

Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Definition of Neurodevelopmental Disorders of Interest

Outcome	Algorithm
Autism Spectrum Disorder	At ≥ 1 year of age: ≥ 2 dates with ICD-9 Dx 299.xx (except 299.1x)
Attention Deficit Hyperactivity Disorder/ Hyperkinetic Syndrome of Childhood	At ≥ 2 years of age, any of the following: <ul style="list-style-type: none"> • ≥ 2 dates with ICD-9 Dx 314.xx • ≥ 2 dispensings of atomoxetine, clonidine, guanfacine, (dextro/lisdex)amphetamine, (dex)methylphenidate • ≥ 1 Dx 314.xx & ≥ 1 dispensing
Learning Difficulty	At ≥ 2 years of age: ≥ 1 ICD-9 Dx 315.0x, 315.1, 315.2
Developmental Speech or Language Disorder	At ≥ 1.5 years of age: ≥ 2 dates with ICD-9 Dx 315.3x (except 315.34)
Intellectual disability	At ≥ 2 years of age: ≥ 2 dates with ICD-9 Dx 317, 318.x, 319
Developmental Coordination Disorder	≥ 2 dates with ICD-9 Dx 315.4 (any age)
Behavioral Disorder	At ≥ 2 years of age: ≥ 2 dates with ICD-9 Dx 312.xx, 313.xx
Any Specific Neurodevelopmental Disorder	Presence of any of the outcomes above
Any Neurodevelopmental Disorder - Expanded Definition	Composite definition: <ul style="list-style-type: none"> • Presence of any of the outcomes above OR • Developmental delay: ≥ 2 dates with ICD-9 Dx 315.xx (except 315.34), 317, 318.x, 319 (any age) OR • Behavioral/neurotic/personality disorders: At ≥ 2 years of age: ≥ 2 dates with ICD-9 Dx 312.xx, 313.xx, 300.xx, 293.83, 296.2x, 296.3x, 298.0x, 309.0x, 309.1x, 309.28, 311.xx, 301.xx

Abbreviations: Dx, diagnosis; ICD, International Classification of Disease.

eTable 2. Patient Characteristics^a Among Children With the Specific Neurodevelopmental Disorder of Interest vs Children Without Any Neurodevelopmental Disorders, After 1:4 Matching on State and Follow-up, Separately for Publicly and Privately Insured Children

A. Any Specific Neurodevelopmental Disorder

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)		Stdiff	N (%) / Mean (SD)		Stdiff
	Cases ^b	Controls ^c		Cases ^b	Controls ^c	
Total	71,604	286,416		32,426	129,704	
Follow-up Years, Mean (SD)	5.28 (2.13)	5.17 (2.14)	0.05	5.66 (2.68)	5.60 (2.71)	0.02
Maternal Age (Years), Mean (SD)	24.81 (5.91)	24.68 (6.01)	0.02	32.74 (4.68)	32.26 (4.58)	0.10
Gender, N(%)						
Male	47193 (65.91%)	137567 (48.03%)	0.37	22229 (68.55%)	64094 (49.42%)	0.40
Female	23409 (32.69%)	146556 (51.17%)	-0.38	9395 (28.97%)	64461 (49.70%)	-0.43
Unknown	1002 (1.40%)	2293 (0.80%)	0.06	802 (2.47%)	1149 (0.89%)	0.12
Region, N (%)						
Northeast	16899 (23.60%)	67596 (23.60%)	0.00	6075 (18.73%)	24300 (18.73%)	0.00
Midwest	19721 (27.54%)	78884 (27.54%)	0.00	8649 (26.67%)	34596 (26.67%)	0.00
South	18597 (25.97%)	74388 (25.97%)	0.00	12901 (39.79%)	51604 (39.79%)	0.00
West	16387 (22.89%)	65548 (22.89%)	0.00	4582 (14.13%)	18328 (14.13%)	0.00
Year of Birth, N (%)						
Before 2006	16913 (23.62%)	84379 (29.46%)	-0.13	4491 (13.85%)	20395 (15.72%)	-0.05
2006-2009	39143 (54.67%)	149064 (52.04%)	0.05	13670 (42.16%)	57992 (44.71%)	-0.05
After 2009	15548 (21.71%)	52973 (18.50%)	0.08	14265 (43.99%)	51317 (39.56%)	0.09
Race/Ethnicity, N (%)						
White	33071 (46.19%)	108112 (37.75%)	0.17	N/A ^d	N/A ^d	N/A ^d
Black	19963 (27.88%)	97518 (34.05%)	-0.13	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	9452 (13.20%)	40893 (14.28%)	-0.03	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	2084 (2.91%)	13488 (4.71%)	-0.09	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	7034 (9.82%)	26405 (9.22%)	0.02	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	2286 (3.19%)	6519 (2.28%)	0.06	943 (2.91%)	2797 (2.16%)	0.05
Pre-eclampsia	4595 (6.42%)	14408 (5.03%)	0.06	2807 (8.66%)	7458 (5.75%)	0.11
Pre-existing Diabetes	2642 (3.69%)	7238 (2.53%)	0.07	978 (3.02%)	2910 (2.24%)	0.05
Gestational Diabetes	136 (0.19%)	422 (0.15%)	0.01	40 (0.12%)	169 (0.13%)	0.00
Obstetric Conditions, N (%)						
Low Birth Weight	5805 (8.11%)	12016 (4.20%)	0.16	2512 (7.75%)	3958 (3.05%)	0.21
Small for Gestational Age	2943 (4.11%)	8406 (2.93%)	0.06	1372 (4.23%)	3345 (2.58%)	0.09
Neonatal Hypoxia/Asphyxia	756 (1.06%)	2191 (0.76%)	0.03	291 (0.90%)	895 (0.69%)	0.02
Preterm Birth (>28 & <37 GW)	10846 (15.15%)	27244 (9.51%)	0.17	4847 (14.95%)	10316 (7.95%)	0.22
Very Preterm Birth (<=28 GW)	1296 (1.81%)	1444 (0.50%)	0.12	674 (2.08%)	632 (0.49%)	0.14
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	1.29 (0.59)	-	-	1.22 (0.53)	-	-
N Specific NDDs, N (%)						
1	55160 (77.03%)	-	-	26613 (82.07%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
2	12961 (18.10%)	-	-	4582 (14.13%)	-	-
3	2858 (3.99%)	-	-	1009 (3.11%)	-	-
4	528 (0.74%)	-	-	196 (0.60%)	-	-
5	84 (0.12%)	-	-	24 (0.07%)	-	-
6	11 (0.02%)	-	-	2 (0.01%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	6548 (9.14%)	-	-	3809 (11.75%)	-	-
ADHD	19917 (27.82%)	-	-	8112 (25.02%)	-	-
LD	1992 (2.78%)	-	-	898 (2.77%)	-	-
SLD	37857 (52.87%)	-	-	20252 (62.46%)	-	-
DCD	6763 (9.45%)	-	-	3618 (11.16%)	-	-
ID	1495 (2.09%)	-	-	90 (0.28%)	-	-
BD	17696 (24.71%)	-	-	2941 (9.07%)	-	-

B. Autism Spectrum Disorder

	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
Name	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
Total	10,093	40,372		3,847	15,388	
Follow-up Years, Mean (SD)	6.77 (2.82)	6.74 (2.85)	0.01	5.92 (2.44)	5.90 (2.46)	0.01
Maternal Age (Years), Mean (SD)	25.75 (6.20)	24.68 (6.04)	0.17	33.12 (4.78)	32.40 (4.60)	0.15
Gender, N(%)						
Male	7703 (76.32%)	18869 (46.74%)	0.64	3002 (78.03%)	7534 (48.96%)	0.63
Female	2207 (21.87%)	21181 (52.46%)	-0.67	726 (18.87%)	7695 (50.01%)	-0.69
Unknown	183 (1.81%)	322 (0.80%)	0.09	119 (3.09%)	159 (1.03%)	0.15
Region, N (%)						
Northeast	2586 (25.62%)	10344 (25.62%)	0.00	973 (25.29%)	3892 (25.29%)	0.00
Midwest	2997 (29.69%)	11988 (29.69%)	0.00	825 (21.45%)	3300 (21.45%)	0.00
South	2689 (26.64%)	10756 (26.64%)	0.00	1398 (36.34%)	5592 (36.34%)	0.00
West	1821 (18.04%)	7284 (18.04%)	0.00	620 (16.12%)	2480 (16.12%)	0.00
Year of Birth, N (%)						
Before 2006	3928 (38.92%)	18752 (46.45%)	-0.15	525 (13.65%)	2408 (15.65%)	-0.06
2006-2009	4353 (43.13%)	15923 (39.44%)	0.07	1731 (45.00%)	7227 (46.97%)	-0.04
After 2009	1812 (17.95%)	5697 (14.11%)	0.10	1591 (41.36%)	5753 (37.39%)	0.08
Race/Ethnicity, N (%)						
White	4848 (48.03%)	15402 (38.15%)	0.20	N/A ^d	N/A ^d	N/A ^d
Black	2660 (26.35%)	15036 (37.24%)	-0.24	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	1106 (10.96%)	4748 (11.76%)	-0.03	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	322 (3.19%)	1688 (4.18%)	-0.05	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	1157 (11.46%)	3498 (8.66%)	0.09	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	385 (3.81%)	933 (2.31%)	0.09	121 (3.15%)	332 (2.16%)	0.06
Pre-eclampsia	653 (6.47%)	2008 (4.97%)	0.06	361 (9.38%)	886 (5.76%)	0.14
Pre-existing Diabetes	444 (4.40%)	988 (2.45%)	0.11	141 (3.67%)	340 (2.21%)	0.09
Gestational Diabetes	20 (0.20%)	57 (0.14%)	0.01	4 (0.10%)	14 (0.09%)	0.00
Obstetric Conditions, N (%)						
Low Birth Weight	762 (7.55%)	1724 (4.27%)	0.14	287 (7.46%)	451 (2.93%)	0.21
Small for Gestational Age	364 (3.61%)	1134 (2.81%)	0.05	149 (3.87%)	374 (2.43%)	0.08
Neonatal Hypoxia/Asphyxia	108 (1.07%)	358 (0.89%)	0.02	38 (0.99%)	102 (0.66%)	0.04
Preterm Birth (>28 & <37 GW)	1521 (15.07%)	3788 (9.38%)	0.17	577 (15.00%)	1239 (8.05%)	0.22
Very Preterm Birth (<=28 GW)	146 (1.45%)	210 (0.52%)	0.09	77 (2.00%)	67 (0.44%)	0.14
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	2.34 (1.10)	-	-	1.99 (0.84)	-	-
N Specific NDDs, N (%)						
1	2589 (25.65%)	-	-	1125 (29.24%)	-	-
2	3399 (33.68%)	-	-	1850 (48.09%)	-	-
3	2626 (26.02%)	-	-	677 (17.60%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
4	1105 (10.95%)	-	-	168 (4.37%)	-	-
5	321 (3.18%)	-	-	25 (0.65%)	-	-
6	50 (0.50%)	-	-	2 (0.05%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	10093 (100.00%)	-	-	3847 (100.00%)	-	-
ADHD	3771 (37.36%)	-	-	858 (22.30%)	-	-
LD	468 (4.64%)	-	-	80 (2.08%)	-	-
SLD	4773 (47.29%)	-	-	2150 (55.89%)	-	-
DCD	1129 (11.19%)	-	-	358 (9.31%)	-	-
ID	807 (8.00%)	-	-	36 (0.94%)	-	-
BD	2570 (25.46%)	-	-	336 (8.73%)	-	-

C. Attention Deficit Hyperactivity Disorder/Hyperkinetic Syndrome of Childhood

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)		Stdiff	N (%) / Mean (SD)		Stdiff
	Cases ^b	Controls ^c		Cases ^b	Controls ^c	
Total	33,259	133,036		8,260	33,040	
Follow-up Years, Mean (SD)	7.33 (1.97)	7.23 (1.98)	0.05	8.46 (1.91)	8.43 (1.92)	0.02
Maternal Age (Years), Mean (SD)	23.87 (5.53)	24.57 (5.97)	-0.12	32.14 (4.75)	32.21 (4.54)	-0.01
Gender, N(%)						
Male	23171 (69.67%)	61979 (46.59%)	0.48	5942 (71.94%)	16045 (48.56%)	0.49
Female	9678 (29.10%)	70045 (52.65%)	-0.49	2168 (26.25%)	16710 (50.58%)	-0.52
Unknown	410 (1.23%)	1012 (0.76%)	0.05	150 (1.82%)	285 (0.86%)	0.08
Region, N (%)						
Northeast	6010 (18.07%)	24040 (18.07%)	0.00	934 (11.31%)	3736 (11.31%)	0.00
Midwest	9852 (29.62%)	39408 (29.62%)	0.00	2140 (25.91%)	8560 (25.91%)	0.00
South	11066 (33.27%)	44264 (33.27%)	0.00	4440 (53.75%)	17760 (53.75%)	0.00
West	6331 (19.04%)	25324 (19.04%)	0.00	699 (8.46%)	2796 (8.46%)	0.00
Year of Birth, N (%)						
Before 2006	14640 (44.02%)	61943 (46.56%)	-0.05	2692 (32.59%)	10629 (32.17%)	0.01
2006-2009	17675 (53.14%)	67192 (50.51%)	0.05	5019 (60.76%)	20101 (60.84%)	0.00
After 2009	944 (2.84%)	3901 (2.93%)	-0.01	549 (6.65%)	2310 (6.99%)	-0.01
Race/Ethnicity, N (%)						
White	17283 (51.96%)	49933 (37.53%)	0.29	N/A ^d	N/A ^d	N/A ^d
Black	10263 (30.86%)	52515 (39.47%)	-0.18	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	3295 (9.91%)	16655 (12.52%)	-0.08	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	398 (1.20%)	5254 (3.95%)	-0.17	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	2020 (6.07%)	8679 (6.52%)	-0.02	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	1012 (3.04%)	3077 (2.31%)	0.05	225 (2.72%)	703 (2.13%)	0.04
Pre-eclampsia	2037 (6.12%)	6601 (4.96%)	0.05	694 (8.40%)	1835 (5.55%)	0.11
Pre-existing Diabetes	1078 (3.24%)	3121 (2.35%)	0.05	270 (3.27%)	713 (2.16%)	0.07
Gestational Diabetes	53 (0.16%)	202 (0.15%)	0.00	5 (0.06%)	45 (0.14%)	-0.02
Obstetric Conditions, N (%)						
Low Birth Weight	2107 (6.34%)	5765 (4.33%)	0.09	457 (5.53%)	980 (2.97%)	0.13
Small for Gestational Age	1104 (3.32%)	3626 (2.73%)	0.03	222 (2.69%)	626 (1.89%)	0.05
Neonatal Hypoxia/Asphyxia	337 (1.01%)	1187 (0.89%)	0.01	58 (0.70%)	238 (0.72%)	0.00
Preterm Birth (>28 & <37 GW)	4306 (12.95%)	12809 (9.63%)	0.11	1009 (12.22%)	2575 (7.79%)	0.15
Very Preterm Birth (<=28 GW)	318 (0.96%)	670 (0.50%)	0.05	96 (1.16%)	188 (0.57%)	0.06
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	1.67 (0.81)	-	-	1.47 (0.77)	-	-
N Specific NDDs, N (%)						
1	16586 (49.87%)	-	-	5463 (66.14%)	-	-
2	12193 (36.66%)	-	-	1917 (23.21%)	-	-
3	3430 (10.31%)	-	-	670 (8.11%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
4	869 (2.61%)	-	-	183 (2.22%)	-	-
5	160 (0.48%)	-	-	25 (0.30%)	-	-
6	19 (0.06%)	-	-	2 (0.02%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	2302 (6.92%)	-	-	854 (10.34%)	-	-
ADHD	33259 (100.00%)	-	-	8260 (100.00%)	-	-
LD	1208 (3.63%)	-	-	373 (4.52%)	-	-
SLD	6149 (18.49%)	-	-	1148 (13.90%)	-	-
DCD	715 (2.15%)	-	-	278 (3.37%)	-	-
ID	536 (1.61%)	-	-	41 (0.50%)	-	-
BD	11497 (34.57%)	-	-	1222 (14.79%)	-	-

D. Learning Disability

	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
Name	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
Total	5,477	21,908		929	3,716	
Follow-up Years, Mean (SD)	8.63 (2.41)	8.60 (2.42)	0.01	8.23 (2.22)	8.23 (2.22)	0.00
Maternal Age (Years), Mean (SD)	24.63 (5.85)	24.75 (6.06)	-0.02	32.71 (4.91)	32.54 (4.56)	0.04
Gender, N(%)						
Male	3323 (60.67%)	9819 (44.82%)	0.32	575 (61.89%)	1813 (48.79%)	0.27
Female	2071 (37.81%)	11938 (54.49%)	-0.34	331 (35.63%)	1879 (50.57%)	-0.30
Unknown	83 (1.52%)	151 (0.69%)	0.08	23 (2.48%)	24 (0.65%)	0.15
Region, N (%)						
Northeast	1497 (27.33%)	5988 (27.33%)	0.00	236 (25.40%)	944 (25.40%)	0.00
Midwest	1582 (28.88%)	6328 (28.88%)	0.00	172 (18.51%)	688 (18.51%)	0.00
South	1550 (28.30%)	6200 (28.30%)	0.00	387 (41.66%)	1548 (41.66%)	0.00
West	848 (15.48%)	3392 (15.48%)	0.00	127 (13.67%)	508 (13.67%)	0.00
Year of Birth, N (%)						
Before 2006	3704 (67.63%)	15319 (69.92%)	-0.05	310 (33.37%)	1210 (32.56%)	0.02
2006-2009	1603 (29.27%)	6022 (27.49%)	0.04	530 (57.05%)	2119 (57.02%)	0.00
After 2009	170 (3.10%)	567 (2.59%)	0.03	89 (9.58%)	387 (10.41%)	-0.03
Race/Ethnicity, N (%)						
White	2474 (45.17%)	8318 (37.97%)	0.15	N/A ^d	N/A ^d	N/A ^d
Black	1809 (33.03%)	8568 (39.11%)	-0.13	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	717 (13.09%)	2769 (12.64%)	0.01	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	97 (1.77%)	783 (3.57%)	-0.11	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	380 (6.94%)	1470 (6.71%)	0.01	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	140 (2.56%)	436 (1.99%)	0.04	25 (2.69%)	91 (2.45%)	0.02
Pre-eclampsia	332 (6.06%)	1027 (4.69%)	0.06	75 (8.07%)	199 (5.36%)	0.11
Pre-existing Diabetes	194 (3.54%)	487 (2.22%)	0.08	29 (3.12%)	85 (2.29%)	0.05
Gestational Diabetes	<11	26 (0.12%)	0.00	1 (0.11%)	1 (0.03%)	0.03
Obstetric Conditions, N (%)						
Low Birth Weight	443 (8.09%)	872 (3.98%)	0.17	72 (7.75%)	122 (3.28%)	0.20
Small for Gestational Age	202 (3.69%)	580 (2.65%)	0.06	25 (2.69%)	76 (2.05%)	0.04
Neonatal Hypoxia/Asphyxia	90 (1.64%)	227 (1.04%)	0.05	12 (1.29%)	29 (0.78%)	0.05
Preterm Birth (>28 & <37 GW)	821 (14.99%)	1944 (8.87%)	0.19	141 (15.18%)	302 (8.13%)	0.22
Very Preterm Birth (<=28 GW)	111 (2.03%)	111 (0.51%)	0.14	14 (1.51%)	22 (0.59%)	0.09
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	2.18 (1.09)	-	-	1.89 (0.91)	-	-
N Specific NDDs, N (%)						
1	1746 (31.88%)	-	-	364 (39.18%)	-	-
2	1883 (34.38%)	-	-	364 (39.18%)	-	-
3	1193 (21.78%)	-	-	149 (16.04%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
4	477 (8.71%)	-	-	42 (4.52%)	-	-
5	142 (2.59%)	-	-	9 (0.97%)	-	-
6	33 (0.60%)	-	-	1 (0.11%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	457 (8.34%)	-	-	80 (8.61%)	-	-
ADHD	2350 (42.91%)	-	-	375 (40.37%)	-	-
LD	5477 (100.00%)	-	-	929 (100.00%)	-	-
SLD	1918 (35.02%)	-	-	240 (25.83%)	-	-
DCD	249 (4.55%)	-	-	52 (5.60%)	-	-
ID	232 (4.24%)	-	-	4 (0.43%)	-	-
BD	1245 (22.73%)	-	-	78 (8.40%)	-	-

