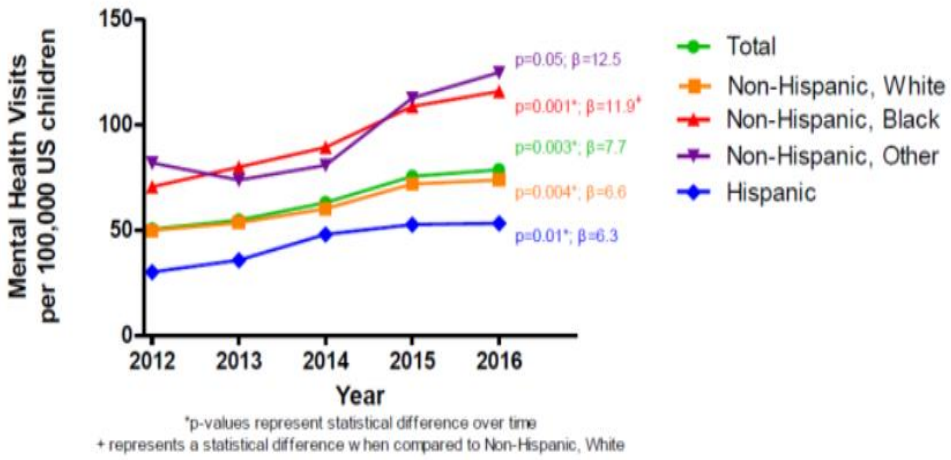
The Changing Epidemiology of Child Mental Health



"And it was so typically brilliant of you to have invited an epidemiologist."

Stephen L. Buka, ScD
Department of Epidemiology
Brown University

LCRN-NAS Mental Health Webinar Series

Challenging Trends of Mental Health Disorders in Children and Youth (September)

Changing Epidemiology of Children's Mental Health (October)

Developmental Origins of Children Mental Health Disorders – Scientific Advances (November)

Reframing dysfunction/disease as an adaptive response to experiences and exposures (January)

Generating a comprehensive policy response to children's changing mental health needs (February)

The Early Family Caregiving Environment and Child Mental and Behavioral Health (March)

Primary Care Approach to Prevention (April)

Thank you Erin Kellogg - NAS

Hoagwood / Halfon Sept Presentation

Challenging Trends for Improving Health Systems to Address Children's Mental Health Risks: A Three Horizons Perspective

Q1: Trends in children's mental health service needs, use, and disparities

Q2: The three horizon perspective and its application to children's mental health system changes

Q3: Emerging models: Towards improved health systems that promote children's mental health within a life course health and development model

Goals for today's presentation:

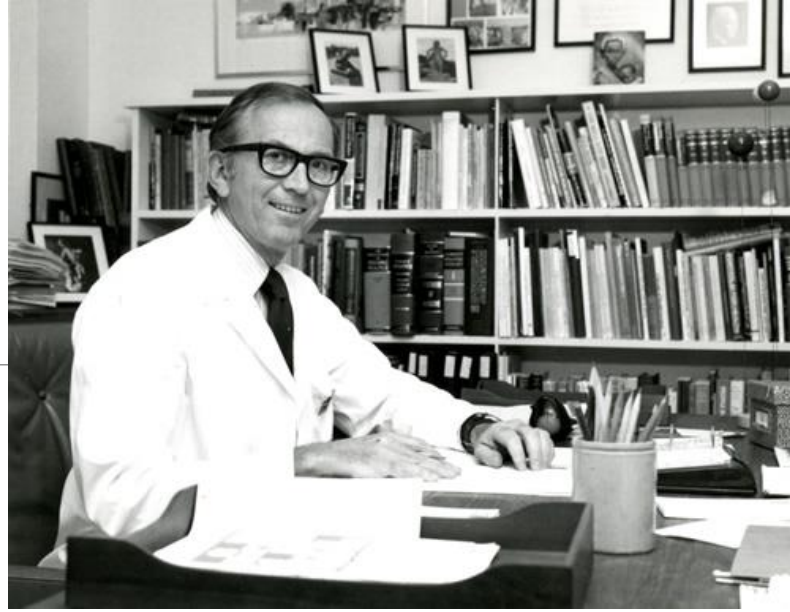
1) Are child and adolescent mental disorders on the rise in the 21st century?

2) Is this grounds for concern?

3) Are there opportunities for prevention?

4) The road ahead…

Dr. Robert Haggerty



concept of “new morbidities”

distinct from the “old morbidities”
(infectious diseases and nutritional problems)

These “new morbidities” are rooted in social difficulties, behavioral problems, and developmental issues, including, but not limited to, autism, ADHD, learning disability, substance use, suicide.

Haggerty, Roghmann, Pless, 1975: Child Health and the Community

The Changing Landscape of Disability in Childhood

Neal Halfon, Amy Houtrow, Kandyce Larson, and Paul W. Newacheck

The Future of Children, Volume 22, No. 1, Spring 2012, pg. 13-42

Table 3. Prevalence of Conditions Associated with Limitations in Usual Activities due to Chronic Conditions, U.S. Children under Age Eighteen, 2008–09

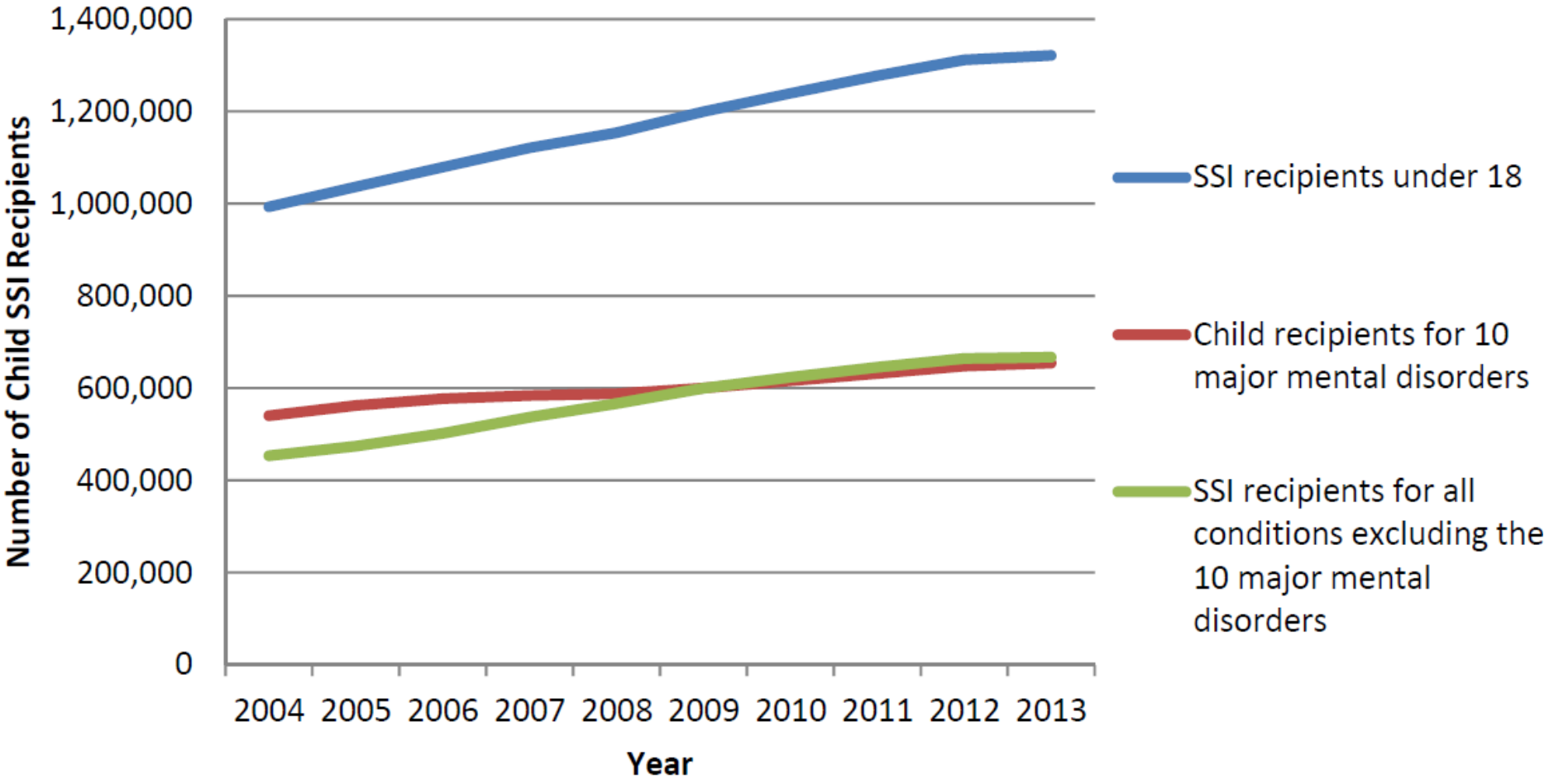
Chronic condition	Number of cases per 100,000 children	Standard error	As a share of all disability cases
Speech problem	1,815	87.5	23.6
Learning disability	1,775	86.8	23.1
ADHD	1,715	74.7	22.3
Other mental, emotional, or behavioral problem	1,452	75.9	18.9
Other developmental problem	779	57.1	10.1
Asthma/breathing problem	632	48.4	8.2
Other impairment/problem	431	36.5	5.6
Birth defect	423	35.7	5.5
Bone/joint/muscle problem	260	31.0	3.4
Hearing problem	256	29.9	3.3
Vision problem	244	27.1	3.2
Mental retardation	207	25.9	2.7
Epilepsy/seizures	173	24.6	2.3
Injuries	76	16.4	1.0

Source: Authors' tabulations of data from the 2008–09 National Health Interview Survey.
Note: Categories are not mutually exclusive—more than one condition could be reported as contributing to the child's activity limitation.

Table 4. Leading Causes of Limitation in Usual Activities due to Chronic Conditions, U.S. Children

1979–81	1992–94	2008–2009
1. Diseases of the respiratory system	1. Diseases of the respiratory system	1. Speech problems
2. Impairment of speech, special sense, and intelligence	2. Impairment of speech, special sense, and intelligence	2. Learning disability
3. Mental, nervous system disorders	3. Mental, nervous system disorders	3. ADHD
4. Diseases of the eye and ear	4. Certain symptoms, ill-defined conditions	4. Other emotional, mental, behavioral problems
5. Specified deformity of limbs, trunk, and back	5. Deafness and impairment of hearing	5. Other developmental problems
6. Nonparalyticorthopedic impairment	6. Nonparalyticorthopedic impairment	6. Asthma/breathing problems

Sources: For 1979–81 data, P. W. Newacheck, N. Halfon, and P. P. Budetti, "Prevalence of Activity Limiting Chronic Conditions among Children Based on Household Interviews," *Journal of Chronic Disease* 39, no. 2 (1986): 63–71; for 1992–94 data, P. W. Newacheck and N. Halfon, "Prevalence and Impact of Disabling Chronic Conditions in Childhood," *American Journal of Public Health* 88, no. 4 (1998): 610–17; for 2008–09, authors' tabulations of data from the 2008–09 National Health Interview Survey.
Note: The age range is under 17 for the 1979–81 data but under 18 for 1992–94 and 2008–09. Includes main and secondary causes of activity limitations.



NAS 2015 Monograph: Mental Disorders and Disabilities Among Low-Income Children

Conclusion:

the number of children with disabilities is increasing

the nature and type of health conditions responsible for these impairments is dramatically changing.

Lack of long-term longitudinal cohort data … hampers our ability to fully understand their causes and inhibits formation of more strategic, responsive, and effective policies, programs, and interventions.

Need to strengthen existing data systems and develop programmatic enhancements to reduce the prevalence and severity of childhood disability.

Special attention should be given to eliminating long-standing disparities in the prevalence of disability.

Review

ANZJP

Australian & New Zealand Journal of Psychiatry
2014, Vol. 48(7) 606–616
DOI: 10.1177/0004867414533834

SAGE

Are child and adolescent mental health problems increasing in the 21st century? A systematic review

William Bor[1,2], Angela J Dean[1,2], Jacob Najman[3] and Reza Hayatbakhsh[3]

William Bor, Mater Children's Hospital, South Brisbane, QLD 4101, Australia.

Up to one in five children experience mental health problems.

Social and cultural factors may influence emergence of mental health problems.

The 21st century has led to changes in many of these factors, but it is unclear whether rates of internalizing and externalizing problems have also changed in recent cohorts of young people.

METHOD:

Comprehensive literature search:

cohort or population studies,

changes in mental health of children over time, repeating same methods over time,

participants ≤ 18 years,

change 10+ years,

data in the 21st century compared to data in the 20th century.

Figure 1. Flow chart of reviewed articles.

