

Adverse Childhood Experiences: Drug Use and Crime in West Virginia

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What would it take...



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The "life-changing" story Oprah reports this week




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TREATING CHILDHOOD TRAUMA

Oprah Winfrey reports on how trauma plays a role in childhood development and what new methods are being used to help kids who have experienced it

2018 BY **MAR 11** **OPRAH WINFREY**

FACEBOOK TWITTER REDDIT FLIPBOARD

In 1850, a Catholic orphanage called St. Aemilian was founded in Milwaukee, Wisconsin to take in children whose parents had died in a cholera epidemic. 168 Years later, that same organization -- now known as "SaintA" -- is still finding shelter for thousands of children who need it, often kids who have deep trauma in their young lives, and helps those kids with a revolutionary approach that's spreading across the country.

RECENT SEGMENTS

The Stormy Daniels 60 Minutes interview

'The Greek Freak'

The Saudi crown

Adverse Childhood Experiences Study (ACE Study)

- Maybe the most important study of which most Americans are unaware
- What is unrecognized in the pediatric exam room shows up in the internal medicine exam room decades later
- Measures 10 categories of childhood abuse and neglect
 - Abuse (3): Emotional, physical, or sexual
 - Neglect (2): Emotional or physical
 - Dysfunction (5):
 - One or both biological parents missing from the household
 - Domestic violence specifically toward the mother
 - Mental illness in the household
 - Substance use in the household
 - Incarcerated members in the household
- <http://www.cdc.gov/violenceprevention/acestudy>

ACE Study Findings

ACE Scores Linked to Physical & Mental Health Problems

Compared with people with no ACEs, those with 4 or more ACEs were:

- 2x more likely to smoke
- 2x more likely to have cancer or heart disease
- 6x more likely to be depressed
- 6x more likely to have had sex before age 15
- 7x more likely to be alcoholics
- 10x more likely to inject drugs
- 12x more likely to have attempted suicide
- Men with 6 or more ACEs were **46** times more likely to have injected drugs than men with no history of adverse childhood experiences

ACE Questions (1-3)

- During your first 18 years of life
 1. Did a parent or other adult in the household **often** ... Swear at you, insult you, put you down, or humiliate you? **or** Act in a way that made you afraid that you might be physically hurt?
 2. Did a parent or other adult in the household **often** ... Push, grab, slap, or throw something at you? **or** **Ever** hit you so hard that you had marks or were injured?
 3. Did an adult or person at least 5 years older than you **ever**... Touch or fondle you or have you touch their body in a sexual way? **or** Try to or actually have oral, anal, or vaginal sex with you?

ACE Questions (4-6)

4. Did you **often** feel that ...

No one in your family loved you or thought you were important or special? **or** Your family didn't look out for each other, feel close to each other, or support each other?

5. Did you **often** feel that ...

You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? **or** Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

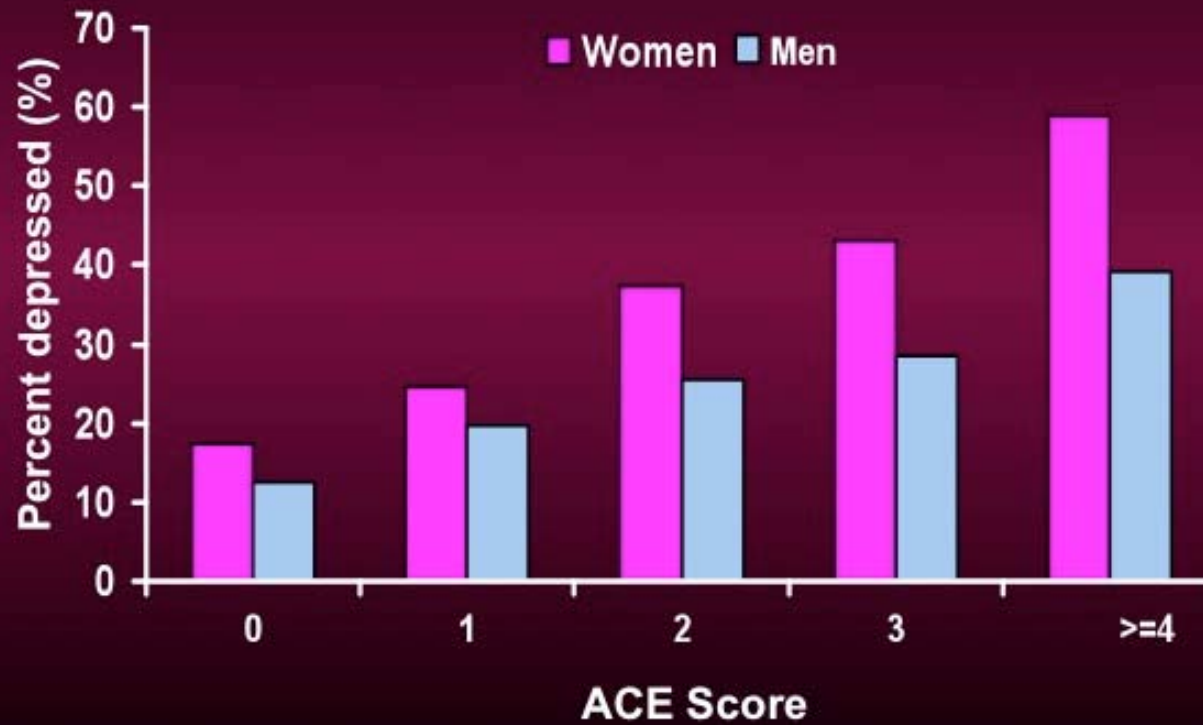
6. Were your parents **ever** separated or divorced?

ACE Questions (7-10)

7. Was your mother or stepmother:
Often pushed, grabbed, slapped, or had something thrown at her? **or**
Sometimes or often kicked, bitten, hit with a fist, or hit with something hard? **or**
Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
9. Was a household member depressed or mentally ill or did a household member attempt suicide?
10. Did a household member go to prison?

Information from the original ACE Study

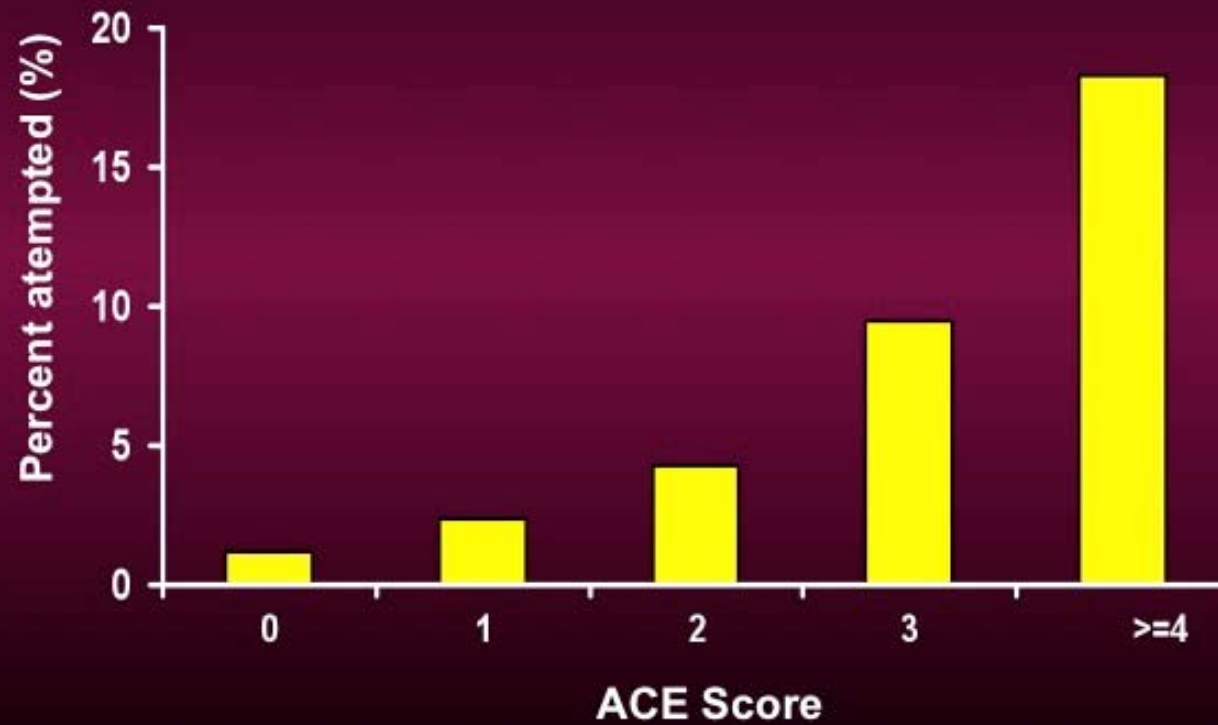
The ACE Score and a Lifetime History of Depression



