

Supplementary Material

The Effect of Adolescent Pregnancy on Child Mortality in 46 Low- and Middle-Income Countries

Navideh Noori^{1,*}, Joshua L. Proctor¹, Yvette Efevbera², and Assaf P. Oron³

¹Institute for Disease Modeling, Global Health Division, Bill and Melinda Gates Foundation, Seattle, WA, USA

² Gender Equality Division, Bill and Melinda Gates Foundation, Seattle, WA, USA

³ Institute for Health Metrics and Evaluation, University of Washington, Seattle, WA, USA.

*Corresponding author, navideh.noori@gatesfoundation.org

Appendix 1. List of countries in Sub-Saharan Africa (SSA) and South Asia with survey data

Table 1. Characteristics of the study population for the child health outcomes in SSA (Unweighted data). All numbers represent women's first birth out of their entire birth history, unless noted otherwise.

Table 2. Characteristics of the study population for the child health outcomes in South Asia (Unweighted data). All numbers represent women's first birth out of their entire birth history, unless noted otherwise.

Table 3. Child and 1-59 months mortality rates and their sampling errors in SSA

Table 4. Child and 1-59 months mortality rates and their sampling errors in South Asia

Figure 1. Ratios associated with 1-59 months and child mortality in SSA and South Asia for the 2014-2018 survey period. Reference group is mothers aged 23-25 years old who live in rural areas and have no formal education (Model 1).

Figure 2. Ratios associated with 1-59 months and child mortality in SSA and South Asia for the 2014-2018 survey period. Reference group is mothers aged 23-25 years old who delivered at home, and had no ANC visit (Model 2)

Figure 3. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2014-2018 survey period. Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, and are in the poorer/middle/richer wealth quintile (Model 3).

Figure 4. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2014-2018 survey period. Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, are in the poorer/middle/richer wealth quintile, and had no ANC visit and at home delivery (Model 4).

Figure 5. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2009-2013 survey period. Reference group is mothers aged 23-25 years old (Model 0).

Figure 6. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2009-2013 survey period. Reference group is mothers aged 23-25 years old who live in rural areas and have no formal education (Model 1).

Figure 7. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2009-2013 survey period. Reference group is mothers aged 23-25 years old who delivered at home, and had no ANC visit (Model 2).

Figure 8. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2009-2013 survey period. Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, and are in the poorer/middle/richer wealth quintile (Model 3).

Figure 9. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2009-2013 survey period. Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, are in the poorer/middle/richer wealth quintile, and had no ANC visit and at home delivery (Model 4).

Figure 10. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Reference group is mothers aged 23-25 years old (Model 0).

Figure 11. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Reference group is mothers aged 23-25 years old who live in rural areas and have no formal education (Model 1).

Figure 12. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Reference group is mothers aged 23-25 years old who delivered at home and have no ANC visits (Model 2).

Figure 13. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, and are in the poorer/middle/richer wealth quintile, (Model 3).

Figure 14. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, are in the poorer/middle/richer wealth quintile, and had no ANC visit and at home delivery (Model 4).

Figure 15. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2014-2018 survey period. Reference group is mothers aged 23-25 years old.

Figure 16. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2014-2018 survey period. Reference group is mothers aged 23-25 years old who live in rural areas, and have no formal education.

Appendix 1. List of countries in Sub-Saharan Africa (SSA) and South Asia with survey data

Angola, Benin, Burkina Faso, Burundi, Democratic Republic of Congo, Congo, Côte d'Ivoire, Cameroon, Ethiopia, Gabon, Ghana, Gambia, Guinea, Kenya, Comoros, Liberia, Lesotho, Madagascar, Mali, Malawi, Mozambique, Nigeria, Niger, Namibia, Rwanda, Sierra Leone, Senegal, Sao Tome and Principe, Chad, Togo, Tanzania, Uganda, South Africa, Zambia, Zimbabwe, Afghanistan, Bangladesh, India, Indonesia, Cambodia, Myanmar, Maldives, Nepal, Philippines, Pakistan, Timor-Leste.

Table 1. Characteristics of the study population for the child health outcomes in SSA (Unweighted data). All numbers represent women's first birth out of their entire birth history, unless noted otherwise.

Maternal age at first birth	2004-2008					2009-2013					2014-2018				
	<16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25
Total births (% ^a)	4404 (5.3)	14639 (17.7)	23258 (28.1)	27688 (33.4)	12942 (15.6)	5356 (4.9)	18569 (16.9)	31204 (28.5)	37062 (33.8)	17451 (15.9)	4157 (4.1)	16429 (16.4)	27787 (27.7)	34526 (34.4)	17544 (17.5)
Stillbirth (% ^b)	22 (1.5)	67 (0.8)	119 (0.7)	187 (0.5)	245 (0.6)	22 (1.2)	98 (0.9)	150 (0.6)	275 (0.6)	269 (0.5)	26 (1.9)	96 (1)	175 (0.8)	305 (0.7)	307 (0.7)
Neonatal deaths (% ^c)	361 (8.2)	813 (5.6)	1040 (4.5)	1111 (4)	513 (4)	348 (6.5)	925 (5)	1187 (3.8)	1302 (3.5)	556 (3.2)	212 (5.2)	690 (4.3)	939 (3.5)	996 (3)	483 (2.8)
Infant deaths (%)	647 (14.7)	1623 (11.1)	1968 (8.5)	2104 (7.6)	935 (7.2)	618 (11.5)	1637 (8.8)	2190 (7)	2231 (6)	928 (5.3)	392 (9.6)	1107 (6.9)	1550 (5.7)	1656 (4.9)	758 (4.5)
Child deaths (%)	316 (7.2)	776 (5.3)	888 (3.8)	986 (3.6)	418 (3.2)	296 (5.5)	694 (3.7)	874 (2.8)	943 (2.5)	392 (2.2)	190 (4.6)	464 (2.9)	575 (2.1)	579 (1.7)	242 (1.4)
1-59 months deaths (%)	603 (13.7)	1588 (10.8)	1820 (7.8)	1983 (7.2)	842 (6.5)	570 (10.6)	1407 (7.6)	1877 (6)	1873 (5.1)	764 (4.4)	370 (9)	881 (5.5)	1186 (4.4)	1241 (3.7)	517 (3)
Under-5 deaths (%)	963 (21.9)	2399 (16.4)	2856 (12.3)	3090 (11.2)	1353 (10.5)	914 (17.1)	2331 (12.6)	3064 (9.8)	3174 (8.6)	1320 (7.6)	582 (14.2)	1571 (9.8)	2125 (7.8)	2235 (6.6)	1000 (5.9)
Residency															
Rural (% ^d)	3407 (77.4)	10623 (72.6)	16249 (69.9)	18320 (66.2)	7594 (58.7)	3941 (73.6)	13299 (71.6)	21969 (70.4)	24444 (66)	10131 (58.1)	3052 (73.4)	12030 (73.2)	19655 (70.7)	22688 (65.7)	9813 (55.9)
Urban (%)	997 (22.6)	4016 (27.4)	7009 (30.1)	9368 (33.8)	5348 (41.3)	1415 (26.4)	5270 (28.4)	9235 (29.6)	12618 (34)	7320 (41.9)	1105 (26.6)	4399 (26.8)	8132 (29.3)	11838 (34.3)	7731 (44.1)
Maternal Education															
No education (%)	2672 (60.7)	7174 (49)	8907 (38.3)	9223 (33.3)	3977 (30.7)	2709 (50.6)	7581 (40.8)	11129 (35.7)	12489 (33.7)	5640 (32.3)	1867 (44.9)	6255 (38.1)	8710 (31.3)	9896 (28.7)	4734 (27)
Any level of education (%)	1732 (39.3)	7465 (51)	14351 (61.7)	18465 (66.7)	8965 (69.3)	2647 (49.4)	10988 (59.2)	20075 (64.3)	24573 (66.3)	11811 (67.7)	2290 (55.1)	101174 (61.9)	19077 (68.7)	24630 (71.3)	12810 (73)

	2004-2008					2009-2013					2014-2018				
Maternal age at first birth	< 16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25
Marital Status	327	1378	2253	2479	1089	672	2677	3846	3913	1574	549	2187	3434	3845	1731
Never in union (%)	(7.4)	(9.4)	(9.7)	(9)	(8.4)	(12.5)	(14.4)	(12.3)	(10.6)	(9)	(13.2)	(13.3)	(12.4)	(11.1)	(9.9)
Currently/Formerly in union/living with a man (%)	4077	13261	21004	25207	11853	4684	15891	27357	33148	15876	3608	14242	24353	30681	15813
	(92.6)	(90.6)	(90.3)	(91)	(91.6)	(87.5)	(85.6)	(87.7)	(89.4)	(91)	(86.8)	(86.7)	(87.6)	(88.9)	(90.1)
Place of Delivery ^b	797	3734	5372	5383	2160	667	3441	5140	4903	1968	562	3002	4200	3788	1510
At home (%)	(60.8)	(53.5)	(44.8)	(38)	(31.1)	(40.8)	(37.7)	(31.5)	(25.7)	(20.8)	(45.4)	(37.9)	(28.8)	(21.4)	(16.3)
Health facility (%)	506	3208	6552	8679	4740	955	5625	11058	14045	7459	666	4856	10246	13733	7655
Other (%)	(38.6)	(46)	(54.6)	(61.3)	(68.2)	(58.4)	(61.7)	(67.9)	(73.6)	(78.7)	(53.8)	(61.4)	(70.3)	(77.8)	(82.7)
	8 (0.6)	37 (0.5)	69 (0.6)	89 (0.6)	53 (0.8)	13 (0.8)	51 (0.6)	94 (0.6)	131 (0.7)	56 (0.6)	9 (0.7)	53 (0.7)	125 (0.9)	142 (0.8)	90 (1)
Antenatal Care Visit ^b	164	857	1149	959	366	153	638	944	807	347	139	662	880	707	323
No visit (%)	(24.4)	(21.2)	(15.5)	(11.1)	(8.6)	(17.1)	(11.8)	(9.1)	(6.7)	(5.9)	(20.2)	(14)	(9.3)	(6.2)	(5.4)
1+ visit (%)	508	3180	6273	7678	3881	740	4785	403	11155	5529	548	4079	8586	10682	5697
	(75.6)	(78.8)	(84.5)	(88.9)	(91.4)	(82.9)	(88.2)	(90.9)	(93.3)	(94.1)	(79.8)	(86)	(90.7)	(93.8)	(94.6)

^a % births in the dataset (age-group distribution).

^b Stillbirths, place of delivery and antenatal care utilization data were available for births that took place 3 or 5 years before the survey.

^c % of cases that ended in death (crude mortality rate).

^d % of cases belonging to subgroup (within-cell distribution).

Table 2. Characteristics of the study population for the child health outcomes in South Asia (Unweighted data). All numbers represent women's first birth out of their entire birth history, unless noted otherwise.

Maternal age at first birth	2004-2008					2009-2013					2014-2018				
	< 16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25
Total births (% ^a)	1835 (3.2)	7084 (12.5)	13405 (23.6)	21767 (38.3)	12737 (22.4)	729 (2.2)	3260 (9.7)	7161 (21.3)	13352 (39.7)	9131 (27.1)	2674 (1.4)	13302 (6.7)	38819 (19.7)	86902 (44.1)	55522 (28.2)
Stillbirth (% ^b)	21 (3.3)	75 (2.2)	124 (1.4)	207 (0.9)	181 (0.8)	5 (2.1)	33 (2.1)	37 (0.8)	105 (0.9)	93 (0.7)	21 (3.1)	78 (1.4)	247 (1.1)	601 (0.8)	605 (0.7)
Neonatal deaths (% ^c)	160 (8.7)	451 (6.4)	690 (5.1)	786 (3.6)	412 (3.2)	41 (5.6)	157 (4.8)	295 (4.1)	408 (3.1)	228 (2.5)	148 (5.5)	643 (4.8)	1552 (4)	2771 (3.2)	1514 (2.7)
Infant deaths (%)	220 (12)	647 (9.1)	976 (7.3)	1133 (5.2)	585 (4.6)	63 (8.6)	229 (7)	415 (5.8)	575 (4.3)	329 (3.6)	219 (8.2)	897 (6.7)	2078 (5.4)	3710 (4.3)	1964 (3.5)
Child deaths (%)	40 (2.2)	101 (1.4)	129 (1)	164 (0.8)	68 (0.5)	8 (1.1)	29 (0.9)	55 (0.8)	89 (0.7)	43 (0.5)	32 (1.2)	108 (0.8)	227 (0.6)	437 (0.5)	218 (0.4)
1-59 months deaths (%)	101 (5.5)	299 (4.2)	419 (3.1)	514 (2.4)	242 (1.9)	30 (4.1)	101 (3.1)	175 (2.4)	259 (1.9)	144 (1.6)	103 (3.9)	362 (2.7)	753 (1.9)	1377 (1.6)	670 (1.2)
Under-5 deaths (%)	260 (14.2)	748 (10.6)	1105 (8.2)	1297 (6)	653 (5.1)	71 (9.7)	258 (7.9)	470 (6.6)	664 (5)	372 (4.1)	251 (9.4)	1005 (7.6)	2305 (5.9)	4147 (4.8)	2182 (3.9)
Residency	1335	5088	9139	13336	6716	523	2302	4999	8794	2054	10047	29711	64977	38311	2054
Rural (%) ^d	(72.8)	(71.8)	(68.2)	(61.3)	(52.7)	(71.7)	(70.6)	(69.8)	(65.9)	(76.8)	(75.5)	(76.5)	(74.8)	(69)	(76.8)
Urban (%)	500 (27.2)	1996 (28.2)	4266 (31.8)	8431 (38.7)	6021 (47.3)	206 (28.3)	958 (29.4)	2162 (30.2)	4558 (34.1)	620 (23.2)	3255 (24.5)	9108 (23.5)	21925 (25.2)	17211 (31)	620 (23.2)

Maternal age at first birth	2004-2008					2009-2013					2014-2018				
	< 16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25	< 16	16-17	18-19	20-22	23-25
Maternal Education	789	2724	4289	5180	2084	161	631	1274	1988	1125	933	4287	11204	21739	11502
No education (%)	(43)	(38.5)	(32)	(23.8)	(16.4)	(22.1)	(19.4)	(17.8)	(14.9)	(12.3)	(34.9)	(32.2)	(28.9)	(25)	(20.7)
Any level of education (%)	1046	4360	9116	16587	10653	568	2629	5887	11364	8006	1741	9015	27615	65163	44020
	(57)	(61.5)	(68)	(76.2)	(83.6)	(77.9)	(80.6)	(82.2)	(85.1)	(87.7)	(65.1)	(67.8)	(71.1)	(75)	(79.3)
Marital Status	1 (0.1)	13	29	58	35	1 (0.1)	19	47 (0.7)	76	43 (0.5)	12	59 (0.4)	126	252	167
Never in union (%)	1834	(0.2)	(0.2)	(0.3)	(0.3)	728	(0.6)	7114	(0.6)	9088	(0.4)	13243	(0.3)	(0.3)	(0.3)
Currently/Formerly in union/living with a man (%)	(99.9)	7071	13376	21709	12702	(99.9)	3241	(99.3)	13276	(99.5)	2662	(99.6)	38693	86650	55355
		(99.8)	(99.8)	(99.7)	(99.7)		(99.4)		(99.4)		(99.6)		(99.7)	(99.7)	(99.7)
Place of Delivery b	463	2111	4029	5878	2593	155	923	1939	2921	1692	225	1533	4406	8332	4350
At home (%)	(79.1)	(74.1)	(64.1)	(52.3)	(38.5)	(73.5)	(66.1)	(55.2)	(42.4)	(33.5)	(48.2)	(35.2)	(26)	(18.9)	(14.3)
Health facility (%)	120	731	2232	5328	4136	56	471	1564	3931	3333	239	2810	12462	35723	25892
Other (%)	(20.5)	(25.7)	(35.5)	(47.4)	(61.4)	(26.5)	(33.7)	(44.5)	(57.1)	(66.1)	(51.2)	(64.4)	(73.6)	(80.9)	(85.3)
	2 (0.3)	7 (0.2)	20	28	7 (0.1)	0 (0)	3 (0.2)	9 (0.3)	32	20 (0.4)	3 (0.6)	18 (0.4)	60 (0.4)	123	114
			(0.3)	(0.2)					(0.5)					(0.3)	(0.4)
Antenatal Care Visit b	104	462	683	806	308	42	196	304	346	171	62	452	1613	3235	1830
No visit (%)	(32.2)	(26.8)	(17.5)	(11)	(6.7)	(29)	(20.1)	(12.5)	(7.1)	(4.7)	(22.5)	(17.6)	(16.1)	(12.1)	(9.2)
1+ visit (%)	219	1264	3216	6537	4307	103	780	2129	4504	3431	213	2120	8434	23503	18135
	(67.8)	(73.2)	(82.5)	(89)	(93.3)	(71)	(79.9)	(87.5)	(92.9)	(95.3)	(77.5)	(82.4)	(83.9)	(87.9)	(90.8)

^a % births in the dataset (age-group distribution).

