

# Ongoing Federal Child Mental Health Surveillance Systems Triangulating Prevalence through Multiple Methods

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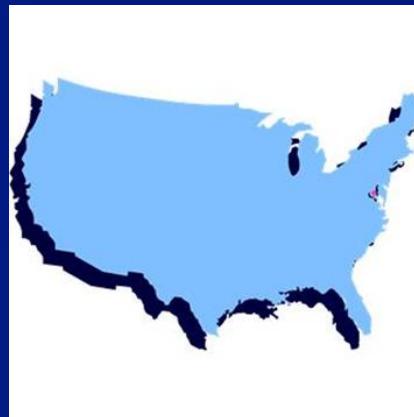
**Centers for Disease Control and Prevention  
National Center on Birth Defects and Developmental  
Disabilities**

Workshop on Integrating New Measures of Serious Emotional Disturbance in  
Children into SAMHSA's Data Collection Programs

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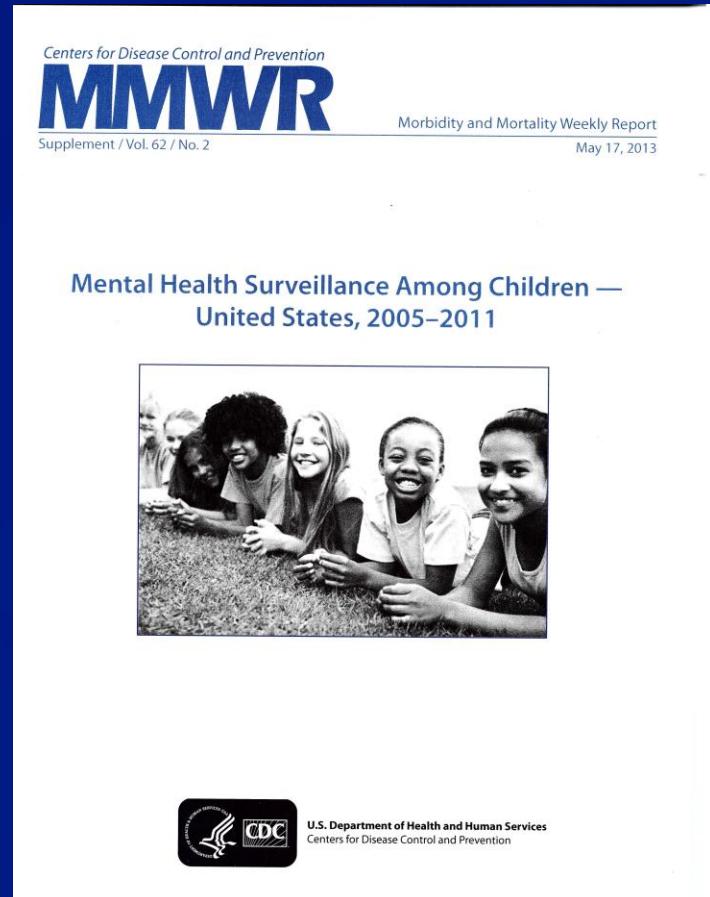
## National Surveillance of Children's Mental Health

- ❑ Document the impact of children's mental health and mental disorders
- ❑ Document mental health needs of children
- ❑ Build effective programs and services for children and families
- ❑ Inform research on factors that increase risk and promote prevention
- ❑ Inform policy and resource allocation



# Children's Mental Health MMWR Overview

- Describes federal efforts on monitoring mental disorders in children
- First report to compile information on the prevalence of specific mental disorders and other indicators of mental health among children
- Developed in collaboration with key federal partners
  - Centers for Disease Control and Prevention (CDC)
  - Substance Abuse and Mental Health Services Administration (SAMHSA)
  - National Institute of Mental Health (NIMH)
  - Health Resources and Services Administration (HRSA)
- Important first step towards better understanding these disorders and the impact they have on children



# Surveillance of Child Mental Disorders

- Autism and Developmental Disabilities Monitoring Network (ADDM; CDC)
- National Health and Nutrition Examination Survey (NHANES; CDC)
- National Health Interview Survey (NHIS; CDC)
- National Survey of Children's Health (NSCH; HRSA/CDC)
- National Survey on Drug Use and Health (NSDUH; SAMHSA)
- National Violent Death Reporting System (NVDRS; CDC)
- National Vital Statistics System (NVSS; CDC)
- National Youth Risk Behavior Survey (YRBS; CDC)
- School-Associated Violent Death Surveillance Study (SAVD; CDC)
- National Comorbidity Survey Replication Adolescent Supplement (NCS-A; NIMH)



# Surveillance of Child Mental Disorders - Methods

## WHO?

Age  
Sample size  
Over-sample

## WHY?

Condition-specific  
General Health  
Child-focused

## WHEN?

Current/ever  
Past month/Yr  
Periodicity  
Year(s)

## WHERE?

All US  
State  
estimates?  
Limited sites

## WHAT?

Symptoms  
Diagnoses  
Self-report  
Parent-report

## HOW?

Phone  
In-Person  
Record Review  
Vital Records

Name, website, and sponsor	Description	Method of data collection	Survey topics related to children	Mental health topics and questions related to children	Populations and periodicity
<b>National Survey of Children's Health (NSCH)</b> <a href="http://www.cdc.gov/nchs/slaits/nsch.htm">http://www.cdc.gov/nchs/slaits/nsch.htm</a> Sponsor: Health Resources and Services Administration Administrator: CDC National Center for Health Statistics	NSCH examines the physical and emotional health of children aged 0–17 years, emphasizing factors that might relate to the well-being of children.	Telephone interviews, with National Immunization Survey sampling frame	Physical, emotional, and dental health Medical home Child, family, and neighborhood well-being Children with special health-care needs Health-care access, use, and barriers Satisfaction with health-care services Neighborhood and community characteristics, including perceived safety, violence, and social capital Health insurance	Activity, social, or learning limitation resulting from mental, emotional, or behavior problems Common acute and chronic conditions (including learning disability, ADHD, depression, anxiety, behavior and conduct disorders, ASD, Tourette syndrome, and epilepsy)	Representative sample nationally and within each state of households with children Approximately 95,000 children aged ≤17 years Periodic: data collected approximately every 4 years and currently available for 2003, 2007, and 2011–2012
<b>National Health Interview Survey (NHIS)</b> <a href="http://www.cdc.gov/nchs/nhis.htm">http://www.cdc.gov/nchs/nhis.htm</a> Sponsor: CDC National Center for Health Statistics	NHIS is a national survey of the health of the civilian noninstitutionalized U.S. population. The main objective of NHIS is to monitor the health of the U.S. population through the collection and analysis of data on a broad range of health topics.	In-person household interviews	Child and family demographic characteristics, including family income and parental education Health insurance coverage Injuries Vaccinations Health status and behaviors Diagnosed health conditions Other health problems Use of educational and health-care services	Diagnosed mental disorders (including ADHD, autism, intellectual disability, learning disabilities, and developmental delay) Emotional and behavioral difficulties Use of special education services for emotional or behavior problems Use of mental health-care services	Nationally and regionally representative sample Approximately 12,000 households with children aged ≤17 years Oversample of Hispanics, non-Hispanic blacks, Asians Ongoing; data files released annually since 1963

