Supplementary Methods 1: Technical detail on the calculation of ADDM study area denominators

For all counties included in a site's surveillance area, 4- and 8-year-old population counts by sex and race/ethnicity were requested as a special tabulation from the United States Census Bureau. Because single year of age estimates are not available from that source by census tract, we used the American Community Survey (ACS) population estimates to adjust county counts for sub-county areas.

- If an entire county is included, the denominator is equal to the Census population estimates for 4- and 8-year-olds.
- If only certain tracts are included in a county:
    1. The proportion of each race+sex category in included tracts compared to all tracts in the county is calculated using ACS population estimates for 4-year-olds and 8-year-olds (5-year age groups 0-4 years and 5-9 years divided by 5).
    2. Census race+sex category estimates are adjusted for the county based on the ACS race+sex proportions.

Links to data sources:

Census – https://www.census.gov/programs-surveys/popest/data/special-tab/request.html

ACS – https://www2.census.gov/programs-surveys/acs/summary_file/

Supplementary Methods 2: Hierarchical Bayesian model and random-effects restricted maximum likelihood method to estimate uncertainty around prevalence.

The ADDM Network has historically reported an overall prevalence of ASD by aggregating the observed counts of children meeting the ASD surveillance case definition and number of children in the population across sites. For 2022, observed ASD prevalence across ADDM sites was 32.2 (95% confidence interval: 31.6-32.9) per 1,000 children aged 8. However, the tightness of the confidence interval does not fully reflect the wide variability in prevalence estimates across sites. To better reflect that variability, we calculated 1) Bayesian hierarchical models which describe site-based prevalence estimates coming from an overarching beta distribution that has mean μ and "certainty" or "tightness" κ (following a gamma distribution) and 2) overall prevalence from a random-effects restricted maximum likelihood method.

1) Hierarchical Bayesian model

This approach is in the style of *Doing Bayesian Data Analysis: A Tutorial with R and BUGS* (Kruschke, 2011) and uses slightly modified and expanded code from https://doingbayesiandataanalysis.blogspot.com/2012/10/abelsons-paradox-baseball-null.html. The model estimates parameters for ASD prevalence for individual ADDM sites and pooled across all ADDM sites. We created hierarchical Bayesian models where a) constants in the top-level prior were set to be vague so that the beta prior on μ was uniform (R code for this model are immediately below) and b) constants in the top-level prior were set to be informative (R code available in appendix at the end of supplemental file). Models were run with 20,000 tuning and burn-in steps each, with 4 chains with a total of 100,000 saved steps. We calculated and present the modeled prevalence as the mean of the posterior distribution and 95% credible intervals as the highest-density distribution of the posterior of μ.

The Bayesian model with vague priors produced an ASD prevalence point estimate of 32.2 (95% credible interval: 25.4-39.3) per 1,000 children aged 8 years, which is similar to the overall observed estimate. The range of certainty represented by the 95% credible interval of the modeled estimate was wider than the observed 95% confidence interval from pooling numerators and denominators across sites.

Using strong informative priors tended to yield slightly lower estimates than the observed 2022 estimate, but not by more than ~1 per 1,000 children. Priors with smaller standard deviations for the beta distribution also produced slightly narrower 95% credible intervals. Using a beta distribution with mean of 0.0272 (close to the 2020 ADDM prevalence estimate of 27.6 per 1,000 children aged 8 years) and small standard deviation (0.01), the model estimated 2022 prevalence to be 30.8 (95% credible interval: 25.7-36.0) per 1,000 children aged 8 years. Using a beta distribution with the same mean but larger standard deviation (0.04) resulted in an estimate of 31.5 (95% credible interval: 25.3-37.7) per 1,000 children aged 8 years. The latter estimate was almost identical to using informative priors, with beta distribution mean closer to the 2023 NSCH estimate of 39 per 1,000 children aged 3-17 years (https://www.childhealthdata.org/browse/survey/results?q=11080&r=1) regardless of standard deviation. With a beta distribution mean of 0.0403 and standard deviation of 0.01, the model resulted in an estimate of 31.6 (95% credible interval: 26.6-36.9) per 1,000 children aged 8 years; when the standard deviation was slightly larger (0.05), the estimate was 31.5 (95% credible interval: 25.4-38.0) per 1,000 children aged 8 years.

The wider credible intervals from these hierarchical Bayesian better reflect the variability across communities in observed differences in prevalence, which in turn are reflections of differences in practices for diagnostic testing and early identification of ASD. Future ADDM reports will align with any revised CDC reporting standards for pooling data across jurisdictions.

R code for hierarchical Bayesian model function:

```
# libraries
library(bayesboot)
library(dplyr)
library(ggplot2)
library(HDInterval)
library(metafor)
library(rjags)
library(tidyr)

# helper rounding function
roundit <- function(dec){
 format(round(dec, digits=1), nsmall=1, trim=T)
}

# this is a helper function from Kruschke to determine gamma distribution
gammaShRaFromMeanSD = function( mean , sd ) {
 if ( mean <=0 ) stop("mean must be > 0")
 if ( sd <=0 ) stop("sd must be > 0")
 shape = mean^2/sd^2
 rate = mean/sd^2
```

```
  return( list( shape=shape , rate=rate ) )
}

#------------------------------------------------------------------------------------------------
# THE DATA AND MODEL OPTIONS

fullfile = read.csv( file="addm/table1_data.csv" )
fullfile$caseprev.all.Cases <- fullfile$caseprev.all.Cases/1000

dataFrame <- fullfile %>%
  filter(age==8 & SITE_full!="Total") %>%
  arrange(desc(caseprev.all.Cases))

y = dataFrame$casenum.all.Cases  # Num cases
N = dataFrame$denom  # Denom
nSites = length(y)

dataList = list(
  y = y ,
  N = N ,
  nSites = nSites
)

parameters = c( "mu" , "kappa" , "theta" )   # The parameter(s) to be monitored.
adaptSteps = 20000             # Number of steps to "tune" the samplers.
burnInSteps = 20000            # Number of steps to "burn-in" the samplers.
nChains = 4                 # Number of chains to run.
numSavedSteps = 100000          # Total number of steps in chains to save.
thinSteps = 1                  # Number of steps to "thin" (1=keep every step).
nIter = ceiling( ( numSavedSteps * thinSteps ) / nChains ) # Steps per chain.

#------------------------------------------------------------------------------------------------
# Create function to run model with different beta and gamma distributions:
bayes <- function(dataList, b1, b2, g1, g2, title){

#------------------------------------------------------------------------------------------------
# THE MODEL.

  # Specify the model in JAGS language, but save it as a string in R:
  modelString = paste0("
model {
   # Likelihood:
   for ( i in 1:nSites ) {
      y[i] ~ dbin( theta[i] , N[i] )
   }
   # Prior:
   for ( i in 1:nSites ) {
      theta[i] ~ dbeta( a , b )
   }
   a <- mu * kappa
   b <- ( 1.0 - mu ) * kappa
   mu ~ dbeta( ", b1, " , ", b2, " )
   kappa ~ dgamma( ", g1, " , ", g2, " )
}
# ... JAGS model specification ends.
") # close quote to end modelString
  # Write the modelString to a file, using R commands:
  writeLines(modelString,con="addm/model.txt")

#------------------------------------------------------------------------------------------------
```

```
# INTIALIZE THE CHAIN.

 # Let JAGS do it randomly...

#------------------------------------------------------------------------------------------------------
# RUN THE CHAINS.

 # Create, initialize, and adapt the model:
 jagsModel = jags.model( "addm/model.txt" , data=dataList ,
                   inits=list(.RNG.name="base::Wichmann-Hill", .RNG.seed=42) ,
                   n.chains=nChains , n.adapt=adaptSteps )
 # Burning in the MCMC chain...
 update( jagsModel , n.iter=burnInSteps )
 # Sampling final MCMC chain...
 codaSamples = coda.samples( jagsModel , variable.names=parameters ,
                     n.iter=nIter , thin=thinSteps )
 # resulting codaSamples object has these indices:
 #   codaSamples[[ chainIdx ]][ stepIdx , paramIdx ]

#------------------------------------------------------------------------------------------------------
# EXAMINE THE RESULTS.

 # Convert coda-object codaSamples to matrix object for easier handling.
 # But note that this concatenates the different chains into one long chain.
 # Result is mcmcChain[ stepIdx , paramIdx ]
 mcmcChain = as.matrix( codaSamples )
 print(summary(codaSamples))

 # Extract the posterior sample from JAGS for easier reference:
 mu = mcmcChain[,"mu"]
 kappa = mcmcChain[,"kappa"] # BRugs gets sample from JAGS
 theta = matrix( 0 , nrow=nSites , ncol=nChains*nIter )
 for ( i in 1:nSites ) {
  nodeName = paste( "theta[" , i , "]" , sep="" )
  theta[i,] = mcmcChain[,nodeName]
 }

#------------------------------------------------------------------------------------------------------
# PRINT THE RESULTS.

 print(paste0(roundit(summary(mu)["Mean"]*1000),
           " (95% credible interval: ",
           roundit(hdi(mu)["lower"]*1000), "-",
           roundit(hdi(mu)["upper"]*1000), ") per 1,000 children aged 8 years"))

#------------------------------------------------------------------------------------------------------
# VISUALIZE THE RESULTS.

 # get histograms
 sites <- data.frame(mcmcChain[, c(colnames(mcmcChain)[grep("theta", colnames(mcmcChain))],"mu")] * 1000)
 sites <- sites %>% pivot_longer(cols=colnames(sites))
 sites$name <- factor(sites$name,
                 levels=c(paste0("theta.", c(1:16), "."),"mu"),
                 labels=c(dataFrame$SITE_full,"Overall"))

 # get all vals of mu and hdi
 sitevals <- data.frame(rbind(colMeans(mcmcChain)*1000, hdi(mcmcChain)*1000))
 sitevals <- sitevals %>% select(-kappa)
 sitevals$est <- rownames(sitevals)
 sitevals$est[sitevals$est==""] <- "mean"
```

```
 sitevalst <- sitevals %>%
   pivot_longer(-est) %>%
   pivot_wider(id_cols=name, names_from=est) %>%
   mutate(comb=paste0(roundit(mean), " (",
                      roundit(lower), "-",
                      roundit(upper), ")"),
          xint=68, yint=0, yint2=1000) %>%
   data.frame()

 sitevalst$name <- factor(sitevalst$name,
                          levels=c(paste0("theta.", c(1:16), "."),"mu"),
                          labels=c(dataFrame$SITE_full,"Overall"))

 #plot
 ggplot(sites, aes(value)) +
   geom_histogram(bins=1000, fill="skyblue") +
   geom_text(data=sitevalst, aes(xint, yint2, label=comb), size=3) +
   geom_segment(data=sitevalst, aes(x=lower, xend=upper, y=0, yend=0), linewidth=0.75) +
   geom_point(data=sitevalst, aes(mean, yint)) +
   geom_vline(xintercept=sitevalst[which(sitevalst$name=="Overall"),"mean"], color="black") +
   geom_vline(xintercept=sitevalst[which(sitevalst$name=="Overall"),"lower"], color="black", linetype="dashed") +
   geom_vline(xintercept=sitevalst[which(sitevalst$name=="Overall"),"upper"], color="black", linetype="dashed") +
   facet_grid(name~., switch="y") +
   labs(title=title,
        x="Autism spectrum disorder prevalence per 1,000 children aged 8 years",
        y="",
        caption="Note: The solid black line indicates the pooled prevalence estimate, with dotted black lines showing the 95% credible interval") +
   scale_x_continuous(expand=c(0,0),
                      limits=c(0,80),
                      breaks=seq(0,60,10)) +
   scale_y_continuous(expand=expansion(add=c(200,25)),
                      breaks=NULL) +
   theme(strip.background.y=element_blank(),
         strip.text=element_text(size=9, face="bold"),
         strip.text.y.left=element_text(hjust=1, angle=0),
         axis.text=element_text(size=8, color="black"),
         axis.title=element_text(size=9),
         axis.ticks=element_blank(),
         axis.line=element_blank(),
         panel.grid.major=element_blank(),
         panel.grid.minor=element_blank(),
         panel.border=element_blank(),
         panel.background=element_blank(),
         panel.spacing=unit(0,"lines"),
         plot.caption=element_text(size=7, hjust=0),
         plot.title=element_text(hjust=0.5),
         axis.title.y=element_text(angle=0, vjust=0.5, margin=margin(t=0, r=6, b=0, l=0)))
}
```

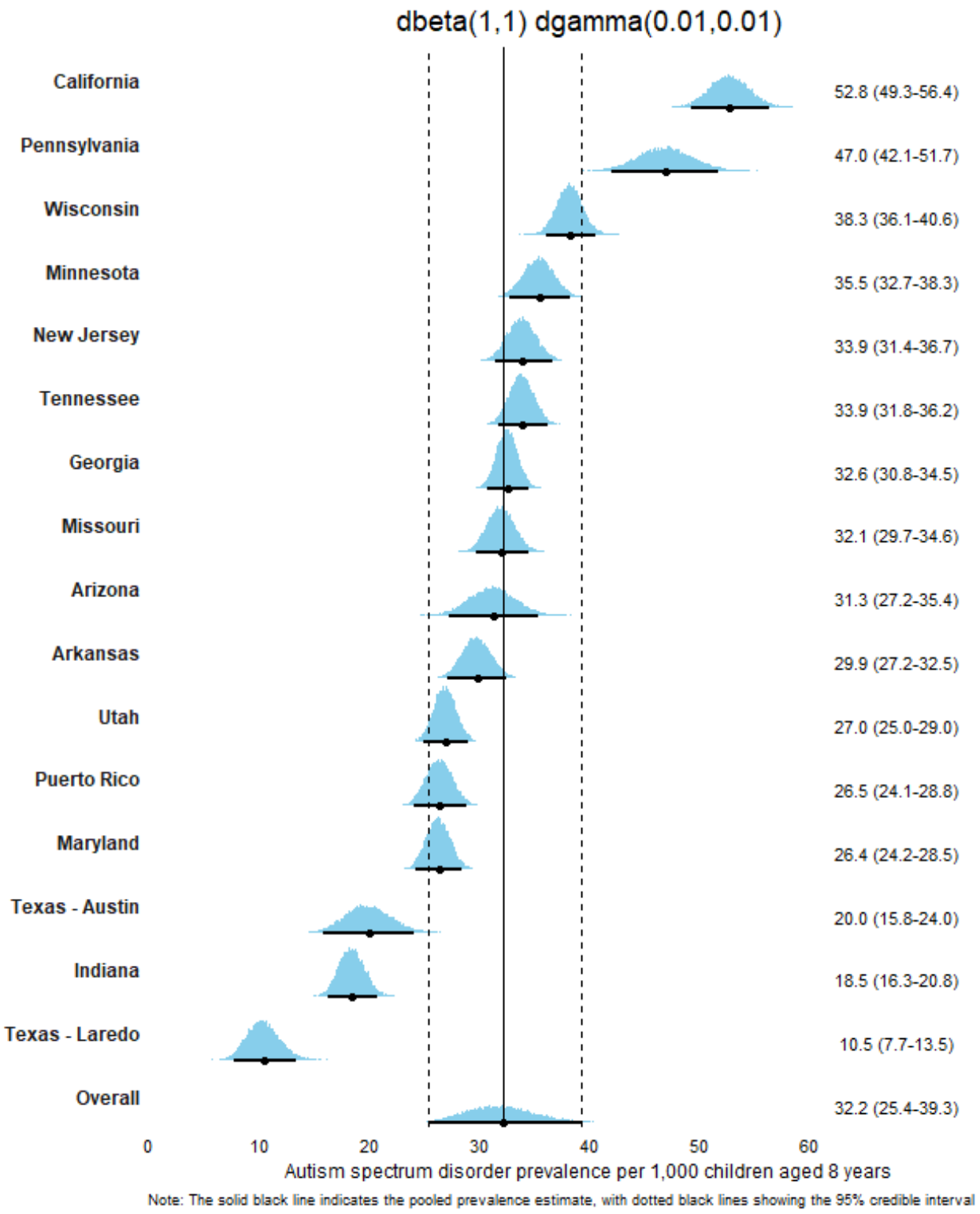
1a) Hierarchical Bayesian model with vague priors

