

8/01/2002

Sample Selection for MMR/Autism Study

Selection Criteria	Variables Used for Definition	Controls			Cases		
		Yes	No	No%	Yes	No	No%
Available Sample	(CASE = 2)	2143			706		
Valid Matching CASE Number	(CASENUM)	2113	30	1%	706	0	0%
Confirmed Autism Case	(AUCASEDF = 1) 46 Cases = Missing	2113	0	0%	660	46	7%
Matched Cases and Controls		1912	201	10%	647	13	2%
Original 3 Controls		1891	21	1%	647	0	0%
Missing Age Data		1890	1	0%	647	0	0%
Missing MMR Vaccine Date (1,2)		1876	14	1%	629	18	3%

1) 11 controls were missing their entire vaccination record

2) 14 cases were missing their entire vaccination record

Table 1: Descriptive Statistics For Entire Sample *

Variable	Category	Controls		Cases	
		N	Percent	N	Percent
Age 1996	3 - 5 yrs	635	34%	215	34%
	6 - 8 yrs	973	52%	321	51%
	9 - 10 yrs	268	14%	93	15%
	Total	1876	100%	629	100%
Sex	Male	1506	80%	505	80%
	Female	370	20%	124	20%
	Total	1876	100%	629	100%
Race	White	930	52%	336	55%
	Black	674	38%	232	38%
	Other	175	10%	40	7%
	Total	1779	100%	608	100%

* All subjects reported in table had date of receipt of MMR vaccine

* All cases are confirmed cases

** Race was missing on 97 children

Table 2: Descriptive Statistics for Matched Autism Cases

Associated Conditions	Yes	%	No	%	Total
Low Functioning (MR)	378	60%	251	40%	629
Low Functioning (MR) DX <= 1 Year	10	2%	619	98%	629
Cerebral Palsy DX <= 1 Year	7	1%	622	99%	629
Visual Impairment DX <= 1 Year	1	0%	628	100%	629
Hearing Impairment DX <= 1 Year	3	0%	626	100%	629
Major Birth Defects	28	4%	601	96%	629
Other Pre-existing conditions <= 1 Year *	212	34%	417	66%	629
Any Pre-Existing Conditions <= 1 Year	235	37%	394	63%	629
Regression or Plateau	80	13%	549	87%	629

* These conditions were identified through chart review

Table 3: Descriptive Statistics Unmatched Birth Certificate Sample

Variable	Category	Controls		Cases	
		N	Percent	N	Percent
Age in 1996	3 - 5 yrs	382	36%	127	35%
	6 - 8 yrs	552	53%	182	51%
	9 - 10 yrs	115	11%	50	14%
	Total	1049	100%	359	100%
Sex	Male	834	80%	286	80%
	Female	215	20%	73	20%
	Total	1049	100%	359	100%
Race	White	578	55%	201	56%
	Black	405	39%	139	39%
	Other	66	6%	19	5%
	Total	1049	100%	359	100%
Maternal Age	< 20 yrs	102	10%	16	4%
	20 - 34 yrs	823	78%	282	79%
	35+ yrs	124	12%	61	17%
	Total	1049	100%	359	100%
Maternal Race	White	618	59%	209	58%
	Black	399	38%	138	38%
	Other	30	3%	12	3%
	Total	1047	100%	359	100%
Maternal Educ	<= 12 yrs	485	46%	138	38%
	13 - 15 yrs	259	25%	100	28%
	16+ yrs	305	29%	121	34%
	Total	1049	100%	359	100%
Birth Weight	0 - 1499 gms	11	1%	12	3%
	1500 - 2499 gms	55	5%	37	10%
	2500 + gms	983	94%	310	86%
	Total	1049	100%	359	100%
Multiplicity	Singleton	1017	97%	333	93%
	Twin +	32	3%	26	7%
	Total	1049	100%	359	100%
Parity	1st Born	462	44%	151	42%
	2nd or Higher	578	56%	206	58%
	Total	1040	100%	357	100%