Slide courtesy of Robert Anda and Vincent Felitti

Information from the original ACE Study

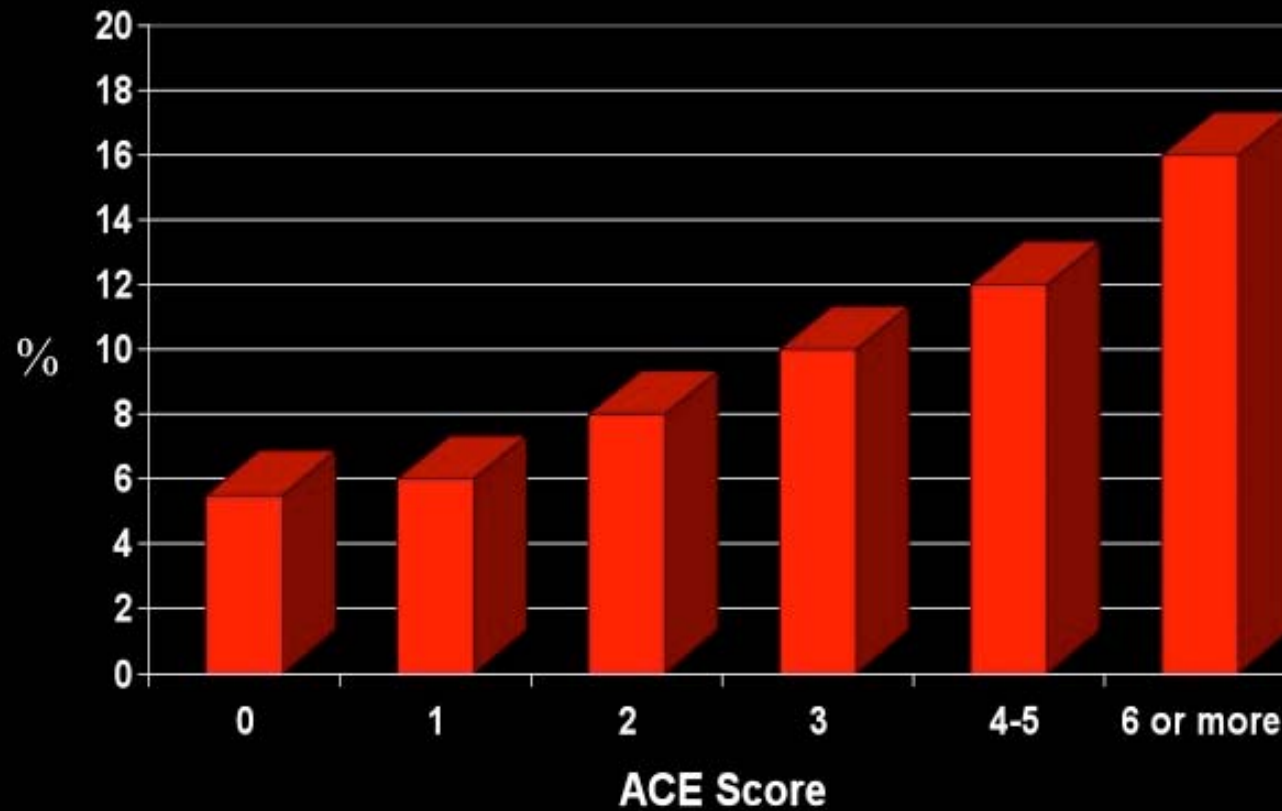
The ACE Score and the Prevalence of Attempted Suicide



