Appendix A:

Probability of protection from in utero IDD relative to program year *t* by month of birth, 380mg IOC [1,2,3]

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Birth year average	Seasonality adjusted birth year average
Program year t	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.083	0.167	0.250	0.333	0.072	0.070
t + 1	0.417	0.500	0.583	0.667	0.750	0.833	0.917	1.000	1.000	1.000	1.000	1.000	0.806	0.802
t + 2	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.998	0.991	0.977	0.997	0.997
t + 3	0.955	0.927	0.891	0.849	0.802	0.749	0.690	0.627	0.559	0.488	0.419	0.353	0.668	0.696
t+ 4	0.292	0.237	0.189	0.148	0.112	0.082	0.057	0.037	0.022	0.011	0.004	0.001	0.099	0.101

Notes:

[1] Calculations make the following assumptions about IOC distribution over the year: Three months are required for the program to reach all individuals in a district, and the distribution of program start dates over the year is uniform. This implies that children born *t* months after the start of the program year were treated in time with probability equal to: $\frac{1}{36}$ if $t = 8$; $\frac{1}{18}$ if $t = 9$; and $\min(1, \frac{1}{36} + \frac{1}{18} + \frac{t-9}{12})$ if $t > 9$.

[2] Iodine contained in IOC is assumed to be stored in the body after an immediate extraction of 90% during month 0, and depleted during months 1-38 following a simple hyperbolic discounting function ($V = \frac{A}{1+kt}$) with a half-life at month 1 of 3 months ($\rightarrow k = 0.33\overline{3}$).

[3] Minimum iodine requirement for one full month of protection from IOC was calculated to be 6.5mg based on recommended daily requirement for pregnant women of 1.4mg – 2.1mg (multiplied by 30 days), assuming daily depletion of dietary iodine of 90%. Based on this range of required iodine across the population, iodine stores below 4.2mg were assumed to offer inadequate protection from fetal IDD.

[4] Seasonality adjustment based on district-level number of births per month between 1996 and 2004 in the 2004 TDHS.

Appendix B: 2000 Grade Attainment and IOC Supplementation in Utero, Ages 6-13

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Highest Grade Attained						**Started primary school**		**Started pre-school**	
	All	Girls	Boys	All	Girls	Boys	All	All	All	All
Pr(IOC in utero)	0.172	0.135	0.130	0.119	0.200	0.059	0.026	0.030	0.006	0.020
	[0.063]**	[0.110]	[0.101]	[0.059]*	[0.086]*	[0.081]	[0.020]	[0.017]+	[0.019]	[0.018]
Age 7	-0.001	-0.093	0.128	0.022	0.158	-0.128	0.199	0.225	0.166	0.192
	[0.105]	[0.190]	[0.176]	[0.086]	[0.124]	[0.119]	[0.033]**	[0.025]**	[0.032]**	[0.026]**
Age 8	0.196	0.011	0.272	0.207	0.339	0.053	0.387	0.424	0.263	0.307
	[0.102]+	[0.174]	[0.182]	[0.090]*	[0.126]**	[0.129]	[0.032]**	[0.026]**	[0.031]**	[0.027]**
Age 9	0.515	0.253	0.377	0.57	0.686	0.402	0.609	0.603	0.472	0.48
	[0.099]**	[0.188]	[0.178]*	[0.088]**	[0.129]**	[0.122]**	[0.031]**	[0.026]**	[0.031]**	[0.026]**
Age 10	1.137	0.741	0.991	1.183	1.312	1.012	0.663	0.713	0.512	0.549
	[0.098]**	[0.200]**	[0.180]**	[0.083]**	[0.123]**	[0.116]**	[0.031]**	[0.025]**	[0.030]**	[0.025]**
Age 11	1.595	1.19	1.352	1.531	1.617	1.322	0.769	0.741	0.56	0.563
	[0.112]**	[0.229]**	[0.222]**	[0.095]**	[0.142]**	[0.134]**	[0.035]**	[0.028]**	[0.035]**	[0.029]**
Age 12	2.526	2.181	2.162	2.42	2.512	2.206	0.743	0.775	0.552	0.586
	[0.109]**	[0.234]**	[0.231]**	[0.089]**	[0.131]**	[0.130]**	[0.034]**	[0.026]**	[0.034]**	[0.027]**
Age 13	3.064	2.805	2.635	3.08	3.363	2.678	0.809	0.789	0.599	0.589
	[0.119]**	[0.254]**	[0.255]**	[0.097]**	[0.145]**	[0.140]**	[0.037]**	[0.029]**	[0.037]**	[0.029]**
Fixed effects	House-hold	House-hold	House-hold	District	District	District	House-hold	District	House-hold	District
Observations	2805	888	926	3590	1765	1825	2805	3590	2805	3590

