

# Opportunities To Change The Outcomes Of Traumatized Children

2015

The Childhood Adversity Narratives

**CAN**

# CAN Contributors

Frank Putnam, MD, UNC at Chapel Hill, NC

William Harris, PhD, Children's Research and Education Institute, NY

Alicia Lieberman, PhD, UCSF, San Francisco, CA

Karen Putnam, PhD, UNC at Chapel Hill, NC

Lisa Amaya-Jackson, MD, Duke University, Durham, NC

# Childhood Adversity Narratives

- This is a Narrative that we are seeking to collectively construct with others.
- The purpose is to help inform policy makers and the public about the costs and consequences of child maltreatment and adversity.
- The goal is to show that there are proven interventions and opportunities to change these personally tragic and socially costly outcomes.
- Feel free to use all or part of this Narrative (with appropriate attribution) if helpful to advocate for children and families.

# Even the Experts are Confused as to Which Term is Best



Chronic  
Stress?

Post Traumatic  
Stress  
Disorder?

Toxic  
Stress?

ACES?

Child  
Traumatic  
Stress?

Complex  
PTSD?

Acute vs.  
Chronic  
Trauma?

Complex  
Trauma?

Allostatic  
Load?

Developmental  
Trauma  
Disorder?

# There is No Single “Best” Term

- Child trauma and adversity come in many forms and no term covers all of them.
- In this Narrative we use ACES (Adverse Childhood Experiences) because it is one of the better known terms among the many audiences this Narrative seeks to reach.
- The basic findings of the original ACES research<sup>1</sup> have been independently replicated by many different studies.

<sup>1</sup><http://www.cdc.gov/violenceprevention/acestudy/prevalence.html>

# ACES (Adverse Childhood Experiences)<sup>1</sup>

- In this Narrative, ACES is used generically to refer to overlapping sets of traumatic and adverse childhood experiences and home environment factors that substantially increase a child's risk for serious, lifelong medical and mental illnesses.
- As the number of ACES increases, the negative outcome of interest (e.g., mental, medical, social, fiscal) increases in a graded (roughly stepwise) fashion.
- This cumulative “ACES-effect” occurs at multiple levels from biological markers of stress within a person to population-based markers of health such as rates of childhood asthma in a neighborhood.

<sup>1</sup><http://www.cdc.gov/violenceprevention/acestudy/prevalence.html>

# ACES Prevalence (%) of Abuse and Neglect In the Original Study<sup>1</sup>

<b>ACE</b>	<b>Women</b>	<b>Men</b>	<b>Total</b>
	<b>N=9367</b>	<b>N=7970</b>	<b>N=17337</b>
<b>Abuse</b>			
Physical Abuse	27.0	29.9	28.3
Sexual Abuse	24.7	16.0	20.7
Emotional Abuse	13.1	7.6	10.6
<b>Neglect</b>			
Emotional Neglect	16.7	12.4	14.8
Physical Neglect	9.2	10.7	9.9

<sup>1</sup><http://www.cdc.gov/violenceprevention/cestudy/prevalence.html>

# ACES Prevalence (%) of Household Dysfunction In the Original Study<sup>1</sup>

<b>ACE</b>	<b>Women</b>	<b>Men</b>	<b>Total</b>
	<b>N=9367</b>	<b>N=7970</b>	<b>N=17337</b>
<b>Household Dysfunction</b>			
Household Substance Abuse	29.5	23.8	26.9
Parental Separation or Divorce	24.5	21.8	23.3
Household Mental Illness	23.3	14.8	19.4
Mother Treated Violently	13.7	11.5	12.7
Incarcerated Household Member	5.2	4.1	4.7

<sup>1</sup><http://www.cdc.gov/violenceprevention/acestudy/prevalence.html>



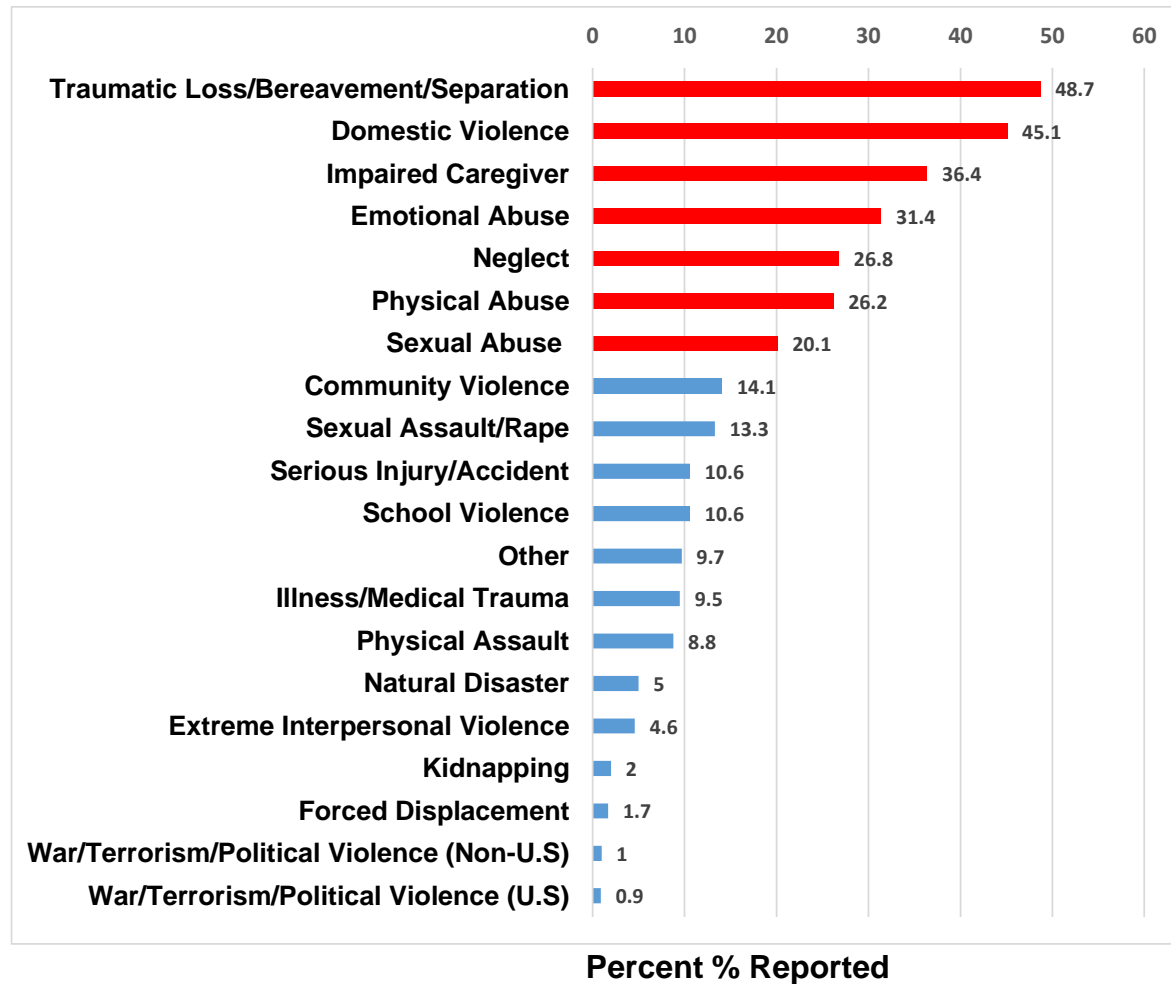
# Percent of Cumulative Adverse Childhood Experiences ACES in the Original Study<sup>1</sup>

<b>Number of ACES</b>	<b>Women</b>	<b>Men</b>	<b>Total</b>
	<b>N=9367</b>	<b>N=7970</b>	<b>N=17337</b>
0	34.5	38.0	36.1
1	24.5	27.9	26.0
2	15.5	16.4	15.9
3	10.3	8.6	9.5
4 or more	15.2	9.2	12.5

<sup>1</sup><http://www.cdc.gov/violenceprevention/acestudy/prevalence.html>

# The ACES are Among Many Childhood Traumas and Adversities Measured by the National Child Traumatic Stress Network N=10,991<sup>1</sup>

- The original ACES (in red) are among the most commonly reported traumas in studies that look at additional traumas.
- Over 40% of the children and adolescents served by the NCTSN experienced 4 or more different types of trauma and adversity.

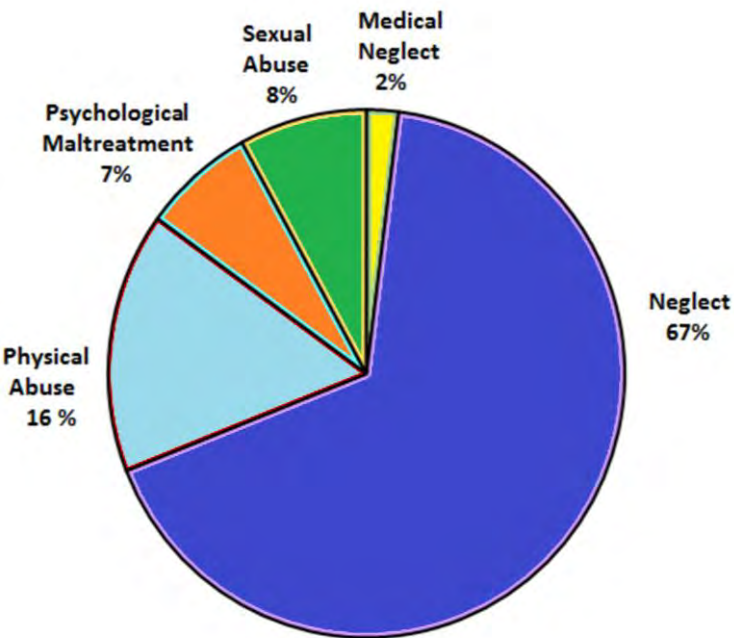


<sup>1</sup>Pynoos et. al (2014). Psychological Trauma: Theory, Research, Practice and Policy. 6:S9-S13.

