The Expanding Spectrum: How Shifts in Criteria and Culture Are Changing Autism Statistics

Leah Cobb Snodgrass, MD

Professor and Chair of Psychiatry

Lincoln Memorial University DeBusk College of Osteopathic Medicine

Harrogate, TN

Disclosures

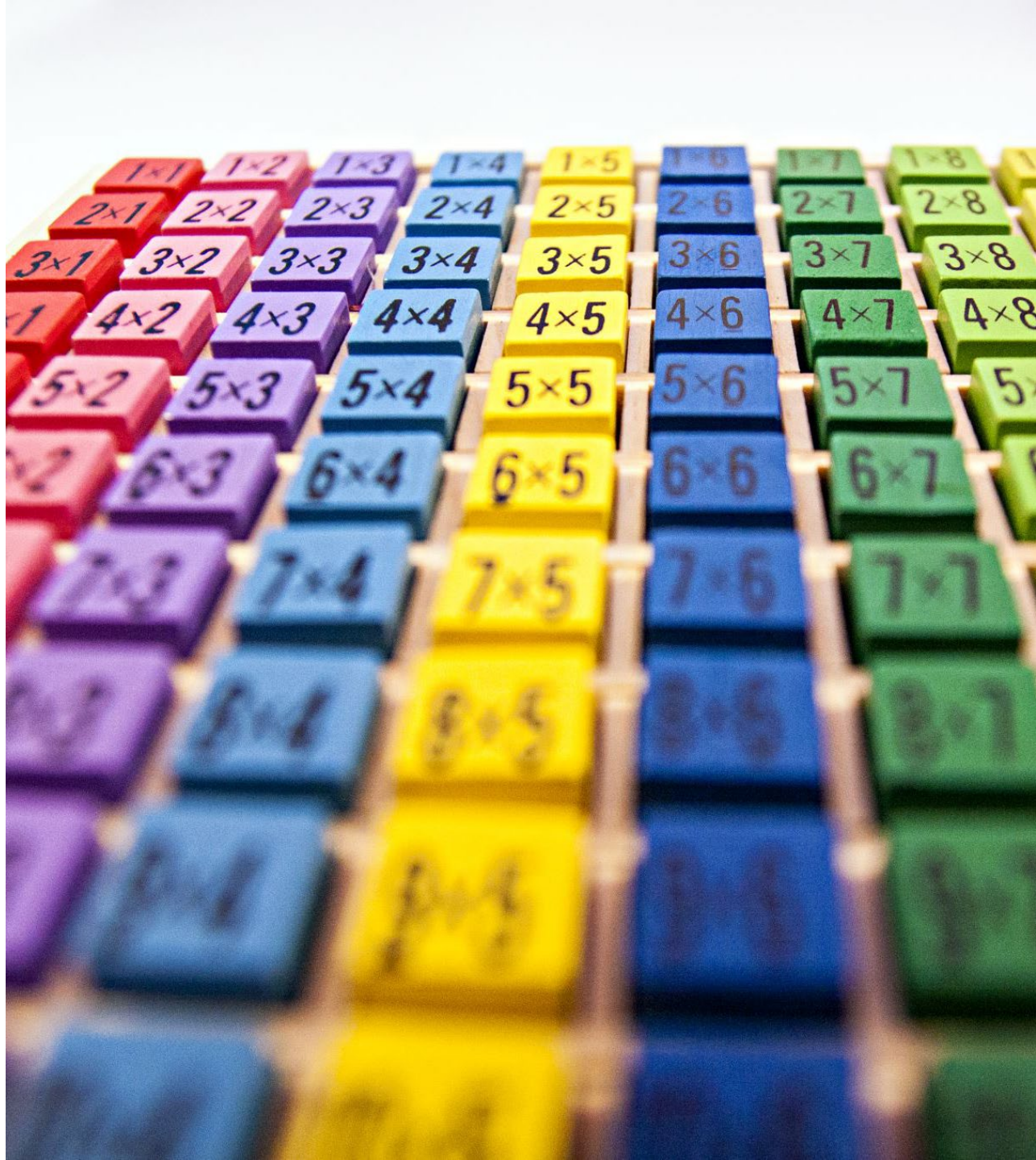
- I have no financial disclosures or conflicts of interest.

Objectives

- Review statistical data regarding autism diagnoses over last 20 years.
- Outline the evolution of the diagnosis of autism.
- Apply diagnostic criteria to diagnose autism as per DSM 5-TR .
- Recognize 2 evidence-based reasons for the increase in autism diagnoses over the past 20 years.
- Dispel at least 1 myth for increase in autism diagnoses over the past 20 years.

The Big Question…

- Why are more children, teens, and adults being diagnosed with Autism Spectrum Disorder in 2026 than ever before?
    - Hypothesis 1: DSM-5 loosened criteria thereby increasing number of diagnosed ASD cases.
    - Hypothesis 2: Pediatric vaccinations are responsible for rise in autism cases.
    - Hypothesis 3: Neurodiversity is trending…sociocultural factors are responsible for the rise in diagnoses of Autism in the US.



The Stats

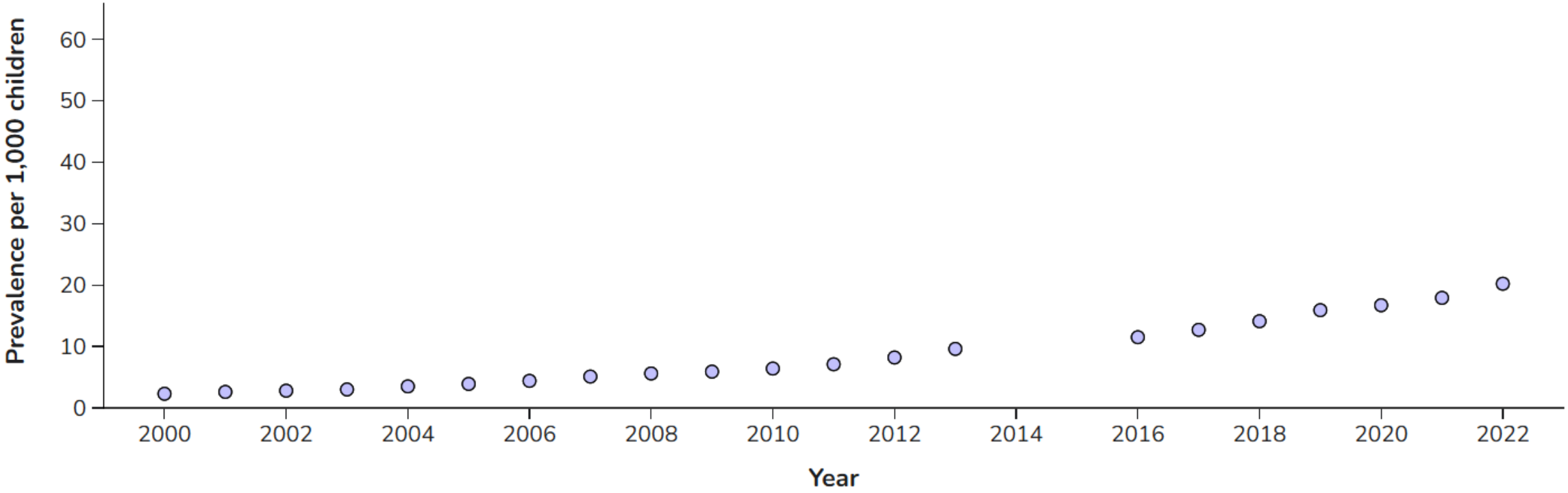
- 3-fold increase in diagnoses of autism in US from 2000-2022
  - 2000: 1 in 150 kids
    - (DSM 5 published 2013)
  - 2020: 1 in 36 kids (1:45 adults)
  - 2022: 3% of children in US (1% international)
    - 23.1/1000 children in Maryland
    - 44.9/1000 children in California
- Males 4x more likely to be diagnosed than females, but we are getting better…
  - Emotional intelligence "camouflages" social deficits in females > males
- 2020: first year prevalence of diagnosis lowest among white children (↑ in Black, Hispanic, API children)
- 2011-2022:
  - 175% increase in new diagnoses of autism
  - *450% increase in 26-34 year olds*

Grosvenor LP, Croen LA, Lynch FL, et al. Autism Diagnosis Among US Children and Adults, 2011-2022. JAMA Netw Open. 2024;7(10):e2442218. doi:10.1001/jamanetworkopen.2024.42218

