

Childhood Stress and Urban Poverty: The Impact of Adverse Childhood Experiences on Health

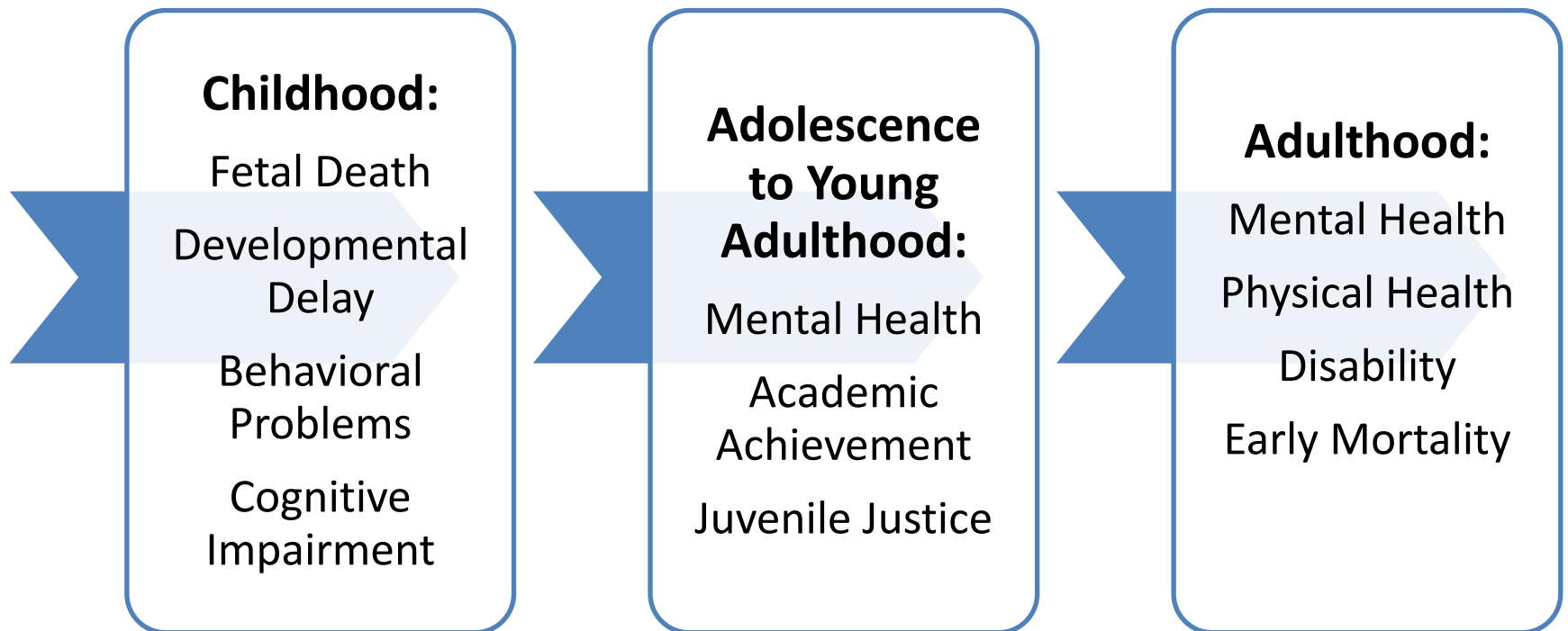
Building Strong Brains - Tennessee's ACEs Initiative
The Science of Early Childhood Adversity
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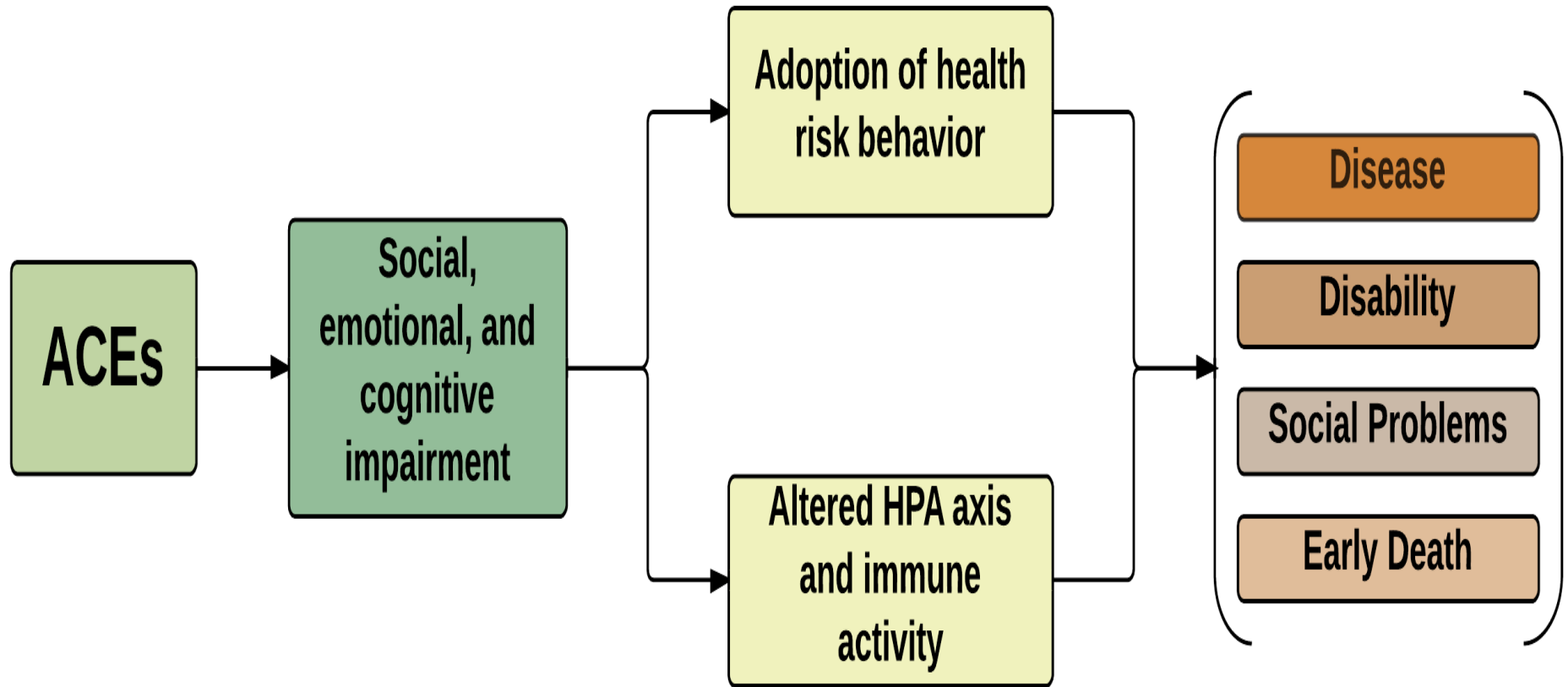
Overview