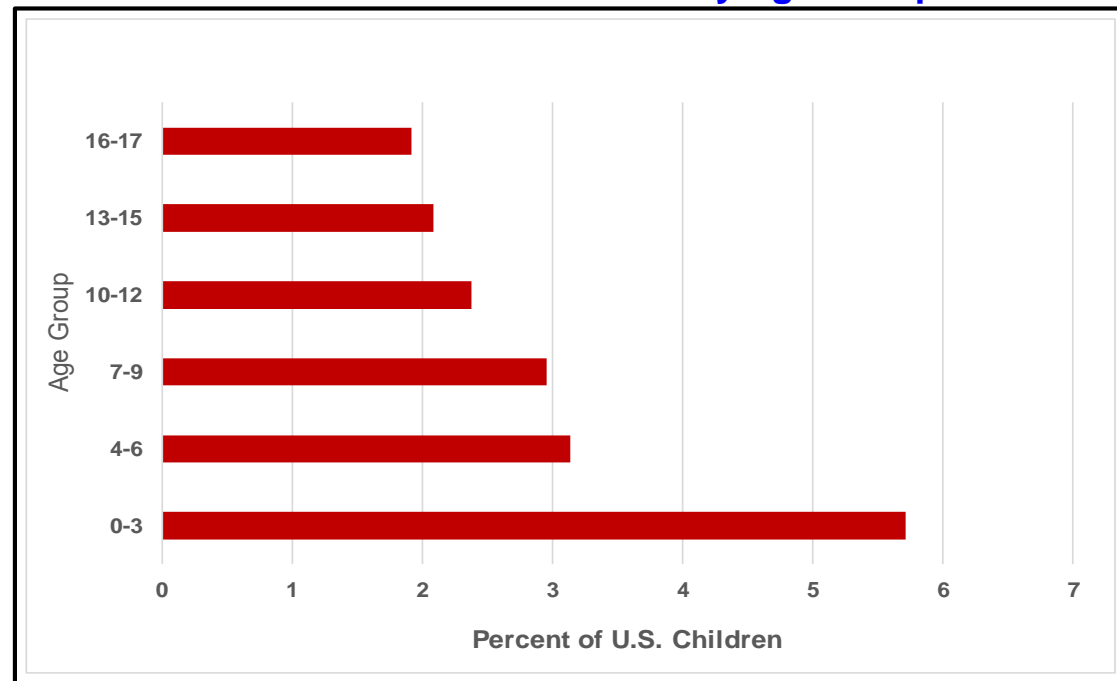
# Rates of Maltreatment by Age<sup>1</sup>

- Most maltreatment happens to younger children.
- Maltreatment has greater negative effects at younger ages.

Types of Child Maltreatment



Rates of Child Maltreatment by Age Group



<sup>1</sup>Child Maltreatment 2012. Washington, DC: US Department of Health and Human Services; 2014.

# How the ACES Work

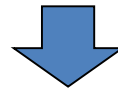
## Adverse Childhood Experiences

- Abuse and Neglect (e.g., psychological, physical, sexual)
- Household Dysfunction (e.g., domestic violence, substance abuse, mental illness)



## Impact on Child Development

- Neurobiologic Effects (e.g., brain abnormalities, stress hormone dysregulation)
- Psychosocial Effects (e.g., poor attachment, poor socialization, poor self-efficacy)
- Health Risk Behaviors (e.g., smoking, obesity, substance abuse, promiscuity)



## Long-Term Consequences

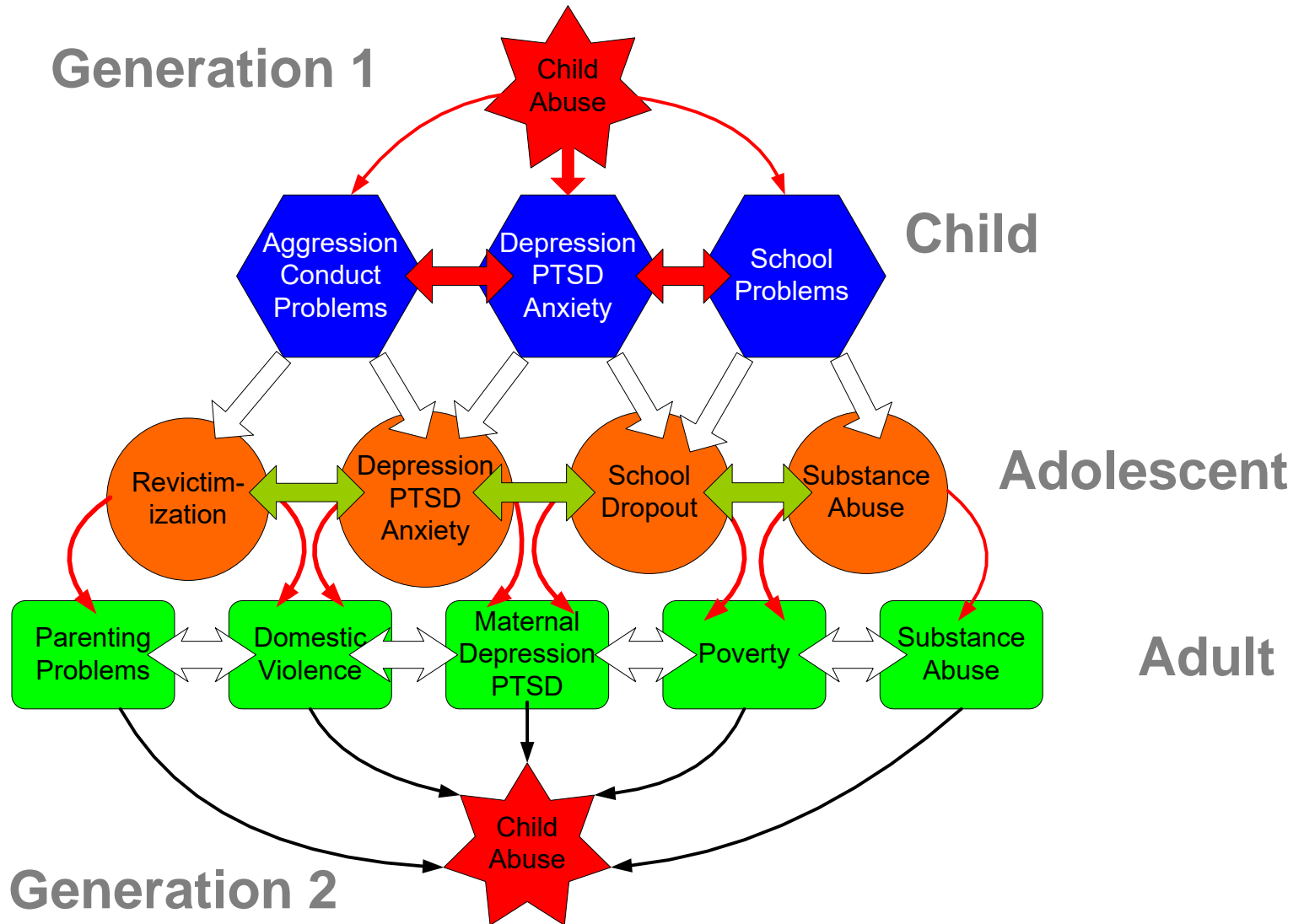
### Disease and Disability

- Major Depression, Suicide, PTSD
- Drug and Alcohol Abuse
- Heart Disease
- Cancer
- Chronic Lung Disease
- Sexually Transmitted Diseases
- Intergenerational transmission of abuse

### Social Problems

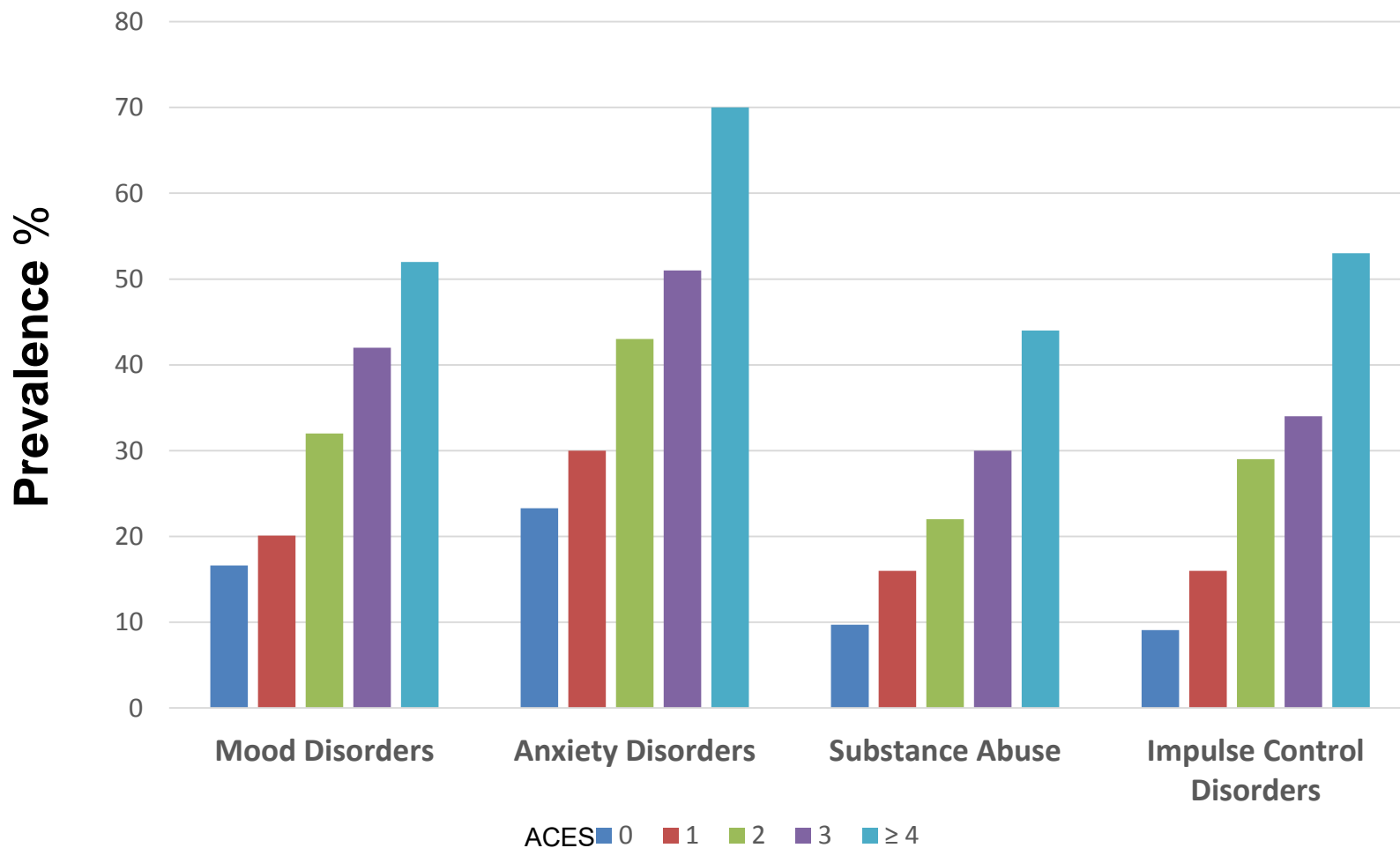
- Homelessness
- Prostitution
- Criminal Behavior
- Unemployment
- Parenting problems
- High utilization of health and social services
- Shortened Lifespan