# Mental Disorders and Indicators of Mental Health

## □ Disorders:

- Attention-deficit/hyperactivity disorder
- Disruptive behavioral disorders
- Autism spectrum disorders
- Anxiety
- Depression
- Substance use disorders
- Tourette Syndrome

## □ Indicators:

- Suicide
- Mentally unhealthy days



TABLE 4. Prevalence of children aged 3–17 years who ever received a diagnosis of ADHD or with current ADHD, by sociodemographic characteristics and year — National Health Interview Survey and National Survey of Children's Health, United States, 2007–2011

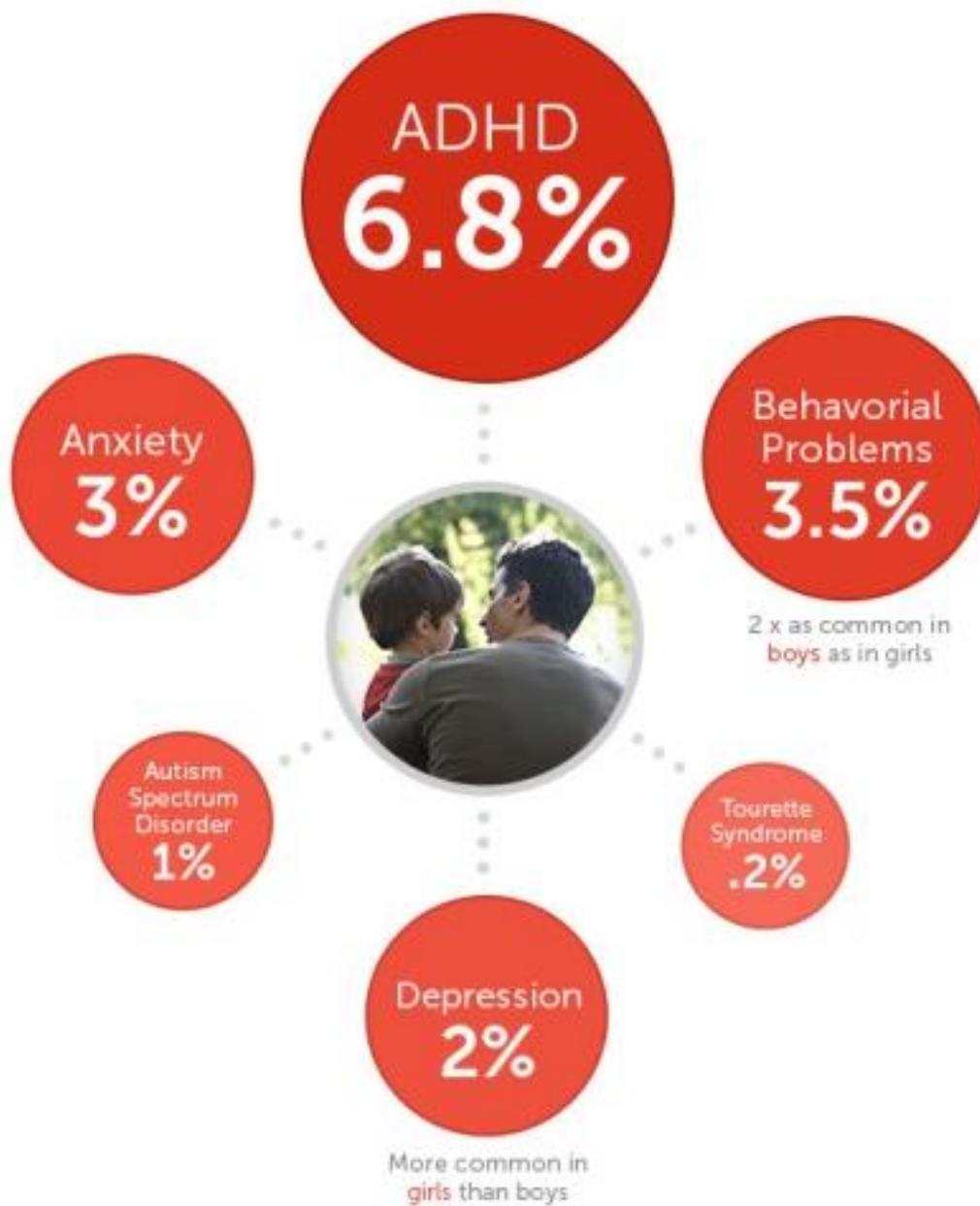
Characteristic	Ever received a diagnosis of ADHD (parent report)						Current ADHD (parent report)			
	NHIS 2007–2008 (N = 14,970 persons surveyed)		NHIS 2009–2010 (N = 18,411 persons surveyed)		NHIS 2011 (N = 10,554 persons surveyed)		NSCH 2007 (N = 78,042 persons surveyed)		NSCH 2007 (N = 78,042 persons surveyed)	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
<b>Sex</b>										
Male	10.6	(9.7–11.4)	11.5	(10.7–12.3)	12.0	(11.0–13.1)	12.3	(11.6–13.1)	9.6	(8.9–10.4)
Female	4.6	(4.0–5.3)	5.4	(4.8–6.0)	4.7	(4.0–5.6)	5.3	(4.8–5.9)	3.8	(3.4–4.2)
<b>Age group (yrs)</b>										
3–5	2.1	(1.5–2.8)	2.5	(1.9–3.4)	2.1	(1.4–3.0)	1.5	(1.1–1.9)	1.1	(0.9–1.5)
6–11	7.4	(6.6–8.3)	8.2	(7.4–9.0)	8.4	(7.4–9.5)	9.1	(8.3–9.9)	7.5	(6.8–8.2)
12–17	10.8	(9.8–11.8)	11.9	(11.0–12.9)	11.9	(10.7–13.2)	12.4	(11.5–13.3)	8.8	(8.1–9.6)
<b>Race/Ethnicity*</b>										
Hispanic	4.1	(3.4–4.9)	4.6	(3.9–5.4)	5.6	(4.6–6.8)	5.4	(4.4–6.6)	4.0	(3.1–5.0)
Black, non-Hispanic	8.1	(6.9–9.5)	10.3	(9.1–11.7)	8.8	(7.3–10.5)	10.0	(8.8–11.4)	7.7	(6.6–9.0)
White, non-Hispanic	9.1	(8.3–10.0)	10.0	(9.2–10.8)	10.1	(9.1–11.2)	10.0	(9.4–10.6)	7.6	(7.0–8.1)
Multirace, non-Hispanic	10.2	(7.3–14.0)	11.5	(8.6–15.2)	5.5	(3.4–8.6)	13.0	(10.4–16.2)	10.2	(7.9–13.0)
Other, non-Hispanic	3.1	(1.8–5.3)	2.0	(1.4–2.9)	4.1	(2.4–6.9)	4.0	(3.1–5.1)	3.0	(2.2–3.9)
<b>Highest education in household†</b>										
Less than high school	6.5	(4.9–8.5)	7.9	(6.5–9.5)	7.7	(6.1–9.7)	8.5	(7.1–10.2)	6.6	(5.3–8.1)
High school graduate	8.9	(7.8–10.1)	10.5	(9.3–11.7)	7.5	(6.3–9.0)	11.8	(10.5–13.2)	8.7	(7.7–9.8)
More than high school	7.4	(6.8–8.2)	8.0	(7.4–8.7)	8.8	(8.0–9.7)	8.1	(7.6–8.7)	6.3	(5.8–6.8)
<b>Insurance</b>										
Yes	7.9	(7.3–8.5)	8.7	(8.2–9.3)	8.7	(8.0–9.5)	9.2	(8.7–9.7)	7.1	(6.7–7.6)
No	5.4	(4.2–6.9)	5.9	(4.6–7.5)	4.7	(3.2–6.7)	6.3	(4.9–8.2)	3.5	(2.7–4.5)
<b>Region</b>										
Northeast	6.8	(5.8–8.0)	8.6	(7.4–9.9)	7.5	(6.0–9.4)	8.8	(7.8–9.9)	7.0	(6.1–8.0)
Midwest	8.8	(7.5–10.2)	9.4	(8.3–10.7)	8.7	(7.3–10.3)	9.3	(8.6–10.1)	7.1	(6.5–7.8)
South	8.9	(8.0–10.0)	10.1	(9.2–11.0)	10.3	(9.2–11.6)	10.3	(9.5–11.1)	7.7	(7.1–8.5)
West	5.1	(4.3–6.0)	5.2	(4.4–6.1)	6.0	(4.9–7.3)	6.6	(5.4–7.9)	4.8	(3.9–6.0)
<b>Poverty-income ratio§</b>										
≤100% FPL	8.9	(7.5–10.4)	11.4	(10.1–12.7)	10.5	(8.9–12.4)	11.1	(9.9–12.4)	8.7	(7.7–10.0)
>100% to ≤200% FPL	8.6	(7.3–10.0)	9.2	(8.0–10.6)	6.7	(5.6–8.1)	9.7	(98.6–11.0)	7.2	(6.3–8.3)
>200% FPL	6.9	(6.3–7.6)	7.1	(6.5–7.8)	8.3	(7.5–9.3)	8.0	(7.5–8.6)	6.1	(5.6–6.6)
<b>Total</b>	<b>7.6</b>	<b>(7.1–8.2)</b>	<b>8.5</b>	<b>(8.0–9.0)</b>	<b>8.4</b>	<b>(7.8–9.1)</b>	<b>8.9</b>	<b>(8.4–9.4)</b>	<b>6.8</b>	<b>(6.4–7.2)</b>