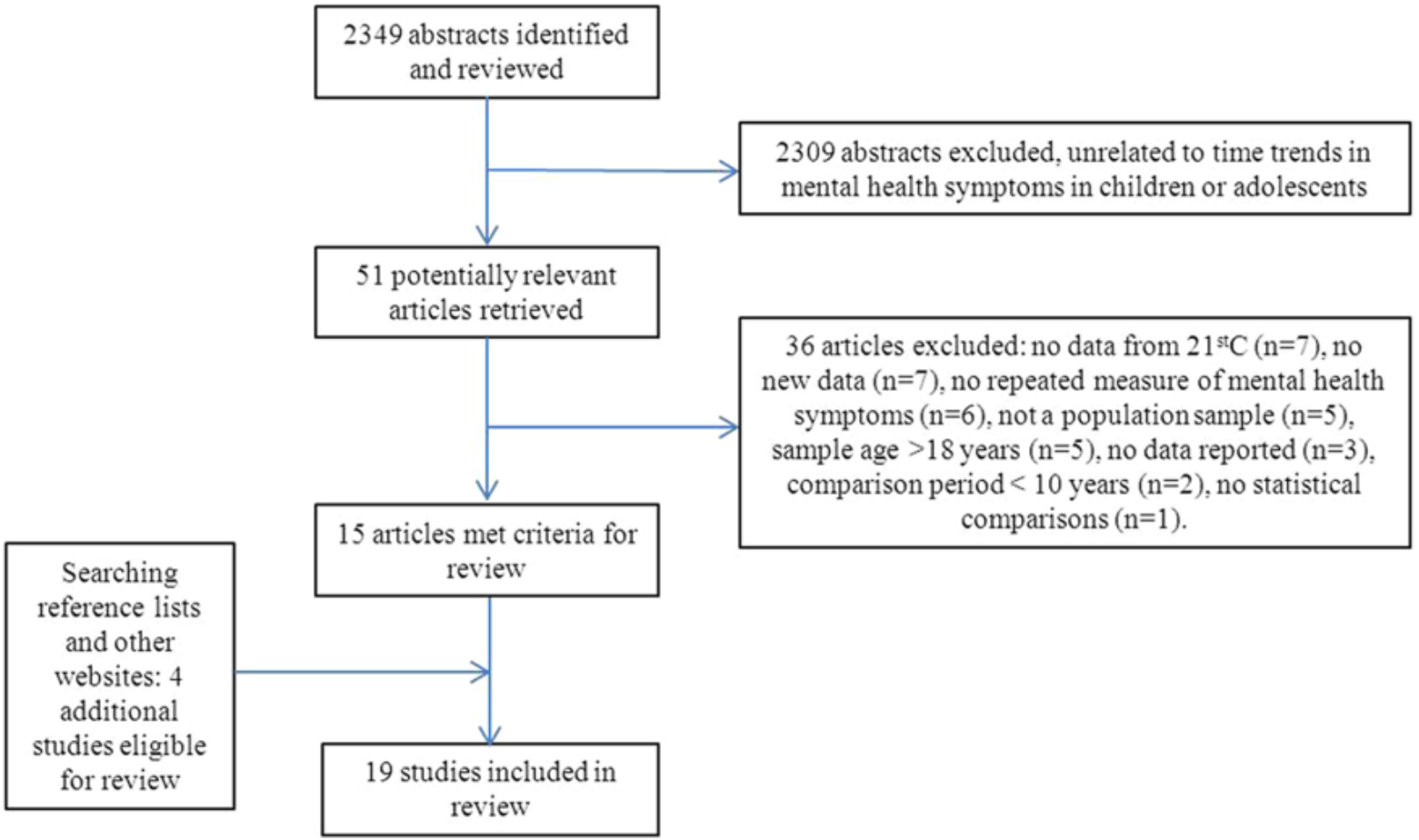


Table I. (Continued)

	Target group	Sampling frame	Country	Years	Sample size	Key assessment instruments	Internalizing symptoms			Externalizing symptoms			Score
							Boys and girls	Girls	Boys	Boys and girls	Girls	Boys	
Sourander et al. (2012)	Adolescents (13–17 years)	Schools	Finland	1998 2008	1458 1569	SDQ (self-report)		No change	No change		↓ (d=−0.3.0) (hyperactivity); no change (conduct)	No change	6
Tick et al. (2008)	Adolescents (11–18 years)	Population	Netherlands	1993 2003	1120 810	YSR		↑ (d=0.27)	↓ (d=−0.14)		No change	↓ (d=−0.33)	6
Centers for Disease Control and Prevention (2012)	Adolescents (14–18 years)	Schools	USA	1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011	At least 10,000 at each time-point	Items developed for this study: 5 items (physical fights or use of weapons)				↓ (d=−0.31)			4
Collishaw et al. (2012)	Adolescents (16–17 years)	Population	UK	1986 2006	4524 716	Rutter Questionnaire (parent)				↑ (d=0.12)	↑ (d=0.17)	No change	5

BITSEA, Brief Infant Toddler Social Emotional Assessment; CBC, Child Behaviour Checklist CBCL, Child Behavior Checklist; GHQ, General Health Questionnaire; HBSC, Health Behaviours among School Children Study; MMPI, Minnesota Multiphasic Personality Inventory; SDQ, Strengths and Difficulties Questionnaire; TRF, Teacher Report Form; YSR, Youth Self Report.

Conclusion: The systematic review of secular changes in mental health symptoms suggests that the burden of internalizing symptoms is increasing in adolescent girls. {from 20th century to 21st century}

increases were not restricted to Western nations.

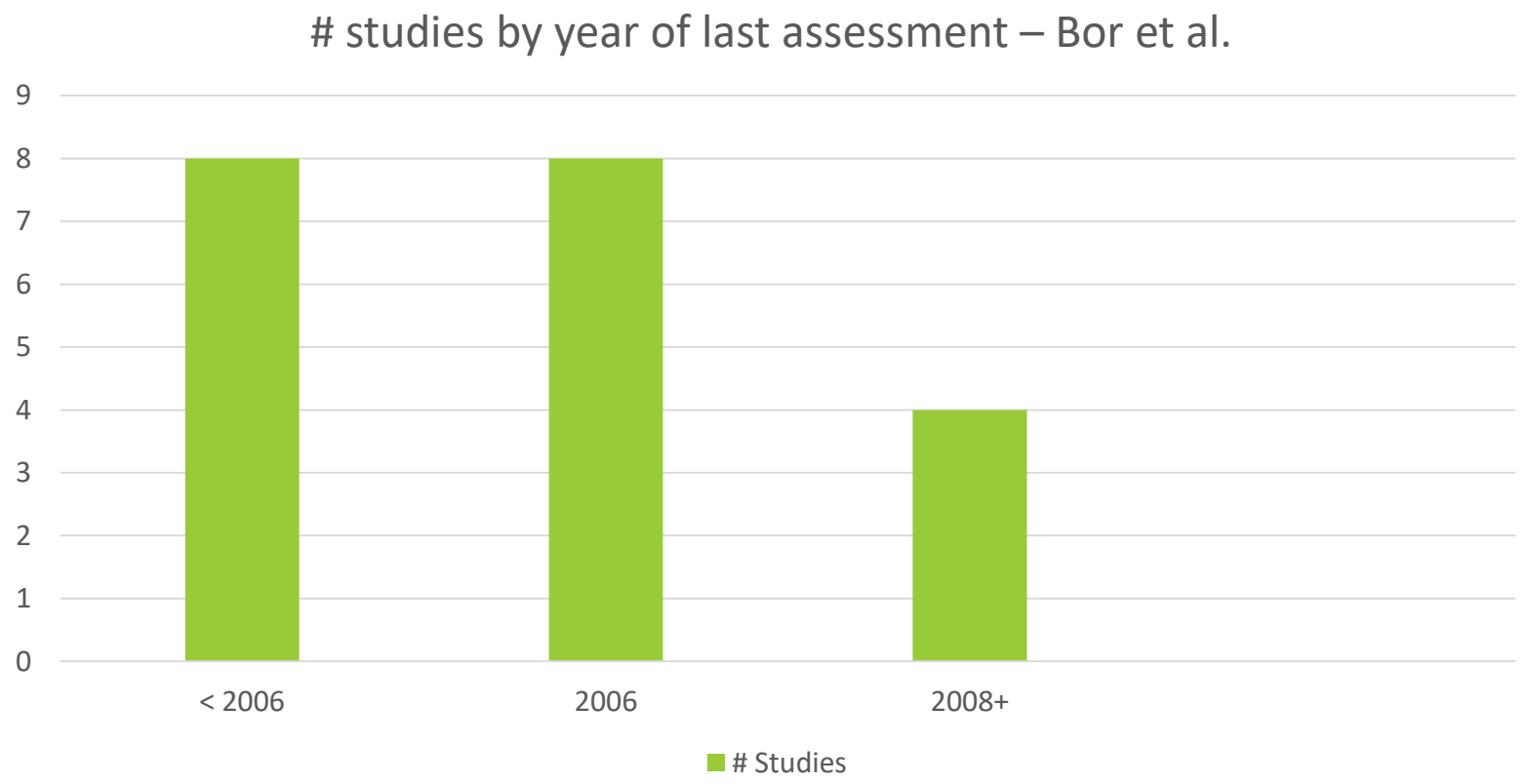
unclear whether this is also occurring for boys.

This finding has a number of public health implications…reinforces the importance of prevention, identification, and treatment programmes.

essential for further research to **regularly monitor trajectories of mental health symptoms** in young people to permit appropriate public health responses for prevention and treatment

Thomas Friedman and 2007

Few studies after 2007, but no evidence of greater increases in rates of mental problems among those 4 later studies



ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Original article

Negative Experiences on Facebook and Depressive Symptoms Among Young Adults

Samantha R. Rosenthal, Ph.D., M.P.H. [a,*], Stephen L. Buka, Sc.D. [a], Brandon D. L. Marshall, Ph.D. [a], Kate B. Carey, Ph.D. [b], and Melissa A. Clark, Ph.D. [c]

[a] *Department of Epidemiology, Brown University School of Public Health, Providence, Rhode Island*
[b] *Department of Behavioral and Social Sciences, Brown University School of Public Health, Providence, Rhode Island*
[c] *Department of Quantitative Health Sciences and Center for Health Policy and Research, University of Massachusetts Medical School, Shrewsbury, Massachusetts*

Article history: Received February 22, 2016; Accepted June 27, 2016

Hypothesis: Negative *Facebook* experiences can lead to or exacerbate depressive symptoms

Follow-up of 17,000 pregnancies: Boston, Providence cohorts of the Collaborative Perinatal Project (born 1960-66)

60 year follow-up

Original study parents (G1); CPP offspring (G2); their offspring (G3)

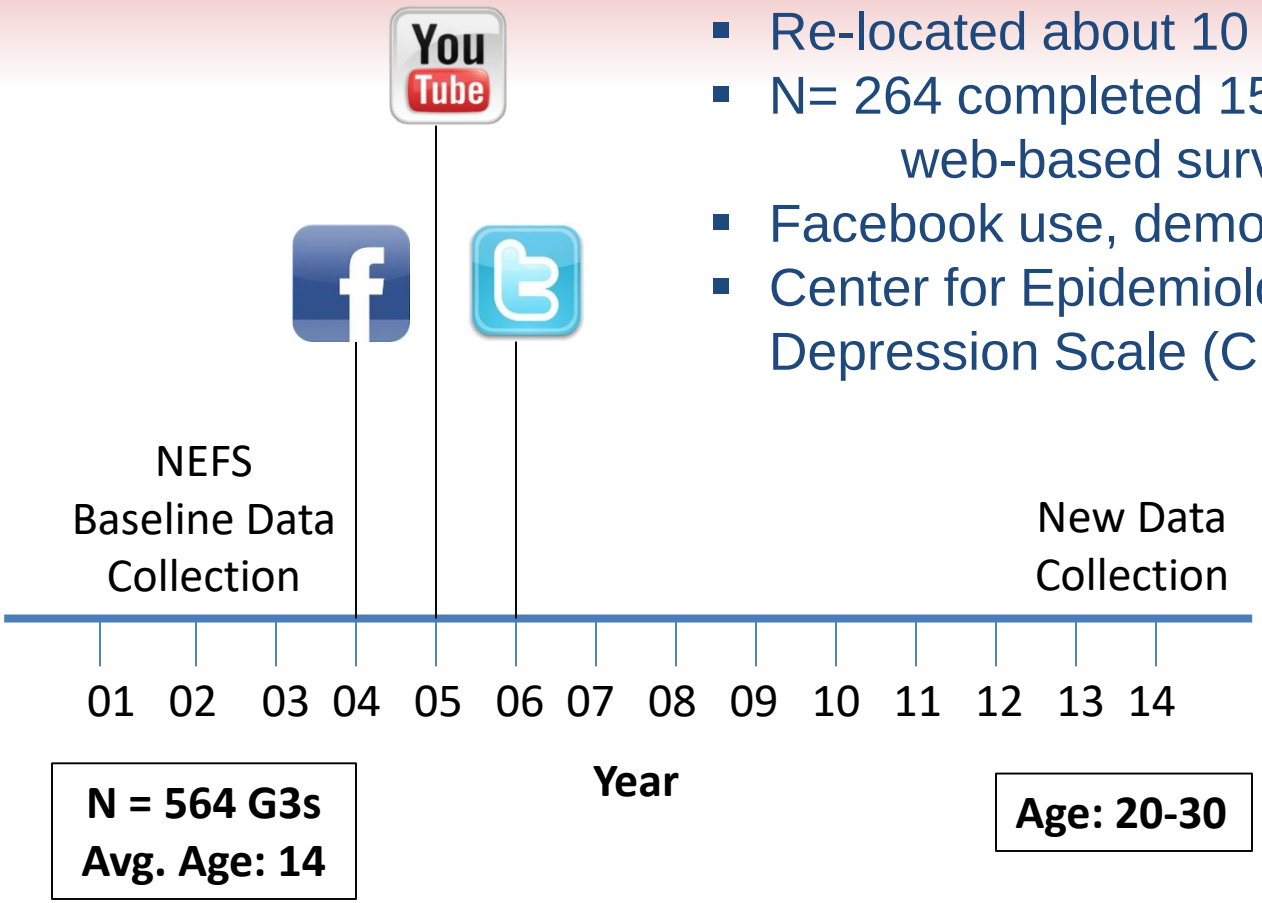
Mental illness, substance abuse, CVD, cognitive decline, others.

Laboratory-based clinical assessments

Longitudinal follow-up of G3 adolescents

Buka et al.

