

APPENDIX

Appendix 1 Descriptive Statistics Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
humanwaste	5249	.0842065	.2777237	0	1
trash	5249	.1009716	.3013198	0	1
stable	5249	.237188	.425399	0	1
suffventil~n	5249	.8561631	.3509577	0	1
hhid14	0				
pid14	5249	5.894456	3.185318	2	40
birthweight	2675	3.093764	.5230762	1	5
skillprof	2538	.929866	.255423	0	1
prenatal	2803	.3282198	.4696491	0	1
postnatal	2606	.4113584	.4921744	0	1
poordrinkwtr	5249	.1085921	.3111564	0	1
poorotherwtr	5249	.0689655	.2534196	0	1
poortoilet	5249	.2570013	.4370218	0	1
poordiswater	5249	.4313203	.4953078	0	1
poordisgar~e	5249	.6433606	.4790527	0	1
hhsize	5249	4.79539	1.75219	2	16
urban	5249	.5764908	.4941616	0	1
hhexp_q1	5249	.1415508	.348622	0	1
hhexp_q2	5249	.2120404	.4087922	0	1
hhexp_q3	5249	.2345209	.4237393	0	1
hhexp_q4	5249	.1746999	.3797464	0	1
motherage~28	5249	.213755	.4099949	0	1
motherage~32	5249	.2387121	.426337	0	1
motherage33	5249	.3362545	.4724722	0	1
father_pri~y	4333	.2077083	.4057136	0	1
father_jun~r	4333	.2344796	.423722	0	1
father_hig~r	4333	.4691899	.4991074	0	1
mother_pri~y	5021	.1995618	.3997108	0	1
mother_jun~r	5021	.2686716	.4433129	0	1
mother_hig~r	5021	.4650468	.4988265	0	1
agemonths~11	5162	.1065478	.3085674	0	1
agemonths~23	5162	.2047656	.4035693	0	1
agemonths~35	5162	.1983727	.398813	0	1
agemonths~47	5162	.1906238	.3928311	0	1
agemonths~59	5162	.2057342	.4042763	0	1
male	5249	.5220042	.4995632	0	1
stunting	5249	.3448276	.4753573	0	1
motherheight	5025	151.6777	5.459712	104.6	174.5

Appendix 3 Marginal Effect of Model 1

Marginal effects after probit
 $y = \text{Pr}(\text{stunting})$ (predict)
 $= .30906885$