Prevalence Estimates Over Time

Using data set: Medicaid

Show prevalence for: Total



https://www.cdc.gov/autism/data-research/autism-data-visualization-tool.html

From: **Autism Diagnosis Among US Children and Adults, 2011-2022**

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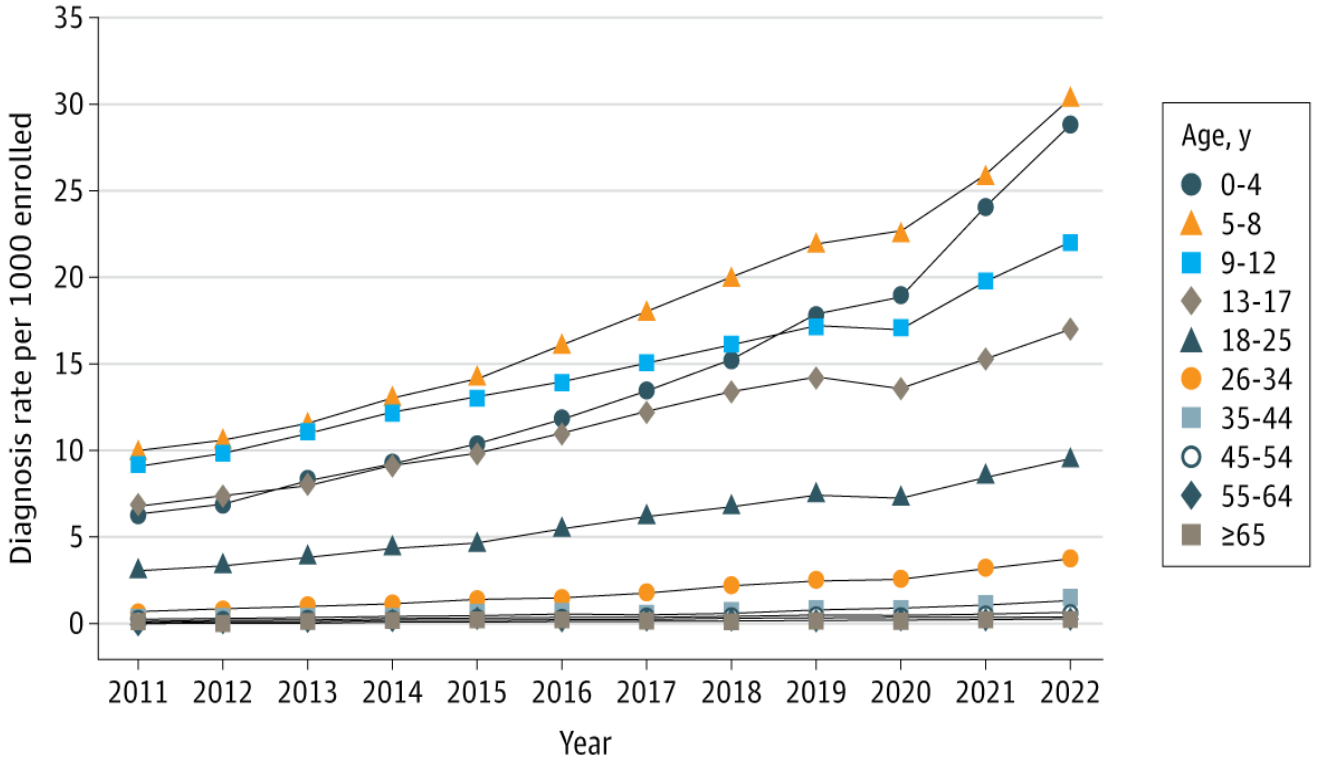
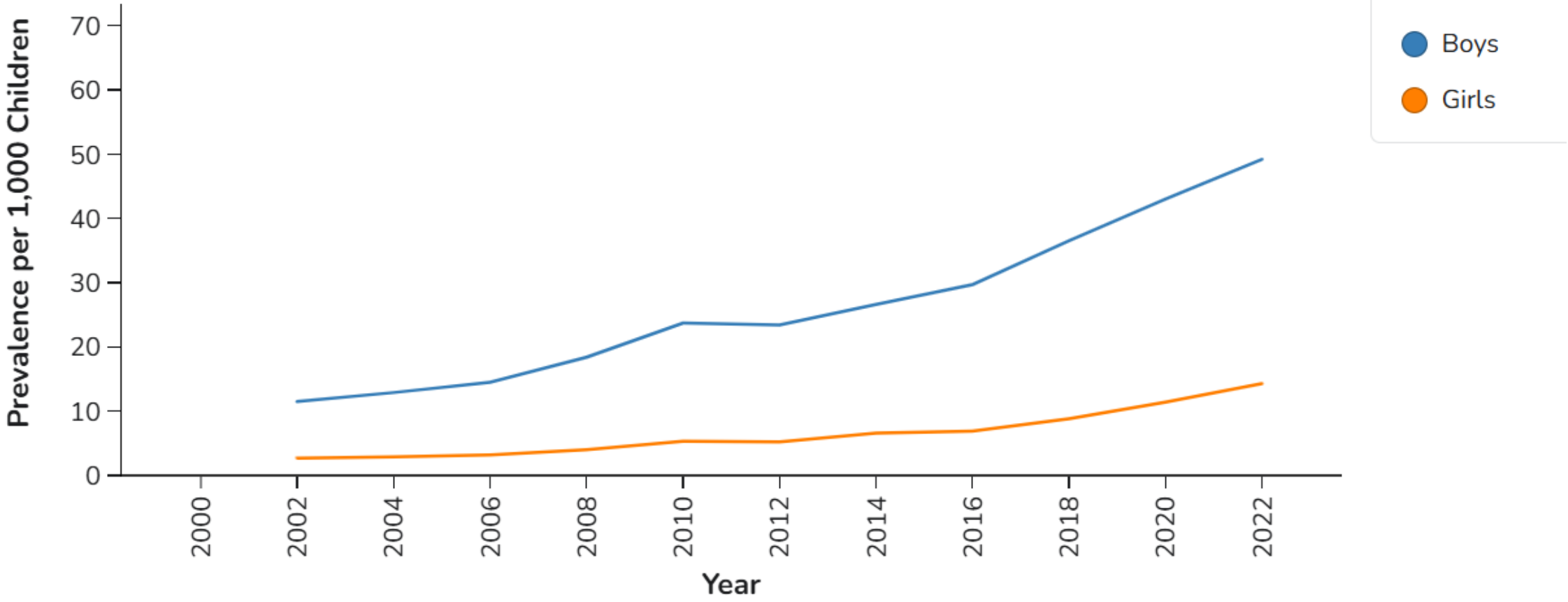


Figure Legend:

Annual Autism Diagnosis Rates Among Members at MHRN Sites From 2011 to 2022, Stratified by Age GroupMHRN indicates Mental Health Research Network.



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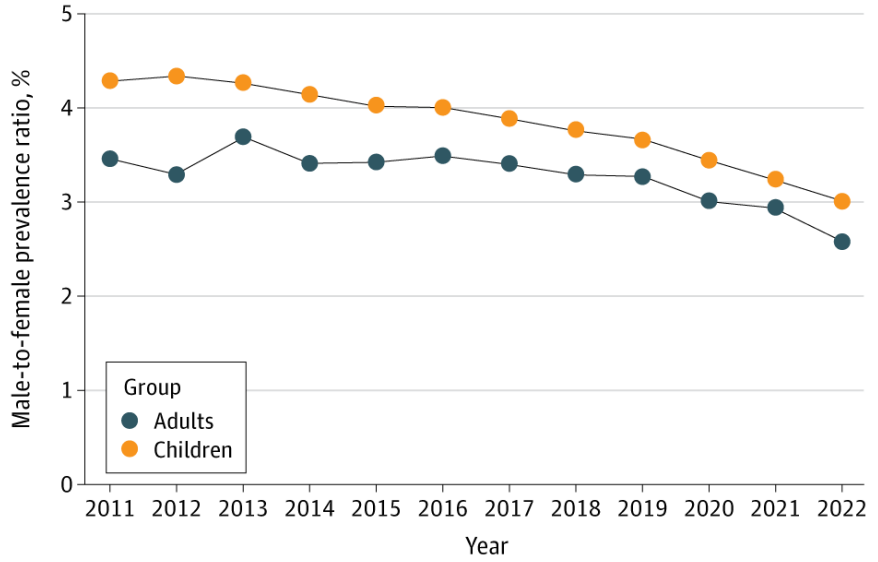

Figure Legend:

Male-to-Female Autism Prevalence Ratio Among Children and Adults From 2011 to 2022

Hypothesis 1: DSM-5/TR loosened diagnostic criteria thereby increasing number of diagnosed ASD cases.

History lesson: Origin of autism

Leo Kanner

- 1943: Austrian-American child psychiatrist Leo Kanner describes “infantile autism” as developmental disorder
  - 8 boys, 3 girls with “inborn autistic disturbances of affective contact”
  - 2 essential features
    1. Deficient social interaction and connectedness
    2. Resistance to change, insistence on sameness, stereotypies (i.e., hand flapping, body rocking, etc., as “attempts to maintain sameness in their world” per Kanner)
  - Earliest stage of schizophrenia?

Rosen NE, Lord C, Volkmar FR. The Diagnosis of Autism: From Kanner to DSM-III to DSM-5 and Beyond. J Autism Dev Disord. 2021 Dec;51(12):4253-4270. doi: 10.1007/s10803-021-04904-1. Epub 2021 Feb 24. PMID: 33624215; PMCID: PMC8531066.

History lesson: Origin of Asperger's

Hans Asperger

- 1944: Viennese pediatrician Hans Asperger describes boys with:
  - social impairments
  - unusual fixated interests
  - good verbal skills
- Conceptualized as personality disorder
- Fathers of boys had similar traits
- Questioned the boundaries of autism
  - "broader autism phenotype"
  - "neurodiversity"

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Asperger’s Disorder


13

TABLE 2

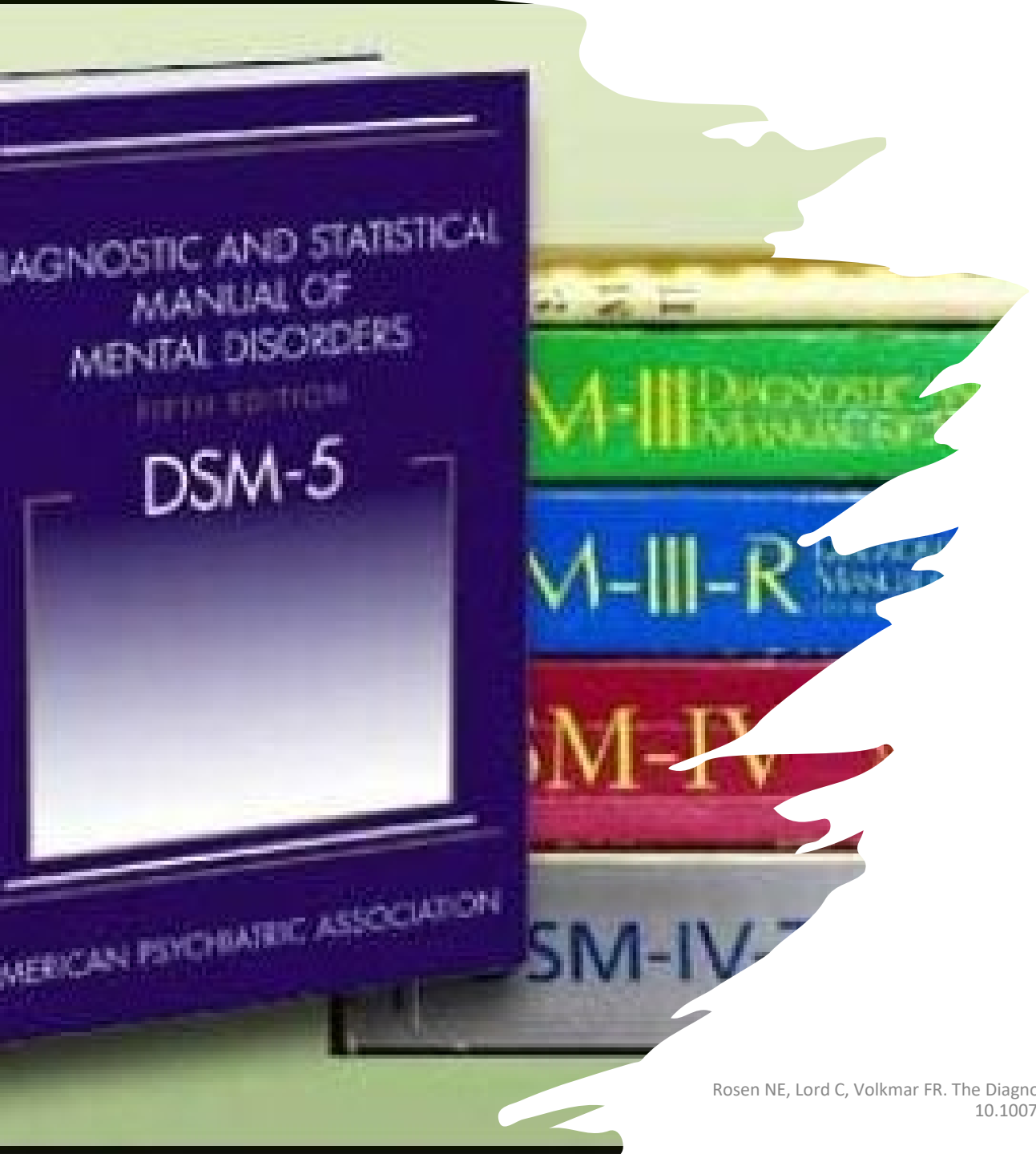
Early Symptoms of Autism Spectrum Disorder

Age of patient	Symptom
By 9 months	Does not respond to name
	Does not show facial expressions such as happy, sad, angry, and surprised
By 12 months	Does not play simple interactive games like pat-a-cake
	Uses few or no gestures (eg, does not wave goodbye)
By 15 months	Does not share interests with others (eg, showing you an object that they like)
By 18 months	Does not point to show you something interesting
By 24 months	Does not notice when others are hurt or upset
By 36 months (3 years)	Does not notice other children and join them in play
By 48 months (4 years)	Does not pretend to be something else, like a teacher or superhero, during play
By 60 months (5 years)	Does not sing, dance, or act for others
General	Avoids or does not keep eye contact and may want to be alone
	Has trouble understanding other people's feelings or talking about their own feelings
	Has delayed speech, language, learning, or movement skills
	Repeats words or phrases they have heard (echolalia)
	Gives unrelated answers to questions
	Gets upset by minor changes or must follow certain routines
	Has obsessive interests
	Makes repetitive movements like flapping hands, rocking, or spinning in circles
	Has unusual reactions to the way things sound, smell, taste, look, or feel
	Has unusual sleeping or eating patterns

Note: Children with autism spectrum disorder may not have all or any of the behaviors listed as examples here.