Social Media Project Data Collection



- Baseline diagnostic interviews including depression symptoms and diagnosis ~ 2002
- Re-located about 10 years later
- N= 264 completed 15-20 minute web-based survey
- Facebook use, demographics
- Center for Epidemiologic Studies Short Depression Scale (CES-D 10)

Odds of serious depressive symptoms associated with different types of negative Facebook experiences

	N = 264 (%)	Depressive symptoms	
		Crude (95% CI)	Adjusted (95% CI)[a]
Lifetime experience			
Bullying or meanness	115 (44)	**2.75 (1.53, 4.91)**	**3.45 (1.73, 6.88)**
Unwanted contact	161 (61)	**2.08 (1.12, 3.88)**	**2.51 (1.20, 5.28)**
Misunderstandings	161 (61)	**2.25 (1.19, 4.24)**	**2.83 (1.31, 6.09)**
Any negative experience	217 (82)	**2.54 (1.01, 6.39)**	**3.21 (1.11, 9.31)**
Past-year experience			
Bullying or meanness	44 (18)	1.40 (.67, 2.93)	1.53 (.63, 3.69)
Unwanted contact	94 (37)	**1.86 (1.04, 3.35)**	1.98 (.98, 3.98)
Misunderstandings	95 (38)	**2.12 (1.19, 3.80)**	**2.60 (1.28, 5.30)**
Any negative experience	143 (55)	**2.21 (1.19, 4.09)**	**2.33 (1.12, 4.85)**

Adjusted ORs controlling for sex, race/ethnicity, social support, baseline adolescent depressive episode, parental depression, average monthly income, educational attainment, employment, daily Facebook use

- Negative Facebook experiences are associated with increased levels of and risk for depression

Limitations

- Temporality of negative experiences and depression
- Recall Bias
- Self-reports
- Generalizability

Strengths

- Controlled for adolescent depressive episode, parental depression
- Depressive history assessed prior to FB
- Test-retest reliability (N=117)

- Negative Facebook experiences are associated with increased levels of and risk for depression

So what else do we know about the potential rise in child and adolescent mental disorders since 2007?

Mental Health Surveillance Among Children — United States, 2005–2011

May 2013

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

summarizes information about ongoing federal surveillance systems of mental disorders and indicators of mental health among children living in the United States,

presents estimates of childhood mental disorders and indicators from these systems during 2005–2011,

explains limitations and identifies gaps in information while presenting strategies to bridge those gaps.

Surveillance during 1994–2011 has identified increased reported prevalence of ADHD, ASDs, and bipolar disorder, as well as changes in patterns of drug use, among children.

NHIS data indicate an average annual increase in ADHD diagnosis of 3% during 1997–2006,

NSCH data indicate a 21.8% increase in ADHD during 2003–2007.

NHIS data indicate a nearly fourfold increase in autism from 1997–1999 to 2006–2008; NSCH data also indicate increases in autism.

Changes over time might be associated with:

actual change in prevalence,
changes in case definition,
changes in public perception
improvements in diagnosis

No dedicated surveillance system on mental health in children exists. Available data do not allow for an overall estimate of the prevalence of all childhood mental disorders.

So extremely limited surveillance data on mental disorders (and other ‘new morbidities’)…

sadly, we can count deaths (mortality)….

(keep an eye on 2007)

NCHS Data Brief ■ No. 352 ■ October 2019

Death Rates Due to Suicide and Homicide Among Persons Aged 10–24: United States, 2000–2017

Sally C. Curtin, M.A., and Melonie Heron, Ph.D.

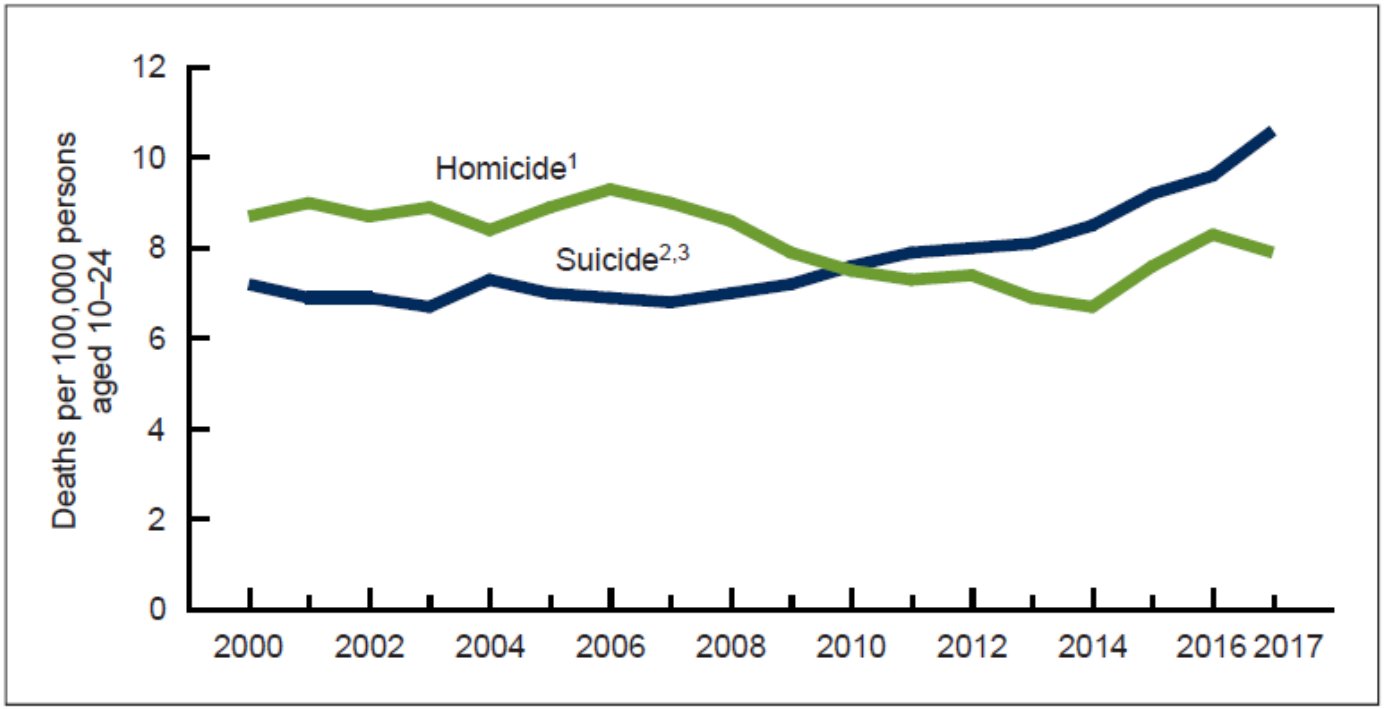
NCHS Data Brief ■ No. 352 ■ October 2019

Death Rates Due to Suicide and Homicide Among Persons Aged 10–24: United States, 2000–2017

Sally C. Curtin, M.A., and Melonie Heron, Ph.D.

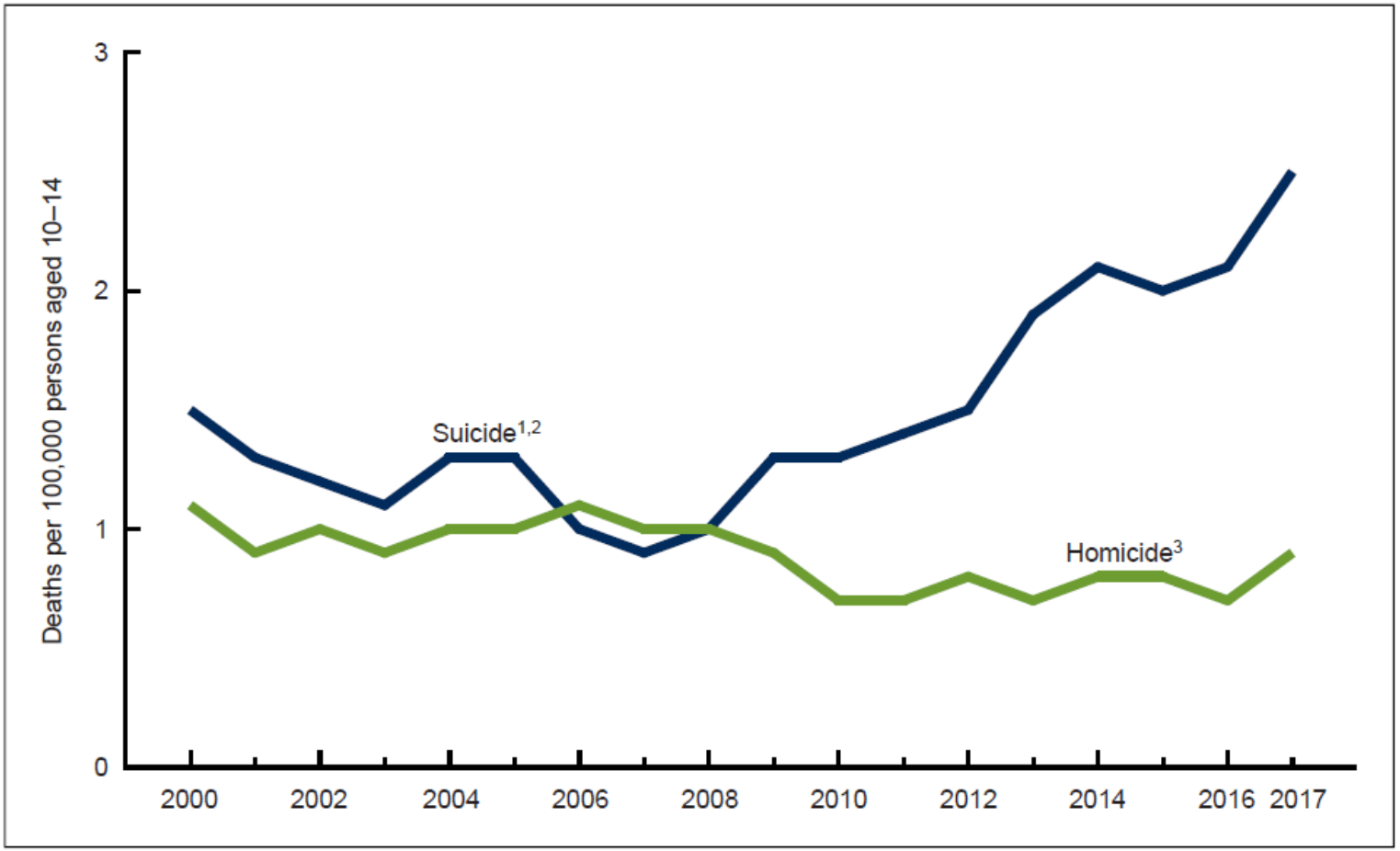
After a stable period from 2000 to 2007, suicide rates for persons aged 10–24 increased from 2007 to 2017, while homicide rates increased from 2014 to 2017.

Figure 1. Suicide and homicide death rates among persons aged 10–24: United States, 2000–2017



The suicide rate for persons aged 10–14 declined from 2000 (1.5) to 2007 (0.9), and then nearly tripled from 2007 to 2017 (2.5)

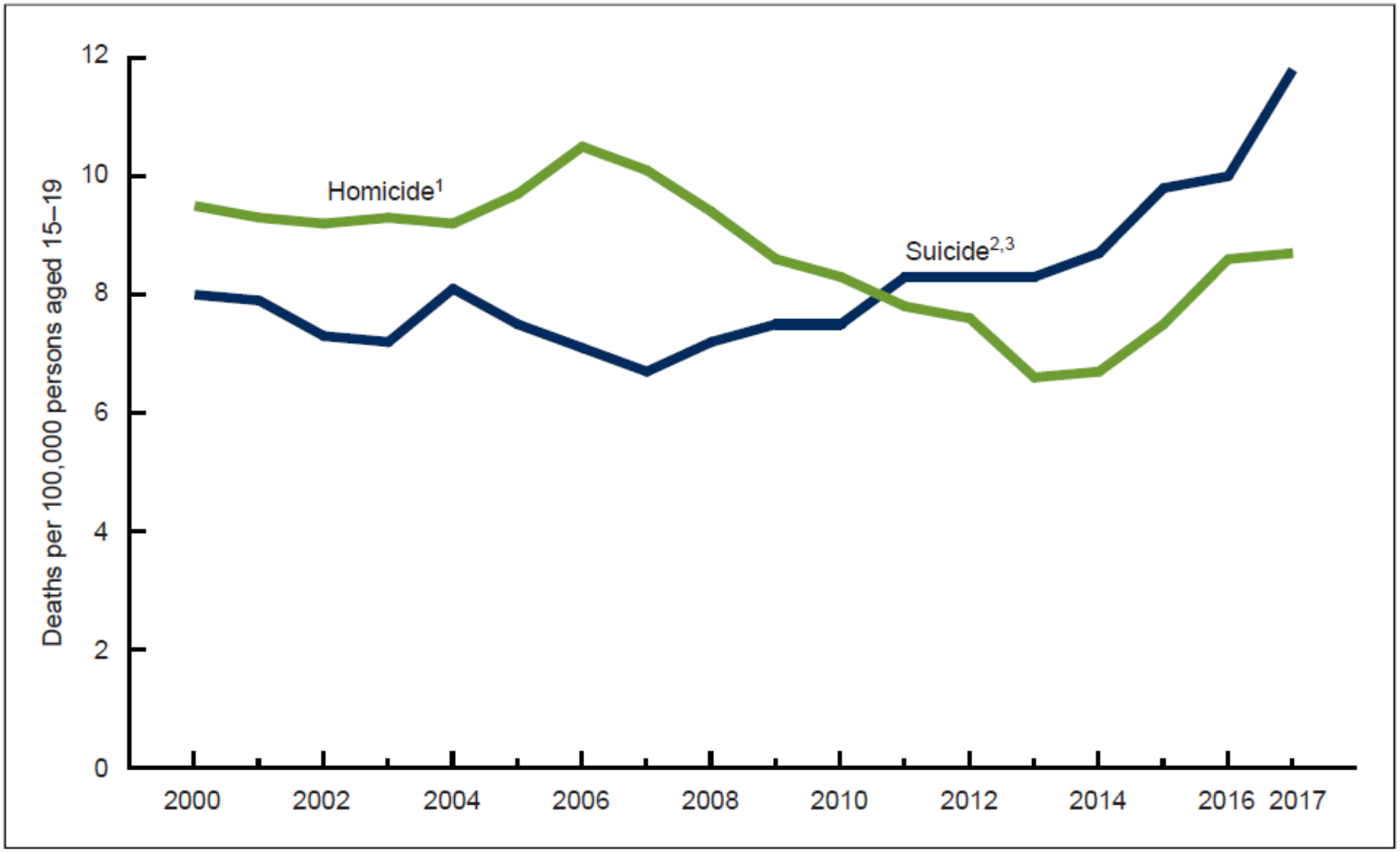
Figure 2. Suicide and homicide death rates among children and adolescents aged 10–14: United States, 2000–2017



[1]Significant decreasing trend from 2000 to 2007; significant increasing trend from 2007 to 2017, $p < 0.05$.
[2]Rate significantly higher than the rate for homicide from 2000 to 2005 and from 2009 to 2017, $p < 0.05$.
[3]Significant decreasing trend from 2000 to 2017, $p < 0.05$.