# How ACEs Cross Generations



# **Cumulative ACEs Increase Risk for Poor Outcomes**

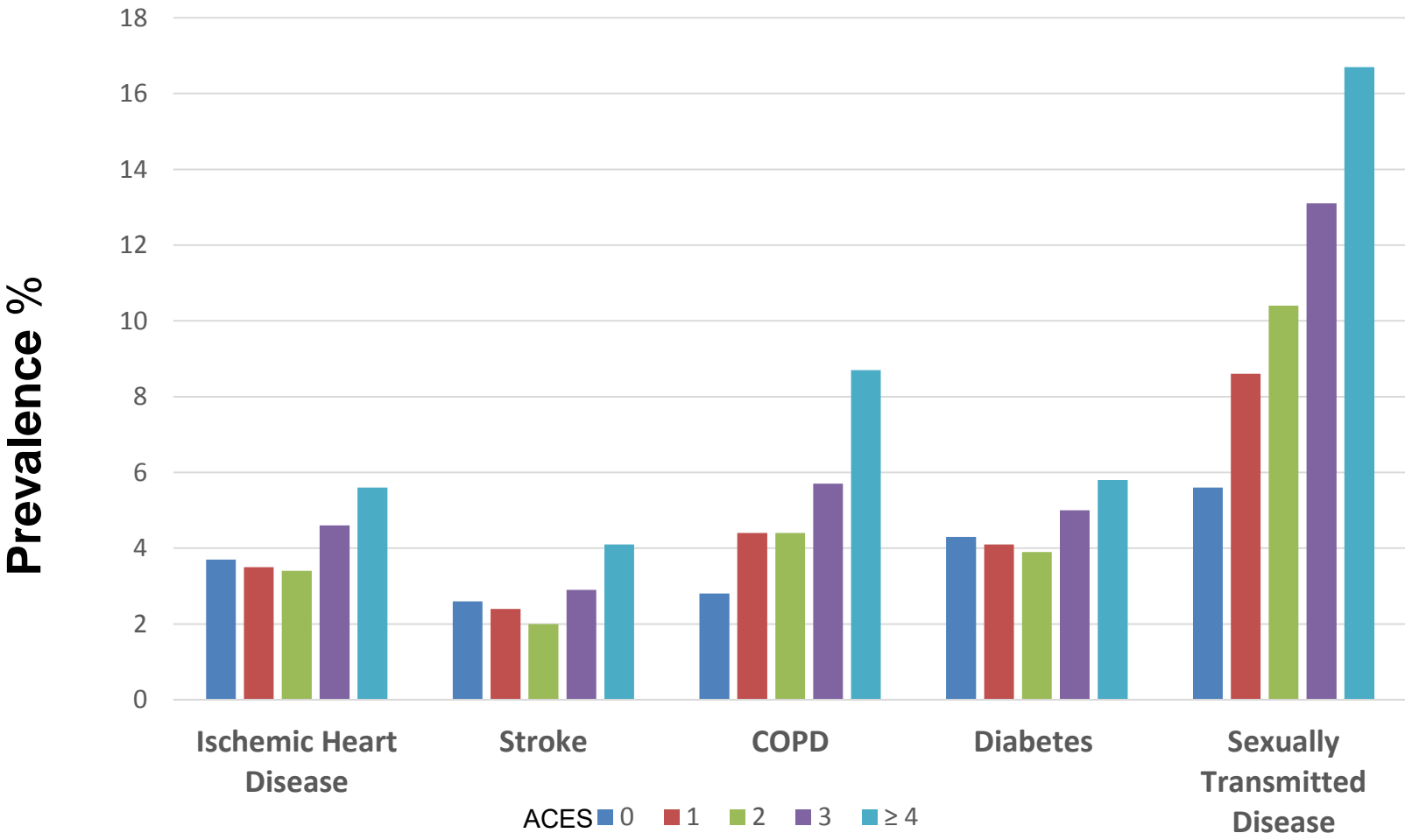
# Cumulative ACES & Mental Health<sup>1,2</sup>



<sup>1</sup>Data from the National Comorbidity Survey-Replication Sample (NCS-R).

<sup>2</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

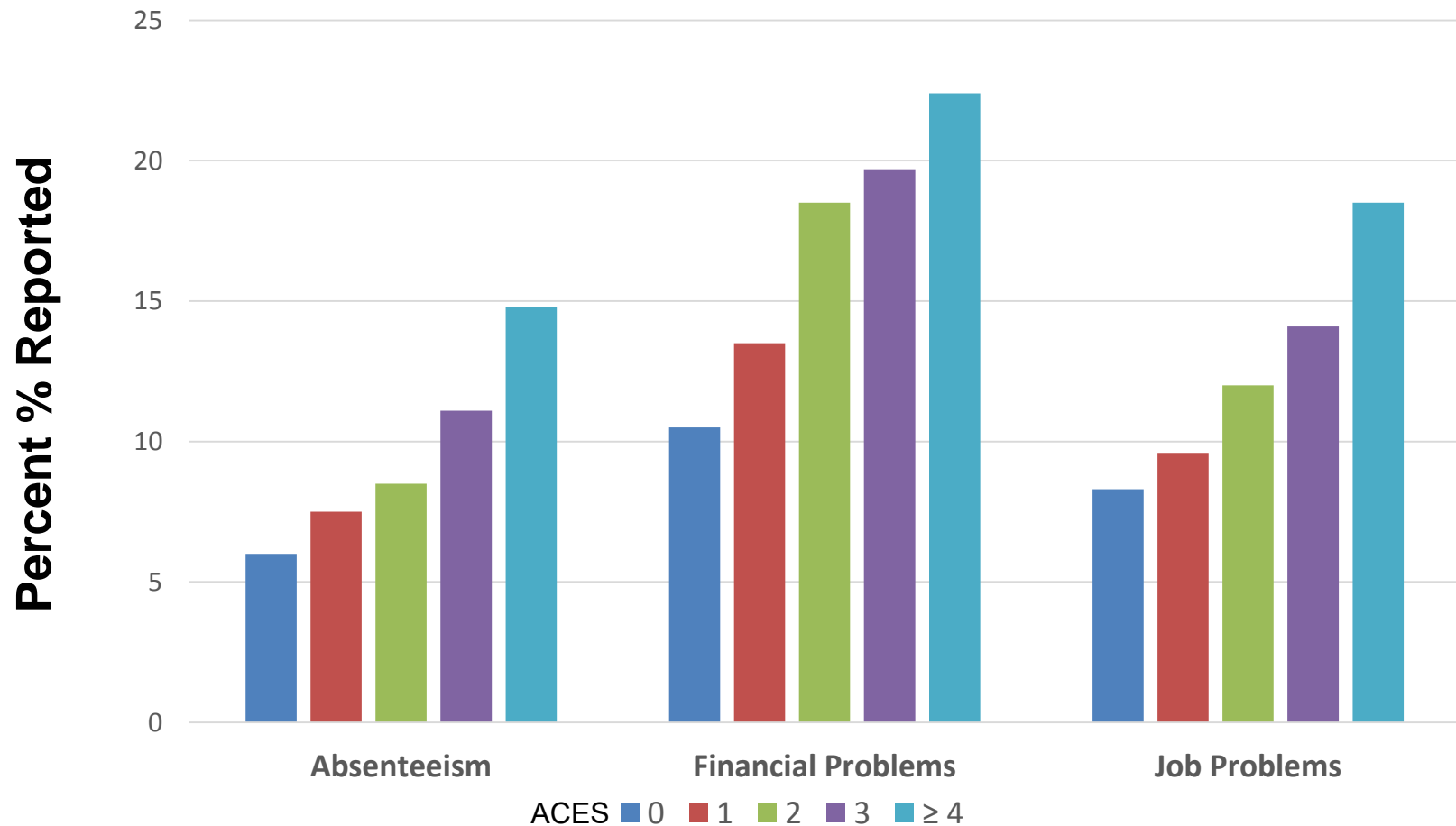
# Cumulative ACEs & Chronic Disease<sup>1</sup>



<sup>1</sup>Felitti et al., (1998) American Journal of Preventive Medicine, 14:245-258.



# Cumulative ACES & Impaired Worker Performance<sup>1</sup>



<sup>1</sup>Anda et al., (2004) The Permanente Journal/Winter 8:30-38.

# Impact of Cumulative ACEs & Social Dysfunction<sup>1</sup>

- Lower educational, occupational attainment.
- Increased social service costs.
- Increased medical costs.
- Shortened life span.
- Increased risk for HIV, teen pregnancy, maternal depression<sup>2</sup>.
- Intergenerational transmission of ACEs to offspring.