- The Adverse Childhood Experience Study
- Approaches to Addressing Toxic Stress
- The Philadelphia Adverse Childhood Experience Study
- Youth Informed Approaches to Addressing ACEs

Outcomes Associated with Adverse Childhood Experiences: A Life Course Perspective



How Does Childhood Stress Get Under the Skin?



Adverse Childhood Experience Study

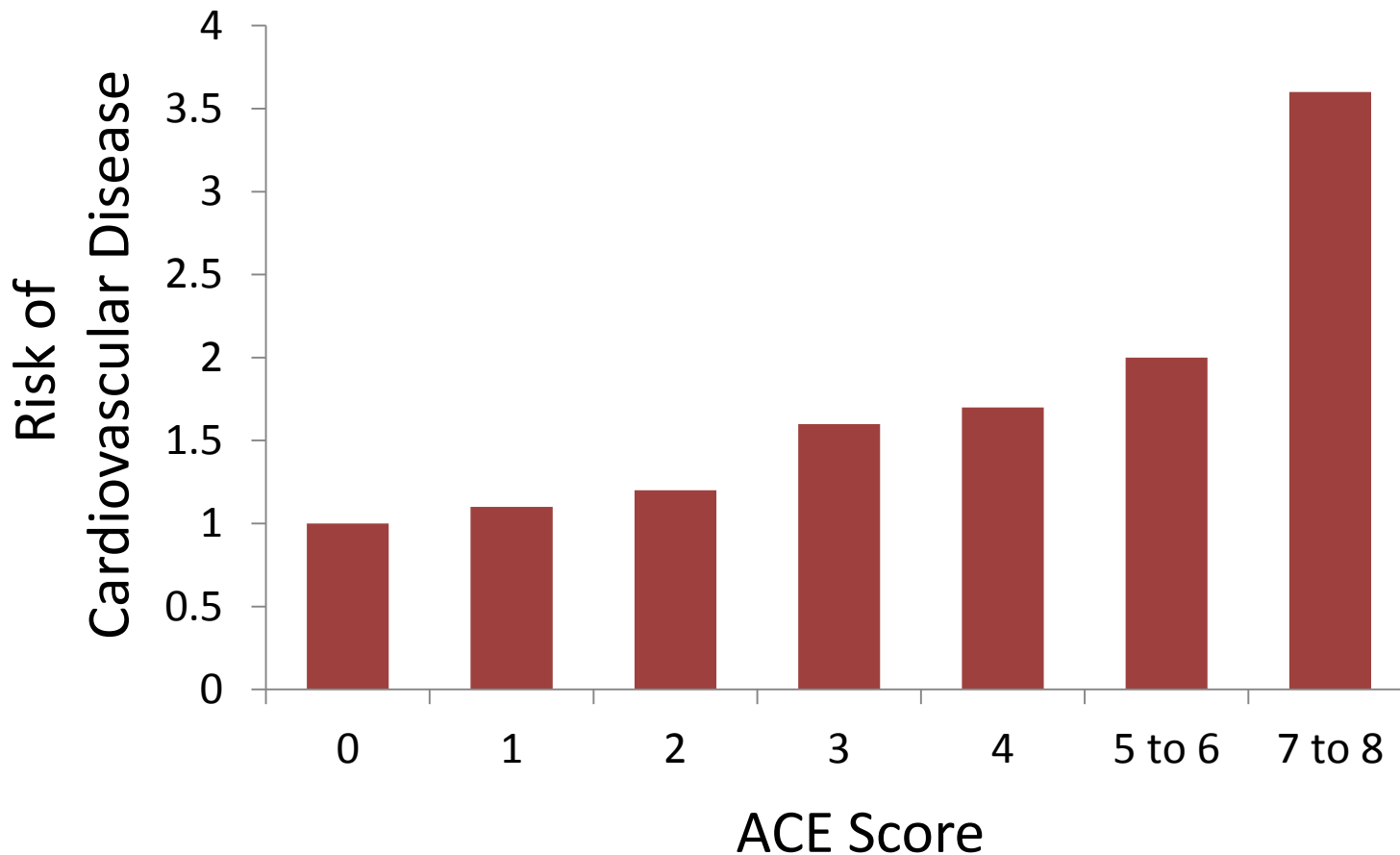
- Published by CDC/Kaiser in 1998
- Surveyed 17,000 policy holders
- Understand relationship between childhood adversity & adult health outcomes