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
mothe~28*	-.070949	.02867	-2.47	0.013	-.127136 -.014763	.25
mothe~32*	-.0912884	.02868	-3.18	0.001	-.147508 -.035069	.211616
mothe~33*	-.0891252	.02932	-3.04	0.002	-.146594 -.031657	.242424
mother~y*	-.0029988	.04993	-0.06	0.952	-.100867 .094869	.176768
mothe~or*	.0180707	.05021	0.36	0.719	-.08034 .116481	.288384
mothe~er*	-.0472549	.0505	-0.94	0.349	-.146234 .051725	.473232
mother~t	-.0120423	.00227	-5.32	0.000	-.016483 -.007602	151.819
father~y*	-.100232	.03933	-2.55	0.011	-.177321 -.023143	.190404
fathe~or*	-.1157157	.03965	-2.92	0.004	-.193421 -.03801	.255556
fathe~er*	-.0958088	.04366	-2.19	0.028	-.181379 -.010239	.473232
male*	.0586792	.02159	2.72	0.007	.016359 .101	.524242
birthw~t	-.1471281	.02157	-6.82	0.000	-.189396 -.10486	3.09909
agemo~11*	-.0298716	.05683	-0.53	0.599	-.141251 .081508	.082323
agemo~23*	.1625429	.05422	3.00	0.003	.056277 .268809	.193939
agemo~35*	.1378949	.05478	2.52	0.012	.030521 .245269	.186364
agemo~47*	.1053179	.05355	1.97	0.049	.000359 .210277	.206061
agemo~59*	.0587638	.05144	1.14	0.253	-.042066 .159594	.260101
hhsiz	.0081506	.00683	1.19	0.233	-.005239 .02154	4.49394
urban*	-.0002742	.0255	-0.01	0.991	-.05026 .049712	.578788
skillp~f*	-.0943735	.05224	-1.81	0.071	-.196754 .008007	.947475
prenatal*	-.0043844	.02346	-0.19	0.852	-.05037 .041601	.344444
postna~l*	-.001345	.02184	-0.06	0.951	-.044143 .041453	.435859
poordr~r*	.0419539	.03779	1.11	0.267	-.032113 .116021	.110101
poorot~r*	.0433116	.04978	0.87	0.384	-.054258 .140881	.058081
poorto~t*	.0327435	.02777	1.18	0.238	-.021682 .087169	.24697
poordi~r*	-.0064802	.02334	-0.28	0.781	-.052229 .039269	.435859
poordi~e*	.0633083	.02644	2.39	0.017	.011484 .115132	.638384
hhexp_q1*	.0227907	.04196	0.54	0.587	-.059443 .105024	.153535
hhexp_q2*	.0662948	.0377	1.76	0.079	-.007595 .140184	.228283
hhexp_q3*	-.0244798	.0342	-0.72	0.474	-.09152 .04256	.242929
hhexp_q4*	.0063688	.03667	0.17	0.862	-.0655 .078238	.174747
humanw~e*	-.0098096	.04665	-0.21	0.833	-.101244 .081625	.075253
trash*	.0241932	.04307	0.56	0.574	-.060222 .108608	.087374
stable*	-.0195105	.02548	-0.77	0.444	-.069453 .030432	.255051
suffve~n*	.0301793	.03178	0.95	0.342	-.032117 .092475	.860101

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix 5 Marginal Effect of Model 2

Marginal effects after probit
 y = Pr(stunting) (predict)
 = .33302361

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
mothe~28*	-.0671089	.02209	-3.04	0.002	-.110407 -.023811	.21775
mothe~32*	-.0677457	.02171	-3.12	0.002	-.110303 -.025188	.245878
mothe~33*	-.0846997	.02098	-4.04	0.000	-.125826 -.043573	.320563
mother~y*	.0297256	.03397	0.87	0.382	-.036862 .096313	.192047
mothe~or*	-.0027374	.03332	-0.08	0.935	-.068043 .062568	.271339
mothe~er*	-.0404536	.03374	-1.20	0.231	-.106589 .025681	.468962
mother~t	-.0165886	.0016	-10.39	0.000	-.019718 -.013459	151.662
father~y*	-.0462432	.02863	-1.62	0.106	-.102355 .009869	.206596
fathe~or*	-.0516283	.02921	-1.77	0.077	-.108879 .005622	.237633
fathe~er*	-.0530148	.03005	-1.76	0.078	-.111915 .005886	.469447
male*	.0221728	.01512	1.47	0.142	-.007456 .051802	.524976
agemo~11*	.0586905	.03874	1.51	0.130	-.017238 .134619	.107905
agemo~23*	.2632051	.03407	7.72	0.000	.196423 .329987	.20999
agemo~35*	.2051694	.0351	5.85	0.000	.13638 .273958	.194956
agemo~47*	.1717061	.03526	4.87	0.000	.102598 .240815	.187439
agemo~59*	.135597	.03483	3.89	0.000	.067336 .203858	.205383
hhsiz	.0064234	.0047	1.37	0.172	-.00279 .015636	4.76673
urban*	-.0405344	.01805	-2.25	0.025	-.07591 -.005159	.575412
poordr~r*	.0159186	.02594	0.61	0.539	-.034915 .066753	.111542
poorot~r*	.0436915	.033	1.32	0.185	-.020983 .108366	.068623
poorto~t*	.0377209	.01946	1.94	0.053	-.000413 .075854	.250727
poordi~r*	-.0044276	.01649	-0.27	0.788	-.036755 .0279	.428468
poordi~e*	.0387078	.01886	2.05	0.040	.001749 .075667	.635548
hhexp_q1*	.0303138	.02904	1.04	0.296	-.026595 .087223	.13773
hhexp_q2*	.0486083	.02533	1.92	0.055	-.00103 .098246	.214355
hhexp_q3*	-.0068162	.02347	-0.29	0.772	-.052826 .039194	.239573
hhexp_q4*	.0044794	.02458	0.18	0.855	-.043705 .052664	.175558
humanw~e*	.0154628	.03138	0.49	0.622	-.046044 .076969	.084384
trash*	.0015153	.02796	0.05	0.957	-.053284 .056315	.100388
stable*	-.0127047	.01834	-0.69	0.488	-.048651 .023242	.240786
suffve~n*	.0193023	.022	0.88	0.380	-.023812 .062416	.858147