Information from reference 23.

Westby A, Coburn-Pierce M. Autism Spectrum Disorder in Primary Care. Am Fam Physician. 2025 Sep;112(3):301-312. PMID: 40961308.



DSM's evolving diagnosis of autism

- DSM I and II – Theoretical, not useful for research, limited applicability – especially for children
  - DSM I (1952): Word **autism** appears once in connection with **"schizophrenic reactions in young children"**
  - DSM II (1968): **"autistic**, atypical, withdrawn behavior" **seen in kids with schizophrenia**
- **DSM III (1980):** *"Infantile Autism"*
  - **Major overhaul** geared towards "research diagnostic criteria" as per Washington University approach
  - **"Infantile Autism" seen as distinct from schizophrenia**
- **DSM III-R (1987)**: "Autistic Disorder" **makes its debut!**
  - Gross deficits in social and language development
  - Peculiar attachment to objects

Rosen NE, Lord C, Volkmar FR. The Diagnosis of Autism: From Kanner to DSM-III to DSM-5 and Beyond. J Autism Dev Disord. 2021 Dec;51(12):4253-4270. doi: 10.1007/s10803-021-04904-1. Epub 2021 Feb 24. PMID: 33624215; PMCID: PMC8531066.

DSM IV: Pervasive Developmental Disorders

- DSM IV (1994) and IV-TR (2000): “Pervasive Developmental Disorders” chapter
  - **Autistic Disorder**
  - Asperger’s Disorder
  - Pervasive Developmental Disorder, NOS
  - Rett’s Disorder
  - Childhood Disintegrative Disorder

- Autistic Disorder in DSM IV/TR comprised of 16 criteria in 4 subcategories – including developmental delay in language
  - Social impairment: at least 2 of 4
  - Language impairment: at least 1 of 4
  - Restrictive Repetitive Behaviors (RRBs): at least 2 of 4
  - ONSET PRIOR TO AGE 3

Rosen NE, Lord C, Volkmar FR. The Diagnosis of Autism: From Kanner to DSM-III to DSM-5 and Beyond. J Autism Dev Disord. 2021 Dec;51(12):4253-4270. doi: 10.1007/s10803-021-04904-1. Epub 2021 Feb 24. PMID: 33624215; PMCID: PMC8531066.

Language/Communication Criteria Changes from DSM IV-TR to DSM 5

DSM IV TR	DSM 5/TR
Delay or total lack in the development of spoken language	Dropped
In those with adequate speech, failure to initiate or sustain conversation	Moved to social criterion
Stereotyped, repetitive, and/or idiosyncratic language	Moved to restrictive, repetitive behavior criterion
Lack of imaginative or socially imitative play	Moved to social criterion

DSM 5 (2013)and 5-TR (2022): Creation of a "Higher Diagnostic Threshold"

- DSM 5: One diagnosis: Autism Spectrum Disorder
  - Removed language deficit criteria
    - Language delay is not specific to ASD
  - Core = social-communication challenges
    - **Must meet ALL social criteria** (improved specificity)
    - Must meet at least 2/4 "restrictive repetitive behaviors" (RRBs)
  - Added sensory issues – hyper- or hypo-reactivity to sensory input (pain, light, textures, etc.)
    - Long recognized by parents/caregivers
    - Elevated to diagnostic criterion in DSM 5

Rosen NE, Lord C, Volkmar FR. The Diagnosis of Autism: From Kanner to DSM-III to DSM-5 and Beyond. J Autism Dev Disord. 2021 Dec;51(12):4253-4270. doi: 10.1007/s10803-021-04904-1. Epub 2021 Feb 24. PMID: 33624215; PMCID: PMC8531066.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

DSM 5-TR Autism Spectrum Disorder Diagnostic Criteria

- **Social/communication deficits (all 3)**
  - Social/emotional reciprocity
  - Nonverbal communication
  - Understanding/developing/ maintaining relationships
- **Behavior/interest/activity criteria (2+)**
  - Stereotypical movement or speech
  - Inflexible adherence to routine/ritual
  - Fixated restricted area of interest
  - Hyper/hypo sensitivity to sensory input
- Present in **early developmental period**
- **Impairment**
- **Not better accounted for by Intellectual Developmental Disorder** or Global Developmental Delay (may co-occur but social communication should be well below that expected for general developmental level)

DSM 5: caveat for IDD and inclusion of previous diagnoses

- Intellectual disability and autism spectrum disorder *frequently co-occur*; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, *social communication should be below that expected for general developmental level*.
- **Note:** Individuals with a well-established DSM-IV diagnosis of:
    - **Autistic disorder**
    - **Asperger's disorder**
    - **PDD, NOS**

    should be given the diagnosis of autism spectrum disorder.
    - Individuals who have **marked deficits in social communication**, but whose symptoms do not otherwise meet criteria for autism spectrum disorder (**0 or 1 RRBs**), should be evaluated for **social** (pragmatic) **communication disorder**.

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

DSM 5 (2013)and 5-TR (2022): Creation of a "Higher Diagnostic Threshold"

- Subsumed Autistic Disorder, Asperger's, Childhood Disintegrative Disorder, and PDD NOS
    - Controversial due to potential loss of services for children/families with Asperger's in particular
    - CDD: specify "with late-onset regression"
    - Rett's removed to neurological disorder
- Focus is on social communication and interaction – all criteria must be met.
- **Added Social Communication Disorder** to capture those who met social communication criteria but not restrictive repetitive behaviors criteria

Mehra C, Sil A, Hedderly T, Kyriakopoulos M, Lim M, Turnbull J, Happe F, Baird G, Absoud M. Childhood disintegrative disorder and autism spectrum disorder: a systematic review. Dev Med Child Neurol. 2019 May;61(5):523-534. doi: 10.1111/dmcn.14126. Epub 2018 Dec 13. PMID: 30548847.

Feature	DSM-IV (Old)	DSM-5 (Current)
Core Domain	Communication (includes language delay)	**Social Communication** (focus on social use, removes language delay)
Language Status	A primary symptom needed for diagnosis	A **Specifier** (added to describe the individual)
Goal	Distinguish between Asperger's and Autism	Defined as "Spectrum" and note individual needs

https://asatonline.org/research-treatment/resources/topical-articles/changes-to-the-dsm-autism-diagnostic-criteria/#:~:text=The%20DSM%2D5%20reduces%20this,et%20al.%2C%202011).

ASD Qualifiers per DSM 5/TR

Qualifiers help identify where child is on the spectrum:

- +/- Intellectual disability
- +/- Language impairment

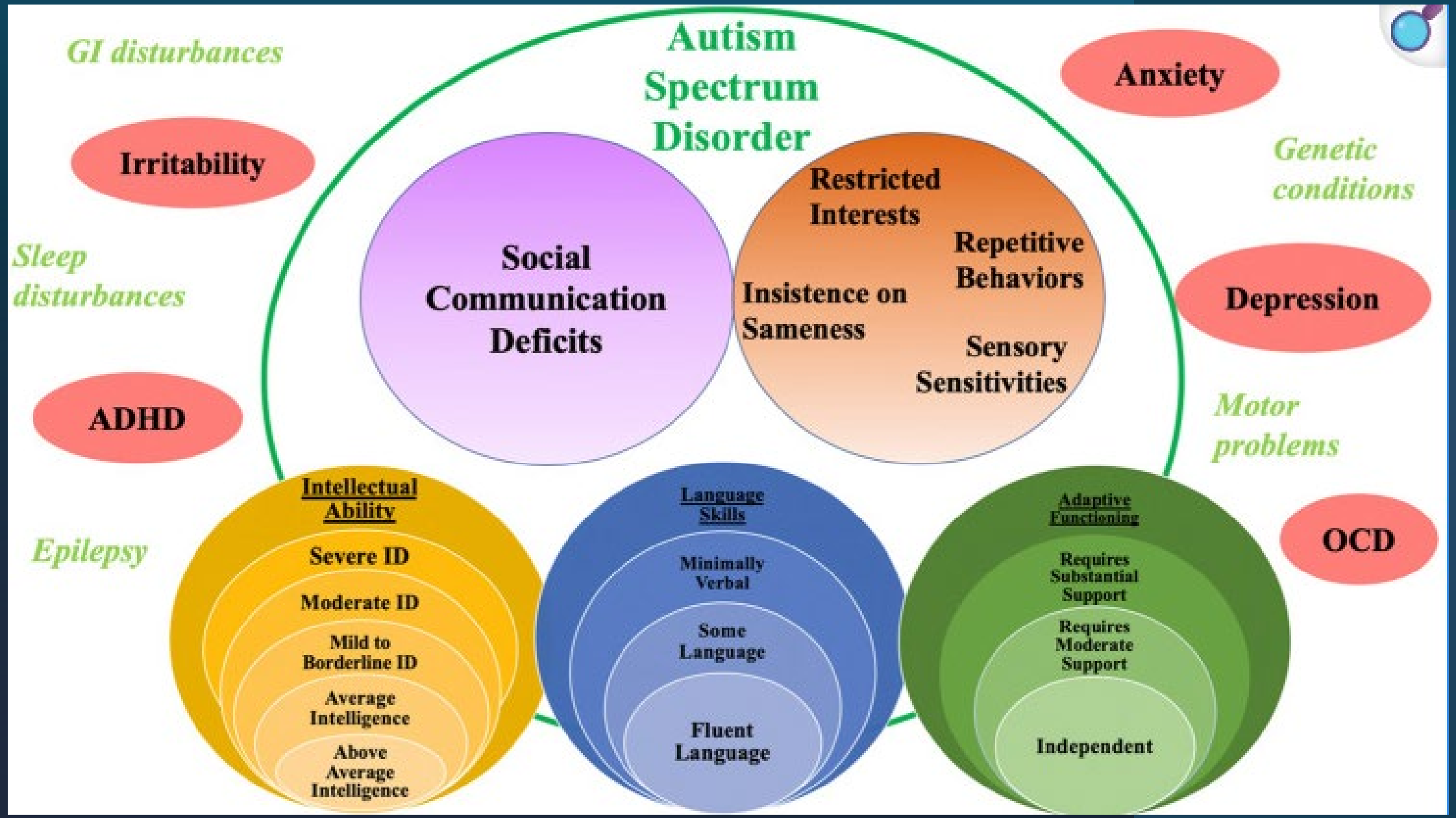
Associations speak to possible cause:

- Associated with known genetic or medical condition or environmental factor
- Associated with neurodevelopmental, mental, or behavioral problem

Severity levels indicate level of care/support:

- Level 3: Requiring very substantial support (severe)
- Level 2: Requiring substantial support (moderate)
- Level 1: Requiring support (mild)