E. Developmental Speech/Language Disorder

	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
Name	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
Total	53,741	214,964		20,353	81,412	
Follow-up Years, Mean (SD)	5.91 (2.58)	5.84 (2.61)	0.03	4.84 (2.19)	4.80 (2.22)	0.02
Maternal Age (Years), Mean (SD)	24.82 (5.85)	24.33 (5.86)	0.08	32.93 (4.62)	32.28 (4.59)	0.14
Gender, N(%)						
Male	35722 (66.47%)	101647 (47.29%)	0.39	14181 (69.68%)	40490 (49.73%)	0.42
Female	17203 (32.01%)	111642 (51.94%)	-0.41	5633 (27.68%)	40194 (49.37%)	-0.46
Unknown	816 (1.52%)	1675 (0.78%)	0.07	539 (2.65%)	728 (0.89%)	0.13
Region, N (%)						
Northeast	11464 (21.33%)	45856 (21.33%)	0.00	4005 (19.68%)	16020 (19.68%)	0.00
Midwest	18624 (34.66%)	74496 (34.66%)	0.00	5510 (27.07%)	22040 (27.07%)	0.00
South	17453 (32.48%)	69812 (32.48%)	0.00	7420 (36.46%)	29680 (36.46%)	0.00
West	6200 (11.54%)	24800 (11.54%)	0.00	3260 (16.02%)	13040 (16.02%)	0.00
Year of Birth, N (%)						
Before 2006	18881 (35.13%)	88597 (41.21%)	-0.13	1566 (7.69%)	8797 (10.81%)	-0.11
2006-2009	24454 (45.50%)	92095 (42.84%)	0.05	7380 (36.26%)	32692 (40.16%)	-0.08
After 2009	10406 (19.36%)	34272 (15.94%)	0.09	11407 (56.05%)	39923 (49.04%)	0.14
Race/Ethnicity, N (%)						
White	25841 (48.08%)	83734 (38.95%)	0.18	N/A ^d	N/A ^d	N/A ^d
Black	16629 (30.94%)	85823 (39.92%)	-0.19	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	4999 (9.30%)	20186 (9.39%)	0.00	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	1204 (2.24%)	6905 (3.21%)	-0.06	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	5068 (9.43%)	18316 (8.52%)	0.03	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	1764 (3.28%)	4935 (2.30%)	0.06	592 (2.91%)	1789 (2.20%)	0.05
Pre-eclampsia	3614 (6.72%)	11229 (5.22%)	0.06	1728 (8.49%)	4754 (5.84%)	0.10
Pre-existing Diabetes	2046 (3.81%)	5090 (2.37%)	0.08	584 (2.87%)	1867 (2.29%)	0.04
Gestational Diabetes	110 (0.20%)	268 (0.12%)	0.02	30 (0.15%)	107 (0.13%)	0.00
Obstetric Conditions, N (%)						
Low Birth Weight	4720 (8.78%)	9571 (4.45%)	0.17	1604 (7.88%)	2586 (3.18%)	0.21
Small for Gestational Age	2331 (4.34%)	6562 (3.05%)	0.07	913 (4.49%)	2265 (2.78%)	0.09
Neonatal Hypoxia/Asphyxia	631 (1.17%)	1916 (0.89%)	0.03	189 (0.93%)	525 (0.64%)	0.03
Preterm Birth (>28 & <37 GW)	8557 (15.92%)	21350 (9.93%)	0.18	3094 (15.20%)	6535 (8.03%)	0.23
Very Preterm Birth (<=28 GW)	1031 (1.92%)	1026 (0.48%)	0.13	460 (2.26%)	373 (0.46%)	0.16
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	1.48 (0.81)	-	-	1.26 (0.59)	-	-
N Specific NDDs, N (%)						
1	36672 (68.24%)	-	-	16312 (80.15%)	-	-
2	10516 (19.57%)	-	-	2986 (14.67%)	-	-
3	4928 (9.17%)	-	-	838 (4.12%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
4	1317 (2.45%)	-	-	189 (0.93%)	-	-
5	270 (0.50%)	-	-	26 (0.13%)	-	-
6	36 (0.07%)	-	-	2 (0.01%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	4438 (8.26%)	-	-	2149 (10.56%)	-	-
ADHD	8887 (16.54%)	-	-	1151 (5.66%)	-	-
LD	1528 (2.84%)	-	-	239 (1.17%)	-	-
SLD	53741 (100.00%)	-	-	20353 (100.00%)	-	-
DCD	3444 (6.41%)	-	-	1147 (5.64%)	-	-
ID	1174 (2.18%)	-	-	49 (0.24%)	-	-
BD	6124 (11.40%)	-	-	608 (2.99%)	-	-

F. Developmental Coordination Disorder

	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
Name	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
Total	8,535	34,140		3,635	14,540	
Follow-up Years, Mean (SD)	4.89 (2.91)	4.85 (2.95)	0.01	4.11 (2.52)	4.09 (2.54)	0.01
Maternal Age (Years), Mean (SD)	26.18 (6.17)	25.08 (6.05)	0.18	33.35 (4.60)	32.33 (4.60)	0.22
Gender, N(%)						
Male	5120 (59.99%)	16312 (47.78%)	0.25	2116 (58.21%)	7221 (49.66%)	0.17
Female	3231 (37.86%)	17629 (51.64%)	-0.28	1368 (37.63%)	7194 (49.48%)	-0.24
Unknown	184 (2.16%)	199 (0.58%)	0.14	151 (4.15%)	125 (0.86%)	0.21
Region, N (%)						
Northeast	4135 (48.45%)	16540 (48.45%)	0.00	985 (27.10%)	3940 (27.10%)	0.00
Midwest	2075 (24.31%)	8300 (24.31%)	0.00	892 (24.54%)	3568 (24.54%)	0.00
South	1536 (18.00%)	6144 (18.00%)	0.00	1172 (32.24%)	4688 (32.24%)	0.00
West	789 (9.24%)	3156 (9.24%)	0.00	565 (15.54%)	2260 (15.54%)	0.00
Year of Birth, N (%)						
Before 2006	2226 (26.08%)	11601 (33.98%)	-0.17	255 (7.02%)	1471 (10.12%)	-0.11
2006-2009	3295 (38.61%)	13140 (38.49%)	0.00	1096 (30.15%)	5143 (35.37%)	-0.11
After 2009	3014 (35.31%)	9399 (27.53%)	0.17	2284 (62.83%)	7926 (54.51%)	0.17
Race/Ethnicity, N (%)						
White	3875 (45.40%)	13440 (39.37%)	0.12	N/A ^d	N/A ^d	N/A ^d
Black	2090 (24.49%)	10928 (32.01%)	-0.17	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	647 (7.58%)	2832 (8.30%)	-0.03	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	344 (4.03%)	1565 (4.58%)	-0.03	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	1579 (18.50%)	5375 (15.74%)	0.07	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	311 (3.64%)	649 (1.90%)	0.11	124 (3.41%)	341 (2.35%)	0.06
Pre-eclampsia	704 (8.25%)	1771 (5.19%)	0.12	413 (11.36%)	878 (6.04%)	0.19
Pre-existing Diabetes	398 (4.66%)	849 (2.49%)	0.12	126 (3.47%)	345 (2.37%)	0.06
Gestational Diabetes	12 (0.14%)	43 (0.13%)	0.00	6 (0.17%)	22 (0.15%)	0.00
Obstetric Conditions, N (%)						
Low Birth Weight	1391 (16.30%)	1456 (4.26%)	0.40	584 (16.07%)	458 (3.15%)	0.45
Small for Gestational Age	523 (6.13%)	1050 (3.08%)	0.15	302 (8.31%)	400 (2.75%)	0.24
Neonatal Hypoxia/Asphyxia	142 (1.66%)	267 (0.78%)	0.08	54 (1.49%)	84 (0.58%)	0.09
Preterm Birth (>28 & <37 GW)	2172 (25.45%)	3279 (9.60%)	0.43	934 (25.69%)	1185 (8.15%)	0.48
Very Preterm Birth (<=28 GW)	396 (4.64%)	179 (0.52%)	0.26	191 (5.25%)	66 (0.45%)	0.29
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	1.87 (1.03)	-	-	1.54 (0.81)	-	-
N Specific NDDs, N (%)						
1	3950 (46.28%)	-	-	2231 (61.38%)	-	-
2	2669 (31.27%)	-	-	968 (26.63%)	-	-
3	1207 (14.14%)	-	-	321 (8.83%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
4	521 (6.10%)	-	-	94 (2.59%)	-	-
5	152 (1.78%)	-	-	19 (0.52%)	-	-
6	33 (0.39%)	-	-	2 (0.06%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	1130 (13.24%)	-	-	358 (9.85%)	-	-
ADHD	1163 (13.63%)	-	-	281 (7.73%)	-	-
LD	253 (2.96%)	-	-	52 (1.43%)	-	-
SLD	3782 (44.31%)	-	-	1149 (31.61%)	-	-
DCD	8535 (100.00%)	-	-	3635 (100.00%)	-	-
ID	292 (3.42%)	-	-	18 (0.50%)	-	-
BD	817 (9.57%)	-	-	120 (3.30%)	-	-

G. Intellectual Disability

	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
Name	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
Total	3,244	12,976		90	360	
Follow-up Years, Mean (SD)	8.17 (2.77)	8.14 (2.78)	0.01	7.74 (2.57)	7.74 (2.56)	0.00
Maternal Age (Years), Mean (SD)	25.02 (6.05)	24.50 (6.03)	0.09	33.37 (4.64)	32.34 (4.25)	0.23
Gender, N(%)						
Male	2045 (63.04%)	5843 (45.03%)	0.37	50 (55.56%)	191 (53.06%)	0.05
Female	1130 (34.83%)	7012 (54.04%)	-0.39	39 (43.33%)	166 (46.11%)	-0.06
Unknown	69 (2.13%)	121 (0.93%)	0.10	1 (1.11%)	3 (0.83%)	0.03
Region, N (%)						
Northeast	471 (14.52%)	1884 (14.52%)	0.00	14 (15.56%)	56 (15.56%)	0.00
Midwest	896 (27.62%)	3584 (27.62%)	0.00	29 (32.22%)	116 (32.22%)	0.00
South	1238 (38.16%)	4952 (38.16%)	0.00	38 (42.22%)	152 (42.22%)	0.00
West	639 (19.70%)	2556 (19.70%)	0.00	9 (10.00%)	36 (10.00%)	0.00
Year of Birth, N (%)						
Before 2006	2241 (69.08%)	9216 (71.02%)	-0.04	28 (31.11%)	104 (28.89%)	0.05
2006-2009	899 (27.71%)	3308 (25.49%)	0.05	45 (50.00%)	199 (55.28%)	-0.11
After 2009	104 (3.21%)	452 (3.48%)	-0.02	17 (18.89%)	57 (15.83%)	0.08
Race/Ethnicity, N (%)						
White	1578 (48.64%)	5234 (40.34%)	0.17	N/A ^d	N/A ^d	N/A ^d
Black	990 (30.52%)	4727 (36.43%)	-0.13	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	274 (8.45%)	1196 (9.22%)	-0.03	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	267 (8.23%)	1218 (9.39%)	-0.04	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	135 (4.16%)	601 (4.63%)	-0.02	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	96 (2.96%)	273 (2.10%)	0.05	2 (2.22%)	14 (3.89%)	-0.10
Pre-eclampsia	221 (6.81%)	706 (5.44%)	0.06	11 (12.22%)	30 (8.33%)	0.13
Pre-existing Diabetes	149 (4.59%)	327 (2.52%)	0.11	3 (3.33%)	6 (1.67%)	0.11
Gestational Diabetes	<11	24 (0.18%)	-0.01	0 (0.00%)	0 (0.00%)	-
Obstetric Conditions, N (%)						
Low Birth Weight	411 (12.67%)	529 (4.08%)	0.31	14 (15.56%)	7 (1.94%)	0.49
Small for Gestational Age	150 (4.62%)	341 (2.63%)	0.11	3 (3.33%)	5 (1.39%)	0.13
Neonatal Hypoxia/Asphyxia	78 (2.40%)	108 (0.83%)	0.12	0 (0.00%)	2 (0.56%)	-0.11
Preterm Birth (>28 & <37 GW)	683 (21.05%)	1224 (9.43%)	0.33	18 (20.00%)	30 (8.33%)	0.34
Very Preterm Birth (<=28 GW)	128 (3.95%)	73 (0.56%)	0.23	6 (6.67%)	3 (0.83%)	0.31
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	2.47 (1.27)	-	-	2.78 (1.26)	-	-
N Specific NDDs, N (%)						
1	864 (26.63%)	-	-	19 (21.11%)	-	-
2	992 (30.58%)	-	-	18 (20.00%)	-	-
3	685 (21.12%)	-	-	24 (26.67%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
4	450 (13.87%)	-	-	23 (25.56%)	-	-
5	206 (6.35%)	-	-	5 (5.56%)	-	-
6	44 (1.36%)	-	-	1 (1.11%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	795 (24.51%)	-	-	36 (40.00%)	-	-
ADHD	1159 (35.73%)	-	-	41 (45.56%)	-	-
LD	246 (7.58%)	-	-	4 (4.44%)	-	-
SLD	1552 (47.84%)	-	-	49 (54.44%)	-	-
DCD	271 (8.35%)	-	-	18 (20.00%)	-	-
ID	3244 (100.00%)	-	-	90 (100.00%)	-	-
BD	751 (23.15%)	-	-	12 (13.33%)	-	-

H. Behavioral Disorder

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)		Stdiff	N (%) / Mean (SD)		Stdiff
	Cases ^b	Controls ^c		Cases ^b	Controls ^c	
Total	32,850	131,400		2,973	11,892	
Follow-up Years, Mean (SD)	7.52 (2.43)	7.44 (2.45)	0.03	7.23 (2.23)	7.22 (2.24)	0.01
Maternal Age (Years), Mean (SD)	23.85 (5.56)	24.41 (5.94)	-0.10	32.42 (4.82)	32.34 (4.57)	0.02
Gender, N(%)						
Male	21449 (65.29%)	60760 (46.24%)	0.39	2082 (70.03%)	5963 (50.14%)	0.41
Female	10971 (33.40%)	69588 (52.96%)	-0.40	834 (28.05%)	5833 (49.05%)	-0.44
Unknown	430 (1.31%)	1052 (0.80%)	0.05	57 (1.92%)	96 (0.81%)	0.10
Region, N (%)						
Northeast	3816 (11.62%)	15264 (11.62%)	0.00	469 (15.78%)	1876 (15.78%)	0.00
Midwest	10241 (31.18%)	40964 (31.18%)	0.00	966 (32.49%)	3864 (32.49%)	0.00
South	11253 (34.26%)	45012 (34.26%)	0.00	1189 (39.99%)	4756 (39.99%)	0.00
West	7540 (22.95%)	30160 (22.95%)	0.00	333 (11.20%)	1332 (11.20%)	0.00
Year of Birth, N (%)						
Before 2006	16333 (49.72%)	69251 (52.70%)	-0.06	614 (20.65%)	2656 (22.33%)	-0.04
2006-2009	14428 (43.92%)	54258 (41.29%)	0.05	1756 (59.06%)	6872 (57.79%)	0.03
After 2009	2089 (6.36%)	7891 (6.01%)	0.01	603 (20.28%)	2364 (19.88%)	0.01
Race/Ethnicity, N (%)						
White	15688 (47.76%)	47448 (36.11%)	0.24	N/A ^d	N/A ^d	N/A ^d
Black	10913 (33.22%)	52720 (40.12%)	-0.14	N/A ^d	N/A ^d	N/A ^d
Hispanic/Latino	3951 (12.03%)	18649 (14.19%)	-0.06	N/A ^d	N/A ^d	N/A ^d
Asian/Pacific Islander	394 (1.20%)	4895 (3.73%)	-0.16	N/A ^d	N/A ^d	N/A ^d
Other/Unknown	1904 (5.80%)	7688 (5.85%)	0.00	N/A ^d	N/A ^d	N/A ^d
Maternal Conditions, N (%)						
Pre-existing Hypertension	963 (2.93%)	2895 (2.20%)	0.05	87 (2.93%)	230 (1.93%)	0.06
Pre-eclampsia	1918 (5.84%)	6557 (4.99%)	0.04	274 (9.22%)	675 (5.68%)	0.14
Pre-existing Diabetes	1023 (3.11%)	3131 (2.38%)	0.04	85 (2.86%)	288 (2.42%)	0.03
Gestational Diabetes	55 (0.17%)	206 (0.16%)	0.00	1 (0.03%)	17 (0.14%)	-0.04
Obstetric Conditions, N (%)						
Low Birth Weight	2004 (6.10%)	5532 (4.21%)	0.09	145 (4.88%)	364 (3.06%)	0.09
Small for Gestational Age	1071 (3.26%)	3453 (2.63%)	0.04	85 (2.86%)	267 (2.25%)	0.04
Neonatal Hypoxia/Asphyxia	331 (1.01%)	1151 (0.88%)	0.01	14 (0.47%)	81 (0.68%)	-0.03
Preterm Birth (>28 & <37 GW)	4187 (12.75%)	12585 (9.58%)	0.10	336 (11.30%)	889 (7.48%)	0.13
Very Preterm Birth (<=28 GW)	310 (0.94%)	615 (0.47%)	0.06	37 (1.24%)	59 (0.50%)	0.08
Co-occurring NDDs						
N Specific NDDs, Mean (SD)	1.83 (0.83)	-	-	1.80 (0.87)	-	-
N Specific NDDs, N (%)						
1	12700 (38.66%)	-	-	1294 (43.53%)	-	-
2	14753 (44.91%)	-	-	1154 (38.82%)	-	-
3	4064 (12.37%)	-	-	384 (12.92%)	-	-

Name	Public Insurance			Private Insurance		
	N (%) / Mean (SD)			N (%) / Mean (SD)		
	Cases ^b	Controls ^c	Stdiff	Cases ^b	Controls ^c	Stdiff
4	1057 (3.22%)	-	-	115 (3.87%)	-	-
5	239 (0.73%)	-	-	24 (0.81%)	-	-
6	35 (0.11%)	-	-	2 (0.07%)	-	-
7	<11	-	-	0 (0.00%)	-	-
Specific NDDs, N (%)						
ASD	2111 (6.43%)	-	-	334 (11.23%)	-	-
ADHD	17098 (52.05%)	-	-	1223 (41.14%)	-	-
LD	938 (2.86%)	-	-	78 (2.62%)	-	-
SLD	5878 (17.89%)	-	-	607 (20.42%)	-	-
DCD	685 (2.09%)	-	-	119 (4.00%)	-	-
ID	485 (1.48%)	-	-	12 (0.40%)	-	-
BD	32850 (100.00%)	-	-	2973 (100.00%)	-	-

Numbers <11 for MAX cohort suppressed in accord with the CMS cell size suppression policy.

Abbreviations: ADHD, attention deficit hyperactivity disorder and other hyperkinetic syndromes of childhood; ASD, autism spectrum disorder/pervasive developmental disorder; BD, behavioral disorder; DCD, developmental coordination disorder; ID, intellectual disability; LD, learning disability; N, number; NDD, neurodevelopmental disorder; SLD, speech/language disorder; SD, standard deviation; Stdiff, standardized difference.

^aThe following assessment periods were used for the respective covariates:

- First date of last menstrual period (LMP)-90 days to LMP+90 days: pre-existing hypertension
- LMP-90 days to LMP+140 days: pre-existing diabetes
- LMP+140 days to delivery: gestational diabetes
- LMP+140 days to delivery+30 days: pre-eclampsia
- delivery to delivery+30 days: preterm/very preterm birth, low birth weight, small for gestational age
- delivery hospitalization: neonatal hypoxia/asphyxia

^bCases include children with the specific NDD of interest.