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix 6 Probit Regression Result Using Model 1 with Breastfeeding Variable

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Iteration 0: log pseudolikelihood = -1248.1847
Iteration 1: log pseudolikelihood = -1134.0488
Iteration 2: log pseudolikelihood = -1133.718
Iteration 3: log pseudolikelihood = -1133.718
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Probit regression                               Number of obs =      1980
                                                Wald chi2(36) =     201.92
                                                Prob > chi2 =       0.0000
Log pseudolikelihood = -1133.718              Pseudo R2 =         0.0917
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stunting	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
motherage25_28	-.20618	.0863543	-2.39	0.017	-.3754313	-.0369287
motherage29_32	-.2695467	.0893547	-3.02	0.003	-.4446787	-.0944148
motherage33	-.2591017	.0905003	-2.86	0.004	-.4364791	-.0817243
mother_primary	-.0082703	.1422159	-0.06	0.954	-.2870083	.2704677
mother_junior	.0512803	.1411213	0.36	0.716	-.2253124	.3278731
mother_higher	-.1351034	.1441659	-0.94	0.349	-.4176633	.1474565
motherheight	-.0341754	.0064489	-5.30	0.000	-.0466815	-.0215359
father_primary	-.2986314	.1250266	-2.39	0.017	-.543679	-.0535837
father_junior	-.3440988	.1249805	-2.75	0.006	-.589056	-.0991415
father_higher	-.2734564	.1257232	-2.18	0.030	-.5198695	-.0270434
male	.1668953	.0617396	2.70	0.007	.0458878	.2879027
birthweight	-.4192847	.0612905	-6.84	0.000	-.5394119	-.2991575
agemonths6_11	-.0848181	.167725	-0.51	0.613	-.4135531	.2439169
agemonths12_23	.4389538	.1417076	3.10	0.002	.161212	.7166956
agemonths24_35	.3725744	.1437137	2.59	0.010	.0909007	.654248
agemonths36_47	.2891786	.1428209	2.02	0.043	.0092548	.5691024
agemonths48_59	.1628563	.1412939	1.15	0.249	-.1140746	.4397872
hhsz	.0225695	.0194065	1.16	0.245	-.0154665	.0606055
urban	-.0013108	.0723794	-0.02	0.986	-.1431718	.1405501
skillprof	-.2605877	.1362403	-1.91	0.056	-.5276138	.0064383
prenatal	-.0137035	.0667325	-0.21	0.837	-.1444968	.1170898
postnatal	-.0037603	.0619931	-0.06	0.952	-.1252646	.117744
breastfeed	.0886231	.1703458	0.52	0.603	-.2452485	.4224948
poordrinkwtr	.1154905	.1029757	1.12	0.262	-.0863382	.3173191
poorotherwtr	.1216361	.1349224	0.90	0.367	-.142807	.3860791
poortoilet	.0908825	.0772263	1.18	0.239	-.0604783	.2422433
poordiswater	-.018479	.0663664	-0.28	0.781	-.1485547	.1115967
poordisgarbage	.1823263	.0773476	2.36	0.018	.0307277	.3339248
hhexp_q1	.0599604	.1165606	0.51	0.607	-.1684941	.2884149
hhexp_q2	.1823312	.1025681	1.78	0.075	-.0186987	.383361
hhexp_q3	-.0723241	.0988027	-0.73	0.464	-.2659738	.1213256
hhexp_q4	.0165433	.1034115	0.16	0.873	-.1861395	.2192261
humanwaste	-.0282786	.1340554	-0.21	0.833	-.2910224	.2344652
trash	.0698433	.1192014	0.59	0.558	-.1637871	.3034737
stable	-.0570186	.0734564	-0.78	0.438	-.2009904	.0869533
suffventilation	.0872705	.0932938	0.94	0.350	-.0955819	.2701229
_cons	5.964261	1.010406	5.90	0.000	3.983901	7.944621