Childhood Exposure	Subcategory
Abuse	Psychological
	Physical
	Sexual
Household dysfunction	Substance abuse
	Mental illness
	Intimate partner violence
	Criminal behavior
	Divorce
Neglect	Emotional
	Physical

Adapted from Felitti et al., 1998

Graded Relationship Between ACE Score and Cardiovascular Disease

Association between ACE Score and Risk for Cardiovascular Disease



Graded Relationship Between ACE Score and Health Outcomes

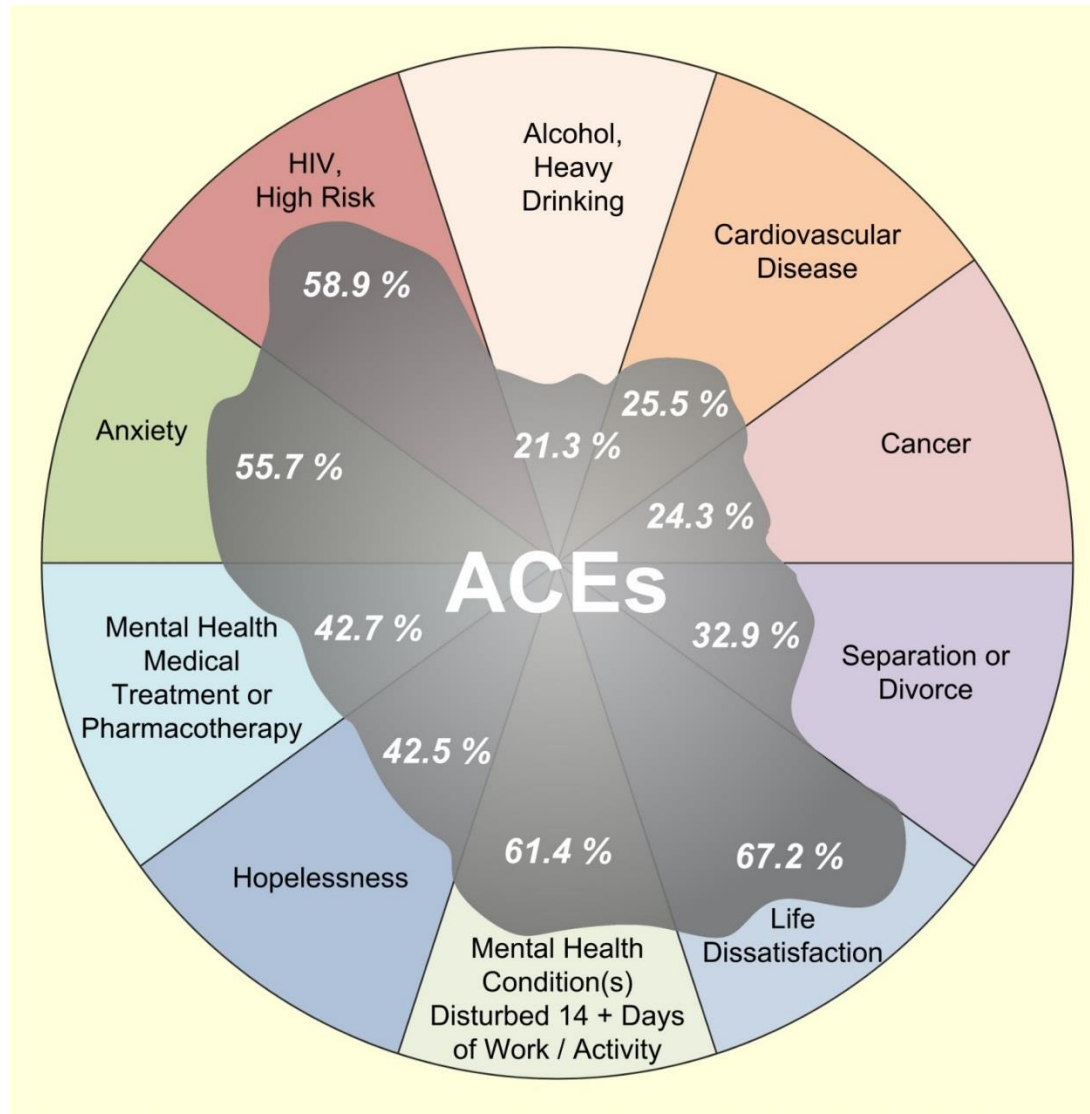
Health Risk Behaviors	Mental Health Conditions	Physical Health Conditions
Smoking	Depression	Cardiovascular Disease
		Diabetes
Alcohol Abuse	Anxiety	Emphysema
	PTSD	Cancer
Drug Abuse/Illicit Drug Use	Hallucinations	Obesity
		Liver Disease
		Headaches
High Risk Sexual Behavior	Suicide	Autoimmune Disease
		Sexually Transmitted Infections
		Self-Reported Health Disability
		Fetal Death