**Abbreviations:** ADHD = attention-deficit/hyperactivity disorder; CI = confidence interval; FPL = federal poverty level; NHIS = National Health Interview Survey; NSCH = National Survey of Children's Health.

\* Other, non-Hispanic, includes American Indian/Alaska Native, Hawaiian/other Pacific Islander, and Asian. Persons categorized as multirace selected more than one race.

† The highest education in the household is based on the highest education of adults in the sample child's family for NHIS and on the education of parents or respondents (adults) for NSCH.

§ FPL is based on family income and family size and composition using federal poverty thresholds that are updated annually by the U.S. Census Bureau using the change in the average annual consumer price index for all urban consumers. (Additional information available at <http://www.census.gov/hhes/www/poverty/index.html>.)



- All demographic groups were affected
- The number of children with a mental disorder increased with age, with the exception of autism spectrum disorders
- Boys were more likely than girls to have most of the conditions (ADHD, behavioral or conduct problems, autism spectrum disorders, anxiety, Tourette syndrome, and cigarette dependence)

## Key Findings: Adolescents Aged 12-17 Years

### National Survey of Drug Use and Health, 2010-2011:

- 8.1% - Major depressive episode, past year
- 4.7% - Illicit drug use disorder in the past year
- 4.2% - Alcohol use disorder in the past year
- 2.8% - Cigarette dependence in the past month



### National Vital Statistics System, 2010:

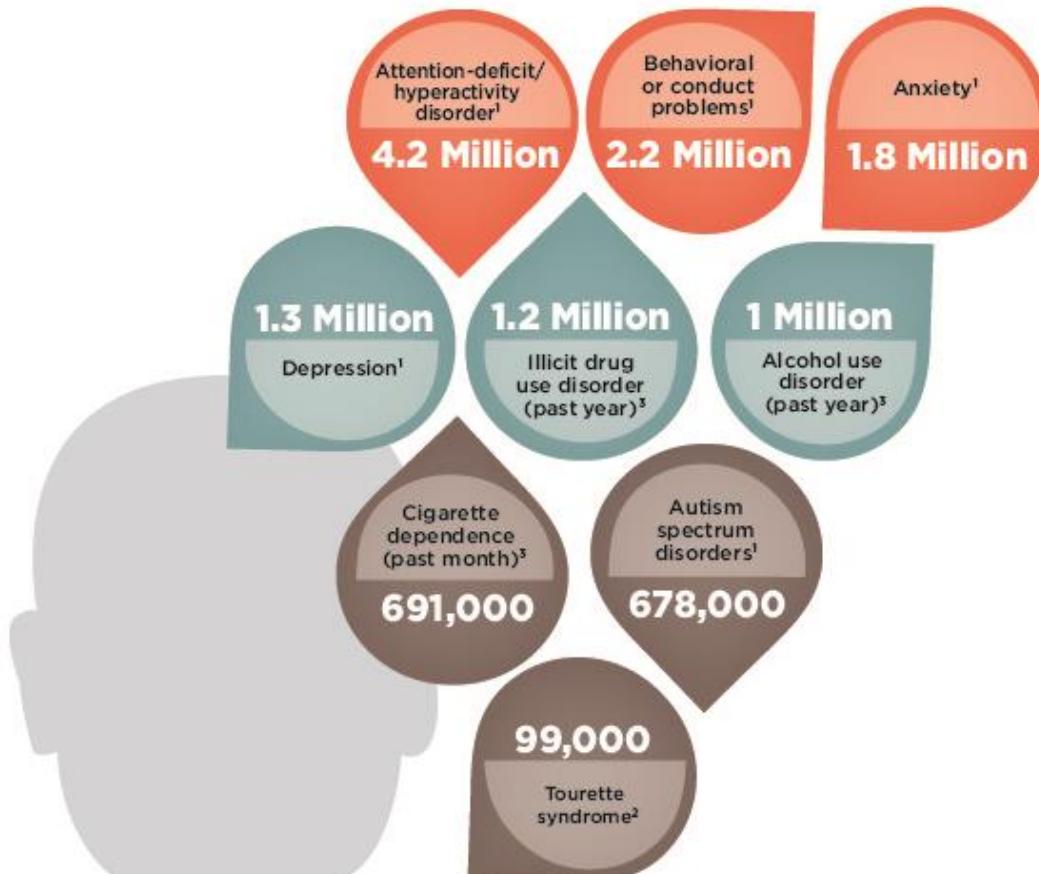
- Suicide was the second leading cause of death among adolescents aged 12–17
- Suicide rate: 4.5/100,000 children