^cControls consist of a sample without any NDD, which is defined using an extended definition that also includes other developmental, neurotic and personality disorders. For details, see eTable 1. Cases and controls were 1:4 matched on state and duration of follow-up after birth (+/- 60 days).

^dInformation on race/ethnicity not available in the privately insured cohort (MarketScan).

eTable 3. Patient Characteristics Among Children, Stratified by Length of Continuous Enrollment, Separately for A) Publicly Insured Children and B) Privately Insured Children^a

Name	N (%) / Mean (SD) Among Children With Continuous Enrollment									
	A) Public Insurance					B) Private Insurance				
	<1 Year	>=1 & <2 Years	>=2 & <5 Years	>=5 & <8 Years	>=8 Years	<1 Year	>=1 & <2 Years	>=2 & <5 Years	>=5 & <8 Years	>=8 Years
Total	402328	545472	670836	280801	171262	395164	316901	412046	128816	57030
Follow-up Years, Mean (SD)	0.61 (0.23)	1.41 (0.30)	3.24 (0.85)	6.30 (0.85)	9.89 (1.41)	0.61 (0.22)	1.48 (0.29)	3.22 (0.84)	6.25 (0.84)	9.52 (1.05)
Maternal Age (Years) at Delivery, Mean (SD)	24.64 (5.83)	24.30 (5.79)	24.32 (5.83)	24.50 (5.90)	24.60 (5.97)	31.74 (4.64)	31.88 (4.64)	32.09 (4.61)	32.18 (4.61)	32.33 (4.56)
Gender, N (%)										
Male	204030 (50.71%)	274040 (50.24%)	339198 (50.56%)	141464 (50.38%)	86780 (50.67%)	201619 (51.02%)	161373 (50.92%)	210166 (51.01%)	65429 (50.79%)	29046 (50.93%)
Female	195931 (48.70%)	265807 (48.73%)	326068 (48.61%)	136661 (48.67%)	82776 (48.33%)	189647 (47.99%)	152493 (48.12%)	197838 (48.01%)	62095 (48.20%)	27406 (48.06%)
Unknown	2367 (0.59%)	5625 (1.03%)	5570 (0.83%)	2676 (0.95%)	1706 (1.00%)	3898 (0.99%)	3035 (0.96%)	4042 (0.98%)	1292 (1.00%)	578 (1.01%)
Region, N (%)										
Northeast	73427 (18.25%)	97925 (17.95%)	111010 (16.55%)	50341 (17.93%)	24313 (14.20%)	58432 (14.79%)	51351 (16.20%)	69911 (16.97%)	18130 (14.07%)	7929 (13.90%)
Midwest	137295 (34.13%)	171907 (31.52%)	219784 (32.76%)	77767 (27.69%)	51889 (30.30%)	100988 (25.56%)	80221 (25.31%)	105045 (25.49%)	35710 (27.72%)	15847 (27.79%)
South	101519 (25.23%)	166466 (30.52%)	193975 (28.92%)	84523 (30.10%)	55618 (32.48%)	154222 (39.03%)	122277 (38.59%)	161667 (39.24%)	53742 (41.72%)	26033 (45.65%)
West	90087 (22.39%)	109174 (20.01%)	146067 (21.77%)	68170 (24.28%)	39442 (23.03%)	75194 (19.03%)	58801 (18.56%)	72012 (17.48%)	20331 (15.78%)	6914 (12.12%)
Year of Birth, N (%)										
Before 2006	96799 (24.06%)	142042 (26.04%)	172727 (25.75%)	79950 (28.47%)	147838 (86.32%)	34702 (8.78%)	27463 (8.67%)	29317 (7.11%)	10146 (7.88%)	24413 (42.81%)
2006-2009	74124 (18.42%)	118910 (21.80%)	213969 (31.90%)	200851 (71.53%)	23424 (13.68%)	103780 (26.26%)	78785 (24.86%)	107237 (26.03%)	85104 (66.07%)	32617 (57.19%)
After 2009	231405 (57.52%)	284520 (52.16%)	284140 (42.36%)	0 (0.00%)	0 (0.00%)	256682 (64.96%)	210653 (66.47%)	275492 (66.86%)	33566 (26.06%)	0 (0.00%)
Race/Ethnicity, N (%)										
White	166670 (41.43%)	230532 (42.26%)	273618 (40.79%)	109613 (39.04%)	65387 (38.18%)	N/A ^b	N/A ^b	N/A ^b	N/A ^b	N/A ^b
Black	123325 (30.65%)	173604 (31.83%)	220343 (32.85%)	98616 (35.12%)	66902 (39.06%)	N/A ^b	N/A ^b	N/A ^b	N/A ^b	N/A ^b
Hispanic/Latino	60824 (15.12%)	73753 (13.52%)	97405 (14.52%)	40132 (14.29%)	23489 (13.72%)	N/A ^b	N/A ^b	N/A ^b	N/A ^b	N/A ^b
Asian/Pacific Islander	14185 (3.53%)	19375 (3.55%)	24429 (3.64%)	10651 (3.79%)	7025 (4.10%)	N/A ^b	N/A ^b	N/A ^b	N/A ^b	N/A ^b
Other/Unknown	37324 (9.28%)	48208 (8.84%)	55041 (8.20%)	21789 (7.76%)	8459 (4.94%)	N/A ^b	N/A ^b	N/A ^b	N/A ^b	N/A ^b

	N (%) / Mean (SD) Among Children With Continuous Enrollment									
	A) Public Insurance					B) Private Insurance				
Name	<1 Year	>=1 & <2 Years	>=2 & <5 Years	>=5 & <8 Years	>=8 Years	<1 Year	>=1 & <2 Years	>=2 & <5 Years	>=5 & <8 Years	>=8 Years
Maternal Conditions, N (%)										
Pre-existing Hypertension	10397 (2.58%)	13177 (2.42%)	16516 (2.46%)	6909 (2.46%)	3775 (2.20%)	8789 (2.22%)	7308 (2.31%)	9544 (2.32%)	2893 (2.25%)	1121 (1.97%)
Pre-eclampsia	22107 (5.49%)	29482 (5.40%)	35964 (5.36%)	14636 (5.21%)	8671 (5.06%)	25269 (6.39%)	20105 (6.34%)	25498 (6.19%)	7824 (6.07%)	3202 (5.61%)
Pre-existing Diabetes	10441 (2.60%)	13796 (2.53%)	17916 (2.67%)	7240 (2.58%)	4364 (2.55%)	9065 (2.29%)	7477 (2.36%)	9839 (2.39%)	3018 (2.34%)	1223 (2.14%)
Gestational Diabetes	527 (0.13%)	793 (0.15%)	1024 (0.15%)	429 (0.15%)	242 (0.14%)	447 (0.11%)	355 (0.11%)	471 (0.11%)	154 (0.12%)	79 (0.14%)
Obstetric Conditions, N (%)										
Low Birth Weight	23089 (5.74%)	27928 (5.12%)	32950 (4.91%)	14351 (5.11%)	8521 (4.98%)	15736 (3.98%)	11971 (3.78%)	14752 (3.58%)	4489 (3.48%)	1862 (3.26%)
Small for Gestational Age	16363 (4.07%)	20391 (3.74%)	22702 (3.38%)	8355 (2.98%)	4461 (2.60%)	14427 (3.65%)	11303 (3.57%)	13021 (3.16%)	3251 (2.52%)	1098 (1.93%)
Neonatal Hypoxia/Asphyxia	4041 (1.00%)	4864 (0.89%)	5598 (0.83%)	2321 (0.83%)	1776 (1.04%)	2912 (0.74%)	2264 (0.71%)	2745 (0.67%)	776 (0.60%)	404 (0.71%)
Preterm Birth (>28 and <37 GW)	48429 (12.04%)	60569 (11.10%)	72579 (10.82%)	29886 (10.64%)	17928 (10.47%)	36189 (9.16%)	28388 (8.96%)	35622 (8.65%)	11098 (8.62%)	4808 (8.43%)
Very Preterm Birth (<=28 GW)	5644 (1.40%)	4478 (0.82%)	4769 (0.71%)	2066 (0.74%)	1285 (0.75%)	2652 (0.67%)	1937 (0.61%)	2281 (0.55%)	699 (0.54%)	394 (0.69%)

Abbreviations: GW, gestational weeks; N, number; N/A, not available; SD, standard deviation

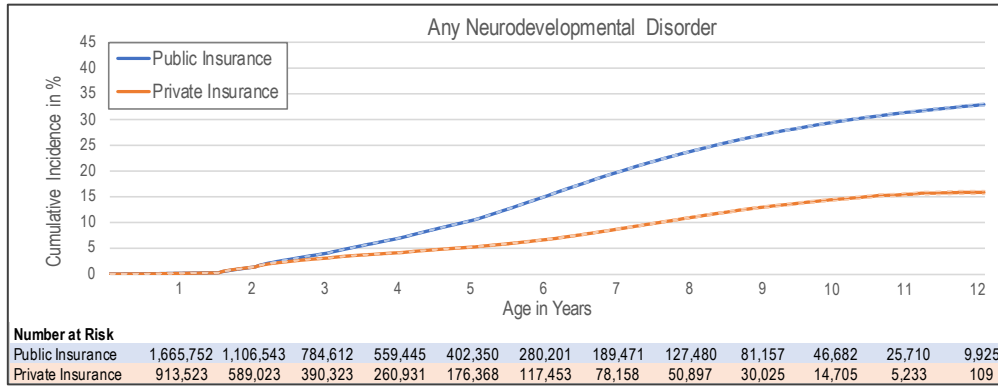
^aThe following assessment periods were used for the respective covariates:

- First date of last menstrual period (LMP)-90 days to LMP+90 days: pre-existing hypertension
- LMP-90 days to LMP+140 days: pre-existing diabetes
- LMP+140 days to delivery: gestational diabetes
- LMP+140 days to delivery+30 days: pre-eclampsia
- delivery to delivery+30 days: preterm/very preterm birth, low birth weight, small for gestational age
- delivery hospitalization: neonatal hypoxia/asphyxia

^bInformation on race/ethnicity not available in the privately insured cohort (MarketScan).

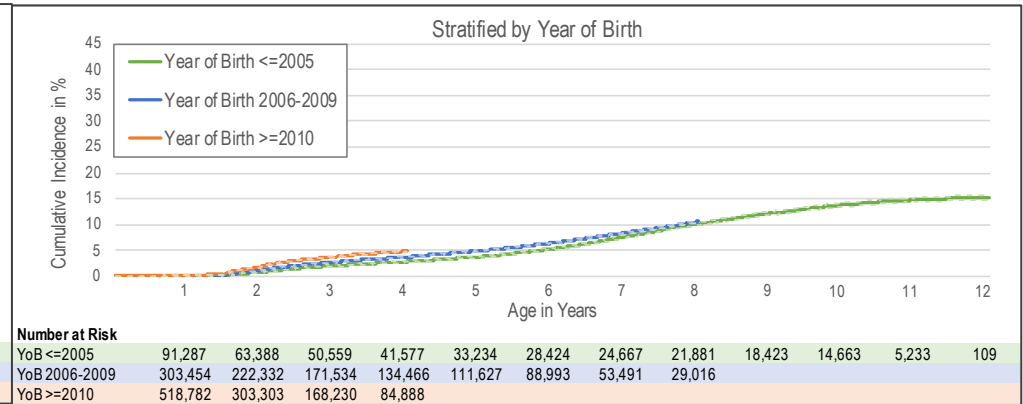
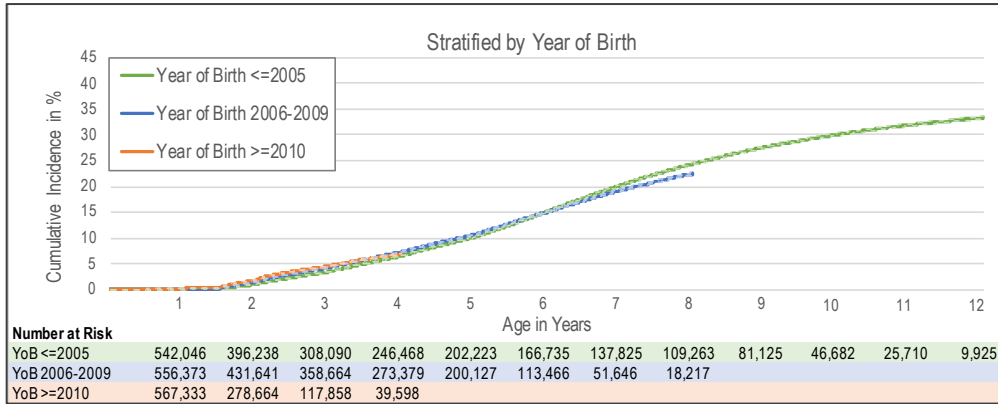
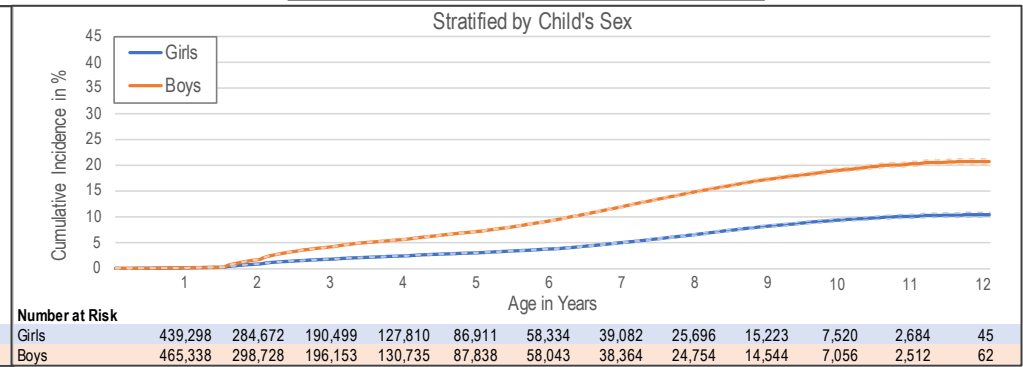
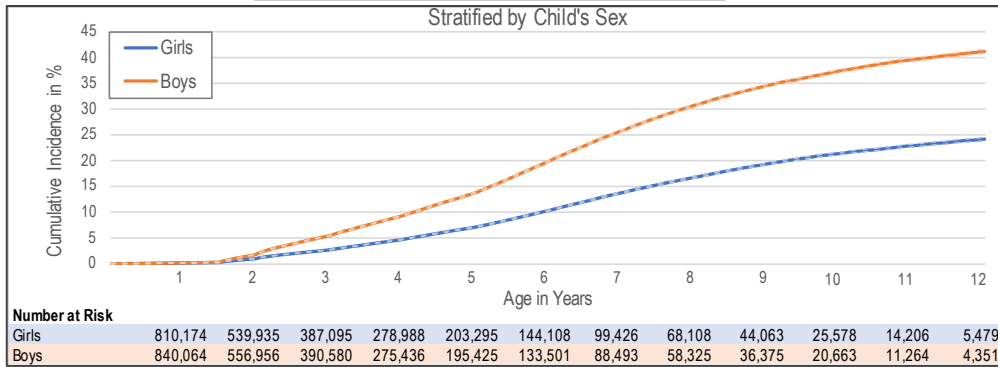
eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age, and Race/Ethnicity

A. Any Neurodevelopmental Disorder

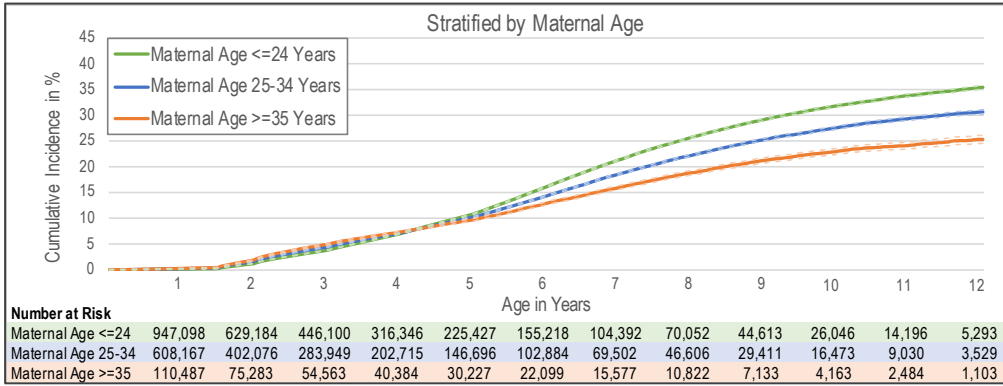


Among Publicly Insured Children

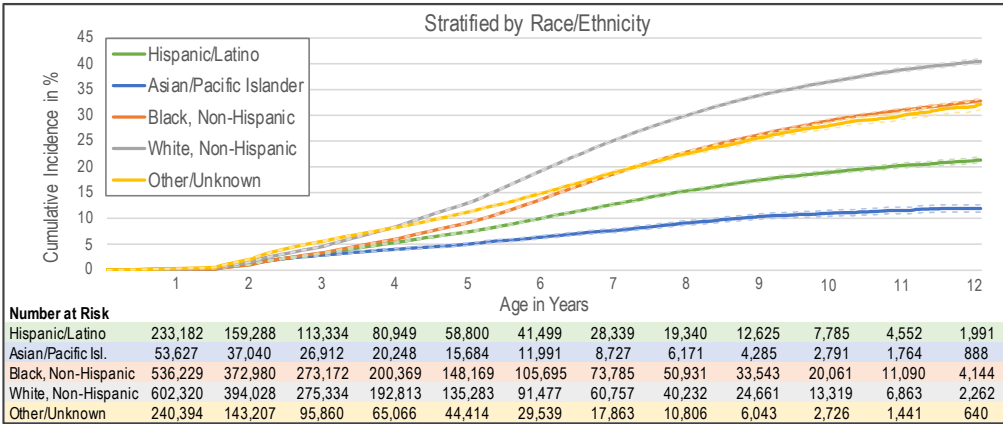
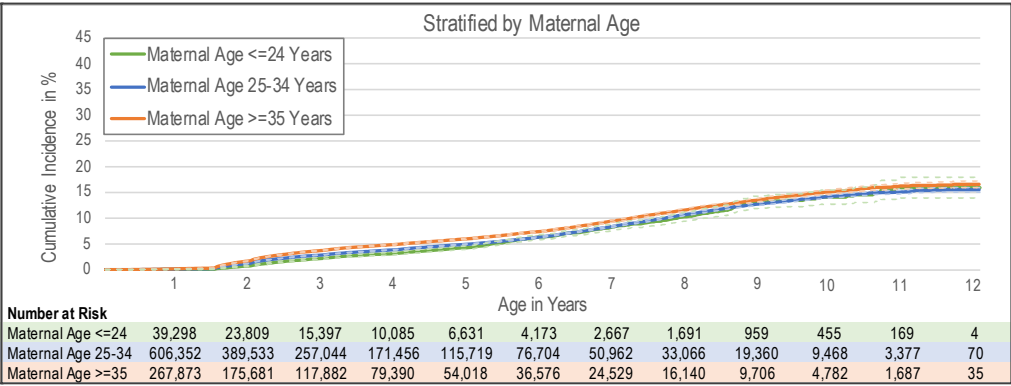
Among Privately Insured Children