American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787



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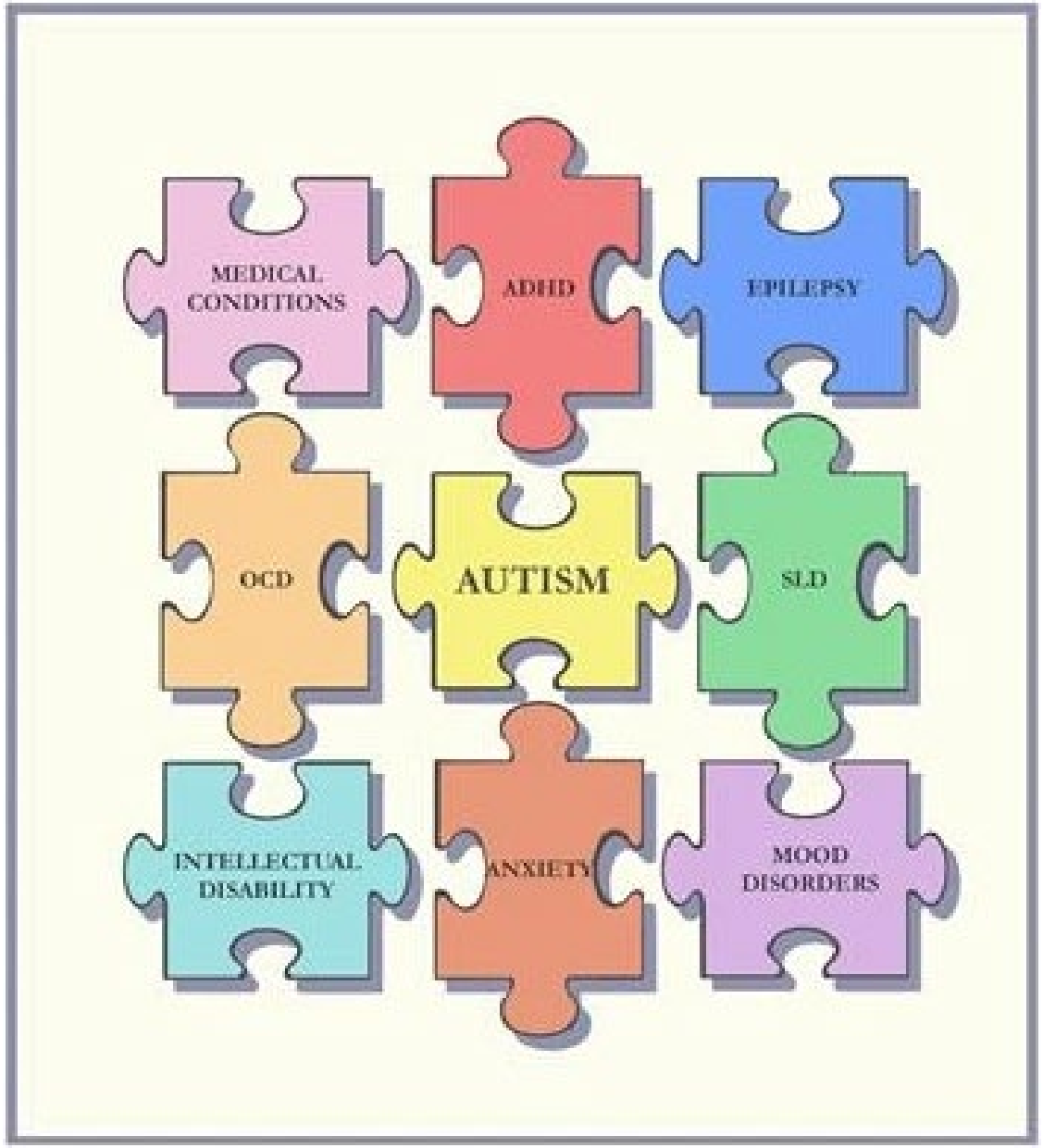
DSM 5 recognizes comorbidities as the rule, not the exception

- Comorbid mental health diagnoses
  - 50% of autistic adults
  - *63% to 95% of autistic children*
- Suicidality is high even in autistic individuals without a depression diagnosis.
  - 2-10x higher risk than general population
  - 20- to 30-year lower life expectancy than the general population
- Sleep disturbances in 50-80% children with ASD!



Westby A, Coburn-Pierce M. Autism Spectrum Disorder in Primary Care. Am Fam Physician. 2025 Sep;112(3):301-312. PMID: 40961308.

Hypothesis 1: DSM-5/TR loosened diagnostic criteria thereby increasing number of diagnosed ASD cases.

Proven or Disproven?

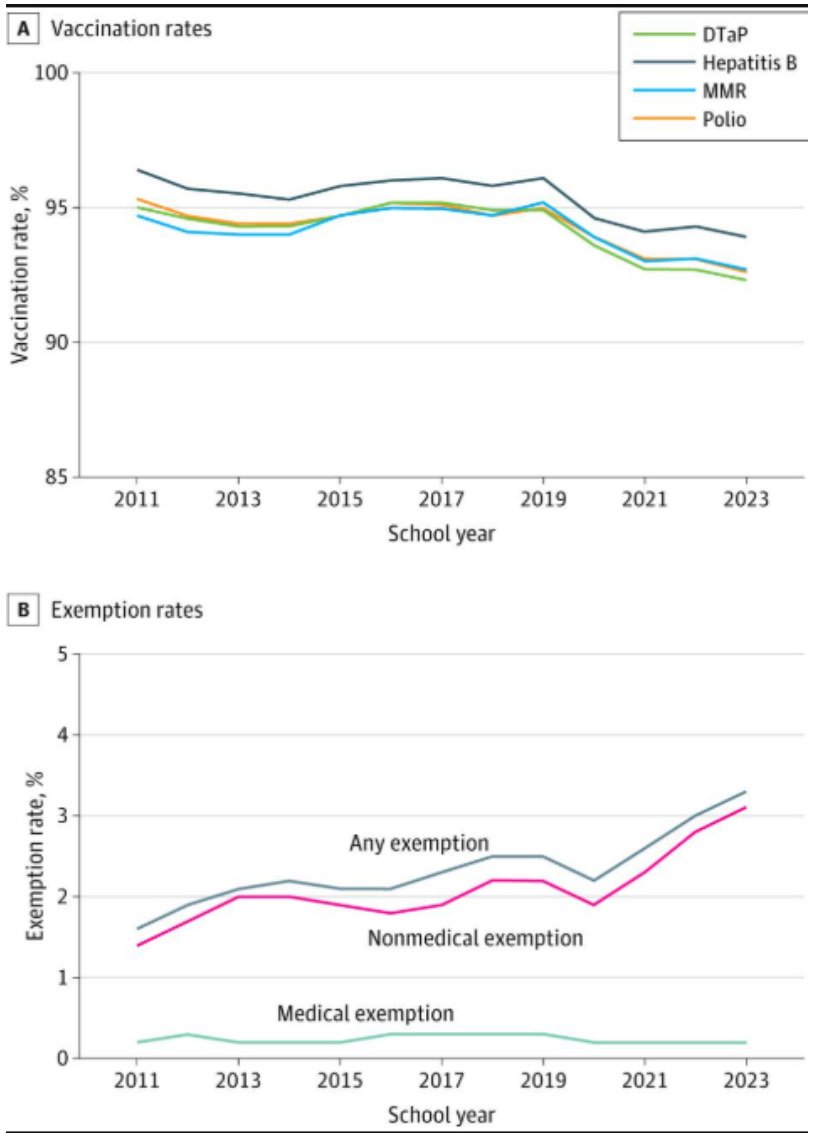
- DSM 5/5-TR collapsed all diagnoses (Autistic Disorder, Aspergers, PDD NOS, CDD) into one – ASD
- Removal of language delay
  - More girls, adults, cognitively able, and higher functioning patients
- Patients formerly diagnosed with Intellectual or Learning Disability
- ~25% of increase in prevalence can be attributed to:
  - Change in DSM criteria ~10%
  - Social influence and information diffusion - ~15%

Kulage KM, Goldberg J, Usseglio J, Romero D, Bain JM, Smaldone AM. How has DSM-5 Affected Autism Diagnosis? A 5-Year Follow-Up Systematic Literature Review and Meta-analysis. J Autism Dev Disord. 2020 Jun;50(6):2102-2127. doi: 10.1007/s10803-019-03967-5. PMID: 30852784.

Hirota T, King BH. Autism Spectrum Disorder: A Review. *JAMA.* 2023;329(2):157–168. doi:10.1001/jama.2022.23661

Hypothesis 2: Vaccines are responsible for rise in autism cases.


ABSOLUTELY
NOT



But…

- Vaccination rates show concerning downward trend over the past 20 years in the US.
- Vaccine adherence was on upswing, increasing from 35.7% in 2011 to 69.4% by 2020
- 2018-2019 – coverage for most vaccines for most children above 90%
- Sharpest declines begin in 2019-2020:
  - COVID-19 pandemic
  - Up to 8% decrease across all vaccines in children born in 2020-2021compared to those born in 2018-2019.

Hill HA, Yankey D, Elam-Evans LD, Mu Y, Chen M, Peacock G, Singleton JA. Decline in Vaccination Coverage by Age 24 Months and Vaccination Inequities Among Children Born in 2020 and 2021 - National Immunization Survey-Child, United States, 2021-2023.

MMWR Morb Mortal Wkly Rep. 2024 Sep 26;73(38):844-853. doi: 10.15585/mmwr.mm7338a3. PMID: 39325676; PMCID: PMC11563569.

And…

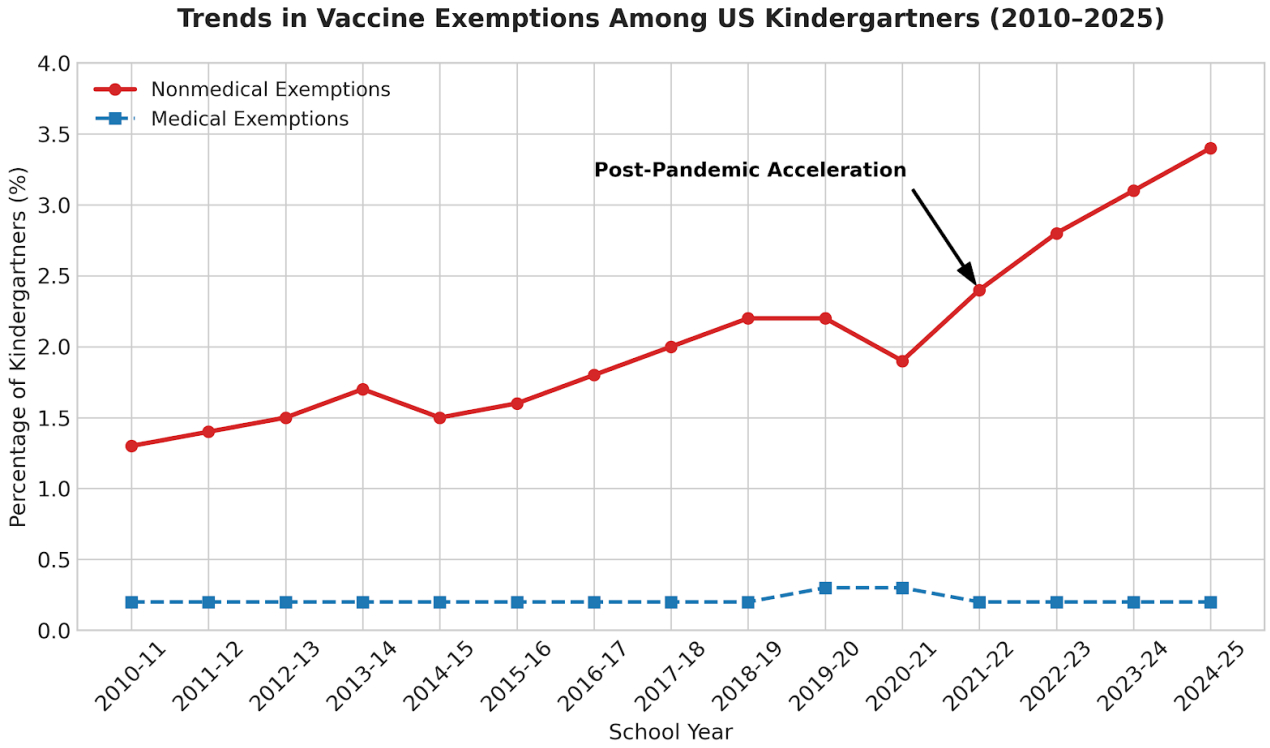
Vaccination rates for Kindergarteners declined 2-3% from mid-2010s to 2023.