^b Stillbirths, place of delivery and antenatal care utilization data and were available for births taking place 3 or 5 years before the survey."

^c % of cases that ended in death (crude mortality rate).

^d % of cases belonging to subgroup (within-cell distribution).

Table 3. Child and 1-59 months mortality rates and their sampling errors in SSA

	2004-2008		2009-2013		2014-2018	
	CMR ^a	1-59MR ^b	CMR	1-59MR	CMR	1-59MR
Maternal age at first birth (years)						
< 16	101.2±5.2	153.4±6.0	77.6±4.4	122.5±5.2	67 ± 4.5	101.9 ± 5.3
16-17	82.0±2.9	130±3.4	59.3±2.2	95.4±2.6	43.4 ± 2	68.4 ± 2.5
18-19	62.6±2.1	99.1±2.4	45.0±1.6	76.4±1.9	32 ± 1.4	53.8 ± 1.8
20-22	52.2±1.8	87.4±2.2	38.6±1.3	62.8±1.6	25.5 ± 1.1	44.8 ± 1.4
23-25	52.9±2.6	83.3±3.2	35.1±1.8	55.2±2.2	21.2 ± 1.5	36.7 ± 1.8
Urban/Rural Residency						
< 16	75.8 ± 7.6	129.4 ± 8	57.1±2.7	100.8±5.9	45.1 ± 3.2	72.7 ± 8.8
	107.7 ± 3.4	159.3 ± 4.4	85.1±3.8	130.3±3.5	75 ± 0.6	112.3 ± 4.7
16-17	69.6 ± 1	110.3 ± 1.6	38.9±1.3	69.9±1.4	30.1 ± 0.9	51.6 ± 6.2
	86 ± 8.2	136.1 ± 7.4	68.1±2.4	105.8±2.4	48.7 ± 0.9	74.9 ± 1.3
18-19	47.7 ± 1	80 ± 1.7	29.7±2.6	54.3±2.6	23.3 ± 1	41.6 ± 2.9
	68.3 ± 2	106.2 ± 2.4	52.4±2.7	86.8±3.7	35.9 ± 1.5	59.2 ± 1.4
20-22	36.8 ± 2.1	65.2 ± 1.7	24.6±1.4	42.2±1.4	17.3 ± 5.1	32.4 ± 4.6
	59.1 ± 1.9	97.2 ± 2.2	46.6±3.6	74.3±4.6	30.3 ± 0.4	51.8 ± 0.6
23-25	28 ± 0.3	53 ± 2	25.7±0.9	40.0±1.2	15.5 ± 0.3	27.8 ± 0.5
	67.7 ± 3.9	101 ± 3.8	42.3±3.3	67.0±3.2	26.1 ± 0.2	44.5 ± 0.4
Maternal Education Status: Any Education/No Education						
< 16	69.3 ± 0.8	115.8 ± 1.1	64.4 ± 1.3	110.3 ± 2.5	52.3 ± 2.5	85 ± 6
	121.5 ± 5.1	176.3 ± 6.7	87.6 ± 4.7	131.5 ± 4.9	83.6 ± 1.1	121.1 ± 6.7
16-17	57.2 ± 0.5	98.5 ± 0.8	47.9 ± 0.5	79.5 ± 0.8	32.7 ± 0.5	57 ± 3.8
	106.1 ± 10.9	159.8 ± 9.2	72.7 ± 3.6	114.4 ± 3.4	59.8 ± 0.9	85.7 ± 1.1
18-19	46.9 ± 0.5	80.1 ± 0.9	34.9 ± 1.9	63.5 ± 3.8	25.4 ± 0.8	44.9 ± 1.3
	86.6 ± 2.1	127.4 ± 3.2	60.9 ± 4.2	97 ± 5.2	45.5 ± 3	72.4 ± 2.8
20-22	39 ± 0.2	69 ± 0.4	29.8 ± 2	51.8 ± 1.9	21 ± 0.5	37.3 ± 0.9
	78 ± 3.5	122.2 ± 3.7	53.8 ± 5.7	82 ± 7.7	36 ± 0.3	62.8 ± 0.6
23-25	39.6 ± 0.3	67 ± 0.6	28.3 ± 0.2	46 ± 0.3	16.4 ± 0.3	30.6 ± 0.5
	81.5 ± 6.6	117.7 ± 6.4	47.5 ± 5.4	72.5 ± 5.3	33.8 ± 0.1	53.2 ± 0.2
Antenatal Care Visit (ANC): Any Visit/No Visit						
< 16	116.9 ± 13.8	153.9 ± 13.9	51.7 ± 24.4	82.6 ± 26.1	-	-
	93 ± 14.7	102.7 ± 14.4	99.2 ± 48.1	127.2 ± 43.8	-	-
16-17	36.2 ± 11.6	67.2 ± 11	43.7 ± 1.1	68.3 ± 1.5	26.1 ± 0.4	40.6 ± 0.7
	87.8 ± 5.3	115.7 ± 11.4	33.7 ± 1.7	67.1 ± 3	67.2 ± 3.3	100 ± 4
18-19	33.9 ± 1.2	55.1 ± 1.7	42.1 ± 0.4	64.2 ± 3.6	21 ± 0.6	33 ± 0.9
	60 ± 0.7	91.8 ± 2	123.4 ± 8.3	139.6 ± 10.6	43.8 ± 1.7	65.6 ± 2.2
20-22	30.2 ± 0.5	54.4 ± 0.8	19.5 ± 0.2	37.2 ± 0.5	11.1 ± 0.2	22.3 ± 0.3
	117.2 ± 17.8	153.9 ± 17.4	81.6 ± 9.8	93.9 ± 13.7	47.2 ± 2.2	82.6 ± 2.9
23-25	32 ± 0.7	56.6 ± 1.3	29.8 ± 0.2	44.1 ± 0.3	9.4 ± 0.6	17.7 ± 0.8
	93.1 ± 259.9	107.5 ± 248.8	19 ± 1.3	42.5 ± 2.6	46.2 ± 6.1	80.8 ± 8.8

	2004-2008		2009-2013		2014-2018	
	CMR	1-59MR	CMR	1-59MR	CMR	1-59MR
Place of Delivery: At Home/Health Facility						
< 16	109.8 ± 6.1	165.1 ± 6.9	110.2 ± 8.5	148.7 ± 9.2	122.6 ± 1.5	162.3 ± 5.1
	104.5 ± 28.2	129 ± 28.4	69.8 ± 0.6	99.6 ± 9.3	66.6 ± 3.9	98.9 ± 11.3
16-17	88.4 ± 3.6	133.6 ± 4.2	72.3 ± 3.6	99.7 ± 4	76.3 ± 1.8	99.7 ± 2.1
	54.3 ± 8.9	96.5 ± 8.2	50.1 ± 1.6	81.8 ± 2.1	33.4 ± 0.3	56.9 ± 0.9
18-19	61.8 ± 6.2	102.1 ± 5.7	57.7 ± 2.1	90.6 ± 2.9	48 ± 0.4	75.9 ± 1.5
	38.3 ± 1.2	65.8 ± 1.9	36.8 ± 0.9	62.2 ± 1.2	22.4 ± 0.9	37.3 ± 1.1
20-22	56.6 ± 1.6	98.3 ± 2.2	42.6 ± 2.1	66.2 ± 2.8	36.9 ± 1	66.6 ± 1.7
	38 ± 0.7	67.5 ± 1.2	27.8 ± 0.8	48.5 ± 1.2	15.2 ± 0.1	30.3 ± 0.2
23-25	62.2 ± 2.4	94.7 ± 5.4	38.6 ± 23.7	66.3 ± 21.8	27.5 ± 1.4	49.1 ± 2.1
	39.4 ± 0.8	65.5 ± 1.2	28.7 ± 0	44.5 ± 0.1	12.8 ± 0.4	24.1 ± 0.6

^aCMR: Child mortality rate, ^b1-59MR: 1-59 months mortality rate

Table 4. Child and 1-59 months mortality rates and their sampling errors in South Asia

	2004-2008		2009-2013		2014-2018	
	CMR	1-59MR	CMR	1-59MR	CMR	1-59MR
Maternal age at first birth (years)						
< 16	36.5 ± 0.6	62.1 ± 1	18.8 ± 6.8	43.6 ± 6.2	12.4 ± 2.6	36 ± 7.8
16-17	19.2 ± 0.3	46.6 ± 2.6	12.8 ± 0.3	36 ± 2.6	10.3 ± 0.7	27.6 ± 2
18-19	13.1 ± 0.2	33.3 ± 0.9	10 ± 2	25.3 ± 1.9	7.8 ± 5.5	20 ± 5.1
20-22	11.1 ± 0.1	27.3 ± 0.2	8.3 ± 0.1	21.1 ± 0.2	6.6 ± 0.2	16.9 ± 0.5
23-25	8.3 ± 0.1	22 ± 0.2	9 ± 0.04	19.8 ± 0.3	6.6 ± 0.2	14.4 ± 1.7
Urban/Rural Residency						
< 16	27.7 ± 1.2 38.3 ± 0.6	51.8 ± 2.3 64.2 ± 1	24.5 ± 1.1 17 ± 7.3	37.7 ± 10.8 45.3 ± 6.7	5.6 ± 2.4 14.5 ± 0.7	20.7 ± 10.6 40.6 ± 3.2
16-17	16.9 ± 5.8 19.8 ± 0.3	36 ± 4.8 49.1 ± 2.5	7 ± 1.2 14.4 ± 0.5	26.1 ± 4.3 38.8 ± 2.6	10.6 ± 1.5 10.2 ± 7.9	27.2 ± 4.1 27.7 ± 7.5
18-19	8.1 ± 0.1 14.8 ± 0.2	24.5 ± 0.2 36.2 ± 1	4.8 ± 1.7 11.7 ± 2.5	21.6 ± 2.2 26.5 ± 2.3	5.5 ± 11 8.6 ± 0.3	15.4 ± 10.4 21.6 ± 0.9
20-22	5.8 ± 0.1 13.6 ± 0.1	17 ± 0.2 32 ± 0.3	5.1 ± 0.7 10 ± 0.1	13.8 ± 0.6 24.7 ± 0.2	4.1 ± 0.2 7.7 ± 0.1	12 ± 0.7 19 ± 1.1
23-25	6.5 ± 0 9.7 ± 0.1	16.4 ± 0.1 26 ± 0.2	7.1 ± 0.1 10.4 ± 0.1	16.4 ± 0.5 22.1 ± 0.1	5 ± 0.2 7.5 ± 0.2	10.3 ± 2.5 16.8 ± 0.3
Maternal Education Status: Any Education/No Education						
< 16	27.7 ± 0.7 44.8 ± 0.5	52.6 ± 1.3 70.8 ± 0.4	21.2 ± 7.8 11.9 ± 0.4	39.6 ± 7.2 59.3 ± 2.3	11.2 ± 2.3 14.2 ± 3	28.8 ± 6.4 49.4 ± 8.6
16-17	12.4 ± 0.2 26.9 ± 0.3	35.7 ± 0.7 59.4 ± 5.4	7.4 ± 0.2 31.9 ± 0.6	27.7 ± 3 66 ± 1	8 ± 0.5 14.7 ± 1.5	22.9 ± 1.6 37.5 ± 4.1
18-19	9.7 ± 0.2 18.3 ± 0.2	26.4 ± 1.3 44.3 ± 0.4	9.5 ± 2.4 12.3 ± 0.1	21.7 ± 2.2 41 ± 0.4	6.2 ± 7.9 11.4 ± 0.9	16.2 ± 7.4 29.7 ± 2.6
20-22	7.6 ± 0.1 20.1 ± 3.4	21.1 ± 0.2 43 ± 3.1	7.3 ± 0.1 13.8 ± 0.1	19.1 ± 0.2 32 ± 0.2	5 ± 0.1 11.1 ± 0.5	13.4 ± 0.4 27.5 ± 1.2
23-25	6.7 ± 0.1 14.8 ± 0	16.8 ± 0.1 43.4 ± 0.2	7.7 ± 0 17.8 ± 0.3	16.8 ± 0.4 39.4 ± 0.5	5.2 ± 0.1 11 ± 0.8	11 ± 0.1 26.7 ± 6.2
Antenatal Care Visit (ANC): Any Visit/No Visit						
< 16	11.4 ± 0.5 2.2 ± 0.2	43.7 ± 1.6 3.5 ± 0.3	-	-	27.3 ± 6.1 0 ± 0	26.5 ± 5.8 0 ± 0

	2004-2008		2009-2013		2014-2018	
	CMR	1-59MMR	CMR	1-59MR	CMR	1-59MR
16-17	17.8 ± 0.7 5 ± 0.2	29.6 ± 0.9 40.7 ±	3.4 ± 7.2 7.4 ± 0.7	7.8 ± 7 12.1 ± 4.9	2.6 ± 0.3 17.1 ± 2	9.4 ± 1.1 43.2 ± 4.1
18-19	4.9 ± 0.1 3.2 ± 0.1	13.5 ± 0.2 9.1 ± 8	2.9 ± 0.1 8.6 ± 0.5	7.1 ± 0.2 27.1 ± 1.1	2.4 ± 0.2 5.8 ± 0.7	9.5 ± 0.7 26.4 ± 2.1
20-22	5 ± 0 24 ± 1	13 ± 0.1 36.9 ± 1.3	1.5 ± 0 1.5 ± 5.6	4.6 ± 0.1 15.2 ± 5.4	3 ± 0.1 8.5 ± 0.5	9.2 ± 0.4 20.1 ± 2.4
23-25	0.6 ± 0 7.9 ± 0.8	6.5 ± 0.1 32.4 ± 2	6.5 ± 0.1 0 ± 0	13 ± 0.7 5.7 ± 0.7	3.7 ± 0 9.2 ± 0.3	8.3 ± 0.2 34.2 ± 1.1
Place of Delivery: At Home/Health Facility						
< 16	36.5 ± 2 0 ± 0	63.4 ± 2.9 35.2 ± 2.7	15.9 ± 37.9 0 ± 0	22.2 ± 36.4 24.9 ± 2.6	36.1 ± 4.4 71.1 ± 6.8	58.8 ± 11.6 85.3 ± 6.9
16-17	13.3 ± 0.2 11.7 ± 0.3	42.8 ± 5.1 32.4 ± 0.9	8.7 ± 0.1 10.2 ± 0.4	28 ± 0.4 9.8 ± 0.4	8.5 ± 0.4 11.1 ± 2.2	34.3 ± 2.3 25.7 ± 3.2
18-19	20.6 ± 0.2 7.2 ± 0.1	38.6 ± 3.5 19.6 ± 0.3	10.8 ± 7.2 5.5 ± 0.2	20.2 ± 6.7 13.7 ± 0.5	6.1 ± 0.2 5.8 ± 0.7	26.7 ± 1.4 17.3 ± 1.7
20-22	18.1 ± 4 5 ± 0.1	34.7 ± 3.6 13 ± 0.1	8.5 ± 0.2 5.9 ± 0	19.2 ± 0.3 12 ± 0.1	19.4 ± 4.2 6.8 ± 0.5	33.1 ± 5.4 16.5 ± 1.1
23-25	9.1 ± 0.1 5.3 ± 0.1	29.7 ± 0.3 12.5 ± 0.2	10.8 ± 0.2 6.2 ± 0	24.6 ± 0.5 14 ± 1.5	16.1 ± 0.8 7.1 ± 0.3	30.8 ± 9.4 13.8 ± 0.6