R code and results:

```
# vague prior
bayes(dataList,
    b1=1, b2=1,
    g1=0.01, g2=0.01,
    title="dbeta(1,1) dgamma(0.01,0.01)")
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 16
##    Unobserved stochastic nodes: 18
##    Total graph size: 56
##
## Initializing model
##
##
## Iterations = 40001:65000
## Thinning interval = 1
## Number of chains = 4
## Sample size per chain = 25000
##
## 1. Empirical mean and standard deviation for each variable,
##    plus standard error of the mean:
##
##              Mean       SD  Naive SE Time-series SE
## kappa     184.41747 7.016e+01 2.219e-01      3.599e-01
## mu          0.03224 3.557e-03 1.125e-05      1.669e-05
## theta[1]    0.05279 1.802e-03 5.699e-06      7.436e-06
## theta[2]    0.04701 2.461e-03 7.782e-06      1.029e-05
## theta[3]    0.03832 1.143e-03 3.614e-06      4.650e-06
## theta[4]    0.03551 1.417e-03 4.481e-06      5.712e-06
## theta[5]    0.03394 1.329e-03 4.201e-06      5.334e-06
## theta[6]    0.03394 1.125e-03 3.557e-06      4.581e-06
## theta[7]    0.03263 9.472e-04 2.995e-06      3.891e-06
## theta[8]    0.03205 1.245e-03 3.938e-06      4.924e-06
## theta[9]    0.03131 2.076e-03 6.566e-06      8.389e-06
## theta[10]   0.02986 1.374e-03 4.345e-06      5.443e-06
## theta[11]   0.02698 1.023e-03 3.235e-06      4.142e-06
## theta[12]   0.02646 1.210e-03 3.827e-06      4.683e-06
## theta[13]   0.02637 1.091e-03 3.451e-06      4.370e-06
## theta[14]   0.02001 2.103e-03 6.650e-06      8.725e-06
## theta[15]   0.01851 1.160e-03 3.670e-06      4.688e-06
## theta[16]   0.01048 1.469e-03 4.644e-06      6.393e-06
##
## 2. Quantiles for each variable:
##
##              2.5%      25%      50%      75%    97.5%
## kappa     74.963097 1.335e+02 174.72449 226.45069 347.03832
## mu        0.026010 2.982e-02   0.03198   0.03436   0.04005
## theta[1]   0.049262 5.157e-02   0.05277   0.05399   0.05636
## theta[2]   0.042261 4.533e-02   0.04699   0.04864   0.05196
## theta[3]   0.036113 3.754e-02   0.03831   0.03908   0.04060
## theta[4]   0.032763 3.455e-02   0.03551   0.03645   0.03831
## theta[5]   0.031360 3.305e-02   0.03393   0.03482   0.03660
## theta[6]   0.031792 3.317e-02   0.03392   0.03469   0.03619
## theta[7]   0.030800 3.197e-02   0.03262   0.03326   0.03451
## theta[8]   0.029658 3.120e-02   0.03204   0.03288   0.03451
## theta[9]   0.027332 2.991e-02   0.03129   0.03267   0.03549
## theta[10]  0.027207 2.894e-02   0.02984   0.03078   0.03259
## theta[11]  0.025016 2.629e-02   0.02698   0.02766   0.02904
## theta[12]  0.024147 2.563e-02   0.02645   0.02728   0.02888
## theta[13]  0.024282 2.561e-02   0.02635   0.02709   0.02856
## theta[14]  0.016141 1.856e-02   0.01992   0.02138   0.02441
## theta[15]  0.016325 1.771e-02   0.01848   0.01928   0.02084
## theta[16]  0.007813 9.471e-03   0.01042   0.01143   0.01356
```

```
##
## [1] "32.2 (95% credible interval: 25.4-39.3) per 1,000 children aged 8 years"
```



2) Random effects restricted maximum likelihood method

The random effects restricted maximum likelihood method generated an ASD prevalence point estimate (30.9 per 1,000 children aged 8 years) that is similar to the overall observed estimate, but the confidence intervals of the modeled estimate (95% CI: 25.8-36.0) is wider than the observed 95% CI from pooling numerators and denominators across sites. The wider CI better reflects the variability across communities in observed differences in prevalence, which in turn are reflections of differences in practices for diagnostic testing and early identification of ASD.

R code and results:

```r
df <- dataFrame %>%
  select(SITE_full, denom, casenum.all.Cases)

df$prevalence <- df$casenum.all.Cases / df$denom

# this is from the metafor package
res <- rma(yi = prevalence,
           sei = sqrt(prevalence * (1 - prevalence) / denom),
           data = df,
           method = "REML")

summary(res)

##
## Random-Effects Model (k = 16; tau^2 estimator: REML)
##
##   logLik  deviance      AIC      BIC     AICc
##  47.0942  -94.1883  -90.1883  -88.7722  -89.1883
##
## tau^2 (estimated amount of total heterogeneity): 0.0001 (SE = 0.0000)
## tau (square root of estimated tau^2 value):      0.0103
## I^2 (total heterogeneity / total variability):   98.42%
## H^2 (total variability / sampling variability):  63.47
##
## Test for Heterogeneity:
## Q(df = 15) = 671.7891, p-val < .0001
##
## Model Results:
##
## estimate     se     zval    pval   ci.lb   ci.ub
##   0.0309  0.0026  11.8475  <.0001  0.0258  0.0360  ***
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

paste0(roundit(res$beta*1000),
      " (95% CI: ",
      roundit(res$ci.lb*1000), "-",
      roundit(res$ci.ub*1000), ") per 1,000 children aged 8 years")

## [1] "30.9 (95% CI: 25.8-36.0) per 1,000 children aged 8 years"
```

Supplementary Table 1. Population denominators for children aged 4 and 8 years, by site and race and ethnicity* — Autism and Developmental Disabilities Monitoring Network, 16 Sites, United States, 2022

Age	Site	American Indian or Alaska Native N (%)	Asian or Pacific Islander N (%)	Black N (%)	Hispanic N (%)	Multiracial N (%)	White N (%)
8	Arizona	176 (3)	406 (6)	630 (9)	2,202 (33)	304 (5)	2,991 (45)
	Arkansas	50 (<1)	215 (1)	3,648 (24)	1,453 (9)	729 (5)	9,224 (60)
	California	46 (<1)	1,813 (12)	1,009 (7)	7,613 (50)	1,086 (7)	3,645 (24)
	Georgia	44 (<1)	3,318 (9)	15,085 (43)	6,359 (18)	1,497 (4)	8,910 (25)
	Indiana	10 (<1)	769 (6)	4,458 (34)	2,319 (18)	814 (6)	4,785 (36)
	Maryland	39 (<1)	1,978 (9)	5,242 (25)	2,204 (10)	1,185 (6)	10,558 (50)
	Minnesota	160 (1)	2,363 (14)	4,309 (25)	1,860 (11)	1,130 (7)	7,509 (43)
	Missouri	16 (<1)	817 (4)	5,544 (28)	1,026 (5)	1,005 (5)	11,560 (58)
	New Jersey	34 (<1)	1,248 (7)	5,370 (29)	6,342 (35)	496 (3)	4,844 (26)
	Pennsylvania	12 (<1)	534 (8)	1,912 (27)	499 (7)	378 (5)	3,731 (53)
	Puerto Rico	†	†	†	17,457 (100)	†	†
	Tennessee	42 (<1)	863 (3)	4,488 (17)	3,552 (14)	1,408 (5)	15,829 (60)
	Texas - Austin	10 (<1)	59 (1)	278 (6)	3,251 (75)	122 (3)	636 (15)
	Texas - Laredo	0 (0)	17 (<1)	23 (<1)	4,698 (97)	10 (<1)	108 (2)
	Utah	136 (1)	1,133 (5)	416 (2)	5,151 (21)	1,127 (5)	16,432 (67)
	Wisconsin	79 (<1)	1,643 (6)	4,810 (17)	4,678 (17)	1,418 (5)	15,470 (55)
	Total	856 (<1)	17,175 (6)	57,222 (21)	70,664 (26)	12,708 (5)	116,230 (42)
4	Arizona	97 (2)	379 (6)	450 (7)	2,142 (34)	285 (5)	2,933 (47)
	Arkansas	43 (<1)	221 (2)	3,573 (24)	1,497 (10)	712 (5)	8,598 (59)
	California	45 (<1)	1,839 (12)	829 (6)	7,081 (47)	1,184 (8)	3,958 (26)
	Georgia	49 (<1)	3,330 (10)	14,173 (42)	6,252 (19)	1,439 (4)	8,349 (25)
	Indiana	18 (<1)	816 (6)	4,494 (34)	2,362 (18)	874 (7)	4,782 (36)
	Maryland	36 (<1)	1834 (9)	4,913 (25)	2,235 (11)	1,244 (6)	9,743 (49)
	Minnesota	172 (1)	2,263 (13)	3,997 (23)	1,881 (11)	1,127 (7)	7,629 (45)
	Missouri	30 (<1)	904 (5)	5,583 (29)	1,071 (6)	957 (5)	10,753 (56)
	New Jersey	32 (<1)	1,161 (6)	5,222 (29)	6,608 (36)	568 (3)	4,669 (26)
	Pennsylvania	9 (<1)	491 (7)	1,854 (28)	574 (9)	313 (5)	3,412 (51)
	Puerto Rico	†	†	†	12,849 (100)	†	†
	Tennessee	44 (<1)	938 (4)	4,507 (17)	3,947 (15)	1,552 (6)	15,375 (58)
	Texas - Austin	6 (<1)	48 (1)	420 (10)	3,254 (74)	133 (3)	544 (12)
	Texas - Laredo	1 (<1)	14 (<1)	14 (<1)	4,222 (97)	7 (<1)	99 (2)
	Utah	143 (1)	1,125 (5)	434 (2)	4,992 (23)	1,052 (5)	14,061 (64)
	Wisconsin	76 (<1)	1,532 (6)	4,947 (18)	4,581 (17)	1,389 (5)	14,517 (54)
	Total	801 (<1)	16,895 (6)	55,410 (21)	65,547 (25)	12,835 (5)	109,421 (42)

* Persons of Hispanic or Latino origin of any race are categorized as Hispanic; all racial groups are non-Hispanic.

† The U.S. Census Bureau Population Estimates Program does not include race and Hispanic origin detail for Puerto Rico. This methodology assumes that all Puerto Rico residents are Hispanic.

Supplementary Table 2. Comparison of 2020 and 2022 prevalence of autism spectrum disorder per 1,000 children aged 8 years in 11 sites participating in both surveillance years.

	Surveillance Year 2020			Surveillance Year 2022					
Site	No. with ASD	Denominator	ASD prevalence per 1,000 (95% CI*)	No. with ASD	Denominator	ASD prevalence per 1,000 (95% CI*)	Absolute change per 1,000 (95% CI*)	Percent change	Geographic surveillance areas or data source changes
Arizona†	360	13,118	27.4 (24.8-30.4)	210	6,709	31.3 (27.4-35.7)	3.9 (-1.0-9.0)	14.1	Reduced surveillance area by two educational sources
Arkansas	362	15,432	23.5 (21.2-26.0)	457	15,319	29.8 (27.3-32.6)	6.4 (2.8-10.0)§	27.2	Same
California†	710	15,828	44.9 (41.7-48.2)	807	15,212	53.1 (49.6-56.7)	8.2 (3.4-13.0)§	18.3	Added one educational source (increased study area) and one administrative health source
Georgia	553	21,921	25.2 (23.2-27.4)	1,149	35,213	32.6 (30.8-34.5)	7.4 (4.6-10.2)§	29.3	Added one county
Maryland	491	21,278	23.1 (21.1-25.2)	558	21,206	26.3 (24.2-28.6)	3.2 (0.3-6.2)§	14.0	Added a new health and educational source in same surveillance area
Minnesota†	482	16,150	29.8 (27.3-32.6)	616	17,331	35.5 (32.9-38.4)	5.7 (1.9-9.5)§	19.1	Added two new educational sources and removed one educational source
Missouri	601	24,561	24.5 (22.6-26.5)	640	19,968	32.1 (29.7-34.6)	7.6 (4.5-10.7)§	31.0	Reduced study area by two counties; added one educational source
New Jersey	544	18,940	28.7 (26.4-31.2)	623	18,334	34.0 (31.5-36.7)	5.3 (1.7-8.8)§	18.3	Same
Tennessee	713	25,588	27.9 (25.9-30.0)	889	26,182	34.0 (31.8-36.2)	6.1 (3.1-9.1)§	21.9	Same
Utah	621	24,734	25.1 (23.2-27.1)	658	24,395	27.0 (25.0-29.1)	1.9 (-1.0-4.7)	7.4	Same
Wisconsin	808	28,789	28.1 (26.2-30.0)	1,078	28,098	38.4 (36.2-40.7)	10.3 (7.4-13.3)§	36.7	Same
Total	6,245	226,339	27.6 (26.9-28.3)	7,685	227,967	33.7 (33.0-34.5)	6.1 (5.1-7.1)§	22.2	¶

Abbreviations: ASD = autism spectrum disorder.

* 95% CIs were calculated using the Wilson score method.

† Study areas defined by school district boundaries, or census tracts within school district boundaries with source access. Additions or reductions of educational sources change surveillance area geography.

§ Significant prevalence difference (95% CI excludes 0).

¶ For sites that did not change study areas, in 2020: 3,048 children had ASD of 113,483 children, for ASD prevalence per 1,000 children aged 8 years of 26.9 (95% CI: 25.9-27.8). In 2022: 3,705 children had ASD of 112,328 children, for ASD prevalence per 1,000 children aged 8 years of 33.0 (95% CI: 32.0-34.0). The absolute change between years was 6.1 (95% CI: 4.7-7.5) per 1,000 children aged 8 years, a relative percent increase of 22.8%.