Among Publicly Insured Children

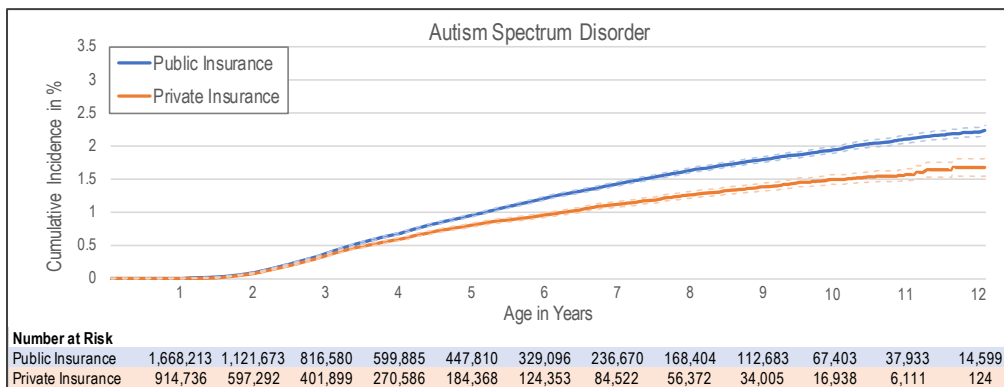


Among Privately Insured Children



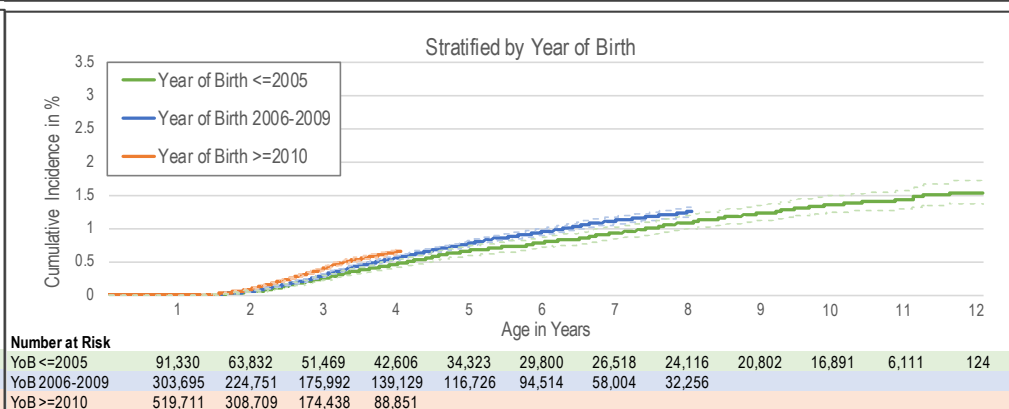
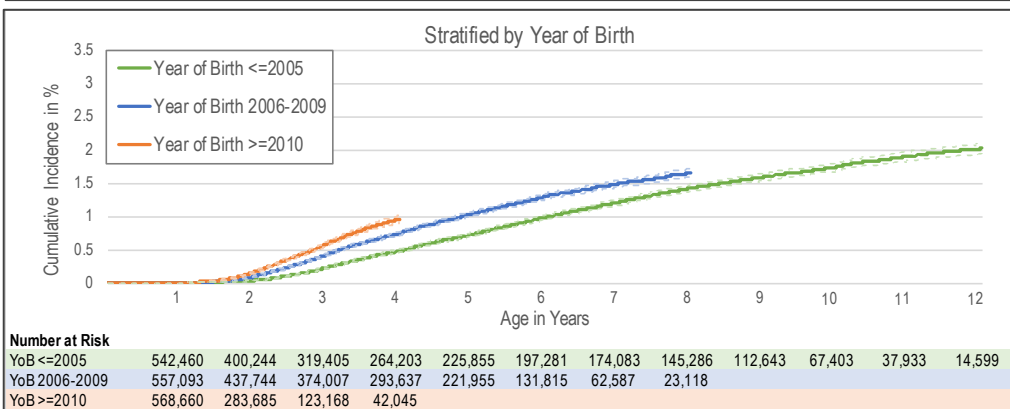
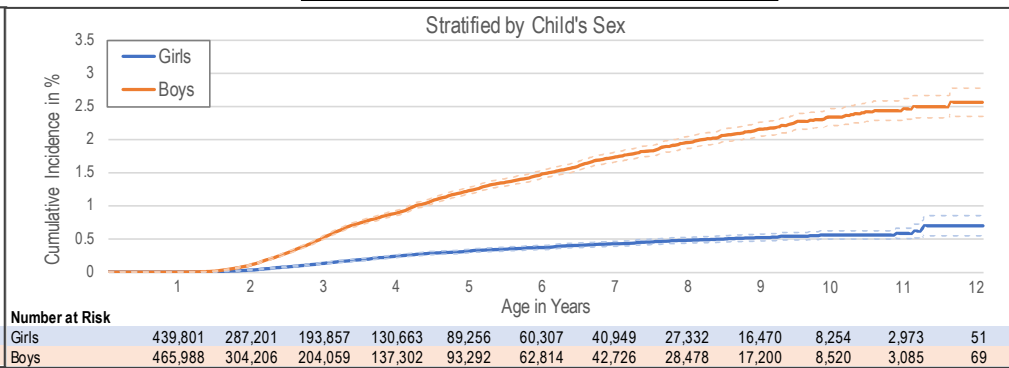
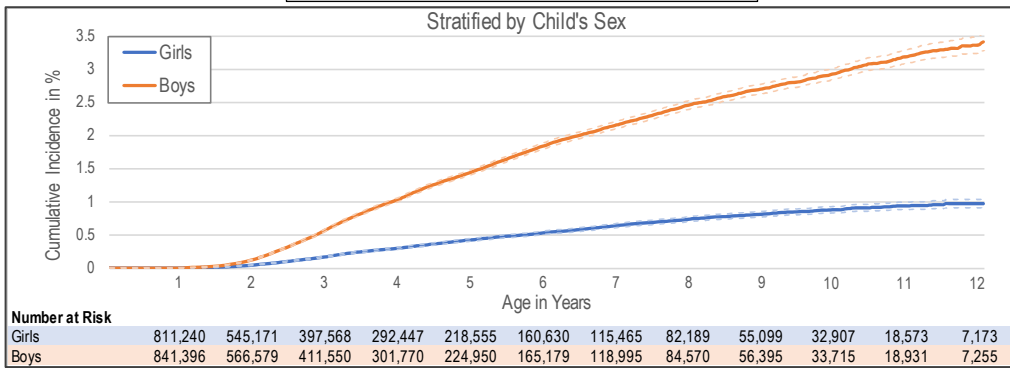
eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age and Race/Ethnicity (Continued)

B. Autism Spectrum Disorder



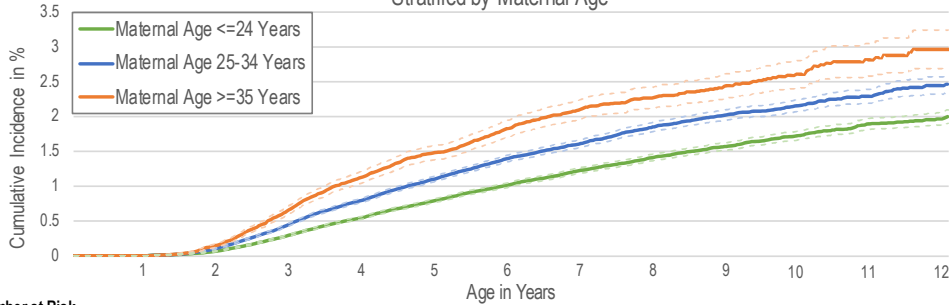
Among Publicly Insured Children

Among Privately Insured Children



Among Publicly Insured Children

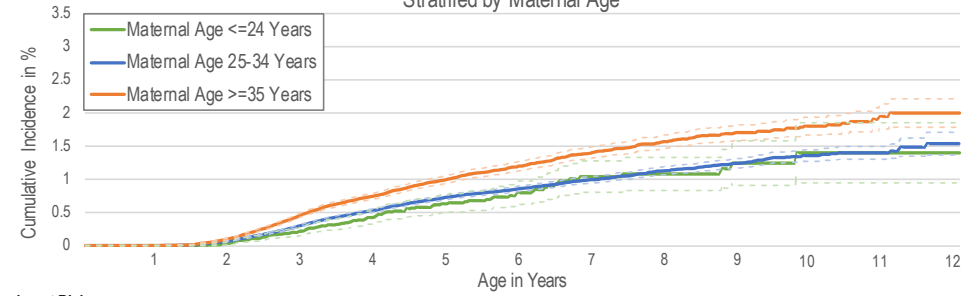
Stratified by Maternal Age



Number at Risk	1	2	3	4	5	6	7	8	9	10	11	12
Maternal Age <=24	948,135	636,575	463,387	339,804	252,817	185,370	133,767	95,660	64,440	39,175	21,937	8,184
Maternal Age 25-34	609,320	408,447	296,144	217,010	162,048	118,900	84,772	59,729	39,369	22,935	12,834	4,999
Maternal Age >=35	110,758	76,651	57,049	43,071	32,945	24,826	18,131	13,015	8,874	5,293	3,162	1,416

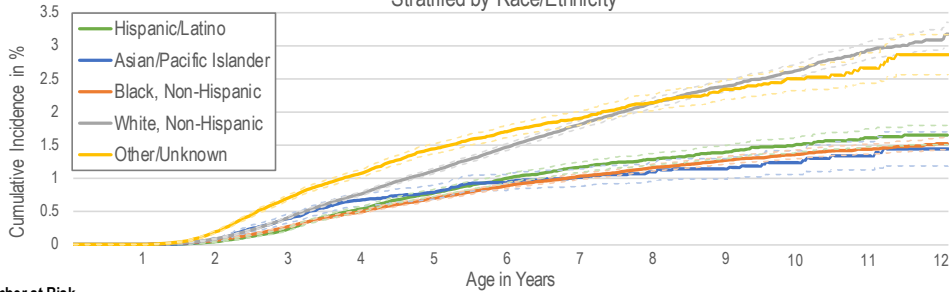
Among Privately Insured Children

Stratified by Maternal Age



Number at Risk	1	2	3	4	5	6	7	8	9	10	11	12
Maternal Age <=24	39,313	23,987	15,740	10,381	6,880	4,426	2,889	1,867	1,084	524	194	4
Maternal Age 25-34	607,065	394,479	264,105	177,436	120,744	81,031	55,049	36,616	21,897	10,899	3,945	81
Maternal Age >=35	268,358	178,826	122,054	82,769	56,744	38,896	26,584	17,889	11,024	5,515	1,972	39

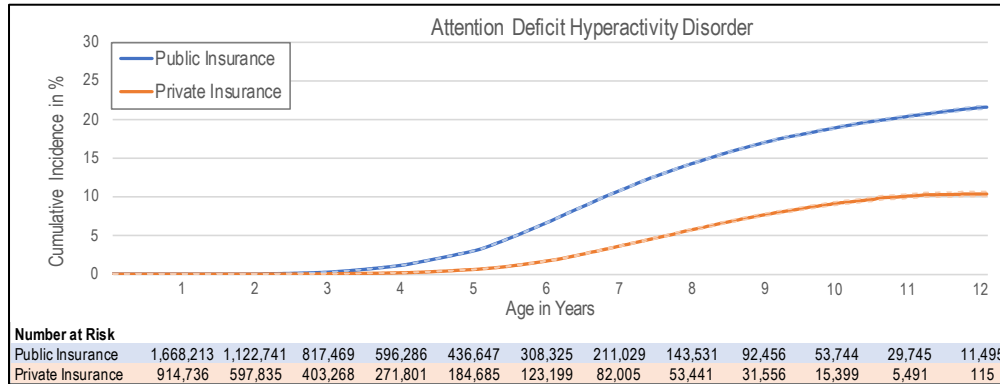
Stratified by Race/Ethnicity



Number at Risk	1	2	3	4	5	6	7	8	9	10	11	12
Hispanic/Latino	233,433	161,017	117,022	85,214	63,167	45,805	32,375	22,788	15,256	9,574	5,674	2,490
Asian/Pacific Isl.	53,710	37,497	27,592	20,900	16,345	12,664	9,343	6,704	4,722	3,090	1,956	983
Black, Non-Hispanic	536,681	376,793	282,487	213,045	163,115	122,687	91,172	66,608	46,056	28,653	16,214	6,134
White, Non-Hispanic	603,323	400,148	288,286	210,238	155,451	113,489	81,738	58,229	38,275	22,021	11,861	3,981
Other/Unknown	241,066	146,218	101,193	70,488	49,732	34,451	22,042	14,075	8,374	4,065	2,228	1,011

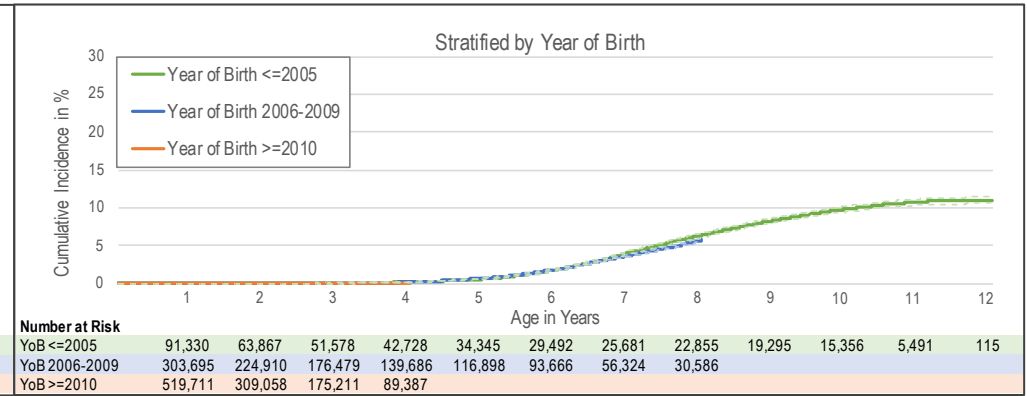
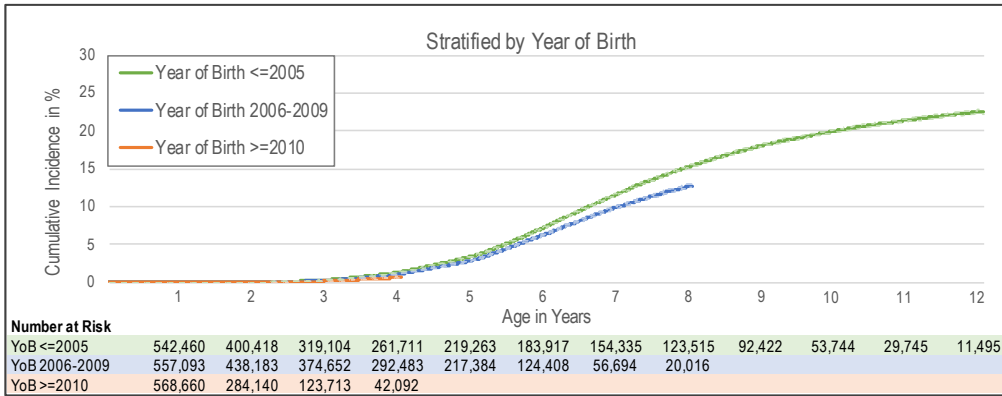
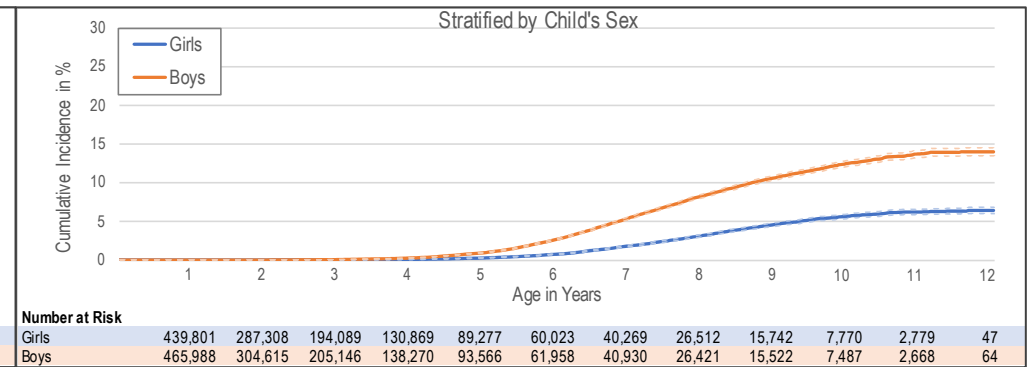
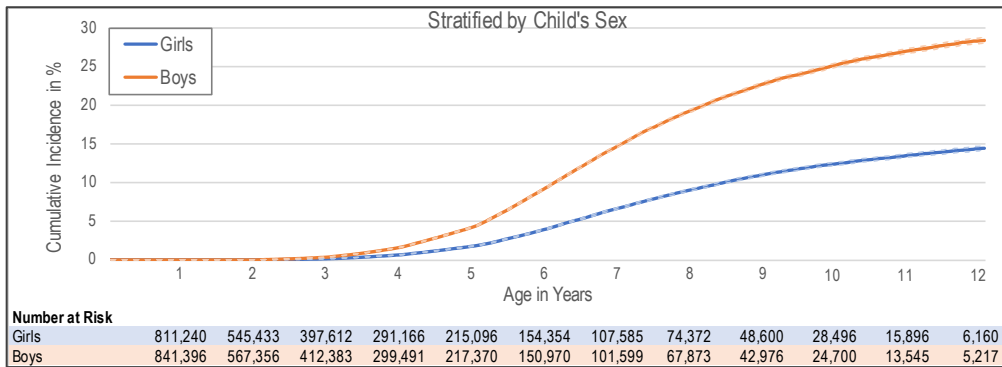
eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age and Race/Ethnicity (Continued)

C. Attention Deficit Hyperactivity Disorder

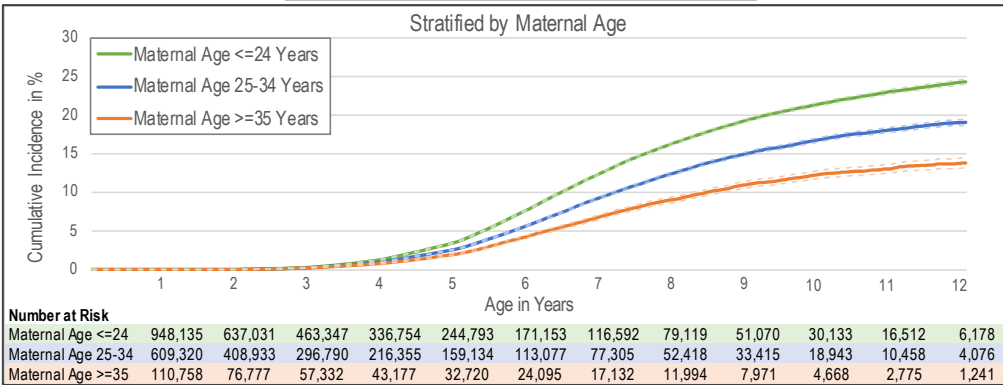


Among Publicly Insured Children

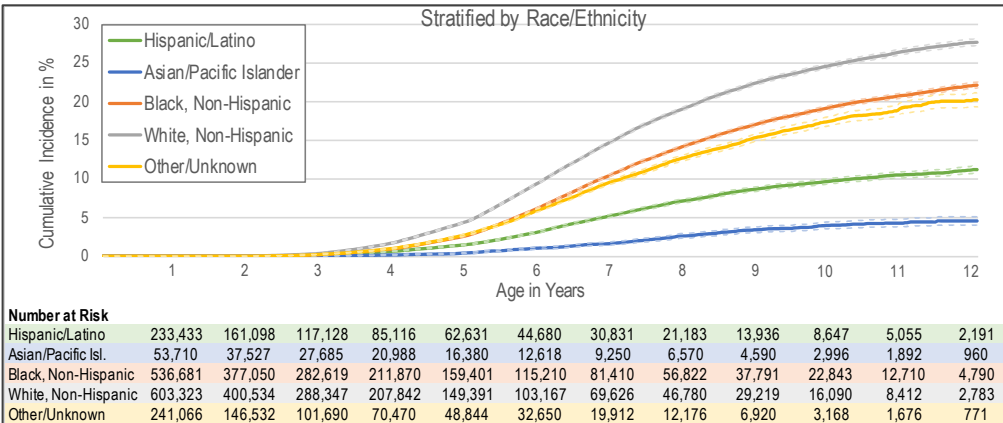
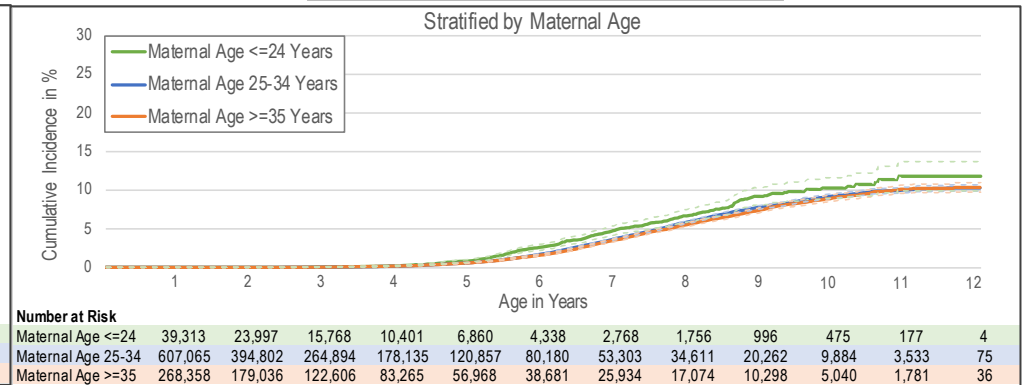
Among Privately Insured Children