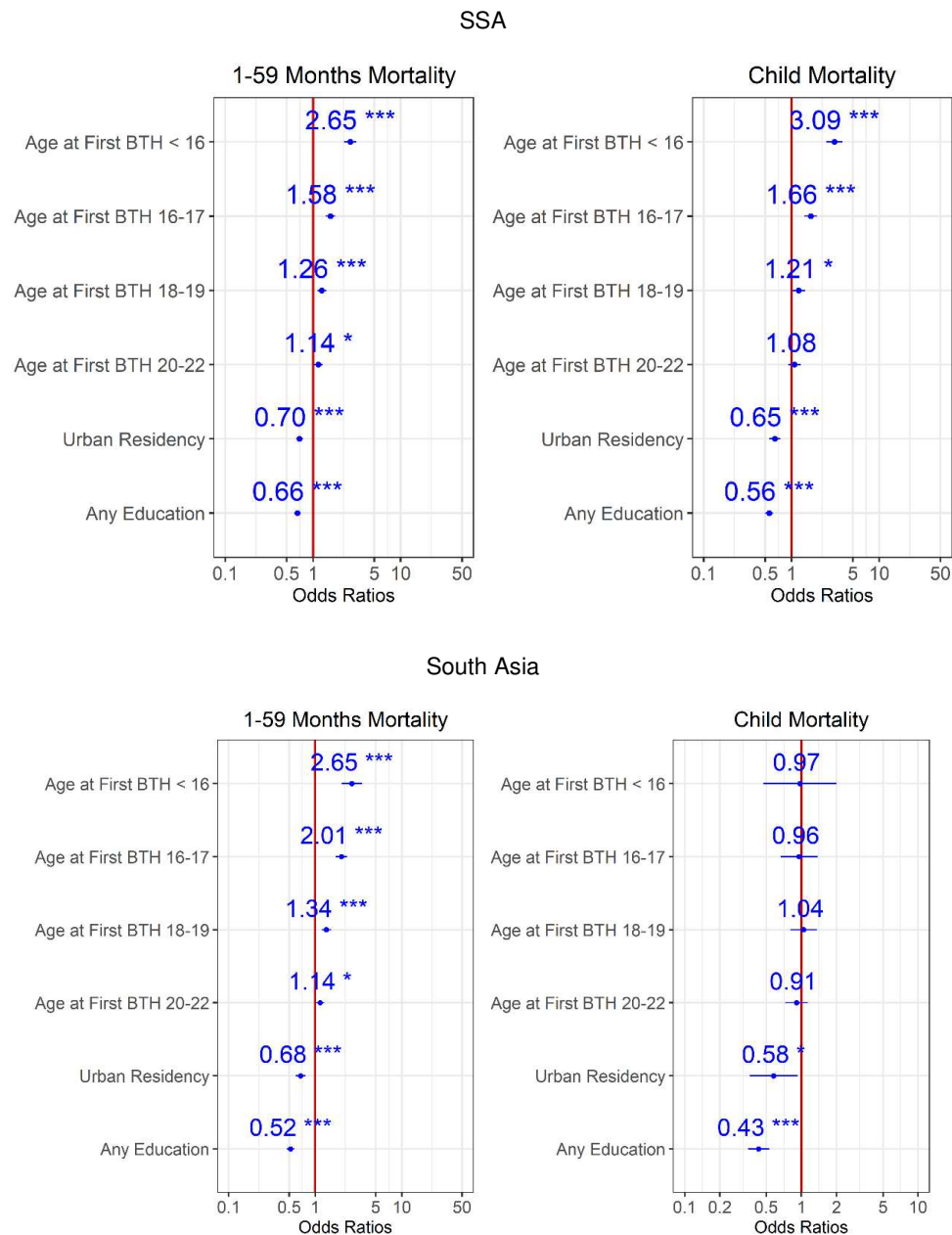


Figure 1. Ratios associated with 1-59 months and child mortality in SSA and South Asia for the 2014-2018 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs ('***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '.' 1). Reference group is mothers aged 23-25 years old who live in rural areas and have no formal education (Model 1).

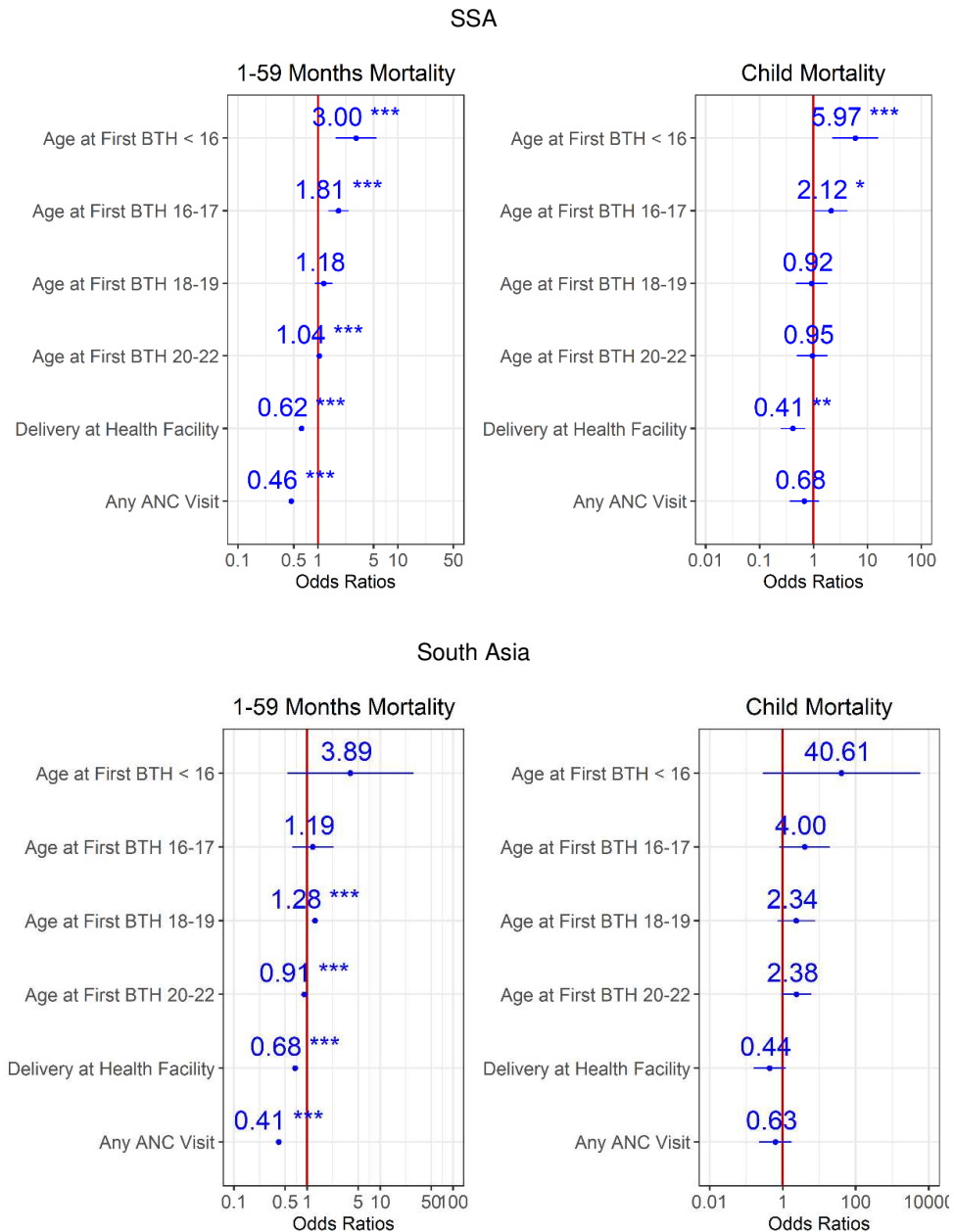
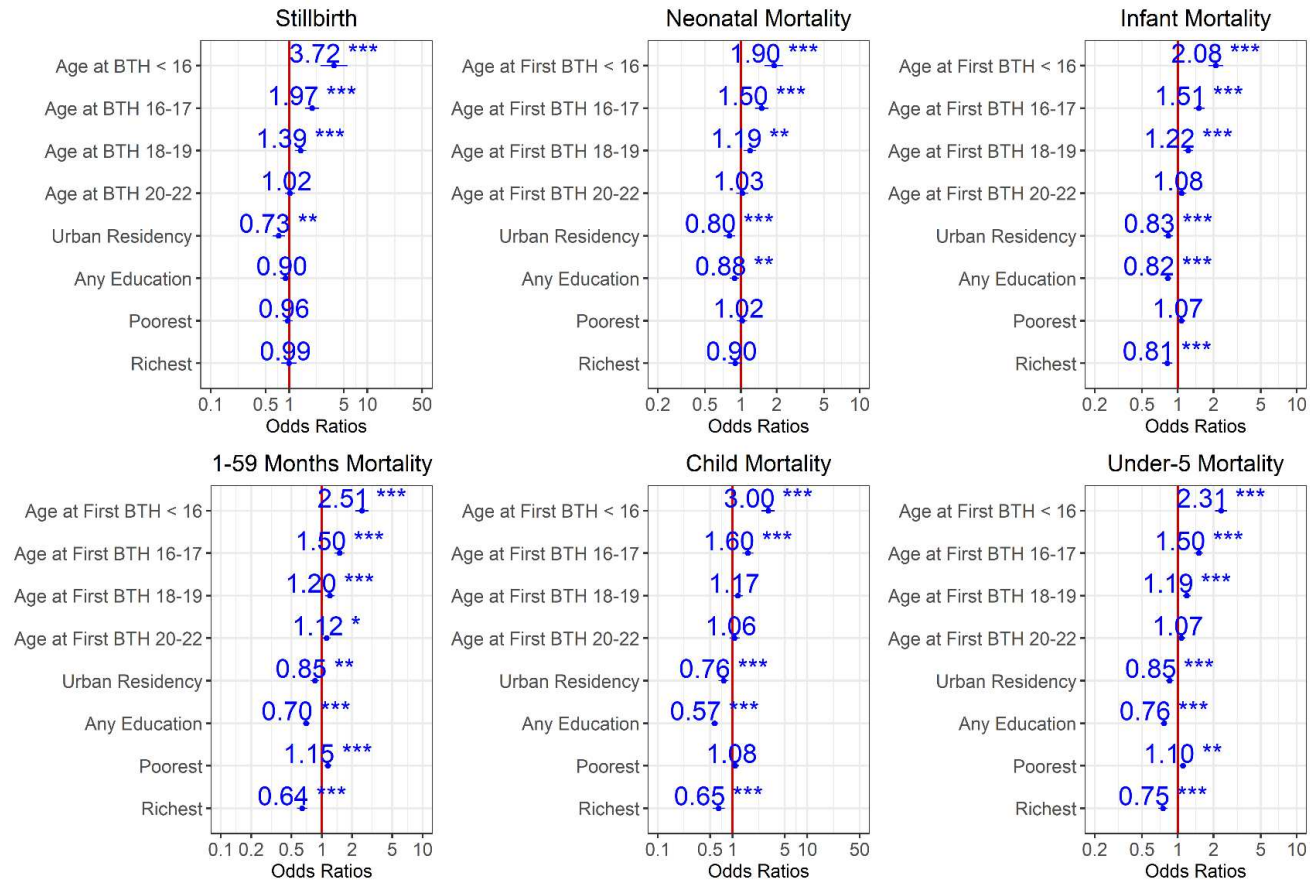


Figure 2. Ratios associated with 1-59 months and child mortality in SSA and South Asia for the 2014-2018 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old who delivered at home, and had no ANC visit (Model 2).

SSA



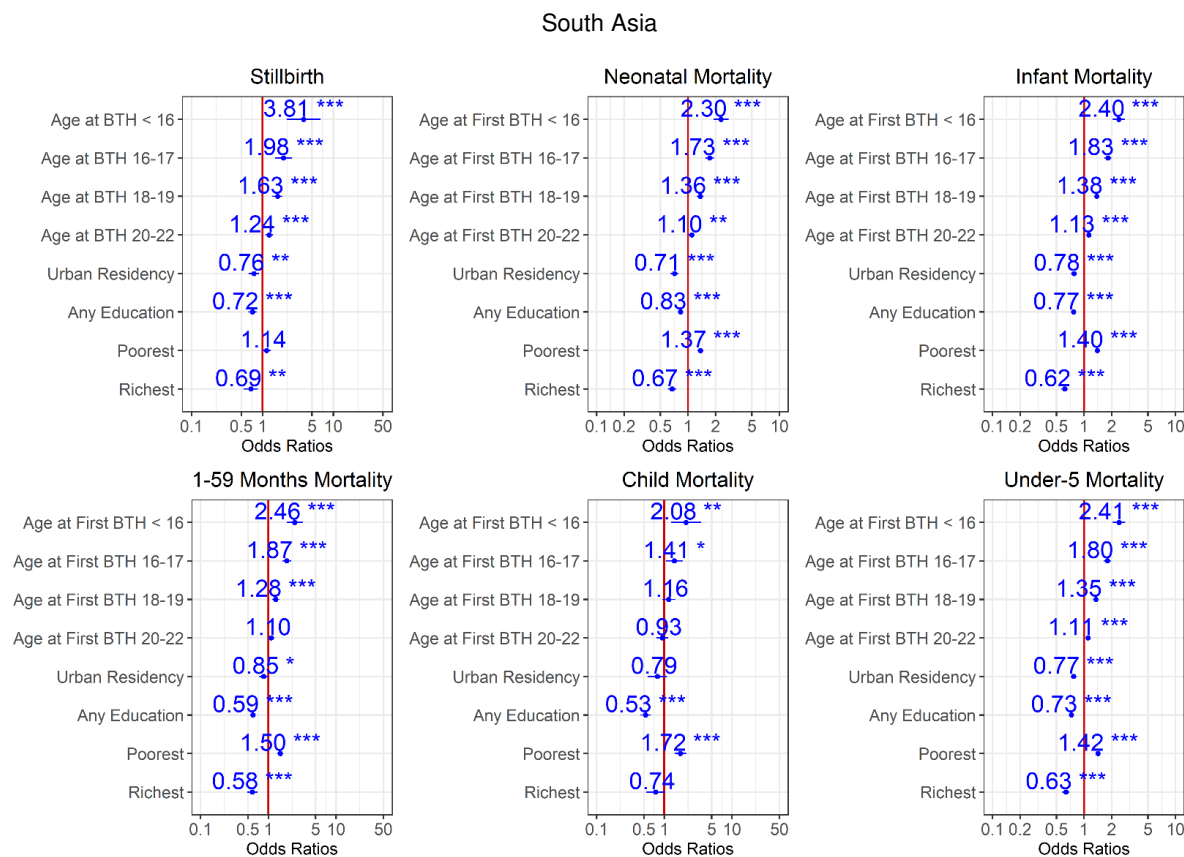
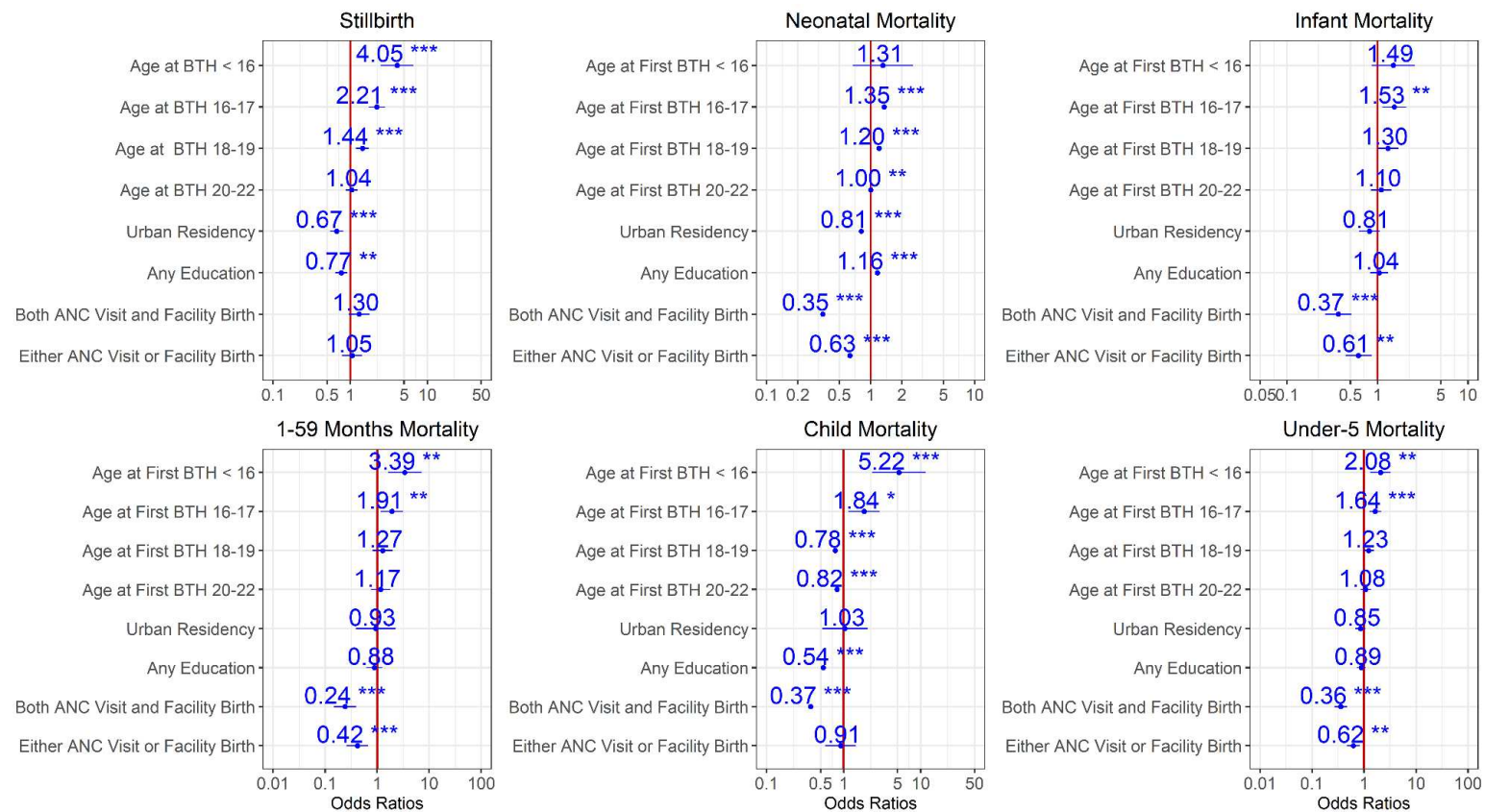


Figure 3. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2014-2018 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, and are in the poorer/middle/richer wealth quintile (Model 3).