Suicide and homicide death rates for persons aged 15–19 have increased recently during 2000–2017, from 2007 to 2017 for suicide and from 2014 to 2017 for homicide.

Figure 3. Suicide and homicide death rates among adolescents aged 15–19: United States, 2000–2017



[1]Significant increasing trend from 2000 to 2007; significant decreasing trend from 2007 to 2014; significant increasing trend from 2014 to 2017, $p < 0.05$.
[2]Stable trend from 2000 to 2007; significant increasing trend from 2007 to 2017 with different rates of change over time, $p < 0.05$.
[3]Rate significantly lower than the rate for homicide from 2000 to 2010 and significantly higher from 2011 to 2017, $p < 0.05$.

Surveillance data limited … what about health care utilization?

The Increasing Rate of Childhood Mental Illnesses And Associated Healthcare Costs in the US

Joseph Tkacz, MS and Brenna L. Brady, PhD

IBM Watson Health, Bethesda, MD, USA

Poster presented **ISPOR2019, May18-22, 2019, New Orleans, LA,USA**

IBM® MarketScan® Commercial and Medicare Database (2010-2017)

- contains de-identified patient level administrative claims records including inpatient, outpatient, and outpatient prescription data of several million individuals and their dependents annually covered under a variety of fee-for-service and capitated health plans*;

seven annual samples (2011 – 2017) of children aged 4-17;

continuous medical and pharmacy enrollment for the calendar year of interest and the year prior.

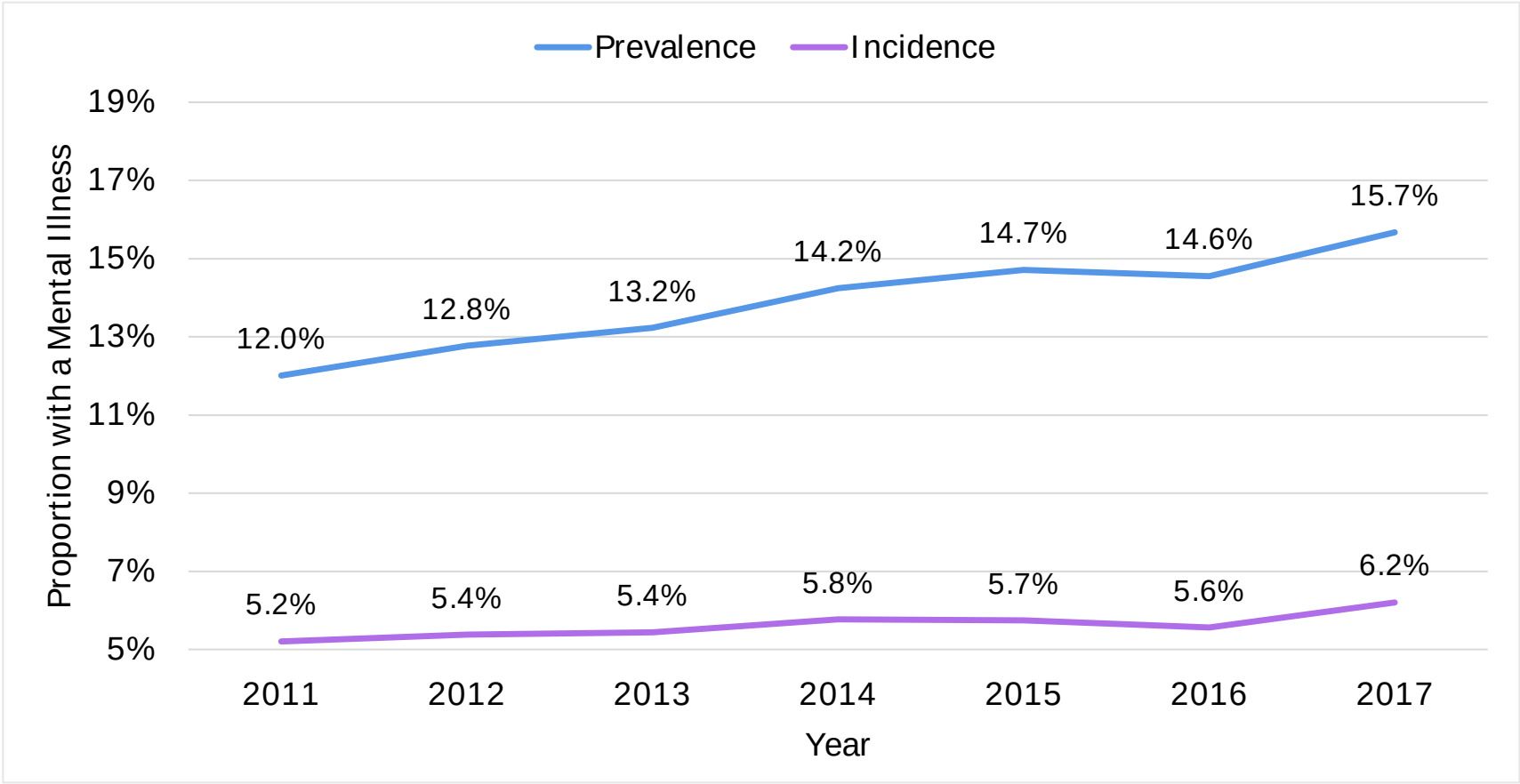
* Does not include Medicaid

Mental illness diagnoses were identified via ICD-9 and ICD-10 diagnostic codes

Prevalent patients - mental health diagnosis in the calendar year of interest, regardless of the presence of prior diagnoses.

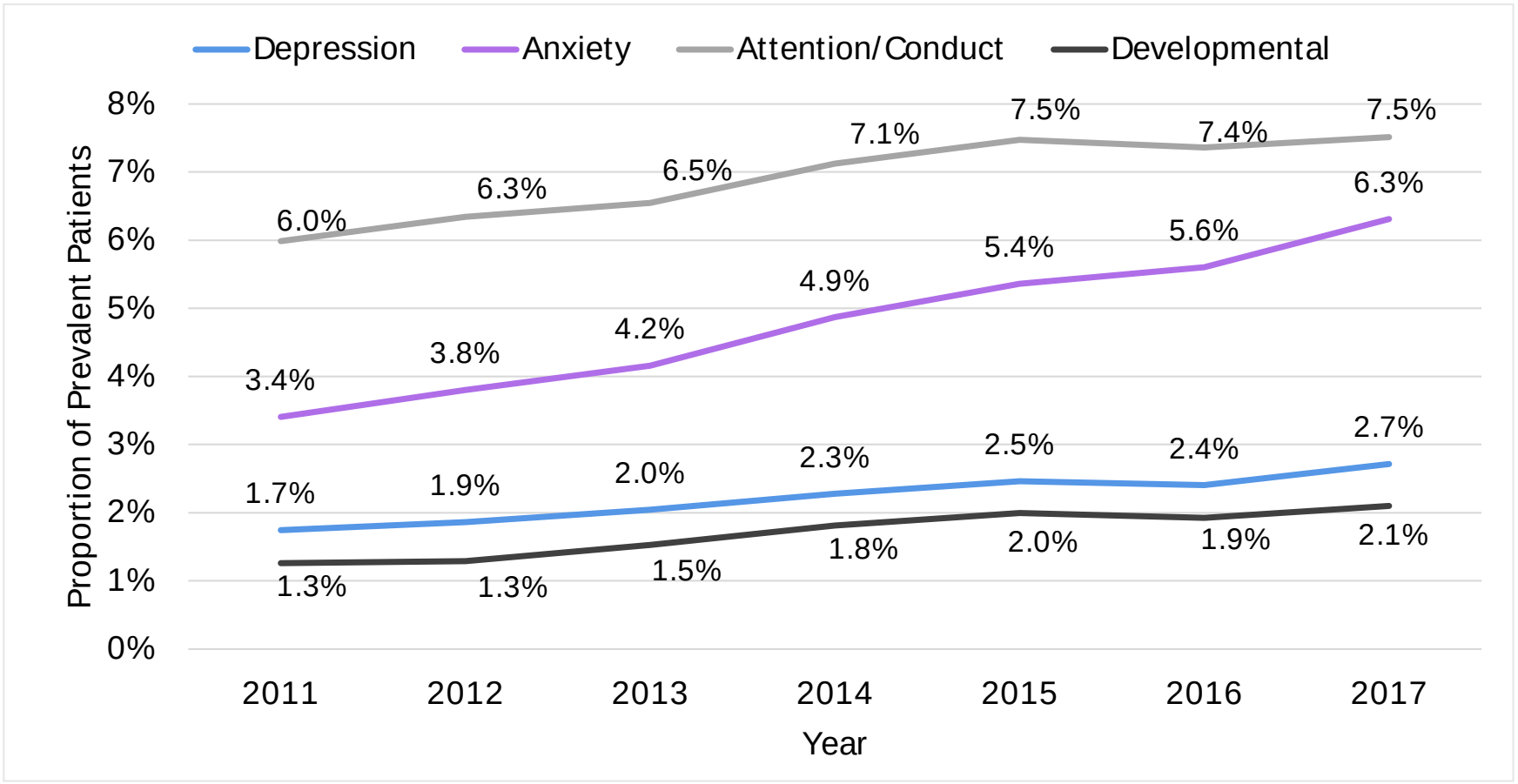
Incident patients - mental health diagnosis in the calendar year of interest, but no mental health diagnoses during the year prior.

Figure 1. Rates of Mental Illness Over Time



The incidence of mental illness increased 19% and prevalence 30% 2011 - 2017

Figure 3. Trends in Specific Mental Illnesses Over Time



Over the study period, the prevalence of depression (55.7%), anxiety (85.3%), attention/conduct disorders (25.5%), and developmental disorders (66.8%) all increased (Figure 3).