<sup>1</sup>IOM (Institute of Medicine) and NRC (National Research Council). 2013.  
*New Directions in child abuse and neglect research*. Washington, DC: The National Academies Press.

<sup>2</sup><http://www.movingbeyonddepression.org/>

# Implications of Cumulative ACEs

- “Dose-Effect” – increasing ACEs increases the number of problems.
- Child maltreatment victims have 2-7 times higher risk of being re-victimized in the future compared with non-victims<sup>1</sup>.
- Preventing future ACEs in previously traumatized children is an important intervention.
- Systems that serve traumatized children – e.g., child protection, juvenile justice, mental health – should include trauma screening & prevention interventions.

<sup>1</sup>Finkelhor et. al (2007). Re-victimization patterns in a national longitudinal sample of children and youth. Child Abuse & Neglect 31:479-502.

# Synergy

*A principle finding of recent work is the extent to which two or more adverse experiences interact so that the risk of a psychological disturbance following is multiplied, often many times over.*

John. Bowlby, The origins of attachment theory, 1988

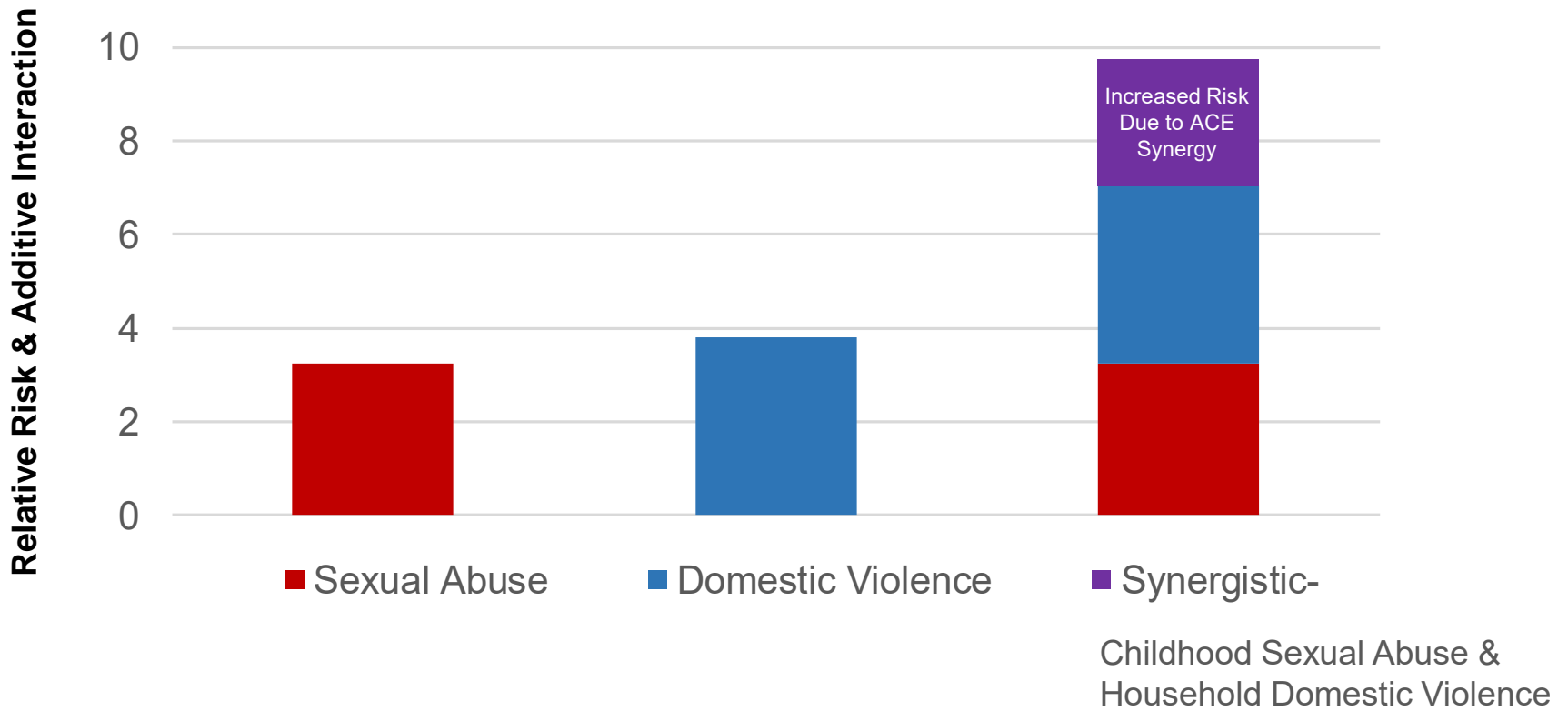
# Synergistic ACEs Increase Complex Adult Psychopathology<sup>1</sup>

- People who experience one ACE are statistically likely to experience two or more ACEs.
- **Synergy** is the interaction of two or more ACEs so that their combined effect is greater than the sum of their individual effects.
- **Complex Adult Psychopathology** is defined as having diagnoses crossing 2 or more DSM diagnostic categories (Mood, Anxiety, Substance Abuse or Impulse Control).

<sup>1</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

# Co-Existing Childhood Sexual Abuse & Household Domestic Violence ACES are Synergistic & Increase Risk of Complex Adult Psychopathology<sup>1,2</sup>

## Females (N=3310)

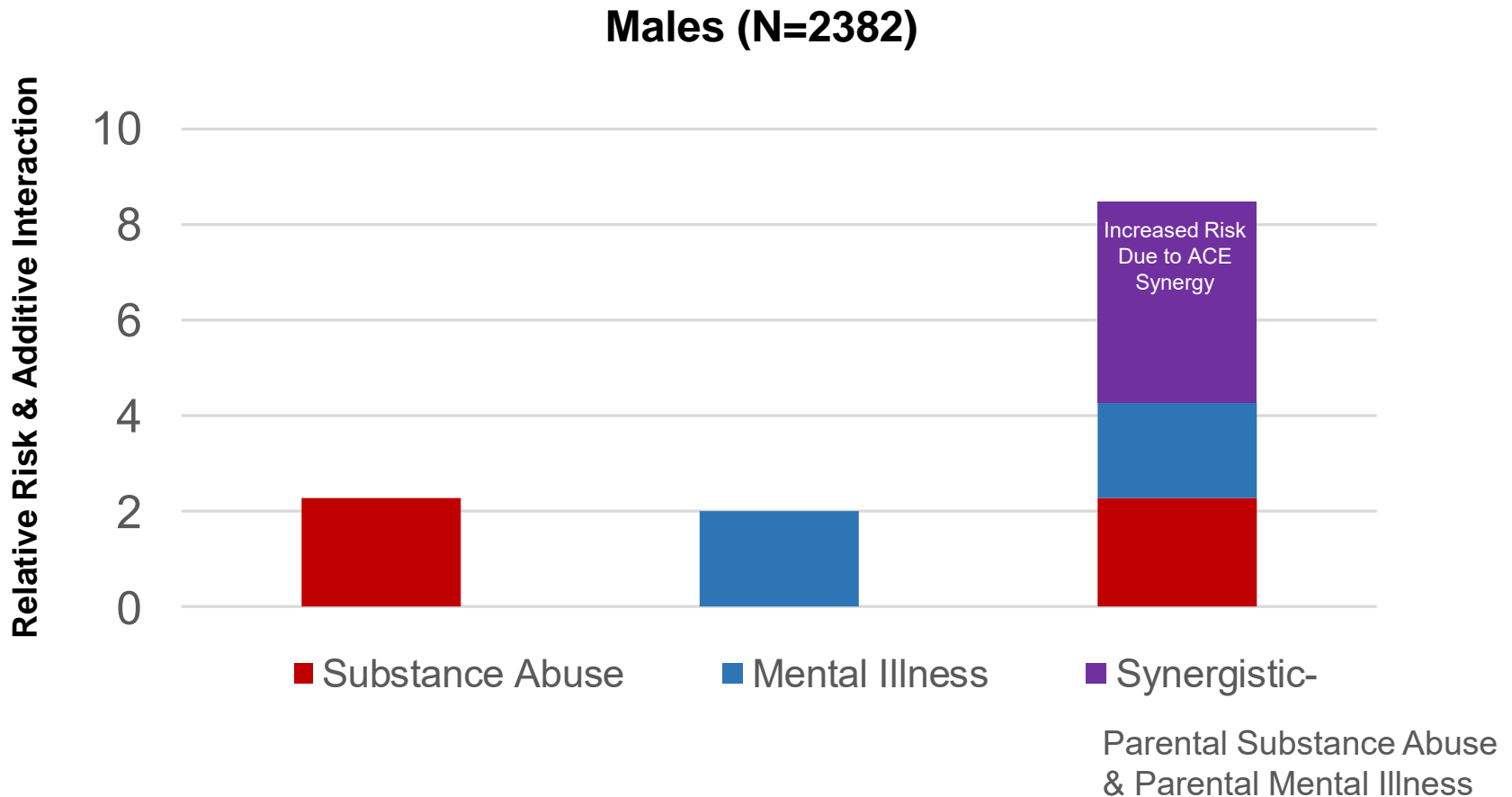


<sup>1</sup>Data from the National Comorbidity Survey-Replication Sample (NCS-R).

<sup>2</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

# Co-Existing Parental Substance Abuse & Parental Mental Illness

## ACES are Synergistic & Increase Risk of Complex Adult Psychopathology<sup>1,2</sup>



<sup>1</sup>Data from the National Comorbidity Survey-Replication Sample (NCS-R).

<sup>2</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

# Synergistic ACEs in Females <sup>1,2</sup>

- In females synergy occurs with 2 or more ACEs.
- For females the most potent ACE, sexual abuse, is synergistic with:
  - Domestic violence
  - Crime victimization
  - Poverty
  - Parental mental illness (anxiety/depression)
  - Loss of a Parent

<sup>1</sup>Data from the National Comorbidity Survey-Replication Sample (NCS-R).

<sup>2</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.