Slide courtesy of Robert Anda and Vincent Felitti

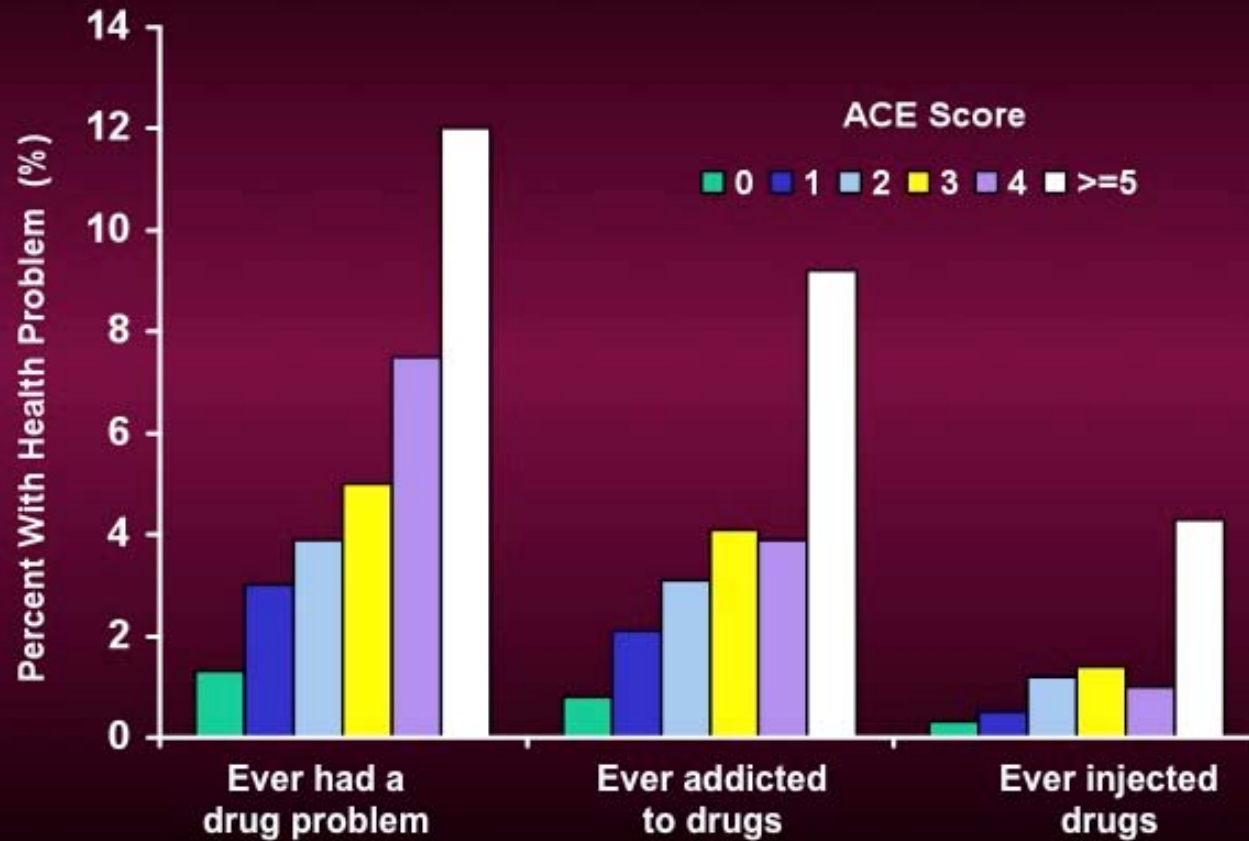
Information from the original ACE Study

Adverse Childhood Experiences and Current Smoking



Information from the original ACE Study

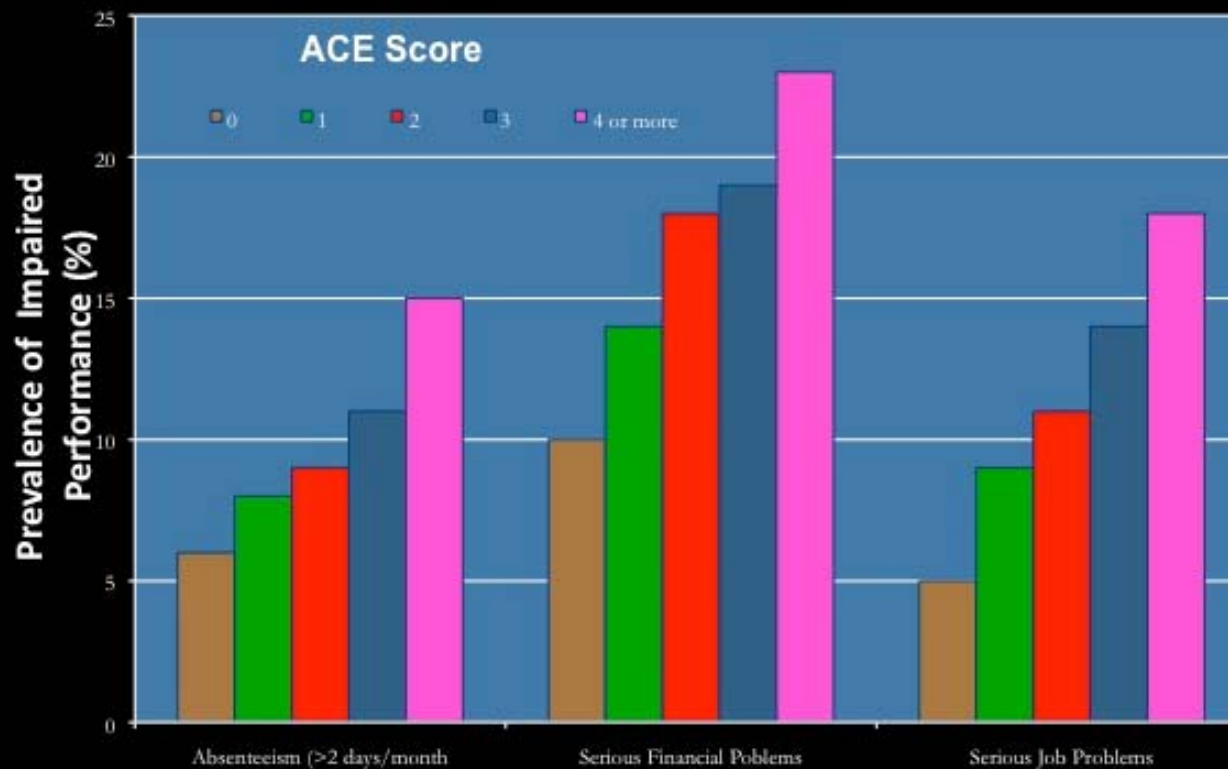
ACE Score and Drug Abuse



Slide courtesy of Robert Anda and Vincent Felitti

Information from the original ACE Study

ACE Score and Indicators of Impaired Worker Performance



Economic Burden

- The lifetime costs associated with child maltreatment alone have been estimated at **\$210,012 to \$1.8 million per child** due to associated health, behavioral health, educational impairments, increased involvement in criminal justice, child welfare, social welfare systems, and lost work productivity.
- Fang, X., Brown, D. S., Florence, C. S., & Mercy, J. A. (2012). The economic burden of child maltreatment in the United States and implications for prevention. *Child Abuse and Neglect*, 36(2), 156-165. doi:10.1016/j.chiabu.2011.10.006.
- Group, T. P. (2014). *An Assessment of the Economic Cost of Child Maltreatment*. Waco, TX: The Perryman Group.

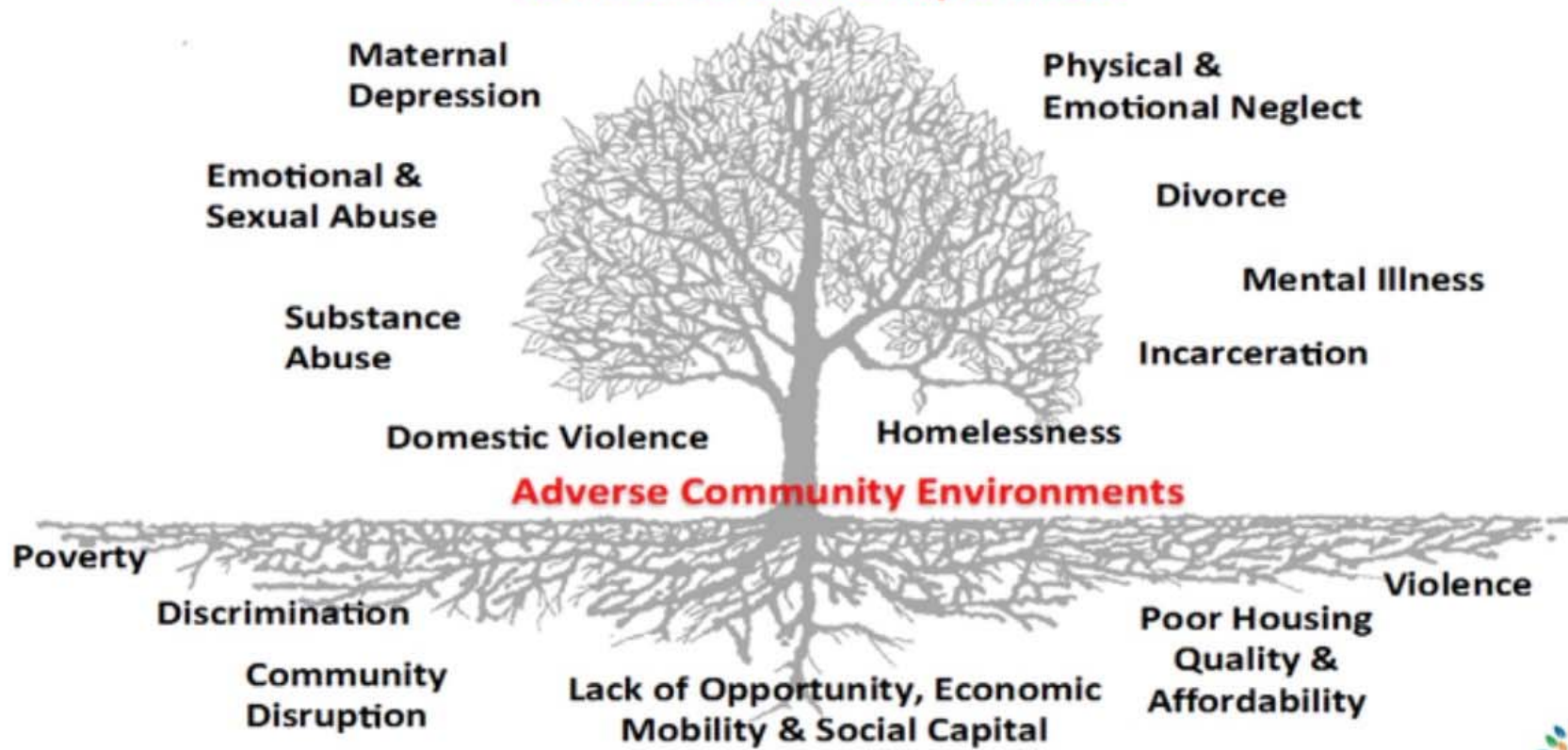
Reduction in Annual Earnings from Selected Health Events (2009 Dollars)



Fang X, et al. The economic burden of child maltreatment in the United States. Under review, 2011

The Pair of ACEs

Adverse Childhood Experiences



Ellis W., Dietz W. BCR Framework *Academic Peds* (2017)