Health outcomes highlighted in red are among the top ten leading causes of death in the US

Individuals with 4 or More ACEs are at Highest Risk for Poor Outcomes

- 4- to 12-fold increased risk for health risk behaviors
- 1.4- to 1.6-fold increased risk for adult diseases

Population Attributable Risk of ACEs

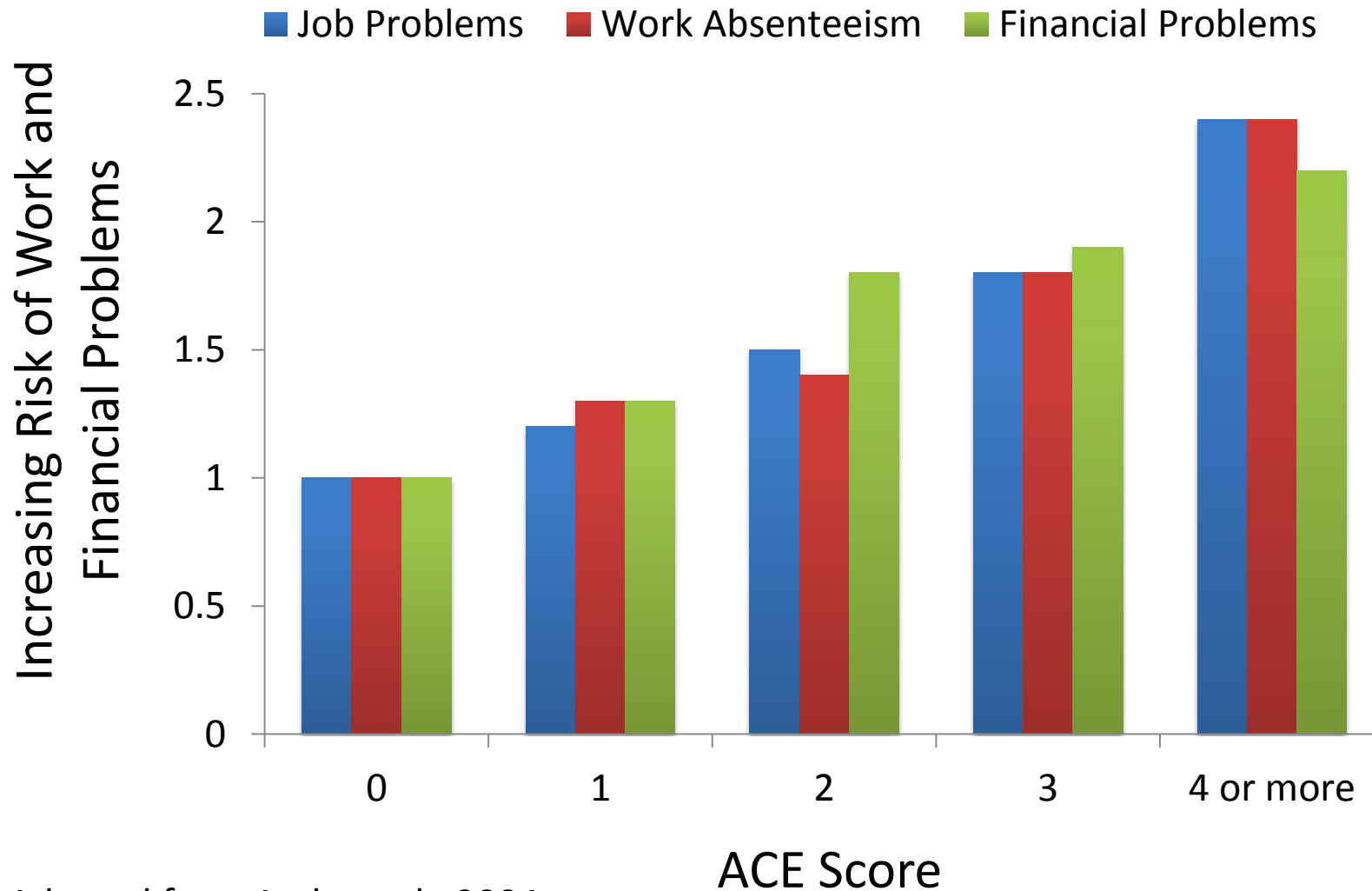


ACEs are Interrelated

ACE Category	Additional ACEs (%)						
	0	≥1	≥2	≥3	≥4	≥5	≥6
Emotional Abuse	2	98	90	77	62	42	25
Physical Abuse	17	83	64	46	32	20	12
Sexual Abuse	22	78	58	42	29	19	12
Emotional Neglect	7	93	79	63	47	32	19
Physical Neglect	11	89	75	61	50	37	24
Parental Separation or Divorce	18	82	61	43	30	19	12
Household Substance Abuse	19	81	60	41	29	18	11
Household Mental Illness	16	84	65	48	34	21	13
Domestic Violence	5	95	82	64	48	32	20
Incarcerated Care Provider	10	90	74	56	43	30	23