Among Publicly Insured Children

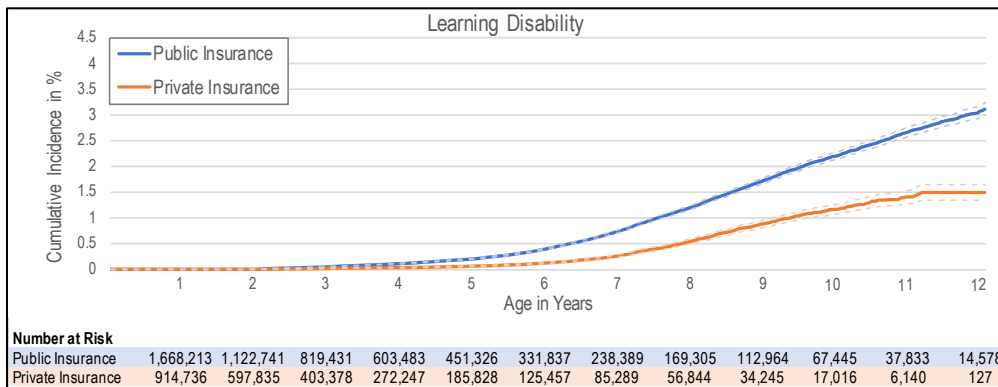


Among Privately Insured Children



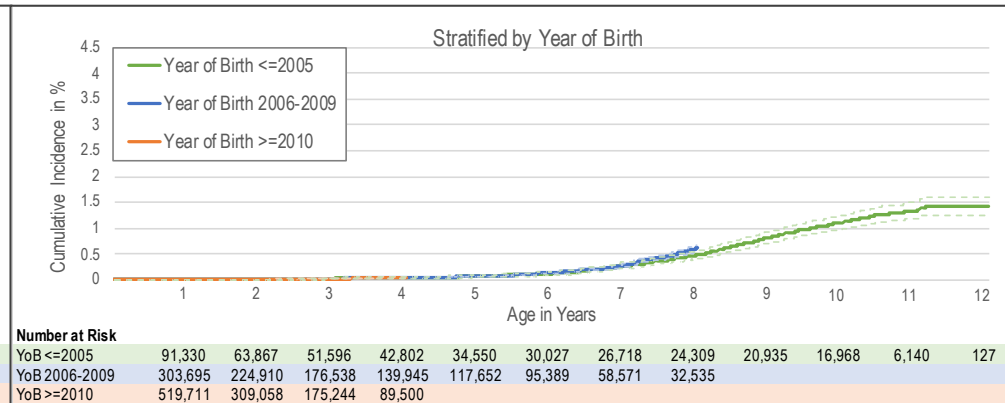
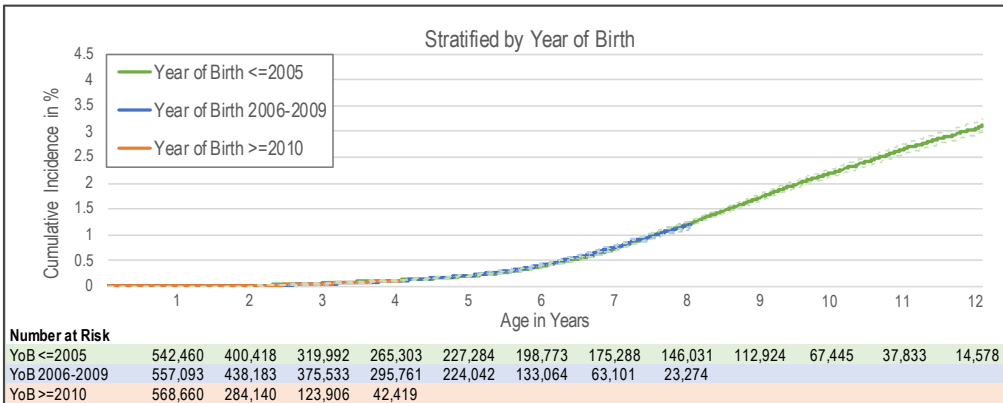
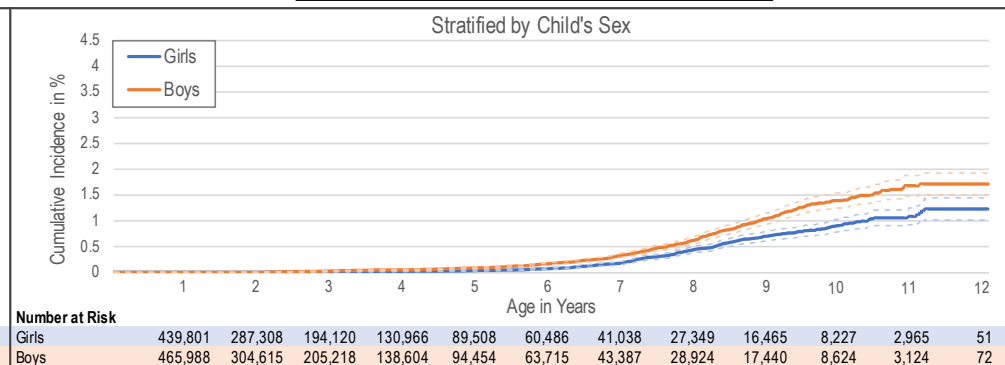
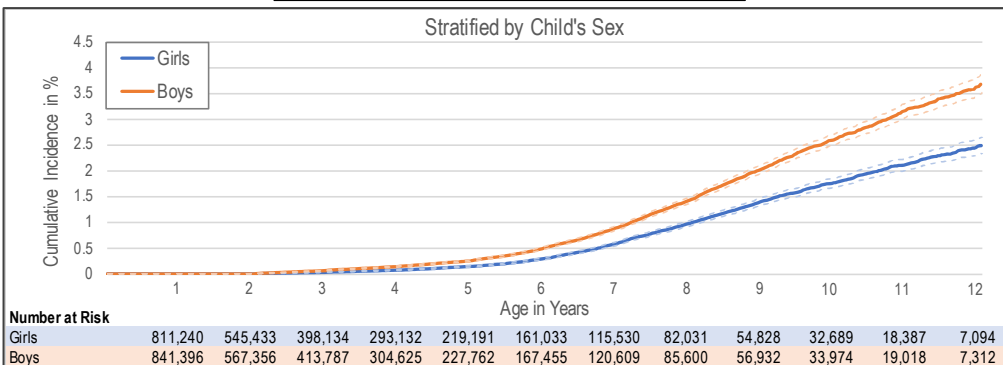
eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age and Race/Ethnicity (Continued)

D. Learning Disability

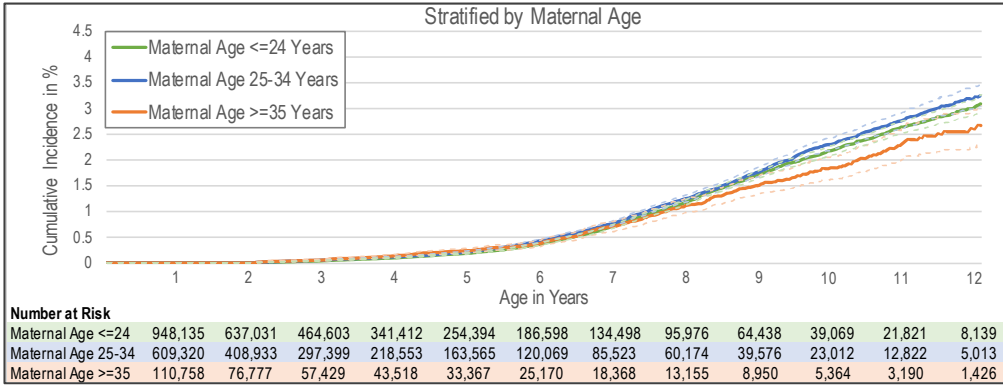


Among Publicly Insured Children

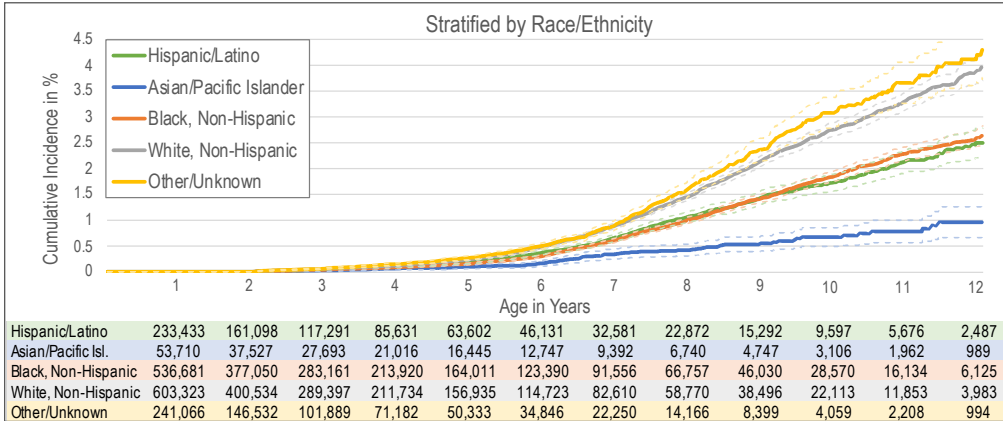
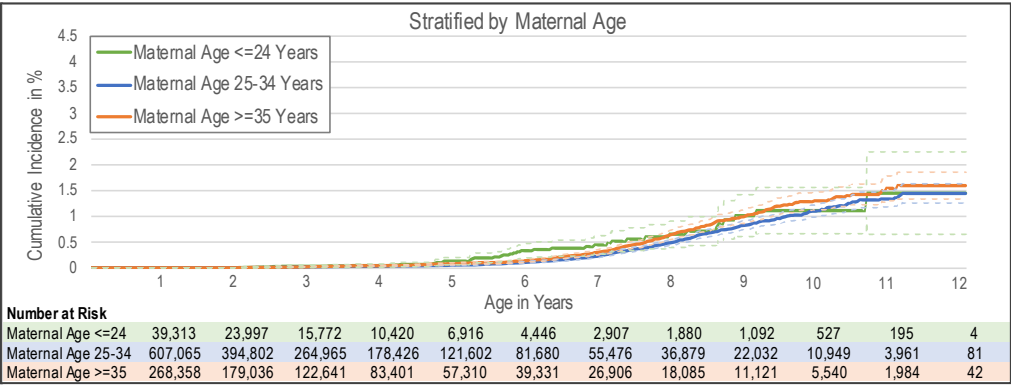
Among Privately Insured Children



Among Publicly Insured Children

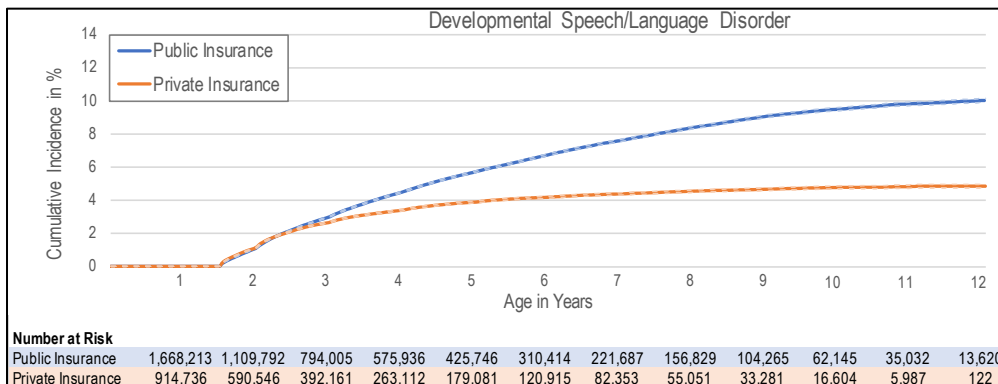


Among Privately Insured Children

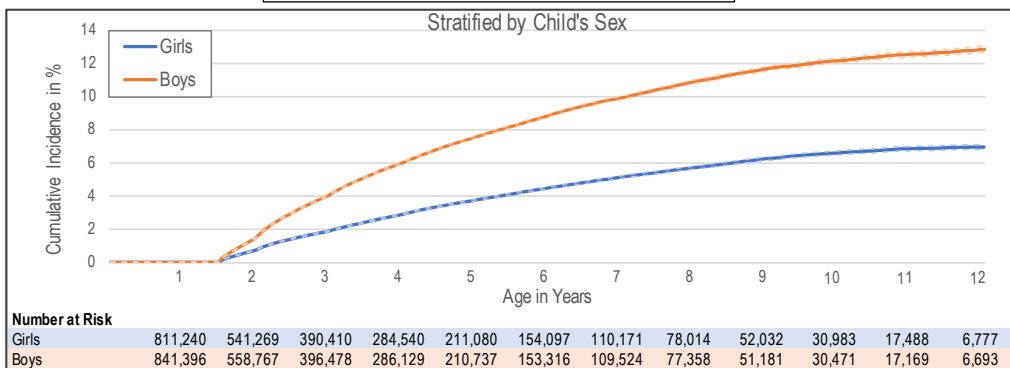


eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age and Race/Ethnicity (Continued)

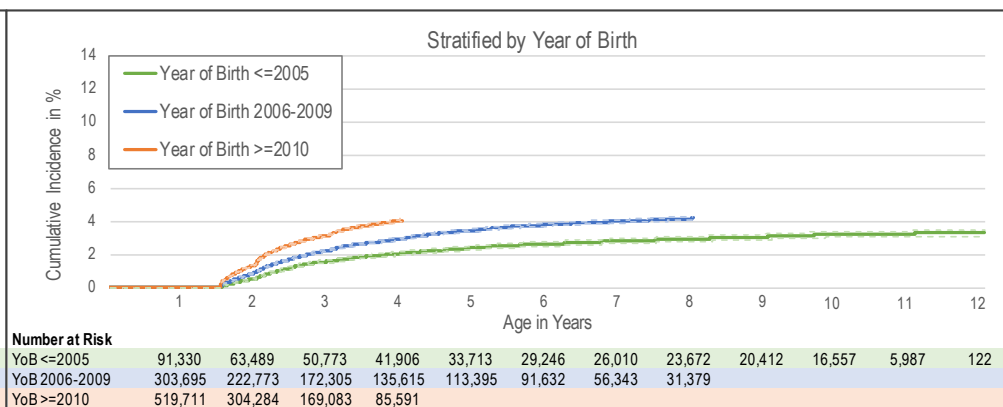
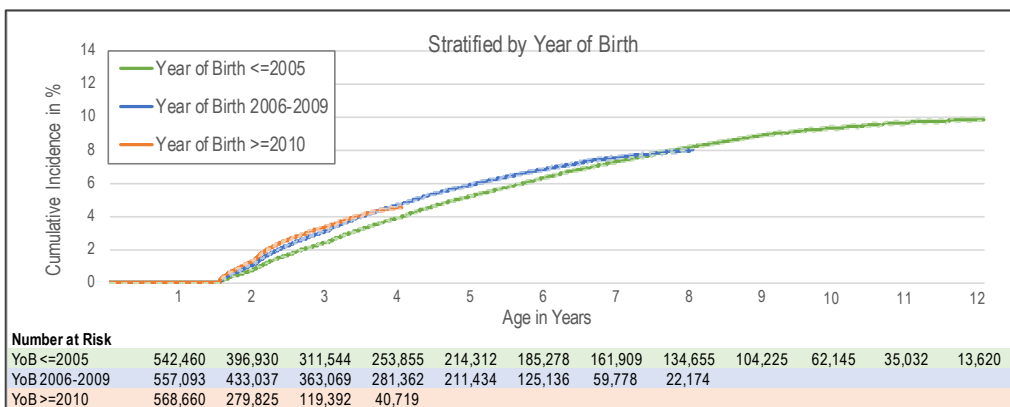
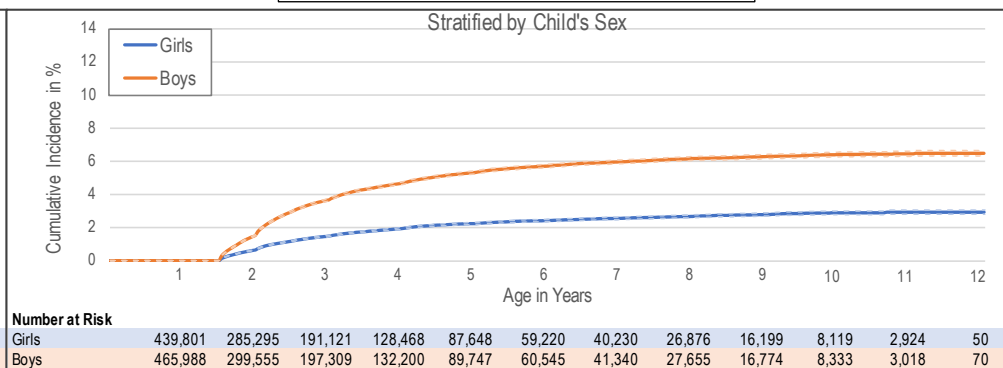
E. Developmental Speech/Language Disorder