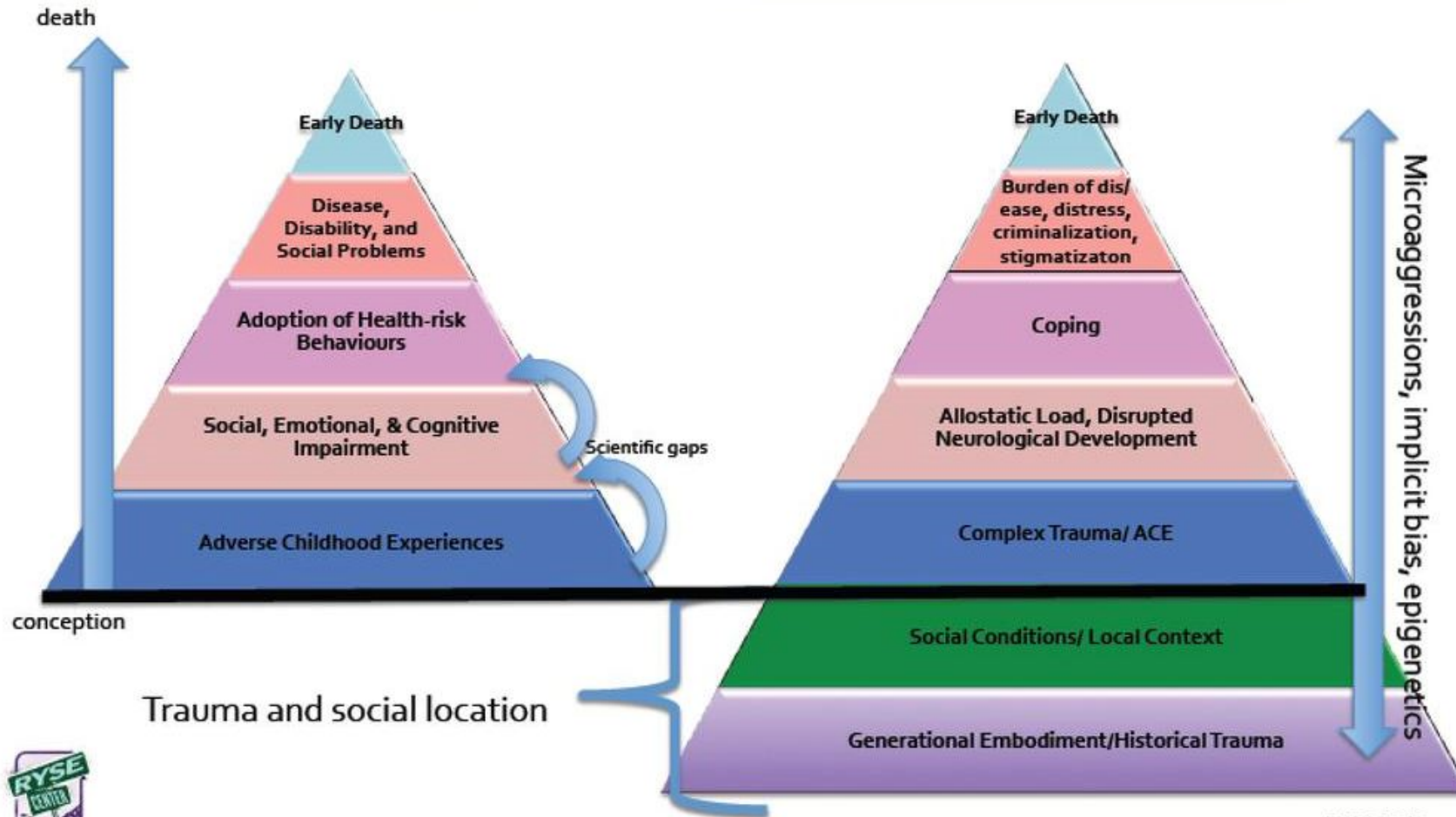


Building Community Resilience

Trauma and Social Location

Adverse Childhood Experiences

Historical Trauma/Embodiment



Traumatic Stress and Brain Alterations

- Traumatic stress is associated with increased cortisol and norepinephrine responses to subsequent stressors.
- Traumatic stress, particularly at sensitive periods of development, can be associated with lasting changes in certain brain areas.
- These brain alterations can predispose to addiction.

Clin Neurosci. 2006 Dec: Traumatic stress: effects on the brain [J. Douglas Bremner](#),



FACING ADDICTION IN AMERICA

*The Surgeon General's Report on
Alcohol, Drugs, and Health*

U.S. Department of Health & Human Services

Key Findings: The Neurobiology of Substance Use, Misuse, and Addiction

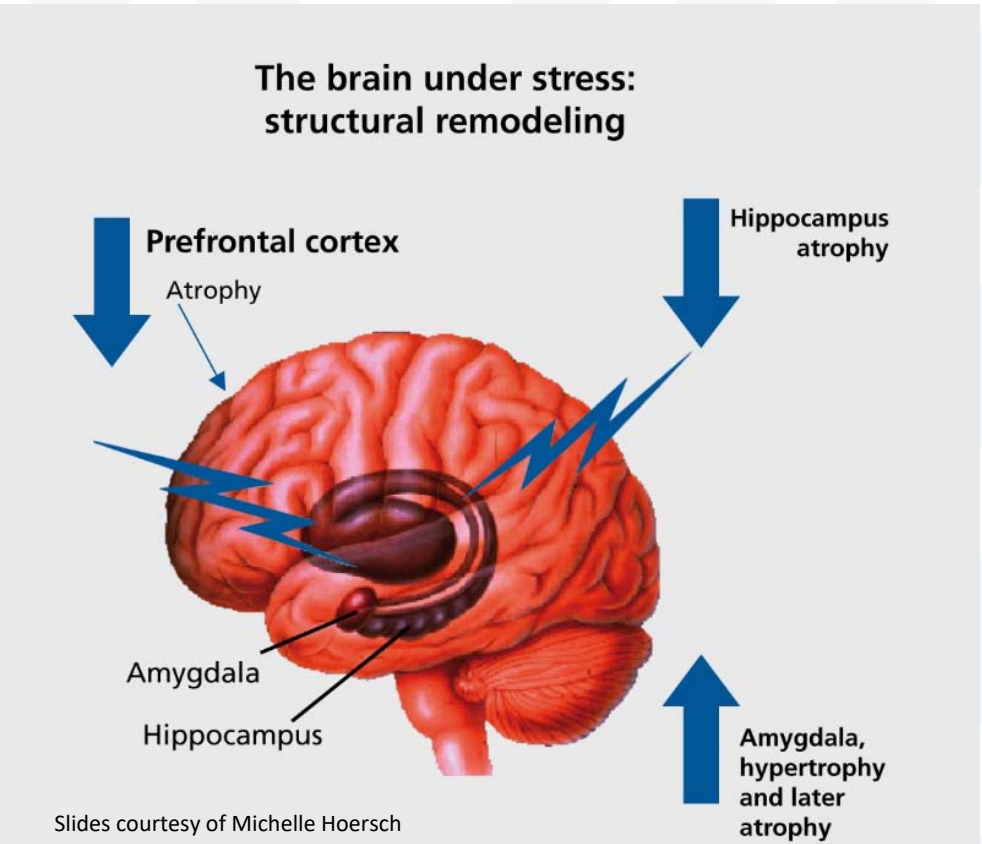
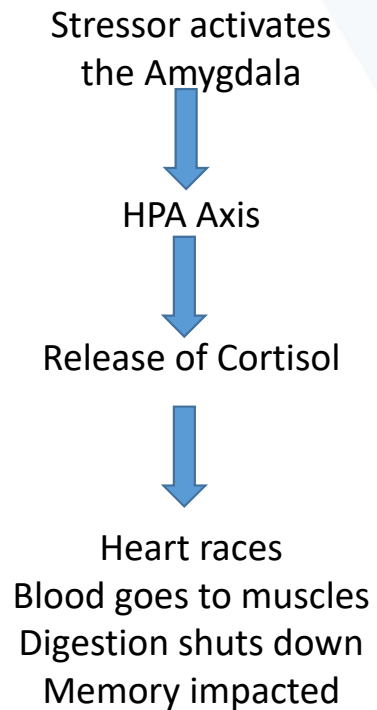
Disruptions in three areas of the brain are particularly important in the onset, development, and maintenance of substance use disorders:

the basal ganglia

the extended amygdala

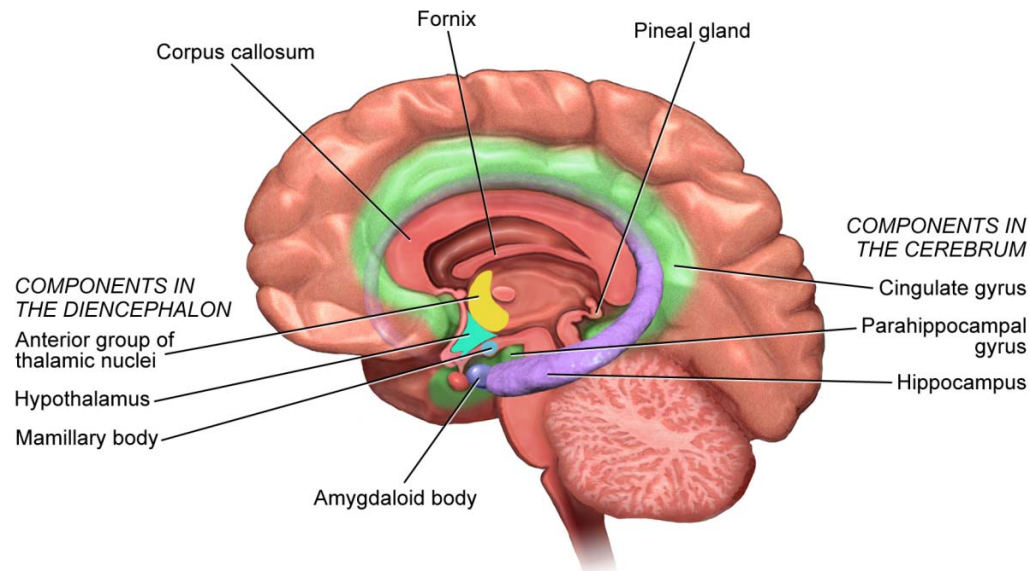
the prefrontal cortex

Traumatic Stress Impact on Brain



Neurophysiology of Trauma

The Limbic System



Fight – Flight – Freeze

Involved in:

- Learning
- Memory
- Reward
- Reinforcement

Regulates:

- Hormones
- Mood
- Heartbeat
- Sexual Behavior

Slides courtesy of Michelle Hoersch

Epigenetics: Sperm-transmitted stress in Children

- 2018 study: Tufts University
- Exposure to early life trauma can elevate risk for poor physical and mental health in individuals and their children.
- Some of the vulnerability in children may derive from stress-associated reductions in microRNAs in their father's sperm
- 28 Caucasian male volunteers, the expression of two highly related sperm miRNAs, miR-449 and miR-34, were inversely proportional to the men's ACE scores.
- Men with the most extensive early abuse (highest ACE scores) had as much as a 300-fold reduction in the two sperm miRNAs compared to men with the least abuse.
- [Exodus 34:7](#) ESV- “Keeping steadfast love for thousands, forgiving iniquity and transgression and sin, but who will by no means clear the guilty, visiting the iniquity of the fathers on the children and the children's children, to the third and the fourth generation.”
- Dickson, D.A., Paulus, J.K., Mensah, V., Lem, J., Saavedra-Rodriguez, L., Gentry, A., Pagidas, K., and Feig, L. A. **Reduced levels of miRNAs 449 and 34 in sperm of mice and men exposed to early life stress.** *Translational Psychiatry*, 2018 DOI: [10.1038/s41398-018-0146-2](https://doi.org/10.1038/s41398-018-0146-2)

Correlation: Opioid/Heroin Use and ACEs

- 1998 ACE study Kaiser Permanente and CDC
 - People with ACE ≥ 3 : much greater likelihood of engaging in substance abuse, domestic violence and suicidal attempts, were more likely to be obese, to have dropped out of school, be divorced and to have diabetes, cancer and heart disease. ACE ≥ 6 : 4600% more likely to use intravenous drugs relative to ACE of zero.
- 2016 study
 - People with ACE ≥ 5 , were 3x more likely to misuse prescription pain medication and 5x more likely to engage in injection drug use.
- 2009 study
 - over 80% of patients seeking treatment for opioid addiction had at least one form of childhood trauma, with almost 2/3 reporting having witnessed violence in childhood.
- Felitti, V.J. (2003) The origins of addiction: Evidence from the Adverse Childhood Experiences study. *Praxis der Kinderpsychologie und Kinderpsychiatrie*, 52, 547 – 559.
- Quinn, K., Boone, L., Scheidell, J.D., Mateau-Gelabert, P., Mcgorray, S.Sp., Beharie, N., Cottler, L.B, and Kahn, M.R (2016) The relationship of childhood trauma and adult prescription pain reliever misuse and injection drug use. *Drug and Alcohol Dependence*, 169, 190-198.
- Sansone, R.A., Whitecar, P., and Wiederman, M.W. (2009) The prevalence of childhood trauma among those seeking buprenorphine treatment. *Journal of Addictive Diseases*, 28(1), 64-67.

KCHD Survey

- Distributed via press (newspaper, television, radio, web) and e-mail.
- Conducted via web-based tool from November 12-28, 2015.
- Purpose: to open a discussion on the role of adverse childhood experiences (ACEs) on our major public health problems through a snapshot survey. Not intended to be a full community cross-section.

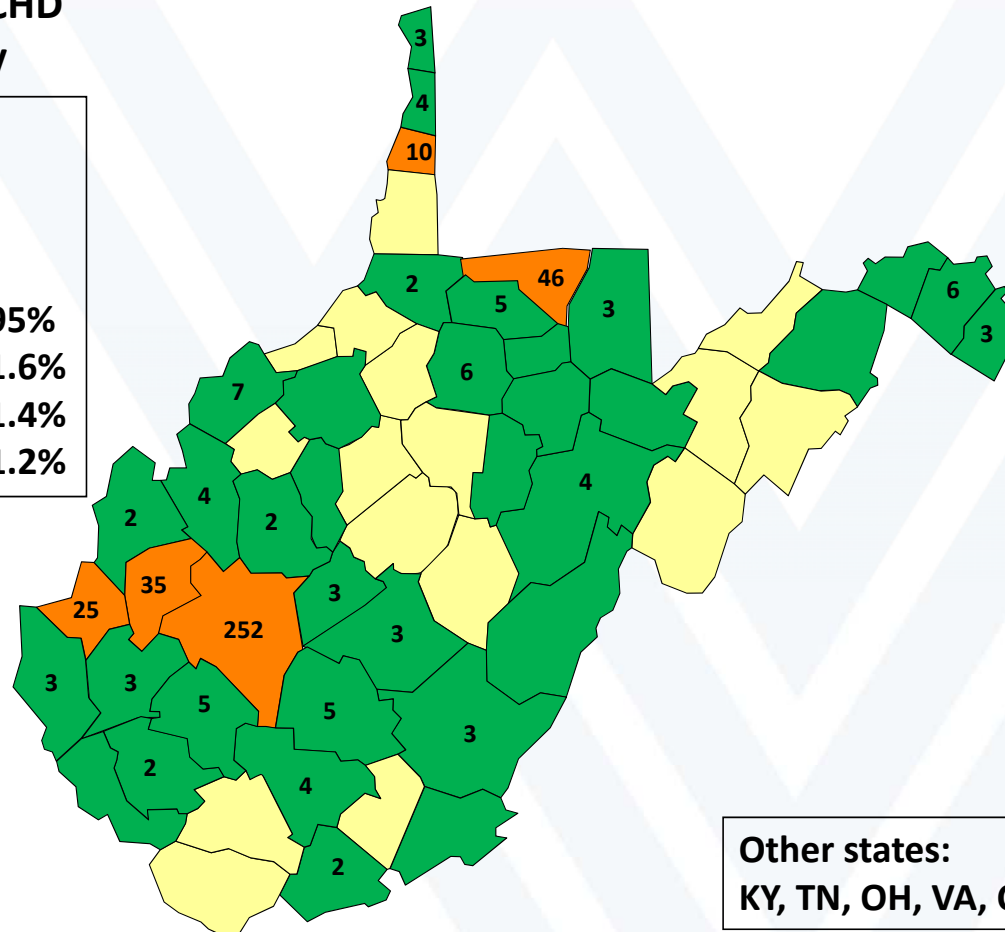
Important Points

- Relevance of ACEs to public health problems. What this means and what it doesn't mean.
- Think of ACE score the social equivalent of cholesterol level
 - **Drug and alcohol use can happen in families with an ACE score of zero.**
 - **We do not want people to blame or shame parents for these issues.**
 - **On a population level, there is a clear correlation and biological connection between ACEs and health outcomes in adults.**

Results from the KCHD Informal Survey

Respondents: N= 506
Female 76%
Male 24%

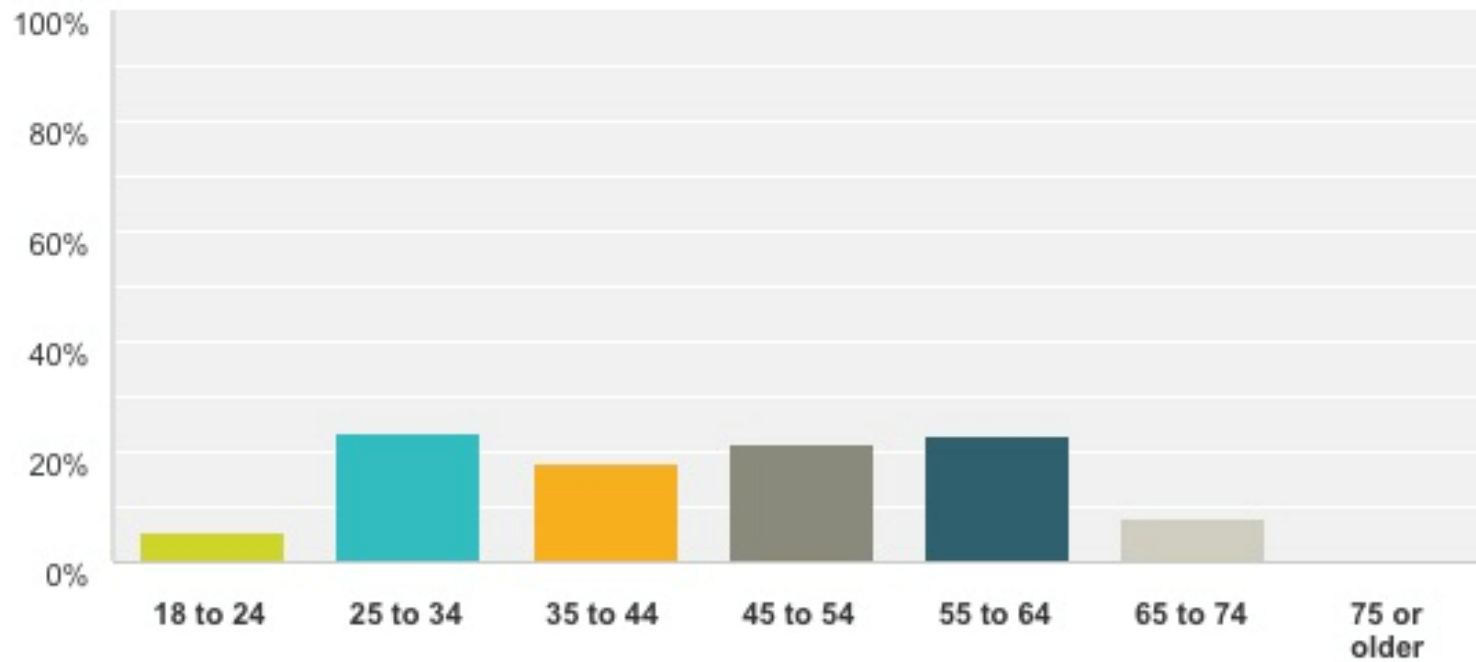
White	95%
African American	1.6%
Native American	1.4%
Asian/PI	1.2%



Other states:
KY, TN, OH, VA, CA, MI

What is your age?