Appendix 7 Marginal Effect of Model 1 with Breastfeeding Variable

Marginal effects after probit
 y = Pr(stunting) (predict)
 = .30904311

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
mothe~28*	-.0706166	.02867	-2.46	0.014	-.12681 -.014423	.25
mothe~32*	-.0908966	.02871	-3.17	0.002	-.147165 -.034628	.211616
mothe~33*	-.0879348	.02944	-2.99	0.003	-.14564 -.030229	.242424
mother~y*	-.0029099	.04997	-0.06	0.954	-.100852 .095033	.176768
mothe~or*	.0181624	.05024	0.36	0.718	-.080297 .116622	.288384
mothe~er*	-.0474863	.05052	-0.94	0.347	-.14651 .051537	.473232
mother~t	-.0120406	.00227	-5.31	0.000	-.016484 -.007597	151.819
father~y*	-.0998034	.03935	-2.54	0.011	-.176935 -.022672	.190404
fathe~or*	-.1154662	.03967	-2.91	0.004	-.193221 -.037711	.255556
fathe~er*	-.0957679	.04367	-2.19	0.028	-.18136 -.010176	.473232
male*	.0586303	.02159	2.72	0.007	.016314 .100947	.524242
birthw~t	-.1477214	.02158	-6.85	0.000	-.190008 -.105435	3.09909
agemo~11*	-.029335	.05689	-0.52	0.606	-.140837 .082167	.082323
agemo~23*	.1627448	.05427	3.00	0.003	.056378 .269111	.193939
agemo~35*	.1375124	.0548	2.51	0.012	.030114 .244911	.186364
agemo~47*	.1056048	.05361	1.97	0.049	.000524 .210685	.206061
agemo~59*	.0584102	.05146	1.13	0.256	-.042455 .159275	.260101
hhsiz*	.0079516	.00683	1.16	0.245	-.005443 .021346	4.49394
urban*	-.0004619	.0255	-0.02	0.986	-.050447 .049524	.578788
skillp~f*	-.096413	.0524	-1.84	0.066	-.199123 .006297	.947475
prenatal*	-.0048228	.02346	-0.21	0.837	-.050805 .041159	.344444
postna~l*	-.0013247	.02184	-0.06	0.952	-.044122 .041473	.435859
breast~d*	.0305538	.05739	0.53	0.594	-.081931 .143038	.966162
poordr~r*	.0415526	.03777	1.10	0.271	-.032469 .115574	.110101
poorot~r*	.0439333	.04985	0.88	0.378	-.053763 .141629	.058081
poorto~t*	.0323715	.0278	1.16	0.244	-.022115 .086858	.24697
poordi~r*	-.0065066	.02335	-0.28	0.781	-.052281 .039268	.435859
poordi~e*	.0633499	.02645	2.40	0.017	.011508 .115192	.638384
hhexp_q1*	.021338	.04188	0.51	0.610	-.060738 .103414	.153535
hhexp_q2*	.0656915	.03768	1.74	0.081	-.008152 .139535	.228283
hhexp_q3*	-.0252376	.03414	-0.74	0.460	-.092159 .041684	.242929
hhexp_q4*	.005844	.03663	0.16	0.873	-.065941 .077629	.174747
humanw~e*	-.0099026	.04665	-0.21	0.832	-.101336 .081531	.075253
trash*	.0249488	.04314	0.58	0.563	-.0596 .109498	.087374
stable*	-.0199453	.0255	-0.78	0.434	-.069934 .030043	.255051
suffve~n*	.0302471	.03177	0.95	0.341	-.03202 .092514	.860101