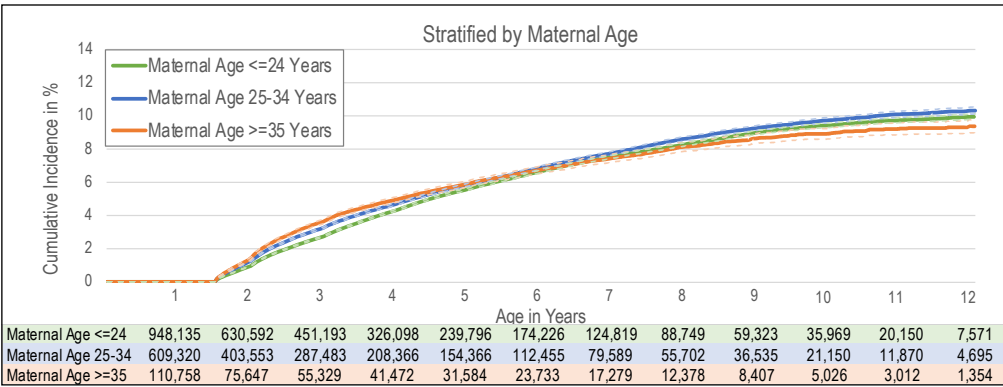
Among Publicly Insured Children



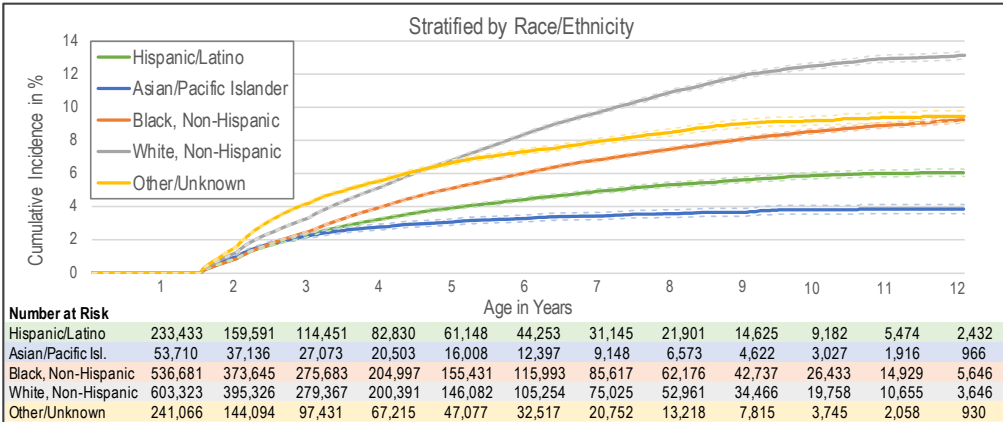
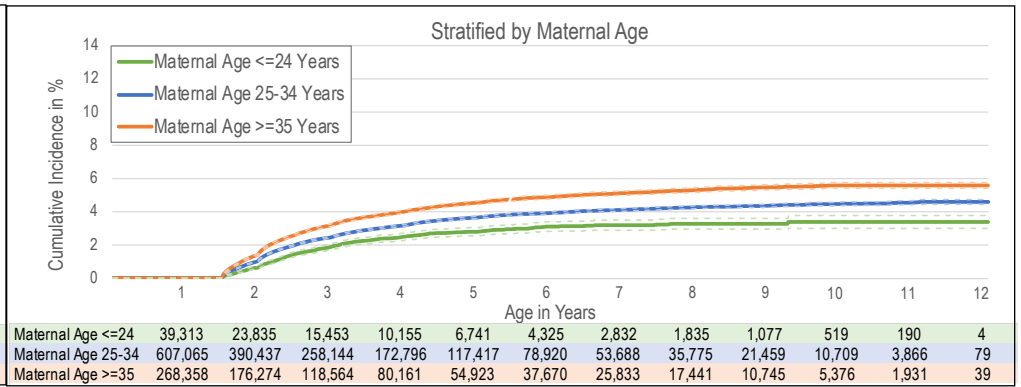
Among Privately Insured Children



Among Publicly Insured Children

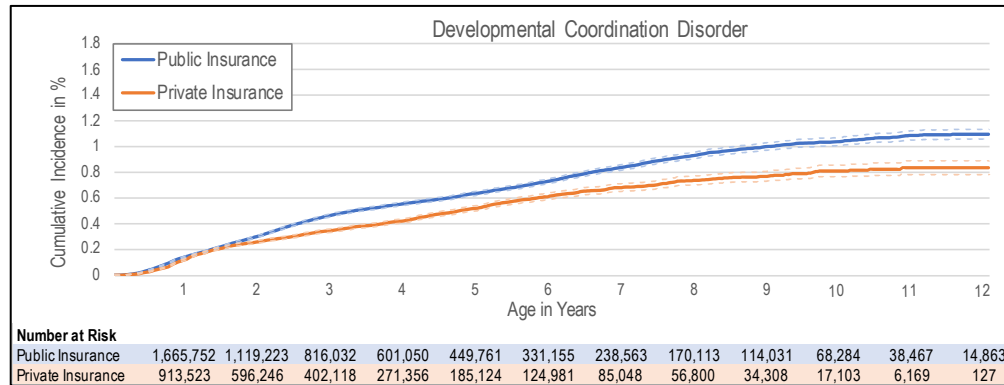


Among Privately Insured Children



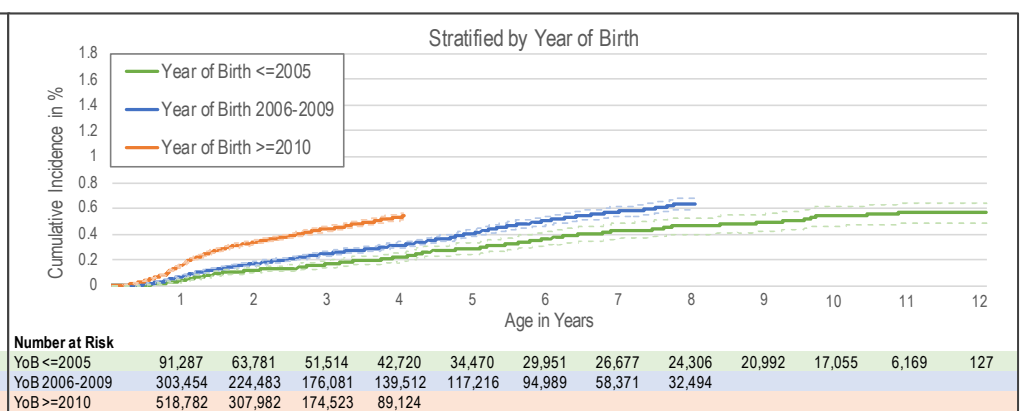
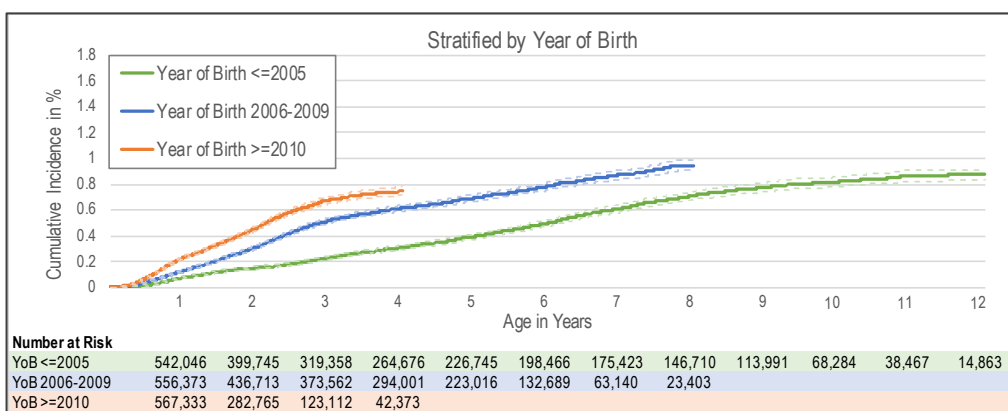
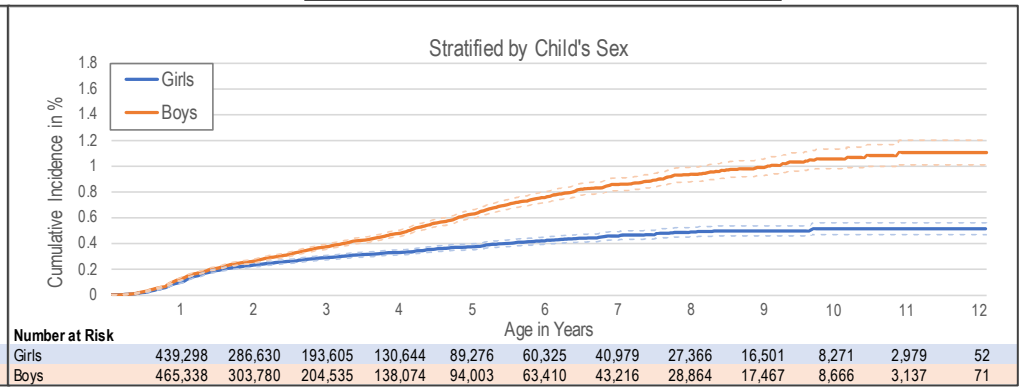
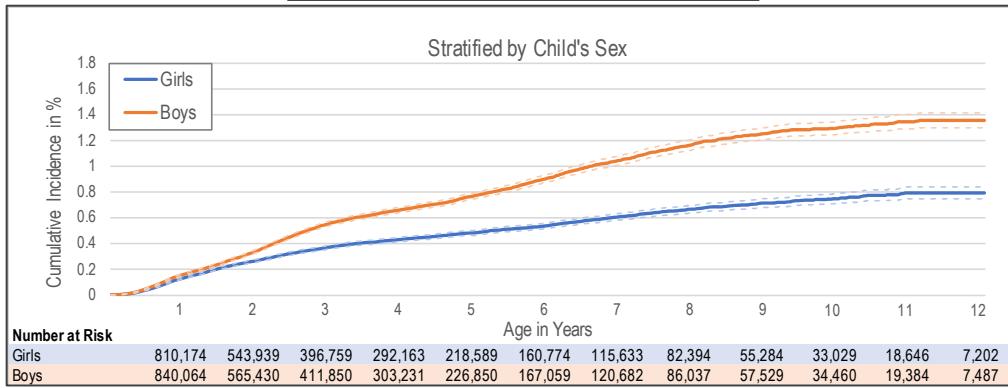
eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age and Race/Ethnicity (Continued)

F. Developmental Coordination Disorder

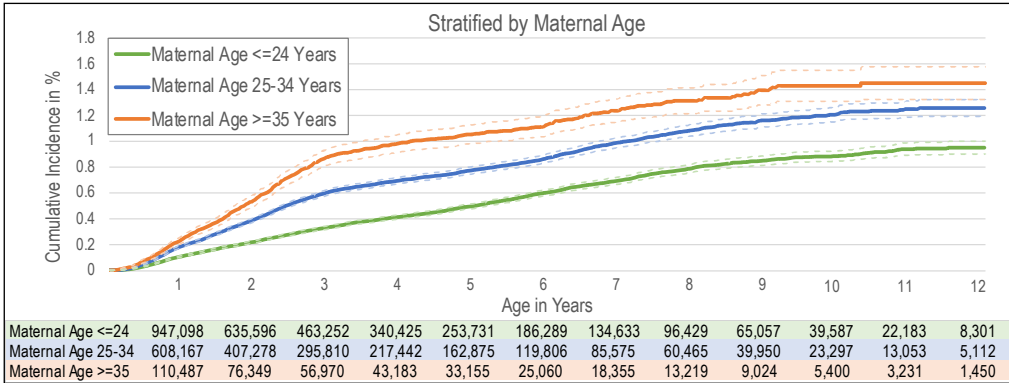


Among Publicly Insured Children

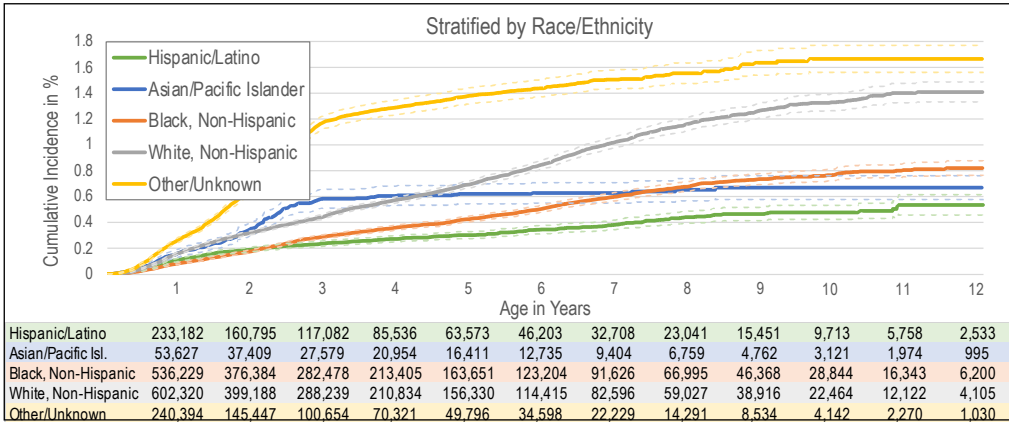
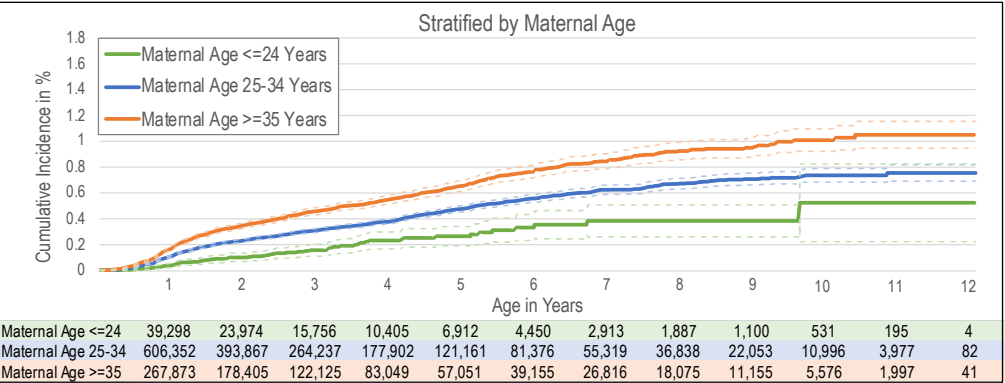
Among Privately Insured Children



Among Publicly Insured Children

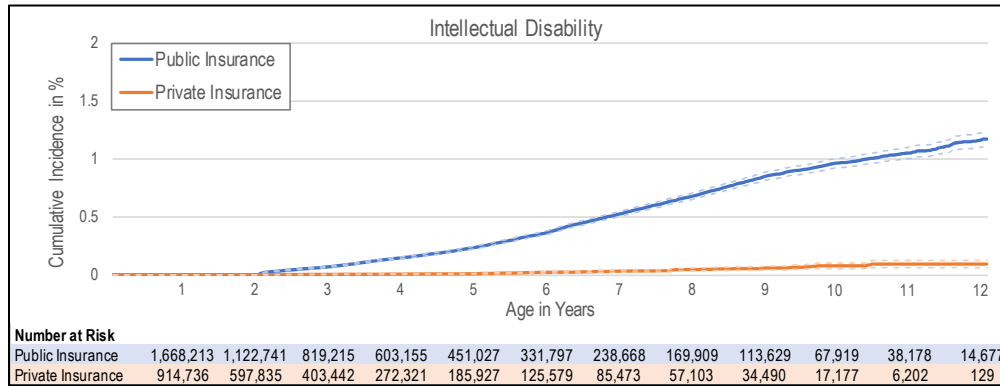


Among Privately Insured Children

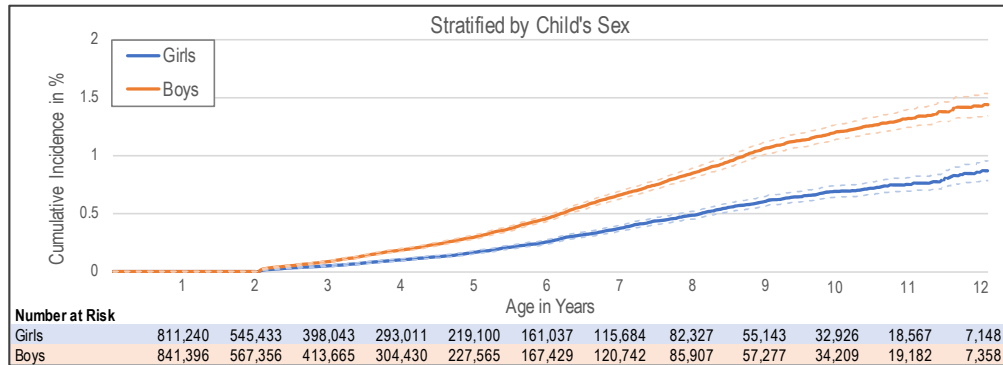


eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age and Race/Ethnicity (Continued)

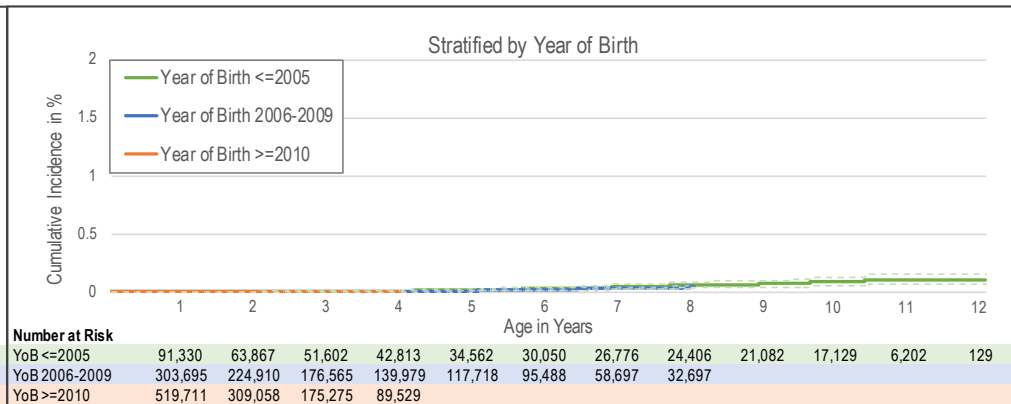
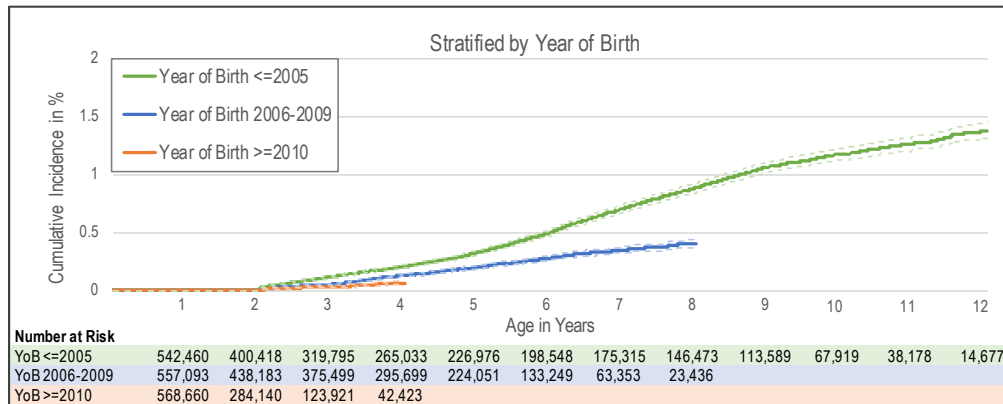
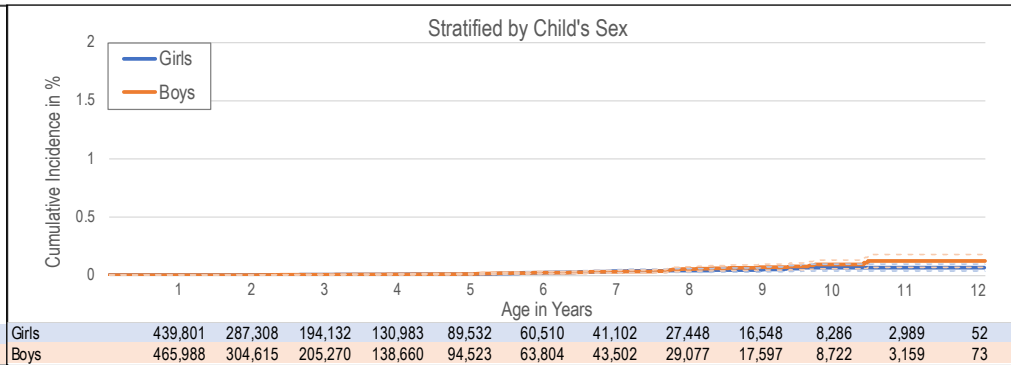
G. Intellectual Disability