Supplementary Table 3. Additional prevalence ratios of autism spectrum disorder per 1,000 children aged 8 years, by race and ethnicity* — Autism and Developmental Disabilities Monitoring Network, 16 sites, United States, 2022

	Prevalence ratio (95% CI†)					
Site	**Black to Hispanic**	**Black to A/PI**	**Black to Multiracial**	**Hispanic to A/PI**	**Hispanic to Multiracial**	**A/PI to Multiracial**
Arizona	—§	—§	—§	1.2 (0.6-2.2)	—§	—§
Arkansas	1.0 (0.7-1.5)	0.6 (0.3-1.1)	1.2 (0.7-2.0)	0.6 (0.3-1.1)	1.2 (0.7-2.0)	2.1 (1.0-4.3)¶
California	1.2 (0.9-1.6)	1.2 (0.9-1.6)	1.0 (0.7-1.3)	1.0 (0.8-1.2)	0.8 (0.6-1.0)	0.8 (0.6-1.1)
Georgia	1.4 (1.2-1.7)¶	1.1 (0.9-1.3)	1.5 (1.1-2.1)¶	0.8 (0.6-1.0)	1.1 (0.8-1.5)	1.4 (1.0-2.0)¶
Indiana	0.8 (0.5-1.2)	0.4 (0.3-0.6)¶	—§	0.5 (0.3-0.8)¶	—§	—§
Maryland	1.3 (1.0-1.7)¶	1.2 (0.9-1.6)	1.2 (0.9-1.8)	0.9 (0.6-1.3)	1.0 (0.6-1.5)	1.1 (0.7-1.6)
Minnesota	1.0 (0.8-1.3)	1.3 (1.0-1.6)¶	0.9 (0.7-1.2)	1.3 (0.9-1.7)	0.9 (0.6-1.3)	0.7 (0.5-1.0)
Missouri	1.3 (0.9-2.0)	0.6 (0.5-0.9)¶	1.4 (0.9-2.1)	0.5 (0.3-0.8)¶	1.1 (0.6-1.8)	2.2 (1.4-3.6)¶
New Jersey	0.9 (0.7-1.0)	1.3 (0.9-1.9)	1.0 (0.6-1.5)	1.5 (1.1-2.2)¶	1.1 (0.7-1.8)	0.7 (0.4-1.3)
Pennsylvania	1.2 (0.8-1.8)	1.3 (0.8-2.0)	1.1 (0.7-1.7)	1.1 (0.6-1.9)	0.9 (0.5-1.6)	0.8 (0.5-1.5)
Puerto Rico	—**	—**	—**	—**	—**	—**
Tennessee	0.9 (0.8-1.2)	0.8 (0.5-1.0)	1.3 (0.9-1.9)	0.8 (0.6-1.1)	1.4 (1.0-2.0)¶	1.8 (1.2-2.7)¶
Texas - Austin	—§	—§	—§	—§	—§	—§
Texas - Laredo	—§	—§	—§	—§	—§	—§
Utah	1.6 (1.0-2.6)¶	1.7 (1.0-2.9)¶	3.7 (1.9-7.3)¶	1.0 (0.7-1.5)	2.3 (1.3-4.0)¶	2.2 (1.2-4.1)¶
Wisconsin	0.7 (0.6-0.8)¶	1.0 (0.8-1.3)	1.1 (0.8-1.5)	1.5 (1.1-1.9)¶	1.6 (1.2-2.2)¶	1.1 (0.8-1.6)
Total	1.1 (1.0-1.2)¶	1.0 (0.9-1.0)	1.1 (1.0-1.3)¶	0.9 (0.8-0.9)¶	1.0 (0.9-1.1)	1.2 (1.1-1.4)¶

Abbreviations: A/PI = Asian/Pacific Islander.

* Excludes children of other or unknown race (n = 115). Persons of Hispanic origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic.

† 95% CIs were calculated using the Wilson score method.

§ Suppressed estimate (relative SE ≥30% estimate or ratio involving at least one suppressed estimate).

¶ Significant prevalence ratio (95% CI excludes 1.0).

** The Population Estimates Program does not include race and Hispanic origin detail for Puerto Rico. This Census methodology assumes that all Puerto Rico residents are Hispanic. Denominators were therefore not available for n = 2 cases aged 8 years with non-Hispanic ethnicity reported by Puerto Rico.

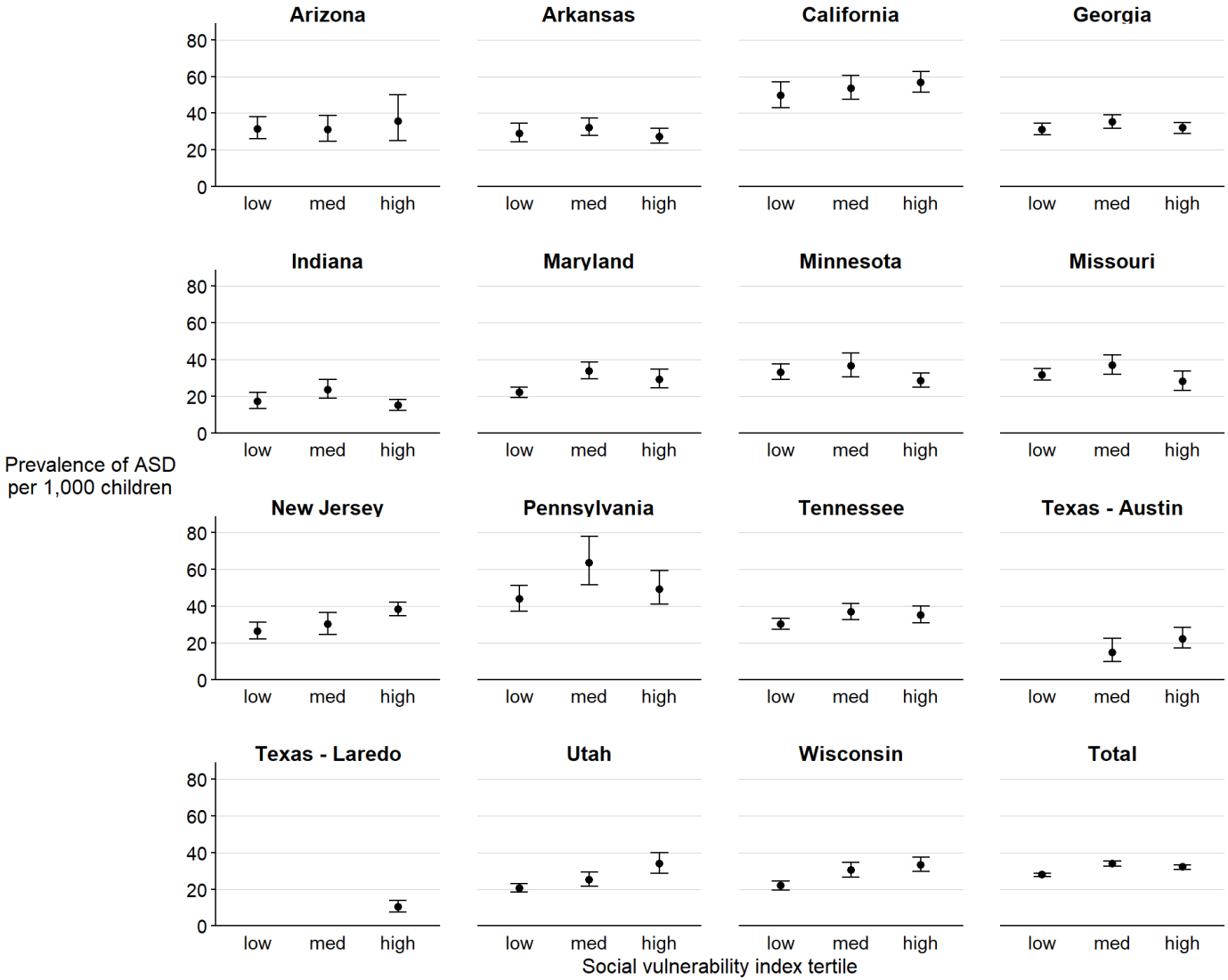
Supplementary Table 4. Prevalence of autism spectrum disorder per 1,000 children aged 8 years, by neighborhood median household income tertile and surveillance site — Autism and Developmental Disabilities Monitoring Network, 16 sites, United States, 2022

	Low tertile		Medium tertile		High tertile		
Site	No. with ASD	Prevalence (95% CI)*	No. with ASD	Prevalence (95% CI)*	No. with ASD	Prevalence (95% CI)*	Cochran-Armitage test for trend
Arizona	19	34.4 (22.1-53.1)	89	32.8 (26.7-40.2)	101	30.6 (25.3-37.1)	0.6
Arkansas	255	28.8 (25.5-32.5)	158	30.7 (26.3-35.8)	42	28.4 (21.1-38.2)	0.8
California	159	57.9 (49.7-67.2)	325	56.2 (50.6-62.5)	322	50.4 (45.3-56.0)	0.1
Georgia	330	31.6 (28.4-35.1)	417	34.6 (31.5-38.0)	395	31.4 (28.5-34.6)	0.9
Indiana	139	17.9 (15.2-21.2)	78	18.9 (15.1-23.5)	21	13.8 (9.0-21.0)	0.5
Maryland	45	22.3 (16.7-29.7)	237	32.9 (29.0-37.3)	275	23.8 (21.1-26.7)	0.1
Minnesota	110	25.8 (21.5-31.0)	242	37.7 (33.3-42.6)	199	30.2 (26.3-34.6)	0.4
Missouri	176	32.4 (28.0-37.5)	230	35.5 (31.2-40.2)	231	29.4 (25.9-33.4)	0.3
New Jersey	260	40.4 (35.9-45.5)	169	33.8 (29.1-39.2)	193	27.4 (23.9-31.5)	<0.01
Pennsylvania	106	45.8 (38.0-55.1)	105	61.8 (51.3-74.3)	124	44.5 (37.4-52.8)	0.7
Puerto Rico	446	25.1 (22.9-27.5)	—†	—†	—†	—†	0.5
Tennessee	260	38.1 (33.8-42.9)	403	37.6 (34.1-41.3)	182	23.1 (20.0-26.7)	<0.01
Texas - Austin	38	22.5 (16.4-30.7)	39	18.8 (13.8-25.6)	—†	—†	0.2
Texas - Laredo	30	12.0 (8.4-17.0)	14	9.7 (5.8-16.3)	—†	—†	0.04
Utah	86	40.8 (33.1-50.1)	258	28.0 (24.9-31.6)	248	18.6 (16.4-21.0)	<0.01
Wisconsin	311	32.9 (29.5-36.7)	293	26.9 (24.0-30.1)	158	20.2 (17.3-23.6)	<0.01
Total	2,770	30.4 (29.3-31.5)	3,067	33.6 (32.4-34.7)	2,499	27.4 (26.3-28.4)	<0.01 (not monotonic)

* 95% CIs were calculated using the Wilson score method.

† Suppressed estimate (relative SE ≥30% estimate or ratio involving at least one suppressed estimate).

Supplementary Figure 1. Prevalence of autism spectrum disorder per 1,000 children aged 8 years, by social vulnerability index tertile and site*† — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022



Abbreviations: ASD = autism spectrum disorder.

* Dots are point estimates and horizontal lines are 95% CIs calculated using the Wilson score method. SVI data were not available for Puerto Rico. Texas – Laredo surveillance area did not include any tracts that were low vulnerability, and estimates were suppressed (relative SE ≥30% estimate) for low vulnerability for Texas – Austin and medium vulnerability Texas – Laredo.

† Cochran Armitage test of trend for association between socioeconomic status tertile and ASD prevalence, by site and overall: Arizona p = 0.7; Arkansas p = 0.5; California p = 0.1; Georgia p = 0.8; Indiana p = 0.2; Maryland p <0.01 (not monotonic); Minnesota p = 0.1; Missouri p = 0.6; New Jersey p = <0.01; Pennsylvania p = 0.3; Tennessee p = 0.04 (not monotonic); Texas - Austin p = 0.2; Utah p = <0.01; Wisconsin p = <0.01; Total p = <0.01 (not monotonic).

Supplementary Table 5. Percentage of cases aged 8 years with autism spectrum disorder with any diagnostic statement, special education eligibility for autism, or ICD code for autism by site* — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022

Site	No. with ASD	% Who had an ASD diagnostic statement	% Who had ASD special education eligibility	% Who had ASD ICD code
Arizona	210	66.2	75.2	44.8
Arkansas	457	92.1	64.1	65.4
California	807	79.7	78.2	75.8
Georgia	1,149	52.9	73.5	51.5
Maryland	558	82.4	81.9	40.9
Minnesota	616	53.9	79.1	62.0
Missouri	640	78.6	61.7	77.7
New Jersey	623	90.2	65.2	70.5
Pennsylvania	335	54.6	68.4	88.7
Puerto Rico	461	95.0	90.2	60.1
Tennessee	889	61.9	56.7	78.5
Texas - Austin	85	41.2	52.9	41.2
Texas - Laredo	47	63.8	38.3	70.2
Utah	658	75.5	54.7	77.8
Wisconsin	1,078	45.1	50.9	87.0
Total	8,613	68.4	67.3	68.9

Abbreviations: ASD = autism spectrum disorder; ICD = International Classification of Diseases.

* N = 8,613 (The ADDM Network has 16 sites; Indiana is not included in the table because the site did not have data from record abstraction available).

Supplementary Table 6. Prevalence of autism spectrum disorder per 1,000 children aged 8 years, by identification type and site — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022

		ASD diagnostic statement*		ASD special education eligibility without diagnostic statement		ASD ICD code only		No record abstraction	
Site	Denominator	N	Prevalence (95% CI†)	N	Prevalence (95% CI†)	N	Prevalence (95% CI†)	N	Prevalence (95% CI†)
Arizona	6,709	139	20.7 (17.6-24.4)	56	8.3 (6.4-10.8)	15	2.2 (1.4-3.7)	—§	—§
Arkansas	15,319	421	27.5 (25.0-30.2)	32	2.1 (1.5-2.9)	4	0.3 (0.1-0.7)	—§	—§
California	15,212	643	42.3 (39.2-45.6)	139	9.1 (7.7-10.8)	25	1.6 (1.1-2.4)	—§	—§
Georgia	35,213	608	17.3 (16.0-18.7)	463	13.1 (12.0-14.4)	78	2.2 (1.8-2.8)	—§	—§
Indiana	13,155	—§	—§	—§	—§	—§	—§	241	18.3 (16.2-20.8)
Maryland	21,206	460	21.7 (19.8-23.7)	98	4.6 (3.8-5.6)	—¶	—¶	—§	—§
Minnesota	17,331	332	19.2 (17.2-21.3)	239	13.8 (12.2-15.6)	45	2.6 (1.9-3.5)	—§	—§
Missouri	19,968	503	25.2 (23.1-27.5)	122	6.1 (5.1-7.3)	15	0.8 (0.5-1.2)	—§	—§
New Jersey	18,334	562	30.7 (28.3-33.2)	48	2.6 (2.0-3.5)	13	0.7 (0.4-1.2)	—§	—§
Pennsylvania	7,066	183	25.9 (22.4-29.9)	79	11.2 (9.0-13.9)	73	10.3 (8.2-13.0)	—§	—§
Puerto Rico	17,457	438	25.1 (22.9-27.5)	5	0.3 (0.1-0.7)	18	1.0 (0.7-1.6)	—§	—§
Tennessee	26,182	550	21.0 (19.3-22.8)	219	8.4 (7.3-9.5)	120	4.6 (3.8-5.5)	—§	—§
Texas - Austin	4,356	35	8.0 (5.8-11.2)	28	6.4 (4.5-9.3)	22	5.1 (3.3-7.6)	—§	—§
Texas - Laredo	4,856	30	6.2 (4.3-8.8)	6	1.2 (0.6-2.7)	11	2.3 (1.3-4.1)	—§	—§
Utah	24,395	497	20.4 (18.7-22.2)	111	4.6 (3.8-5.5)	50	2.0 (1.6-2.7)	—§	—§
Wisconsin	28,098	486	17.3 (15.8-18.9)	270	9.6 (8.5-10.8)	322	11.5 (10.3-12.8)	—§	—§

Abbreviations: ASD = autism spectrum disorder; ICD = International Classification of Diseases.