### National Health and Nutrition Examination Survey, 2005-2010

- 8.3% reported  $\geq 14$  mentally unhealthy days in the past month

# ESTIMATES OF U.S. CHILDREN

with Mental Disorders



1 3-17 years  
2 6-17 years  
3 12-17 years

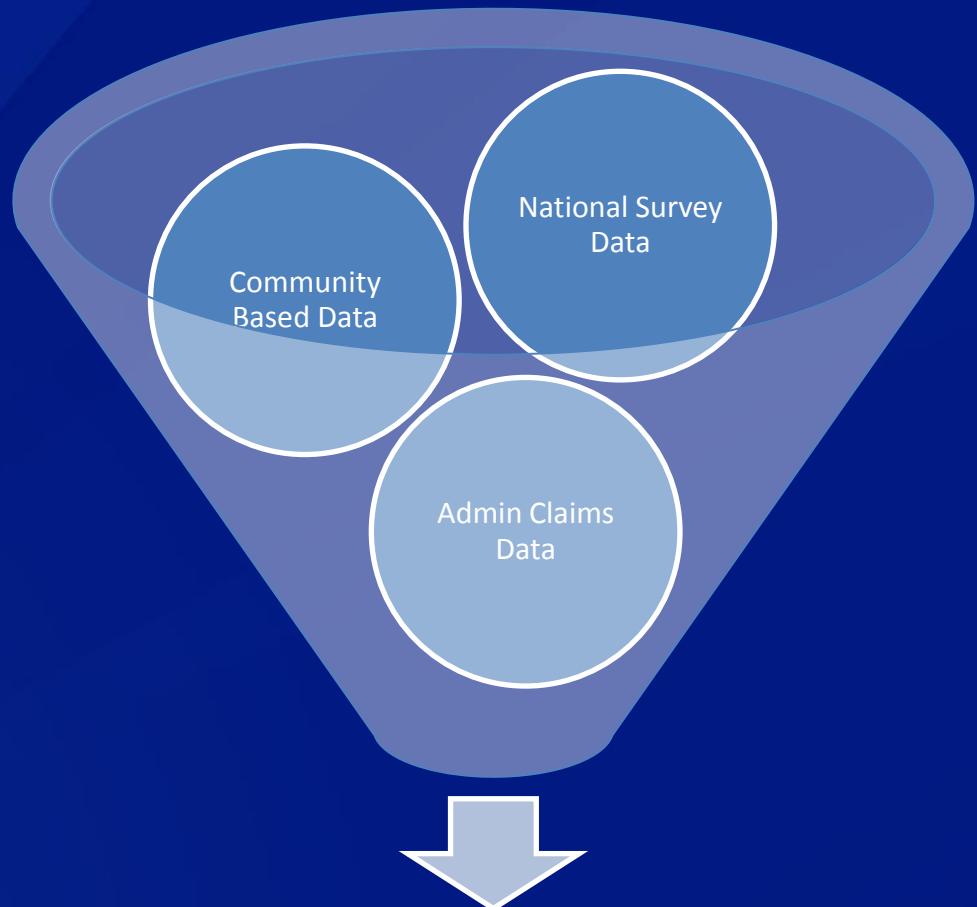
# Data Gaps and Challenges

- ❑ Many systems exclude undiagnosed cases
- ❑ Limited data are available on many conditions (e.g., specific anxiety disorders, bipolar disorder)
- ❑ Available data do not allow for an overall estimate of the prevalence of all childhood mental disorders
  - No single dedicated system
- ❑ Consistent case definitions are needed for comparability and reliability of estimates across surveillance systems
- ❑ Subjective criteria for mental disorders
- ❑ Little validation on case ascertainment methods for surveillance



# Epidemiological Considerations for Assessing ADHD Prevalence

- Parent-reported surveys, community-based studies, and administrative analyses are complimentary methods for assessing ADHD prevalence
- Each with their own strengths and limitations

