Supplementary Table 1: Distribution of race/ethnicity by Site— Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016

		Non-Hispanic White		Non-Hispanic Black		Asian/Pacific Islander		Hispanic	
SITE	Total	Number	%	Number	%	Number	%	Number	%
Arizona	17656	7883	(44.6)	1302	(7.4)	719	(4.1)	7167	(40.6)
Arkansas	40225	25923	(64.4)	7926	(19.7)	970	(2.4)	5079	(12.6)
Colorado	40874	22065	(54.0)	2793	(6.8)	2044	(5.0)	13767	(33.7)
Georgia	24113	6510	(27.0)	9895	(41.0)	1998	(8.3)	5664	(23.5)
Maryland	9993	4831	(48.3)	3522	(35.2)	725	(7.3)	885	(8.9)
Minnesota	13728	5736	(41.8)	3676	(26.8)	2090	(15.2)	2043	(14.9)
Missouri	15635	7804	(49.9)	6291	(40.2)	706	(4.5)	790	(5.1)
New Jersey	33031	13245	(40.1)	7159	(21.7)	2004	(6.1)	10562	(32.0)
North Carolina	19291	10522	(54.5)	4020	(20.8)	1418	(7.4)	3272	(17.0)
Tennessee	25839	16203	(62.7)	5181	(20.1)	875	(3.4)	3523	(13.6)
Wisconsin	35034	20193	(57.6)	6744	(19.2)	1615	(4.6)	6313	(18.0)
All Sites Combined	275419	140915	(51.2)	58509	(21.2)	15164	(5.5)	59065	(21.4)

Supplementary Table 2: ICD codes for Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016

This list of ICD Codes contains is provided to sites. Sites may omit or add codes based on their local circumstances.

ICD Codes

Code Type	ICD Code	Condition
ICD-9	29900	Autistic disorder
ICD-9	29901	Autistic disorder
ICD-9	29910	Childhood disintegrative disorder
ICD-9	29911	Childhood disintegrative disorder
ICD-9	29980	Other specified pervasive developmental disorders
ICD-9	29981	Other specified pervasive developmental disorders
ICD-9	29990	Unspecified pervasive developmental disorder
ICD-9	29991	Unspecified pervasive developmental disorder
ICD-9	31530	Developmental speech or language disorder
ICD-9	31531	Expressive language disorder
ICD-9	31532	Mixed receptive-expressive language disorder
ICD-9	31539	Other developmental speech or language disorder
ICD-9	31540	Developmental coordination disorder
ICD-9	31550	Mixed development disorder
ICD-9	31580	Other specified delays in development
ICD-9	31590	Unspecified delay in development

ICD-9	31700	Mild mental retardation
ICD-9	31800	Moderate mental retardation
ICD-9	31810	Severe mental retardation
ICD-9	31820	Profound mental retardation
ICD-9	31900	Unspecified mental retardation
ICD-9	33080	Other specified cerebral degenerations in childhood (Rett)
ICD-9	34830	Encephalopathy, not elsewhere classified
ICD-9	34880	Other conditions of brain
ICD-9	34889	Other conditions of brain
ICD-9	34890	Unspecified condition of brain
ICD-9	75950	Tuberous sclerosis
ICD-9	75983	Fragile X syndrome
ICD-9	77100	Congenital rubella
ICD-9	78342	Delayed milestones
ICD-9	V792.0	Special screening for intellectual disabilities
ICD-9	V793.0	Screening for developmental handicaps in early childhood
ICD-9	V798.0	Screening for other specified mental disorders and developmental handicaps
ICD-9	V799.0	Screening for unspecified mental disorder and developmental handicap
ICD-10	F70	Mild intellectual disabilities
ICD-10	F71	Moderate intellectual disabilities