* Total prevalence of autism spectrum disorder per 1,000 children aged 8 years based only on documented diagnostic ASD statement was 22.5 (95% CI: 21.9-23.1) (Total N=5,887; Denominator without Indiana=261,702).

† 95% CIs were calculated using the Wilson score method.

§ Data from record abstraction were not available for Indiana; all other sites abstracted records.

¶ Maryland did not submit any cases with only an ASD ICD code.

Supplementary Table 7. Special education eligibility category* on most recent documented individualized education program among children aged 8 years by site† — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022

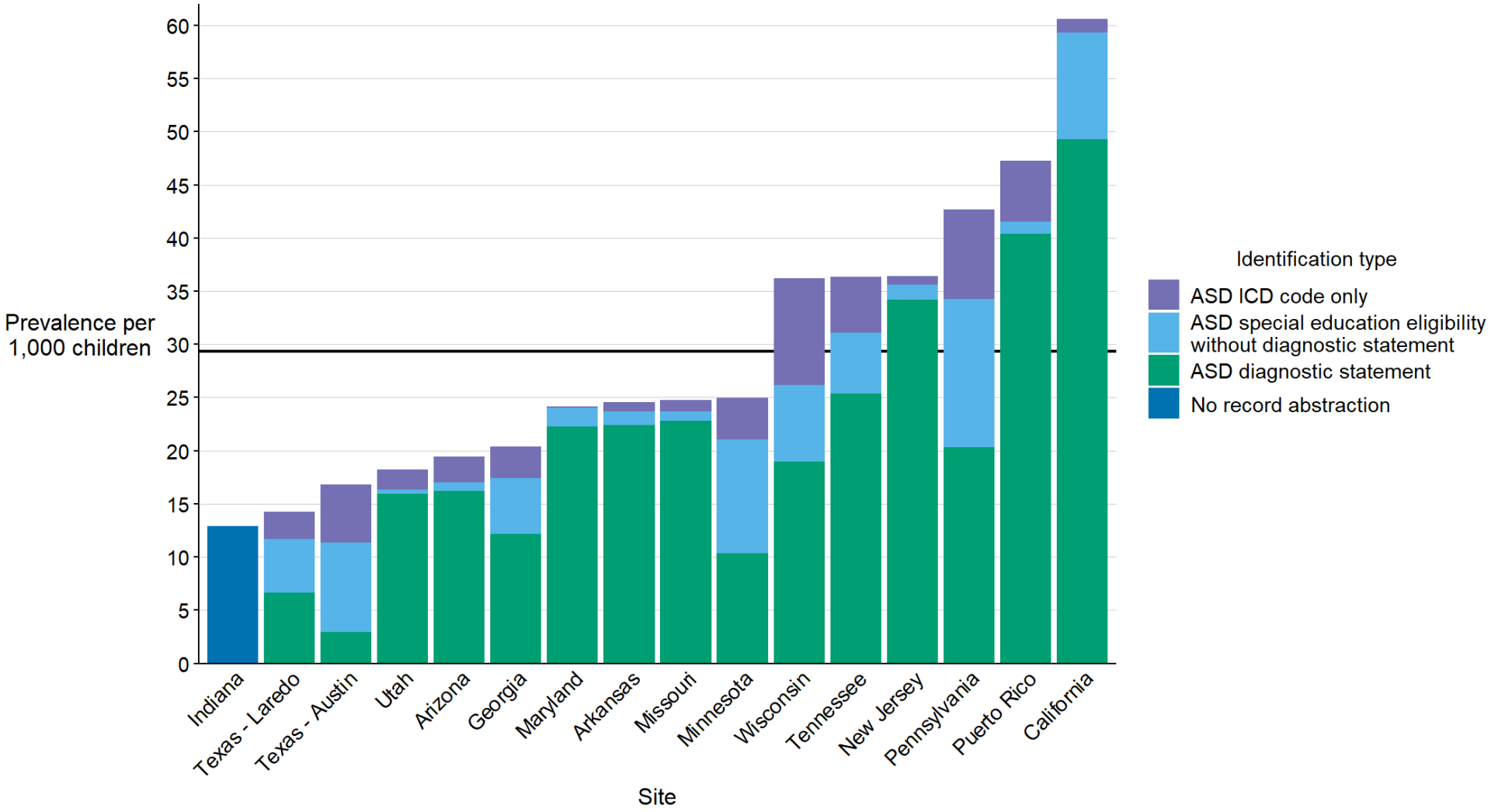
Site	Number with IEP collected in records (% of children with ASD)	% of children with IEPs with category on most recent IEP									
		Autism	Speech or language impairment	Health, Physical, or other disability	Developmental delay/Preschool	Intellectual Disability	Specific Learning Disability	Multiple Disabilities	Emotional Disturbance	Hearing or Visual Impairment	Other
Arizona	174 (82.9)	87.4	26.4	6.9	5.2	6.9	2.9	2.3	0.6	0.6	1.1
Arkansas	358 (78.3)	72.3	10.6	5.6	0.6	8.4	2.2	1.7	0	0	0.3
California	730 (90.5)	80.0	33.6	14.9	0	7.8	7.5	0.7	1.0	1.0	0
Georgia	516 (44.9)	76.7	81.4	6.0	19.4	2.1	1.9	0	0.6	0.6	0
Maryland	496 (88.9)	82.3	2.8	2.0	4.6	0.8	1.0	5.8	0.4	0.2	0
Minnesota	410 (66.6)	85.6	38.0	2.4	4.4	1.5	1.2	0.5	3.9	1.7	1.2
Missouri	500 (78.1)	76.4	14.0	7.4	10.6	2.0	2.2	0.8	1.0	0.8	1.2
New Jersey	436 (70.0)	74.5	9.9	8.5	0.5	0.7	2.3	3.7	0	0	0
Pennsylvania	187 (55.8)	74.9	33.2	15.0	6.4	5.9	7.5	0.5	3.2	0.5	0.5
Puerto Rico	448 (97.2)	82.4	6.0	6.9	0	0.7	2.7	0.9	0	0.4	0
Tennessee	663 (74.6)	75.7	9.2	7.4	15.4	4.2	2.6	1.7	0.5	0.3	0.9
Texas - Austin	46 (54.1)	80.4	80.4	8.7	0	10.9	2.2	0	0	2.2	0
Texas - Laredo	9 (19.1)	100.0	66.7	0	0	22.2	0	0	0	0	0
Utah	286 (43.5)	69.6	8.7	9.8	4.5	2.1	2.8	2.1	0.3	0	0
Wisconsin	224 (20.8)	66.1	47.8	12.9	18.8	4.9	0	0	0.4	1.3	0
Total	5,483 (63.7)	77.7	24.7	7.9	6.9	3.6	2.9	1.6	0.8	0.6	0.4

Abbreviations: ASD = autism spectrum disorder; IEP = individualized education program.

* Percent totals could be greater than 100% in sites where children can be eligible for multiple disability categories on an IEP.

† The ADDM Network has 16 sites; Indiana is not included in the table because the site did not have data from record abstraction available.

Supplementary Figure 2. Prevalence of autism spectrum disorder per 1,000 children aged 4 years, by identification type and site* — Autism and Developmental Disabilities Monitoring Network, 16 sites, United States, 2022†

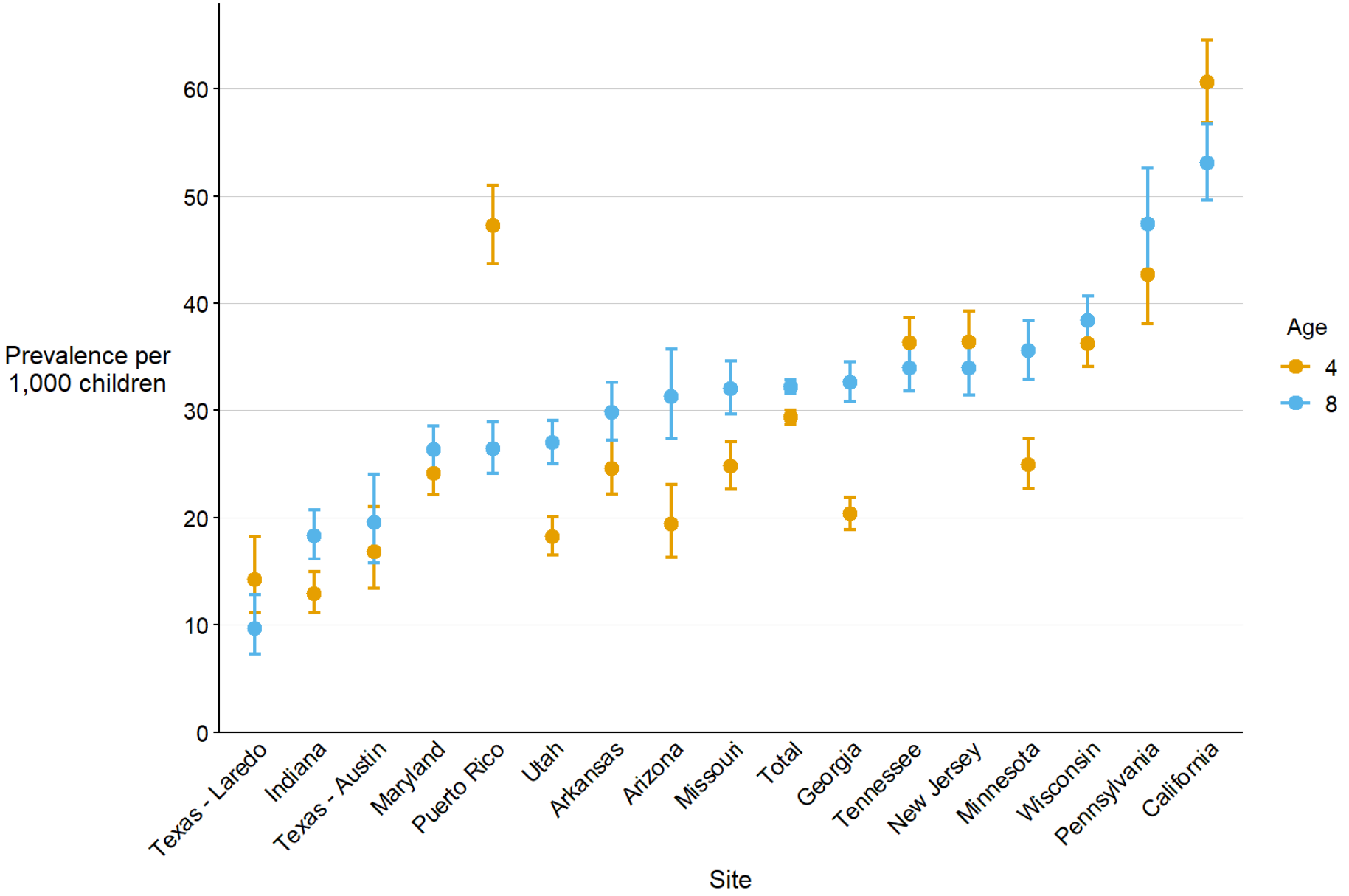


Abbreviations: ASD = autism spectrum disorder; ICD = International Classification of Diseases.

* Data from record abstraction were not available for Indiana.

† Horizontal line is the overall Autism and Developmental Disabilities Monitoring Network prevalence of 29.4 per 1,000 children aged 4 years. Children with documented autism spectrum disorder (ASD) statements could also have ASD eligibility in special education or ASD ICD codes.

Supplementary Figure 3. Prevalence of autism spectrum disorder per 1,000 children aged 4 years compared to prevalence per 1,000 children aged 8 years, by surveillance site* — Autism and Developmental Disabilities Monitoring Network, 16 sites, United States, 2022



* Dots are point estimates and horizontal lines are 95% CIs calculated using the Wilson score method.

Supplementary Table 8. Prevalence of autism spectrum disorder per 1,000 children aged 4 years, by sex* and race and ethnicity† — Autism and Developmental Disabilities Monitoring Network, 16 sites, United States, 2022