# Synergistic ACEs in Males <sup>1,2</sup>

- In males synergy occurs with 3 or more ACEs.
- For males, the most potent ACE, poverty, is synergistic with:
  - Sexual abuse
  - Parental substance abuse
  - Loss of a parent

<sup>1</sup>Data from the National Comorbidity Survey-Replication Sample (NCS-R).

<sup>2</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

# Synergy between ACES & Other Adversities (e.g., Environmental Pollution<sup>1</sup>)

- **Childhood asthma** disproportionately affects lower income communities where air pollution & ACES may be elevated.
- Correcting for potential confounders – researchers found an increased risk between traffic-related air pollution and asthma (OR = 1.63, CI=1.14-2.33) **solely among children exposed to violence.**
- ACES likely interact synergistically with many environmental pollutants and negative social experiences to increase risk for many costly illnesses.

<sup>1</sup>Clougherty et al, (2007) Synergistic effects of traffic-related air pollution and exposure to violence on urban asthma etiology. Environmental Health Perspectives 115:1140.

# Addressing ACES Offers Critical Public Health Opportunities<sup>1</sup>

- ACES are the most preventable cause of serious mental illness.
- ACES are the most preventable causes of drug and alcohol abuse in women.
- ACES are the most preventable causes of HIV high-risk behavior (IV drugs, promiscuity).
- ACES are a significant contributor to leading causes of death (heart disease, cancer, stroke, diabetes, suicide).

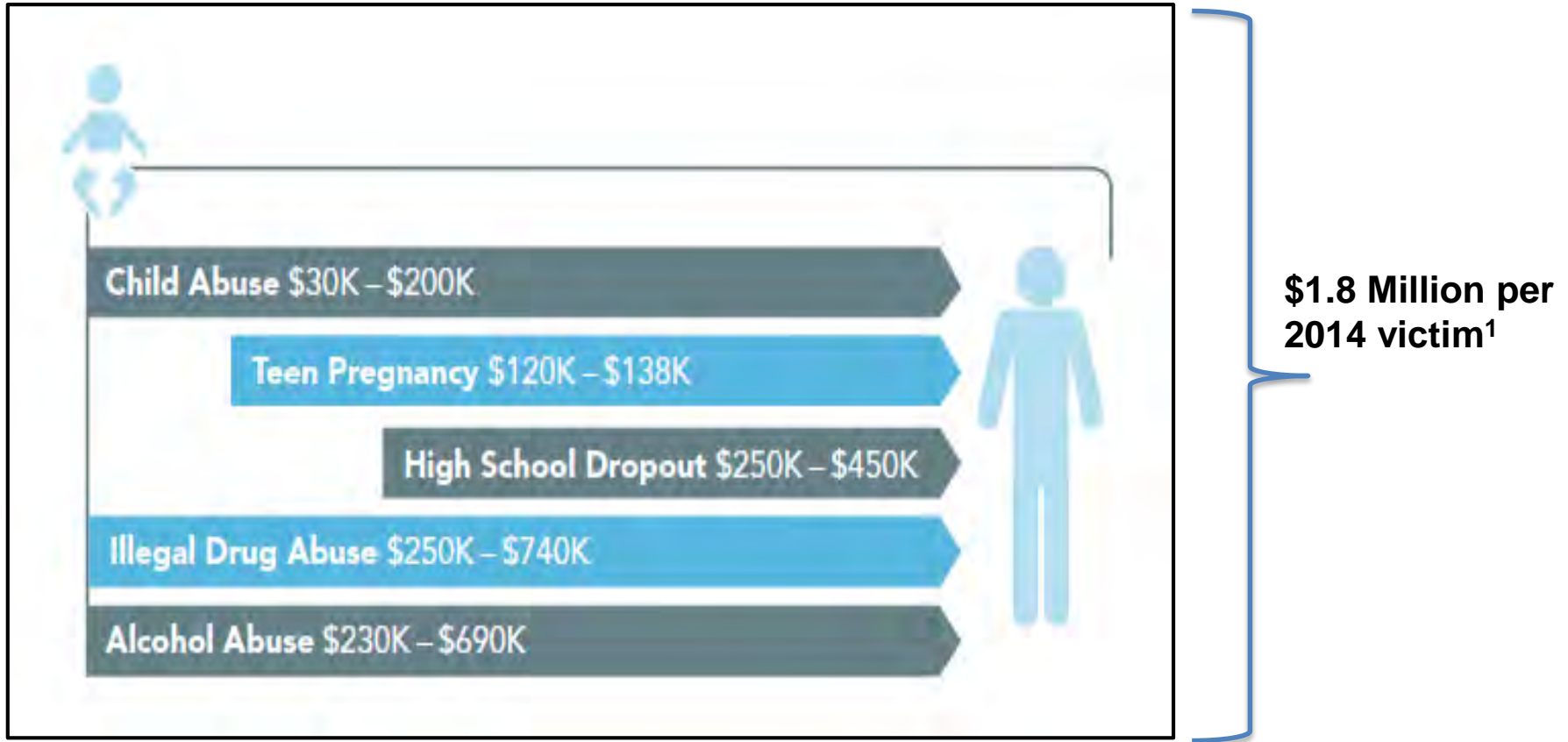
<sup>1</sup>IOM (Institute of Medicine) and NRC (National Research Council). 2013.

# Costs of Cumulative & Synergistic ACES

- Human suffering borne by victims & their families.
- Economic costs borne by society.
- Social costs borne by society.
- Intergenerational transmission of childhood adversity borne by future society.

# What does it cost to do nothing?

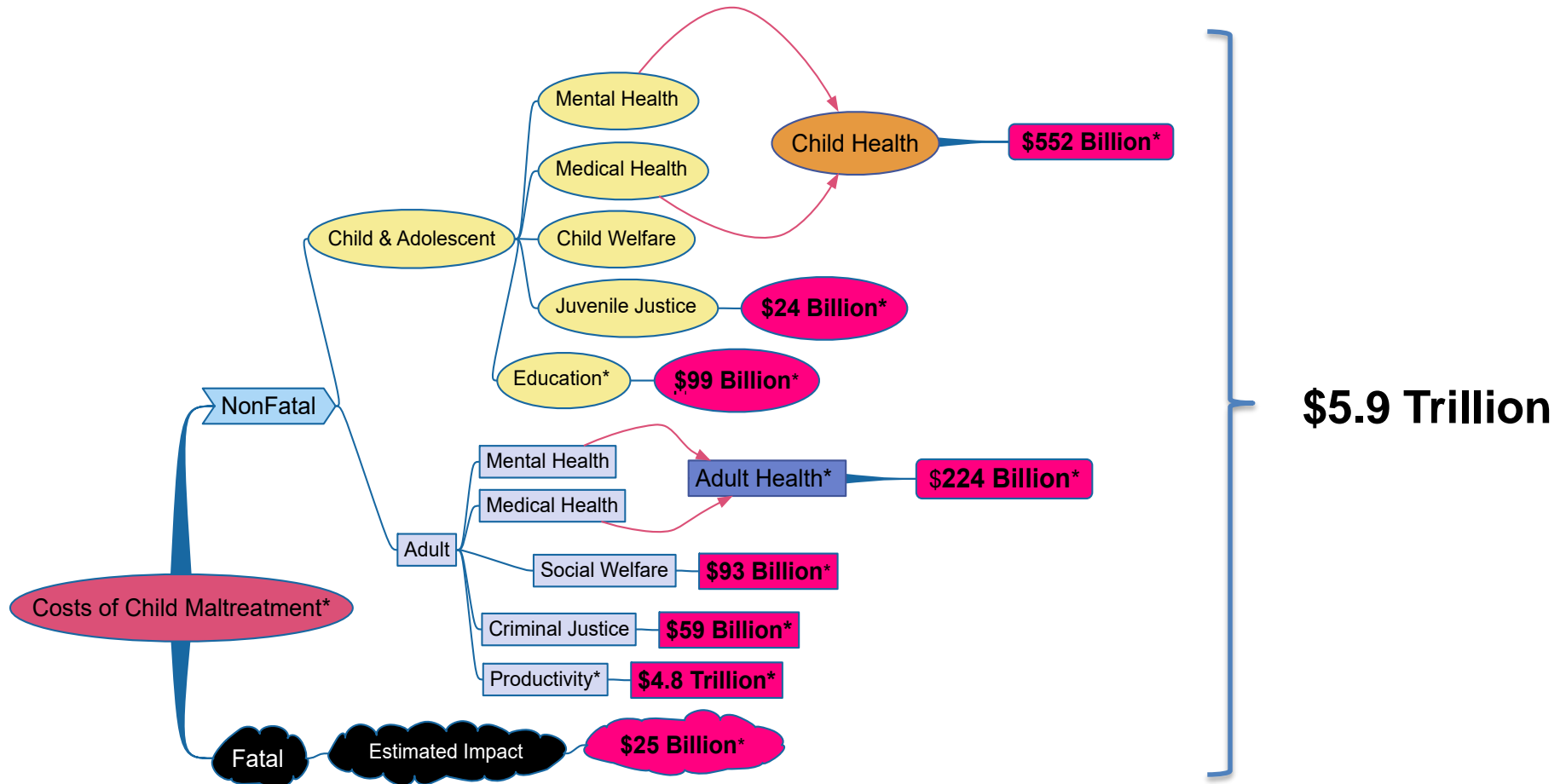
Each 2014 First-Time Case of Child Maltreatment Costs U.S. Economy  
Approximately \$1.8 Million in Total Expenditures over their Lifetime<sup>1</sup>



Graphic from Pew Issue Brief Jan 2011: Paying Later: High Cost of failing to Invest in Young children.