ICD-10	F72	Severe intellectual disabilities
ICD-10	F73	Profound intellectual disabilities
ICD-10	F78	Other intellectual disabilities
ICD-10	F79	Unspecified mental retardation
ICD-10	F80.1	Expressive language disorder
ICD-10	F80.2	Mixed receptive-expressive language disorder
ICD-10	F80.82	Social Pragmatic Communication Disorder
ICD-10	F80.89	Other developmental disorders of speech and language
ICD-10	F80.9	Developmental disorder of speech and language, unspecified
ICD-10	F82	Specific developmental disorder of motor function (Developmental coordination disorder)
ICD-10	F84.0	Autistic Disorder
ICD-10	F84.2	Rett syndrome
ICD-10	F84.3	Other childhood disintegrative disorder
ICD-10	F84.5	Asperger's syndrome
ICD-10	F84.8	Other pervasive developmental disorders
ICD-10	F84.9	Pervasive developmental disorder, unspecified
ICD-10	F88	Other disorders of psychological development
ICD-10	F89	Unspecified disorder of psychological development (Developmental disorder NOS)
ICD-10	G93.40	Encephalopathy, unspecified
ICD-10	G93.49	Other encephalopathy (Encephalopathy NEC)

ICD-10	G93.8	Other specified disorders of brain
ICD-10	G93.89	Other specified disorders of brain
ICD-10	G93.9	Disorder of brain, unspecified
ICD-10	G96.9	Disorder of central nervous system, unspecified
ICD-10	P35.0	Congenital Rubella Syndrome
ICD-10	Q85.1	Tuberous Sclerosis
ICD-10	Q90.0	Trisomy 21, nonmosaicism (meiotic nondisjunction)
ICD-10	Q90.1	Trisomy 21, mosaicism (mitotic nondisjunction)
ICD-10	Q90.2	Trisomy 21, translocation
ICD-10	Q90.9	Down syndrome, unspecified (Trisomy 21 NOS)
ICD-10	Q99.2	Fragile X chromosome
ICD-10	R62.0	Delayed Milestone in Childhood
ICD-10	Z134	Encounter for screening for certain developmental disorders in childhood

Special Education Eligibility Classifications

This list of special education exceptionalities is provided to sites. Sites may omit or add classifications specific to their site. AUTISM should be required.

Special Education Classification
AUTISM
EMOTIONALBEHAVIORAL DISORDER
MILD INTELLECTUAL DISABILITY

MODERATE INTELLECTUAL DISABILITY
OTHER HEALTH IMPAIRMENT
PROFOUND INTELLECTUAL DISABILITY
SEVERE INTELLECTUAL DISABILITY
SIGNIFICANT DEVELOPMENTAL DELAY
SPEECH/LANGUAGE DELAY
SPECIFIC LEARNING DISABILITY
TRAUMATIC BRAIN INJURY

Supplementary Table 3: Inter-rater reliability for clinical review using the DSM-5 ASD surveillance case definition— Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016

SITE	Number of records reviewed for reliability	% agreement on ASD case Status	Cohen's kappa for ASD case status
Arizona	81	0.94	0.88
Arkansas	126	0.99	0.98
Colorado	102	0.90	0.79
Georgia	94	0.89	0.79
Maryland	27	0.96	0.91
Minnesota	78	0.95	0.90
Missouri	35	0.91	0.82
New Jersey	147	0.97	0.93
North Carolina	95	0.94	0.84
Tennessee	51	0.94	0.74
Wisconsin	116	0.94	0.88

Note: The combined kappa statistic for 952 DSM-5 reliability reviews was 0.89 (95% Confidence interval: 0.86–0.92). There were a total of 288 records that underwent a second clinical review for reliability for DSM-IV – the overall kappa was 0.78

Supplementary Methods: Technical detail on the calculation of ADDM study area denominators

For all counties included in a site's study area, 4- and 8-year-old population counts are pulled from the National Vital Statistics System (NVSS) Vintage 2018 estimates for 2016.

If an entire county is included, the denominator is equal to the NVSS population estimates for 4- and 8-year-olds.

If only certain school districts are included in a county:

1. The proportion of each race/sex category in included districts compared to all school districts in the county is calculated using National Center for Education Statistics (NCES) Common Core of Data 2016 population estimates for kindergarteners (proxy for population of 4-year-olds because 2017 data are not available) and 3rd graders (8-year-olds).
2. NVSS race/sex category estimates are adjusted for the county based on the NCES race/sex enrollment proportions.