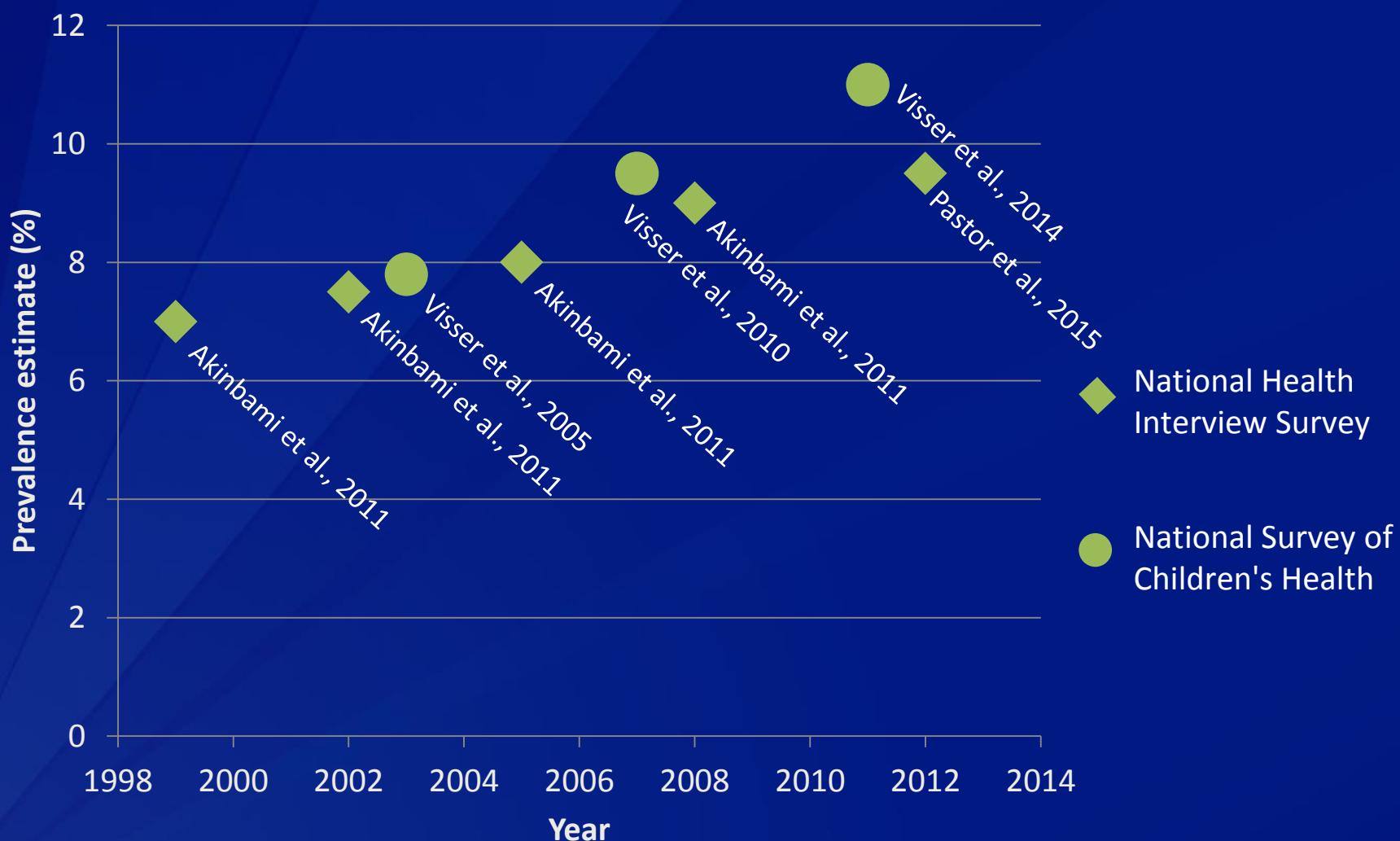


ADHD Prevalence

# Strengths and Limitations of Various Data for ADHD Prevalence Estimation

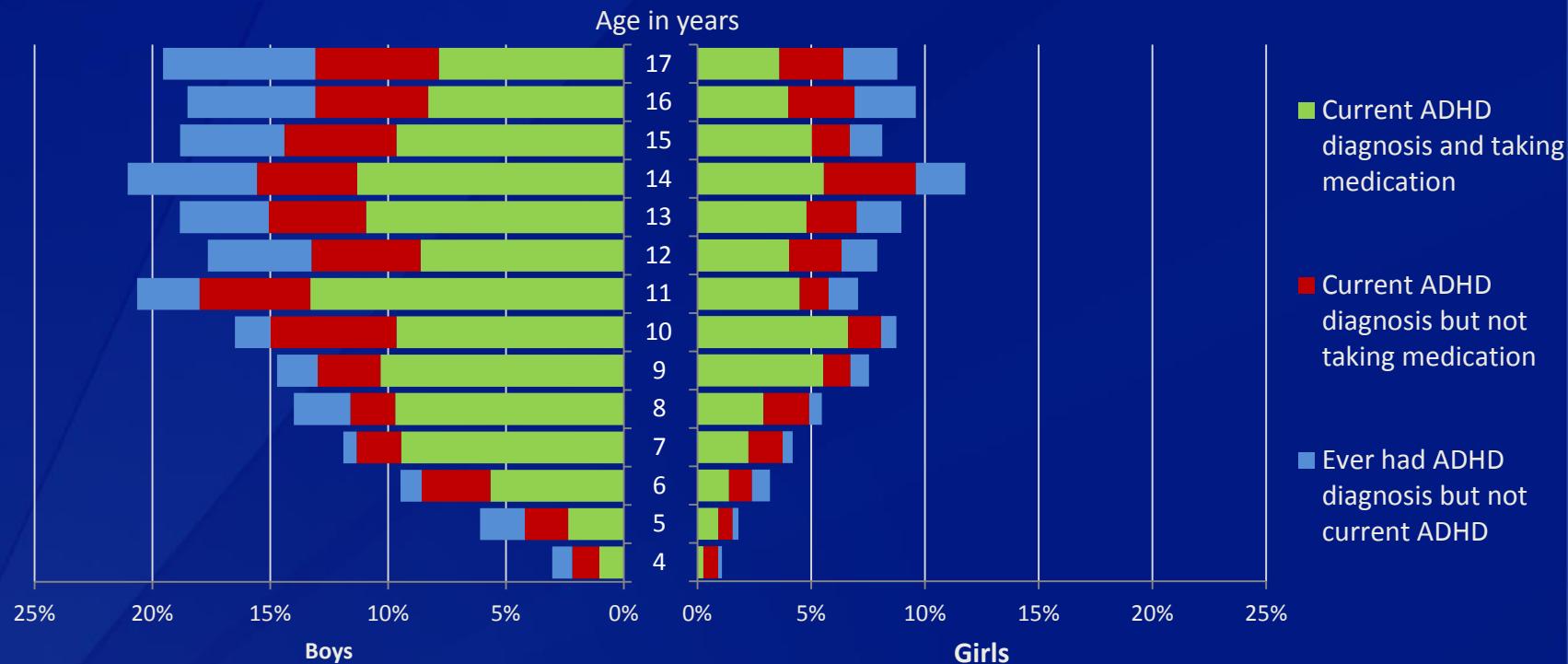
	Major Strengths	Major Limitations
National Parent Surveys	<ul style="list-style-type: none"><li>• National and state-based generalizability</li><li>• Allows for monitoring trends over time</li><li>• Larger sample size</li></ul>	<ul style="list-style-type: none"><li>• Lower response rates</li><li>• Non-coverage bias</li><li>• Recall or reporting bias</li></ul>
Community-Based Studies	<ul style="list-style-type: none"><li>• Allows for depth and breadth</li><li>• Allows for hypothesis generation and testing</li></ul>	<ul style="list-style-type: none"><li>• Non-coverage bias</li><li>• Lower response rates</li><li>• Lack of generalizability</li></ul>
Administrative Records	<ul style="list-style-type: none"><li>• Medicaid data are available in every state</li><li>• Allows for monitoring trends over time</li><li>• Larger sample size</li></ul>	<ul style="list-style-type: none"><li>• Data are submitted for the purpose of payment</li><li>• Limited clinical information</li><li>• Non-coverage bias</li></ul>

# Diagnosed ADHD Prevalence Estimates: National Parent Survey Data



# Weighted Prevalence Estimates (%) of Attention-Deficit/Hyperactivity Disorder (ADHD) Diagnosis by a Health Care Provider among U.S. Children, by Age and Medication Status