	Prevalence by sex (95% CI§)		Prevalence ratio (95% CI§)	Prevalence by race (95% CI§)					Prevalence Ratio (95% CI§)			
Site	**Male**	**Female**	**Male-to-female**	**A/PI**	**Black**	**Hispanic**	**Multiracial**	**White**	**A/PI to White**	**Black to White**	**Hispanic to White**	**Multiracial to White**
Arizona	27.1 (22.0-33.2)	11.2 (8.0-15.6)	2.4 (1.6-3.6)¶	**	24.4 (13.7-43.2)	24.7 (19.0-32.2)	**	14.0 (10.3-18.9)	**	1.7 (0.9-3.4)	1.8 (1.2-2.7)¶	**
Arkansas	33.4 (29.6-37.7)	15.4 (12.8-18.5)	2.2 (1.7-2.7)¶	**	33.3 (27.9-39.7)	24.0 (17.4-33.1)	16.9 (9.7-29.2)	21.1 (18.2-24.3)	**	1.6 (1.3-2.0)¶	1.1 (0.8-1.6)	0.8 (0.4-1.4)
California	88.7 (82.4-95.3)	32.8 (29.0-37.1)	2.7 (2.3-3.1)¶	61.4 (51.4-73.4)	80.8 (64.1-101.4)	71.2 (65.4-77.4)	64.2 (51.6-79.6)	35.6 (30.3-41.9)	1.7 (1.4-2.2)¶	2.3 (1.7-3.0)¶	2.0 (1.7-2.4)¶	1.8 (1.4-2.4)¶
Georgia	30.1 (27.7-32.8)	10.2 (8.8-11.9)	2.9 (2.5-3.5)¶	18.9 (14.8-24.1)	25.8 (23.3-28.6)	21.6 (18.3-25.5)	13.2 (8.5-20.5)	11.5 (9.4-14.0)	1.6 (1.2-2.3)¶	2.2 (1.8-2.8)¶	1.9 (1.4-2.4)¶	1.1 (0.7-1.9)
Indiana	17.8 (14.9-21.2)	7.7 (5.8-10.1)	2.3 (1.7-3.2)¶	**	13.6 (10.6-17.4)	10.6 (7.2-15.6)	**	13.8 (10.9-17.5)	**	1.0 (0.7-1.4)	0.8 (0.5-1.2)	**
Maryland	34.6 (31.2-38.3)	13.1 (11.0-15.5)	2.6 (2.2-3.2)¶	31.6 (24.5-40.7)	39.7 (34.6-45.5)	29.5 (23.3-37.4)	19.3 (13.0-28.5)	14.0 (11.8-16.5)	2.3 (1.7-3.1)¶	2.8 (2.3-3.5)¶	2.1 (1.6-2.8)¶	1.4 (0.9-2.1)
Minnesota	36.4 (32.7-40.6)	13.2 (11.0-15.9)	2.8 (2.2-3.4)¶	25.6 (19.9-33.0)	38.0 (32.5-44.4)	33.0 (25.8-42.0)	28.4 (20.2-39.8)	15.5 (12.9-18.5)	1.7 (1.2-2.3)¶	2.5 (1.9-3.1)¶	2.1 (1.6-2.9)¶	1.8 (1.2-2.7)¶
Missouri	35.3 (31.9-39.1)	13.6 (11.4-16.1)	2.6 (2.1-3.2)¶	35.4 (25.2-49.5)	31.0 (26.8-35.9)	25.2 (17.4-36.4)	23.0 (15.2-34.6)	20.4 (17.9-23.2)	1.7 (1.2-2.5)¶	1.5 (1.2-1.9)¶	1.2 (0.8-1.8)	1.1 (0.7-1.7)
New Jersey	52.9 (48.5-57.6)	19.0 (16.3-22.0)	2.8 (2.3-3.3)¶	32.7 (23.9-44.6)	42.3 (37.2-48.1)	46.0 (41.2-51.3)	24.6 (14.7-40.9)	16.9 (13.6-21.0)	1.9 (1.3-2.8)¶	2.5 (1.9-3.2)¶	2.7 (2.1-3.5)¶	1.5 (0.8-2.6)
Pennsylvania	65.2 (57.4-73.9)	18.0 (13.9-23.2)	3.6 (2.7-4.8)¶	36.7 (23.3-57.2)	57.7 (48.0-69.3)	55.7 (39.8-77.6)	35.1 (19.7-61.8)	32.5 (27.1-39.0)	1.1 (0.7-1.8)	1.8 (1.4-2.3)¶	1.7 (1.2-2.5)¶	1.1 (0.6-2.0)
Puerto Rico	72.0 (66.0-78.5)	20.9 (17.6-24.7)	3.4 (2.9-4.2)¶	††	††	46.2 (42.7-49.9)	††	††	††	††	††	††
Tennessee	52.9 (49.2-56.8)	19.0 (16.8-21.5)	2.8 (2.4-3.2)¶	41.6 (30.6-56.3)	49.5 (43.5-56.2)	44.1 (38.1-50.9)	29.0 (21.7-38.6)	28.6 (26.1-31.4)	1.5 (1.1-2.0)¶	1.7 (1.5-2.0)¶	1.5 (1.3-1.8)¶	1.0 (0.7-1.4)
Texas – Austin	21.4 (16.4-27.8)	10.9 (7.2-16.6)	2.0 (1.2-3.2)¶	**	**	19.1 (14.9-24.3)	**	**	**	**	**	**
Texas – Laredo	22.3 (16.9-29.4)	6.0 (3.5-10.3)	3.7 (2.0-6.8)¶	**	**	14.7 (11.5-18.8)	**	**	**	**	**	**
Utah	25.8 (23.1-29.0)	10.3 (8.5-12.4)	2.5 (2.0-3.1)¶	16.9 (10.8-26.2)	27.6 (15.9-47.7)	19.6 (16.1-23.9)	**	17.3 (15.3-19.6)	1.0 (0.6-1.6)	1.6 (0.9-2.8)	1.1 (0.9-1.4)	**
Wisconsin	53.4 (49.8-57.3)	18.5 (16.3-20.9)	2.9 (2.5-3.3)¶	40.5 (31.7-51.5)	46.1 (40.6-52.3)	59.2 (52.7-66.4)	33.1 (24.9-43.9)	24.5 (22.1-27.1)	1.7 (1.3-2.2)¶	1.9 (1.6-2.2)¶	2.4 (2.1-2.8)¶	1.4 (1.0-1.8)¶
Total	42.6 (41.6-43.7)	15.4 (14.7-16.1)	2.8 (2.6-2.9)¶	31.3 (28.8-34.0)	35.0 (33.5-36.5)	38.2 (36.8-39.7)	25.2 (22.7-28.1)	20.4 (19.6-21.3)	1.5 (1.4-1.7)¶	1.7 (1.6-1.8)¶	1.9 (1.8-2.0)¶	1.2 (1.1-1.4)¶

Abbreviations: AI/AN = American Indian or Alaska Native; A/PI = Asian or Pacific Islander.

* All children aged 4 years had available sex information.

† Excludes children of other or unknown race (n = 106). Persons of Hispanic origin might be of any race but are categorized as Hispanic; all racial groups are non-Hispanic. Overall AI/AN autism spectrum disorder prevalence per 1,000 was 30.0 (20.2-44.2). No individual site met the threshold for statistical precision for AI/AN prevalence. AI/AN to White ratio was significant overall 1.5 (1.0-2.2).

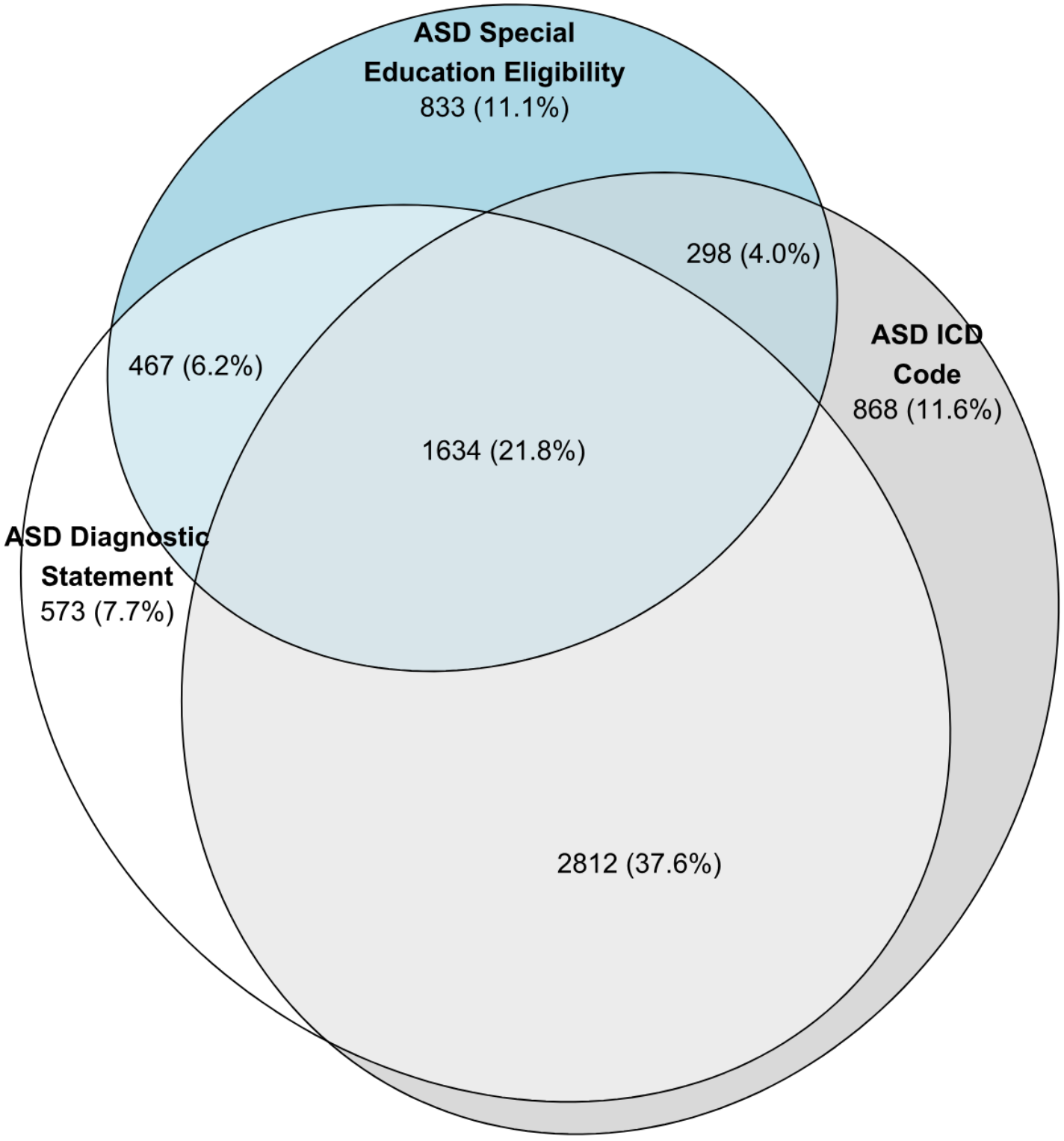
§ 95% CIs were calculated using the Wilson score method.

¶ Significant prevalence ratio (95% CI excludes 1.0).

** Suppressed estimate (relative SE ≥30% estimate or ratio involving at least one suppressed estimate).

†† The Population Estimates Program does not include race and Hispanic origin detail for Puerto Rico. This methodology assumes that all Puerto Rico residents are Hispanic. Denominators were therefore not available for n = 4 cases aged 4 years with non-Hispanic ethnicity reported by Puerto Rico.

Supplementary Figure 4. Euler diagram of different types of autism spectrum disorder identification among children aged 4 years with autism spectrum disorder* — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022



Abbreviations: ASD = autism spectrum disorder; ICD = International Classification of Diseases.

* N = 7,485 (The ADDM Network has 16 sites; Indiana is not included in the figure because the site did not have data from record abstraction available).

Supplementary Table 9. Prevalence of suspected autism spectrum disorder per 1,000 children aged 4 years, by surveillance site* — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022

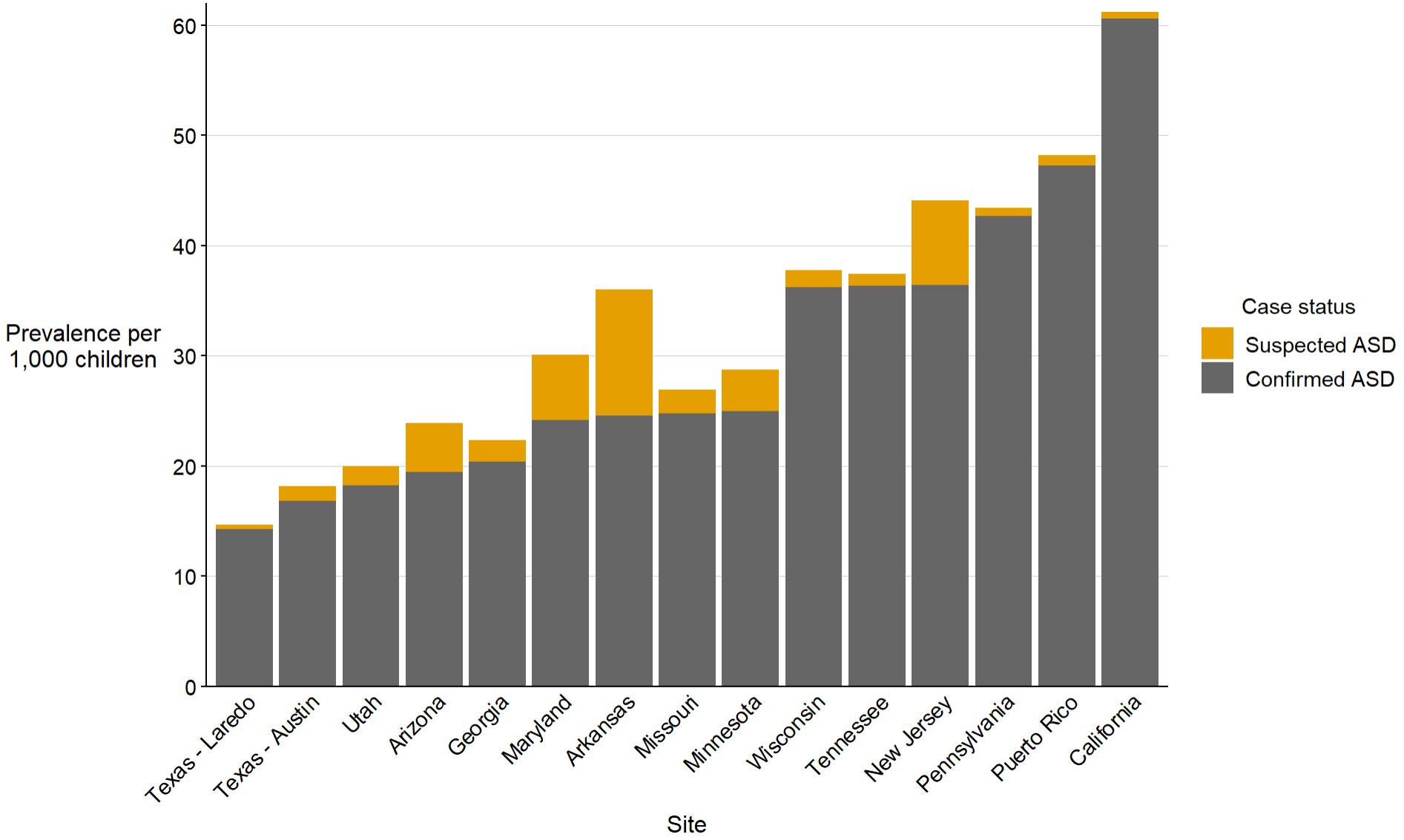
Site	No. of children aged 4 years with suspected ASD	Prevalence of suspected ASD among children aged 4 years (95% CI[†])	Ratio of ASD to suspected ASD cases
Arizona	28	4.5 (3.1-6.4)	4:1
Arkansas	167	11.4 (9.8-13.3)	2:1
California	9	0.6 (0.3-1.1)	101:1
Georgia	66	2.0 (1.5-2.5)	10:1
Maryland	119	5.9 (5.0-7.1)	4:1
Minnesota	64	3.7 (2.9-4.8)	7:1
Missouri	42	2.2 (1.6-2.9)	11:1
New Jersey	140	7.7 (6.5-9.0)	5:1
Pennsylvania	5	0.8 (0.3-1.8)	57:1
Puerto Rico	12	0.9 (0.5-1.6)	51:1
Tennessee	28	1.1 (0.7-1.5)	34:1
Texas - Austin	6	1.4 (0.6-3.0)	12:1
Texas - Laredo	2	0.5 (0.1-1.7)	31:1
Utah	39	1.8 (1.3-2.4)	10:1
Wisconsin	41	1.5 (1.1-2.1)	24:1
Total	768	3.1 (2.9-3.3)	10:1

Abbreviations: ASD = autism spectrum disorder.

* The ADDM Network has 16 sites; Indiana is not included in the table because the site did not have data from record abstraction available. The overall ASD prevalence estimate per 1,000 children aged 4 years excluding Indiana was 30.2 (95% CI: 29.6-30.9).

[†] 95% CIs were calculated using the Wilson score method.

Supplementary Figure 5. Prevalence of autism spectrum disorder and suspected autism spectrum disorder per 1,000 children aged 4 years, by site* — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022



Abbreviations: ASD = autism spectrum disorder.

* The ADDM Network has 16 sites; Indiana is not included in the figure because the site did not have data from record abstraction available.