SSA



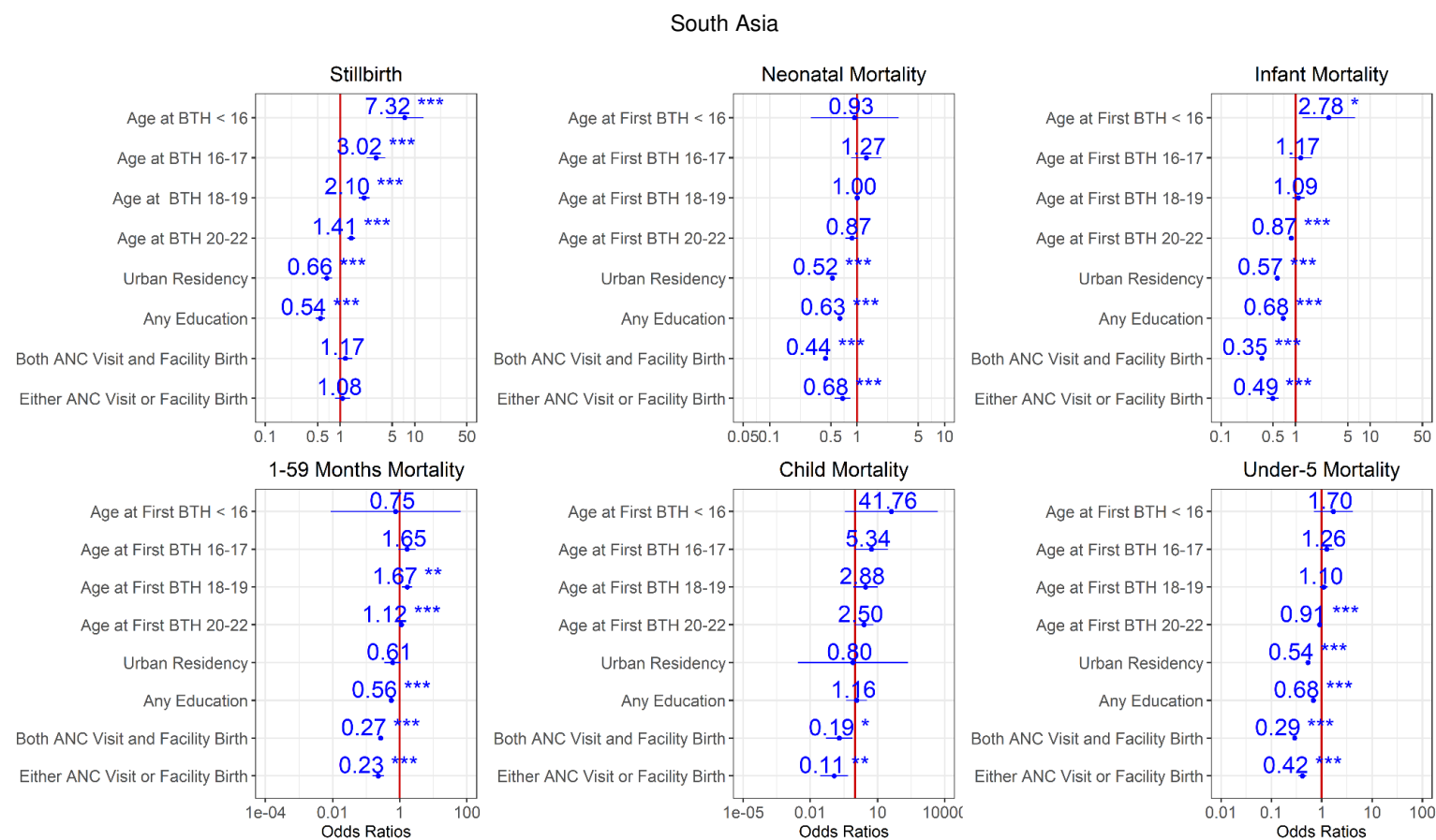
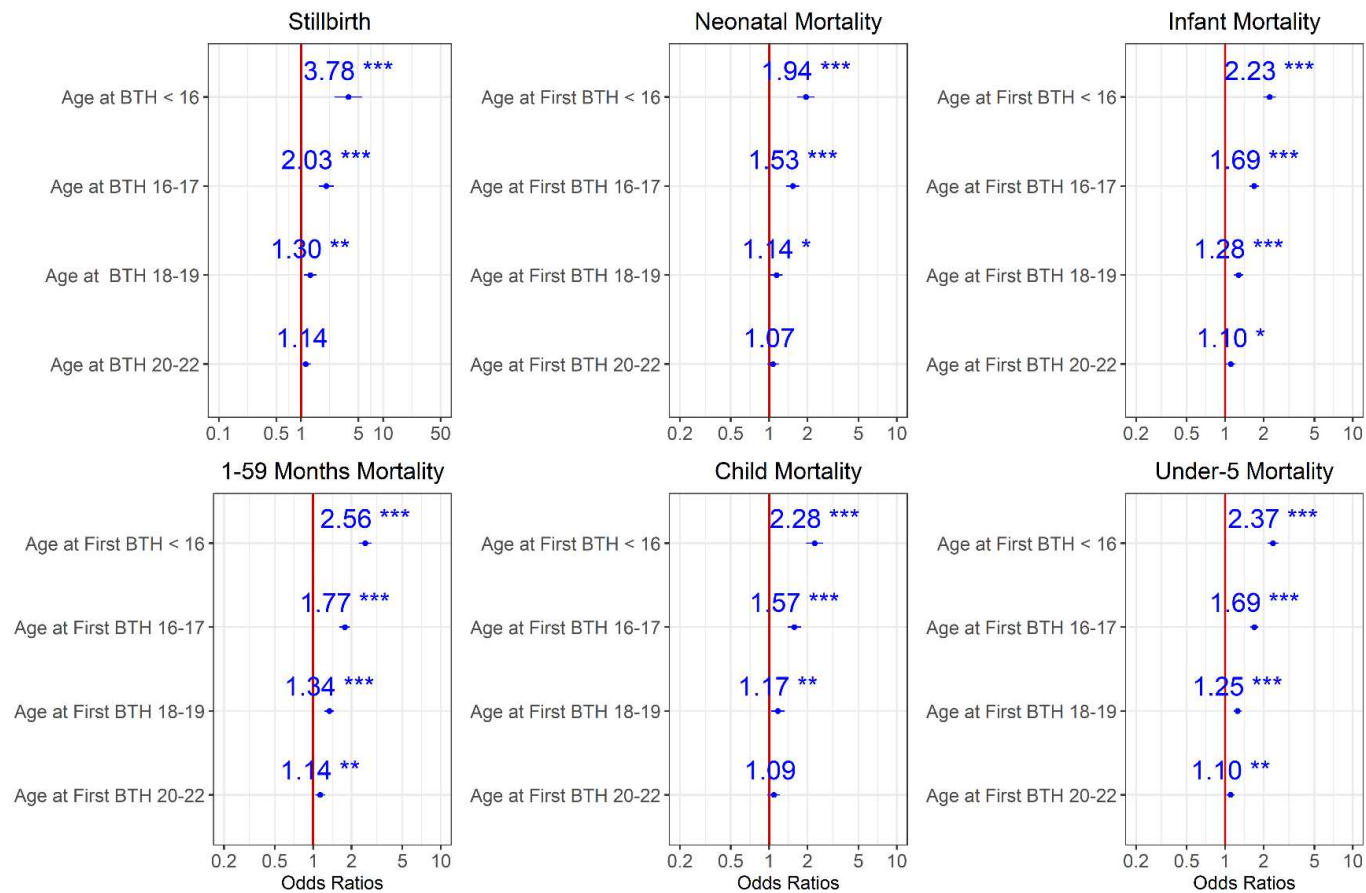


Figure 4. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2014-2018 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, are in the poorer/middle/richer wealth quintile, and had no ANC visit and at home delivery (Model 4).

SSA



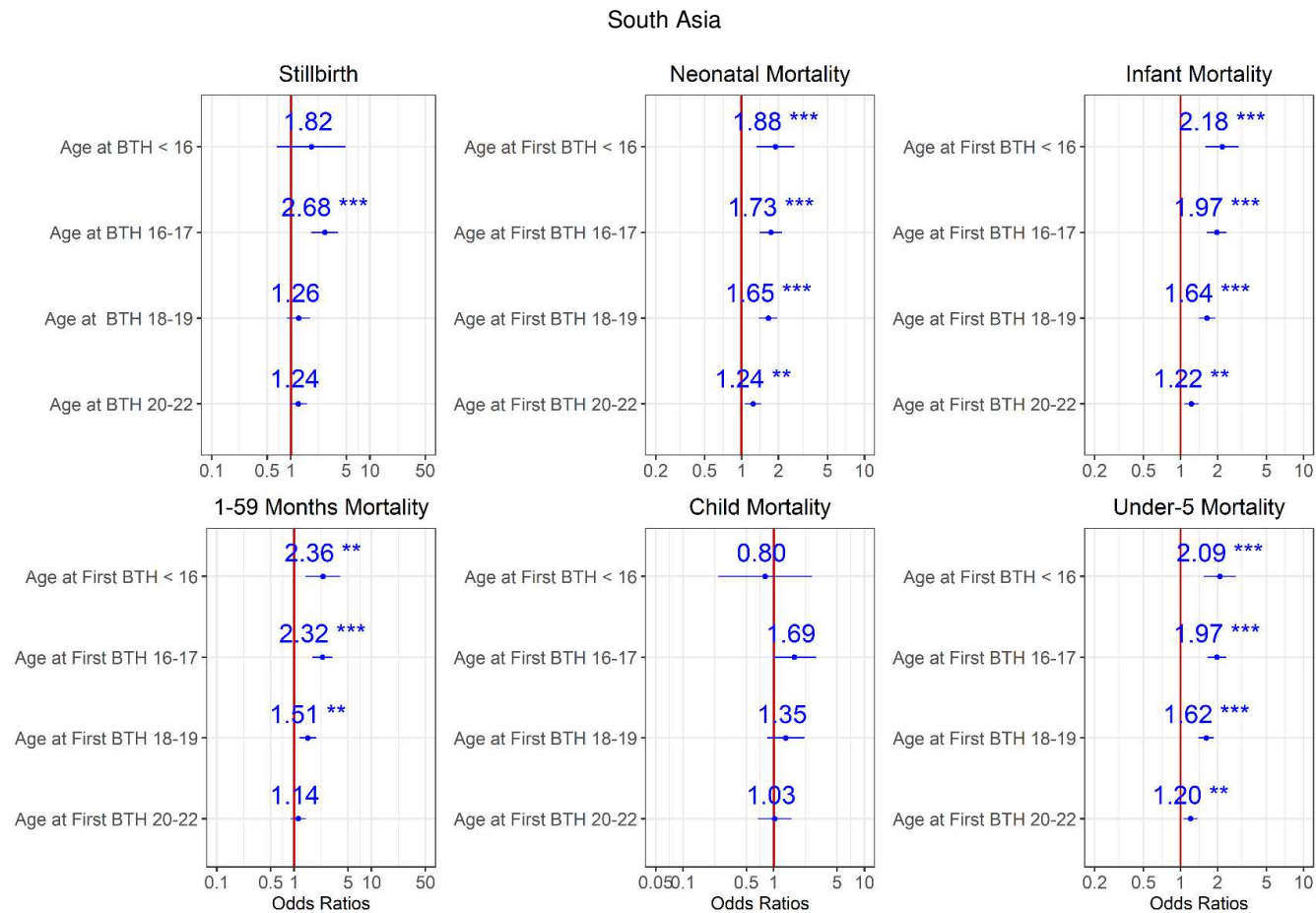
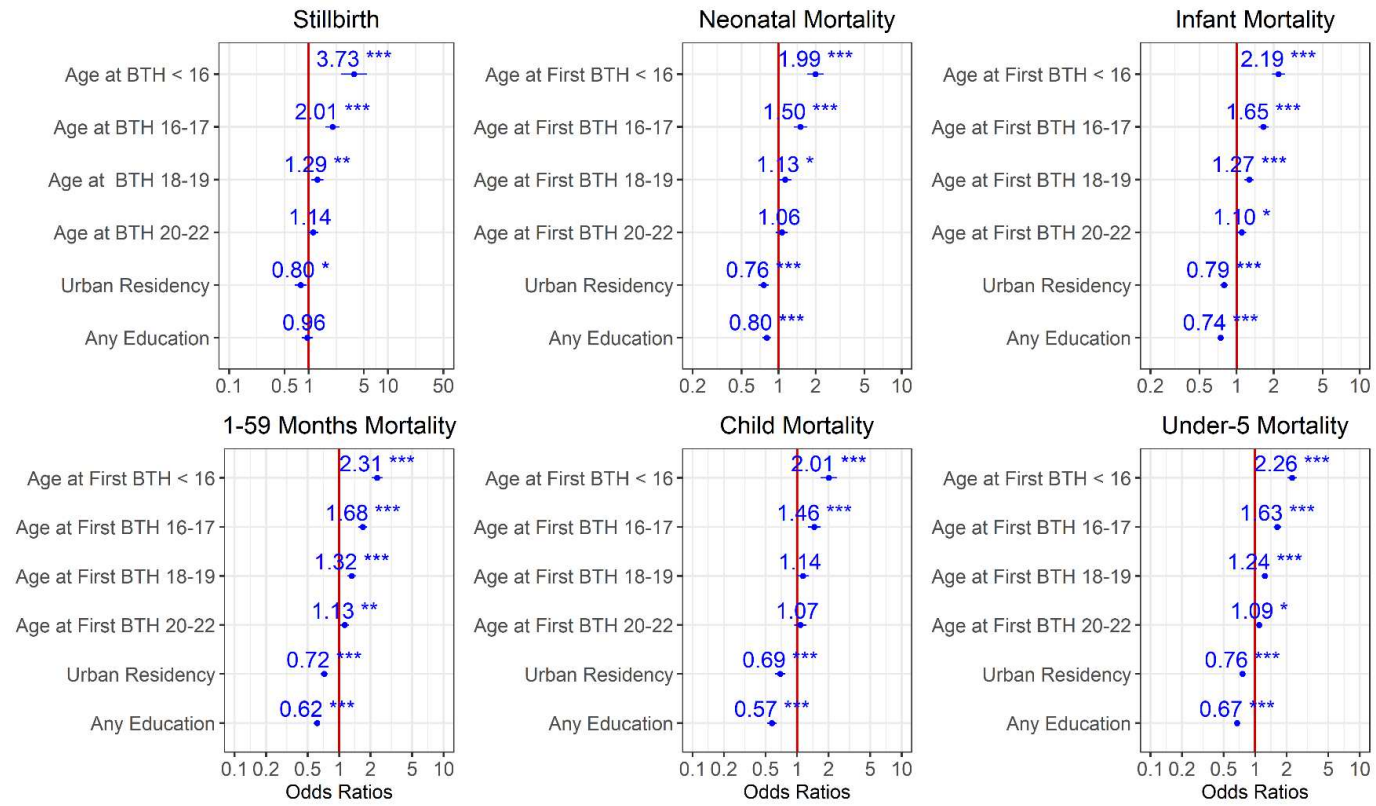


Figure 5. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2009-2013 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs ('***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1). Reference group is mothers aged 23-25 years old (Model 0).