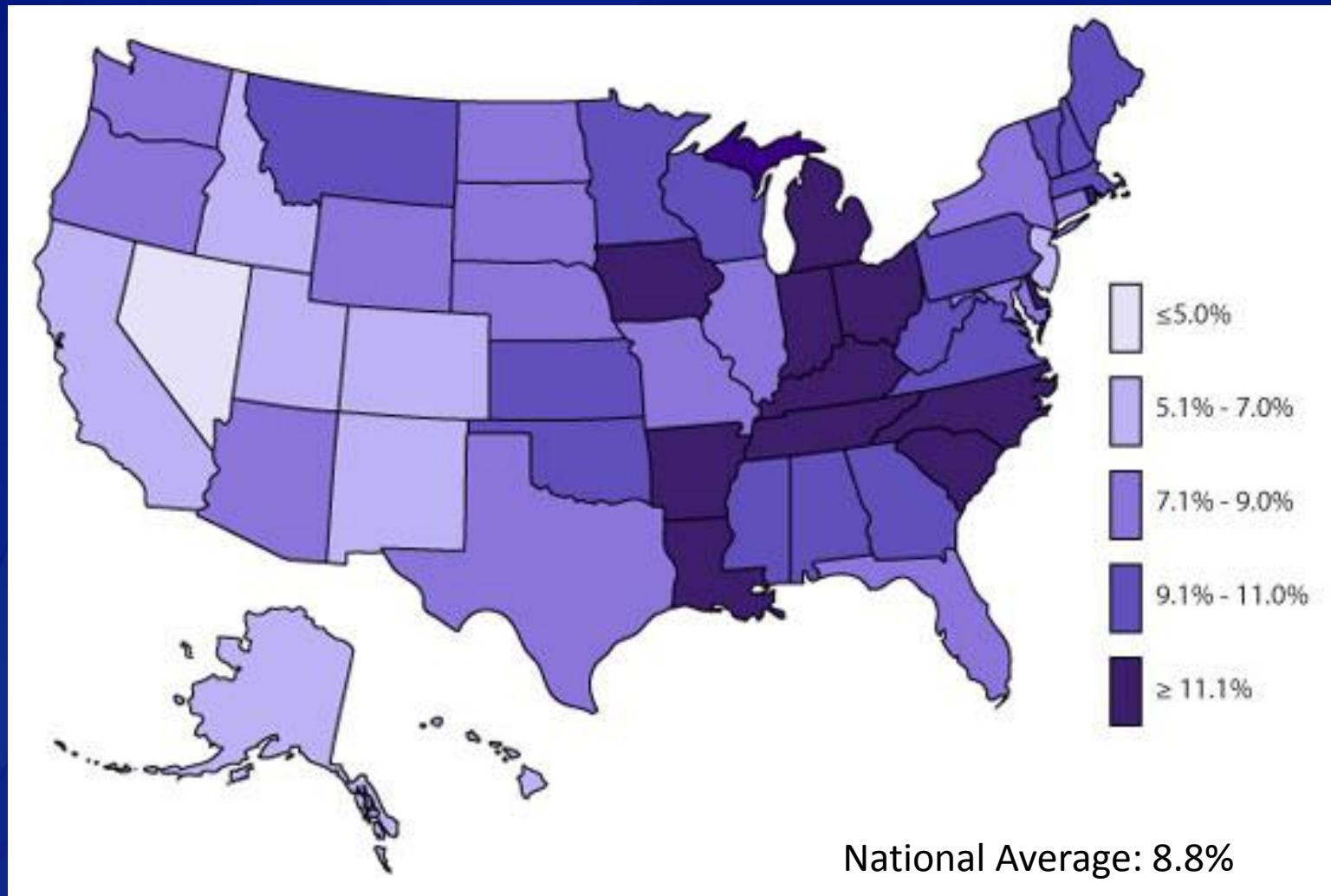
Parent-Reported Data from the National Survey of Children's Health



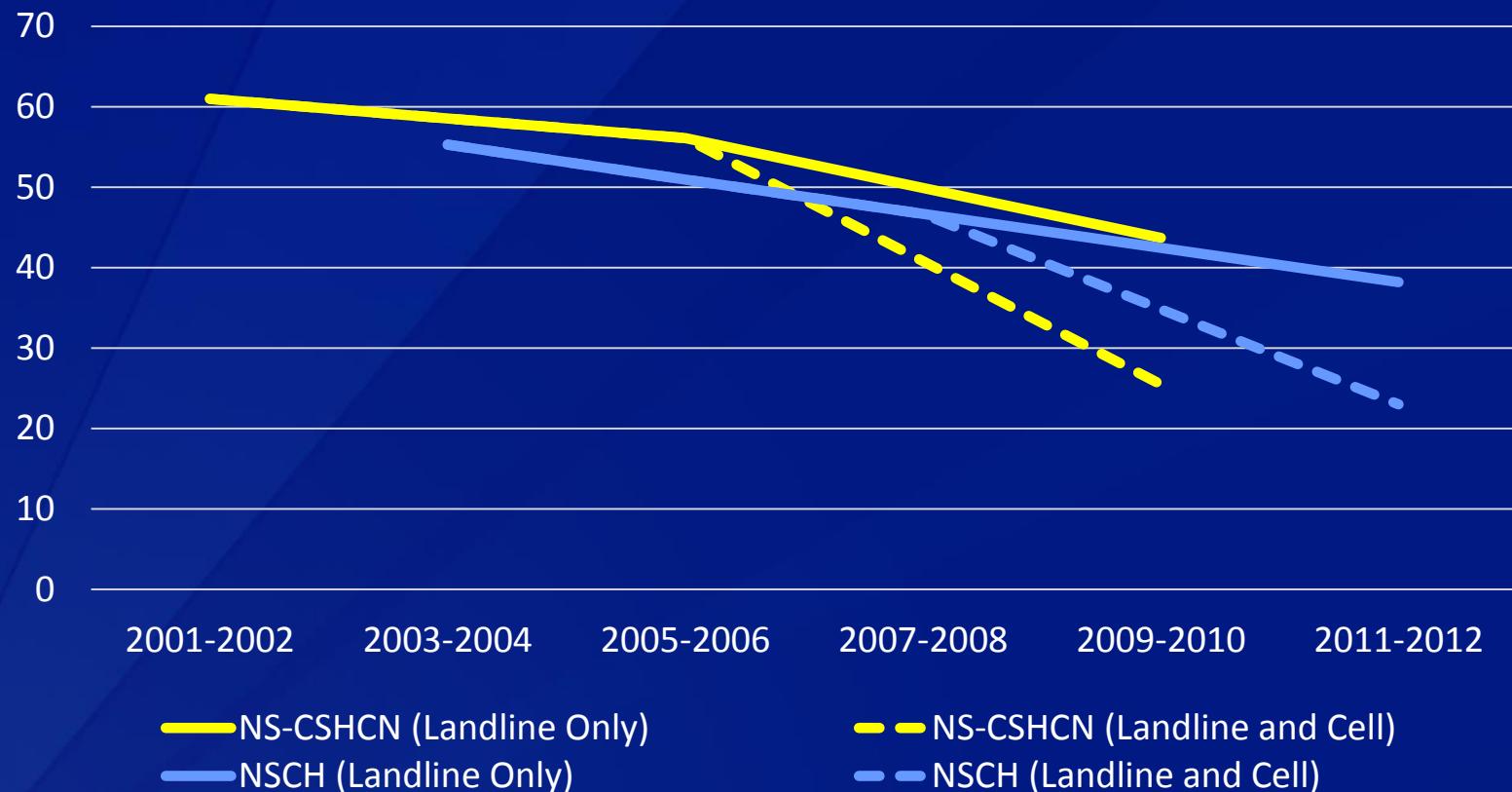
2011-2012

Visser SN, Danielson ML, Bitsko RH, Holbrook JR, Kogan MD, Ghandour RM, . . . Blumberg SJ (2014). Trends in the Parent-Report of Health Care Provider-Diagnosed and Medicated Attention-Deficit/Hyperactivity Disorder: United States, 2003–2011. *Journal of the American Academy of Child and Adolescent Psychiatry*, 53(1), 34-46.e32.