If a school crosses county boundaries and only one county is in the study area:

1. For the included county, census tracts assigned to the school district and proportion of kids in those tracts assigned to the school district are determined using the Missouri Census Data Center Geographic Correspondence Engine (Geocorr).
2. American Community Survey (ACS) population estimates of 5-to-9-year-olds in the same census tracts by race/sex category are adjusted based on the Geocorr assignment proportions.
3. The ACS race/sex category counts in the assigned census tracts are then divided by the ACS 5-to-9-year-old estimate for the entire county, and NVSS race/sex category estimates are adjusted based on that proportion.

Links to data sources:

NVSS – https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm

NCES – https://nces.ed.gov/ccd/pubagency.asp

Geocorr - http://mcdc.missouri.edu/applications/geocorr2014.html

ACS – https://www2.census.gov/programs-surveys/acs/summary_file/2016/data/?#

Supplementary Table 4. R packages used for statistical or graphical output

Citation	Package	Function	Use
1	epiR	epi2by2()	Calculate prevalence ratios and 95% confidence intervals
2	Hmisc	binconf()	Calculate prevalence and 95% confidence intervals
3	ggplot2	ggplot()	Visualize data
4	psych	cohen.kappa()	Calculate Cohen's kappa
5	rcompanion	percentile_test()	Permutation test for comparing medians

1. Stevenson M. epiR: Tools for the Analysis of Epidemiological Data [Internet]. Available from: https://CRAN.R-project.org/package=epiR

2. Harrell, Jr FE. Hmisc: Harrell Miscellaneous [Internet]. 2019. Available from: https://CRAN.R-project.org/package=Hmisc

3. Wickham H. ggplot2: Elegant Graphics for Data Analysis [Internet]. Springer-Verlag New York; 2016. Available from: https://ggplot2.tidyverse.org

4. Revelle W. psych: Procedures for Personality and Psychological Research [Internet]. Northwestern University, Evanston, Illinois, USA; 2018. Available from: https://CRAN.R-project.org/package=psych

5. Mangiafico S. rcompanion: Functions to Support Extension Education Program Evaluation. R. [Internet]. 2019. Available from: https://CRAN.R-project.org/package=rcompanion

Supplementary Table 5: ASD prevalence reported by 11 Autism and Developmental Disabilities Monitoring (ADDM) Network sites in 2014 and 2016

	2014 DSM-4*			2014 DSM-5*			2016 DSM-5			
Site	No. Children with ASD	Denominator	ASD prevalence per 1,000	No. Children with ASD	Denominator	ASD prevalence per 1,000	No. Children with ASD	Denominator	ASD prevalence per 1,000	DSM-5 Surveillance Areas for 2014 and 2016
Arizona	349	24952	14.0	162	9478	17.1	282	17656	16.0	Different
Arkansas	522	39992	13.1	552	39992	13.8	606	40225	15.1	Same
Colorado	572	41128	13.9	97	8022	12.1	537	40874	13.1	Different
Georgia	869	51161	17.0	861	51161	16.8	456	24113	18.9	Different
Maryland	199	9955	20.0	195	9955	19.6	192	9993	19.2	Same
Minnesota	234	9767	24.0	220	9767	22.5	313	13728	22.8	Different
Missouri	356	25333	14.1	197	12205	16.1	213	15635	13.6	Different
New Jersey	964	32935	29.3	873	32935	26.5	1036	33031	31.4	Same
North Carolina	527	30283	17.4	498	30283	16.4	489	19291	25.3	Different
Tennessee	387	24940	15.5	369	24940	14.8	405	25839	15.7	Same
Wisconsin	494	35037	14.1	477	35037	13.6	579	35034	16.5	Same

*Previously reported in Baio J, Wiggins L, Christensen DL, et al. Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years — Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2014. MMWR Surveill Summ 2018;67(No. SS-6):1–23. DOI: http://dx.doi.org/10.15585/mmwr.ss6706a1

Supplementary Table 6: Comparison of Autism and Developmental Disabilities Monitoring Network DSM-IV-TR and DSM-5 case definitions — Autism and Developmental Disabilities Monitoring Network, 10 sites, United States, 2016