Supplementary Table 10. Cumulative incidence of autism spectrum disorder diagnosis or eligibility by age 48 months per 1,000 children by age and site* — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022

Site	ASD diagnosis or eligibility by age 48 months among children born in 2018 (aged 4 years in 2022) (95% CI†)	ASD diagnosis or eligibility by age 48 months among children born in 2014 (aged 8 years in 2022) (95% CI†)	Age 4 to age 8 Risk Ratio (95% CI†)
Arizona	15.7 (13.0-19.1)	11.5 (9.2-14.3)	1.4 (1.0-1.8)§
Arkansas	20.8 (18.6-23.3)	12.9 (11.3-14.8)	1.6 (1.3-1.9)§
California	54.8 (51.2-58.5)	32.9 (30.2-35.8)	1.7 (1.5-1.9)§
Georgia	14.2 (13.0-15.5)	10.3 (9.3-11.4)	1.4 (1.2-1.6)§
Maryland	21.6 (19.7-23.8)	11.9 (10.5-13.4)	1.8 (1.6-2.1)§
Minnesota	14.5 (12.8-16.4)	12.9 (11.3-14.7)	1.1 (0.9-1.3)
Missouri	20.8 (18.9-22.9)	13.6 (12.1-15.3)	1.5 (1.3-1.8)§
New Jersey	31.4 (28.9-34.0)	18.6 (16.7-20.7)	1.7 (1.5-1.9)§
Pennsylvania	29.0 (25.2-33.3)	19.1 (16.2-22.6)	1.5 (1.2-1.9)§
Puerto Rico	32.5 (29.5-35.7)	10.5 (9.1-12.2)	3.1 (2.6-3.7)§
Tennessee	27.2 (25.3-29.3)	10.7 (9.5-12.0)	2.6 (2.2-2.9)§
Texas - Austin	10.0 (7.4-13.4)	8.5 (6.2-11.7)	1.2 (0.8-1.8)
Texas - Laredo	6.2 (4.3-9.0)	2.1 (1.1-3.8)	3.0 (1.5-6.2)§
Utah	14.1 (12.6-15.7)	8.9 (7.8-10.2)	1.6 (1.3-1.9)§
Wisconsin	20.1 (18.5-21.8)	11.6 (10.4-12.9)	1.7 (1.5-2.0)§
Total	22.6 (22.0-23.2)	13.1 (12.6-13.5)	1.7 (1.7-1.8)§

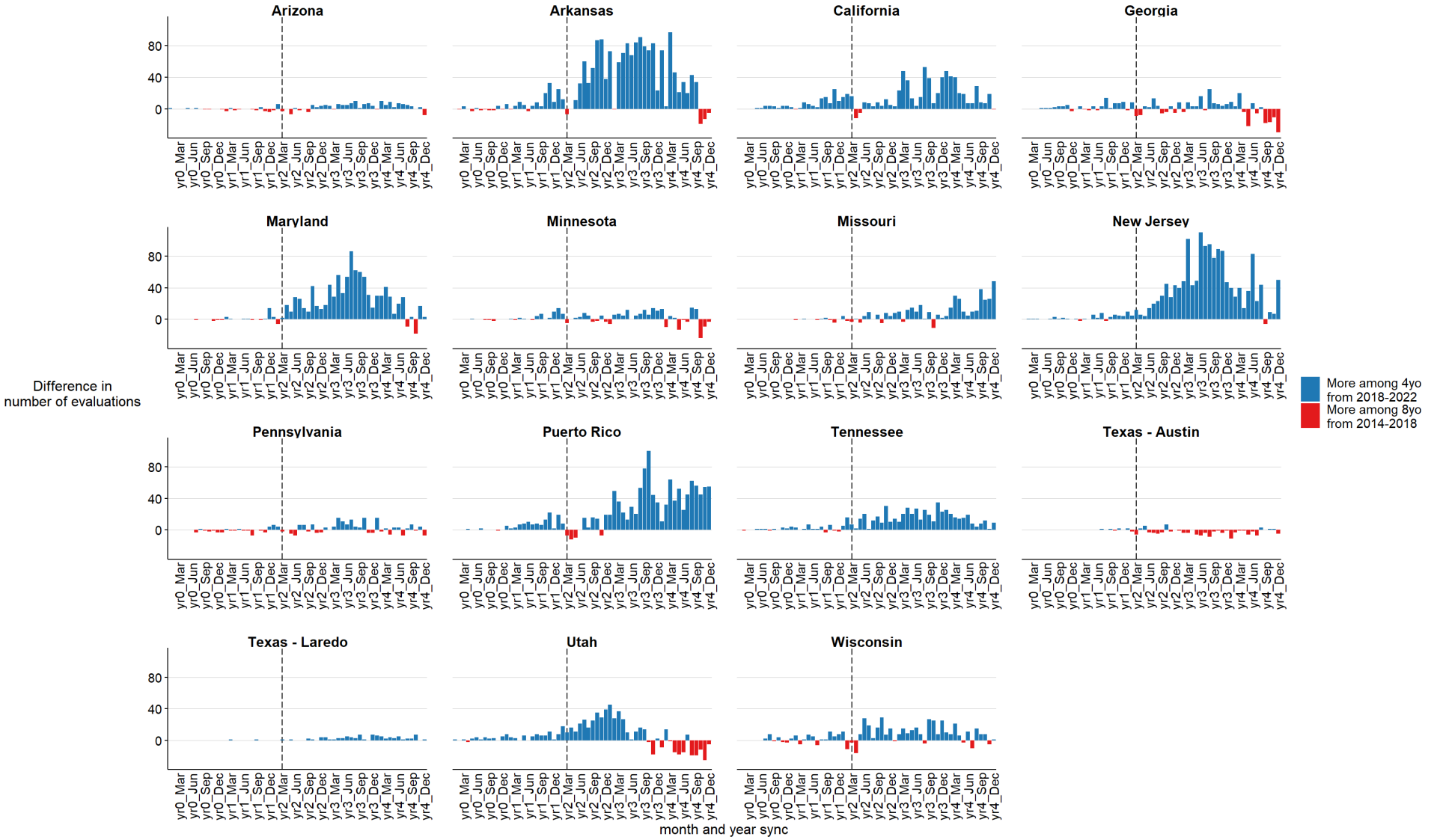
Abbreviations: ASD = autism spectrum disorder.

* The ADDM Network has 16 sites; Indiana is not included in the table because the site did not have data from record abstraction available.

† 95% CIs were calculated using the Wilson score method.

§ Significant prevalence ratio (95% CI excludes 1.0).

Supplementary Figure 6. Difference in number of developmental evaluations per 1,000 children aged 4 years in 2022 during calendar years 2018–2022 and children aged 8 years in 2022 during calendar years 2014–2018, by month and site*†— Autism and Developmental Disabilities Monitoring Network, 15 sites, United States



* The ADDM Network has 16 sites; Indiana is not included in the figure because the site did not have data from record abstraction available.

† For children aged 4 years, year 0 to year 4 represents 2018–2022; for children aged 8 years, year 0 to year 4 represents 2014–2018. The dashed line shows the comparison at pandemic onset for children aged 4 years.

Supplementary Figure 7. Difference in incidence of autism spectrum disorder identification per 1,000 children aged 4 years in 2022 during calendar years 2018–2022 and children aged 8 years in 2022 during calendar years 2014–2018, by month and site*†— Autism and Developmental Disabilities Monitoring Network, 15 sites, United States

Abbreviations: ASD = autism spectrum disorder.

* The ADDM Network has 16 sites; Indiana is not included in the figure because the site did not have data from record abstraction available.

† For children aged 4 years, year 0 to year 4 represents 2018–2022; for children aged 8 years, year 0 to year 4 represents 2014–2018. The dashed line shows the comparison at pandemic onset for children aged 4 years.

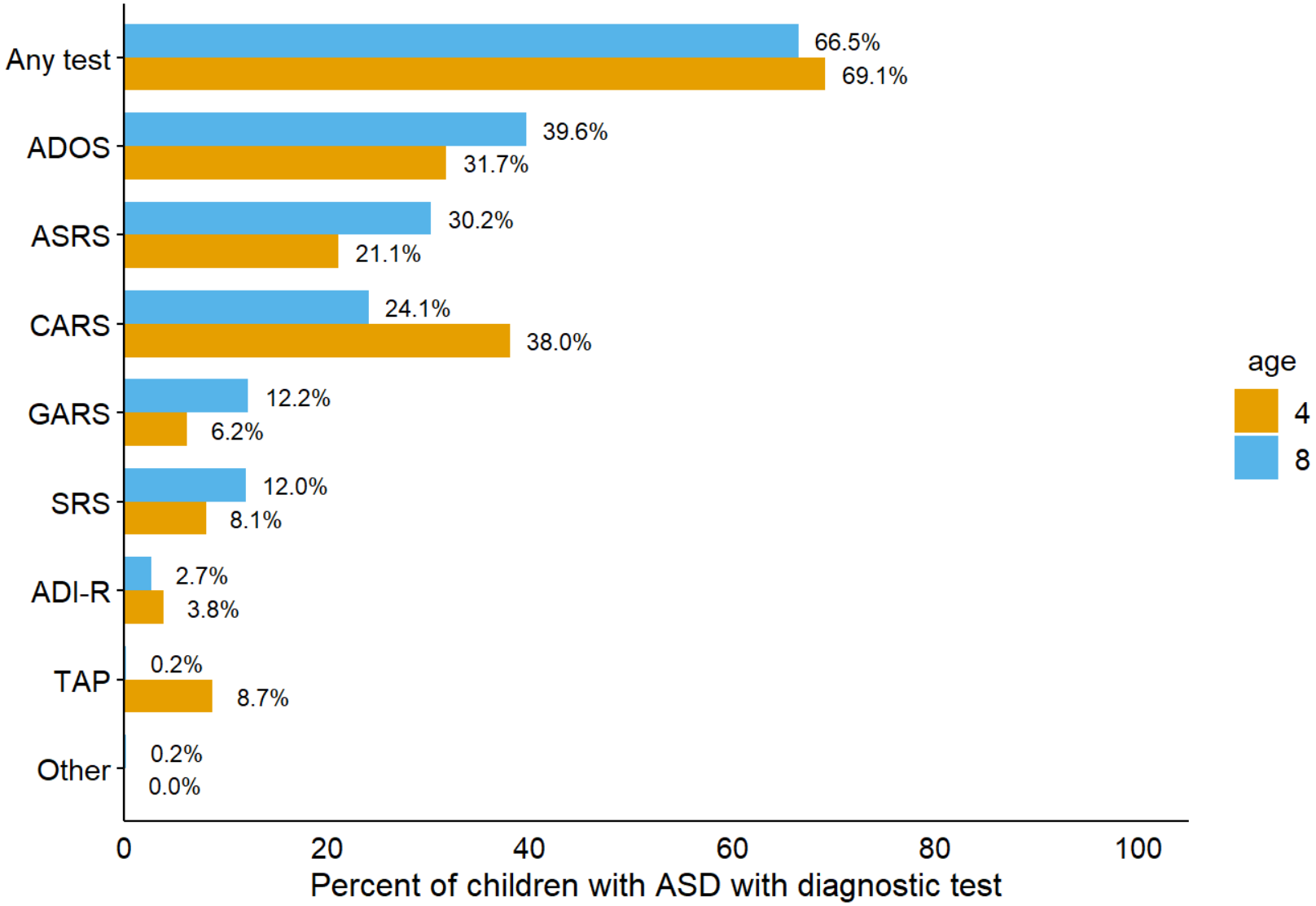
Supplementary Table 11. Percentage of children aged 8 years with autism spectrum disorder who have a recorded autism spectrum disorder diagnostic test, by site* — Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022

Site	Any test	ADOS	ASRS	CARS	GARS	SRS	ADI-R	Other
Arizona	80.0	33.3	60.0	21.0	21.0	10.5	2.9	0.5
Arkansas	83.6	63.9	20.1	22.3	19.5	13.1	0.2	0.4
California	92.8	49.2	55.4	48.7	30.1	18.5	0.4	0.9
Georgia	54.0	38.3	25.2	14.8	9.6	5.7	1.0	0.3
Maryland	86.6	45.2	64.5	18.5	3.2	18.1	8.4	0.5
Minnesota	75.0	54.4	48.7	24.0	1.9	10.7	1.9	0.3
Missouri	87.7	55.5	31.4	22.7	18.0	37.7	0.5	0.6
New Jersey	24.7	13.0	0.3	10.1	1.4	0.3	11.6	0.2
Pennsylvania	62.4	13.4	37.9	38.5	10.1	7.2	0.6	0.0
Puerto Rico	93.5	34.1	11.9	70.7	60.1	1.5	6.7	0.2
Tennessee	64.5	41.5	23.4	19.9	5.7	9.7	0.1	0.6
Texas - Austin	67.1	47.1	23.5	54.1	12.9	7.1	0.0	0.0
Texas - Laredo	31.9	10.6	10.6	12.8	12.8	2.1	0.0	0.0
Utah	65.8	40.9	50.8	11.2	2.1	15.2	2.7	0.5
Wisconsin	39.8	28.4	3.6	13.8	1.8	9.3	2.1	0.3
Total	66.5	39.6	30.2	24.1	12.2	12.0	2.7	0.4

Abbreviations: ADI-R = Autism Diagnostic Interview-Revised; ADOS = Autism Diagnostic Observation Schedule; ASD = autism spectrum disorder; ASRS = Autism Spectrum Rating Scales; CARS = Childhood Autism Rating Scale; GARS = Gilliam Autism Rating Scale; SRS = Social Responsiveness Scale; other test category includes Asperger Syndrome Diagnostic Scale, Gilliam Asperger's Disorder Scale, and TELE-ASD-PEDS.

* N = 8,613 (The ADDM Network has 16 sites; Indiana is not included in the table because the site did not have data from record abstraction available).

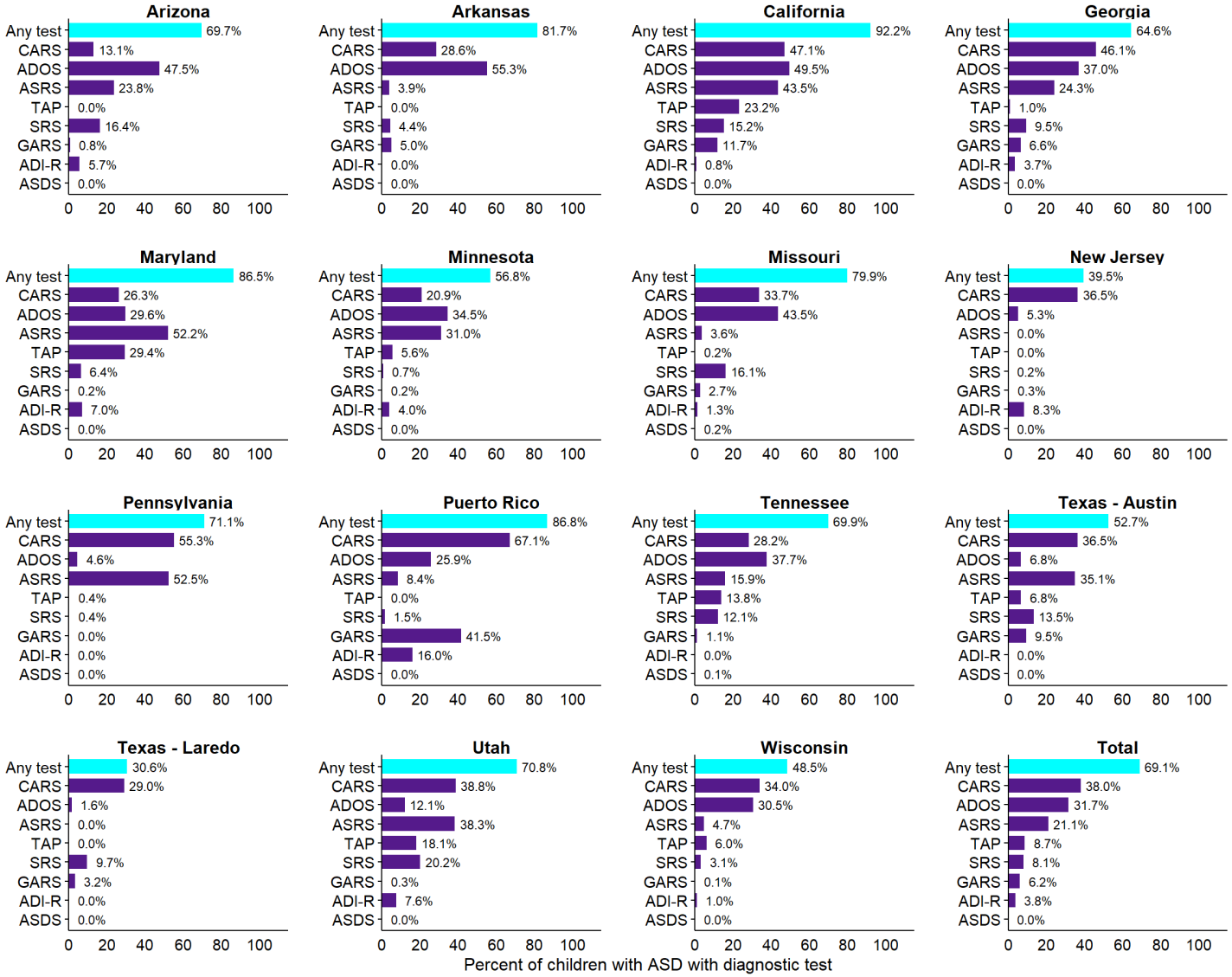
Supplementary Figure 8. Percentage of children with autism spectrum disorder who have recorded autism spectrum disorder diagnostic test by age* – Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022.