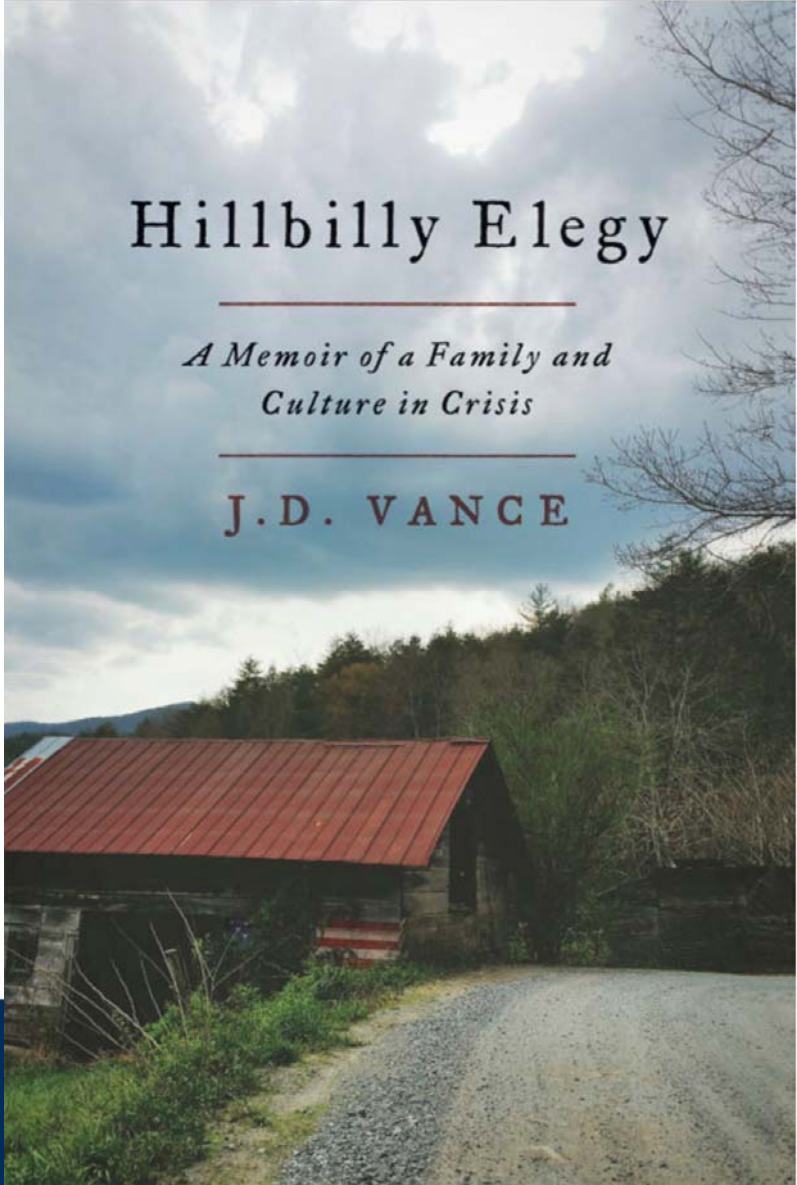
Answered: 502 Skipped: 4



Summary statistics from ACE

Number of Adverse Childhood Experiences (ACE Score)	Women	Men	Total
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

- 72% of patients reported at least one ACE event
- Over 1 in 4 patients had a score of 4 or more
- ACEs are extremely common and relevant to the public health problems



Hillbilly Elogy

*A Memoir of a Family and
Culture in Crisis*

J. D. VANCE

ACE Category*		Total (N = 17,337)	HRC N = 199
<u>Abuse</u>			
	<u>Emotional Abuse</u>	10.6	34
	<u>Physical Abuse</u>	28.3	30
	<u>Sexual Abuse</u>	20.7	20
<u>Neglect</u>			
	<u>Emotional Neglect¹</u>	14.8	36
	<u>Physical Neglect¹</u>	9.9	19
<u>Household Dysfunction</u>			
	<u>Mother Treated Violently</u>	12.7	26
	<u>Household Substance Abuse</u>	26.9	53
	<u>Household Mental Illness</u>	19.4	31
	<u>Parental Separation or Divorce</u>	23.3	39
	<u>Incarcerated Household Member</u>	4.7	28

Comparison between the original ACE study and our survey results

Summary statistics from ACE

Number of Adverse Childhood Experiences (ACE Score)	Women	Men	Total	HRC N=199
0	34.5	38.0	36.1	33.7
1	24.5	27.9	26.0	12.6
2	15.5	16.4	15.9	6.5
3	10.3	8.6	9.5	8.0
4 or more	15.2	9.2	12.5	39.2

- 66% of patients reported at least one ACE event
- 39% patients had a score of 4 or more
- ACEs are more common and severe among patients in the Harm Reduction Clinic than in the referent population.

ACEs in Children: 2016 National Survey of Children's Health

TABLE 1: National and Across-State Prevalence of ACEs among Children and Youth

Adverse Childhood Experiences (ACEs)	National Prevalence, by Age of Child				Range Across States
	All Children	Age 0-5	Age 6-11	Age 12-17	
Child had ≥ 1 Adverse Childhood Experience	46.3%	35.0%	47.6%	55.7%	38.1% (MN) – 55.9% (AR)
Child had ≥ 2 Adverse Childhood Experiences	21.7%	12.1%	22.6%	29.9%	15.0% (NY) – 30.6% (AZ)
Nine assessed on the 2016 NSCH¹					% with 1+ Additional ACEs
Somewhat often/very often hard to get by on income*	25.5%	24.1%	25.7%	26.5%	54.4%
Parent/guardian divorced or separated	25.0%	12.8%	27.5%	34.2%	68.0%
Parent/guardian died	3.3%	1.2%	2.9%	5.9%	74.7%
Parent/guardian served time in jail	8.2%	4.5%	9.2%	10.6%	90.6%
Saw or heard violence in the home	5.7%	3.0%	6.1%	8.0%	95.4%
Victim of violence or witnessed neighborhood violence	3.9%	1.2%	3.7%	6.5%	92.1%
Lived with anyone mentally ill, suicidal, or depressed	7.8%	4.4%	8.6%	10.3%	82.4%
Lived with anyone with alcohol or drug problem	9.0%	5.0%	9.3%	12.7%	90.7%
Often treated or judged unfairly due to race/ethnicity**	3.7%	1.2%	4.1%	5.7%	75.3%

*47% of children in households with poverty level incomes have parents who reported "often hard to get by on income". **1 in 10 black and "other" race/ethnicity children had parents who reported their children often were treated or judged unfairly. 4.4% of Hispanic and Asian/Non-Hispanic children had parents who reported this (1% for white children)

Citation: Bethell, CD, Davis, MB, Gombojav, N, Stumbo, S, Powers, K. Issue Brief: A national and across state profile on adverse childhood experiences among children and possibilities to heal and thrive. Johns Hopkins Bloomberg School of Public Health, October 2017. <http://www.cahmi.org/projects/adverse-childhood-experiences-aces/>