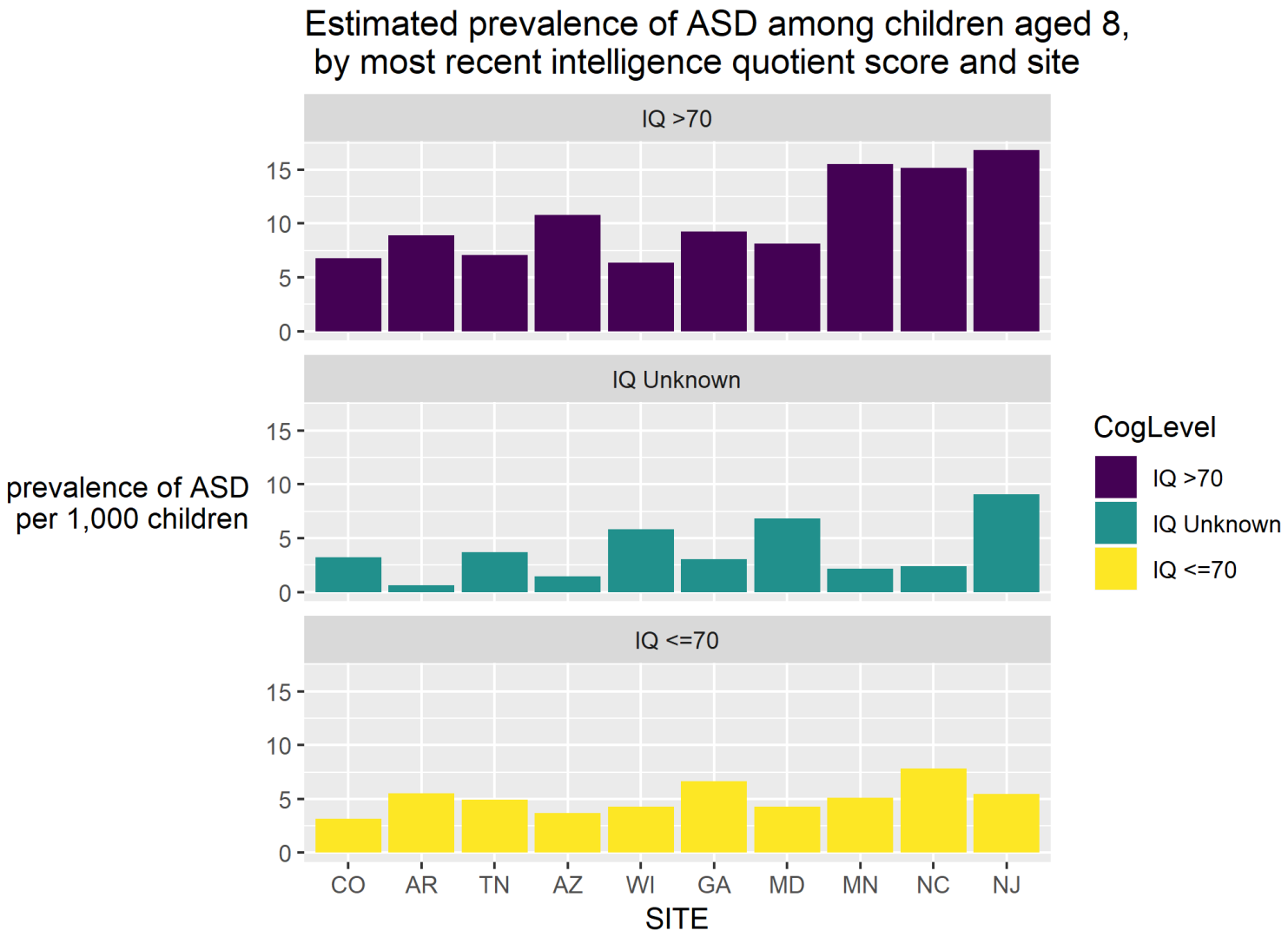
Site	Number meeting both DSM-IV and DSM-5	Number meeting DSM-5 only	Number meeting DSM-IV only	Number of abstracted children meeting neither case definition	DSM-5 vs DSM-4 ratio	Cohen's kappa for DSM-5 versus DSM-IV
Arizona	179	10	10	326	1.00	0.92
Arkansas	79	6	1	127	1.06	0.93
Colorado	124	8	27	90	0.87	0.72
Georgia	170	20	12	214	1.04	0.84
Maryland	64	1	9	46	0.89	0.83
Minnesota	176	9	14	286	0.97	0.90
Missouri	186	18	7	87	1.06	0.81
New Jersey	1006	30	49	1261	0.98	0.93
Tennessee	388	17	40	60	0.95	0.61
Wisconsin	161	3	11	67	0.95	0.86
All Sites Combined	2533	122	180	2564	0.98	0.89

Note: New Jersey and Tennessee conducted DSM-5 surveillance for all 8-year-old children with abstracted data in the study area; other sites performed DSM-IV reviews for a subset of children within the study area, North Carolina did not conduct any DSM-IV reviews.