SSA



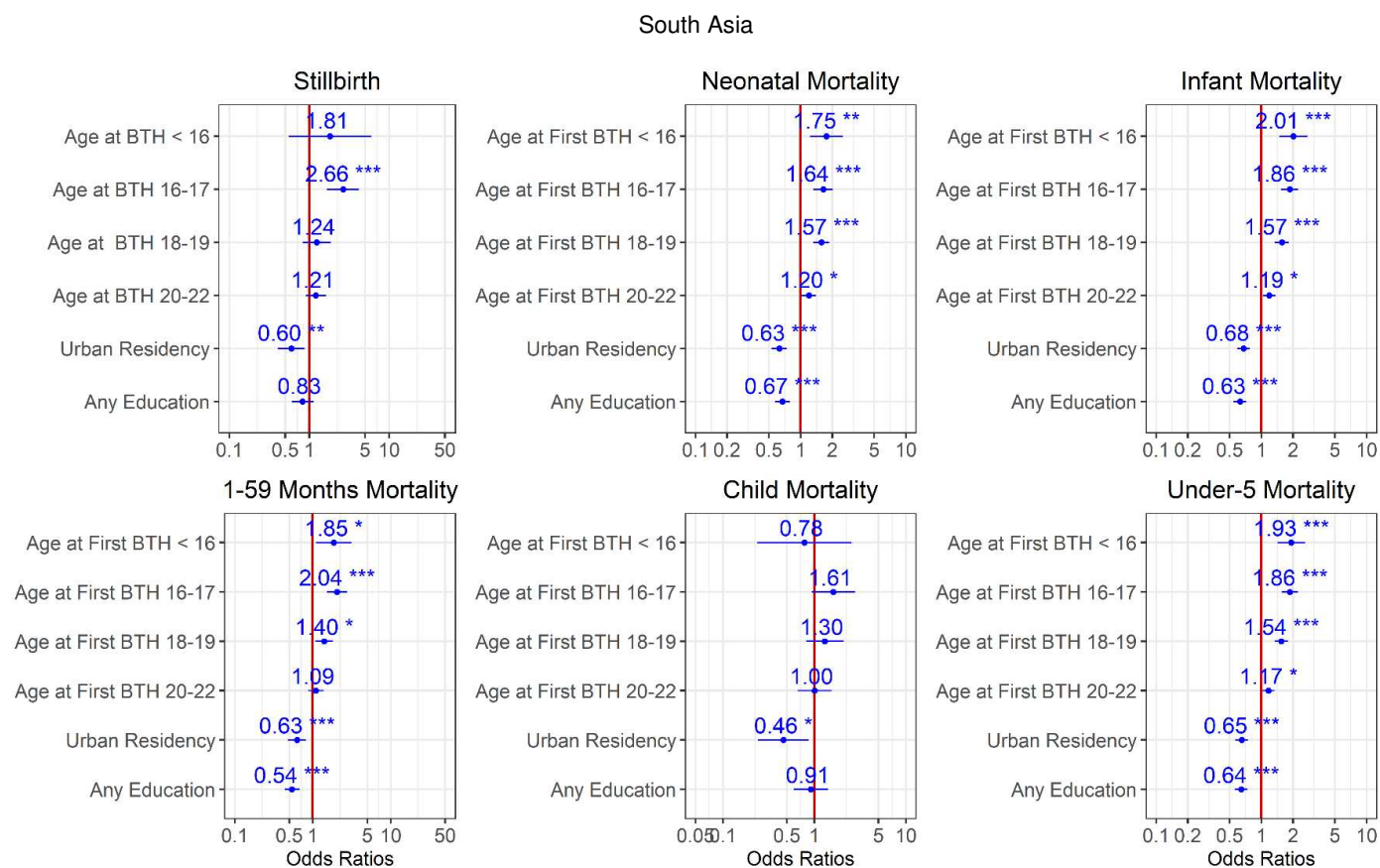


Figure 6. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2009-2013 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs ('***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1). Reference group is mothers aged 23-25 years old who live in rural areas and have no formal education (Model 1).

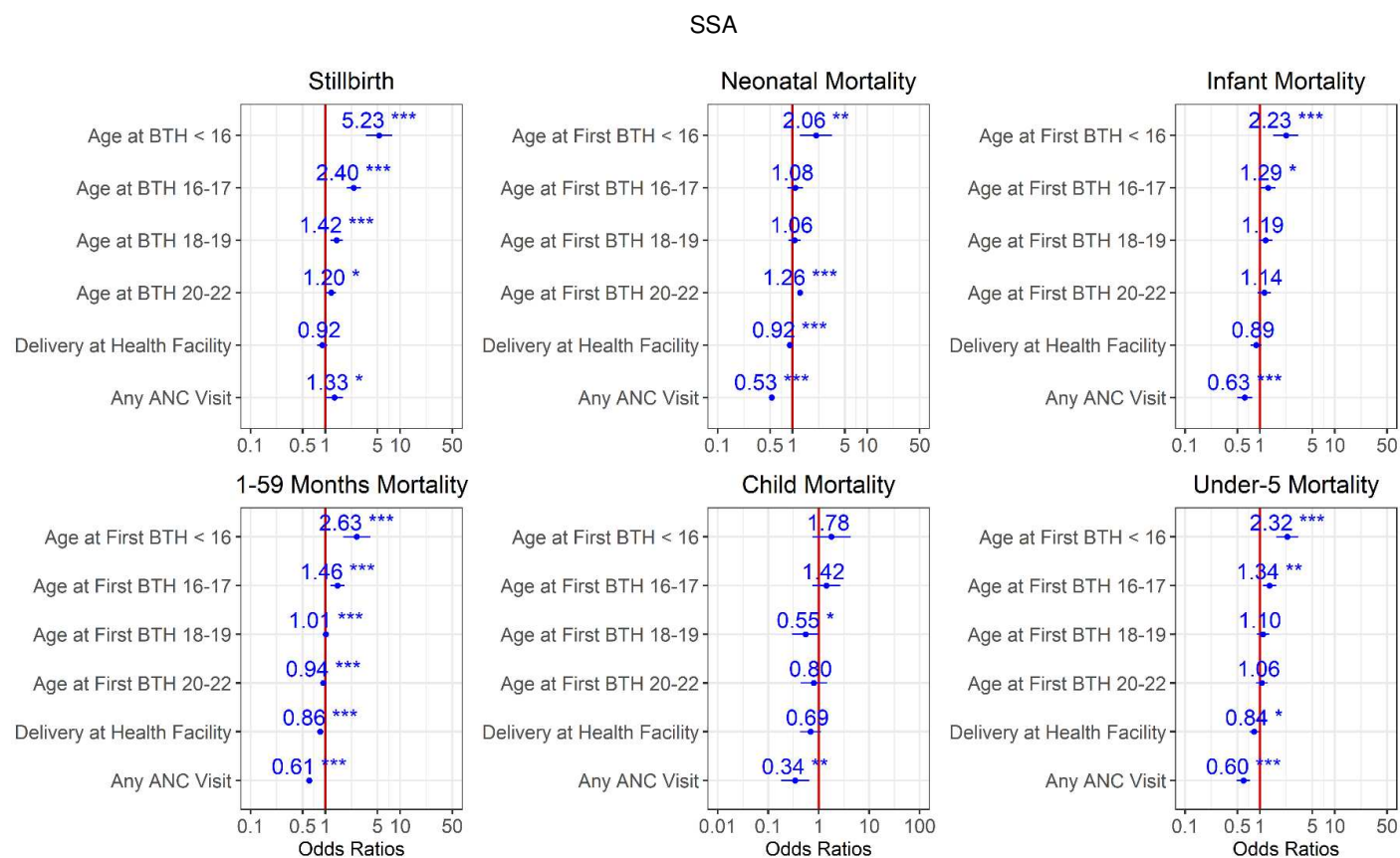
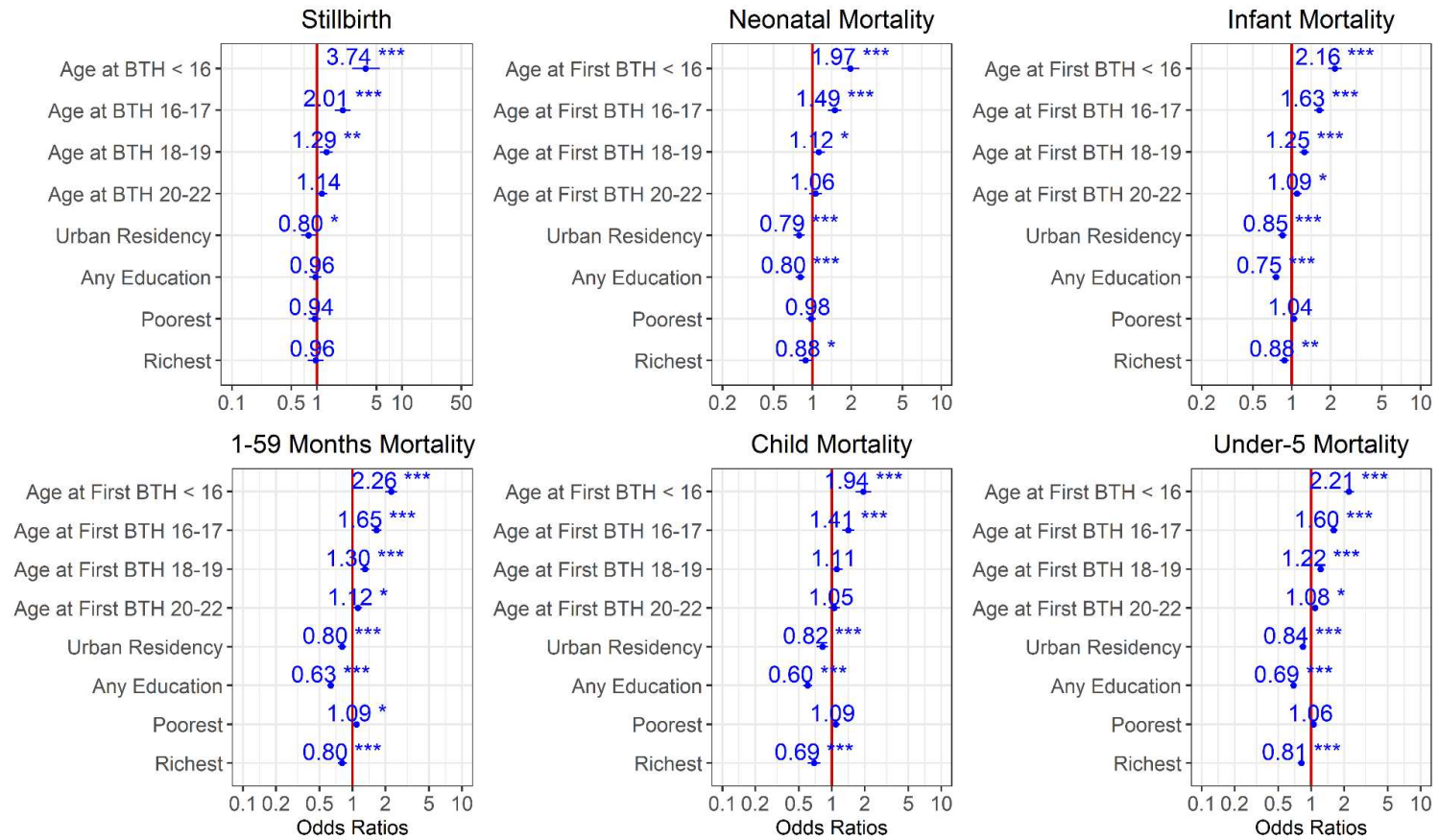


Figure 7. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2009-2013 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old who delivered at home, and had no ANC visit (Model 2).

SSA



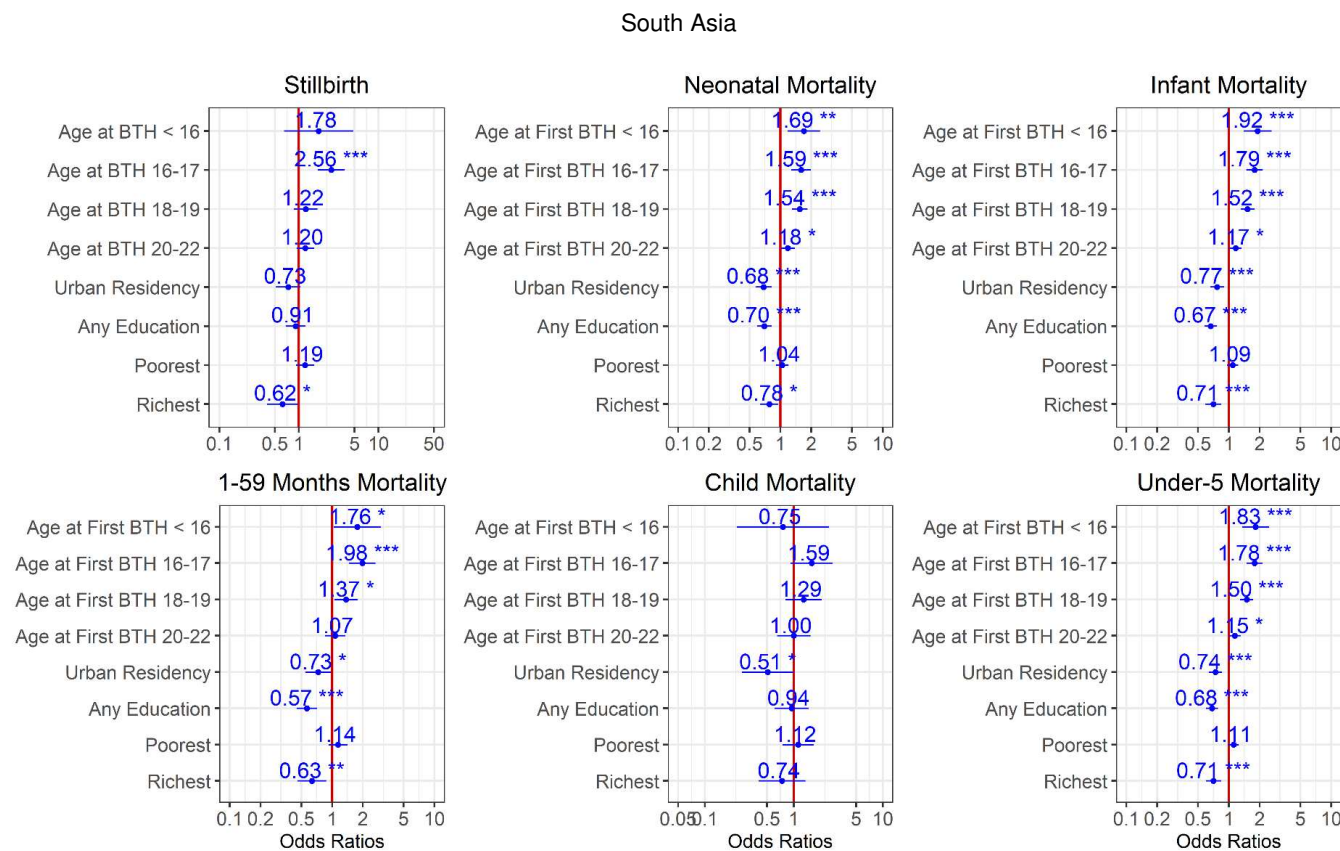


Figure 8. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2009-2013 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with asterisk signs (**** 0.001 *** 0.01 ** 0.05 * 0.1 ' ' 1). Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, and are in the poorer/middle/richer wealth quintile (Model 3).