Figure 2. Prevalence of Mental Illness Over Time by Gender

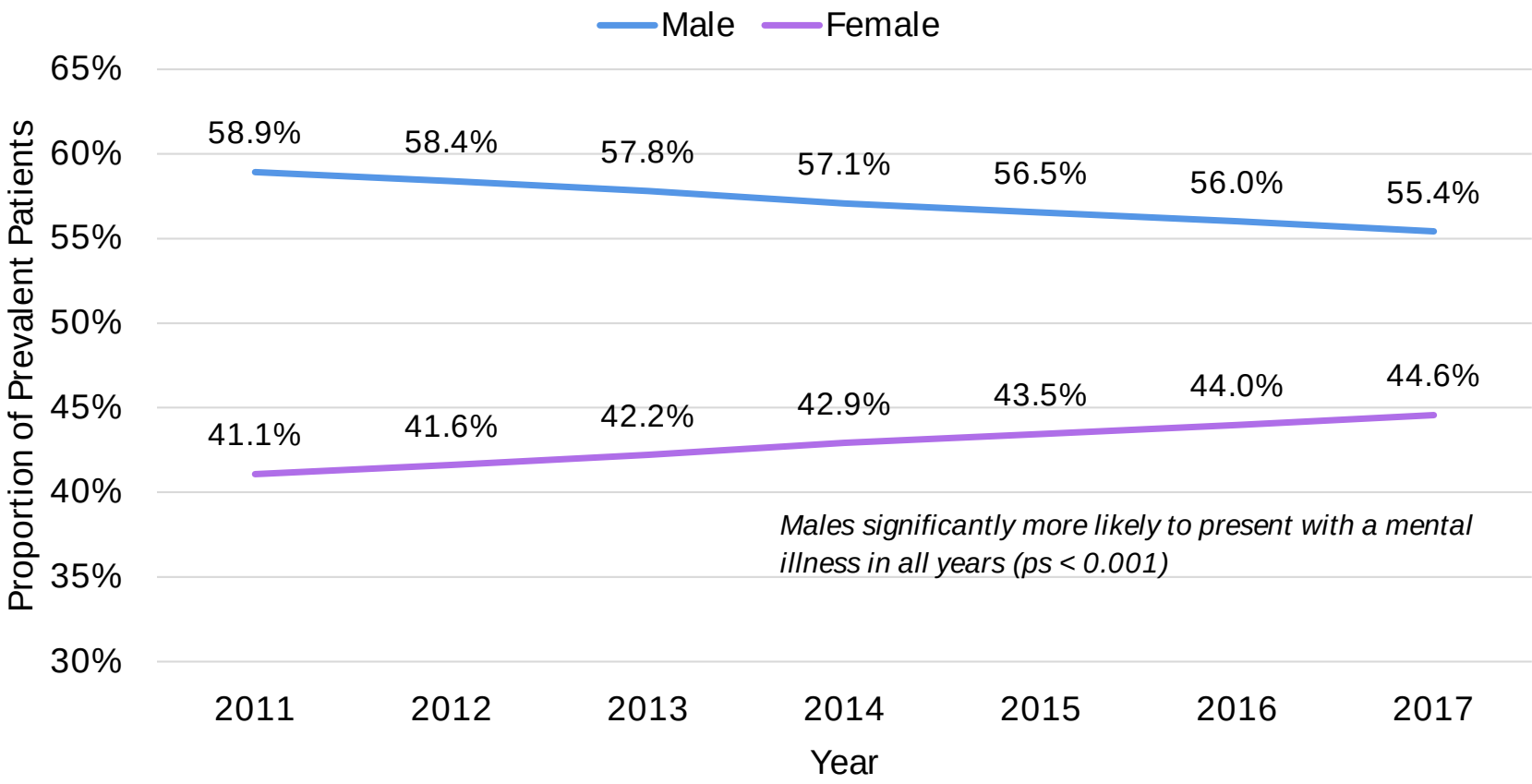
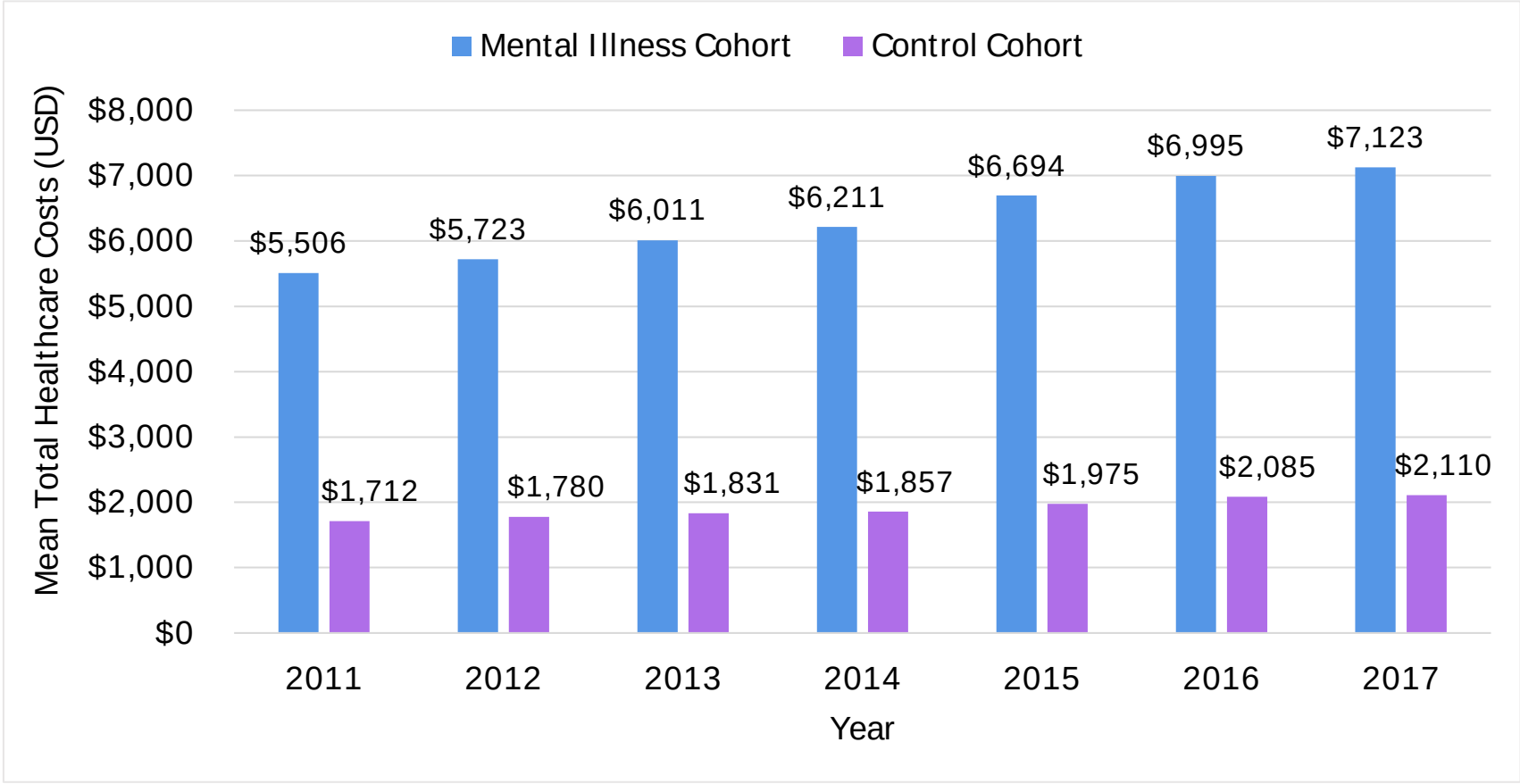


Table 1. Characteristics of Prevalent Samples (2011 & 2017)

	Calendar Year 2011 Sample N=538,724	Calendar Year 2017 Sample N=431,616
Demographics	**SD/%**	**SD/%**
Age	11.6	11.8
Age Category		
Early Childhood (4-8)	24.7%	22.6%
Middle Childhood (9-11)	21.4%	20.9%
Adolescence (12-17)	53.9%	56.6%
Gender		
Male	58.9%	55.4%
Female	41.1%	44.6%
Geographic Region		
Northeast	19.9%	19.1%
North Central	26.0%	21.7%
South	35.3%	45.0%
West	17.5%	13.7%
Missing	1.3%	0.5%
Mental Health Diagnoses		
Alcohol Abuse	1.4%	1.0%
Substance Abuse/Dependence	3.8%	2.1%
Depression	14.5%	17.3%
Anxiety	28.4%	40.3%
Bipolar Disorder	3.0%	1.8%
Eating Disorder	0.9%	1.2%
Attention/Conduct Disorder	49.8%	47.9%
Schizophrenia	0.1%	0.1%
Developmental Disorder	10.5%	13.4%

Figure 5. Healthcare Costs Associated with Mental Illness



In all calendar years assessed, the presence of a mental health diagnosis was associated with annual healthcare costs that were at least double that of the control population (*ps < 0.001;* Figure 5)

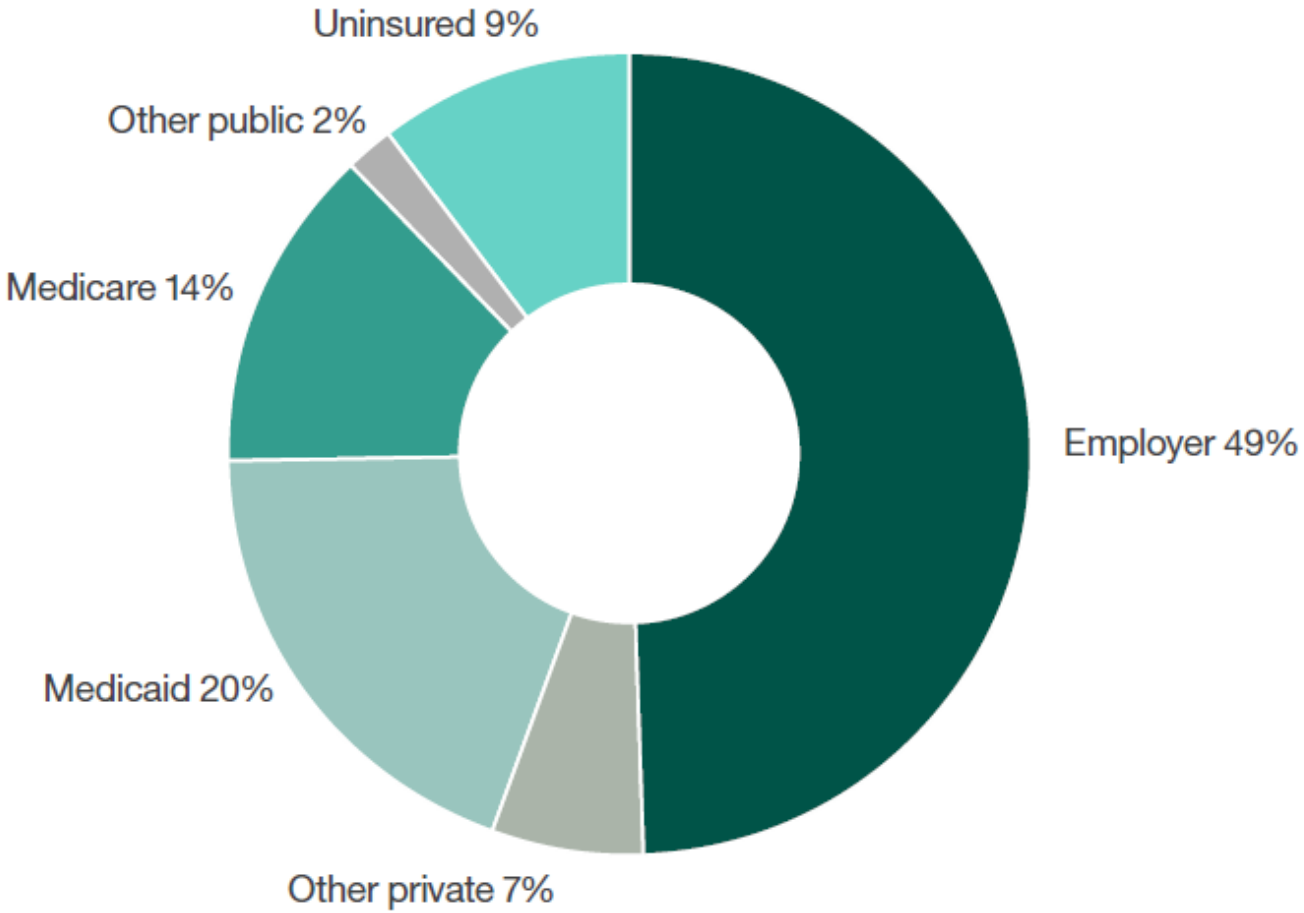


Figure 1: US population distribution
by insurance status – 2014

Source: Kaiser Family Foundation estimates. http://kff.org/other/state-indicator/total-population/.
Accessed March 2017.

Racial Disparities in Pediatric Mental Health-Related Emergency Department Visits: A Five-Year Multi-Institutional Study

Anna Abrams et al. American Academy of Pediatrics: Section on Emergency Medicine. Nov 2-6 2018

The Pediatric Health Information System®, a comparative pediatric database, includes clinical and resource utilization data for inpatient, ambulatory surgery, emergency department and observation unit patient encounters for more than 45 children's hospitals.

Anna Abrams et al. American Academy of Pediatrics: Section on Emergency Medicine. Nov 2-6 2018

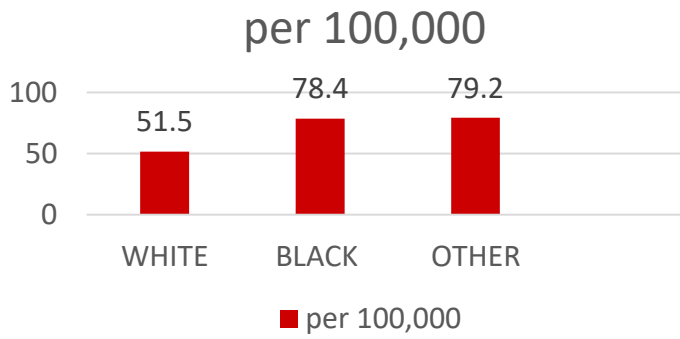
Included children ≤ 21 years old with an ICD-9/10 diagnosis for a mental health illness: 2012 - 2016.

293,198 patients with mental health-related diagnoses in pediatric EDs (58,640/year).

Mean age 13.3 (SD 3.9) years

Majority were publicly insured (54.7%).

Higher rates of mental health-related diagnoses among non-Whites.



Rates of mental health-related ED visits increased significantly over time

50.4 visits per 100,000 children in 2012 compared to 78.5 in 2016 for all race / ethnic groups

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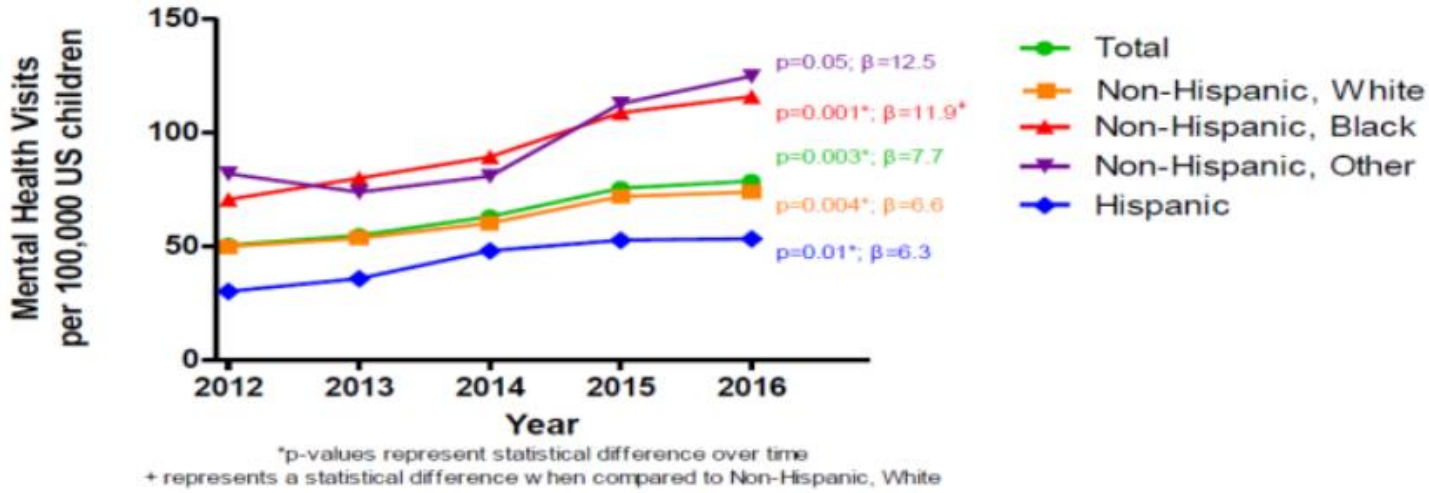
Mental health-related PED visits increased at a higher rate among NH black (β=11.9) compared to NH white (β=6.6) children ($p<0.05$)



Anna Abrams et al. American Academy of Pediatrics: Section on Emergency Medicine. Nov 2-6 2018

Summary of trends in 21st Century

Limited available national surveillance data in US

However…published literature, CDC surveillance estimates, insurance claims, emergency department visits indicate:

- Increase in anxiety disorders among females
- Dramatic increases in completed suicides since 2007
- Increases in reported rates of ADHD, autism (CDC)
- Increases in medical claims for depression, anxiety, ADHD, developmental disorders
- Increases in emergency department visits for mental disorders

Evidence that adverse social media experiences are associated with increased rates of serious depressive symptomatology.