The combined 7 vaccine series dropped from 71% of children born in 2016-2017 to **only 60% of those born in 2020**.

By 2022, many US states had statewide MMR vaccine rates below 90% (95% required for herd immunity)– at high risk of outbreaks.

States that allow non-medical vaccine exemptions at high risk

- Centers for Disease Control and Prevention (CDC) and recent research published in *JAMA*, the rate of **nonmedical exemptions** (NMEs) from vaccines among U.S. kindergartners has **more than doubled** over the last decade.

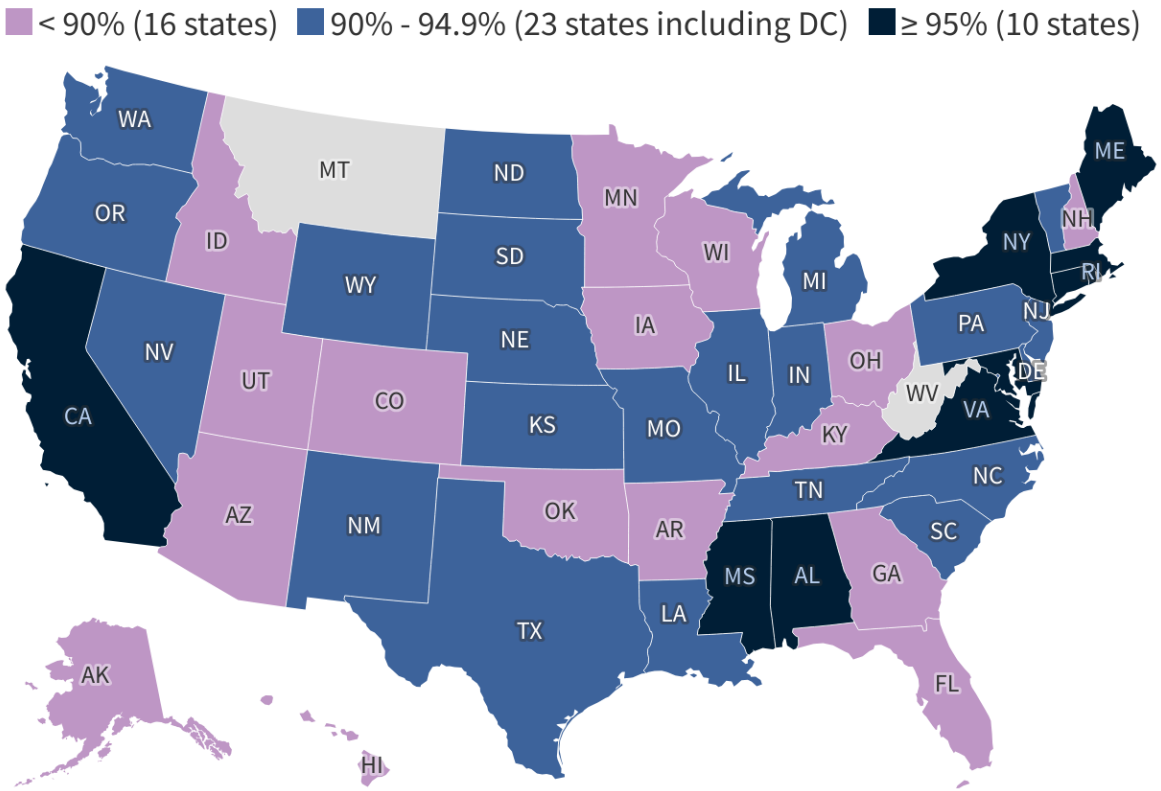


Hill HA, Yankey D, Elam-Evans LD, Mu Y, Chen M, Peacock G, Singleton JA. Decline in Vaccination Coverage by Age 24 Months and Vaccination Inequities Among Children Born in 2020 and 2021 - National Immunization Survey-Child, United States, 2021-2023.

39 of 50 states below herd immunity of 95% MMR immunization rate

Figure 2

Over Three-Quarters of States Had MMR Vaccination Coverage Rates For Kindergarteners Below the Healthy People Target of 95% During the 2024-2025 School Year



Note: MMR = measles, mumps, and rubella. The Healthy People 2030 Target for MMR is 95%. MT and WV did not report for the 2024-2025 school year.

Source: Vaccination Coverage and Exemptions among Kindergartners, Centers for Disease Control and Prevention (U.S.)

KFF

Measles - a Vaccine Preventable Disease (VPD)

- October 2025 to March 16, 2026 in SC
  - 996 cases of measles
  - 416 in first 23 days of 2026!
  - US will lose “elimination status” for measles in 2026 if sustained transmission >12 months
- 95% of cases in Spartanburg County
  - 86% - <20 years old
  - 94% of all cases - UNvaccinated
- “We have these communities that choose to be unvaccinated. That’s their personal freedom.”

  ~Ralph Abraham, MD, principal deputy director of the CDC
- Outbreak over as of late April 2026

South Carolina’s measles outbreak hits 700 cases as CDC confirms 416 so far in 2026

Jim Wappes, January 23, 2026

Topics: Measles, Childhood Vaccines, Anti-science

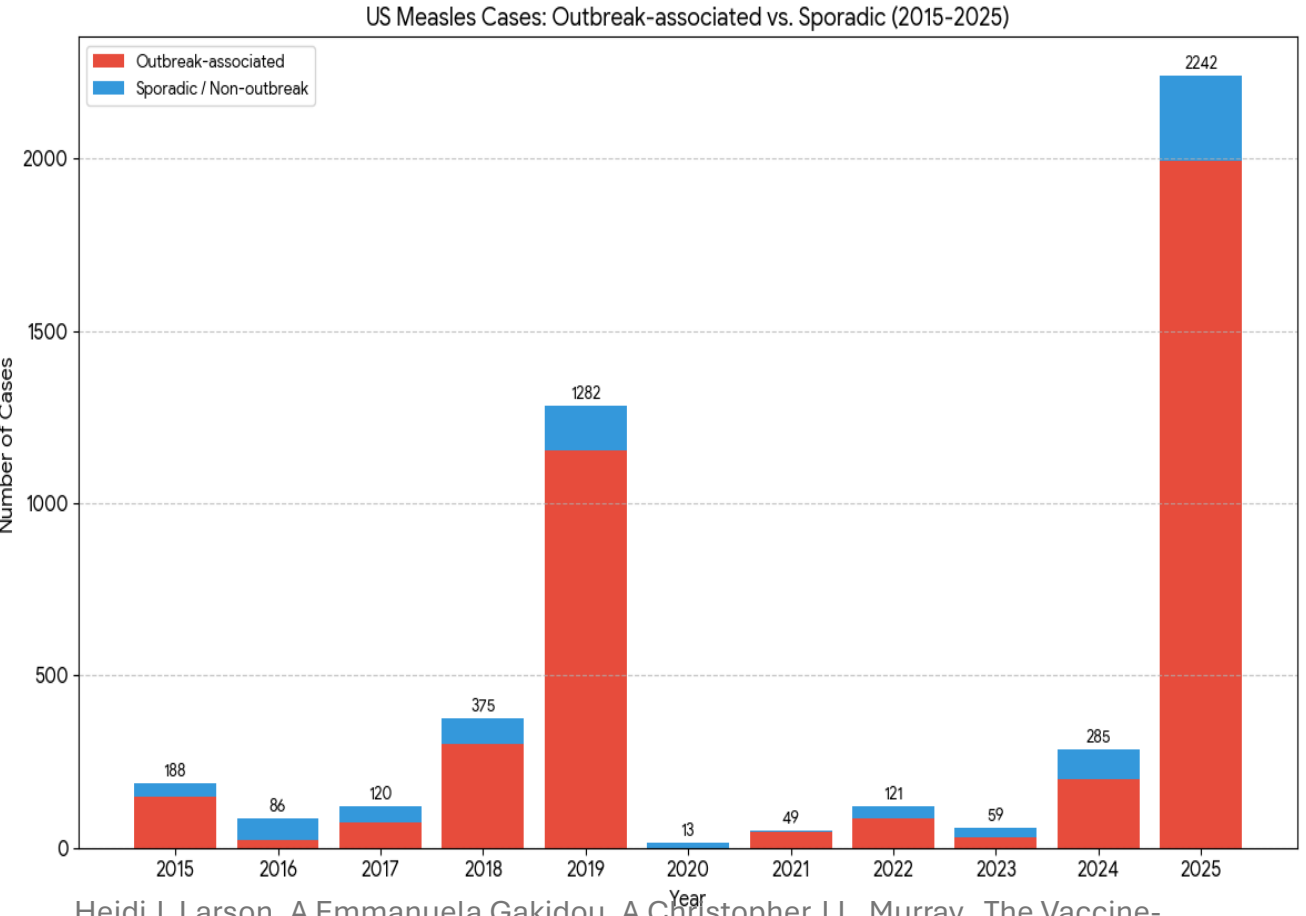
Heather Hazzan / Self Magazine

South Carolina’s measles outbreak hits 700 cases as CDC confirms 416 so far in 2026 | CIDRAP

US Measles Cases 2015-2025

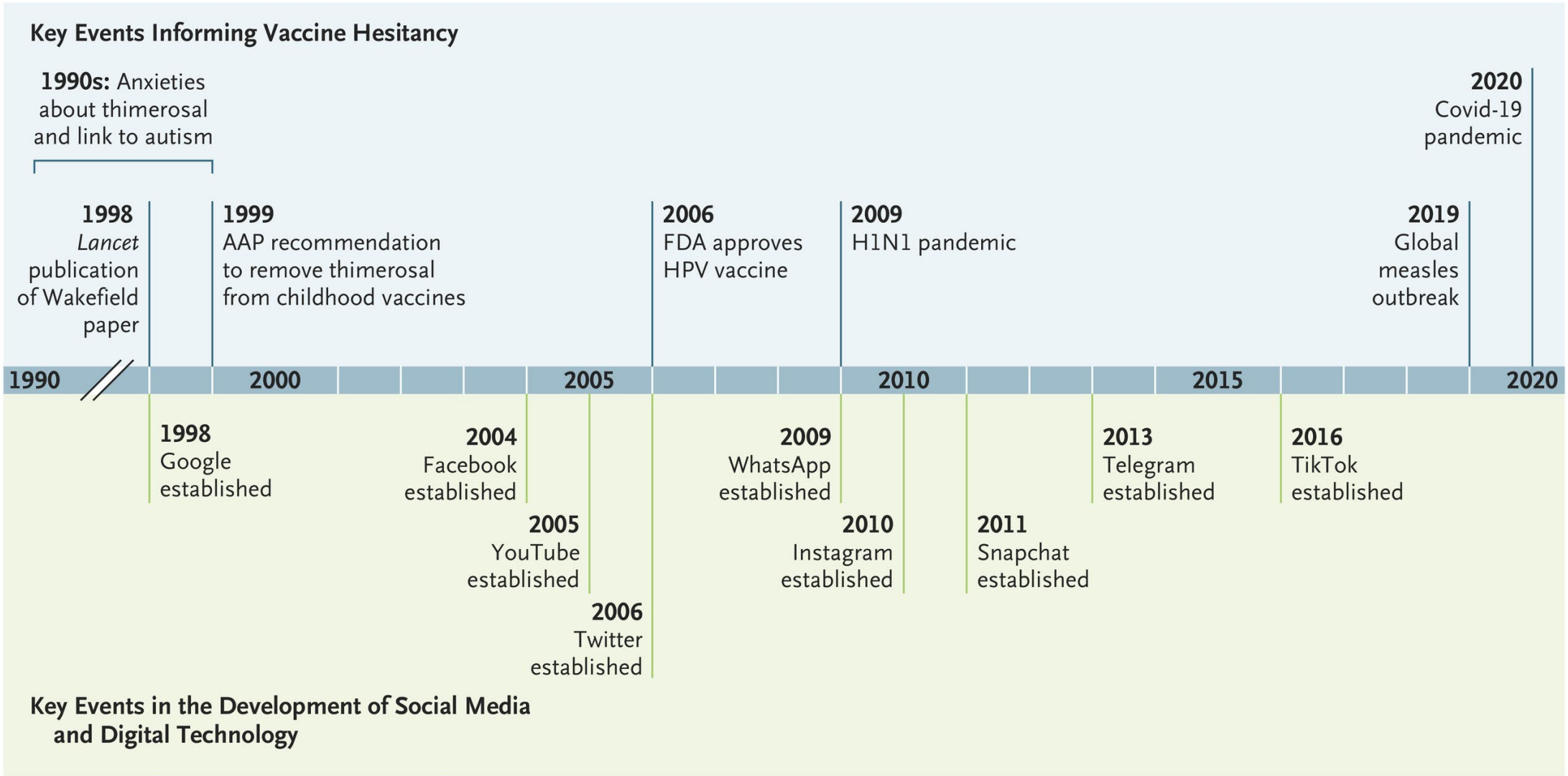
Vaccine hesitancy: “a state of indecision and uncertainty that precedes a decision to become or not become vaccinated”