* All subjects reported in table had date of receipt of MMR vaccine

** All cases are confirmed cases

*** Subjects are unmatched. There are significantly fewer matched cases and controls

6/10/2014

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Table 4: Age at 1st MMR Vaccination and Case Status

1) Total Sample	Age Group	Controls	%Controls	Cases	%Cases	OR	- 95% CI	+ 95% CI
	0 - 11 mo	37	2.0%	8	1.3%	1.0	0.4	2.3
	12 - 17 mo	1258	67.1%	444	70.6%	1.6	1.1	2.2
	18 - 23 mo	271	14.4%	92	14.6%	1.5	1.0	2.3
	24 - 29 mo	93	5.0%	29	4.6%	1.5	0.8	2.5
	30 - 35 mo	38	2.0%	16	2.5%	1.8	0.9	3.7
	36+ mo	179	9.5%	40	6.4%	--	--	--
Total		1876	100.0%	629	100.0%			

* Overall test of distribution is not statistically significant

2) Unmatched BC Sample	Age Group	Controls	%Controls	Cases	%Cases	OR	- 95% CI	+ 95% CI
	0 - 11 mo	10	1.0%	2	0.6%	0.8	0.2	4.0
	12 - 17 mo	744	70.9%	251	69.9%	1.4	0.8	2.3
	18 - 23 mo	159	15.2%	59	16.4%	1.5	0.8	2.7
	24 - 29 mo	42	4.0%	16	4.5%	1.5	0.7	3.3
	30 - 35 mo	17	1.6%	12	3.3%	2.9	1.2	7.0
	36+ mo	77	7.3%	19	5.3%	--	--	--
Total		1049	100.0%	359	100.0%			

* Overall test of distribution is not statistically significant

3) Matched BC Sample	Age Group	Controls	%Controls	Cases	%Cases	OR	- 95% CI	+ 95% CI
	0 - 11 mo	8	1.4%	2	0.6%	0.7	0.1	4.0
	12 - 17 mo	406	70.5%	219	70.4%	1.4	0.7	2.7
	18 - 23 mo	87	15.1%	52	16.7%	1.5	0.8	3.1
	24 - 29 mo	28	4.9%	13	4.2%	1.3	0.5	3.2
	30 - 35 mo	8	1.4%	9	2.9%	2.4	0.7	7.7
	36+ mo	39	6.8%	16	5.1%	--	--	--
Total		576	100.0%	311	100.0%			