Adverse child experiences on the rise.


TIME
ANXIETY, DEPRESSION AND THE MODERN ADOLESCENT

So…rates of and treatment for child and adolescent disorders are on the rise…

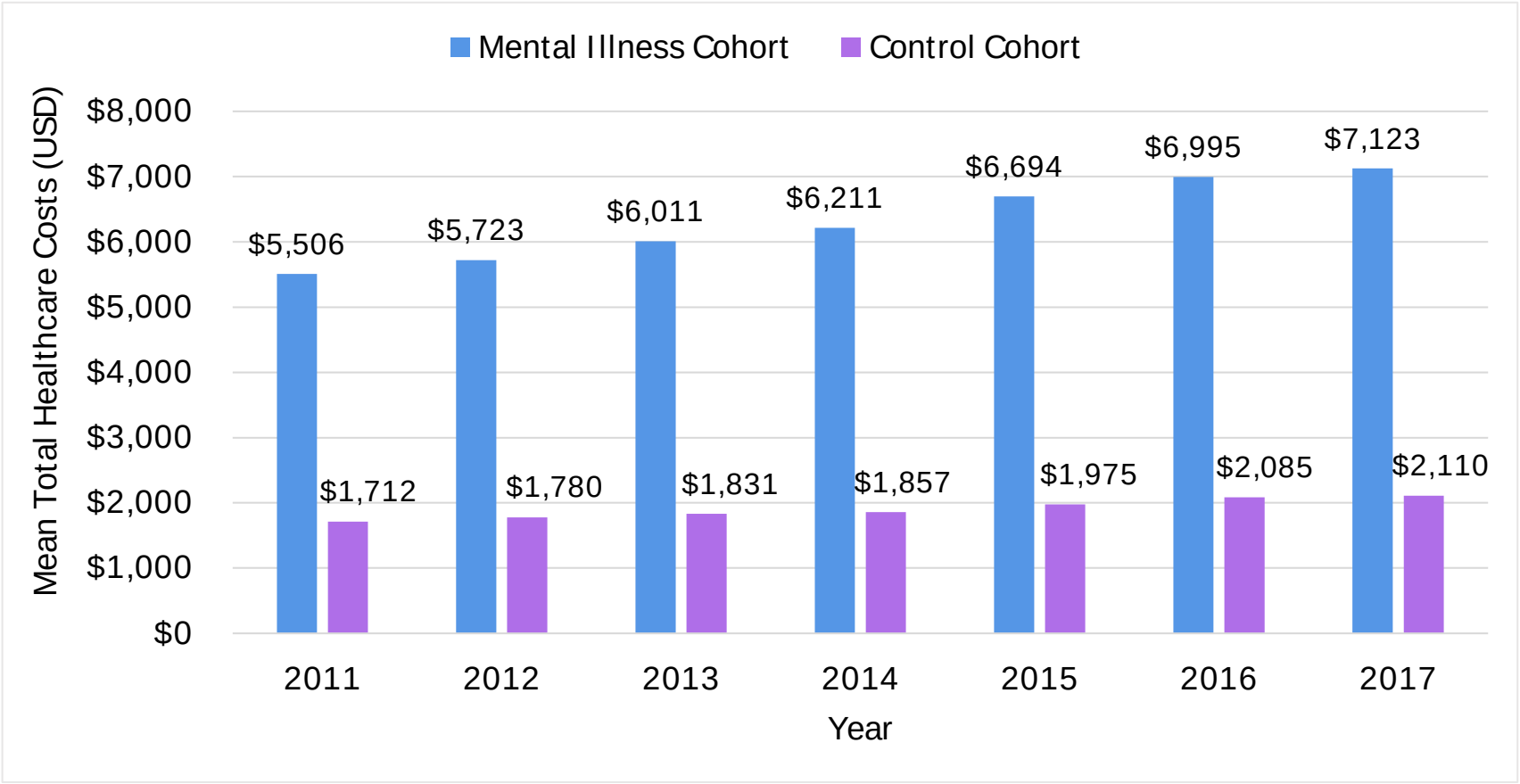
how concerned should we be?

Developmental Implications

a) looking forward
b) looking backward

Direct Impact - family, self
Cost ($300 billion annually)
Indirect Impact (classmates, society)
Etc….

Figure 5. Healthcare Costs Associated with Mental Illness



World Health Organization

Child and adolescent mental health

WHO / SEARO /Payden

Worldwide 10-20% of children and adolescents experience mental disorders. Half of all mental illnesses begin by the age of 14 and three-quarters by mid-20s. Neuropsychiatric conditions are the leading cause of disability in young people in all regions. If untreated, these conditions severely influence children's development, their educational attainments and their potential to live fulfilling and productive lives. Children with mental disorders face major challenges with stigma, isolation and discrimination, as well as lack of access to health care and education facilities, in violation of their fundamental human rights.

Curr Opin Psychiatry. 2007 July ; 20(4): 359–364.

Age of onset of mental disorders: A review of recent literature

Ronald C. Kessler, PhD, **G. Paul Amminger, MD**, **Sergio Aguilar-Gaxiola, MD, PhD**, **Jordi Alonso, MD**, **Sing Lee, MD**, and **T. Bedirhan Ustun, MD**

World Mental Health Survey Initiative

coordinated population surveys from 16 countries

conducted face-to-face by trained lay interviewers in multi-stage household probability samples.

A total of 85,052 interviews using the WHO Composite Diagnostic Interview (CIDI)

Curr Opin Psychiatry. 2007 July ; 20(4): 359–364.

Age of onset of mental disorders: A review of recent literature

Ronald C. Kessler, PhD, **G. Paul Amminger, MD**, **Sergio Aguilar-Gaxiola, MD, PhD**, **Jordi Alonso, MD**, **Sing Lee, MD**, and **T. Bedirhan Ustun, MD**

Roughly half of all lifetime mental disorders in most studies start by the mid-teens and three-fourths by the mid-20s.

Later onsets are mostly secondary conditions.

Severe disorders are typically preceded by less severe disorders that seldom are brought to clinical attention.

So, thinking developmentally and looking forward, we should be concerned about child and adolescent mental disorders – not only for their immediate burden – but for consequences in later life.

What about looking backward (at developmental origins)?

Eur Child Adolesc Psychiatry (2010) 19:259–279
DOI 10.1007/s00787-010-0091-y

REVIEW

Child and adolescent psychiatric genetics

Johannes Hebebrand · Andre Scherag · Benno G. Schimmelmann · Anke Hinney

Disorder	Heritability estimates (%)	Reference
PDD	90	[139]
Enuresis	67–70	[54]
Conduct disorder	53	[51]
OCD	47	[25]
Anxiety disorders	30–40	[33]
ADHD	60–80	[64]
Anorexia nervosa	48–88	[141]
Bulimia nervosa	28–83	[141]
Schizophrenia	73–90	[160]
Bipolar disorder	60–85	[149]
Major depression	31–42	[159]

OCD Obsessive Compulsive Disorder; *PDD* Pervasive Developmental Disorders (including autistic disorder, Asperger disorder, disintegrative disorder, and PDD not otherwise specified); *ADHD* Attention Deficit/Hyperactivity Disorder

nature

Article | Published: 22 July 2014

Biological insights from 108 schizophrenia-associated genetic loci

Schizophrenia Working Group of the Psychiatric Genomics Consortium

Nature **511**, 421–427 (24 July 2014) | Download Citation

genome-wide association study of up to 36,989 cases and 113,075 controls

Independent of genes expressed in brain, associations were enriched among genes expressed in tissues that have important roles in immunity, providing support for the speculated link between the immune system and schizophrenia.

Convergence of placenta biology and genetic risk for schizophrenia

Gianluca Ursini[1,2,3], Giovanna Punzi[1,2], Qiang Chen[1], Stefano Marenco[4,5], Joshua F. Robinson[6], Annamaria Porcelli[2], Emily G. Hamilton[6], Marina Mitjans[7], Giancarlo Maddalena[2], Martin Begemann[7], Jan Seidel[7], Hidenaga Yanamori[8], Andrew E. Jaffe[1,9], Karen F. Berman[4], Michael F. Egan[10], Richard E. Straub[1], Carlo Colantuoni[11,12,13], Giuseppe Blasi[2], Ryota Hashimoto[8,14], Dan Rujescu[15], Hannelore Ehrenreich[7], Alessandro Bertolino[2] and Daniel R. Weinberger[1,3,11,12,13,16]*

Nature Medicine | VOL **792** 24 | JUNE 2018 | 792–801 |

Schizophrenia ‘risk genes’ are not so risky if the mother’s pregnancy was healthy

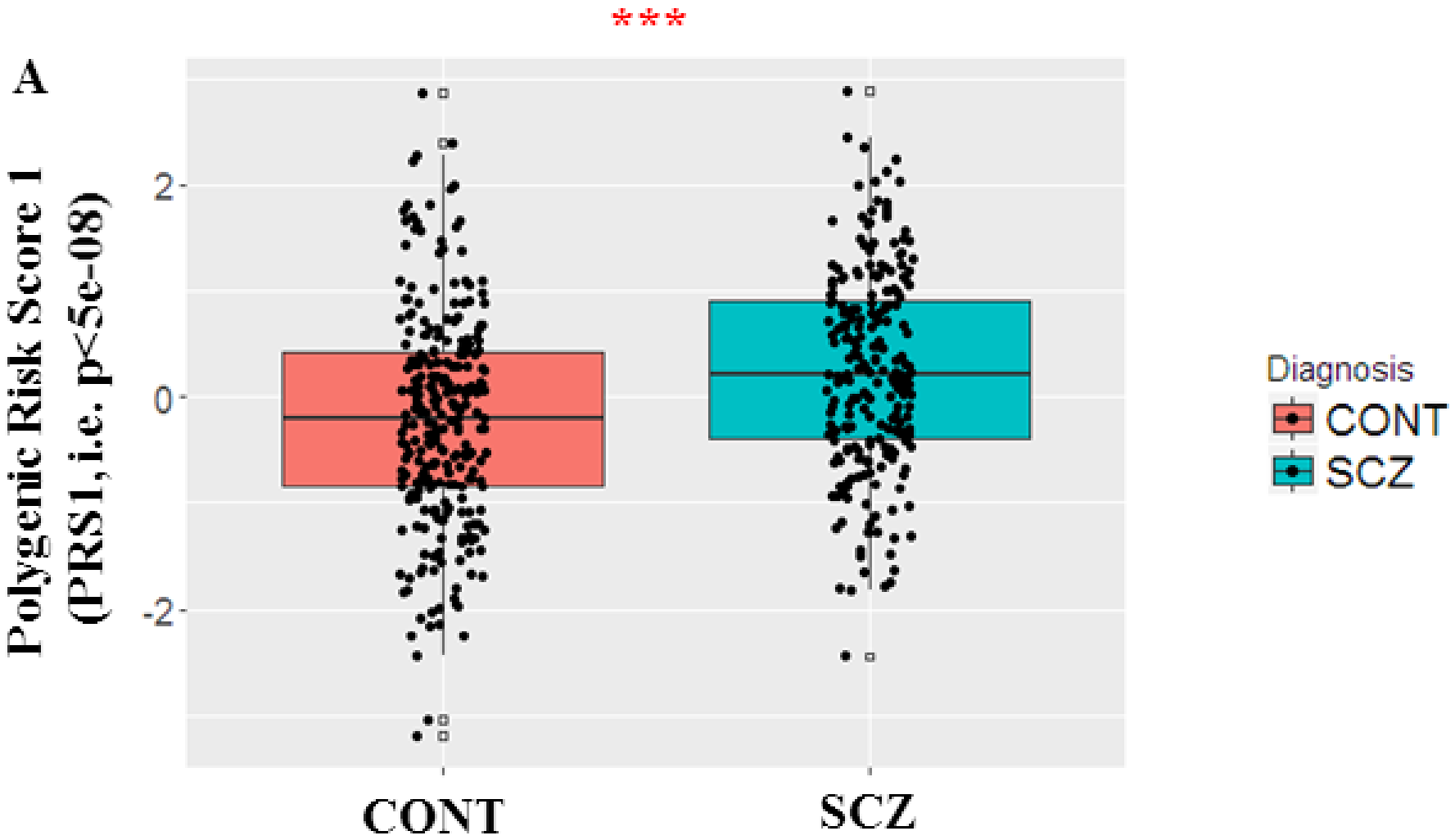
By SHARON BEGLEY @sxbegle / MAY 28, 2018