- Named top 10 threat to global health by WHO
- 2026: **1,792** US Cases as of April 23 (predictive of 5,796 for year)



Year	Significant Outbreak Location(s)	Reported Cases	Primary Drivers & Context
2015	California (Disneyland Outbreak)	191	Multi-state spread linked to an amusement park; sparked by a traveler. Led to stricter CA vaccine laws.
2017	Minnesota (Somali-American community)	120	Targeted misinformation campaigns within a specific close-knit community regarding vaccine safety.
2018	New York City & New Jersey	381	Importations from Israel (which was having a massive outbreak) into under-vaccinated orthodox communities.
2019	NY (Rockland County), WA, CA	1,274	The largest resurgence since 1992. Driven by philosophical exemptions and high-intensity misinformation.
2020–22	National (Sporadic cases)	13 – 121	Low travel during COVID-19 suppressed cases, but routine vaccination rates for children began to slip.
2024	Chicago (Migrant shelters), FL, OH	285	Outbreaks in high-density settings and schools where "herd immunity" had dropped below 95%.
2025	**West Texas**, NM, SC, UT/AZ border	**2,242**	**Record year.** Major outbreaks in "opt-in" registry zones and close-knit communities. Highest total since 1992.

Heidi J. Larson, A Emmanuela Gakidou, A Christopher J.L. Murray. The Vaccine-Hesitant Moment. 2022 J New England Journal of Medicine. P 58-65. V 387



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Vaccine Refusal Drivers 2024-2026

Driver	Description	Impact
Medical Autonomy	Feeling that the government shouldn't "dictate" health choices.	High use of "Philosophical Exemptions" Aka "non-medical exemptions" or NMEs
Safety Anxiety	Fears of "overloading" the immune system with too many shots at once. 20% of parents believe vaccine > disease risk.	Parents requesting "alternative" (delayed) schedules.
Institutional Skepticism	Belief that public health agencies are influenced by "Big Pharma" profits.	Rejection of CDC guidelines as "biased."
Access Barriers	Lack of insurance or flexible work hours for doctor visits.	High "zero-dose" rates in low-income urban/rural areas.

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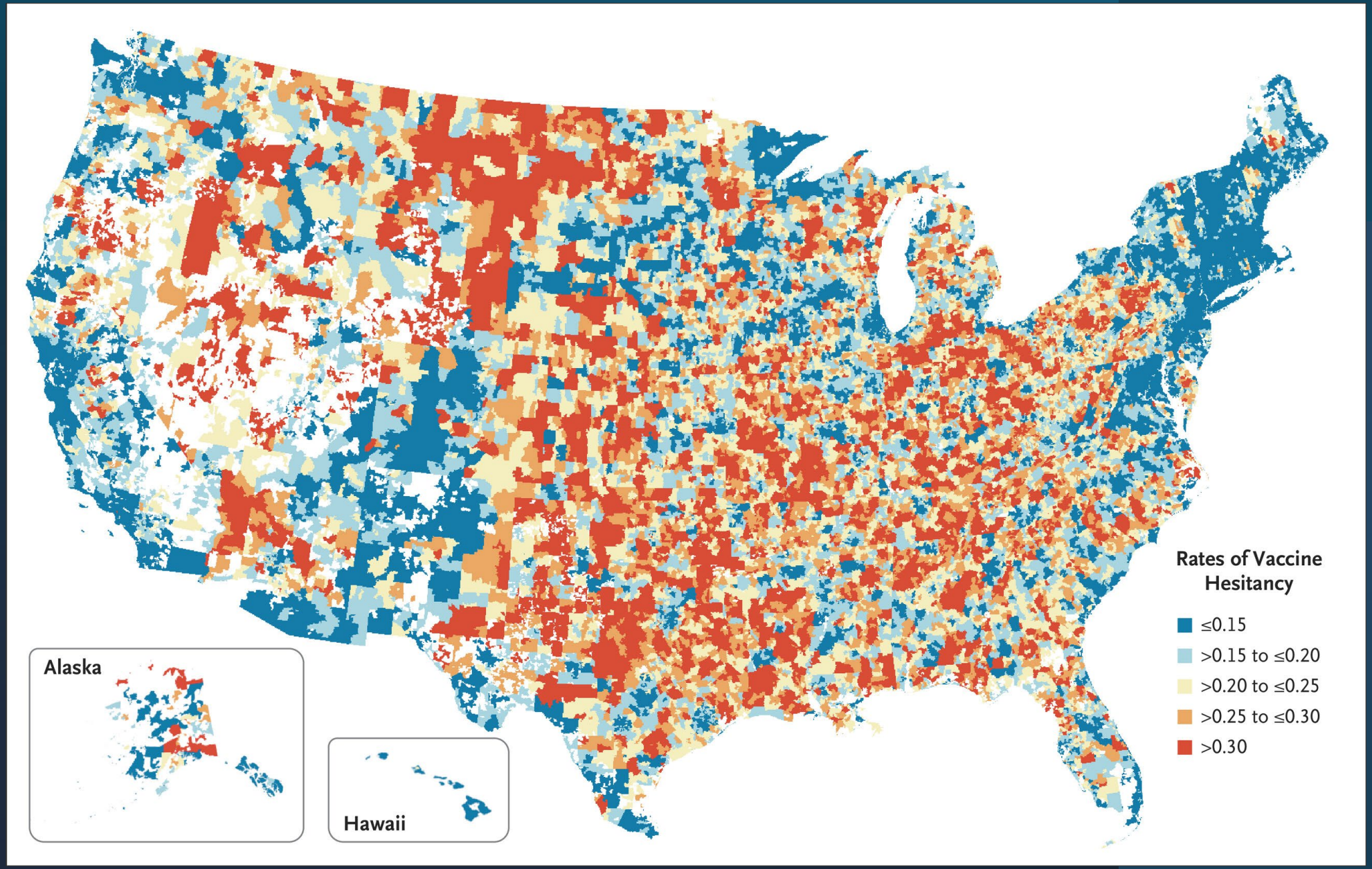

Alaska
Hawaii
Rates of Vaccine Hesitancy
≤0.15
>0.15 to ≤0.20
>0.20 to ≤0.25
>0.25 to ≤0.30
>0.30

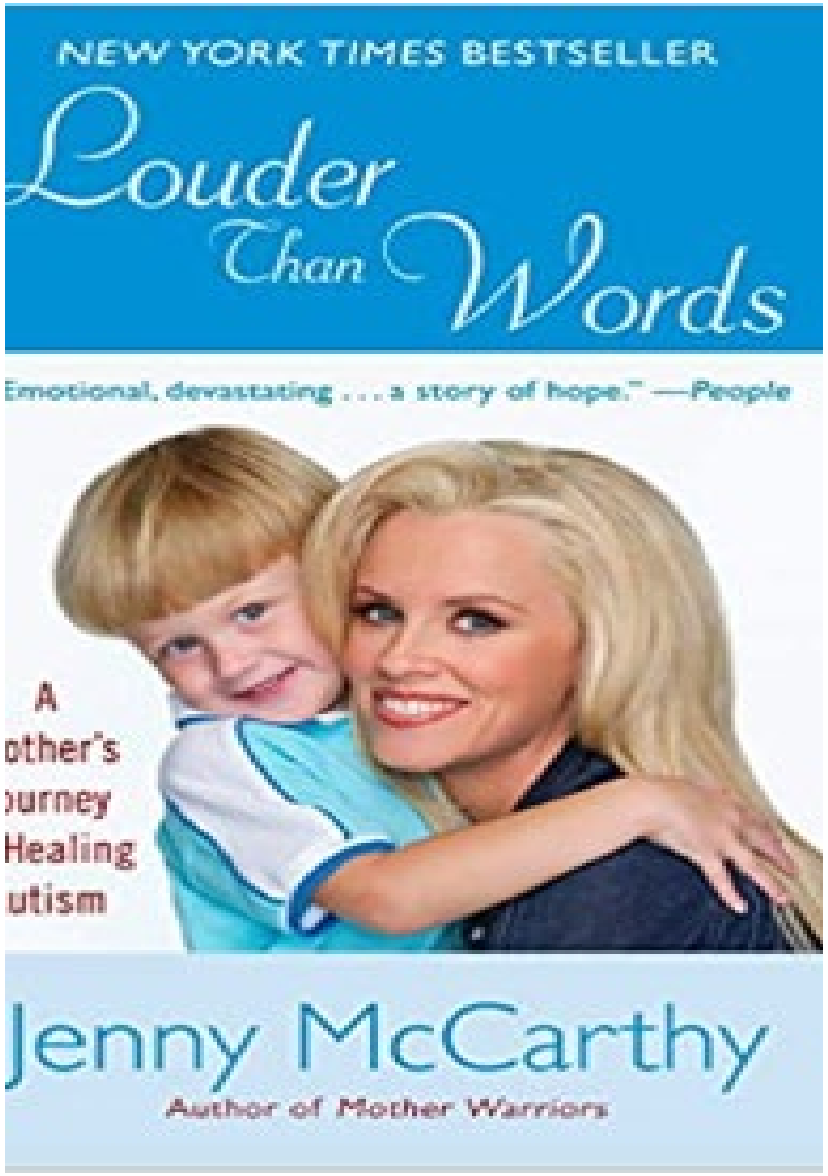
Now, back to Autism and Vaccines…

- *No association between vaccination and autism or ASD, nor any relationship with MMR, thimerosal, or mercury*
  - A meta-analysis of five cohort studies involving **1,256,407 children showed no relationship between MMR and ASD**
  - 5 case-control studies involving **9,920 children showed no relationship**
- *MMR vaccination did not increase autism risk*
  - A Danish nationwide cohort study of **657,461 children**
  - Not even in high-risk subgroups such as children with siblings who have autism!
- Bottom line: *Vaccines* routinely administered in the United States have *not* been *shown to cause autism*

Taylor LE, Swerdfeger AL, Eslick GD. Vaccines are not associated with autism: an evidence-based meta-analysis of case-control and cohort studies. Vaccine. 2014 Jun 17;32(29):3623-9. doi: 10.1016/j.vaccine.2014.04.085. Epub 2014 May 9. PMID: 24814559.
Hviid A, Hansen JV, Frisch M, Melbye M. Measles, Mumps, Rubella Vaccination and Autism: A Nationwide Cohort Study. Ann Intern Med. 2019 Apr 16;170(8):513-520. doi: 10.7326/M18-2101. Epub 2019 Mar 5. PMID: 30831578.