Supplementary Table 7: Numerator and denominator counts by race/ethnicity — Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016

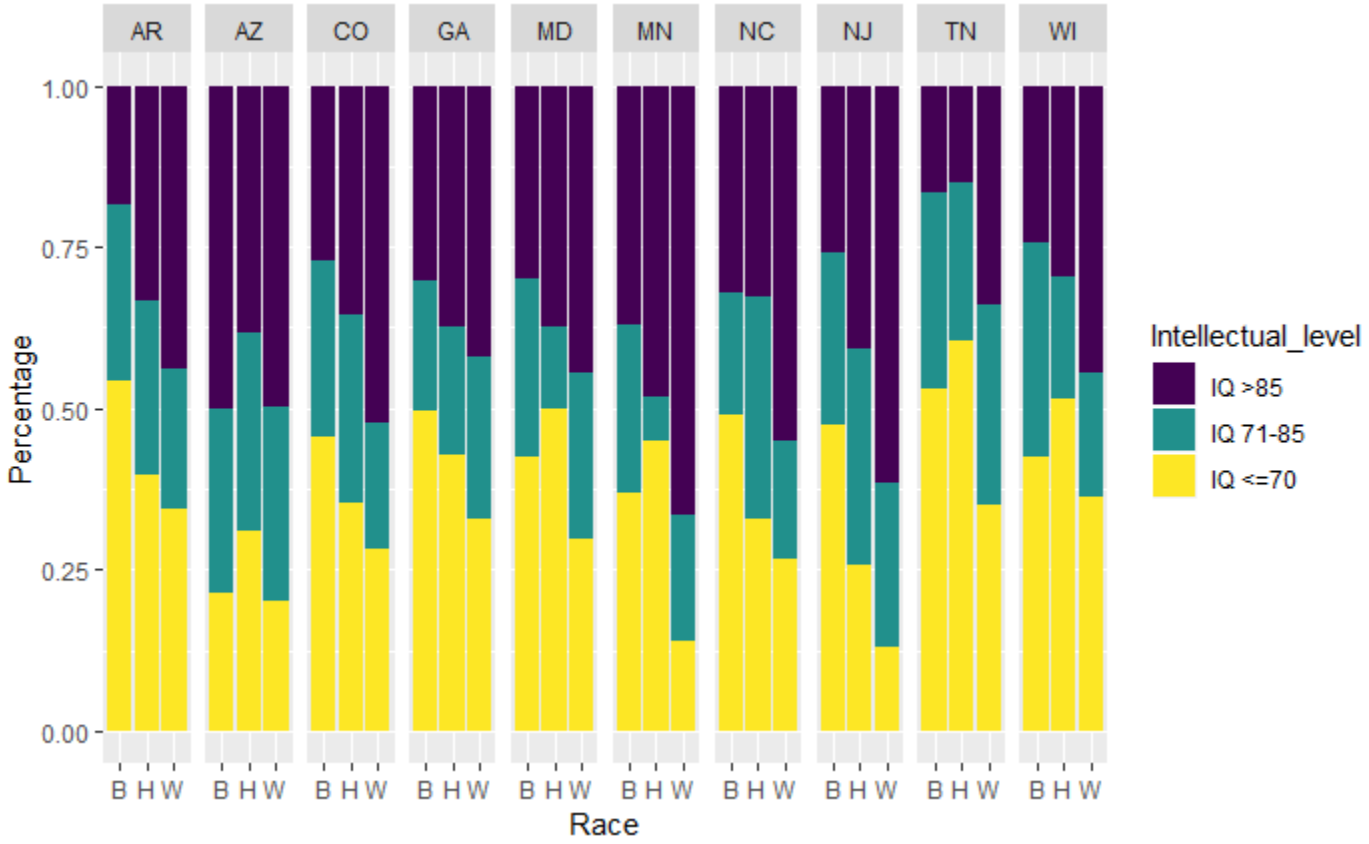
	Non-Hispanic White		Non-Hispanic Black		Asian/Pacific Islander		Hispanic	
SITE	Numerator	Denominator	Numerator	Denominator	Numerator	Denominator	Numerator	Denominator
Arizona	148	7883	16	1302	8	719	89	7167
Arkansas	430	25923	96	7926	18	970	49	5079
Colorado	287	22065	43	2793	17	2044	142	13767
Georgia	123	6510	195	9895	46	1998	64	5664
Maryland	81	4831	69	3522	13	725	12	885
Minnesota	141	5736	95	3676	34	2090	36	2043
Missouri	119	7804	73	6291	3	706	3	790
New Jersey	443	13245	188	7159	54	2004	315	10562
North Carolina	245	10522	112	4020	40	1418	63	3272
Tennessee	253	16203	90	5181	13	875	39	3523
Wisconsin	343	20193	93	6744	25	1615	97	6313
All Sites Combined	2613	140915	1070	58509	271	15164	909	59065