Adapted from Dong et al, 2004

ACEs Impact Outcomes Across Different Sectors of Society



Adapted from Anda et al., 2004

Economic Costs Associated with ACEs

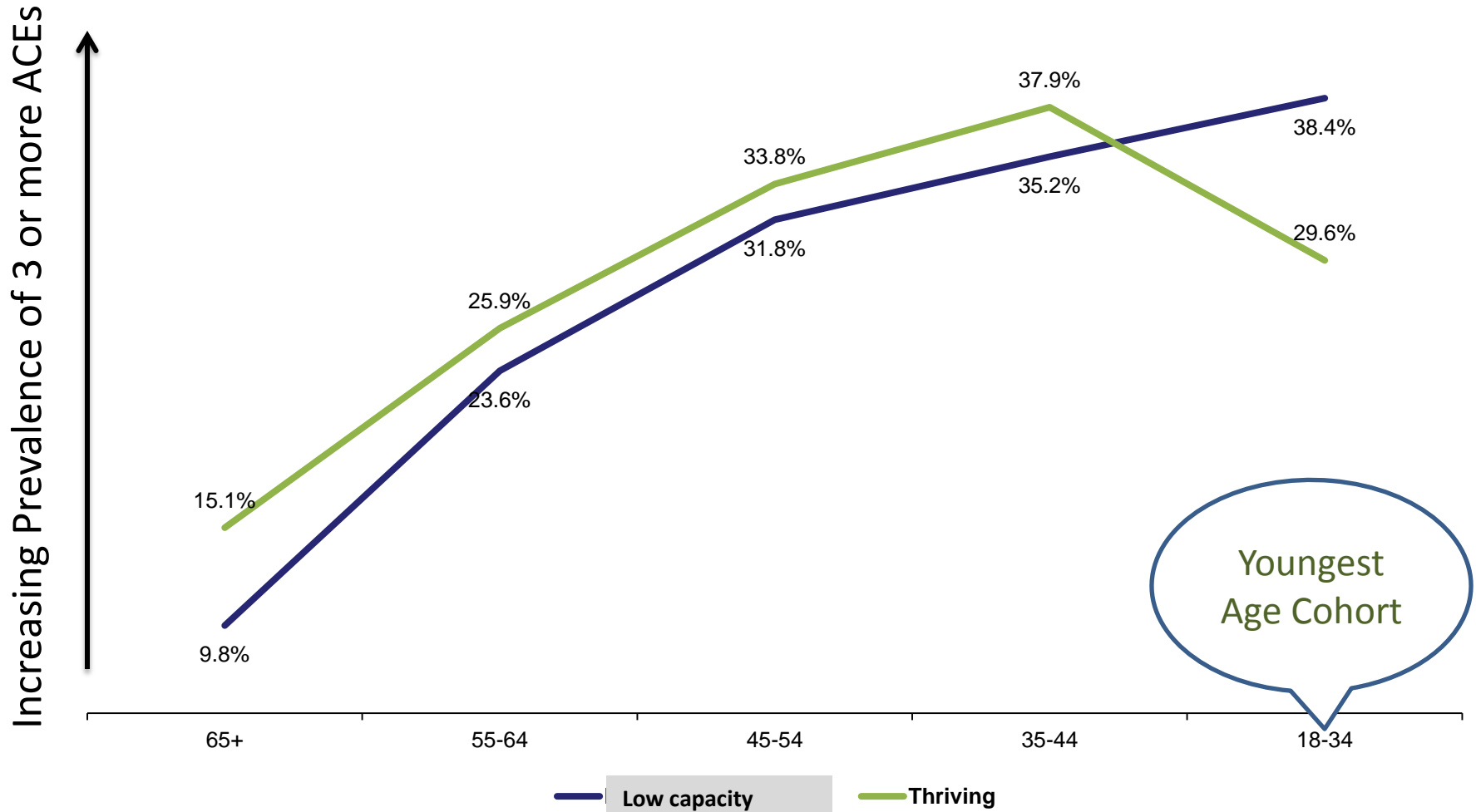
ACEs and Social Problems

- Job problems
- Work absenteeism
- Homelessness
- Exposure to violence
- Juvenile & criminal justice system involvement
- Poor academic achievement
- Residential mobility

Lifetime Economic Toll

- Total - \$124 billion
- Productivity loss - \$83.5 billion
- Health care - \$25 billion
- Special education - \$4.6 billion
- Child welfare - \$4.4 billion
- Criminal justice - \$3.9 billion