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix 9 Marginal Effect of Model 1 with Breastfeeding Variable

Marginal effects after probit
 y = Pr(stunting) (predict)
 = .32616031

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
mothe~28*	-.087852	.02673	-3.26	0.001	-.139434 -.034669	.243641
mothe~32*	-.0959753	.02727	-3.52	0.000	-.149417 -.042533	.203927
mothe~33*	-.1146436	.02687	-4.27	0.000	-.167309 -.061978	.241856
mother~y*	-.0224487	.04591	-0.49	0.625	-.112434 .067537	.187416
mothe~or*	-.0201201	.04616	-0.44	0.663	-.110596 .070356	.285587
mothe~er*	-.0723405	.04707	-1.54	0.124	-.16459 .019909	.464971
mother~t	-.014343	.0022	-6.53	0.000	-.018646 -.01004	151.723
father~y*	-.1013288	.03746	-2.71	0.007	-.174746 -.027912	.198572
fathe~or*	-.1217651	.03758	-3.24	0.001	-.19542 -.04811	.256582
fathe~er*	-.1074503	.04094	-2.62	0.009	-.187698 -.027202	.464079
male*	.0158859	.02049	0.78	0.438	-.024282 .056054	.526551
ageno~11*	-.0402646	.05233	-0.77	0.442	-.142839 .062309	.08523
ageno~23*	.1707653	.04958	3.44	0.001	.07359 .26794	.192771
ageno~35*	.1338171	.04977	2.69	0.007	.036275 .231359	.19054
ageno~47*	.1018541	.04891	2.08	0.037	.005993 .197715	.203034
ageno~59*	.0761496	.04728	1.61	0.107	-.016514 .168813	.255243
breast~d	-.02134	.05839	-0.37	0.715	-.135786 .093106	.966979
hhsiz	.0063018	.00645	0.98	0.328	-.006335 .018939	4.50424
urban*	-.0001838	.02398	-0.01	0.994	-.047193 .046826	.562695
poordr~r*	.0339703	.03483	0.98	0.329	-.034289 .10223	.114681
poorot~r*	.034009	.04592	0.74	0.459	-.056001 .124019	.060687
poorto~t	.04472	.02606	1.72	0.086	-.006365 .095805	.258367
poordi~r*	.012183	.02216	0.55	0.582	-.031248 .055614	.450692
poordi~e*	.048738	.02548	1.91	0.056	-.001193 .098669	.655511
hhexp_q1*	.0296357	.03957	0.75	0.454	-.047919 .107191	.158411
hhexp_q2*	.0568099	.03552	1.60	0.110	-.012809 .126429	.227577
hhexp_q3*	-.0320575	.03242	-0.99	0.323	-.095608 .031493	.242749
hhexp_q4*	-.0132414	.03415	-0.39	0.698	-.080181 .053698	.175814
humanw~e*	-.0164993	.04362	-0.38	0.705	-.102002 .069003	.077198
trash*	-.0063806	.03932	-0.16	0.871	-.083445 .070684	.091031
stable*	.0064485	.02453	0.26	0.793	-.041636 .054534	.256136
suffve~n*	.023411	.03038	0.77	0.441	-.03613 .082952	.859438

(*) dy/dx is for discrete change of dummy variable from 0 to 1