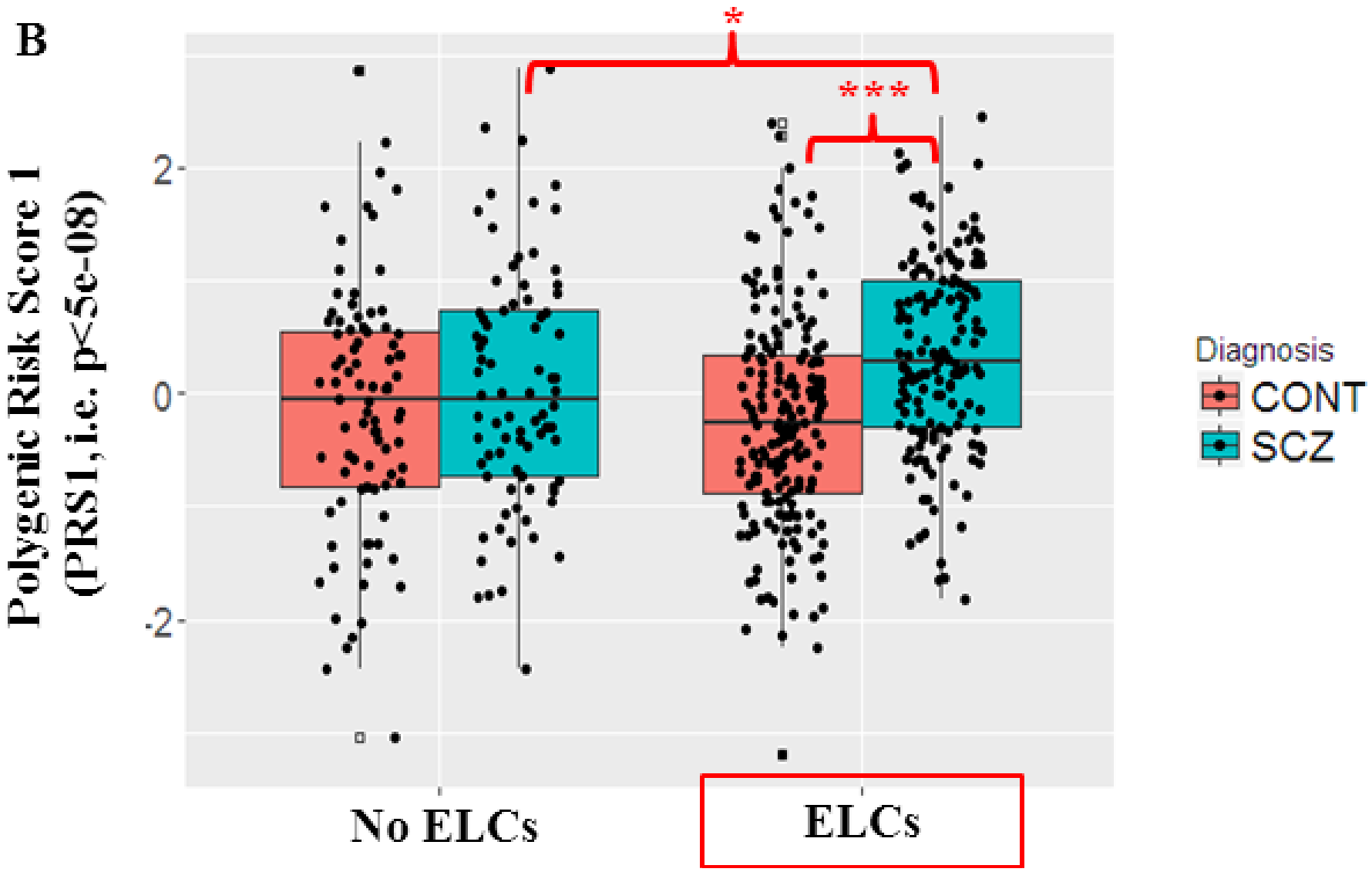
“This should be an eye-opening study, especially for anyone who thinks disease risk is all genetic,” said Janine LaSalle, of the University of California, Davis, who studies the genetics of autism and was not involved in the schizophrenia research. “Genes don’t exist in a lock-box away from everything else that happens to you.”

“We need to create a new risk score for schizophrenia, incorporating not only genes but also placental health,” Weinberger said.

“The odds of becoming schizophrenic based on your polygenic risk score is more than 10 times greater with these early-life complications than without them.”

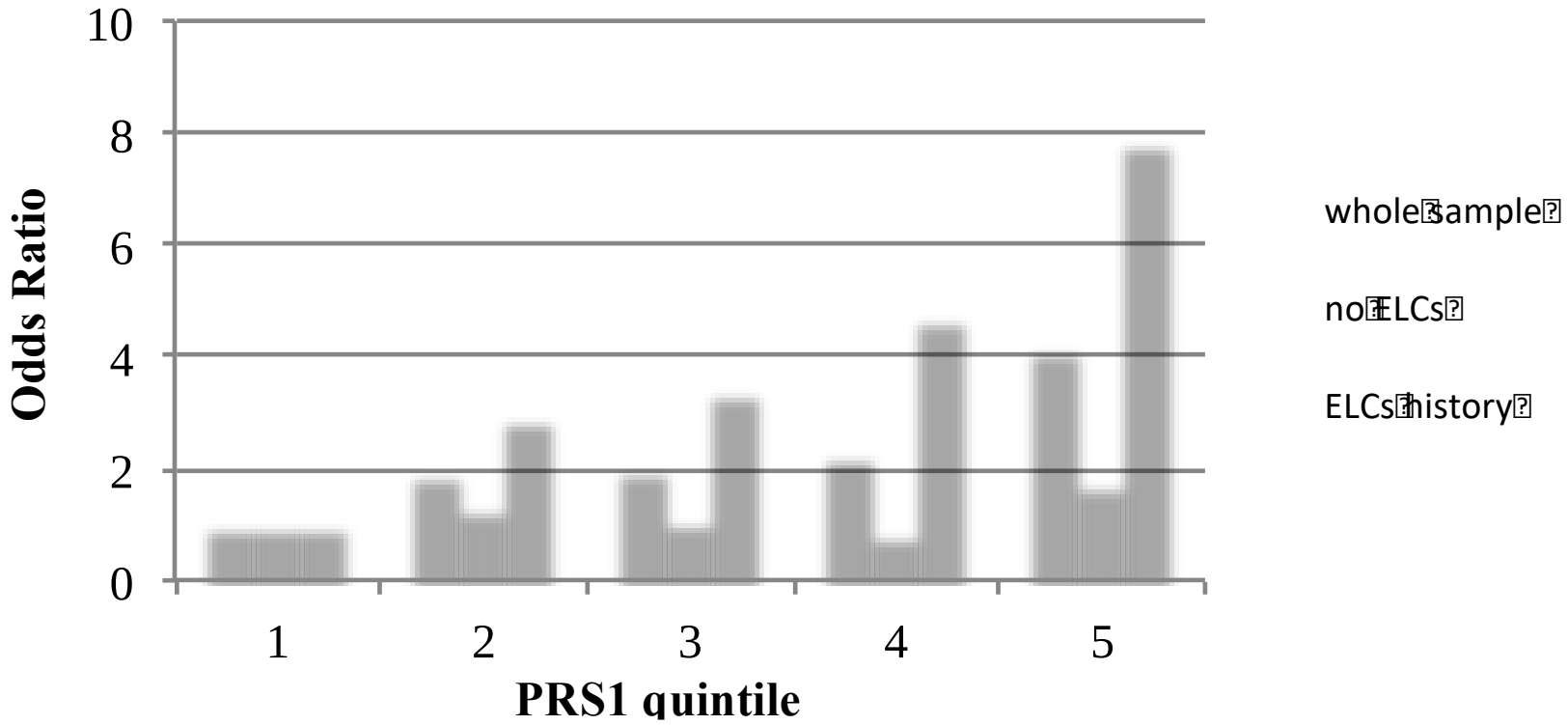
But the genes-only risk score, “in the absence of a serious complicated pregnancy, explains very little risk for schizophrenia — less that 2 percent” of the chance the individual will develop the disease.


***
A
Polygenic Risk Score 1
(PRS1, i.e. p<5e-08)
2
0
-2
CONT
SCZ
Diagnosis
CONT
SCZ



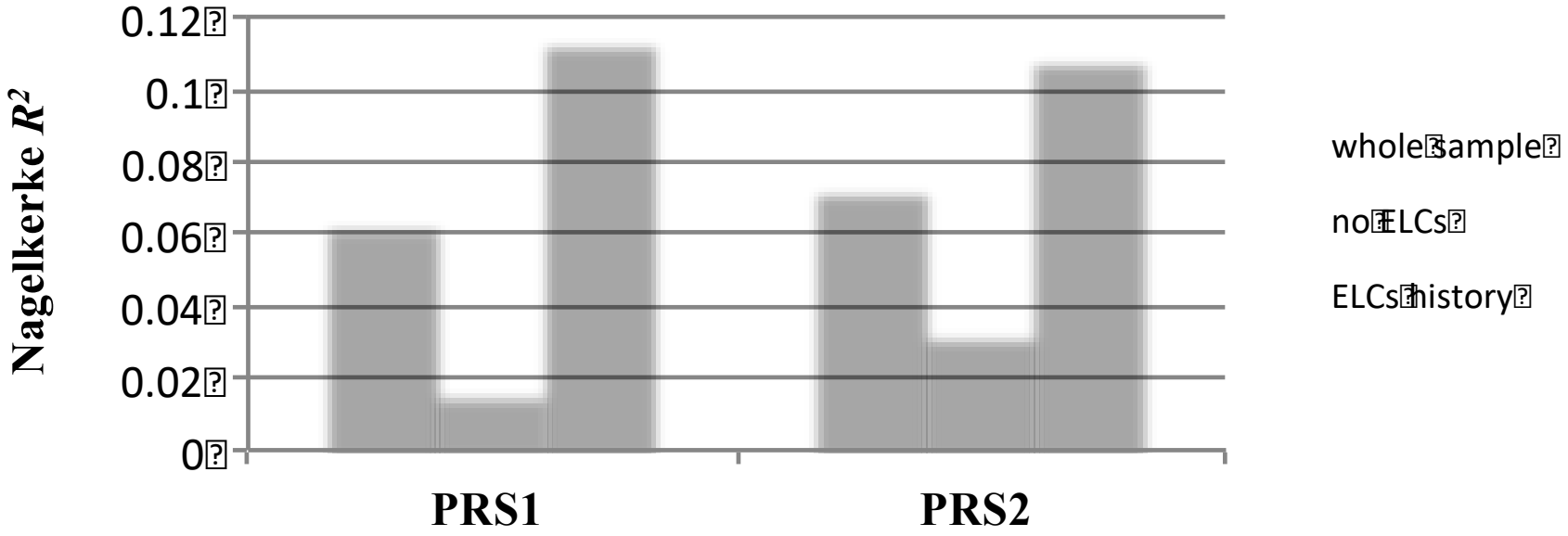
ELC: Early Life Complications

A



PRS1 = polygenic risk score 1

C



Polygenic risk scores are weak predictors of risk for schizophrenia (R-square) in the absence of early life complications

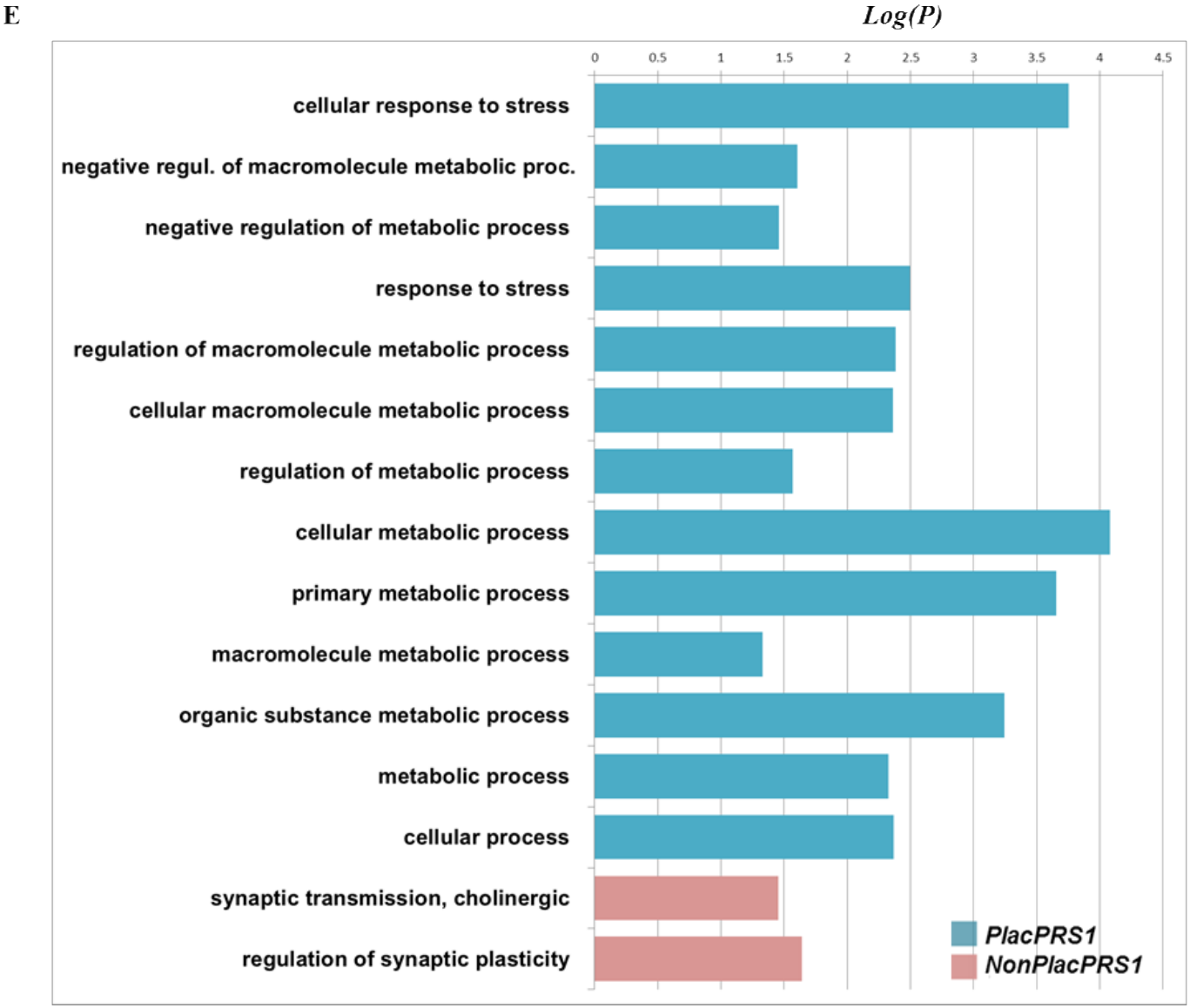


Fig. 3. Schizophrenia risk genes dynamically modulated in placenta drive the interaction between genetic risk and ELCs.

So, thinking developmentally and looking forward, we should be concerned about child and adolescent mental disorders – not only for their immediate burden – and for consequences in later life.