Disspelled myths: false etiologies of autism

- NO ASSOCIATION BETWEEN AUTISM AND:
  1. **VACCINES :**
     - Thimerosal containing vaccines like DTaP
     - Non-thimerosal containing vaccines like MMR
     - Flu vaccines in pregnant ♀♀
  2. **Schedule and/or number of vaccines:**
     - Diagnosis of ASD often made after age of main childhood immunizations (age 3) but can be made as early as 18 months, after first year vaccinations are complete
     - Timing is coincidental, not causative
  3. **Psychosocial risk factors:**
     - Mothers who lack emotional warmth (“refrigerator mothers)
  4. **Diet**:
     - Gluten, casein, others.
       - Dietary restrictions may improve behavior?
     - Maternal prenatal supplementation with folic acid, vitamin D, and multivitamins has been associated with reduced odds of ASD in offspring.



Zhong C, Tessing J, Lee BK, Lyall K. Maternal Dietary Factors and the Risk of Autism Spectrum Disorders: A Systematic Review of Existing Evidence. Autism Res. 2020 Oct;13(10):1634-1658. doi: 10.1002/aur.2402. Epub 2020 Oct 5. PMID: 33015977; PMCID: PMC9234972.

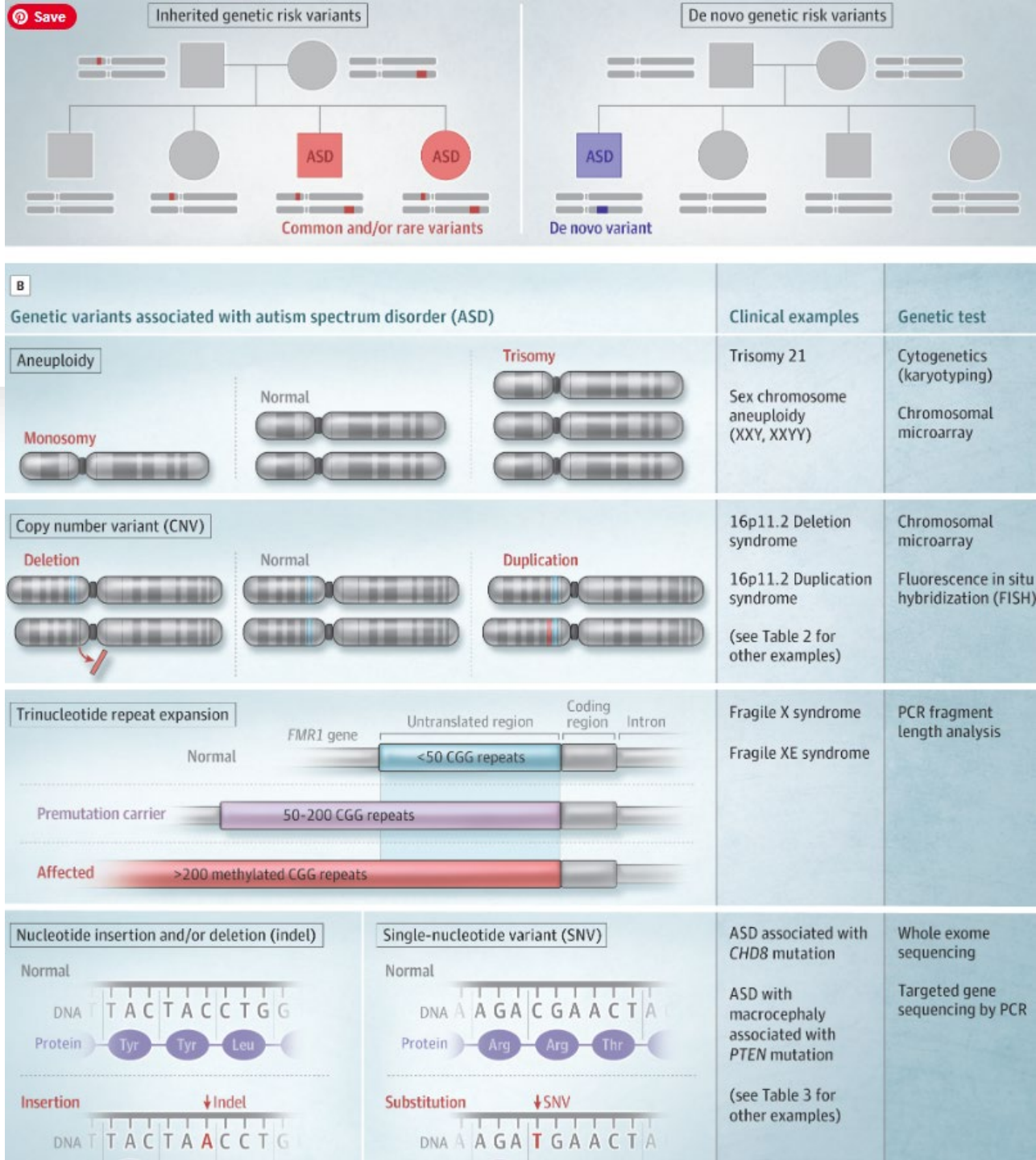
What has been proven to increase risk of Autism?

- Prenatal exposure to neurotoxins
  - Medications:
    - Valproate confers absolute risk of 4.4% (1.5% in unexposed)
    - Thalidomide
    - SSRIs are NOT causative.
  - Infections:
    - CMV
    - Rubella
- Preeclampsia/gestational hypertension/maternal obesity
- Prematurity up to 37 weeks
  - LBW and SGA/LGA infants with ↑ risk
- Interpregnancy intervals <12 mos. or >6 yrs
- Advanced maternal age (>=35) increases ASD risk by 30%
- Advanced paternal age (>=50) increases risk 21% per decade >50

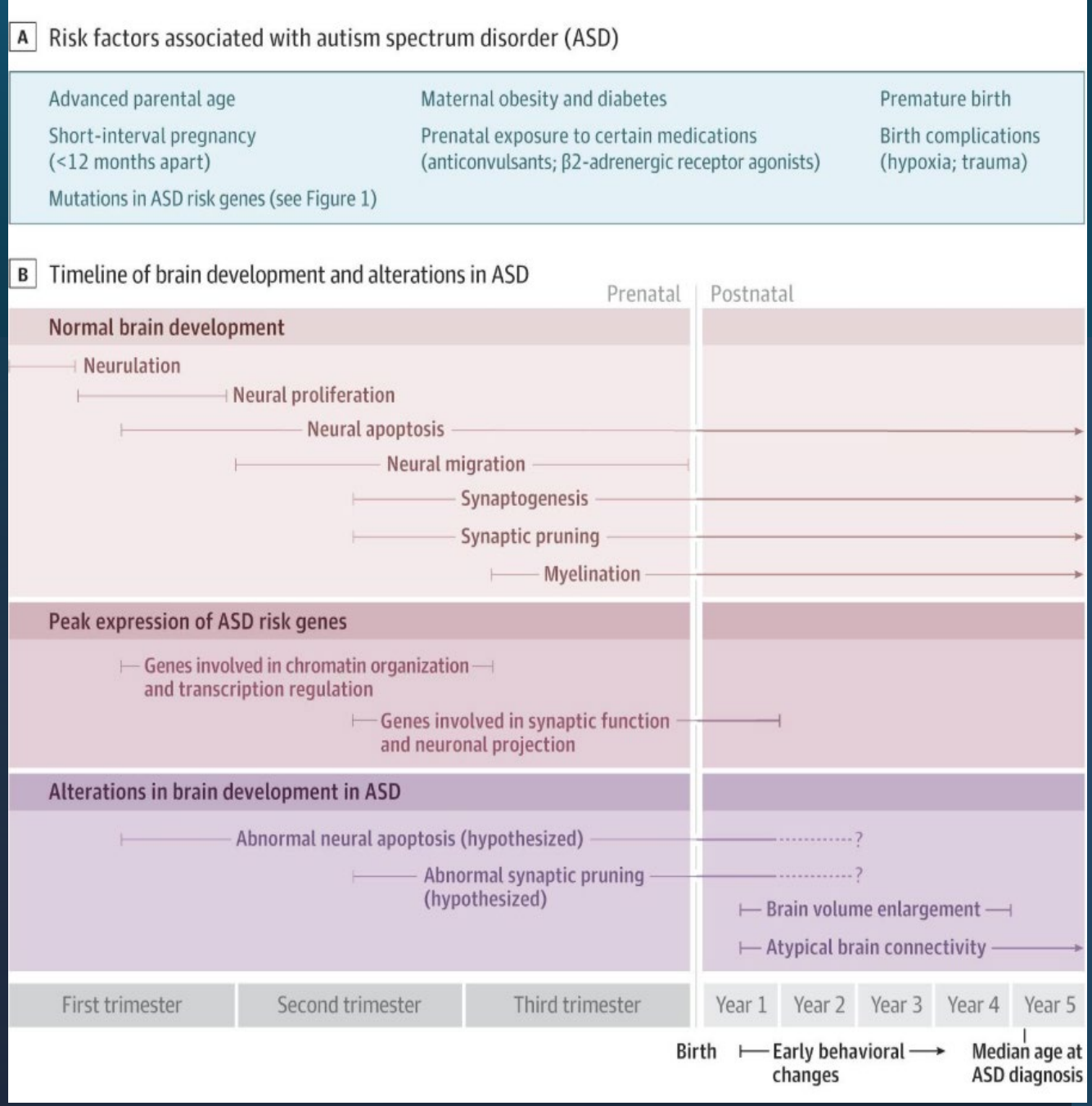
Kim JY, Son MJ, Son CY, Radua J, Eisenhut M, Gressier F, Koyanagi A, Carvalho AF, Stubbs B, Solmi M, Rais TB, Lee KH, Kronbichler A, Dragioti E, Shin JI, Fusar-Poli P. Environmental risk factors and biomarkers for autism spectrum disorder: an umbrella review of the evidence. Lancet Psychiatry. 2019 Jul;6(7):590-600. doi: 10.1016/S2215-0366(19)30181-6. PMID: 31230684.

Genetics account for majority of ASD risk

- Approximately 80% of autism spectrum disorder (ASD) diagnoses are genetically linked
  - 15% of ASD cases can be attributed to a known specific genetic mutation
- Environmental factors account for the remaining 14-22% of ASD risk.



Muhle RA, Reed HE, Stratigos KA, Veenstra-VanderWeele J. The Emerging Clinical Neuroscience of Autism Spectrum Disorder: A Review. JAMA Psychiatry. 2018;75(5):514–523. doi:10.1001/jamapsychiatry.2017.4685



Muhle RA, Reed HE, Stratigos KA, Veenstra-VanderWeele J. The Emerging Clinical Neuroscience of Autism Spectrum Disorder: A Review. JAMA Psychiatry. 2018;75(5):514–523. doi:10.1001/jamapsychiatry.2017.4685

Hypothesis 2: Vaccines are responsible for rise in autism cases.