ACEs in Children: 2016 National Survey of Children's Health

TABLE 2: Prevalence of ACEs by Race/Ethnicity and Income

	All Children	White, NH*	Hispanic	Black, NH*	Asian, NH*	Other, NH*
% of all US children		51.9%	24.5%	12.7%	4.5%	6.3%
% 1+ ACEs	46.3%	40.9%	51.4%	63.7%	25.0%	51.5%
% 2+ ACEs	21.7%	19.2%	21.9%	33.8%	6.4%	28.3%
% among children with 1+ ACEs		46.0%	27.0%	17.4%	2.4%	7.1%
Income < 200% of Federal Poverty Level (43.7% of all US children; 58% of children with 1+ ACEs)						
% 1+ ACEs	61.9%	63.3%	57.0%	70.5%	36.4%	70.6%
% 2+ ACEs	31.9%	34.7%	25.1%	39.9%	9.0%	44.4%
Income 200-399% of Federal Poverty Level (26.8% of all US Children; 25.1% of children with 1+ ACEs)						
% 1+ ACEs	43.2%	39.7%	46.8%	59.1%	24.8%	50.7%
% 2+ ACEs	19.0%	17.2%	19.8%	29.4%	7.0%	24.5%
Income ≥ 400% of Federal Poverty Level (29.5% of all US Children; 17.0% of children with 1+ ACEs)						
% 1+ ACEs	26.4%	24.4%	35.5%	41.2%	14.3%	27.3%
% 2+ ACEs	9.2%	8.6%	12.1%	14.1%	3.6%	10.5%

*NH=Non-Hispanic

Citation: Bethell, CD, Davis, MB, Gombojav, N, Stumbo, S, Powers, K. Issue Brief: A national and across state profile on adverse childhood experiences among children and possibilities to heal and thrive. Johns Hopkins Bloomberg School of Public Health, October 2017. <http://www.cahmi.org/projects/adverse-childhood-experiences-aces/>

SOCIAL AND EMOTIONAL CHALLENGES COMPOUNDED

- Compared to those with no ACEs, children ages 3-5 with 2+ ACEs are over four times more likely to have three or more of the six social and emotional challenges that can impact learning listed in Figure 1.
- About two-thirds of children ages 6-17 who bully, pick on, or exclude other children—or are themselves bullied, picked on, or excluded—have ACEs.¹¹

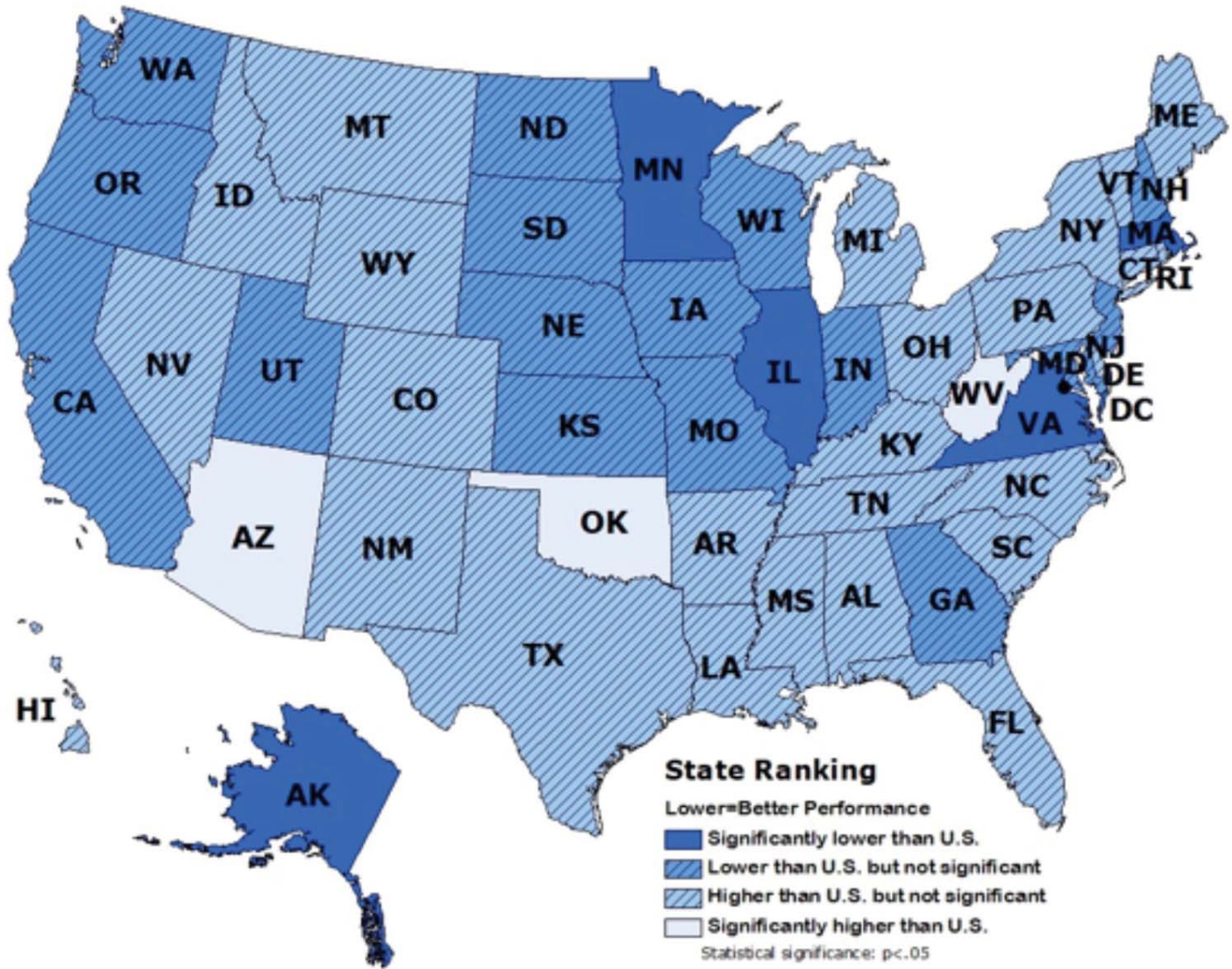
SCHOOL SUCCESS IMPACTED

- More than three in four (76.3 percent) U.S. children ages 3-5 who were expelled (“asked to stay home”) from preschool had ACEs.
- Children ages 6-17 with no ACEs are half as likely to be disengaged in school compared to those with 2+ ACEs (24.1 percent vs. 49.0 percent).¹¹



Percent of Children Age 0-5 with One or More Adverse Childhood Experiences in the US

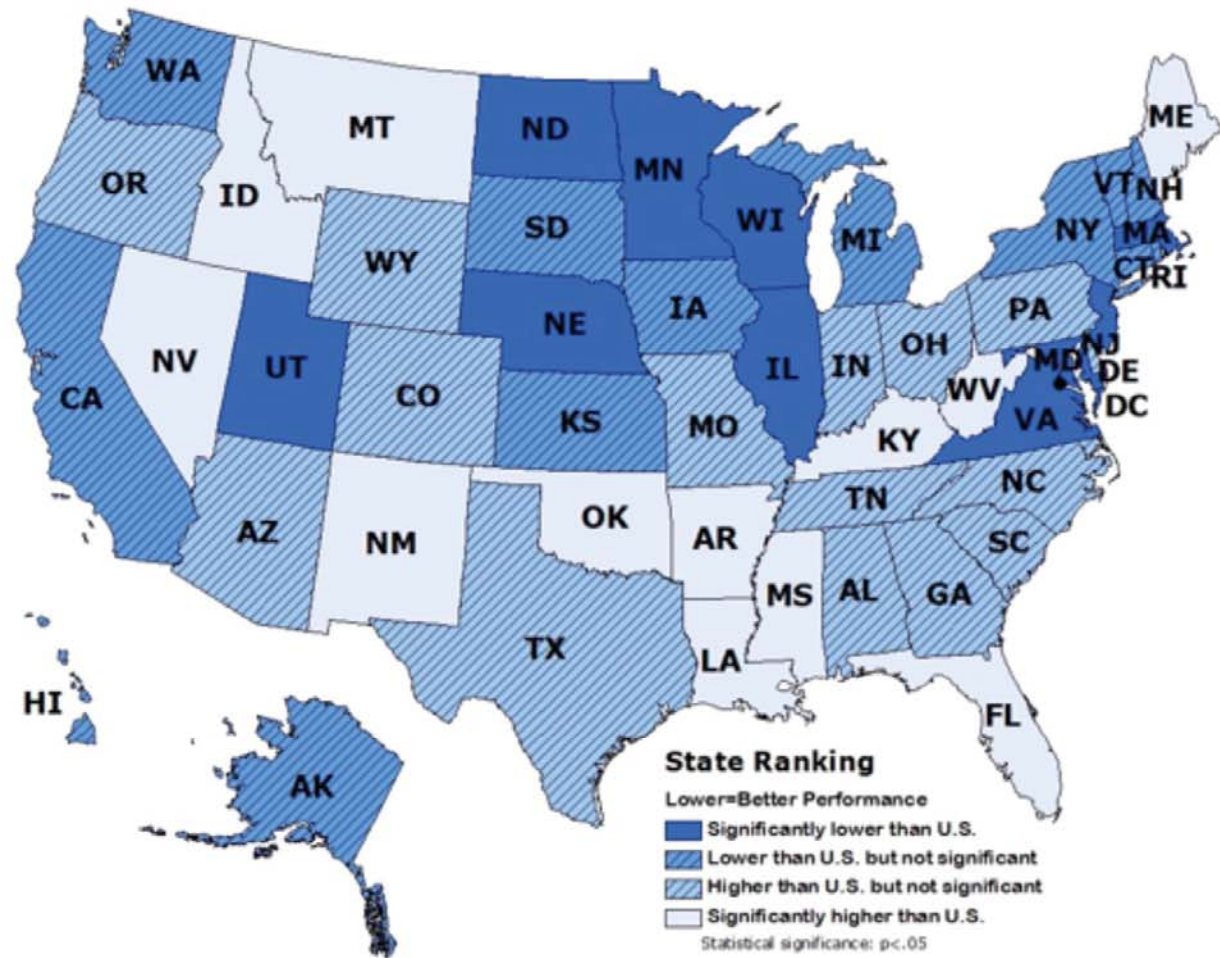
Nationwide: 35.0%
State Range: 23.1%–49.1%