Transgenerational Transmission of ACEs



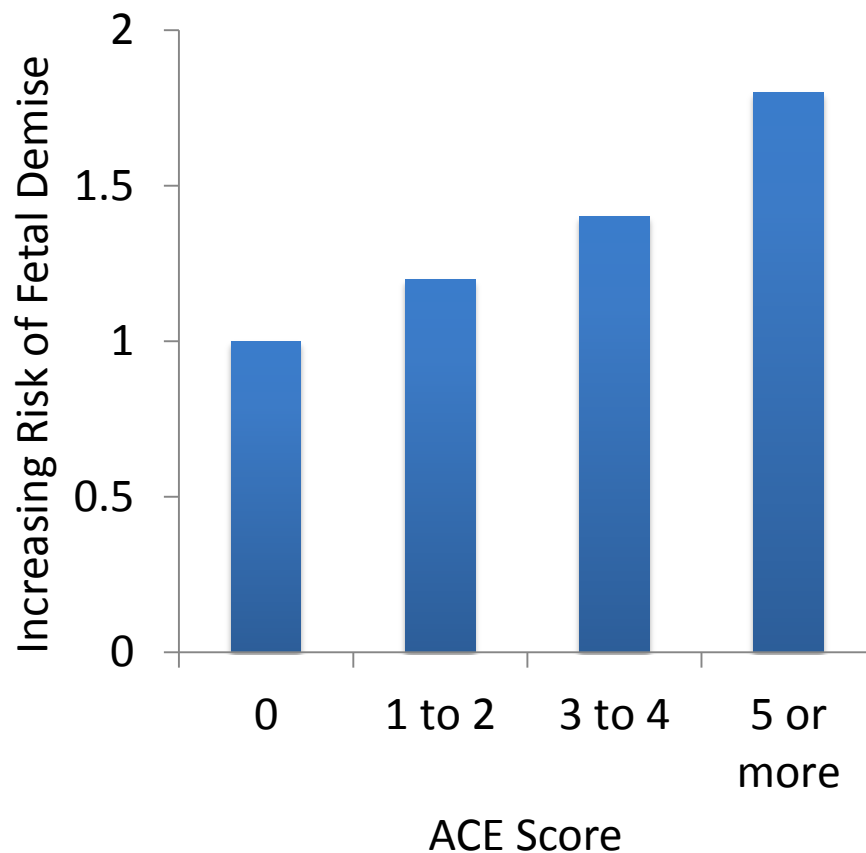
Adapted from Washington State Family Policy Council, 2011

ACEs are Associated Poor Pediatric Health Outcomes

Common Pediatric Conditions

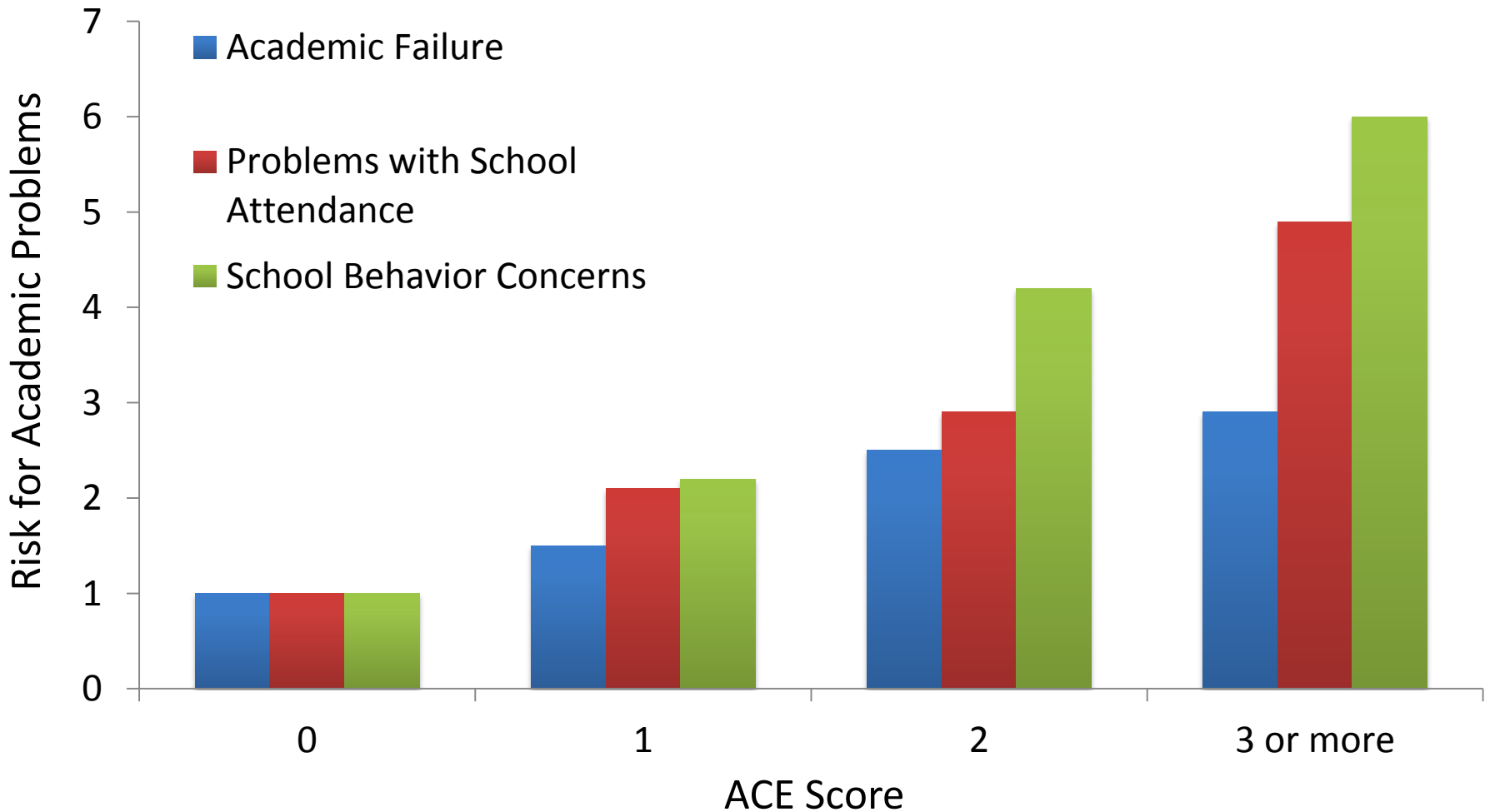
- Fetal death
- Developmental delay
- Cognitive impairment
- Behavioral problems
- Headaches
- Somatic complaints
- ADHD
- Adolescent pregnancy
- Early initiation of sexual activity and smoking

