Appendixes

Appendix 1. Definition of the selected indicators for the analysis

Coverage of antenatal care (ANC): Total number of pregnant women who made at least one ANC visit at a health facility during pregnancy divided by the estimated number of pregnant women in the catchment area.

Coverage of postnatal care (PNC): Total number of women who made at least one postpartum care visit 2 weeks after delivery at a health facility divided by the estimated number of pregnant women in the catchment area.

Coverage of delivery by skilled birth attendants (DSBA): The total number of deliveries by trained personnel divided by the estimated number of pregnant women in the catchment area.

Coverage of bacillus Calmette-Guerin (BCG) vaccination: Total number of children receiving BCG vaccination divided by the estimated number of children under the age of 1.

Coverage of polio vaccination: Total number of child receiving polio vaccination divided by the estimated number of children under the age of 1.

Coverage of pentavalent vaccination: Total number of children receiving pentavalent vaccination divided by the estimated number of children under the age of 1.

Appendix 2. Derivation of confidence interval of each indicator for 95% confidence interval of composite parameter for LiST modelling.

Assuming the impact of SLA on coverage of six indicators are estimated as b_1-b_6, with standard errors of $se_1 - se_6$.

As we assume the six indicators are additive and independent, then the variance of linear combination of the six indicators are estimated as

$$\text{Var}_{\text{composite}} = se_1^2 + se_2^2 + se_3^2 + se_4^2 + se_5^2 + se_6^2$$

After we conducted the regression model, we realized the se_1 through se_6 are quite close (please see the table below), to further simplify the calculation, let us assume $se_1^2 \cong se_2^2 \cong \cdots \cong se_6^2 \cong se_{common}^2$. Then

$\text{Var}_{\text{composite}} = 6se_{common}^2$, and $se_{composite} = \sqrt{6} * se_{common}$

<div align="center">Standard errors of the coefficients for the six health services</div>

Indicator	Standard Error
ANC	0.054
PNC	0.043
DSBA	0.033
BCG	0.046
Penta	0.040
Polio	0.042
Average	0.043

By definition, the 95% confidence interval of linear combination of the six indicators would be

$$mean \pm 1.96 * \sqrt{6} * se_{common}$$

To arrive such a boundary, the number of deviation for each indicator is estimated to be $\frac{1.96*\sqrt{6}}{6} = 0.8$, which is equivalent to 42% of confidence interval.

Appendix 3

Table A1. Random effects model examining the impact of service level agreements on utilization of key maternal and child health services

Variable	ANC	PNC	DSBA	BCG	Pentavalent	Polio
SLA	0.127*	0.136**	0.174***	0.059	0.008	0.009
Month 1	Reference					
Month 2	-0.002	-0.061	-0.106**	-0.104*	-0.029	0.028
Month 3	0.138*	-0.081	-0.120***	-0.063	0.118**	0.117*
Month 4	0.054	-0.037	-0.129***	-0.101*	0.047	0.083
Month 5	-0.043	-0.106*	-0.087*	-0.130*	0.028	0.070
Month 6	-0.105	-0.030	-0.054	-0.101*	0.022	0.096*
Month 7	-0.055	-0.075	-0.042	-0.114*	-0.023	0.027
Month 8	-0.081	-0.070	-0.022	-0.094	0.039	0.077
Month 9	-0.038	-0.025	-0.035	-0.124*	0.005	0.026
Month 10	-0.047	-0.038	-0.074*	-0.112*	-0.008	0.018
Month 11	-0.080	-0.070	-0.101**	-0.191***	-0.016	-0.016
Month 12	-0.028	0.085	-0.027	-0.198***	-0.063	-0.072
Month 13	-0.184*	-0.016	-0.116**	-0.163*	-0.036	0.032
Month 14	-0.067	-0.218**	-0.194***	-0.209**	-0.106	-0.06
Month 15	-0.074	-0.134*	-0.160***	-0.228***	-0.056	-0.065
Month 16	-0.069	-0.083	-0.162***	-0.238***	-0.076	-0.067
Month 17	-0.056	-0.112	-0.200***	-0.238***	-0.061	-0.103
Month 18	-0.357***	-0.175*	-0.194***	-0.272***	-0.033	-0.029
Month 19	-0.151	-0.157*	-0.169***	-0.253***	-0.044	0.000
Month 20	-0.238**	-0.090	-0.051	-0.087	0.017	0.044
Month 21	-0.280***	-0.094	-0.106*	-0.100	-0.039	-0.007
Month 22	-0.037	-0.209**	-0.214***	-0.287***	-0.126*	-0.123
Month 23	-0.181*	-0.150*	-0.170***	-0.255***	-0.074	-0.052
Month 24	-0.145	-0.138	-0.129**	-0.293***	-0.130*	-0.112
Constant	0.850***	0.371***	0.673***	0.922***	0.765***	0.735***

*p<0.05, **p<0.01, ***p<0.001

Notes: ANC denotes antenatal care, PNC denotes postnatal care, DSBA denotes delivery by skilled birth attendants, BCG denotes bacillus Calmette-Guerin vaccine, pentavalent denotes pentavalent vaccination, polio denotes polio vaccination.

Appendix 4

Table A2. Key Parameters used in LiST

Common parameters		
Population size		1,209,205
Fertility rate		4.95
Coverage of health services	No SLA	SLA
ANC	79.1	92.9
Skilled birth attendance	57.8	76.9
PNC	31.0	44.1
BCG	77.0	86.6
Pentavalent	74.5	78.1
Polio	73.7	78.1

Notes: SLA denotes service-level agreement; ANC denotes antenatal care, PNC denotes postnatal care, BCG denotes bacillus Calmette-Guerin vaccine, pentavalent denotes pentavalent vaccination, polio denotes polio vaccination.

Appendix 5

Table A3. Lives saved by causes for both children under age 5 and pregnant women*

Causes	Point estimate	Lower bound	Upper bound
Children under 5			
Neonatal - Sepsis	116	98	135
Neonatal - Pneumonia	32	26	36
Neonatal - Asphyxia	138	119	158
Neonatal - Prematurity	71	61	81
Neonatal - Tetanus	2	2	2
Diarrhea	-1	0	-1
Pneumonia	10	0	20
Meningitis	3	0	6
Measles	-1	-1	-1
Malaria	-1	0	-1
Pertussis	4	0	8
Injury	0	0	-1
Other	-3	-3	-3
Sub total	370	302	439
Pregnant women			
Antepartum hemorrhage	7	6	8
Postpartum hemorrhage	21	18	24
Hypertensive disorders	20	17	23
Sepsis	13	11	15
Other direct causes	2	1	2
Sub total	63	53	72
Total	433	355	511

*Note: The results are slightly different from Table 3 due to rounding.