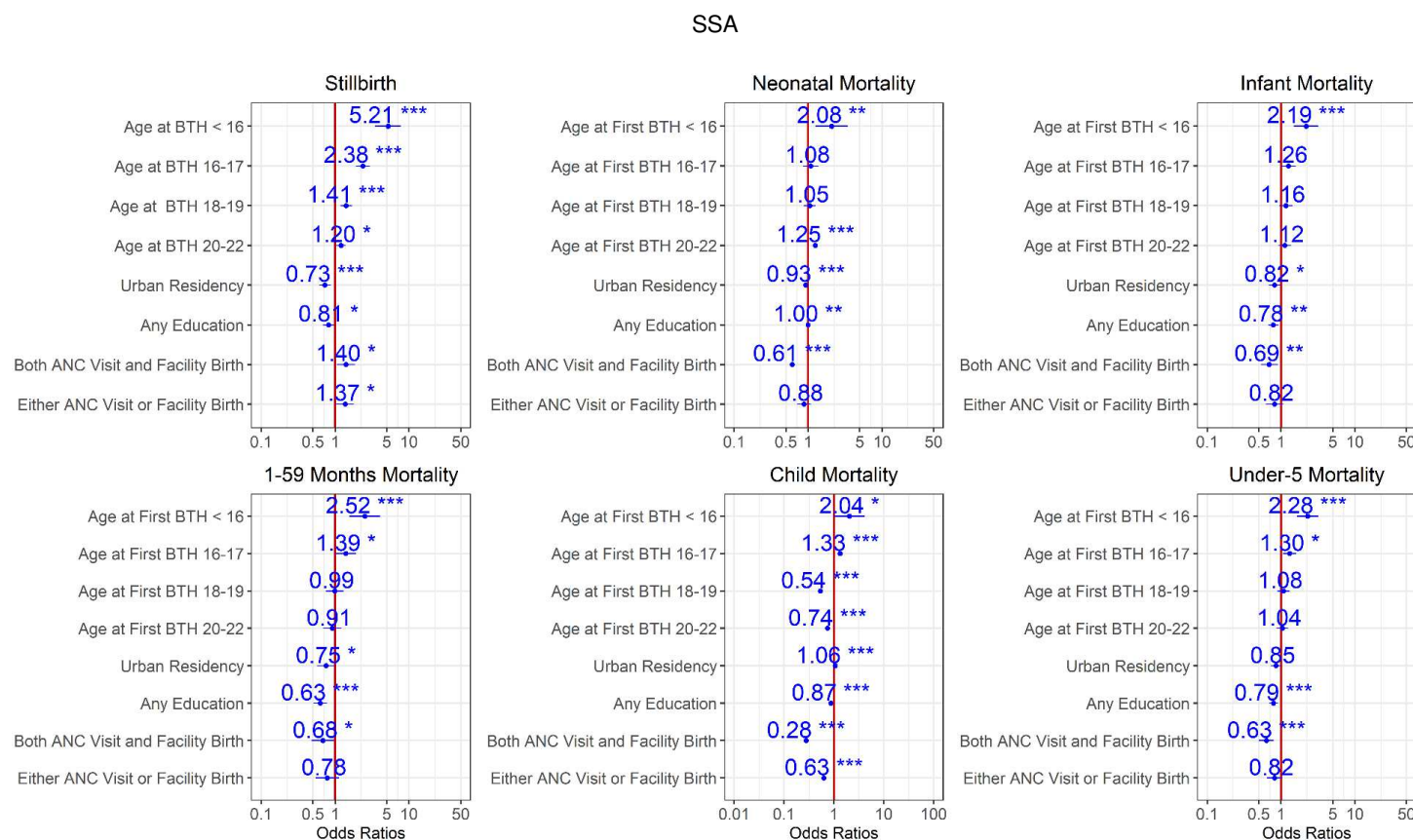
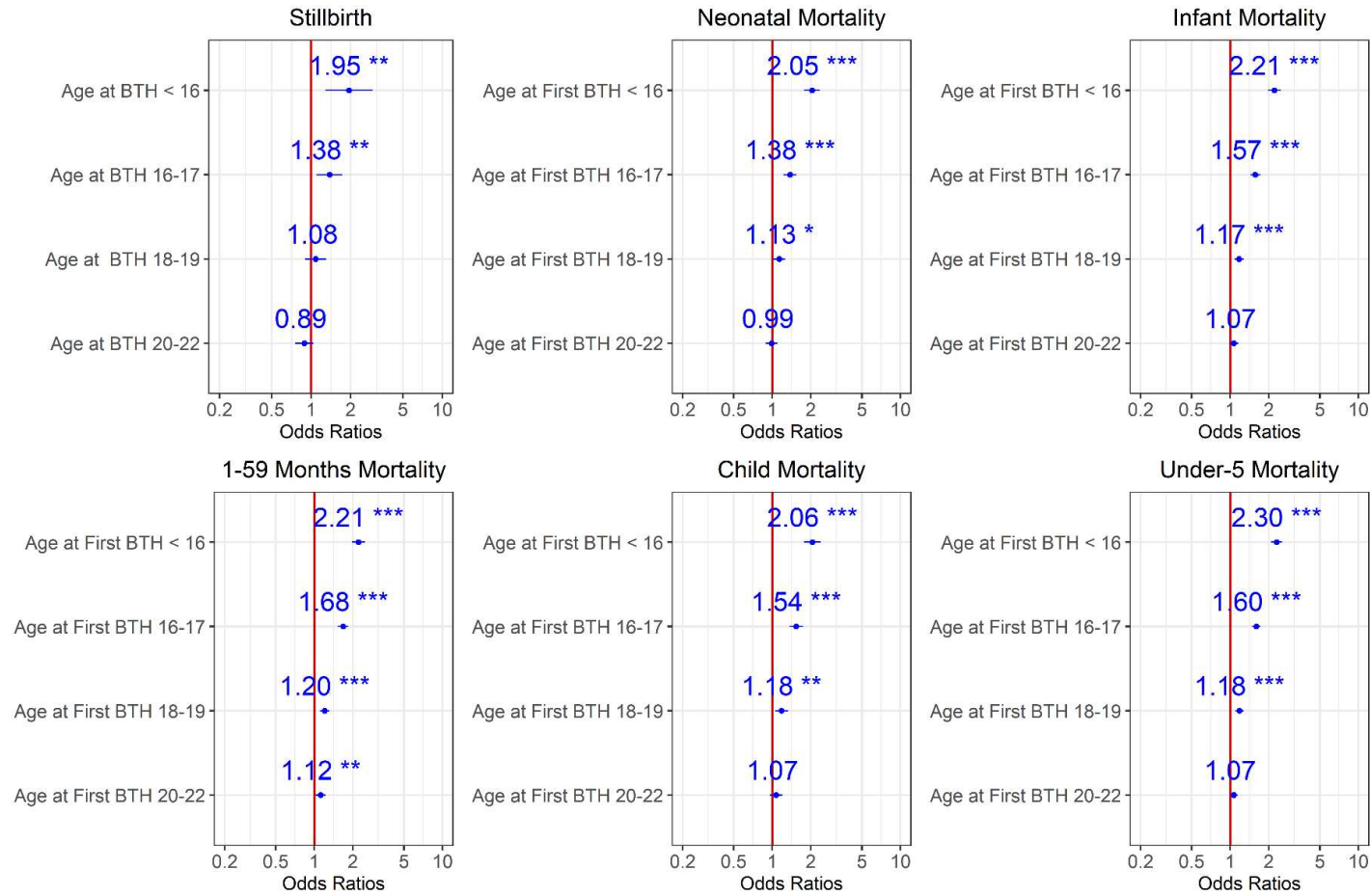


Figure 9. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2009-2013 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs (**** 0.001 *** 0.01 ** 0.05 * . 0.1 ' ' 1). Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, are in the poorer/middle/richer wealth quintile, and had no ANC visit and at home delivery (Model 4).

SSA



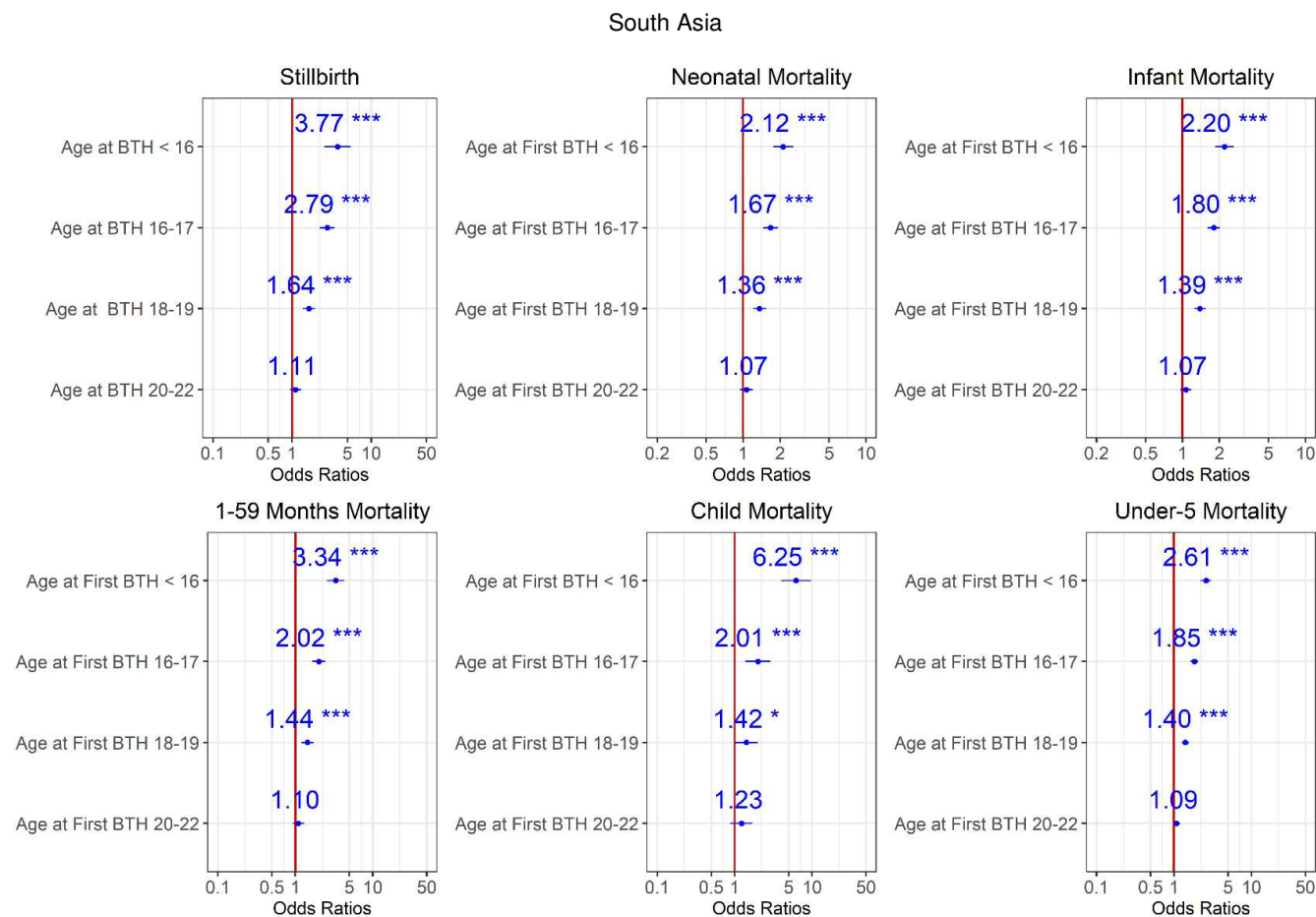
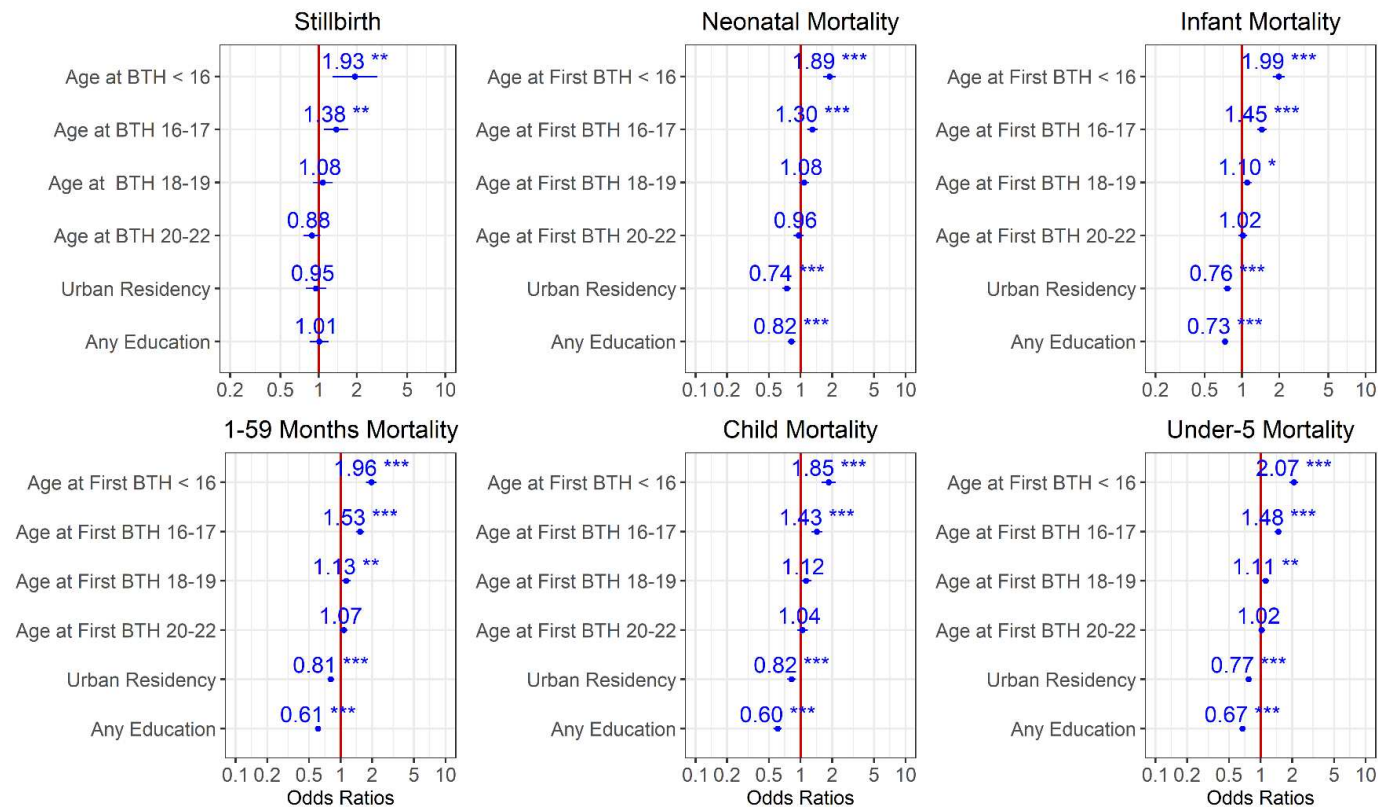


Figure 10. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old (Model 0).