<sup>1</sup>Suffer the Little Children: An Assessment of the Economic Costs of Child Maltreatment  
The Perryman Group, Nov. 2014: <http://perrymangroup.com/special-reports/chlld-abuse-study/>

# Estimated Lifetime Costs for all 2014 First Time Maltreatment Victims = \$5.9 Trillion<sup>1</sup>



**\$5.9 Trillion**

<sup>1</sup>Suffer the Little Children: An Assessment of the Economic Costs of Child Maltreatment  
The Perryman Group, Nov. 2014: <http://perrymangroup.com/special-reports/chlld-abuse-study/>

**Can We Do Anything?**

# What Do We Have Available Now?

- Proven (evidence-based) prevention & treatment interventions.
- Existing programs provide opportunities within which to embed screening, prevention & treatments.
- Replication strategies (e.g., National Child Traumatic Stress Network (NCTSN)<sup>1</sup> Learning Collaboratives) to expand access to services.
- Web networking & data collection tools to support large scale interventions.
- Prevention & quality improvement science to enhance interventions while they are being delivered.<sup>2</sup>

<sup>1</sup>[www.nctsn.org](http://www.nctsn.org)

<sup>2</sup>Ammerman, R.T., et al. (2007). Journal of Prevention and Intervention in the Community, 34, 89-107.



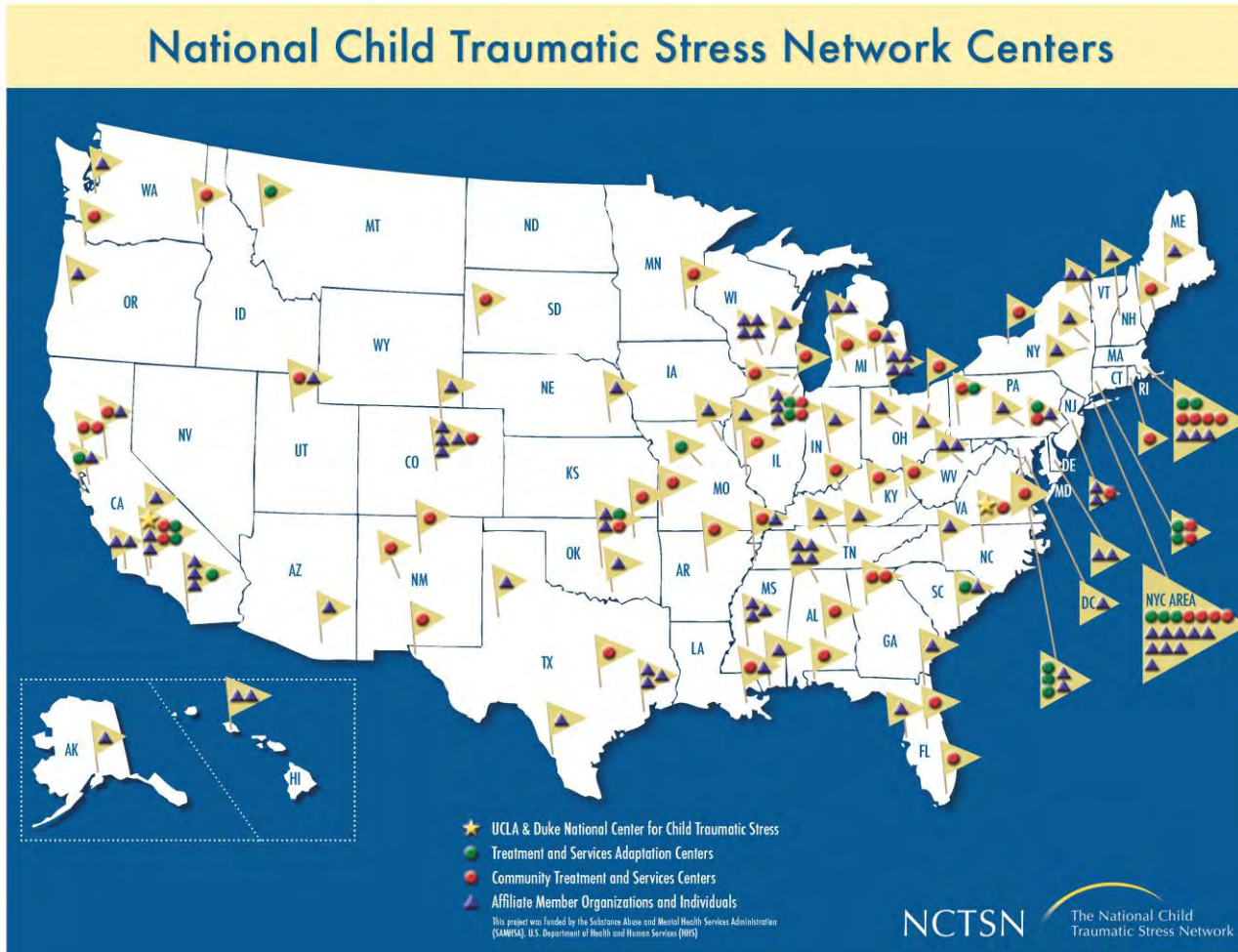
# Child Abuse Prevention

- Evidence-based prevention programs exist (e.g., high quality home visitation, Triple P - **P**romoting **P**ositive **P**arenting).
- CDC meta-analysis of home visitation - median 40% reduction with maximum 80% in official case reports.
- Triple-P population-based clinical trial – population effect size  $d = 0.51$  (reduces substantiated cases, out-of-home placements, maltreatment injuries).
- Dissemination strategies for ‘going to scale’ with these models exist.
- Economic analyses exist documenting cost-effectiveness of the best prevention programs.

# Treatment

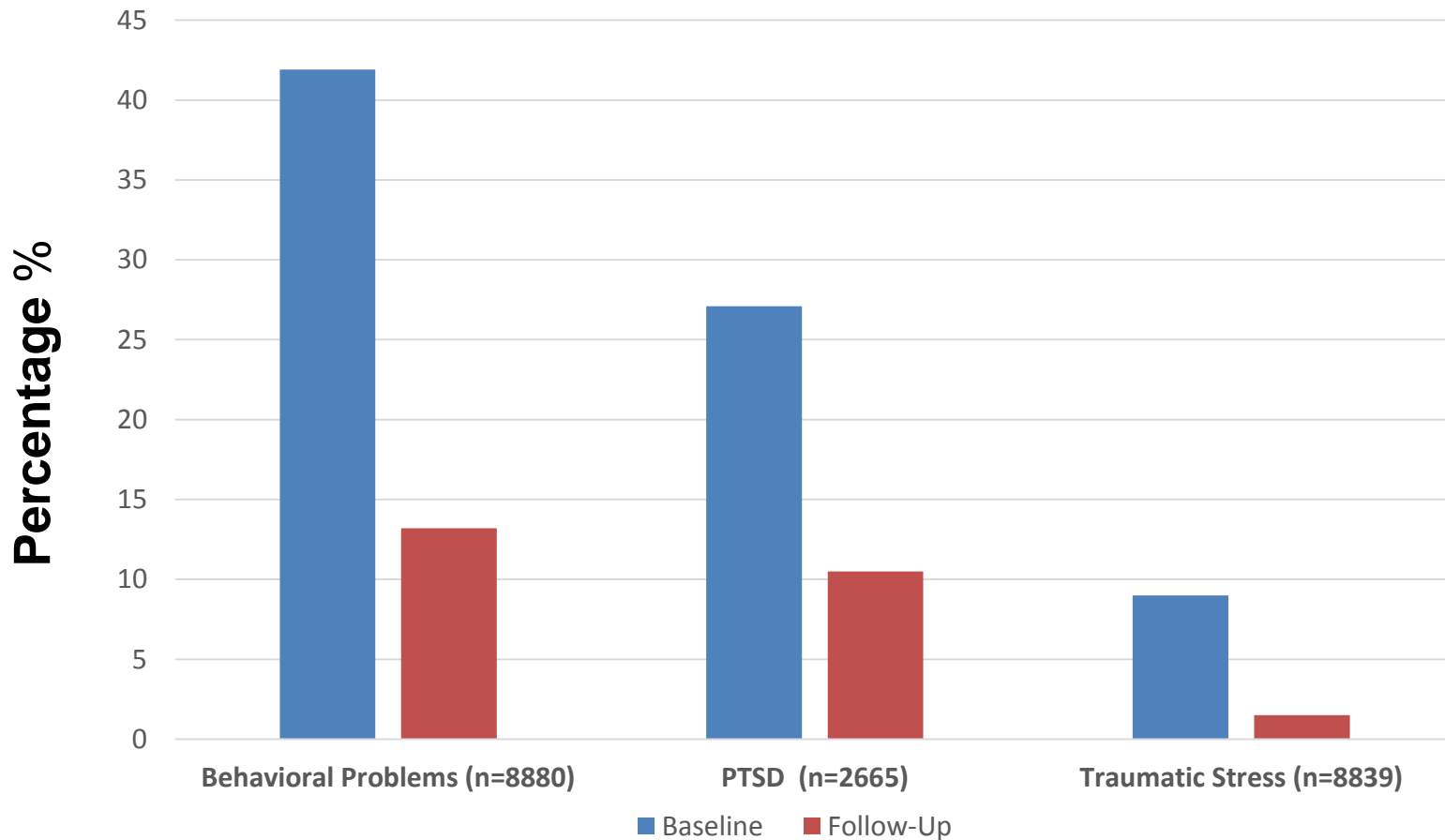
- Proven treatments exist for traumatized children, e.g.,
  - **TF CBT** -Trauma-Focused Cognitive Behavioral Therapy
  - **CPP** - Child Parent Psychotherapy
  - **PCIT** -Parent Child Interaction Therapy
- Children with 4 or more ACEs respond as well to treatment as children with fewer adversities<sup>1</sup>.
- Therapists who follow guidelines carefully get the best results.
- Treatments can improve both children and parents' mental health outcomes.
- Treatment appears to restore normal biology in stress response systems in some instances.