* Overall test of distribution is not statistically significant

**Figure 1a: Age of 1st MMR Vaccination by Case Status
For Total Sample**

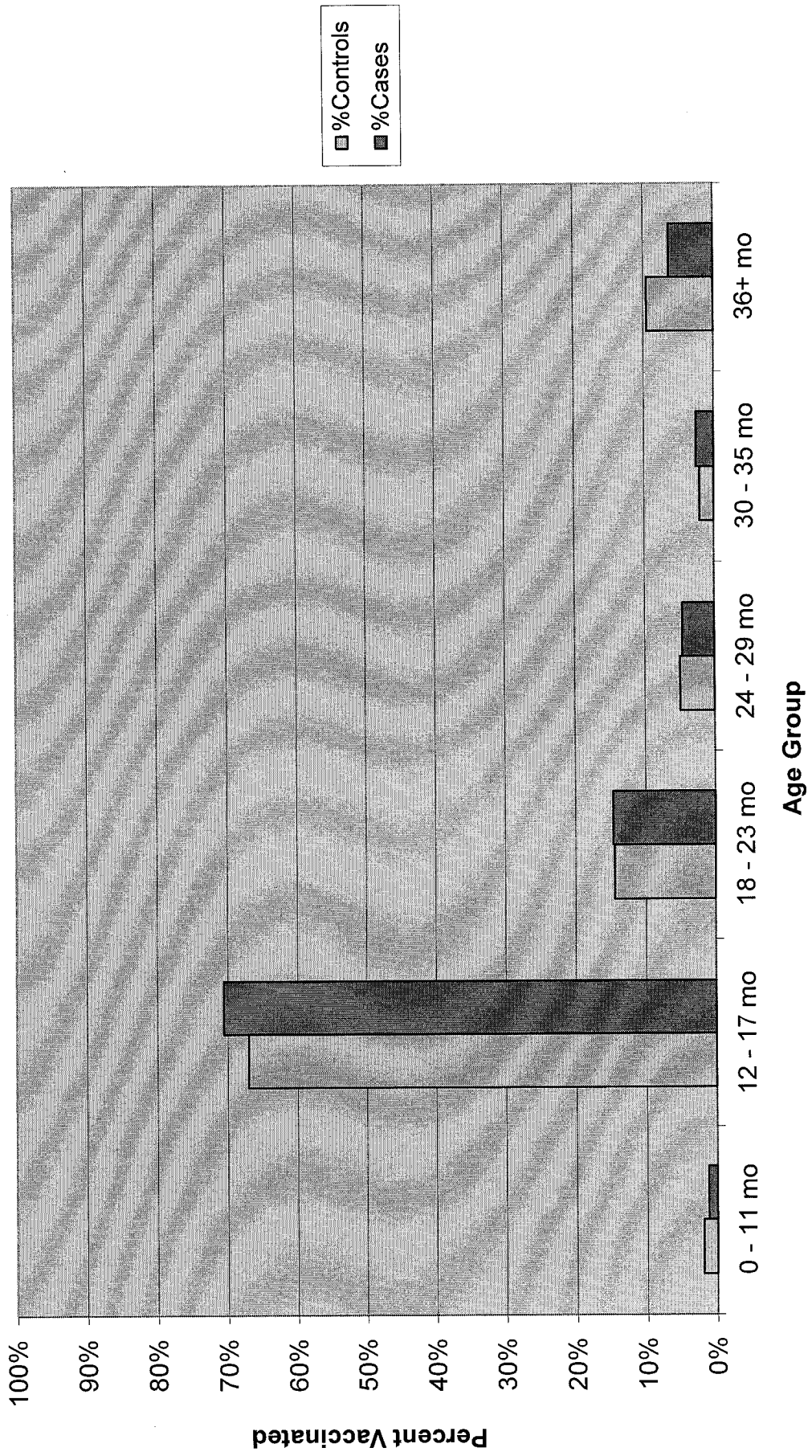


Figure 1b: Age of 1st MMR Vaccination by Case Status for Birth Certificate Sample