Supplementary Figures: Additional data on co-occurring intellectual disability among children with ASD, by Race/ethnicity and Site--10 Autism and Developmental Disabilities Monitoring (ADDM) Network sites, 2016



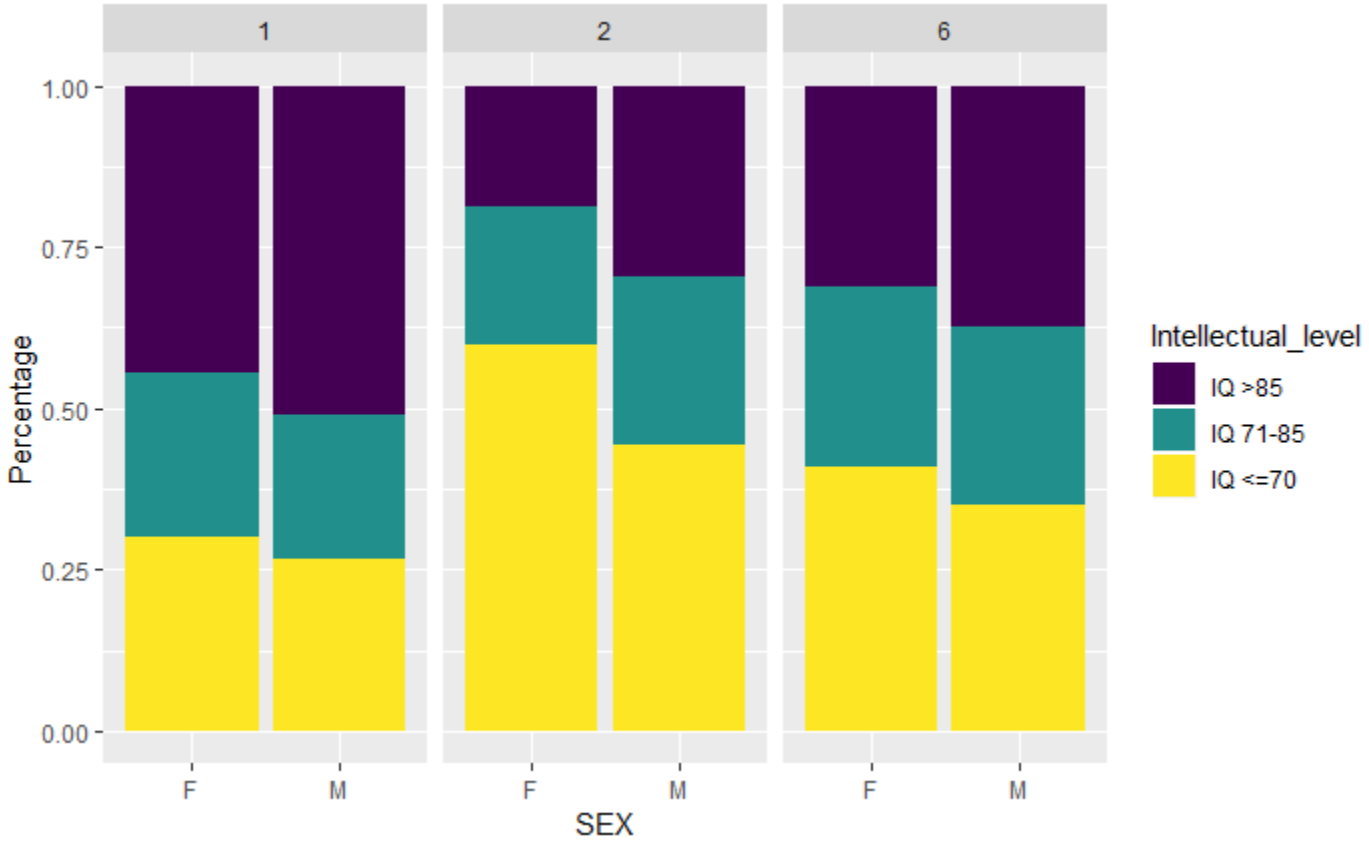
Supplementary Figures (cont'd):