# The National Child Traumatic Stress Network (NCTSN) Centers and Affiliated Agencies Provide Proven Treatments to Traumatized Youth Nationwide<sup>1</sup>



<sup>1</sup>[www.nctsn.org](http://www.nctsn.org)

# NCTSN Children & Adolescents At Baseline and Last Follow up<sup>1</sup>



<sup>1</sup>The National Child Traumatic Stress Network CDS September 2010 – [www.nctsn.org](http://www.nctsn.org)

# Prevention & Treatment Costs

- Are prevention & treatment programs cost-effective?
- High quality home visiting child abuse prevention programs have been found to return ~ \$3.00/dollar of cost<sup>1</sup>.
- Evidence-based child trauma treatments such as Parent-Child Interaction Therapy (PCIT) return \$3.64/dollar cost<sup>1</sup>.

<sup>1</sup>Benefits and Costs of Early Intervention and Prevention Programs, Sept, 2004.  
<http://www.wsipp.wa.gov/rptfiles/04-07-3901a.pdf>.

# Preventing ACES is Protective Within & Across Generations

- Having Zero (0) ACES significantly protects against child & adult mental illness<sup>1,2</sup>.
- Developmental models postulate that resilience decreases as ACES increase.
- Positive childhood experiences<sup>3</sup> (“*Angels in the Nursery*”<sup>4</sup>) can offset negative childhood experiences.

<sup>1</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

<sup>2</sup>Bethell, CD, et al, (2014). Health Affairs, 33:2106-2115.

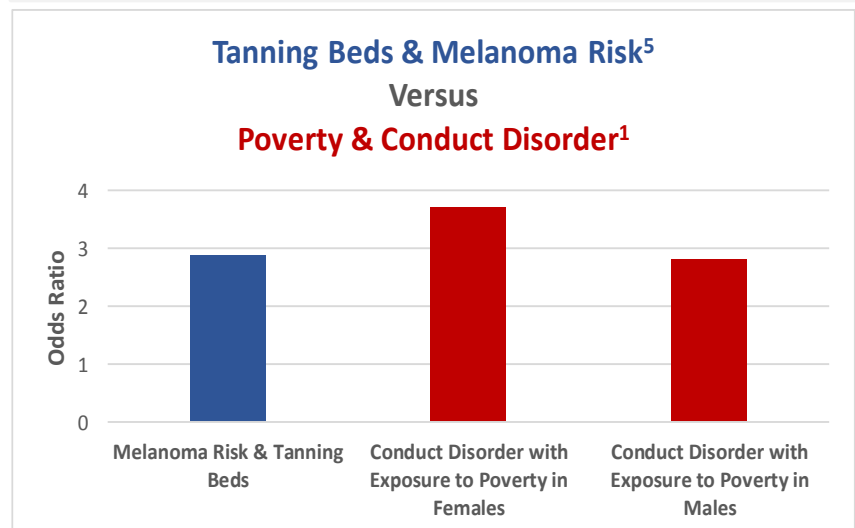
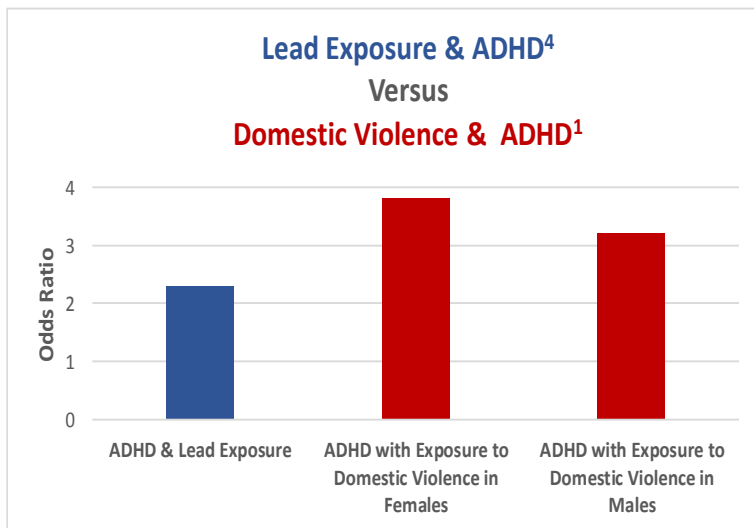
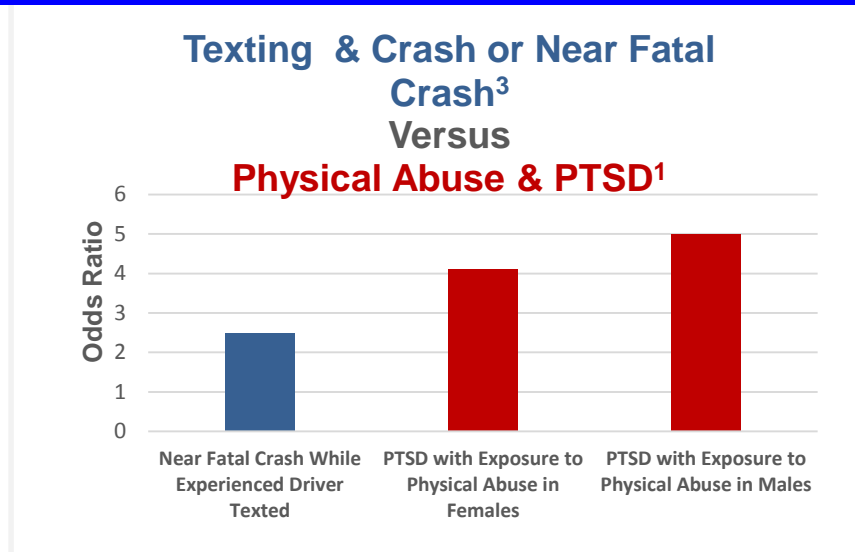
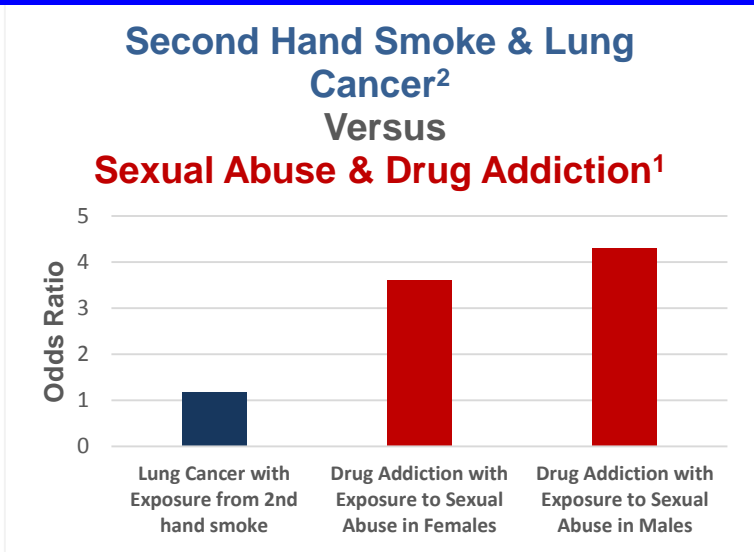
<sup>3</sup>Chung et al, Ambulatory Pediatrics 2008; 8:109-116.

<sup>4</sup>Lieberman, et al, Infant Mental Health Journal 2005, 26(6) 504-520.

# Measuring Risk

- An Odds Ratio (OR) is a statistic quantifying the strength of association between two factors in a population, e.g., fatty diet and heart disease, smoking and lung cancer.
- If the OR is greater or less than 1, then the two factors are significantly associated. If the OR equals 1 there is not a significant association.
- ORs are often used to quantify how much a certain factor (e.g., a gene, diet, habit) increases or decreases a person's risk for a negative outcome.

# Public Health Thresholds of Risk for Legislation, Regulation or Recommendations

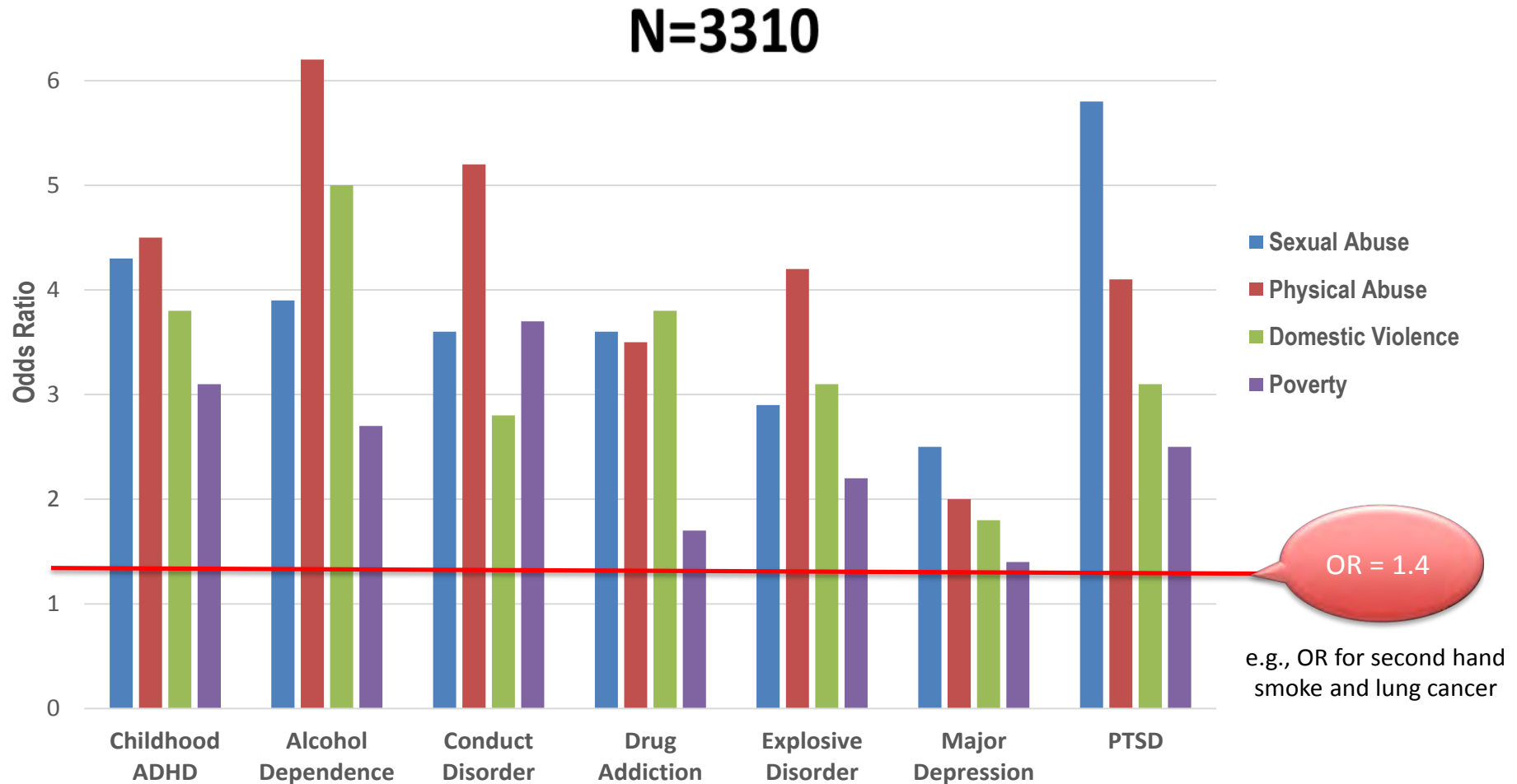


<sup>1</sup>Putnam et. al. JTS, 26:435-442,2013. <sup>2</sup>Brennan et. al. Int J Cancer, 109:125-31,2004. <sup>3</sup>Klauer et.al. NEJM, 370:54-59,2014.