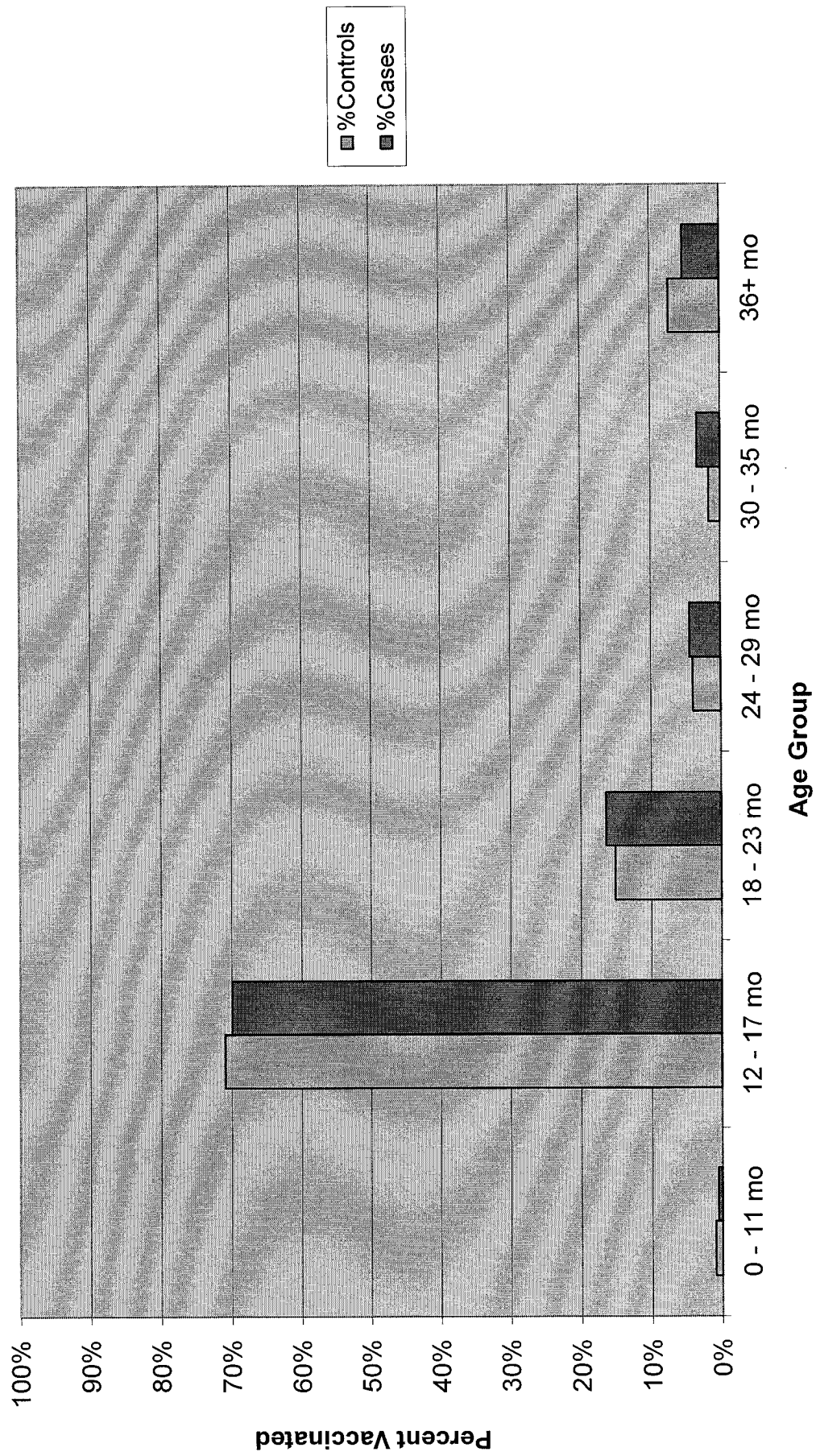


Figure 1c: Age of 1st MMR Vaccination by Case Status for Matched Birth Certificate Sample