ACE Score and Risk of Fetal Demise After First Pregnancy



Adapted from Hillis et al., 2004

ACE Exposure Associated with Academic Problems



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Three Levels of Stress

Positive Stress:

Brief increases in heart rate, mild elevations in stress hormone levels

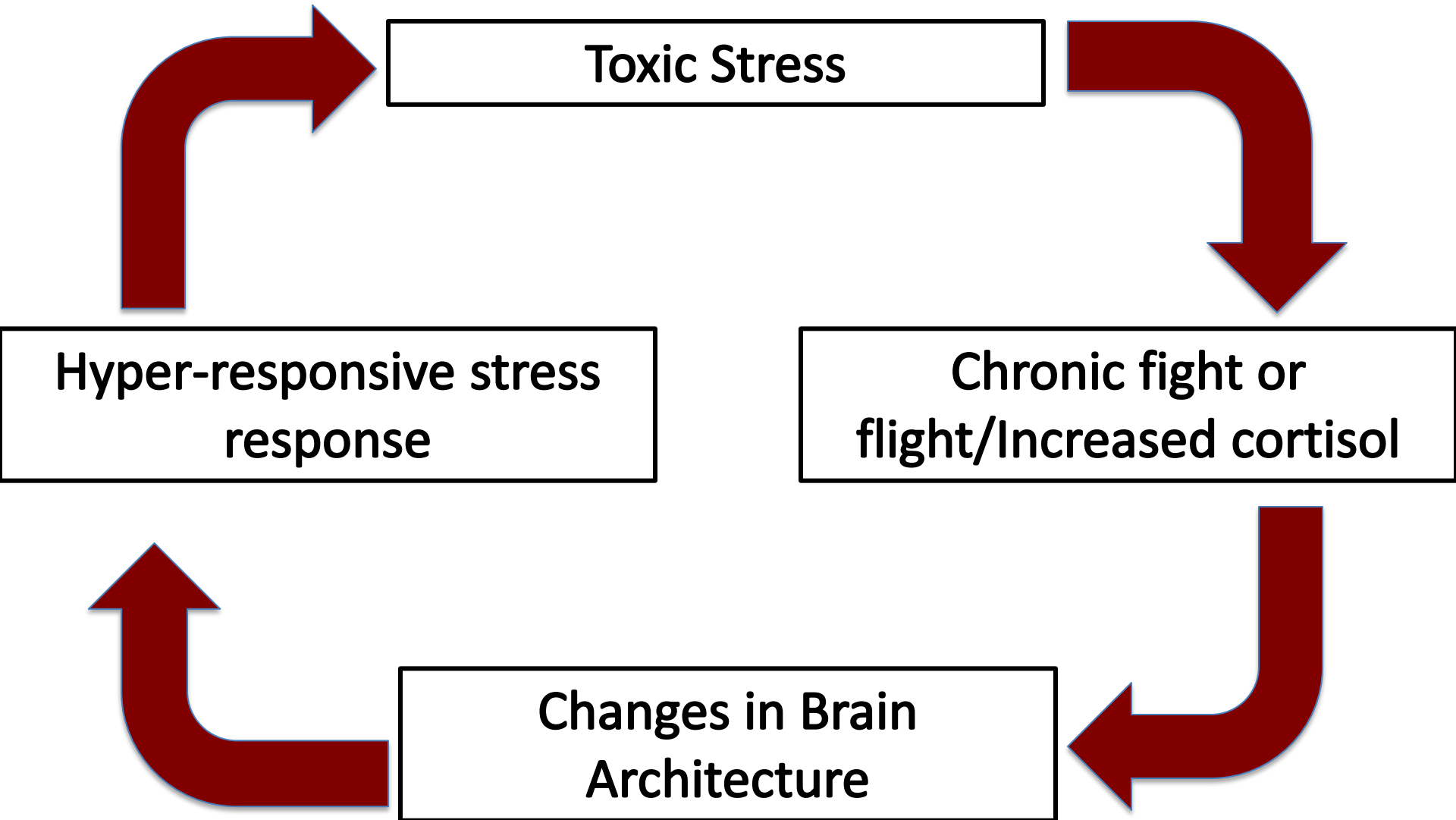
Tolerable Stress:

Serious, temporary stress responses buffered by supportive relationships

Toxic Stress:

Prolonged activation of stress response systems in the absence of protective relationships