Most recent intelligence quotient score as of age 8 years among children with autism spectrum disorder for whom test data were available, by race/ethnicity and site, 10 Autism and Developmental Disabilities Monitoring (ADDM) Network sites, 2016



Supplementary Figures (cont'd):

Most recent intelligence quotient score as of age 8 years among children with autism spectrum disorder for whom test data were available, by sex and race/ethnicity (1=Non-Hispanic White, 2=Non-Hispanic Black, 6=Hispanic), 10 Autism and Developmental Disabilities Monitoring (ADDM) Network sites, 2016



Supplementary Table 8: Children aged 8 years identified with autism spectrum disorder with available special education records, by site and primary special education eligibility category* — Autism and Developmental Disabilities Monitoring Network, 11 sites, United States, 2016

	Arizona	Arkansas	Colorado	Georgia	Maryland	Minnesota	Missouri	New Jersey	North Carolina	Tennessee	Wisconsin
Total no. of ASD cases	282	606	537	456	192	313	213	1036	489	405	579
Total no. of ASD cases w/ special education records[†]	264	526	175	406	135	273	12	890	416	315	168
Percent of ASD cases with special education records[§]	93.6	86.8	32.6	89.0	70.3	87.2	5.6	85.9	85.1	77.8	29.0
Portion of surveillance area where school records were reviewed[¶]	All	Partial	Partial	All	Partial	All	None	All	All	Partial	Partial
Primary exceptionality (%) among children with special education records											
Autism	79.2	69.4	37.7	63.1	68.1	72.5	58.3	54.5	69.7	65.4	44.0
Emotional Disturbance	1.9	1.1	6.9	1.5	0.7	4.4	0.0	1.8	1.4	0.6	3.6
Speech or language impairment	3.4	3.4	8.6	3.9	4.4	3.3	0.0	6.2	5.5	0.0	0.0
Specific Learning Disability	2.3	9.9	9.7	1.0	2.2	6.6	0.0	9.2	2.4	6.7	16.1
Hearing or Visual Impairment	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.0
Health, Physical, or other disability	3.4	9.3	16.0	4.9	13.3	9.2	41.7	19.3	12.3	8.6	14.3
Multiple Disabilities	0.8	2.3	9.1	0.0	3.7	0.0	0.0	6.2	1.7	0.0	0.0
Intellectual Disability	1.9	4.4	1.1	2.5	4.4	3.3	0.0	1.5	2.6	2.2	3.6
Developmental delay/Preschool	7.2	0.0	10.9	23.2	3.0	0.7	0.0	1.0	4.3	16.2	18.5

* Some state-specific categories were recoded or combined to match current U.S. Department of Education categories.

[†] Includes all children with special education records on file. ADDM reports from prior years excluded children living in school districts where records were not reviewed.

[§] Includes data for all sites. ADDM reports from prior years did not report this percentage for sites with less-than-complete access to special education records

[¶] Sites with access to "All" records reviewed all relevant special education records from school districts in the surveillance area. Sites with "Partial" access indicates that sites did not review records for at least a portion of schools within the surveillance area. "None" indicates no agreements in place to review records at any schools and school data were only collected if they were included in a child's medical record.