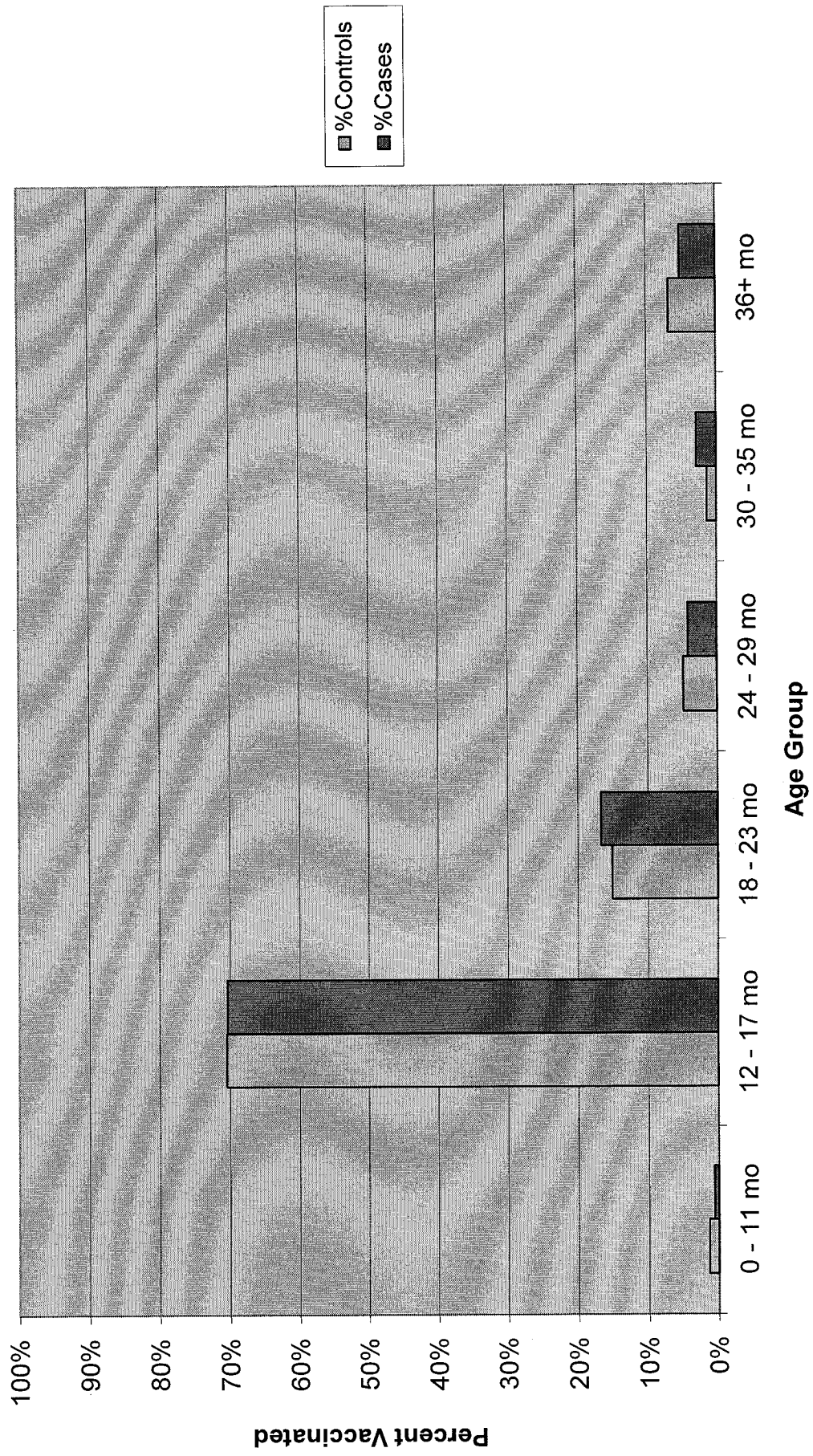


Table 5: Matched Statistical Analyses for Dichotomous Cut-Points

Sample	Exposure	Cases	Crude OR			Adjusted OR		
			OR	L95CI	U95CI	OR	L95CI	U95CI
Total	MMR < 18 Mo	629	1.13	0.92	1.39			
	MMR < 24 Mo	629	1.23	0.95	1.60			
	MMR < 36 Mo	629	1.53	1.07	2.19			
Birth Certificate	MMR < 18 Mo	311	1.00	0.72	1.38	0.95	0.67	1.33
	MMR < 24 Mo	311	1.14	0.74	1.75	1.04	0.66	1.63
	MMR < 36 Mo	311	1.45	0.76	2.76	1.30	0.67	2.55