Notes: Data from the 2000 Tanzanian Household Budget Survey, sample restricted to children ages 6-13 in 25 districts targeted for iodized oil capsule (IOC) distribution between 1986 and 1992. All estimates exclude children that cannot be matched to mothers in the household. Outcome in columns 1-6 is highest grade completed; outcome in columns 7-8 is whether child ever enrolled in primary school; outcome in columns 9-10 is whether child ever enrolled in either primary or pre-school. *Pr(IOC in utero)* is the probability that IOC was distributed in the district before or during the first trimester of pregnancy times the likelihood that sufficient iodine stores remain in the mother's body to protect the fetus during month 1 of pregnancy. Precise values are given in Appendix A. All regressions also control for binary indicators of sex-specific birth order. + significant at 10%; * significant at 5%; ** significant at 1%

Appendix C: 2000 Grade Attainment and IOC Supplementation in Utero, Ages 6-13

	(1)	(2)	(3)	(4)	(5)	(6)
	At least one year early primary (≥ Standard I)		**Completed early primary (≥ Standard IV)**		**At least one year late primary (≥ Standard V)**	
Pr(IOC in utero)	0.044	0.053	0.007	0.011	0.018	0.032
	[0.018]*	[0.021]**	[0.015]	[0.019]	[0.009]+	[0.012]**
Age 7	0.052	0.048	0.002	-0.010	-0.008	0.000
	[0.026]*	[0.034]	[0.022]	[0.031]	[0.014]	[0.020]
Age 8	0.232	0.202	0.003	0.011	-0.006	-0.004
	[0.027]**	[0.033]**	[0.023]	[0.030]	[0.014]	[0.020]
Age 9	0.417	0.411	0.043	0.035	-0.002	-0.004
	[0.026]**	[0.033]**	[0.022]+	[0.029]	[0.014]	[0.019]
Age 10	0.623	0.62	0.168	0.152	0.005	-0.003
	[0.025]**	[0.032]**	[0.021]**	[0.029]**	[0.013]	[0.019]
Age 11	0.685	0.7	0.288	0.303	0.023	0.023
	[0.028]**	[0.037]**	[0.024]**	[0.033]**	[0.015]	[0.022]
Age 12	0.809	0.852	0.528	0.546	0.111	0.115
	[0.027]**	[0.036]**	[0.023]**	[0.032]**	[0.014]**	[0.021]**
Age 13	0.857	0.874	0.675	0.691	0.255	0.236
	[0.029]**	[0.039]**	[0.025]**	[0.035]**	[0.016]**	[0.023]**
Female	0.015	0.01	0.039	0.046	0.012	0.013
	[0.013]	[0.017]	[0.011]**	[0.015]**	[0.007]+	[0.010]
Fixed effects	*District*	*Household*	*District*	*Household*	*District*	*Household*
Observations	2805	3590	2805	3590	2805	3590

Notes: Data from the 2000 Tanzanian Household Budget Survey, sample restricted to children ages 6-13 in 25 districts targeted for iodized oil capsule (IOC) distribution between 1986 and 1992. All estimates exclude children that cannot be matched to mothers in the household. Outcomes are binary indicators of whether child has passed a certain grade in school. *Pr(IOC in utero)* is the probability that IOC was distributed in the district before or during the first trimester of pregnancy times the likelihood that sufficient iodine stores remain in the mother's body to protect the fetus during month 1 of pregnancy. Precise values are given in Appendix A. All regressions also control for binary indicators of sex-specific birth order. + significant at 10%; * significant at 5%; ** significant at 1%