But also to understand their developmental origins / etiology.

Summary & Implications

Even the most highly heritable psychiatric disorders (eg schizophrenia, autism) are likely to have major environmental components that operate during pregnancy and early life.

The conditions that contribute to the etiology of child and adolescent mental disorders; and the disorders themselves are increasing in the 21st century.

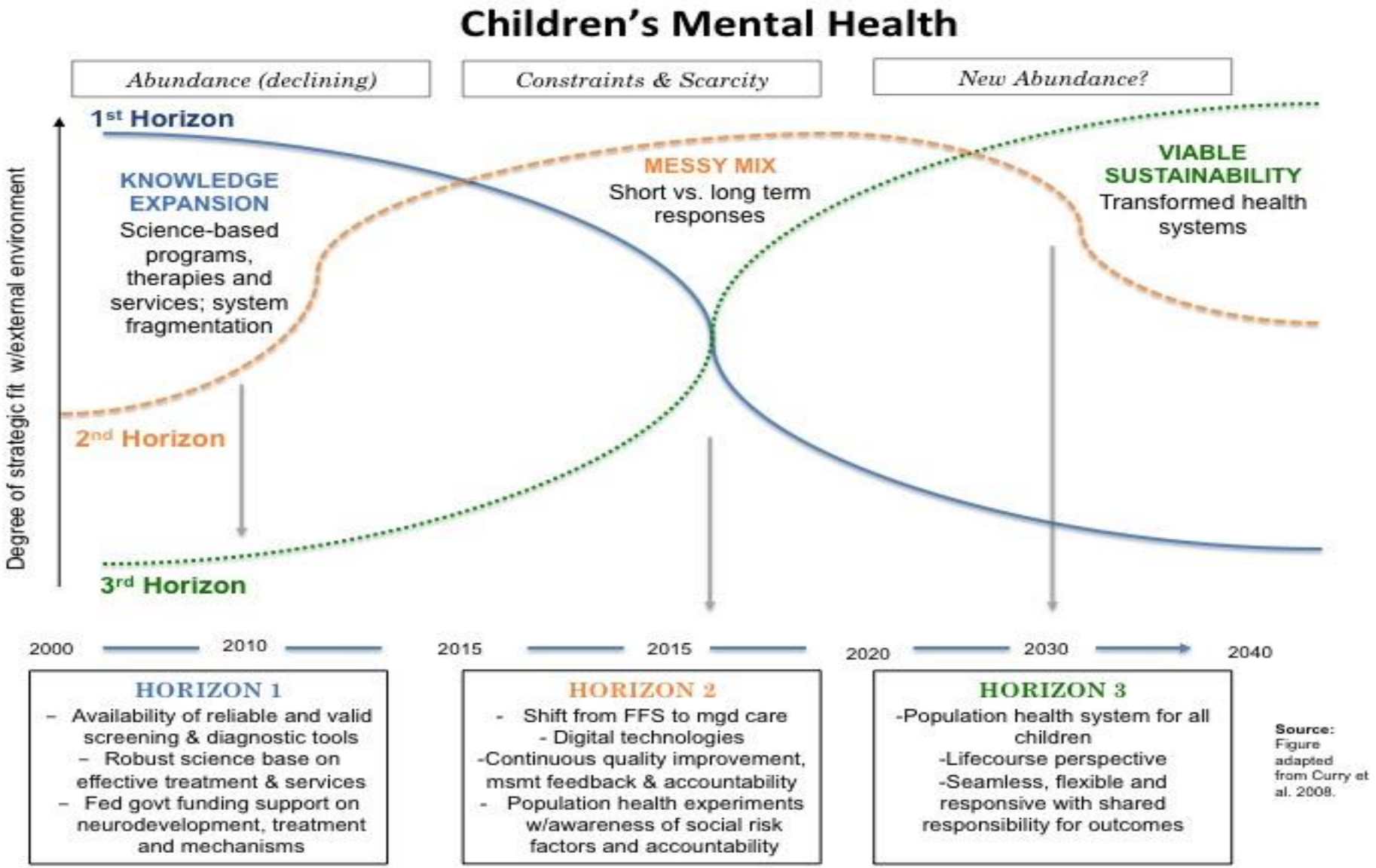
These disorders have substantial immediate and long-term consequences.

Greater emphasis is needed on: surveillance; course; cost; and

- PREVENTION

An Approach to Framing the Issues

Three Horizons Thinking for Children's Mental Health



2015

VISION

NIMH envisions a world in which mental illnesses are prevented and cured.

MISSION

To transform the understanding and treatment of mental illnesses through basic and clinical research, paving the way for prevention, recovery, and cure.

NIMH: Four High Level Strategic Objectives

1) Define the mechanisms of complex behaviors.

2) Chart mental illness trajectories to determine when, where, and how to intervene.

3) Strive for prevention and cures.

4) Strengthen the public health impact of NIMH-supported research.

STRATEGY 3.1: DEVELOP NEW TREATMENTS BASED ON DISCOVERIES IN GENOMICS, NEUROSCIENCE, AND BEHAVIORAL SCIENCE

STRATEGY 3.2: DEVELOP WAYS TO TAILOR EXISTING AND NEW INTERVENTIONS TO OPTIMIZE OUTCOMES

STRATEGY 3.3: TEST INTERVENTIONS FOR EFFECTIVENESS IN COMMUNITY PRACTICE SETTINGS

SAMHSA Strategic Plan – FY2019-FY2023

The Substance Abuse and Mental Health Services Administration leads efforts to advance the behavioral health of the nation and to improve the lives of individuals living with mental and substance use disorders, and their families.

1. Combating the Opioid Crisis through the Expansion of Prevention, Treatment, and Recovery Support Services

2. Addressing Serious Mental Illness and Serious Emotional Disturbances

3. Advancing Prevention, Treatment, and Recovery Support Services for Substance Use

4. Improving Data Collection, Analysis, Dissemination, and Program and Policy Evaluation

5. Strengthening Health Practitioner Training and Education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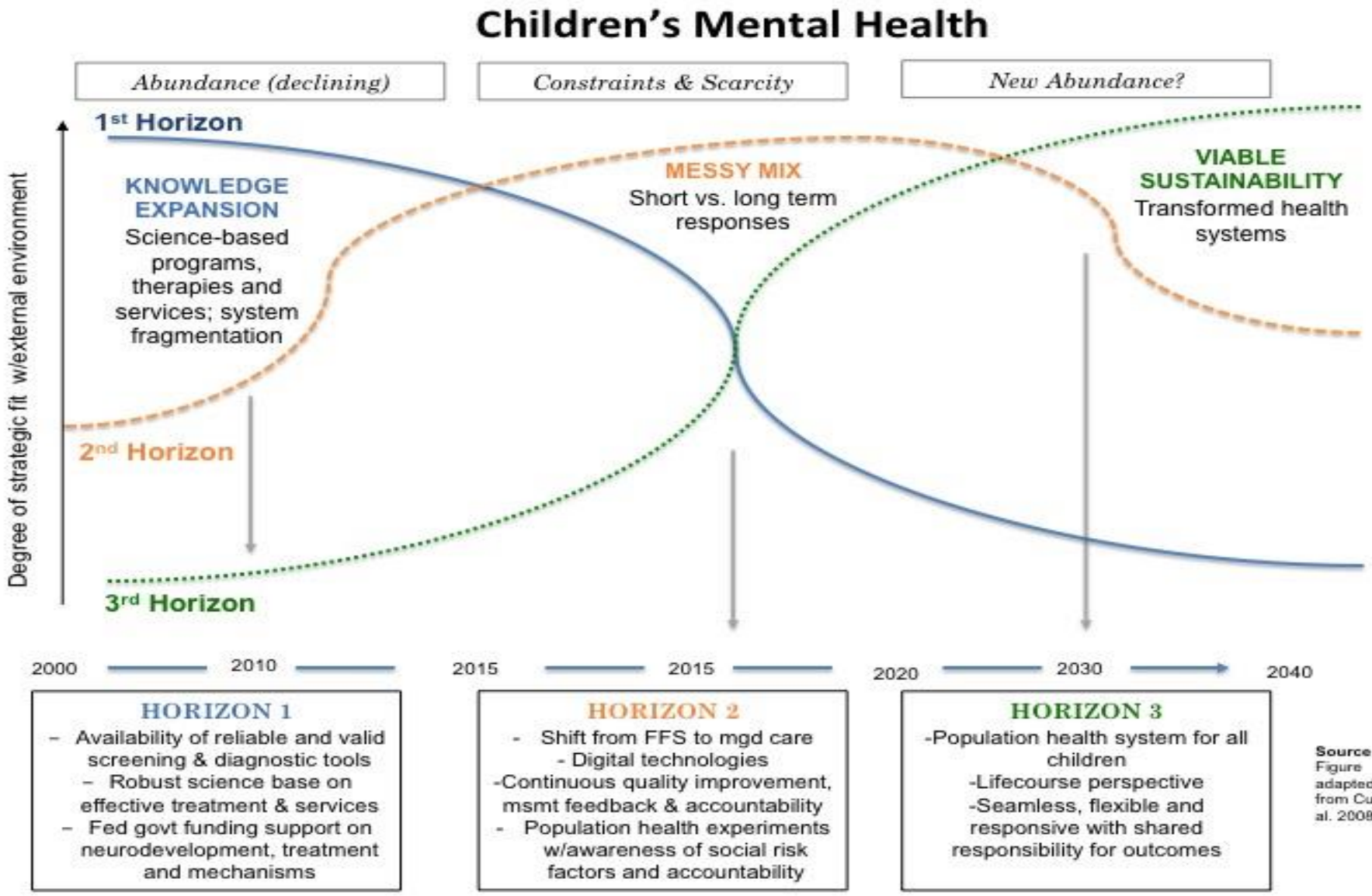
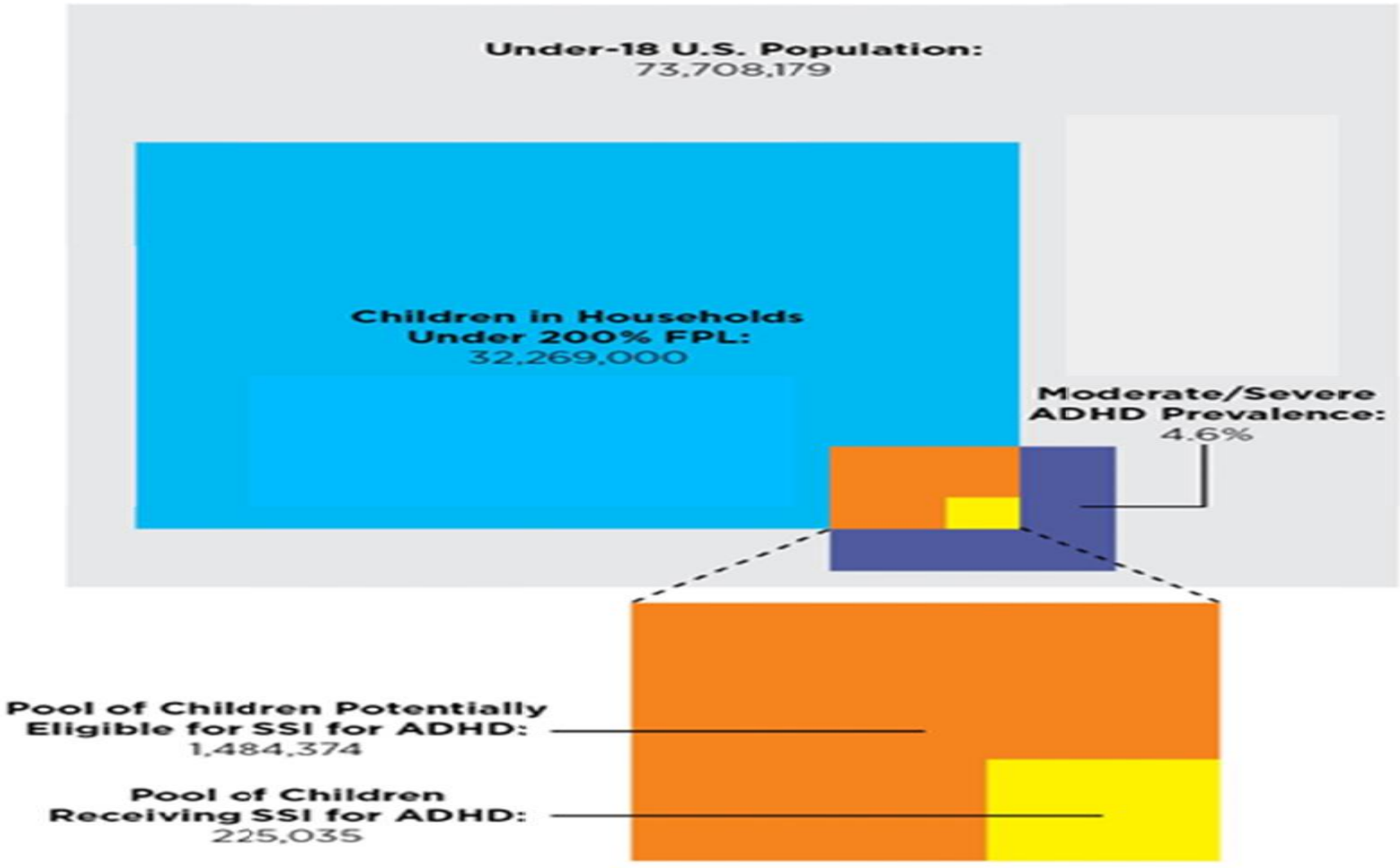
DISCUSSION AND NEXT STEPS:

Three Horizons Thinking for Children's Mental Health



END OF PRESENTATION


Under-18 U.S. Population:
73,708,179
Children in Households
Under 200% FPL:
32,269,000
Moderate/Severe
ADHD Prevalence:
4.6%
Pool of Children Potentially
Eligible for SSI for ADHD:
1,484,374
Pool of Children
Receiving SSI for ADHD:
225,035