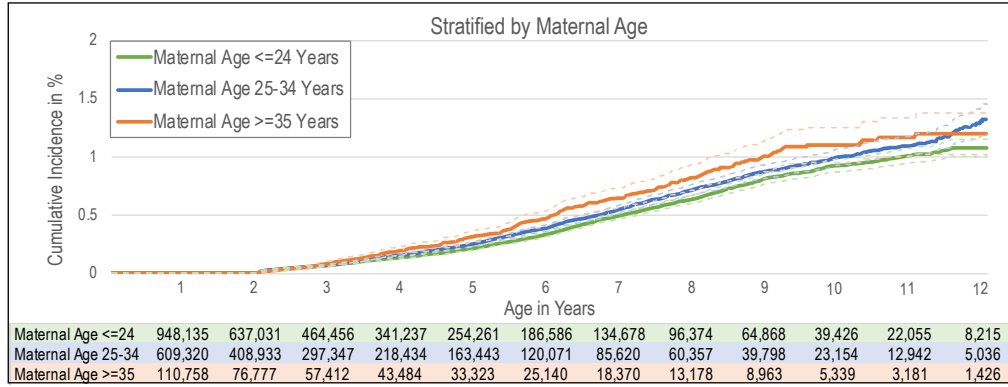
Among Publicly Insured Children



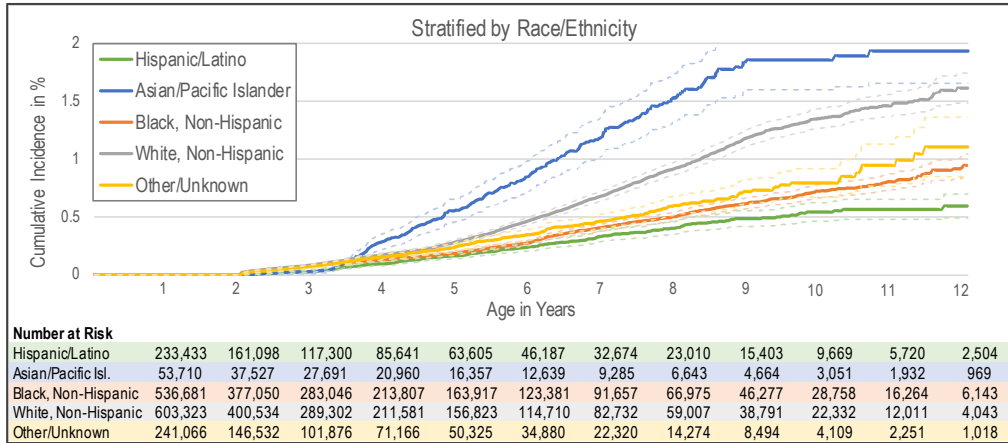
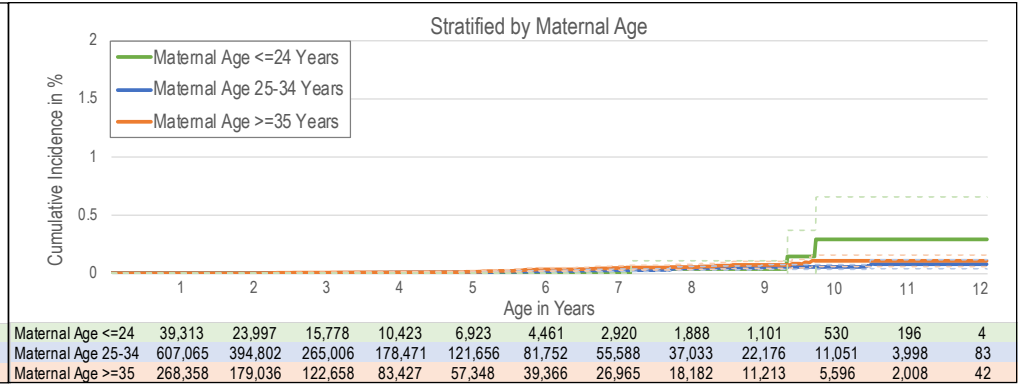
Among Privately Insured Children



Among Publicly Insured Children

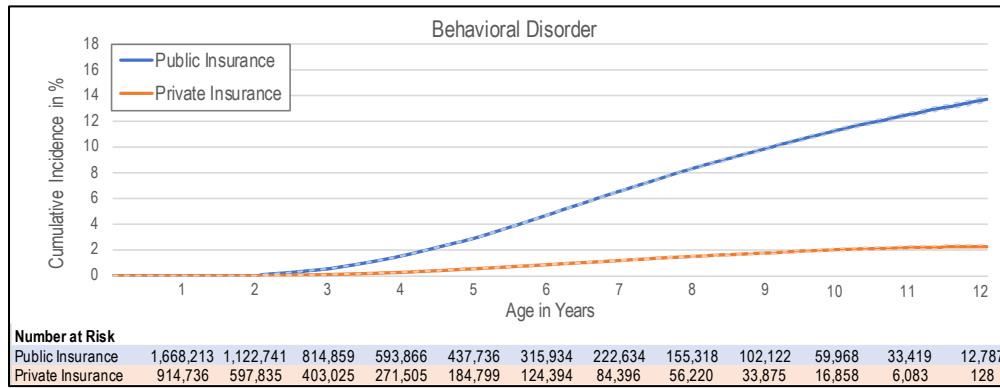


Among Privately Insured Children



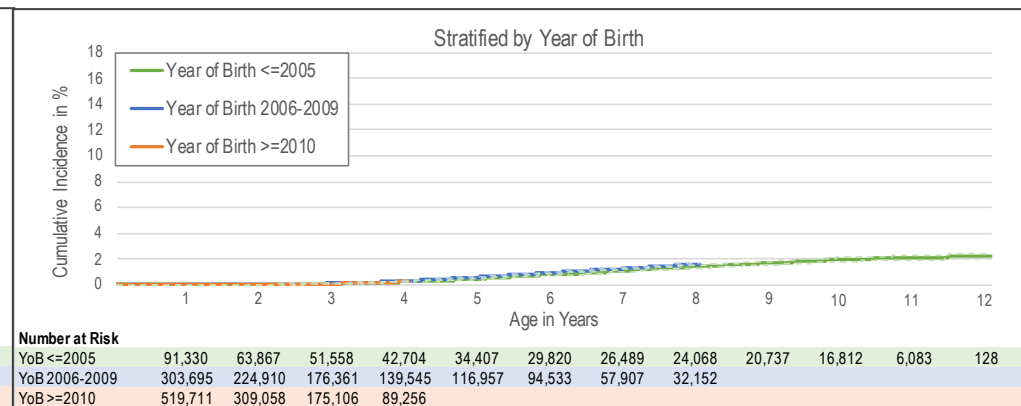
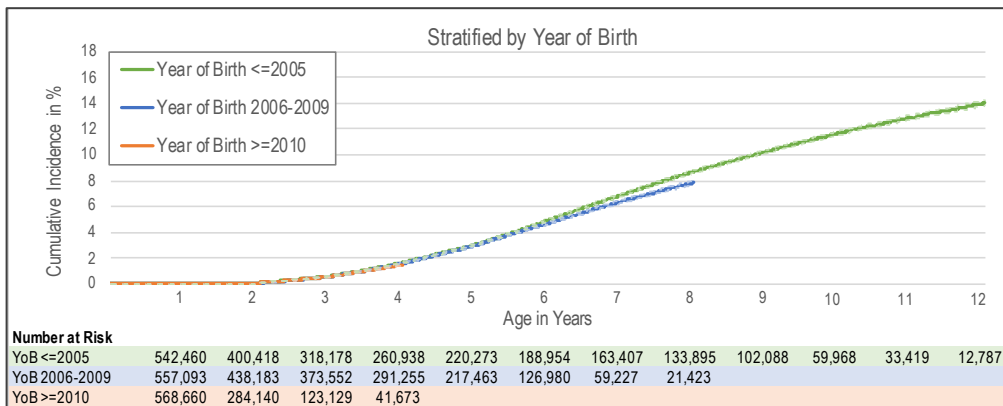
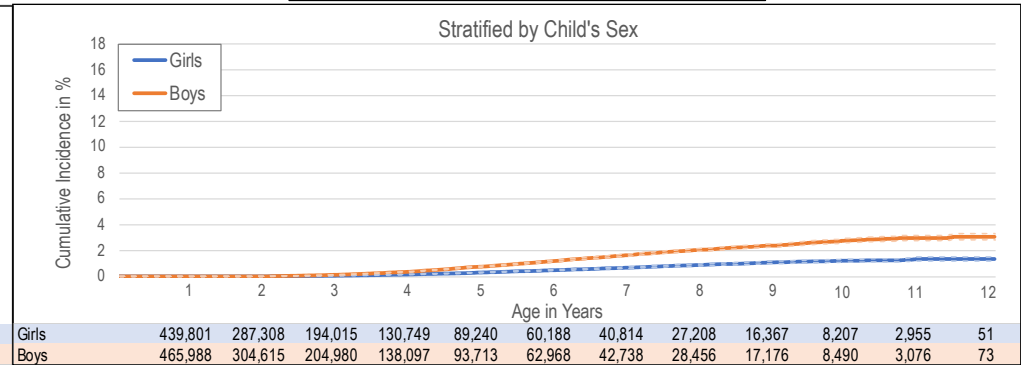
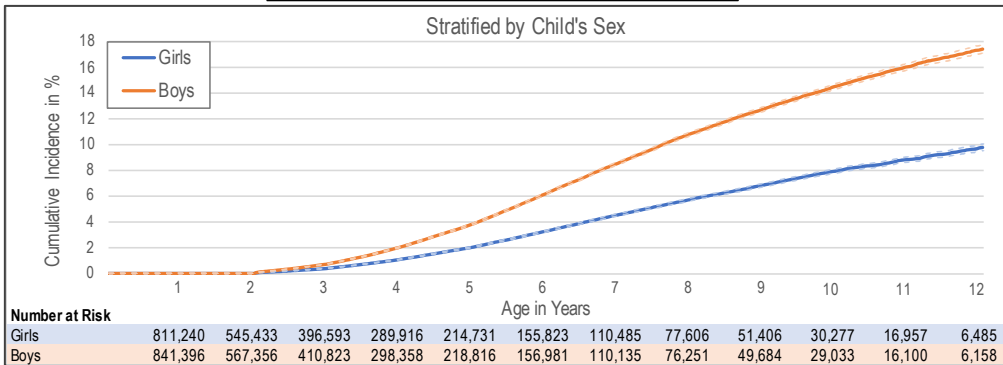
eFigure 1. Cumulative Incidence Curves for Each of the Specific Neurodevelopmental Disorders of Interest, Stratified by Insurance Type, Child's Sex, Year of Birth, Maternal Age and Race/Ethnicity (Continued)

H. Behavioral Disorder

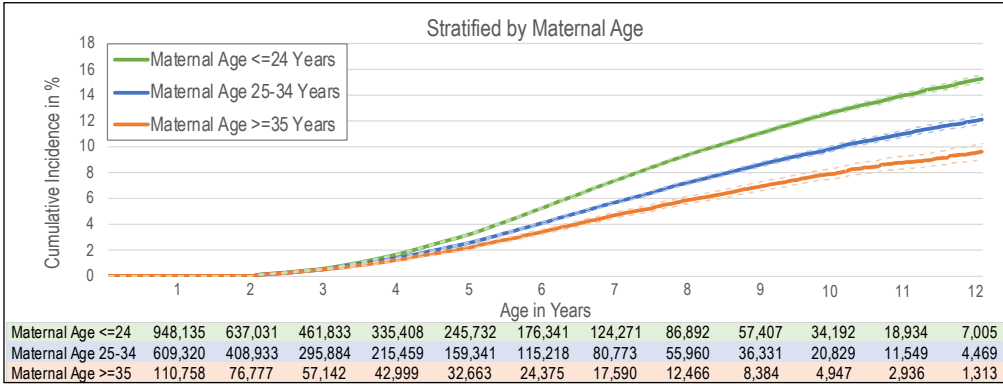


Among Publicly Insured Children

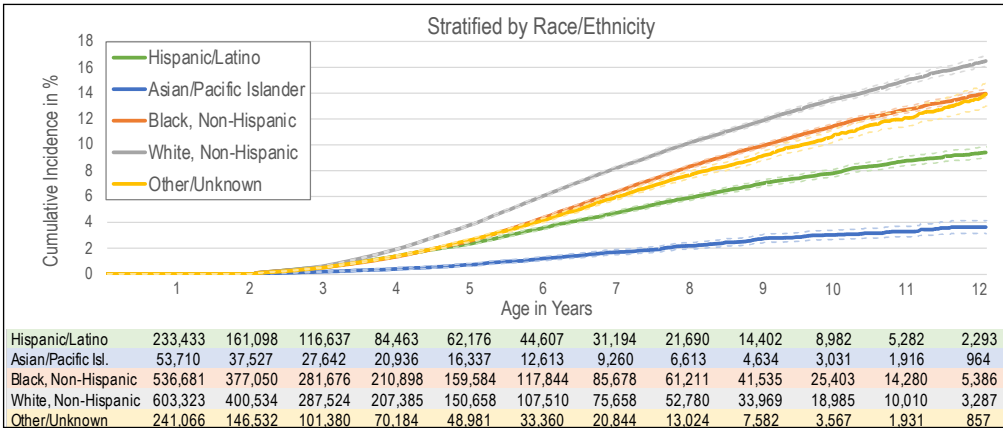
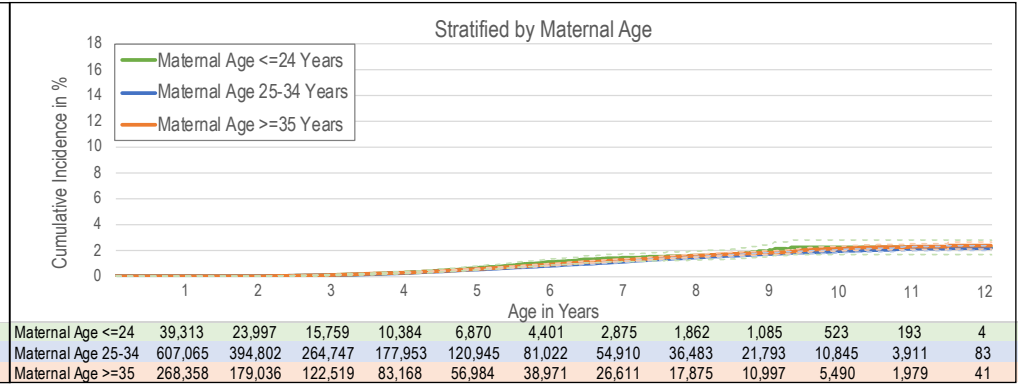
Among Privately Insured Children



Among Publicly Insured Children

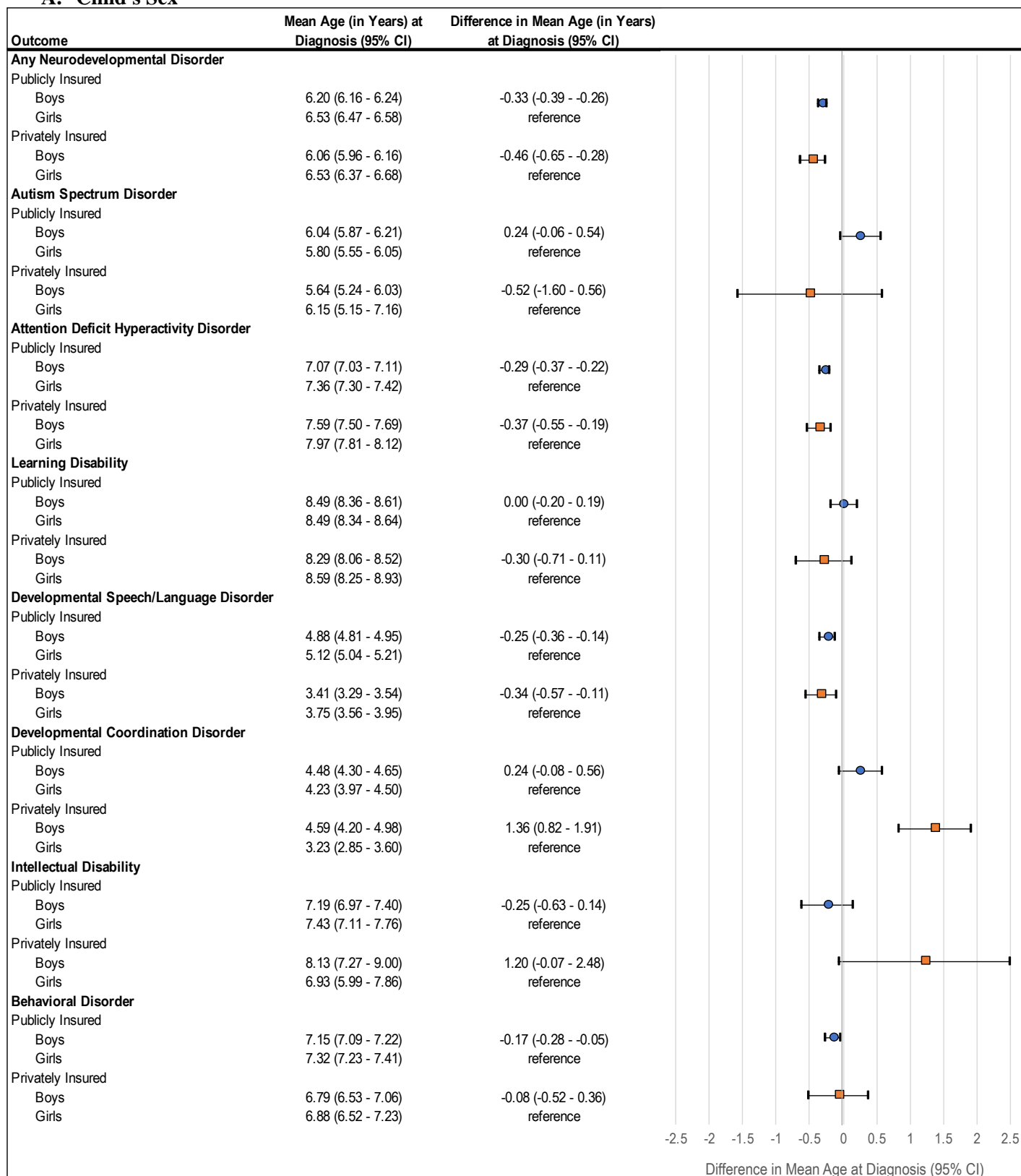


Among Privately Insured Children



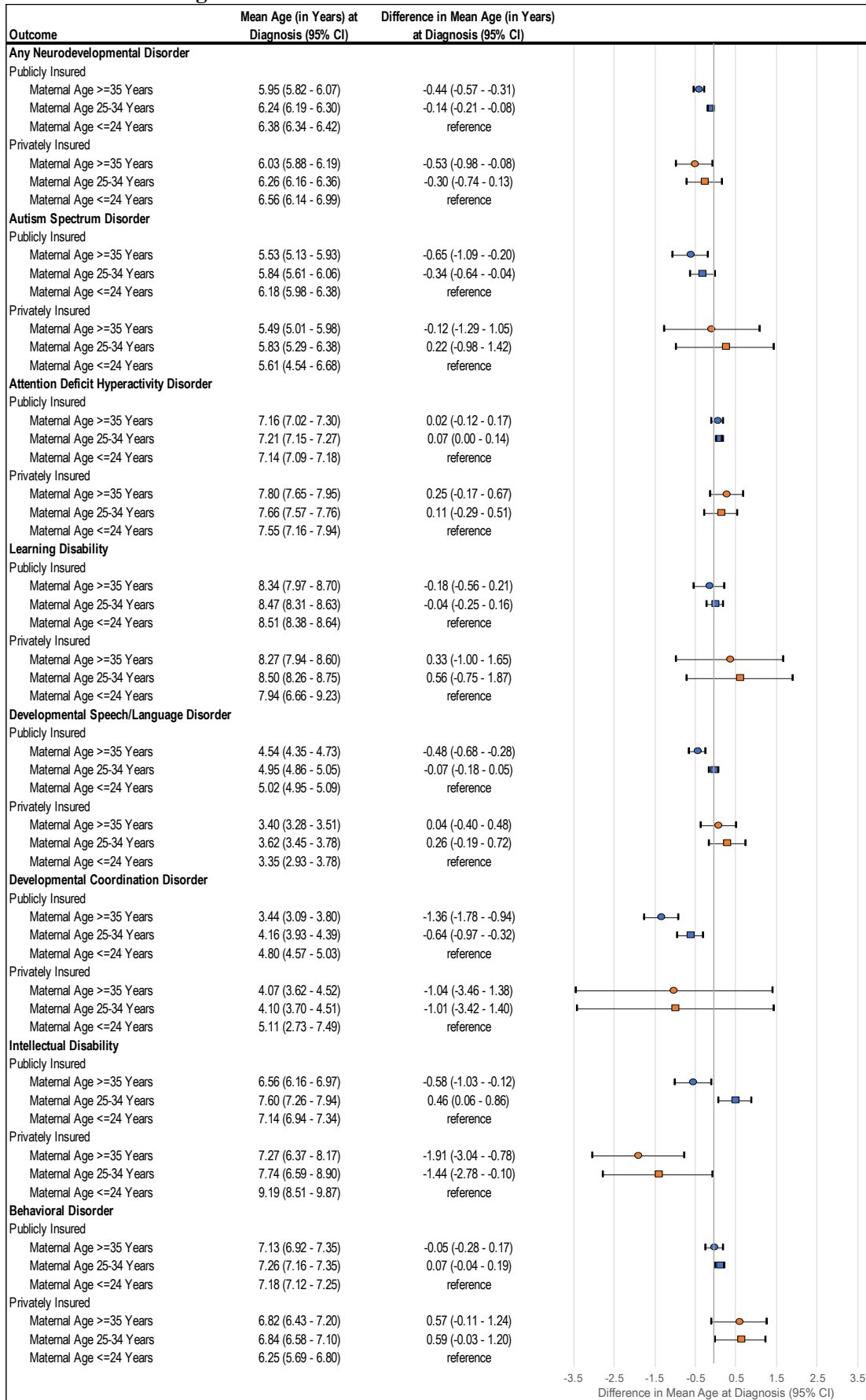
eFigure 2. Children’s Mean Age in Years (95% Confidence Interval) at Diagnosis of Each of the Specific Neurodevelopmental Disorders of Interest, Separately for Publicly and Privately Insured Children, Stratified by A) Child’s Sex, B) Maternal Age, and C) Race/Ethnicity (Public Insurance Only)