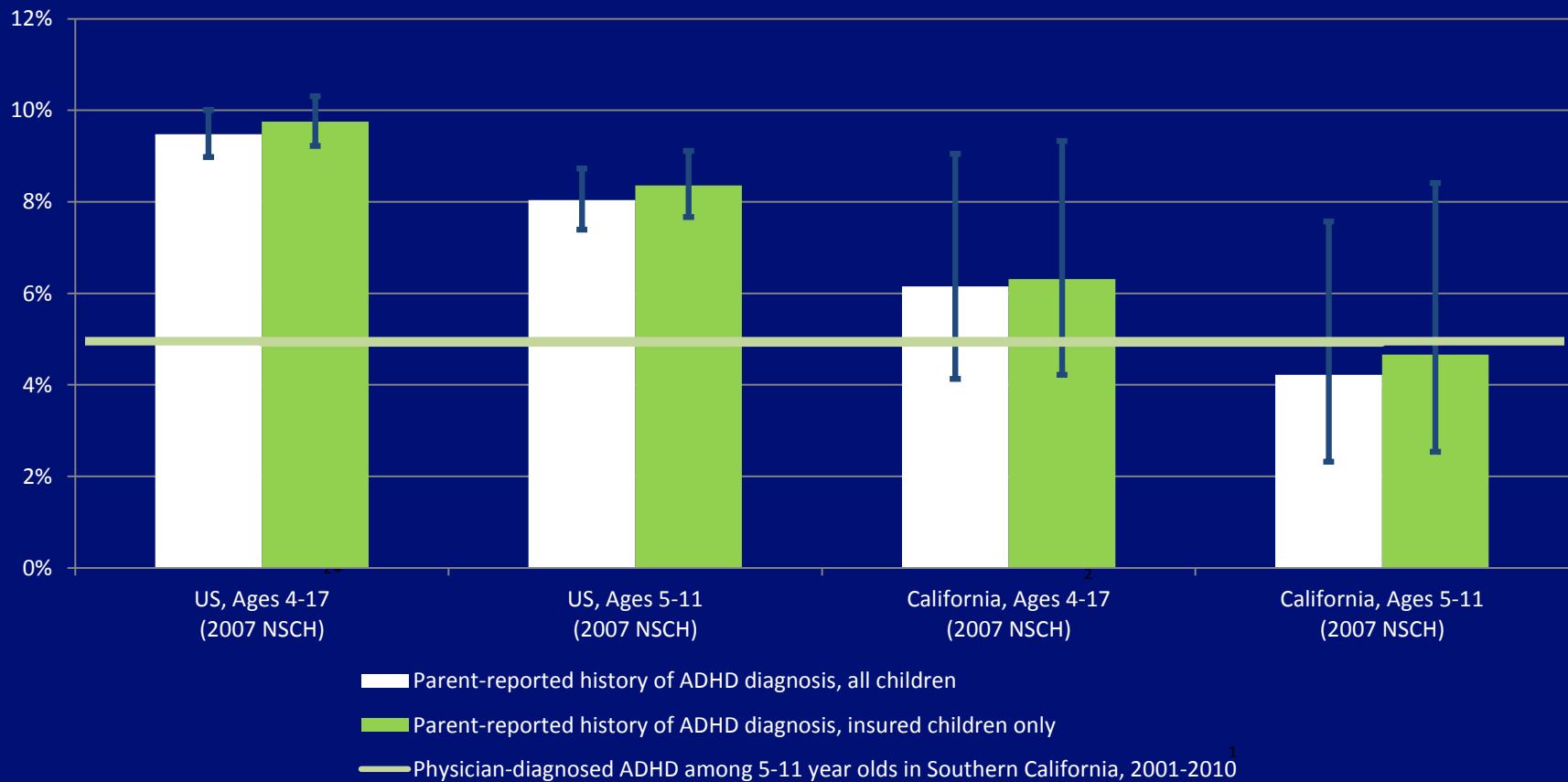
# Current ADHD Diagnosis: NSCH, 2011-12



# SLAITS Response Rates



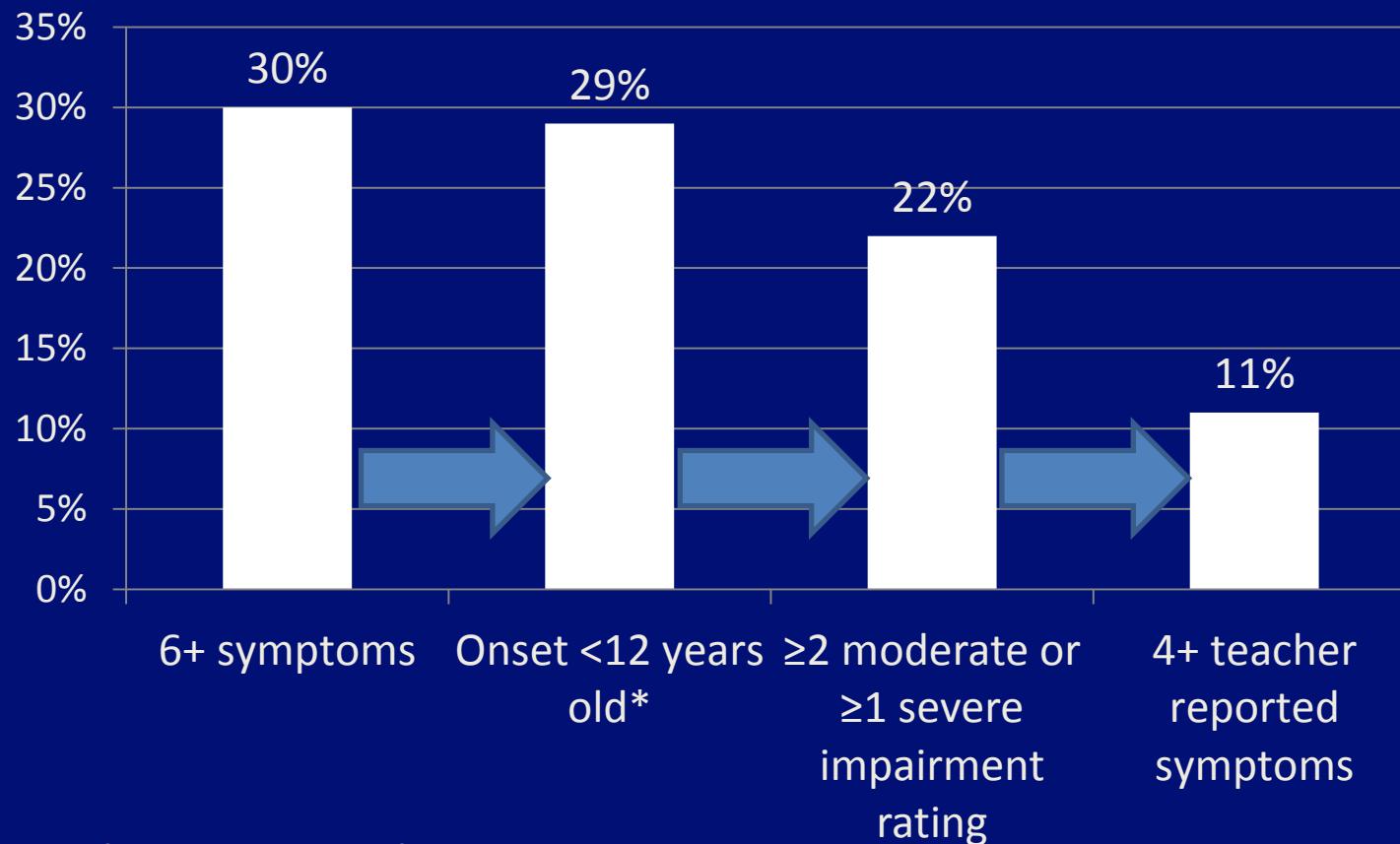
# Prevalence of ADHD among children, by insurance status, geography, age, and data source