Appendix D: Control Experiment, IOC Distribution and Grade Attainment of Older Cohort

	(1)	(2)	(3)	(4)	(5)	(6)
	Boys and girls	Boys	Girls	Boys and girls	Boys	Girls
Pr(IOC in utero)	-0.023	0.069	-0.028	-0.042	-0.035	-0.050
	[0.025]	[0.047]	[0.045]	[0.019]*	[0.027]	[0.026]+
Age 11	0.699	0.692	0.596	0.716	0.784	0.646
	[0.022]**	[0.043]**	[0.041]**	[0.014]**	[0.020]**	[0.020]**
Age 12	1.622	1.558	1.423	1.394	1.445	1.341
	[0.019]**	[0.047]**	[0.047]**	[0.013]**	[0.019]**	[0.019]**
Age 13	2.547	2.446	2.319	2.239	2.301	2.176
	[0.023]**	[0.062]**	[0.061]**	[0.015]**	[0.022]**	[0.021]**
Female	0.268			0.324		
	[0.015]**			[0.010]**		
Fixed effects	House-hold	House-hold	House-hold	District	District	District
Observations	113932	57613	56319	113932	57613	56319

Notes: All data from the 1988 Census of Population and Housing, sample restricted to children ages 10-13 in 1988 in 25 districts targeted for iodized oil capsule (IOC) distribution between 1986 and 1995. In all regressions, Pr(IOC in utero) is equal to the value of the variable described in the notes to Table 3 for children born 12 years later in the same district, such that kids born 11 years before a distribution round receive the value pertaining to kids in the same district born 1 year after the distribution round, etc. Regressions also control for sex-specific birth order and household or district fixed effects. + significant at 10%; * significant at 5%; ** significant at 1%

Appendix E: Difference in Grade Attainment and IOC Supplementation by Birth Order

IOC in utero, eldest only	0.383	0.383
	[0.201]$^+$	[0.212]$^+$
IOC in utero, youngest only	-0.225	-0.225
	[0.129]$^+$	[0.134]$^+$
IOC in utero, both		-0.001
		[0.127]
Age difference = 1 year	0.616	0.616
	[0.176]**	[0.176]**
Age difference = 2 years	0.990	0.990
	[0.160]**	[0.159]**
Age difference = 3 years	1.333	1.333
	[0.197]**	[0.197]**
Age oldest	0.157	0.157
	[0.057]*	[0.088]$^+$
Both female	-0.041	-0.041
	[0.123]	[0.124]
Both male	-0.115	-0.115
	[0.117]	[0.117]
Birth order	-0.008	-0.008
	[0.030]	[0.030]
Observations	667	667

Notes: Data from the 2000 Tanzanian Household Budget Survey, sample restricted to children ages 10-13 in 25 districts targeted for iodized oil capsule (IOC) distribution between 1986 and 1992. Observations are sibling pairs from 667 different households in sample in which more than one child between 10 and 13. To balance across treatment orders, in households with more than one sibling pair, pair in which older sibling treated and younger not was selected first, pair in which younger sibling treated and older not was treated second, otherwise two siblings chosen at random. *IOC in utero* is the binary indicator of treatment based on probability that IOC was distributed in the district before or during the first trimester of pregnancy, defined in Notes to Table 3. + significant at 10%; * significant at 5%; ** significant at 1%