A. Child's Sex



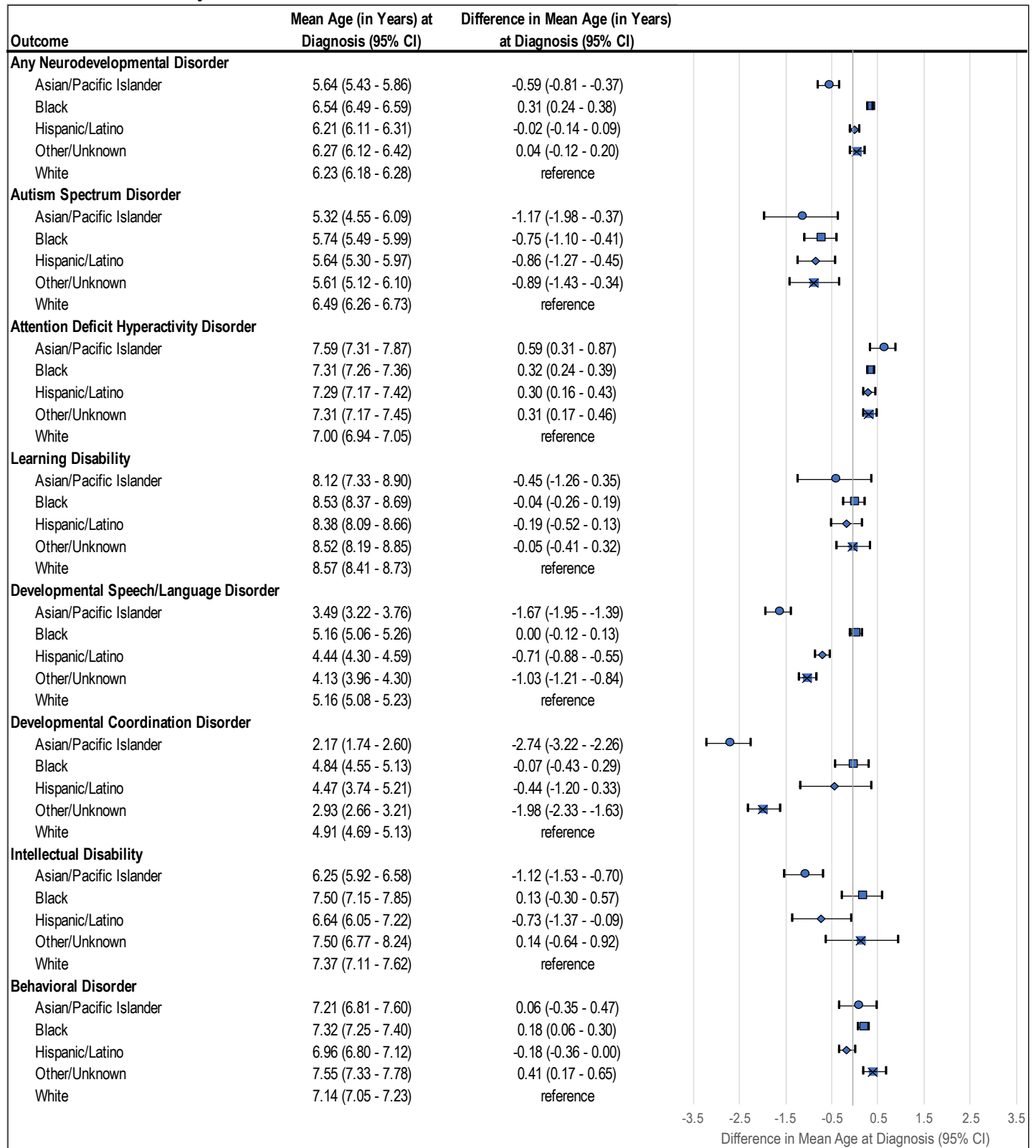
eFigure 2. Children's Mean Age in Years (95% Confidence Interval) at Diagnosis of Each of the Specific Neurodevelopmental Disorders of Interest, Separately for Publicly and Privately Insured Children, Stratified by A) Child's Sex, B) Maternal Age, and C) Race/Ethnicity (Public Insurance Only) (Continued)

B. Maternal Age



eFigure 2. Children's Mean Age in Years (95% Confidence Interval) at Diagnosis of Each of the Specific Neurodevelopmental Disorders of Interest, Separately for Publicly and Privately Insured Children, Stratified by A) Child's Sex, B) Maternal Age, and C) Race/Ethnicity (Public Insurance Only) (Continued)

C. Race/Ethnicity

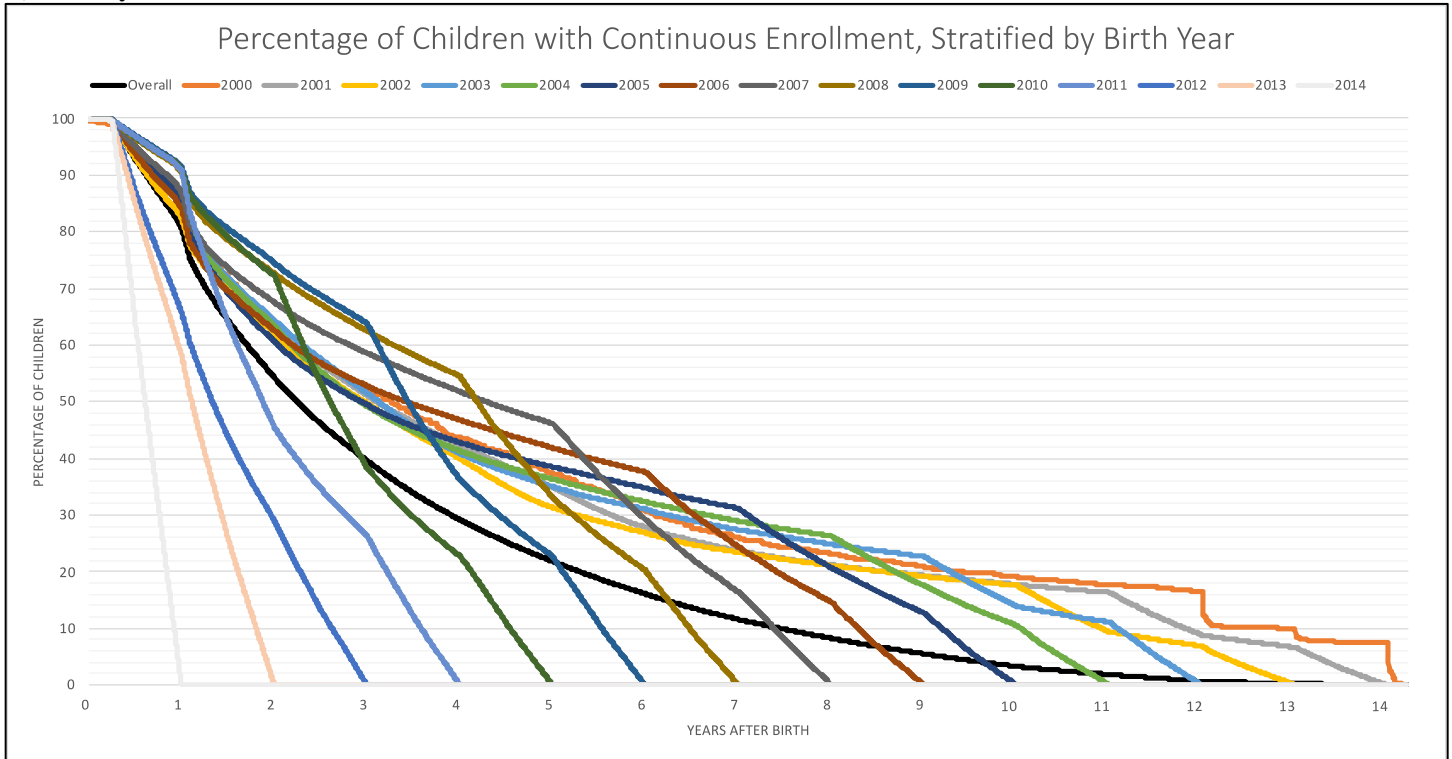


Abbreviation: CI, confidence interval.

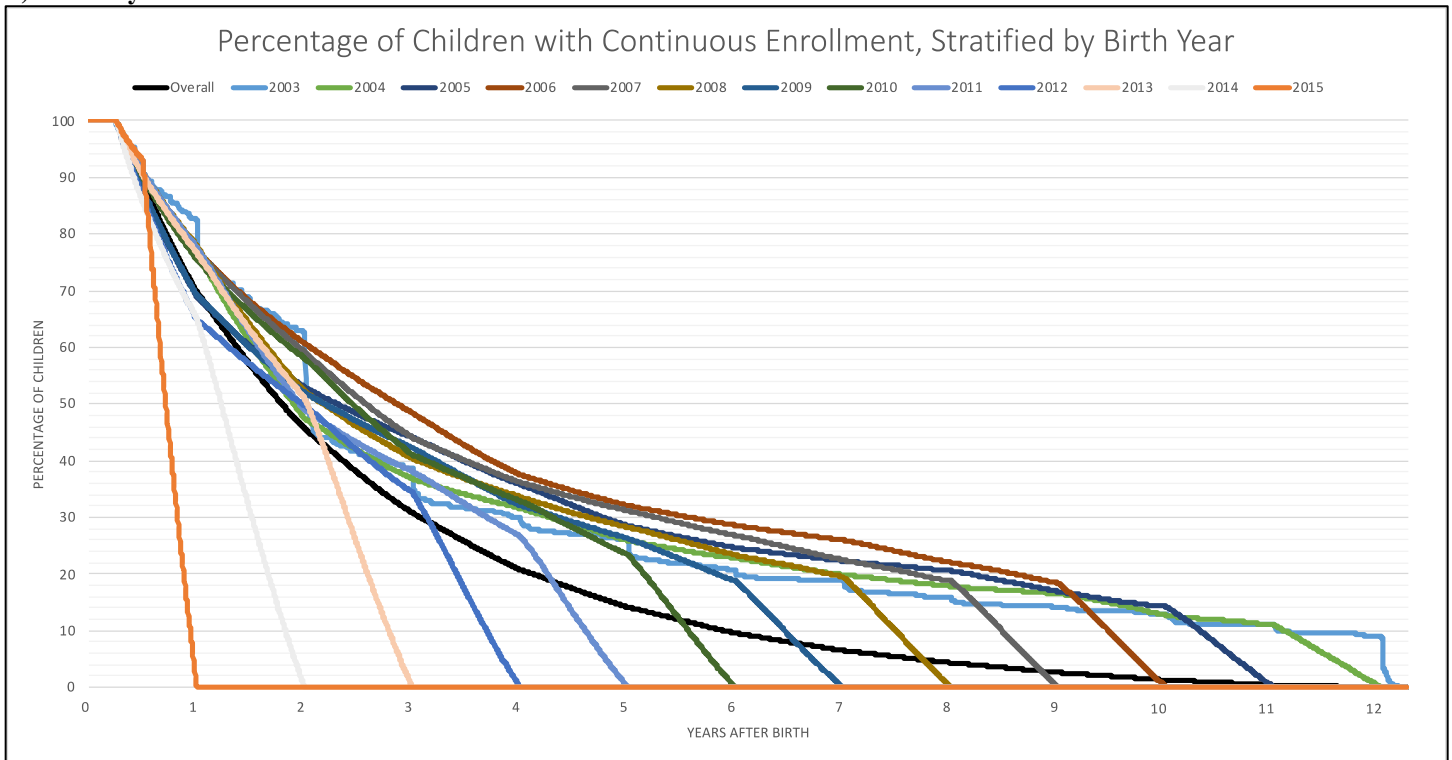
* Information on race/ethnicity only available in MAX.

eFigure 3. Length of Continuous Enrollment Stratified by Birth Year, Among A) Publicly Insured and B) Privately Insured Children

A) Publicly Insured



B) Privately Insured Children



eAppendix 1. Description and Patient Characteristics of the Publicly and Privately Insured Mother-Child Linked Cohorts

Description of Cohorts:

For this project, we used information of pregnant women and their liveborn children nested in the Medicaid Analytic eXtract (MAX) 2000-2014 and the IBM Health MarketScan Research Database (MarketScan) 2003-2015. The MAX database consists of healthcare claims from the nationwide Medicaid population, thus, including an overrepresentation of teens and young adults, African-Americans, and disabled persons. The MarketScan database is the largest nationwide dataset that is based on commercial health insurance claims. It includes data from >100 commercial health insurers, which together provide coverage for over 25 million members annually with active policies throughout the US.

For both cohorts, we have previously developed a mother-child linkage algorithm that is based on state, insurance case number (to identify family units), and date of delivery.^a As Medicaid currently covers about 50% of births in the US, and commercial insurers cover most of the balance, the MAX and MarketScan cohorts, taken together, are therefore expected to be highly representative of the overall US obstetric population.

^aPalmsten K, Huybrechts KF, Mogun H, et al. Harnessing the Medicaid Analytic eXtract (MAX) to Evaluate Medications in Pregnancy: Design Considerations. PLoS One. 2013;8(6):e67405. doi:10.1371/journal.pone.0067405

Patient Characteristics^b:

Name	Number of Pregnancies (%)	
	Public Insurance Cohort	Private Insurance Cohort
Total	2,070,541	1,309,900
Demographic Characteristics		
Follow Up After Birth		
<=2 Years	1,250,685 (60.40%)	906,441 (69.20%)
>2 to <=5 Years	486,961 (23.52%)	277,940 (21.22%)
>5 Years	332,895 (16.08%)	125,519 (9.58%)
Maternal Age at Delivery		
<=24 Years	1,166,585 (56.34%)	60,140 (4.59%)
25-34 Years	766,130 (37.00%)	874,228 (66.74%)
>=35 Years	275,652 (13.31%)	751,064 (57.34%)
Gender		
Male	1,045,426 (50.49%)	667,607 (50.97%)
Female	1,007,171 (48.64%)	629,448 (48.05%)
Unknown	17,944 (0.87%)	12,845 (0.98%)
Region		
Northeast	356,984 (17.24%)	205,742 (15.71%)
Midwest	658,600 (31.81%)	337,794 (25.79%)
South	602,053 (29.08%)	517,925 (39.54%)
West	452,904 (21.87%)	233,239 (17.81%)
Year of Birth		
Before 2006	639,259 (30.87%)	126,032 (9.62%)
2006-2009	631,217 (30.49%)	407,475 (31.11%)
After 2009	800,065 (38.64%)	776,393 (59.27%)
Race/Ethnicity ^c		
Asian/Pacific Islander	75,662 (3.65%)	-
Black/African American	682,730 (32.97%)	-
Hispanic/Latino	295,585 (14.28%)	-
Other/Unknown	170,807 (8.25%)	-
White	845,757 (40.85%)	-
Maternal Conditions		
Pre-existing Hypertension	50,774 (2.45%)	29,654 (2.26%)
Pre-eclampsia	110,853 (5.35%)	81,894 (6.25%)
Pre-existing Diabetes	53,756 (2.60%)	30,621 (2.34%)
Gestational Diabetes	3,015 (0.15%)	1,506 (0.11%)
Obstetric Conditions		

Name	Number of Pregnancies (%)	
	Public Insurance Cohort	Private Insurance Cohort
Low Birth Weight	106,833 (5.16%)	48,806 (3.73%)
Small for Gestational Age	72,270 (3.49%)	43,097 (3.29%)
Neonatal Hypoxia/Asphyxia	18,599 (0.90%)	9,101 (0.69%)
Preterm Birth (>28 and <37 GW)	229,369 (11.08%)	116,099 (8.86%)
Very Preterm Birth (<=28 GW)	18,241 (0.88%)	7,961 (0.61%)

^bThe following assessment periods were used for the respective covariates:

- First date of last menstrual period (LMP)-90 days to LMP+90 days: pre-existing hypertension
- LMP-90 days to LMP+140 days: pre-existing diabetes
- LMP+140 days to delivery: gestational diabetes
- LMP+140 days to delivery+30 days: pre-eclampsia
- delivery to delivery+30 days: preterm/very preterm birth, low birth weight, small for gestational age
- delivery hospitalization: neonatal hypoxia/asphyxia

^cInformation on race/ethnicity not available in the privately insured cohort (MarketScan).

eAppendix 2. Calculation of Mean Age at Diagnosis and 95% Confidence Intervals Accounting for Loss to Follow up

Kaplan-Meier Survival Probability Until Period t:

$$\hat{S}_0 = 1$$

$$\hat{S}_{t+1} = \hat{S}_t \cdot (1 - \hat{\lambda}_t)$$

where:

N_t : number of people in sample at beginning of period t

D_t : number of deaths in period t

Estimated death rate

$$\hat{\lambda}_t \equiv D_t / N_t$$

Variance estimation via Greenwood's formula^a:

$$\widehat{Var}(S_t) = S_t^2 \sum_{s < t} \frac{D_s}{N_s (N_s - D_s)}$$

Calculation of Mean Age at Dx:

Survival function among those who developed the outcome by time T:

$$S_t \equiv 1 - \frac{1 - S_t}{1 - S_T} = \frac{S_t - S_T}{1 - S_T}$$

Mean age at Dx conditional on developing the outcome by time T:

$$\hat{\chi}_T \equiv \sum_{t=0}^T \frac{\hat{S}_t - \hat{S}_T}{1 - \hat{S}_T}$$

Calculation of Variance Around Mean Age:

Modified formula of Klein & Moeschberger (2003)^b which allows the calculation of mean and variance conditional on developing the outcome by time T:

$$Var(\hat{\mu}_T) = \sum_{u=0}^T \left(\sum_{t=u+1}^T \hat{S}_t \right)^2 \frac{D_s}{N_s (N_s - D_s)}$$

$$Var(\hat{\chi}_T) = \sum_{s=0}^{T-1} \left[\sum_{t=s+1}^T \frac{\hat{S}_t}{1 - \hat{S}_T} - \sum_{t=0}^T \frac{(1 - \hat{S}_t) \hat{S}_T}{(1 - \hat{S}_T)^2} \right]^2 \frac{D_s}{N_s (N_s - D_s)}$$

^aGreenwood M, Jr. The Natural Duration of Cancer. Reports of Public Health and Related Subjects Vol 33, HMSO, London; 1926.

^bKlein, J.P. and Moeschberger, M.L. (2003) Survival analysis: Techniques for censored and truncated data, equation (4.5.2). 2nd Edition, Springer, New York.