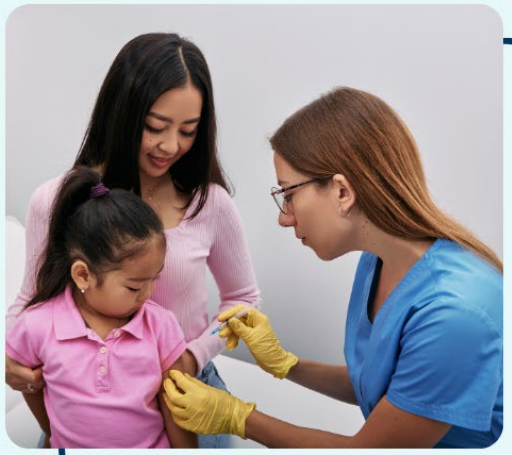
Proven or Disproven?

The Bottom Line for Caregivers

Vaccines **DO NOT** cause autism.

Vaccines **DO** protect against many preventable and deadly diseases.

Vaccinating your child is one of the **most important** things you can do to protect their health.



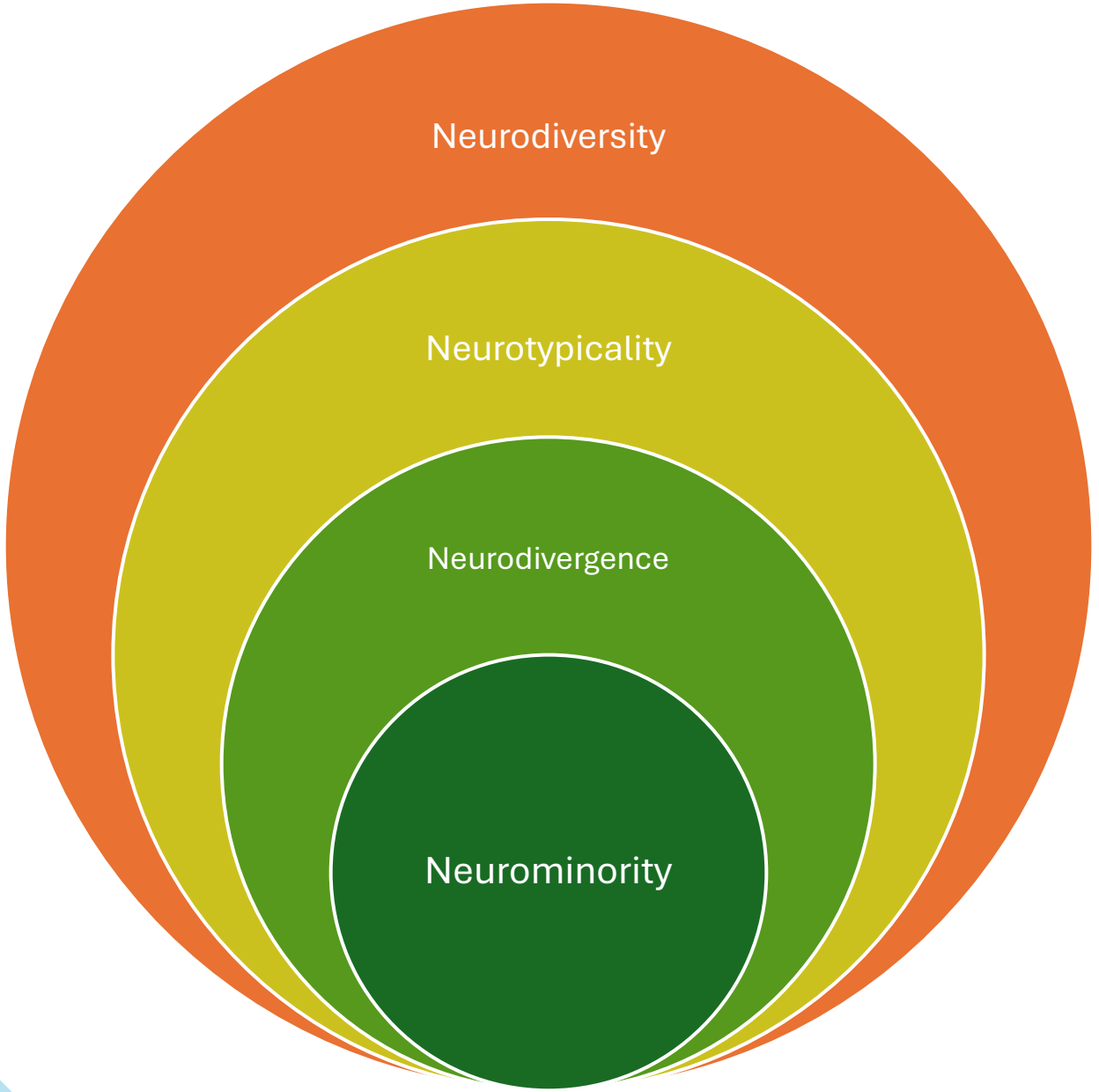
https://publichealthcollaborative.org/communication-tools/vaccines-do-not-cause-autism/

Hypothesis 3: Neurodiversity is trending…social media and other sociocultural factors are partially responsible for the rise in diagnoses of Autism in the US.

Medical vs. Social Model of Autism and Neurodiversity Paradigm

- **Medical model of disease**
  - Locate disability in individual
  - Reduce outward manifestations of neurodevelopmental differences
  - Seeks a “cure” for autism
- **Social model of disease**
  - Disability not due to difference or condition
  - Disability due to structural, cultural, and societal factors
  - Seeks inclusion and accessibility for autistic people
- **Neurodiversity paradigm**
  - Neurological and developmental differences are part of human diversity.
  - Challenges faced by people with ASD due to misalignment of unique characteristics of person and society’s expectations, biases.
- **A shift from** pathology **to** identity

Westby A, Coburn-Pierce M. Autism Spectrum Disorder in Primary Care. Am Fam Physician. 2025 Sep;112(3):301-312. PMID: 40961308.



Pellicano, E. and den Houting, J. (2022), Annual Research Review: Shifting from ‘normal science’ to neurodiversity in autism science. J Child Psychol Psychiatr, 63: 381-396. https://doi.org/10.1111/jcpp.13534

DSM 5-TR meets TikTok…

- Improved recognition of ASD in females and adults attributed to social media platforms amplifying public awareness of autism beyond traditional childhood presentations
  - TikTok – a significant source of autism information, identity formation
  - TikTok – a significant source of autism **dis**information, personal experiences >>> medically informed content
- Social media driven awareness of autism in females narrowing the gender disparity gap
  - 2012: 4.5♂:1♀
  - 2020: 3.8♂:1♀
- Increased rate of diagnosis in young adults 18-34
  - Historically inequitable screening practices
  - Increased public awareness through social media and advocacy

Brennan E, Lampinen LA, Paek H, Wang X, Romano H, Bal VH. Deconstructing Information About Autism Diagnosis in Adults on TikTok: A Cross-Sectional, Descriptive Content Analysis. J Autism Dev Disord. 2025 Nov 8. doi: 10.1007/s10803-025-07123-0. Epub ahead of print. PMID: 41205090.

Sociocultural factors

- Social media gives autism a voice
- Improved screening tools
  - Digital behavioral phenotyping
    - Artificial intelligence and machine learning applications
- 2022 CDC-AAP revised milestone checklist
  - 75th percentile threshold (rather than 50th percentile) for developmental surveillance
  - Earlier identification of delays.
- Universal developmental screening implementation
  - Modified Checklist for Autism in Toddlers, Revised with Follow-Up (M-CHAT-R/F), at 18 and 24 months, unchanged

*****Multidisciplinary diagnostic assessment remains the gold standard*****

Hirota T, King BH. Autism Spectrum Disorder: A Review. JAMA. 2023;329(2):157–168. doi:10.1001/jama.2022.23661
Perochon S, Di Martino JM, Carpenter KLH, Compton S, Davis N, Eichner B, Espinosa S, Franz L, Krishnappa Babu PR,Sapiro G, Dawson G. Early detection of autism using digital behavioral phenotyping. Nat Med. 2023 Oct;29(10):24892497. doi: 10.1038/s41591-023-02574-3. Epub 2023 Oct 2. PMID: 37783967; PMCID: PMC10579093.
Rajagopalan SS, Ghosh S. Recent Developments in the Application of Artificial Intelligence and Machine Learning in Early Screening and Diagnosis of Autism. Methods Mol Biol. 2025;2952:233-242. doi: 10.1007/978-1-0716-4690-8_13. PMID: 40553336.

Hypothesis 3: Neurodiversity is trending…social media and other sociocultural factors are partially responsible for the rise in diagnoses of Autism in the US.

Proven or Disproven?


CLINICALLY PROVEN

So why are autism cases on the rise?

1. DSM 5 collapsed PDD chapter into one diagnosis of Autism Spectrum Disorder√
2. Neurodiversity and other sociocultural factors √
3. PLUS???

Considerations…

- Improved case ascertainment
  - Enhanced screening practices
  - Increased clinician awareness
  - Systematic improvement in previously underdiagnosed groups
    - Females – historically misdiagnosed with anxiety or personality disorders
    - Adults
    - Racial and ethnic minorities
- Greater access to services creates incentive for diagnosis
  - Early intervention
  - Educational supports
- Environmental risk factors on rise
  - Advanced paternal age >50
  - Advanced maternal age >35
  - Maternal obesity, DM, HTN
  - Prematurity

Kim JY, Son MJ, Son CY, Radua J, Eisenhut M, Gressier F, Koyanagi A, Carvalho AF, Stubbs B, Solmi M, Rais TB, Lee KH, Kronbichler A, Dragioti E, Shin JI, Fusar-Poli P. Environmental risk factors and biomarkers for autism spectrum disorder: an umbrella review of the evidence. Lancet Psychiatry. 2019 Jul;6(7):590-600. doi: 10.1016/S2215-0366(19)30181-6. PMID: 31230684.

Increased outreach to minority communities

- **Family navigation programs**
- **Screening in early intervention settings**
- **Culturally informed care coordination**
- **Greater access to services**
  - **SPACE framework** (Sensory, Predictability, Acceptance, Communication, Empathy).
  - **Community-embedded service delivery pathways**.
  - **Multisystem coordination initiatives**

Attar SM, Benavidez H, Gicheru C, Alabi C, Sapano R, L Stone W. Co-designing a novel service delivery pathway to increase access to autism identification and care within a non-profit community organization serving culturally and linguistically diverse families. Autism. 2025 Aug;29(8):2097-2110. doi: 10.1177/13623613251335702. Epub 2025 May 9. PMID: 40346799; PMCID

Autism Spectrum Disorder rates continue to rise due to…

- Enhanced screening practices
- Increased awareness and advocacy
- Improved access to services
- Broader recognition of the autism spectrum
- Better identification in historically underserved populations

Take home points

- DSM 5/5TR criteria overhaul increased overall numbers by capturing Asperger's, CDD, and PDD NOS as Autism Spectrum Disorder.
- Vaccinations are **NOT** responsible for elevated rates of autism spectrum diagnoses over the past 20 years.
- Social media and other sociocultural factors have contributed to the rise in diagnoses of Autism in the US especially in females, young adults, and minorities.
- **Improved recognition, screening, awareness, advocacy, and access are drivers of increase in autism spectrum disorder diagnoses over the past 20 years.**

Questions?

leah.snodgrass@lmunet.edu

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