Table 6a: Matched Case Subgroup Analyses for <18 Month Cut-Point

Sample	Case Subgroup	Cases	Crude OR			Adjusted OR		
			OR	L95CI	U95CI	OR	L95CI	U95CI
Total	All Cases	629	1.13	0.92	1.39			
	Males	505	1.24	0.98	1.56			
	Females	124	0.82	0.52	1.30			
	No Pre-Existing Conditions Before Age 1 Year	394	1.08	0.83	1.40			
	Regression or Plateau	80	1.46	0.83	2.60			
	Low Functioning (MR)	378	1.06	0.82	1.38			
	High Functioning (No MR)	251	1.26	0.90	1.77			
	Records in School Sources Only	258	1.31	0.96	1.79			
	Records from Multiple Sources and/or Clinics	371	1.01	0.77	1.33			
	Previous ASD Dx	396	1.05	0.81	1.36			
	No Previous ASD Dx	233	1.29	0.92	1.83			
Birth Certificate	All Cases	311	1.00	0.72	1.38	0.95	0.67	1.33
	Males	243	1.03	0.71	1.48	0.98	0.67	1.44
	Females	68	0.92	0.45	1.90	0.77	0.32	1.82
	No Pre-Existing Conditions Before Age 1 Year	187	1.09	0.71	1.66	1.06	0.68	1.64
	Regression or Plateau	31	1.02	0.39	2.67	1.16	0.41	3.28
	Low Functioning (MR)	179	1.16	0.76	1.79	1.12	0.71	1.77
	High Functioning (No MR)	132	0.80	0.49	1.33	0.74	0.43	1.26
	Records in School Sources Only	125	1.18	0.71	1.97			
	Records from Multiple Sources and/or Clinics	186	0.89	0.58	1.35			
	Previous ASD Dx	199	1.00	0.67	1.48			
	No Previous ASD Dx	112	0.99	0.55	1.77			

Table 6b: Matched Case Subgroup Analyses for <24 Month Cut-Point

Sample	Case Subgroup	Cases	Crude OR			Adjusted OR		
			OR	L95CI	U95CI	OR	L95CI	U95CI
Total	All Cases	629	1.23	0.95	1.60			
	Males	505	1.31	0.98	1.77			
	Females	124	0.98	0.56	1.71			
	No Pre-Existing Conditions Before Age 1 Year	394	1.15	0.83	1.59			
	Regression or Plateau	80	1.45	0.69	3.04			
	Low Functioning (MR)	378	1.10	0.80	1.52			
	High Functioning (No MR)	251	1.52	0.97	2.39			
	Records in School Sources Only	258	1.34	0.92	1.96			
	Records from Multiple Sources and/or Clinics	371	1.14	0.80	1.63			
	Previous ASD Dx	396	1.11	0.80	1.53			
	No Previous ASD Dx	233	1.48	0.95	2.30			
Birth Certificate	All Cases	311	1.00	0.72	1.38	0.95	0.67	1.33
	Males	243	1.19	0.73	1.93	1.08	0.65	1.80
	Females	68	0.96	0.37	2.47	0.80	0.24	2.68
	No Pre-Existing Conditions Before Age 1 Year	187	1.10	0.62	1.95	1.04	0.57	1.89
	Regression or Plateau	31	0.93	0.27	3.25	1.17	0.31	4.41
	Low Functioning (MR)	179	1.06	0.62	1.81	0.94	0.53	1.68
	High Functioning (No MR)	132	1.30	0.61	2.75	1.21	0.55	2.69
	Records in School Sources Only	125	0.95	0.52	1.73			
	Records from Multiple Sources and/or Clinics	186	1.37	0.73	2.57			
	Previous ASD Dx	199	1.25	0.72	2.16			
	No Previous ASD Dx	112	0.97	0.47	1.97			

Table 6c: Matched Case Subgroup Analyses for <36 Month Cut-Point

Sample	Case Subgroup	Cases	Crude OR			Adjusted OR			
			OR	L95CI	U95CI	OR	L95CI	U95CI	
Total	All Cases	629	1.53	1.07	2.19				
	Males	505	1.72	1.13	2.60				
	Females	124	1.09	0.53	2.26				
	No Pre-Existing Conditions Before Age 1 Year	394	1.49	0.95	2.35				
	Regression or Plateau	80	1.83	0.62	5.45				
	Low Functioning (MR)	378	1.22	0.80	1.86				
	High Functioning (No MR)	251	2.60	1.27	5.32				
	Records in School Sources Only	258	2.82	1.51	5.25				
	Records from Multiple Sources and/or Clinics	371	1.00	0.64	1.57				
	Previous ASD Dx	396	1.27	0.82	1.94				
	No Previous ASD Dx	233	2.26	1.17	4.38				
	Birth Certificate	All Cases	311	1.45	0.76	2.76	1.30	0.67	2.55
		Males	243	2.04	0.95	4.40	1.84	0.84	4.04
		Females	68	0.40	0.09	1.70			
No Pre-Existing Conditions Before Age 1 Year		187	1.77	0.77	4.07				
Regression or Plateau		31	1.00	0.18	5.61				
Low Functioning (MR)		179	0.89	0.42	1.86				
High Functioning (No MR)		132	8.43	1.09	65.00	8.02	0.97	66.21	
Records in School Sources Only		125	1.83	0.71	4.76				
Records from Multiple Sources and/or Clinics		186	1.16	0.48	2.82				
Previous ASD Dx		199	1.19	0.54	2.61				
No Previous ASD Dx		112	2.11	0.67	6.64	1.85	0.55	6.22	