\* NSCH = National Survey of Children's Health

Visser SN, et al. (2013). "Convergent validity of parent-reported attention-deficit/hyperactivity disorder diagnosis: A cross-study comparison." JAMA Pediatr 167(7): 674-675.

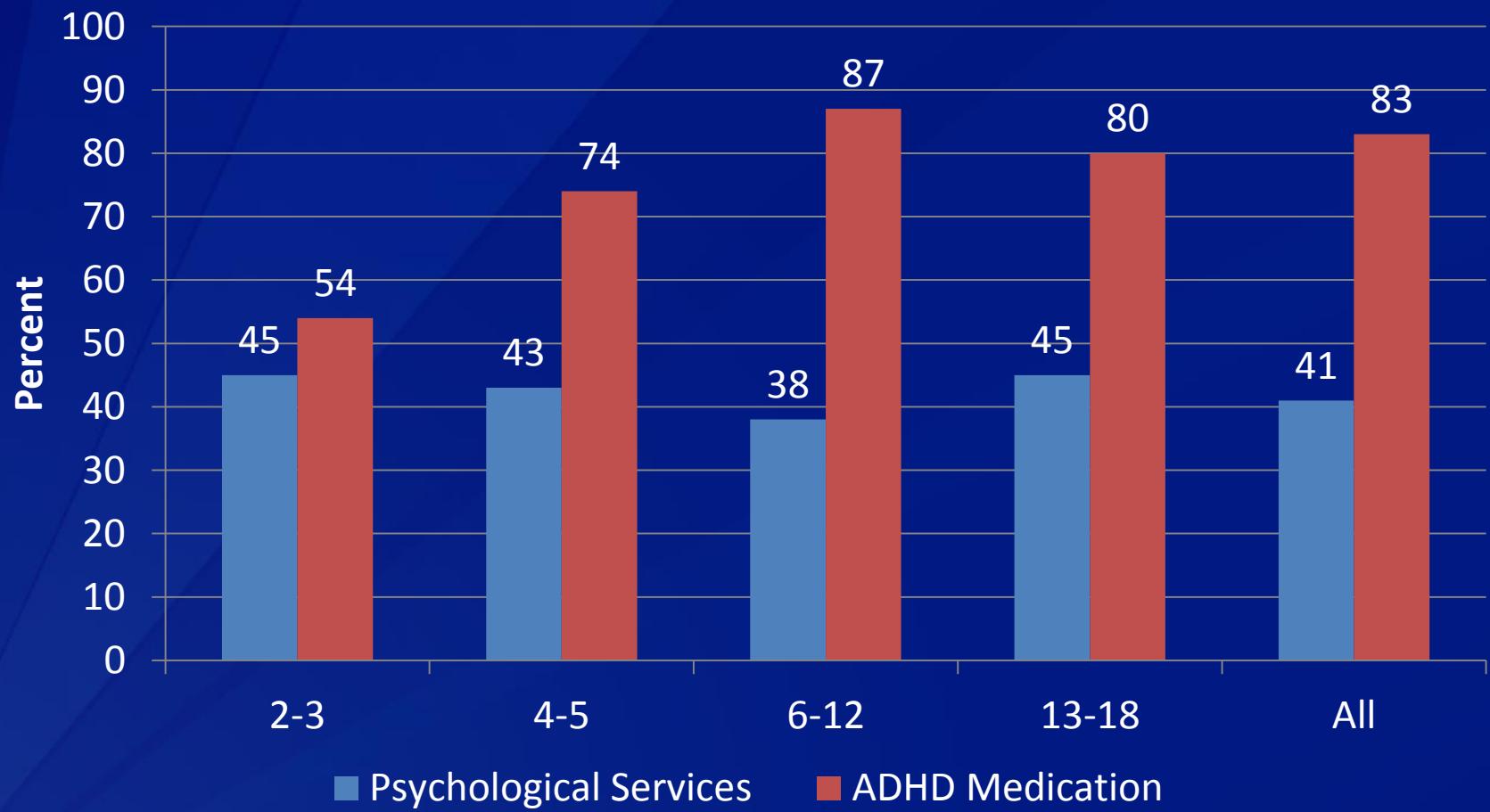
## Depreciation in the Percent of the Baseline PLAY Sample who Met Each Level of ADHD Diagnostic Criteria



*\*This age of onset used to reflect DSM-5 criteria*

McKeown, R. E., Holbrook, J. R., Danielson, M. L., Cuffe, S. P., Wolraich, M. L., & Visser, S. N. (2015). The Impact of Case Definition on Attention-Deficit/Hyperactivity Disorder Prevalence Estimates in Community-Based Samples of School-Aged Children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 54(1), 53-61.

## Treatment of GA Children in Medicaid with 1+ ADHD Diagnosis Codes and 1+ Treatment Claim (2013)



Data Source: GA Medicaid Files

# Conclusions

- ❑ Mental disorders in children are a significant public health issue
- ❑ More comprehensive surveillance is needed
  - Consistent case definitions
  - Validation of methodology
  - Mixed and multiple methods can help triangulate prevalence
- ❑ Partnerships are key to improving a coordinated approach



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