Percent of Children Age 0-17 with One or More Adverse Childhood Experiences in the US

Nationwide: 46.3%

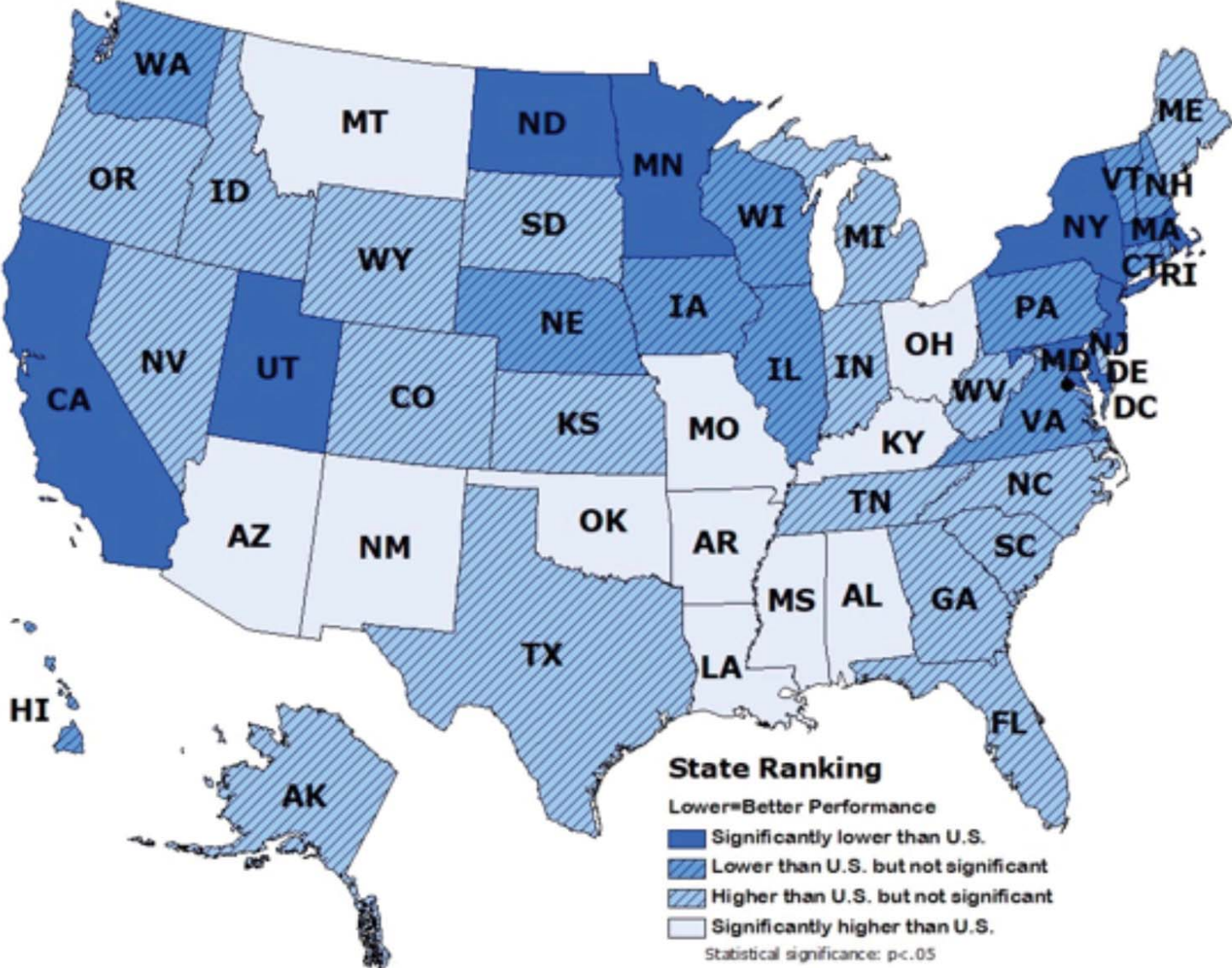
State Range: 38.1%–55.9%



Citation: Bethell, CD, Davis, MB, Gombojav, N, Stumbo, S, Powers, K. Issue Brief: A national and across state profile on adverse childhood experiences among children and possibilities to heal and thrive. Johns Hopkins Bloomberg School of Public Health, October 2017. <http://www.cahmi.org/projects/adverse-childhood-experiences-aces/>

Percent of Children Age 0-17 or with Two More Adverse Childhood Experiences in the US

Nationwide: 21.7%
State Range: 15.0%–30.6%



ABUSE



Physical



Emotional



Sexual

NEGLECT



Physical



Emotional

HOUSEHOLD DYSFUNCTION



Mental Illness



Mother treated violently



Divorce



Incarcerated Relative



Substance Abuse

Evidenced-based Interventions

Effective preventive interventions reduce exposure to adversity and strengthen resilience to adverse circumstances

Home Visiting Programs effective at reducing child abuse, neglect, and domestic violence and improving health outcomes for children and parents

Nurse Family Partnership (NFP)

- **48%** Reduction in rates of abuse and neglect
- **56%** Reduction in emergency room visits
- **79%** Reduction in children days hospitalized with injuries and ingestions during first two years of life

• *Olds D, Eckenrode J, Henderson C, Kitzman H, Powers, J, Cole R, Sidora K, Morris P, Pettitt L, Luckey D. (1997)*

• *Olds DL, Henderson CR Jr., Chamberlin R, Tatelbaum R. (1986)*

• *Kitzman H, Olds DL, Henderson CR Jr., Hanks C, Cole R, Tatelbaum R. (1997)*

Slides courtesy of Michelle Hoersch

Evidenced-based Interventions

The Positive Parenting Program (Triple P)

- Intervention provides parents with tools to raise healthier children and deal with stressors
- Demonstrated to reduce rates of child maltreatment by **over 20%**
- Decreased out of home placements and childhood injuries

Prinz, R.J., Sanders, M.R., Shapiro, C.J., Whitaker, D.J. & Lutzker, J.R. (2009)

Slides courtesy of Michelle Hoersch

Evidenced-based Interventions

Parent Child Interaction Therapy

- Tool to assist parents improve quality of parent-child interaction and relationship
- Shown to reduce child abuse in participants (19% reported abuse) versus individuals in the control conditions (49% reported abuse) at a median follow-up of up of 850 days

Chaffin, M., Silovsky, J.F., Funderburk, B., Valle, L.A., Brestan, E.V., Balachova, T., Jackson, S., Lensgraf, J., & Bonner, B.L. (2004)

Slides courtesy of Michelle Hoersch

Non-pharmacologic practices: Children and Adults

- Exercise
 - Regulation of HR and BP
 - Regulation of the hypothalamic-pituitary axis (HPA)
 - Decrease depression and anxiety
 - Regulation of cerebral neurotransmitters including dopamine and serotonin
 - Endorphin release
- Mindfulness-based awareness training
 - Regulation of HR, BP, and HPA
 - Anti-inflammatory effects
 - Decreases depression and anxiety
 - Decrease post-traumatic symptoms

Dr. Nadine Burke-Harris, The Center for Youth Wellness, October 23, 2015

Bottom lines

- ACEs are common but often completely overlooked.
- What is overlooked in the exam room, the classroom, and other places shows up in courts, emergency departments, and on the streets.
- Shifting the dialogue from “What’s wrong with them?” to “What happened to them?”
- Shifting the perspective from judgment to compassion.