Appendix F: Projected impact on school participation worldwide

Country	% of households using adequately iodized salt	Year Salt Iodization Measured	Total Goiter Rate [1]	Year TGR Measured	Population [2] 5-9 yr 2002	Expected [3] Treated Population	Average Years of Schooling [4]	Percentage increase in [5] grade attainment
Algeria	92.0	1995	48	1995	3,628	3,204	5.37	11.9%
Argentina	92.0	1996	19.0	1995	3,373	1,179	8.83	2.9%
Bangladesh	44.0	1995	10.5	1982	13,782	1,273	2.58	2.6%
Bhutan	82.0	1996	21.0	1988	276	95	9	2.8%
Croatia	70.0	1997	20.0	1995	267	75	6.28	3.2%
Indonesia	62.1	1997	25.0	1988	23,114	7,177	4.99	4.5%
Jordan	95.0	1997	37.7	1993	677	485	6.91	7.5%
Kazakhstan	52.9	1995	52.1	1993	1,379	760	8.87	4.5%
Kyrgyz Republic	27.0	1997	49.1	1993	530	141	8	2.4%
Malaysia	85.0	1998	36.9	1993	2,618	1,642	6.8	6.7%
Maldives	55.0	1999	23.6	1995	49	13	7	2.7%
Mongolia	46.0	1999	22.0	1993	256	52	8	1.8%
Myanmar	64.8	1997	33.1	1994	4,019	1,724	2.77	11.3%
Nicaragua	86.1	1998	35.8	1994	653	403	4.58	9.8%
Niger	7.4	1996	20.0	1993	1,661	49	1.02	2.1%
Oman	35.0	1996	10.0	1994	376	26	9	0.6%
Pakistan	19.0	1995	13.2	1990	19,761	991	3.88	0.9%
Panama	91.6	1996	13.2	1990	302	73	8.55	2.1%
Paraguay	64.0	1995	48.7	1988	762	475	6.18	7.3%
Philippines	14.6	1996	29.5	1991	10,180	877	8.21	0.8%
Russian Federation	30.0	2000	50	1990	7,069	2,121	10.03	2.2%
Syrian Arab Republic	40.0	2000	42	1994	2,152	723	5.77	4.2%
Thailand	60.2	1999	32	1992	5,264	2,028	6.5	4.3%
Tunisia	63.0	1996	30.5	1988	926	356	5.02	5.6%
Turkey	18.2	1995	23.0	1994	6,274	525	5.29	1.1%
Uzbekistan	16.7	1996	17.2	1981	2,906	167	8	0.5%
Venezuela, RB	90.0	1998	39.7	1986	2,601	1,859	6.64	7.8%
Vietnam	49.4	1996	22.0	1993	8,312	1,807	3.84	4.1%
Central/Southern Africa:								
Angola	35.0	2001	35.3	1965	1,493	369	4	4.5%
Botswana	60.2	1994	16.5	1994	214	43	6.28	2.3%
Burundi	80.0	1993	30	1990	932	447	1.38	25.3%
Cameroon	82.5	1998	26.5	1993	2,142	937	3.54	9.0%
Central African Republ	86.0	2002	80	1991	520	716	2.53	39.5%
Congo	75.0	2000	69	1987	379	392	5.14	14.6%
Congo, Dem. Rep.	12.3	1995	20.0	1995	8,806	433	6	0.6%
Cote d'Ivoire	31.0	2000	43	1992	2,490	664	4	4.8%
Gabon	15.0	2000	34.4	1989	179	18	6	1.2%
Guinea	36.8	1996	26.4	1992	1,277	248	0.84	16.8%
Kenya	100.0	1995	16.3	1984	4,420	1,441	4.2	5.6%
Lesotho	73.0	1996	42.9	1993	234	147	4.23	10.8%
Madagascar	7.0	1995	45.2	1992	2,426	154	6	0.8%
Malawi	58.1	1995	51.2	1993	1,734	1,032	3.2	13.5%
Mozambique	62.0	1995	34.5	1991	2,409	1,031	1.11	28.0%
Namibia	59.0	1996	34.5	1990	270	110	10	3.0%
Nigeria	83.2	1995	10.0	1993	18,766	3,123	5	2.4%
Rwanda	90.0	2000	50.0	1993	982	884	2.56	25.5%
Tanzania	73.8	1995	15.3	1991	5,196	1,173	2.71	6.1%
Uganda	69.0	1995	75.0	1991	4,241	4,389	3.51	21.4%
Zambia	78.1	1996	65.0	1990	1,570	1,594	5.46	13.5%
Zimbabwe	93.0	1999	42.7	1989	1,617	1,284	5.35	10.8%

Total Projected Increase Among Beneficiary Countries Worldwide: **4.83%**

Total Projected Increase Among Beneficiary Countries in Central/Southern Africa: **7.50%**