SSA



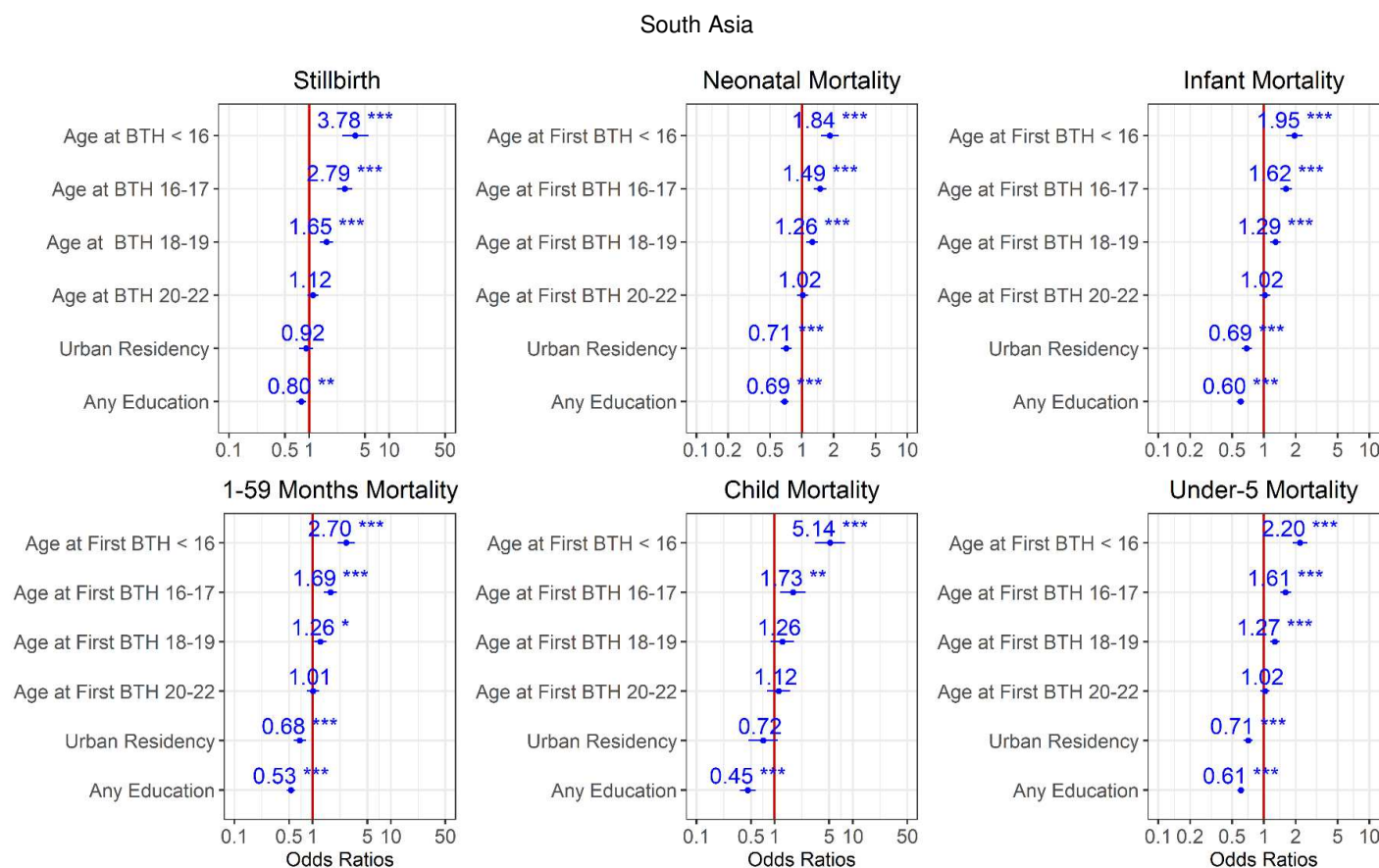
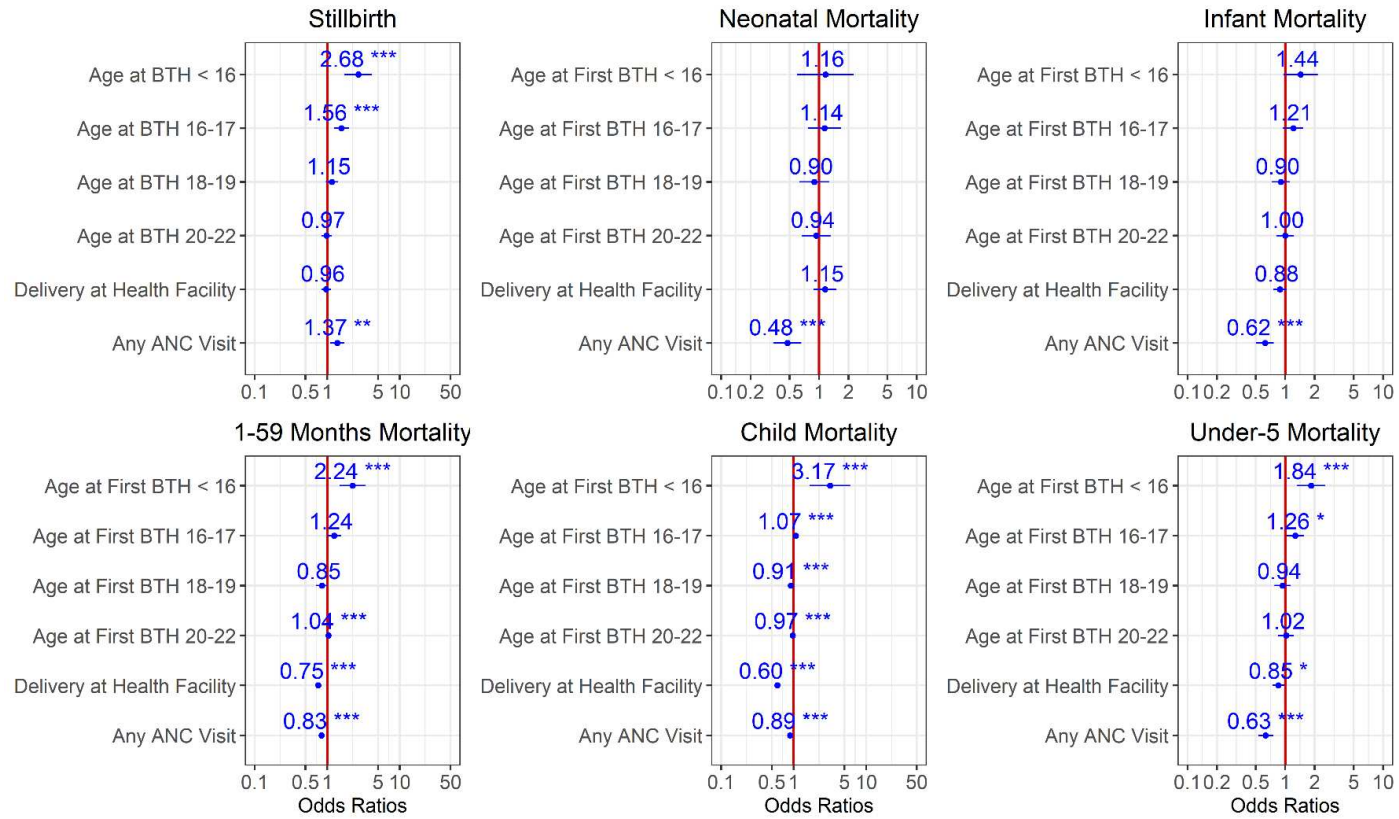


Figure 11. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs ('***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '.' 1). Reference group is mothers aged 23-25 years old who live in rural areas and have no formal education (Model 1).

SSA



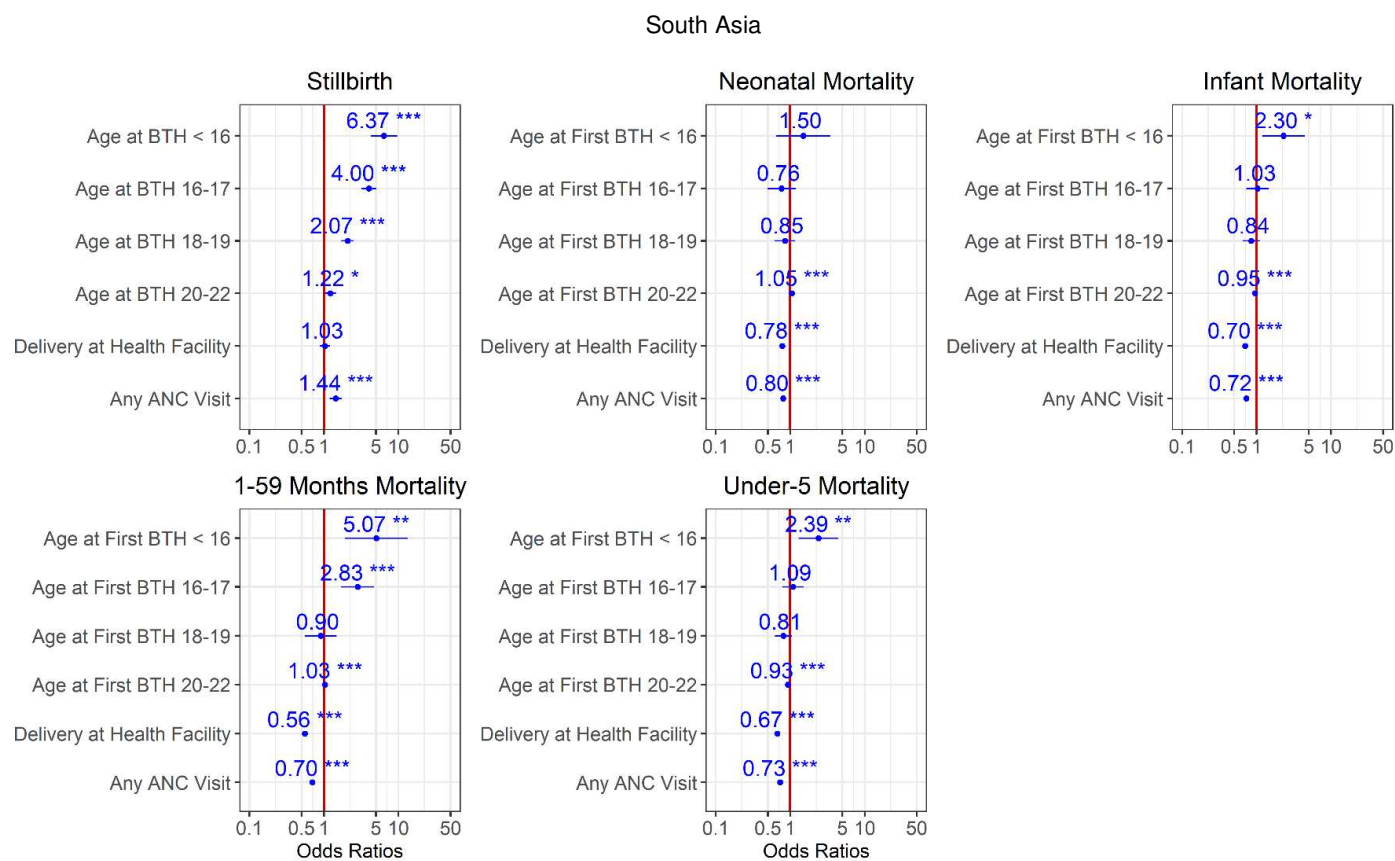
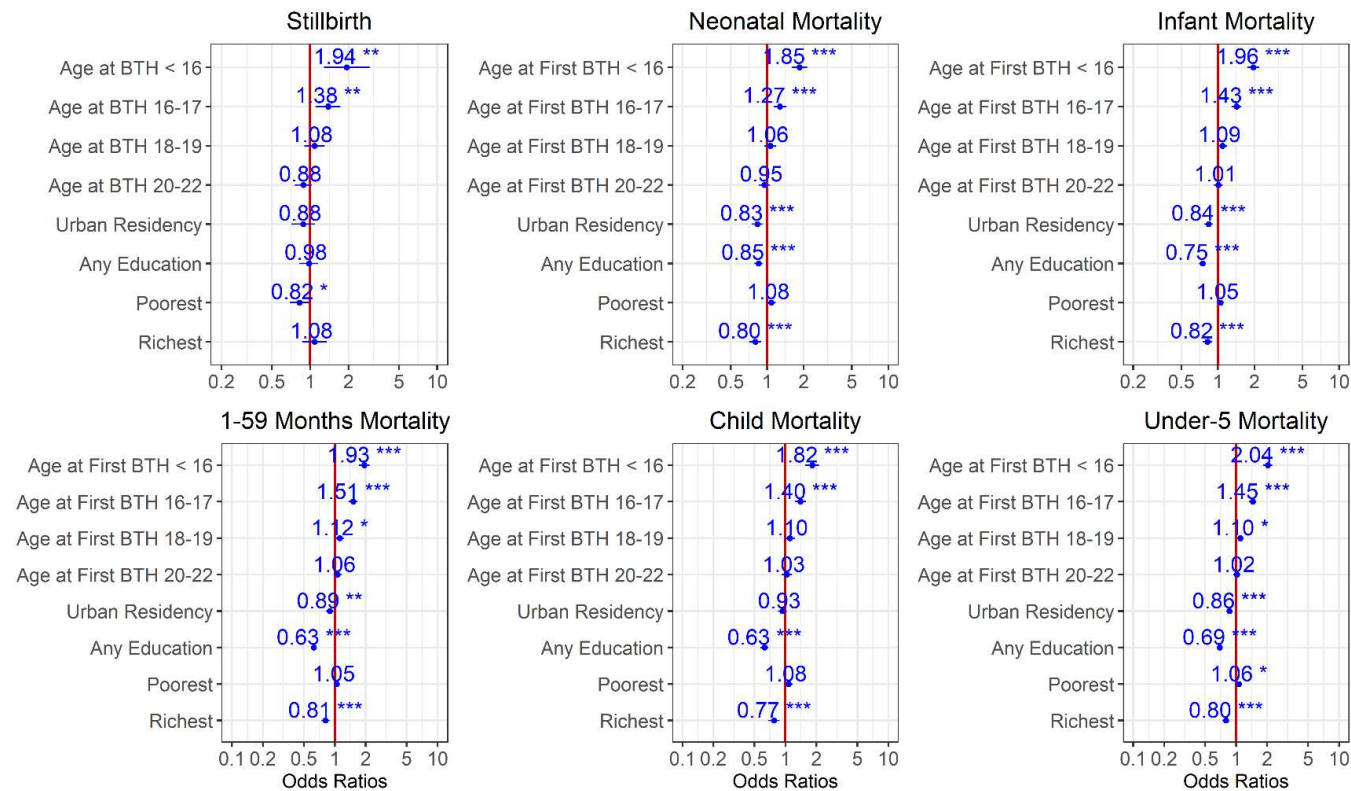


Figure 12. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs ('***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1). Reference group is mothers aged 23-25 years old who delivered at home and have no ANC visits (Model 2).