Abbreviations: ADI-R = Autism Diagnostic Interview-Revised; ADOS = Autism Diagnostic Observation Schedule; ASD = autism spectrum disorder; ASRS = Autism Spectrum Rating Scales; CARS = Childhood Autism Rating Scale; GARS = Gilliam Autism Rating Scale; SRS = Social Responsiveness Scale; TAP = TELE-ASD-PEDS; other test category includes Asperger Syndrome Diagnostic Scale and Gilliam Asperger's Disorder Scale.

* The ADDM Network has 16 sites; Indiana is not included in the figure because the site did not have data from record abstraction available.

Supplementary Figure 9. Percentage of children aged 4 years with autism spectrum disorder who have recorded autism spectrum disorder diagnostic test by site* – Autism and Developmental Disabilities Monitoring Network, 15 sites, United States, 2022.



Abbreviations: ADI-R = Autism Diagnostic Interview-Revised; ADOS = Autism Diagnostic Observation Schedule; ASD = autism spectrum disorder; ASDS = Asperger Syndrome Diagnostic Scale; ASRS = Autism Spectrum Rating Scales; CARS = Childhood Autism Rating Scale; GARS = Gilliam Autism Rating Scale; SRS = Social Responsiveness Scale; TAP = TELE-ASD-PEDS.

* N = 7,485 (The ADDM Network has 16 sites; Indiana is not included in the figure because the site did not have data from record abstraction available).

Appendix for Supplementary Methods 2

1b) Hierarchical Bayesian models with informative priors

To visualize / calculate beta distributions: https://homepage.divms.uiowa.edu/~mbognar/applets/beta.html
To choose gamma distribution, we chose the distribution where mean kappa = a + b from the beta distribution.

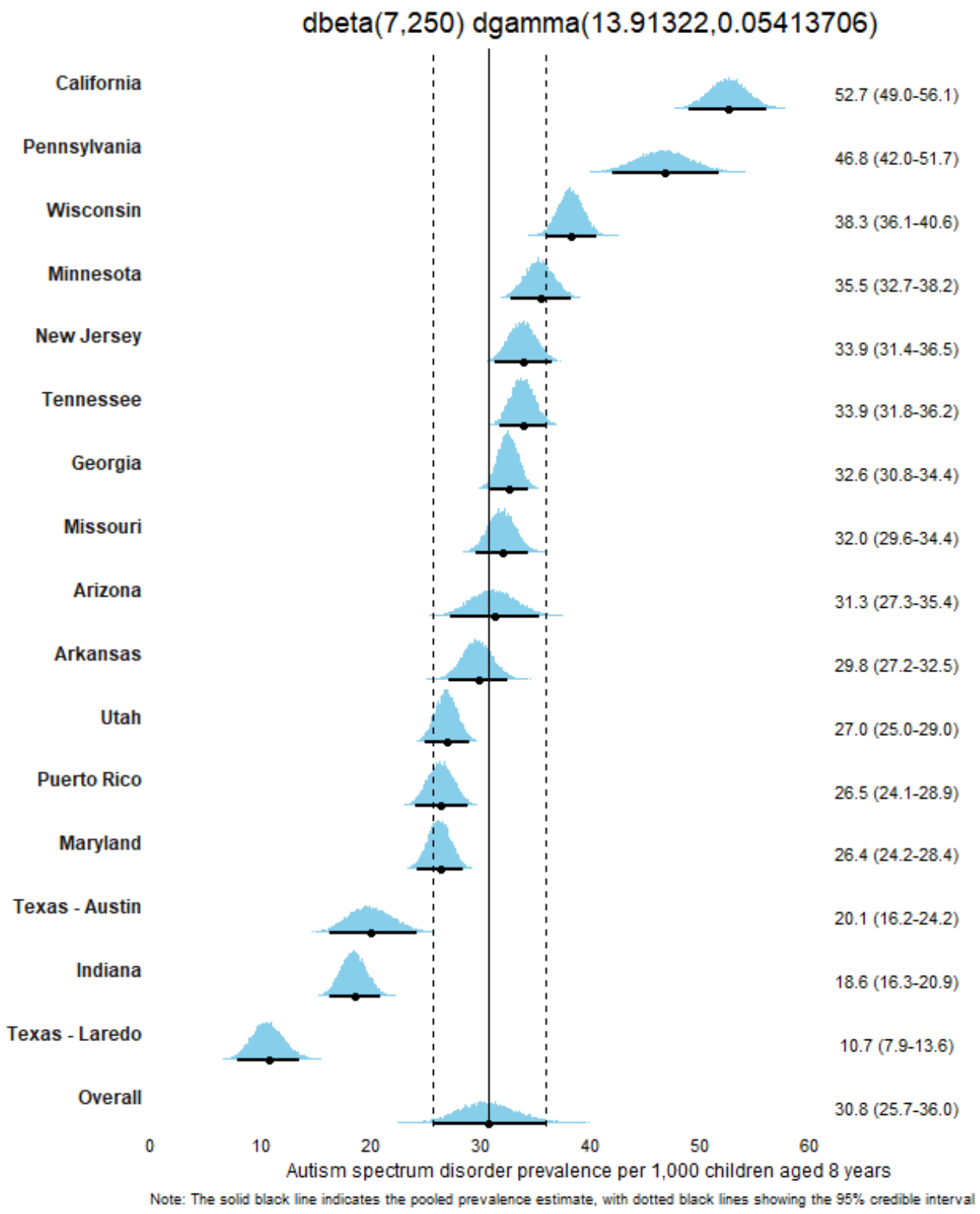
Informative prior with beta distribution mean 0.0272, close to 2020 ADDM ASD prevalence of 0.0276 among children aged 8 years

R code and results:

```
###
# smaller standard deviation than vague prior (0.0101)
#gammaShRaFromMeanSD( 257, 68.9)
bayes(dataList,
    b1=7, b2=250,
    g1=13.91322, g2=0.05413706,
    title="dbeta(7,250) dgamma(13.91322,0.05413706)")

## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 16
##    Unobserved stochastic nodes: 18
##    Total graph size: 59
##
## Initializing model
##
##
## Iterations = 40001:65000
## Thinning interval = 1
## Number of chains = 4
## Sample size per chain = 25000
##
## 1. Empirical mean and standard deviation for each variable,
##    plus standard error of the mean:
##
##              Mean       SD  Naive SE Time-series SE
## kappa     255.00471 5.558e+01 1.758e-01      2.429e-01
## mu          0.03078 2.663e-03 8.422e-06      1.099e-05
## theta[1]    0.05267 1.790e-03 5.661e-06      7.199e-06
## theta[2]    0.04681 2.482e-03 7.849e-06      9.949e-06
## theta[3]    0.03830 1.146e-03 3.625e-06      4.670e-06
## theta[4]    0.03547 1.402e-03 4.433e-06      5.671e-06
## theta[5]    0.03393 1.314e-03 4.156e-06      5.289e-06
## theta[6]    0.03394 1.117e-03 3.534e-06      4.533e-06
## theta[7]    0.03263 9.434e-04 2.983e-06      3.761e-06
## theta[8]    0.03203 1.233e-03 3.901e-06      5.049e-06
## theta[9]    0.03128 2.089e-03 6.607e-06      8.345e-06
## theta[10]   0.02983 1.361e-03 4.305e-06      5.379e-06
## theta[11]   0.02700 1.027e-03 3.249e-06      4.113e-06
## theta[12]   0.02649 1.215e-03 3.843e-06      4.877e-06
## theta[13]   0.02637 1.073e-03 3.394e-06      4.325e-06
## theta[14]   0.02010 2.059e-03 6.510e-06      8.294e-06
## theta[15]   0.01856 1.184e-03 3.744e-06      4.858e-06
## theta[16]   0.01074 1.461e-03 4.620e-06      6.253e-06
##
```

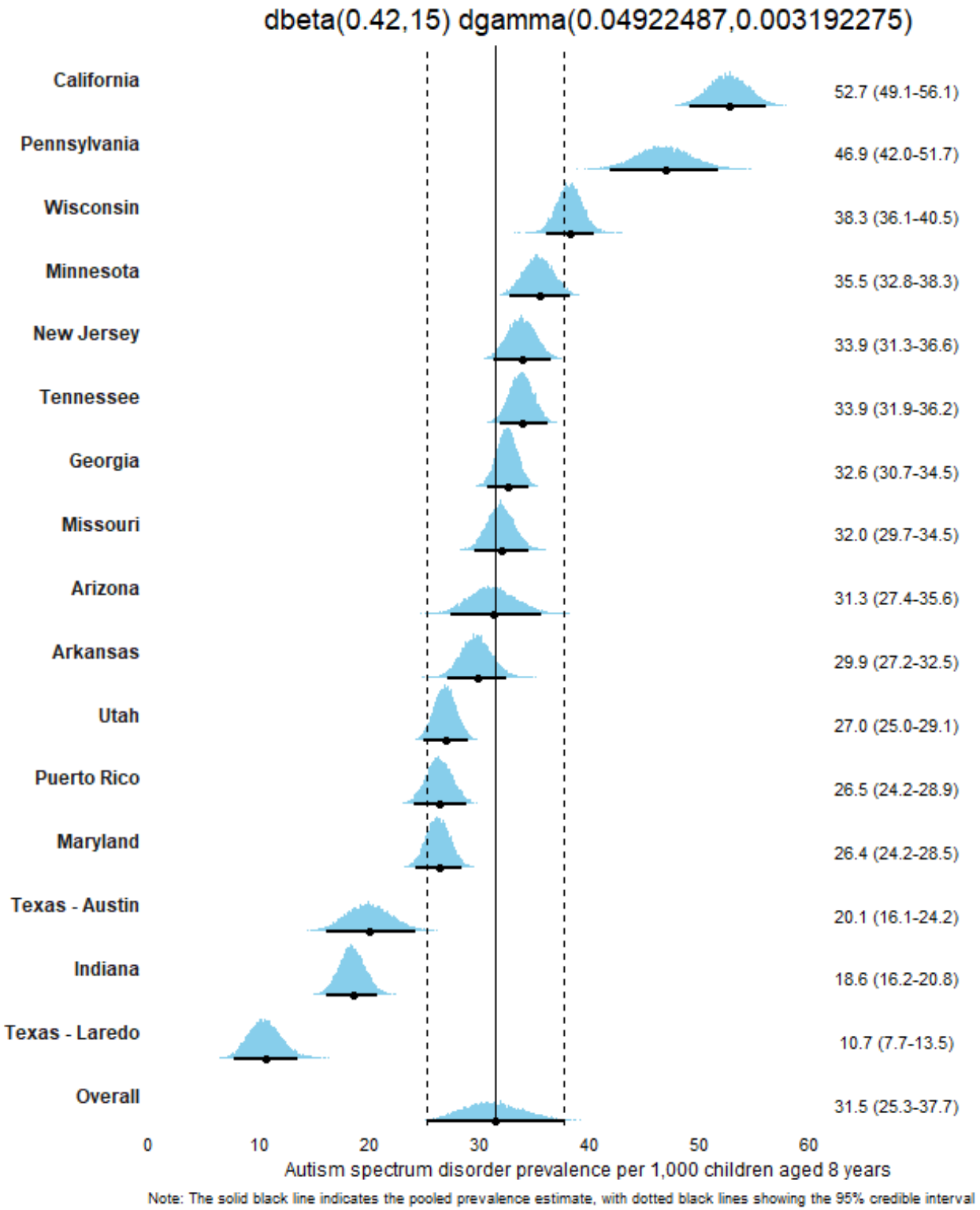
```
## 2. Quantiles for each variable:
##
##              2.5%       25%       50%       75%     97.5%
## kappa     1.589e+02 2.156e+02 250.45826 289.40146 376.30633
## mu        2.580e-02 2.896e-02   0.03069   0.03252   0.03618
## theta[1]  4.915e-02 5.146e-02   0.05267   0.05386   0.05625
## theta[2]  4.204e-02 4.511e-02   0.04677   0.04846   0.05176
## theta[3]  3.607e-02 3.752e-02   0.03829   0.03906   0.04055
## theta[4]  3.276e-02 3.452e-02   0.03545   0.03640   0.03827
## theta[5]  3.140e-02 3.302e-02   0.03391   0.03480   0.03654
## theta[6]  3.180e-02 3.317e-02   0.03392   0.03469   0.03617
## theta[7]  3.080e-02 3.199e-02   0.03261   0.03326   0.03449
## theta[8]  2.966e-02 3.118e-02   0.03202   0.03286   0.03448
## theta[9]  2.733e-02 2.984e-02   0.03124   0.03267   0.03552
## theta[10] 2.721e-02 2.890e-02   0.02980   0.03073   0.03257
## theta[11] 2.504e-02 2.629e-02   0.02698   0.02768   0.02907
## theta[12] 2.417e-02 2.565e-02   0.02647   0.02730   0.02891
## theta[13] 2.431e-02 2.563e-02   0.02635   0.02707   0.02853
## theta[14] 1.629e-02 1.865e-02   0.02002   0.02149   0.02433
## theta[15] 1.631e-02 1.775e-02   0.01854   0.01934   0.02094
## theta[16] 8.034e-03 9.737e-03   0.01068   0.01168   0.01378
##
## [1] "30.8 (95% credible interval: 25.7-36.0) per 1,000 children aged 8 years"
```




```
###
# smaller standard deviation than vague prior but larger standard deviation than above (0.0402)
#gammaShRaFromMeanSD( 15.42, 69.501162)
bayes(dataList,
    b1=0.42, b2=15,
    g1=0.04922487, g2=0.003192275,
    title="dbeta(0.42,15) dgamma(0.04922487,0.003192275)")

## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
```

```
## Graph information:
##    Observed stochastic nodes: 16
##    Unobserved stochastic nodes: 18
##    Total graph size: 59
##
## Initializing model
##
##
## Iterations = 40001:65000
## Thinning interval = 1
## Number of chains = 4
## Sample size per chain = 25000
##
## 1. Empirical mean and standard deviation for each variable,
##    plus standard error of the mean:
##
##              Mean       SD  Naive SE Time-series SE
## kappa     228.24021 8.767e+01 2.772e-01      4.522e-01
## mu          0.03148 3.165e-03 1.001e-05      1.468e-05
## theta[1]    0.05271 1.801e-03 5.694e-06      7.081e-06
## theta[2]    0.04691 2.478e-03 7.835e-06      9.829e-06
## theta[3]    0.03831 1.139e-03 3.602e-06      4.638e-06
## theta[4]    0.03549 1.402e-03 4.433e-06      5.665e-06
## theta[5]    0.03393 1.333e-03 4.216e-06      5.417e-06
## theta[6]    0.03393 1.107e-03 3.500e-06      4.340e-06
## theta[7]    0.03262 9.522e-04 3.011e-06      3.813e-06
## theta[8]    0.03205 1.235e-03 3.904e-06      4.884e-06
## theta[9]    0.03131 2.097e-03 6.630e-06      8.641e-06
## theta[10]   0.02985 1.361e-03 4.303e-06      5.423e-06
## theta[11]   0.02702 1.033e-03 3.266e-06      4.143e-06
## theta[12]   0.02647 1.202e-03 3.800e-06      4.743e-06
## theta[13]   0.02637 1.094e-03 3.460e-06      4.380e-06
## theta[14]   0.02011 2.095e-03 6.625e-06      8.708e-06
## theta[15]   0.01856 1.178e-03 3.725e-06      4.682e-06
## theta[16]   0.01065 1.477e-03 4.671e-06      6.390e-06
##
## 2. Quantiles for each variable:
##
##              2.5%      25%      50%      75%     97.5%
## kappa     91.562296 1.647e+02 216.20149 278.99045 427.89852
## mu        0.025794 2.937e-02   0.03128   0.03340   0.03838
## theta[1]   0.049222 5.149e-02   0.05269   0.05393   0.05627
## theta[2]   0.042113 4.523e-02   0.04686   0.04855   0.05193
## theta[3]   0.036114 3.754e-02   0.03831   0.03907   0.04059
## theta[4]   0.032766 3.454e-02   0.03548   0.03644   0.03825
## theta[5]   0.031357 3.302e-02   0.03391   0.03482   0.03660
## theta[6]   0.031788 3.318e-02   0.03391   0.03466   0.03614
## theta[7]   0.030766 3.198e-02   0.03261   0.03325   0.03453
## theta[8]   0.029660 3.121e-02   0.03203   0.03287   0.03451
## theta[9]   0.027392 2.987e-02   0.03126   0.03269   0.03559
## theta[10]  0.027270 2.892e-02   0.02983   0.03075   0.03259
## theta[11]  0.025012 2.631e-02   0.02701   0.02770   0.02907
## theta[12]  0.024167 2.566e-02   0.02644   0.02727   0.02886
## theta[13]  0.024269 2.563e-02   0.02635   0.02711   0.02855
## theta[14]  0.016215 1.865e-02   0.02003   0.02149   0.02442
## theta[15]  0.016277 1.777e-02   0.01852   0.01933   0.02094
## theta[16]  0.007964 9.627e-03   0.01059   0.01160   0.01378
##
## [1] "31.5 (95% credible interval: 25.3-37.7) per 1,000 children aged 8 years"
```