<sup>4</sup>Froehlich et. al. Pediatrics, 124:1054-1063,2009. <sup>5</sup>Lazovich et. al. Cancer Epidemiol Biomarker Prev., 19:1557-1568,2010.



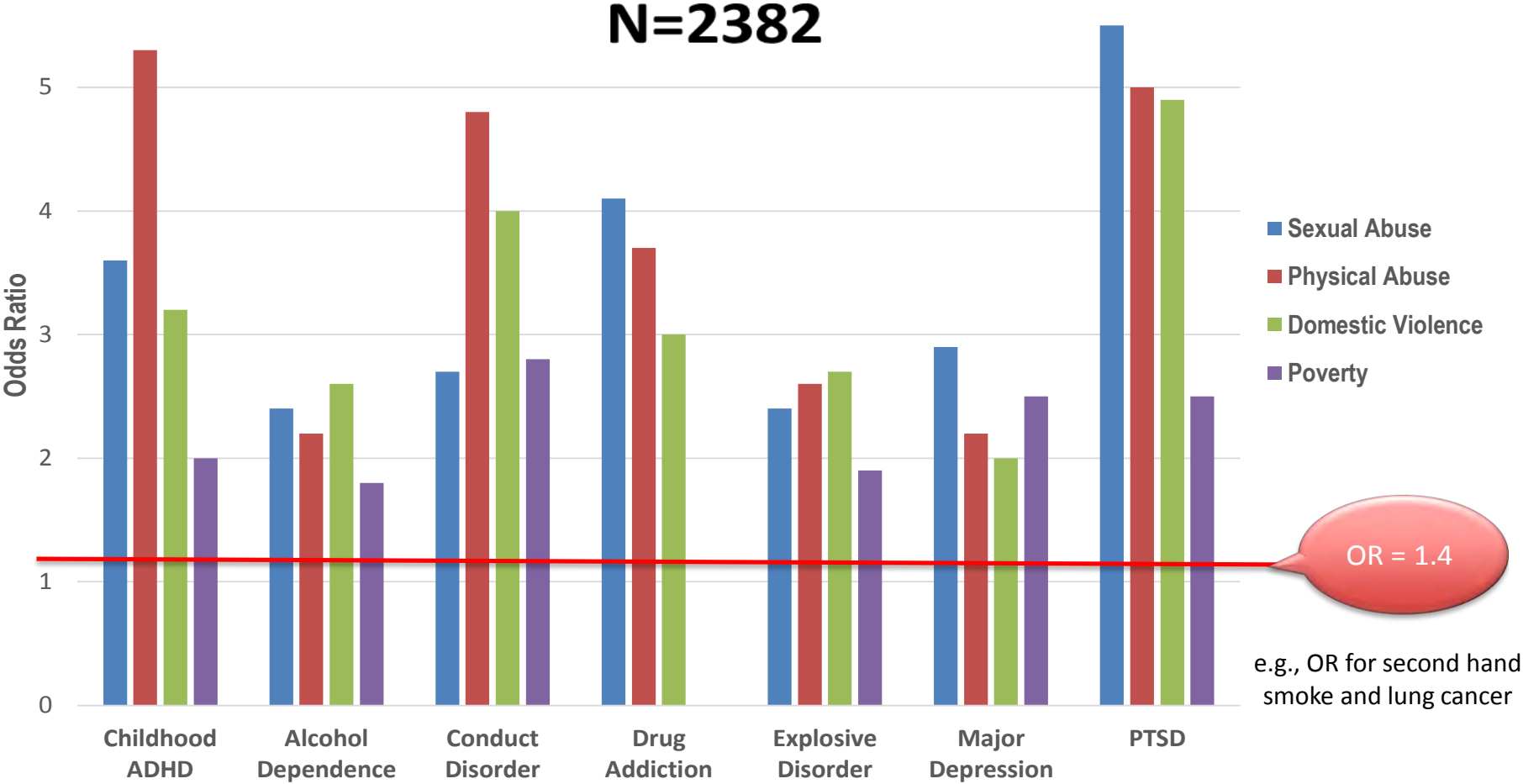
# Sexual Abuse, Physical Abuse, Domestic Violence & Poverty Each Increase Risk for Mental Health Problems in Females<sup>1,2</sup>



<sup>1</sup>Data from the National Comorbidity Survey-Replication Sample (NCS-R).

<sup>2</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

# Sexual Abuse, Physical Abuse, Domestic Violence & Poverty Each Increase Risk for Mental Health Problems in Males <sup>1,2</sup>



<sup>1</sup>Data from the National Comorbidity Survey-Replication Sample (NCS-R).

<sup>2</sup>Putnam, Harris, Putnam, J Traumatic Stress, 26:435-442, 2013.

# Prevention, Screening, & Treatment Can Be Embedded In Existing Systems That Serve Children

- Child care
- Education
- Medical
- Well-child
- Home visitation
- Military families
- Foster Care
- Child welfare
- Mental health
- Drug and alcohol
- Juvenile justice
- Immigration
- Faith based

# Summary

- ACES are cumulative & synergistic.
- Females and males have different (but overlapping) combinations of synergistic ACES.
- ACES increase risk for major public health problems far in excess of the usual thresholds (i.e., ORs  $\geq 1.4 - 1.8$ ) for interventions.
- ACEs may be synergistic with environmental exposures or social experiences, e.g., air pollution & childhood asthma.

# What More Can We Do?

## **Adopt a Public Health approach to Child Maltreatment and other ACEs by:**

1. Screening for ACEs in systems that serve children and families.
2. Building capacity to prevent & treat child trauma.
3. Increasing access to trauma-informed services for children & families.
4. Integrating and enhancing programs to target synergistic ACEs with highest cumulative risks.
5. Integrating trauma services across family-serving systems.

# How Would We Do It?

- Disseminate proven interventions (e.g., NCTSN learning collaboratives).
- Incentive-based credentialing and/or rostering of trained clinicians.
- Continuous monitoring of intervention outcomes.
- Internet systems to manage large scale programs:
  - Clinical data collection for referrals, outcome analyses & clinician feedback
  - Interactive training and education
  - Program management
  - Networking among providers and stakeholders
- Continuous Quality Improvement (CQI) – to improve working programs while delivering services in the field.

# What Are The Expected Outcomes?

- Reduced Human Suffering.
- Decreased costly Mental & Medical Illness.
- Reduction in Health Risk Behaviors (e.g., smoking, substance abuse, poor diet).
- Improved Population Health & Well-Being.
- Decreased Intergenerational Transmission of ACES.
- Improved Educational & Occupation Attainment.
- Decreased Crime & Victimization.
- Decreased Welfare & Social Services.
- Increased Productivity & Life Expectancy.

**How Can a Public Effort Help Us?**



**Christof Wieland**, the German man of letters, wrote in 1798 that public opinion was

*“ . . . an opinion that gradually takes root among a whole people; especially among those who have the most influence when they work together as a group. In this way it wins the upper hand to such an extent that one meets it everywhere... It then only requires some small opening that will allow it air, and it will break out with force. Then it can change whole nations in a brief time and give whole parts of the world a new configuration.”*<sup>1</sup>

Christof Wieland, 1798

<sup>1</sup>Daniel J. Boorstin, *Democracy and Its Discontents Reflections on Everyday America*, Vintage Books p14, 1975.

# Resource URLs

## ACES

- TED Talk [www.ted.com/talks/nadine\\_burke\\_harris\\_how\\_childhood\\_trauma\\_affects\\_health\\_across\\_a\\_lifetime](http://www.ted.com/talks/nadine_burke_harris_how_childhood_trauma_affects_health_across_a_lifetime)
- CDC [www.cdc.gov/violenceprevention/acestudy/index.html](http://www.cdc.gov/violenceprevention/acestudy/index.html)
- Academy on Violence and Abuse [www.avahealth.org/aces\\_best\\_practices/](http://www.avahealth.org/aces_best_practices/)

## Evidence Based Treatment & Prevention

- NCTSN [www.nctsn.org](http://www.nctsn.org)
- ISTSS <https://www.istss.org/>
- Children's Bureau <http://www.acf.hhs.gov/programs/cb>
- SAMHSA <http://www.samhsa.gov/ebp-web-guide>
- Maternal Depression <http://www.movingbeyonddepression.org/>

## Advocacy & Policy

- AAP [www.aap.org/en-us/Pages/Default.aspx](http://www.aap.org/en-us/Pages/Default.aspx)
- APAs [www.apa.org](http://www.apa.org) & [www.psychiatry.org](http://www.psychiatry.org)
- AACAP [www.aacap.org](http://www.aacap.org)