Table 7a: Unmatched Subgroup Analyses for <18 Month Cut-Point

Subgroups	Cases		Crude OR		Cases		Adjusted OR		
	OR	L95CI	U95CI	OR	L95CI	U95CI	OR	L95CI	U95CI
All Cases	629	1.15	0.94	1.40					
White/Other	376	1.02	0.78	1.34					
Black	232	1.25	0.91	1.70					
Born in GA	399	1.05	0.81	1.35					
Not Born in GA	230	1.28	0.93	1.77					
Maternal Age 35+ Years	61	0.99	0.69	1.41	61	0.81	0.53	1.22	
Maternal Age < 35 Years	298	1.02	0.76	1.35	298	0.92	0.68	1.24	
Maternal Education 16+ Years	121	0.65	0.37	1.12	121	0.68	0.38	1.20	
Maternal Education <16 Years	238	0.98	0.721	1.33	238	0.92	0.67	1.26	
Birth Weight < 2500 gms	49	0.59	0.27	1.30	49	0.49	0.18	1.37	
Birth Weight >= 2500 gms	310	1.01	0.76	1.34	310	0.92	0.68	1.23	

Table 7b: Unmatched Subgroup Analyses for <24 Month Cut-Point

Subgroups	Cases		Crude OR			Cases			Adjusted OR			
	OR	L95CI	U95CI	OR	L95CI	U95CI	OR	L95CI	U95CI	OR	L95CI	U95CI
Birth Weight >= 2500 gms	310	1.01	0.76	1.34	310	0.92	0.68	1.23				
All Cases	629	1.27	0.98	1.64								
White/Other	376	1.08	0.75	1.55								
Black	232	1.51	1.02	2.24	139	0.93	0.56	1.53				
Born in GA	399	1.23	0.87	1.75								
Not Born in GA	230	1.24	0.85	1.83								
Maternal Age 35+ Years	61	0.57	0.17	1.95	61	0.57	0.16	2.04				
Maternal Age < 35 Years	298	1.00	0.69	1.45	298	0.95	0.65	1.40				
Maternal Education 16+ Years	121	0.78	0.31	1.99	121	0.82	0.31	2.16				
Maternal Education <16 Years	238	0.97	0.66	1.44	238	0.93	0.63	1.40				
Birth Weight < 2500 gms	49	0.54	0.20	1.48	49	0.40	0.13	1.17				
Birth Weight >= 2500 gms	310	1.11	0.75	1.63	310	0.97	0.65	1.45				

Table 7c: Unmatched Subgroup Analyses for <36 Month Cut-Point

Subgroups	Cases		Crude OR			Cases			Adjusted OR		
	OR	L95CI	U95CI	OR	L95CI	U95CI	OR	L95CI	U95CI		
All Cases	629	1.55	1.09	2.22	359	1.33	0.78	2.26			
White/Other	376	1.13	0.71	1.79							
Black	232	2.25	1.25	4.04	139	1.49	0.73	3.04			
Born in GA	399	1.57	0.95	2.59							
Not Born in GA	230	1.45	0.88	2.41							
Maternal Age 35+ Years	61				61						
Maternal Age < 35 Years	298				298						
Maternal Education 16+ Years	121				121						
Maternal Education <16 Years	238				238						
Birth Weight < 2500 gms	49				49						
Birth Weight >= 2500 gms	310				310						