Informative prior with beta distribution mean 0.0403, close to 2023 NSCH ASD prevalence of 0.039 among children aged 3-17 years

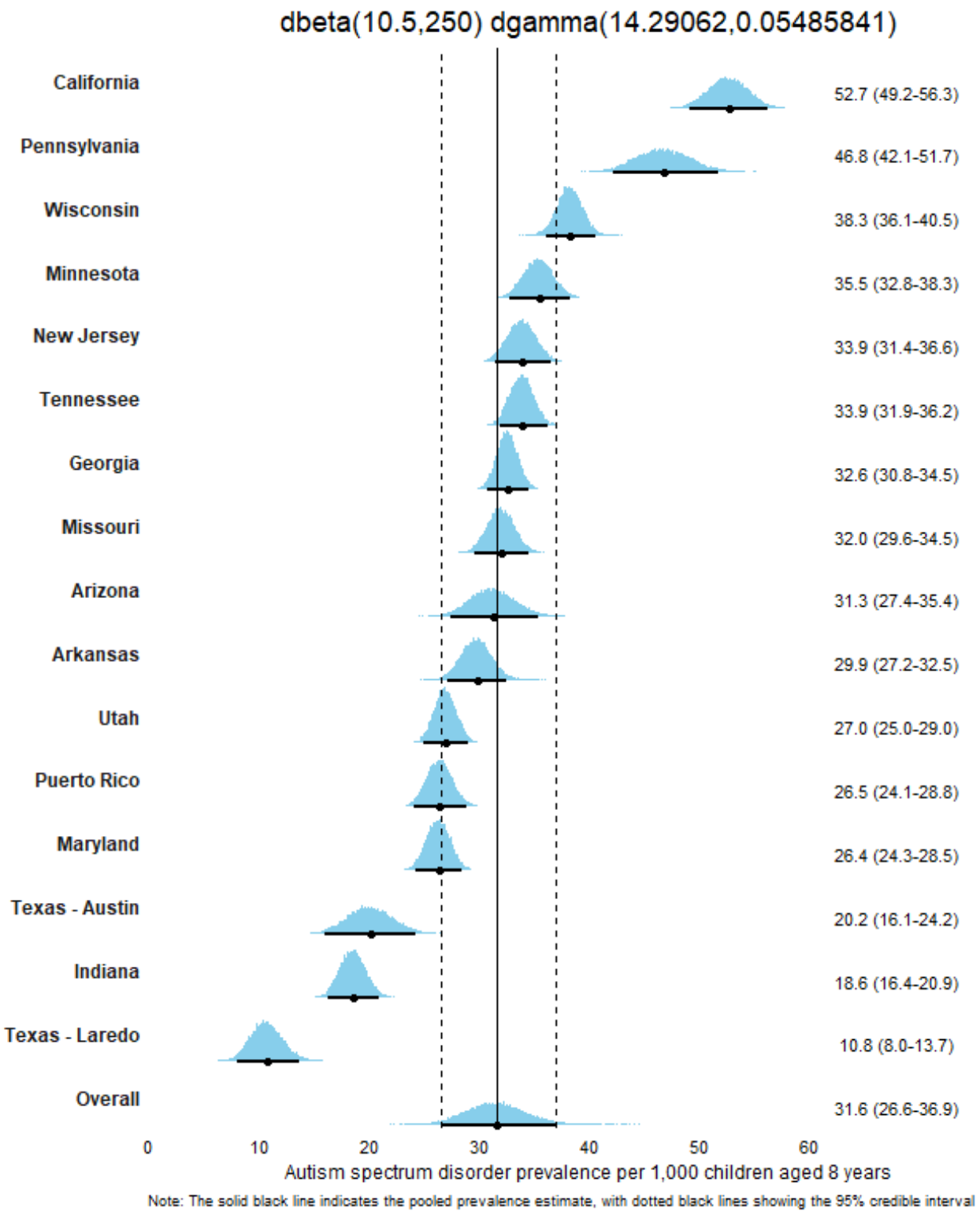
R code and results:

```
###
# smaller standard deviation than vague prior (0.0122)
#gammaShRaFromMeanSD( 260.5, 68.91)
bayes(dataList,
    b1=10.5, b2=250,
```

```
    g1=14.29062, g2=0.05485841,
    title="dbeta(10.5,250) dgamma(14.29062,0.05485841)")
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 16
##    Unobserved stochastic nodes: 18
##    Total graph size: 59
##
## Initializing model
##
##
## Iterations = 40001:65000
## Thinning interval = 1
## Number of chains = 4
## Sample size per chain = 25000
##
## 1. Empirical mean and standard deviation for each variable,
##    plus standard error of the mean:
##
##              Mean       SD  Naive SE Time-series SE
## kappa     257.28869 5.607e+01 1.773e-01      2.484e-01
## mu          0.03161 2.651e-03 8.384e-06      1.124e-05
## theta[1]    0.05271 1.814e-03 5.735e-06      7.400e-06
## theta[2]    0.04684 2.461e-03 7.781e-06      9.873e-06
## theta[3]    0.03830 1.132e-03 3.580e-06      4.620e-06
## theta[4]    0.03547 1.403e-03 4.437e-06      5.712e-06
## theta[5]    0.03395 1.320e-03 4.175e-06      5.448e-06
## theta[6]    0.03395 1.108e-03 3.505e-06      4.396e-06
## theta[7]    0.03263 9.486e-04 3.000e-06      3.732e-06
## theta[8]    0.03203 1.236e-03 3.908e-06      4.845e-06
## theta[9]    0.03132 2.060e-03 6.514e-06      8.453e-06
## theta[10]   0.02986 1.372e-03 4.338e-06      5.632e-06
## theta[11]   0.02702 1.036e-03 3.275e-06      4.221e-06
## theta[12]   0.02648 1.200e-03 3.793e-06      4.769e-06
## theta[13]   0.02637 1.086e-03 3.436e-06      4.278e-06
## theta[14]   0.02021 2.094e-03 6.621e-06      8.485e-06
## theta[15]   0.01859 1.160e-03 3.668e-06      4.646e-06
## theta[16]   0.01077 1.461e-03 4.621e-06      6.034e-06
##
## 2. Quantiles for each variable:
##
##              2.5%      25%      50%      75%    97.5%
## kappa     1.611e+02 2.174e+02 253.04524 292.15384 378.44016
## mu        2.665e-02 2.980e-02   0.03154   0.03335   0.03704
## theta[1]  4.919e-02 5.147e-02   0.05268   0.05393   0.05630
## theta[2]  4.215e-02 4.514e-02   0.04681   0.04849   0.05172
## theta[3]  3.610e-02 3.753e-02   0.03828   0.03906   0.04054
## theta[4]  3.276e-02 3.453e-02   0.03546   0.03641   0.03826
## theta[5]  3.142e-02 3.304e-02   0.03394   0.03483   0.03658
## theta[6]  3.182e-02 3.320e-02   0.03394   0.03468   0.03617
## theta[7]  3.080e-02 3.199e-02   0.03262   0.03327   0.03451
## theta[8]  2.965e-02 3.121e-02   0.03201   0.03286   0.03451
## theta[9]  2.743e-02 2.990e-02   0.03127   0.03269   0.03552
## theta[10] 2.723e-02 2.892e-02   0.02984   0.03076   0.03261
## theta[11] 2.503e-02 2.633e-02   0.02699   0.02771   0.02910
## theta[12] 2.419e-02 2.566e-02   0.02646   0.02726   0.02890
## theta[13] 2.428e-02 2.562e-02   0.02636   0.02711   0.02851
## theta[14] 1.630e-02 1.877e-02   0.02014   0.02156   0.02450
```

```
## theta[15] 1.639e-02 1.779e-02   0.01857   0.01935   0.02093
## theta[16] 8.085e-03 9.771e-03   0.01072   0.01172   0.01380
##
## [1] "31.6 (95% credible interval: 26.6-36.9) per 1,000 children aged 8 years"
```




```
###
# smaller standard deviation than vague prior but larger than above (0.0473)
#gammaShRaFromMeanSD( 16.28125, 70)
bayes(dataList,
    b1=0.65625, b2=15.625,
```

```
    g1=0.05409778, g2=0.003322704,
    title="dbeta(0.65625,15.625) dgamma(0.05409778,0.003322704)")
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 16
##    Unobserved stochastic nodes: 18
##    Total graph size: 59
##
## Initializing model
##
##
## Iterations = 40001:65000
## Thinning interval = 1
## Number of chains = 4
## Sample size per chain = 25000
##
## 1. Empirical mean and standard deviation for each variable,
##    plus standard error of the mean:
##
##              Mean       SD  Naive SE Time-series SE
## kappa     226.15137 8.705e+01 2.753e-01      4.413e-01
## mu          0.03154 3.197e-03 1.011e-05      1.456e-05
## theta[1]    0.05275 1.785e-03 5.646e-06      7.250e-06
## theta[2]    0.04692 2.487e-03 7.865e-06      1.053e-05
## theta[3]    0.03831 1.139e-03 3.601e-06      4.549e-06
## theta[4]    0.03550 1.373e-03 4.342e-06      5.480e-06
## theta[5]    0.03395 1.332e-03 4.213e-06      5.359e-06
## theta[6]    0.03392 1.122e-03 3.548e-06      4.521e-06
## theta[7]    0.03263 9.486e-04 3.000e-06      3.861e-06
## theta[8]    0.03204 1.238e-03 3.914e-06      5.061e-06
## theta[9]    0.03131 2.092e-03 6.617e-06      8.320e-06
## theta[10]   0.02986 1.363e-03 4.309e-06      5.627e-06
## theta[11]   0.02702 1.043e-03 3.297e-06      4.263e-06
## theta[12]   0.02647 1.205e-03 3.809e-06      4.816e-06
## theta[13]   0.02636 1.097e-03 3.469e-06      4.398e-06
## theta[14]   0.02009 2.088e-03 6.604e-06      8.474e-06
## theta[15]   0.01854 1.177e-03 3.721e-06      4.775e-06
## theta[16]   0.01065 1.490e-03 4.713e-06      6.523e-06
##
## 2. Quantiles for each variable:
##
##              2.5%      25%      50%      75%    97.5%
## kappa     91.337714 1.632e+02 214.00452 276.79087 428.80952
## mu         0.025796 2.941e-02   0.03134   0.03340   0.03854
## theta[1]   0.049312 5.153e-02   0.05272   0.05395   0.05627
## theta[2]   0.042100 4.525e-02   0.04688   0.04857   0.05195
## theta[3]   0.036094 3.755e-02   0.03829   0.03906   0.04059
## theta[4]   0.032833 3.456e-02   0.03549   0.03642   0.03825
## theta[5]   0.031355 3.305e-02   0.03393   0.03483   0.03664
## theta[6]   0.031760 3.315e-02   0.03391   0.03467   0.03615
## theta[7]   0.030806 3.199e-02   0.03262   0.03326   0.03454
## theta[8]   0.029657 3.121e-02   0.03203   0.03287   0.03452
## theta[9]   0.027327 2.989e-02   0.03126   0.03271   0.03552
## theta[10]  0.027211 2.894e-02   0.02984   0.03077   0.03258
## theta[11]  0.025016 2.631e-02   0.02700   0.02772   0.02910
## theta[12]  0.024143 2.564e-02   0.02645   0.02728   0.02891
## theta[13]  0.024250 2.561e-02   0.02634   0.02709   0.02855
## theta[14]  0.016113 1.866e-02   0.02003   0.02145   0.02435
```

```
## theta[15]  0.016318 1.774e-02   0.01851   0.01932   0.02095
## theta[16]  0.007908 9.613e-03   0.01057   0.01162   0.01378
##
## [1] "31.5 (95% credible interval: 25.4-38.0) per 1,000 children aged 8 years"
```