SSA



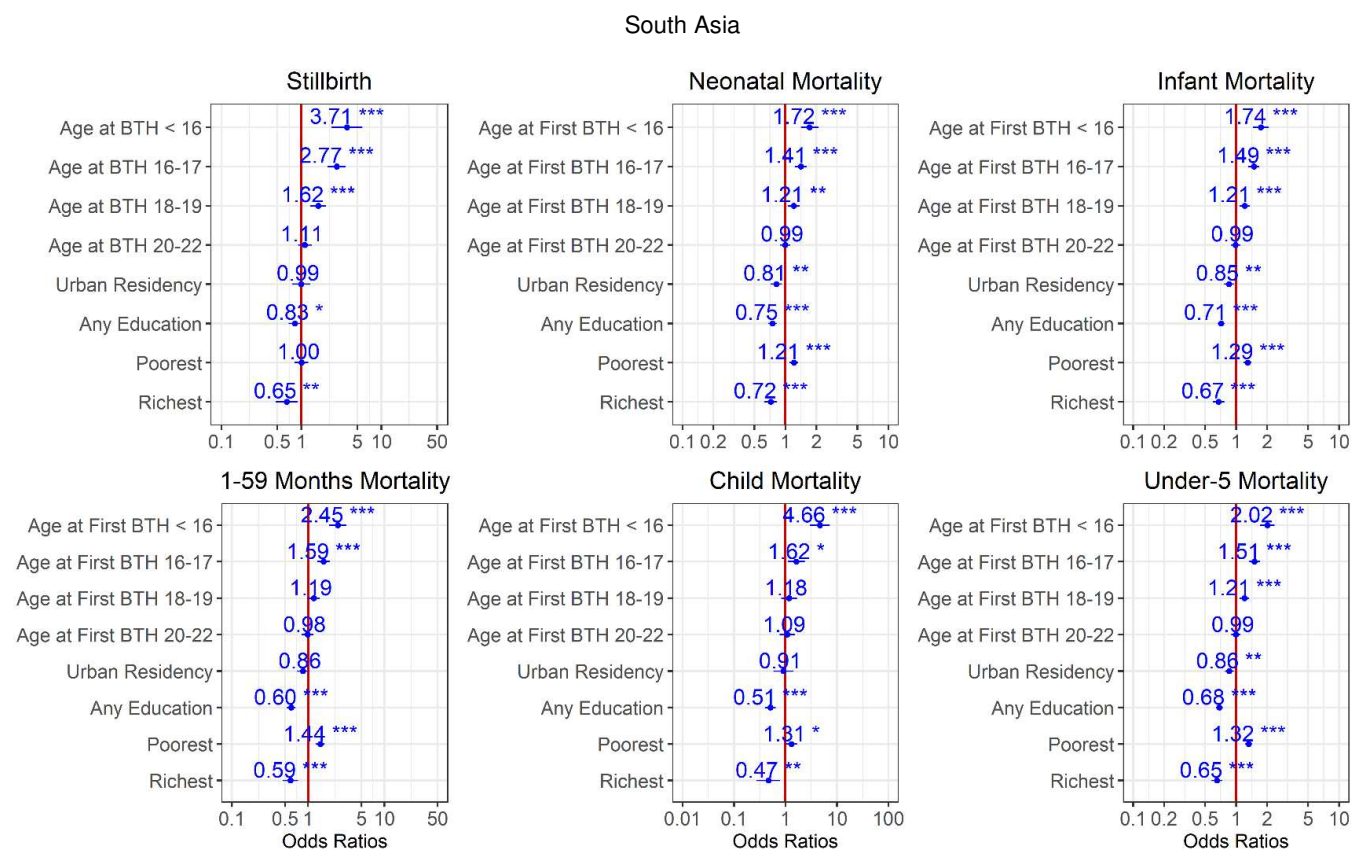
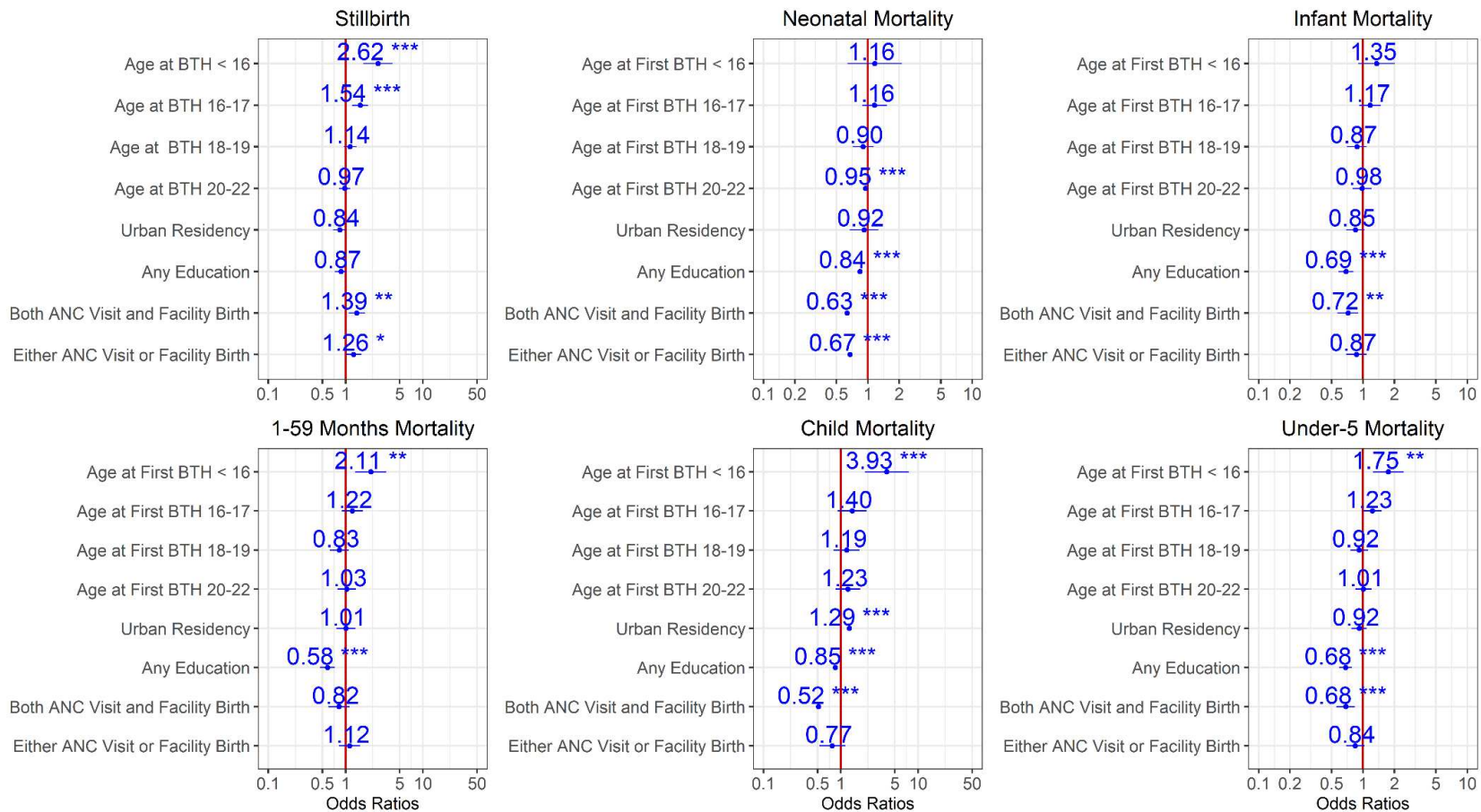


Figure 13. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with the asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, and are in the poorer/middle/richer wealth quintile, (Model 3).

SSA



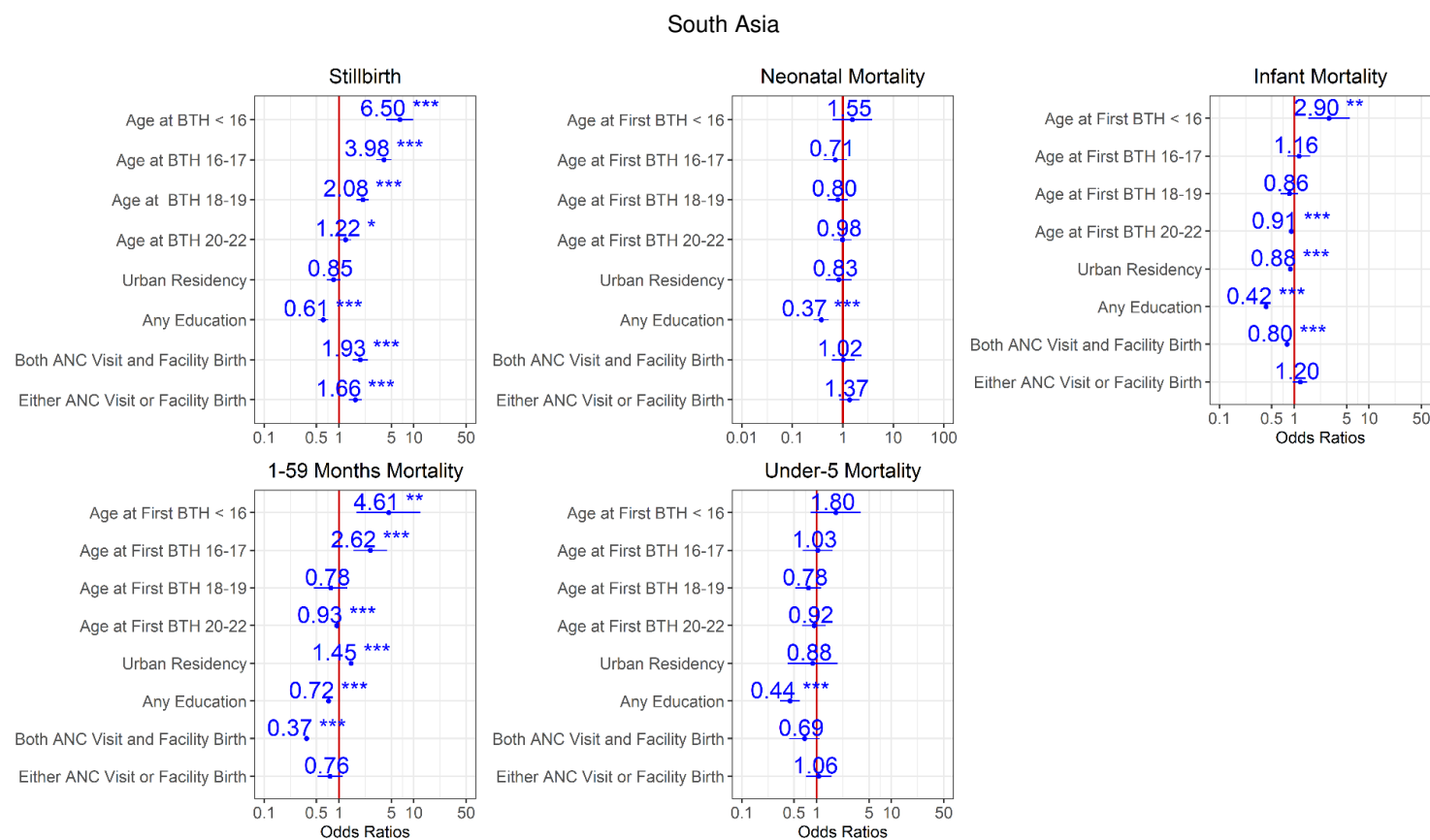


Figure 14. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA and South Asia for the 2004-2008 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given, P-values are shown with the asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old who live in rural areas, have no formal education, are in the poorer/middle/richer wealth quintile, and had no ANC visit and at home delivery (Model 4).

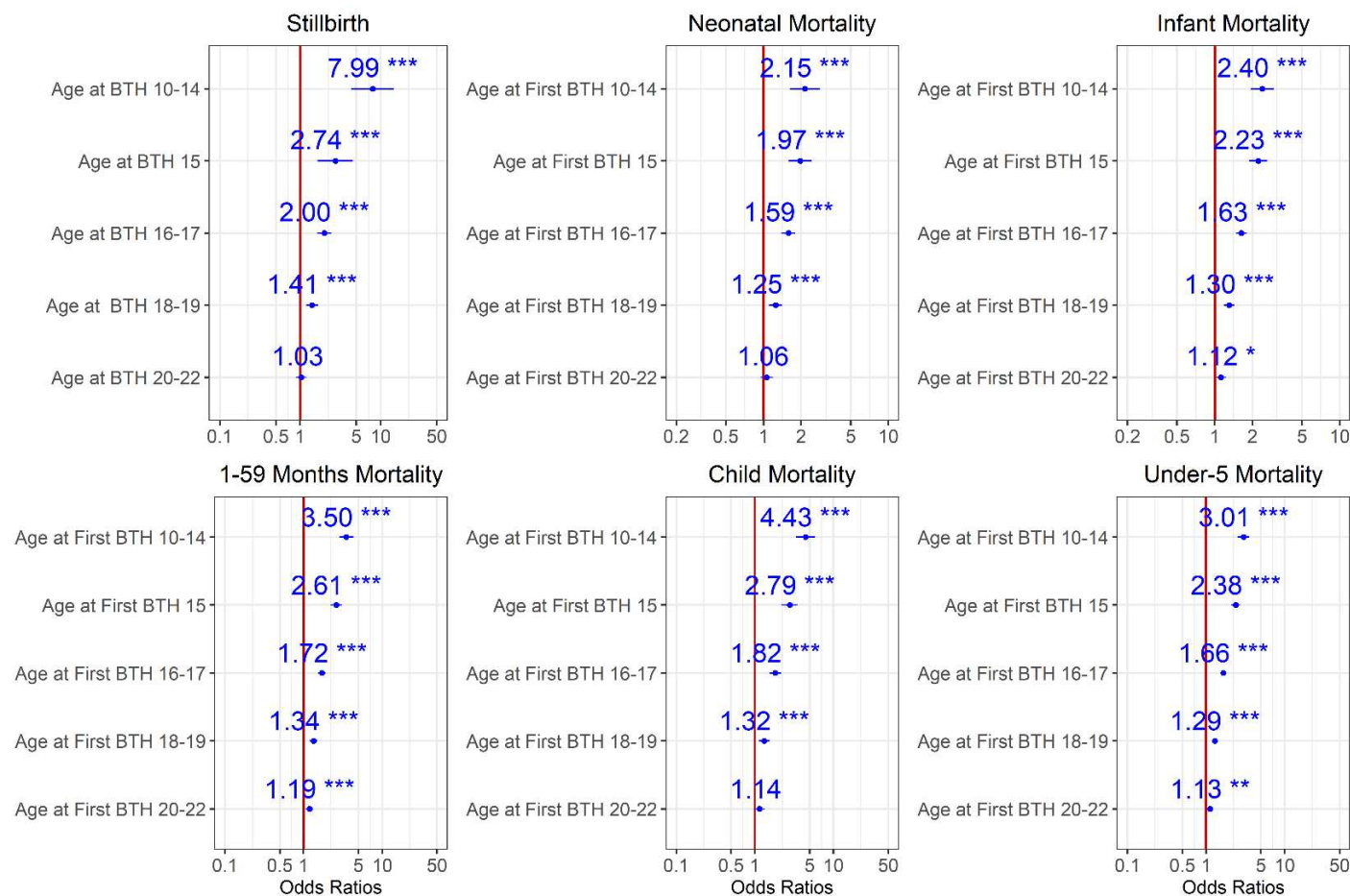


Figure 15. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2014-2018 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with asterisk signs (‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1). Reference group is mothers aged 23-25 years old.

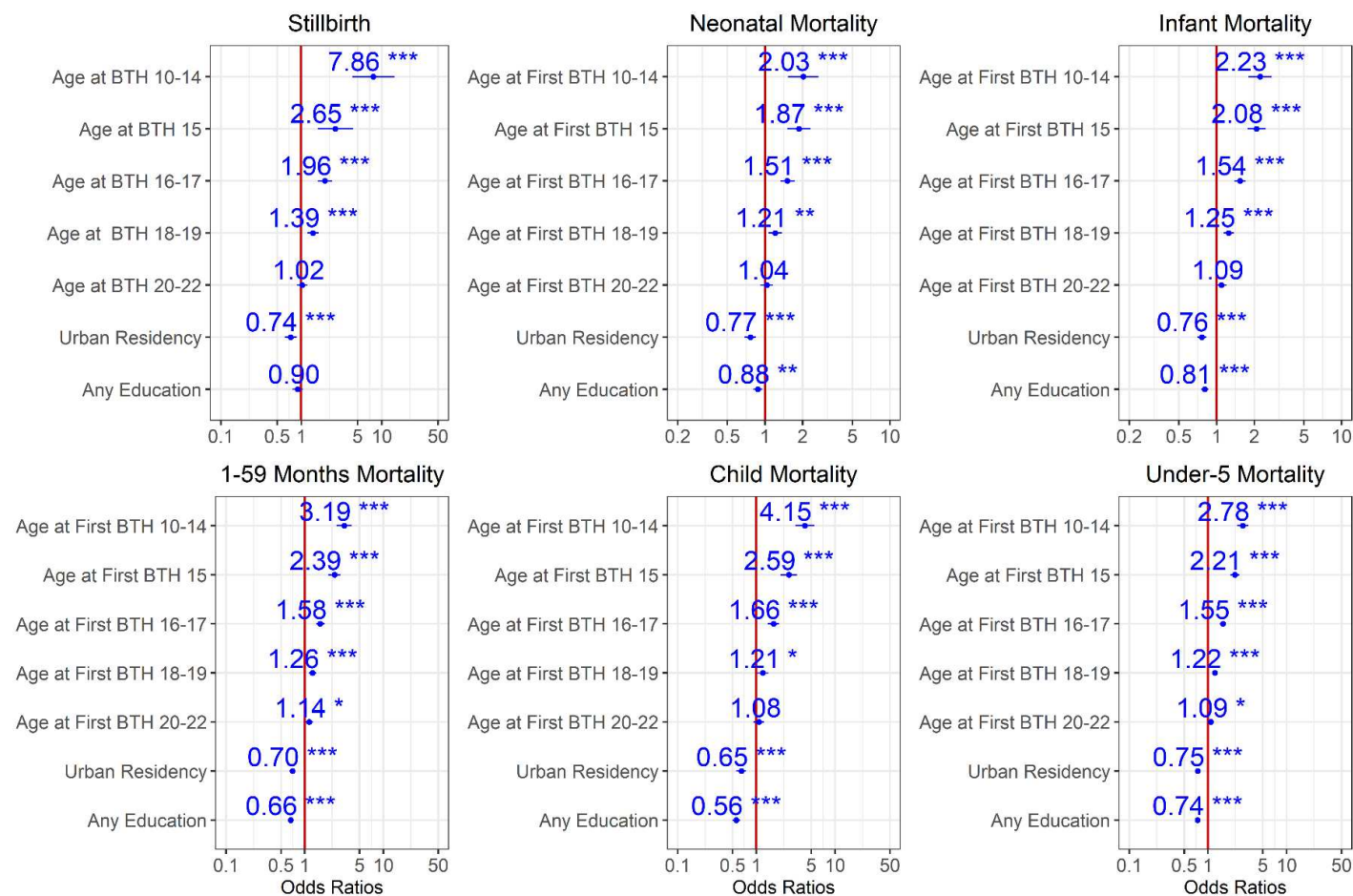


Figure 16. Ratios associated with neonate, infant, child, 1-59 months, under-5 years, and stillbirth in SSA for the 2014-2018 survey period. Risk factors reducing the probability of death have odds ratios lower than 1 to the left of the vertical red line. Odds ratios (blue points), 95% confidence intervals (horizontal blue lines) are given. P-values are shown with asterisk signs (****) 0.001 (***) 0.01 (*) 0.05 (.) 0.1 (‘) 1). Reference group is mothers aged 23-25 years old who live in rural areas, and have no formal education.