Impact of Toxic Stress

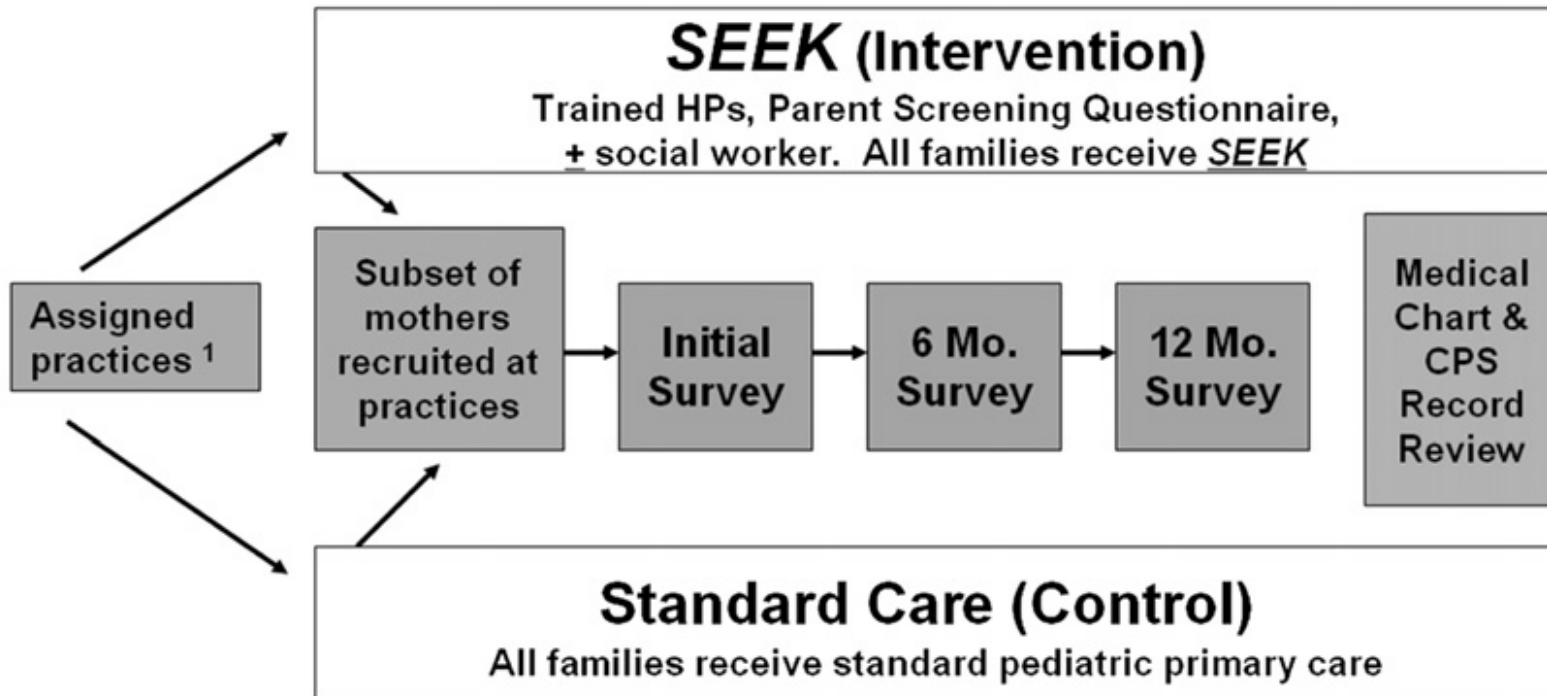


Breaking the Cycle of Trauma

Nurturing Supportive Relationships



The Safe Environment for Every Kid Model



Adapted from Dubowitz et al., 2012

Decreased CPS Reports and Physical Assault in SEEK Intervention Group

	Intervention (N = 308)	Control (N = 250)	Odds Ratio	p
Families With at Least 1 CPS Report, n(%)	41 (13.3)	48 (19.2)	1.5	0.045
Physical assault severe or very severe, Mean (SD)*	0.11 (0.75)	0.33 (1.96)	--	0.04

* Scores from Parent-Child Conflict Tactics Scale

- Health professionals endorsed increased comfort in screening and addressing risk factors for ACEs
- Intervention increased clinic screening rates for risk factors for ACEs – 25% increase
- Addressing patient psychosocial problems DID NOT require additional provider time
- Implementation of SEEK cost approximately \$5.12 per family

Strategies to Address Toxic Stress

- Parenting programs
 - Home Visiting programs
 - Parent Child Interaction Therapy
- Trauma Focused Cognitive Behavior Therapy
- Mindfulness training
- Promoting Non-Cognitive skills

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AAP Policy Statement on ACE

POLICY STATEMENT

Identifying children at high risk for toxic stress is the first step in providing targeted

the Role of
Science

... Pediatric practices have been asked to consider implementing standardized measures to identify other family- or community-level factors that put

... the AAP and others have encouraged pediatric providers to develop a screening schedule that uses age-appropriate, standardized tools to identify risk factors that are highly prevalent or relevant to their particular practice setting.

innovative strategies to reduce the precipitants of toxic stress in young children and to mitigate their negative effects on the course of development and health across the life span. *Pediatrics* 2012;129:e224–e231

ACE Study Population is not Representative of Urban Populations

Demographics	ACE Study	Philadelphia
Mean age	56	34
Race/ethnicity	79% White	45% White
	5% African American	44% African American
	5% Hispanic	14% Hispanic
High school graduates	94%	81%
College graduates	43%	24%
Percent below FPL	Not measured	27%

ACE Scale Can Be Improved by Adding Additional Adversities to the Measure

Original

- Emotional abuse
- Physical abuse
- Sexual abuse
- Physical neglect
- Emotional neglect
- Mother treated violently
- Household substance abuse
- Household mental illness
- **Incarcerated household member**
- **Parental separation or divorce**

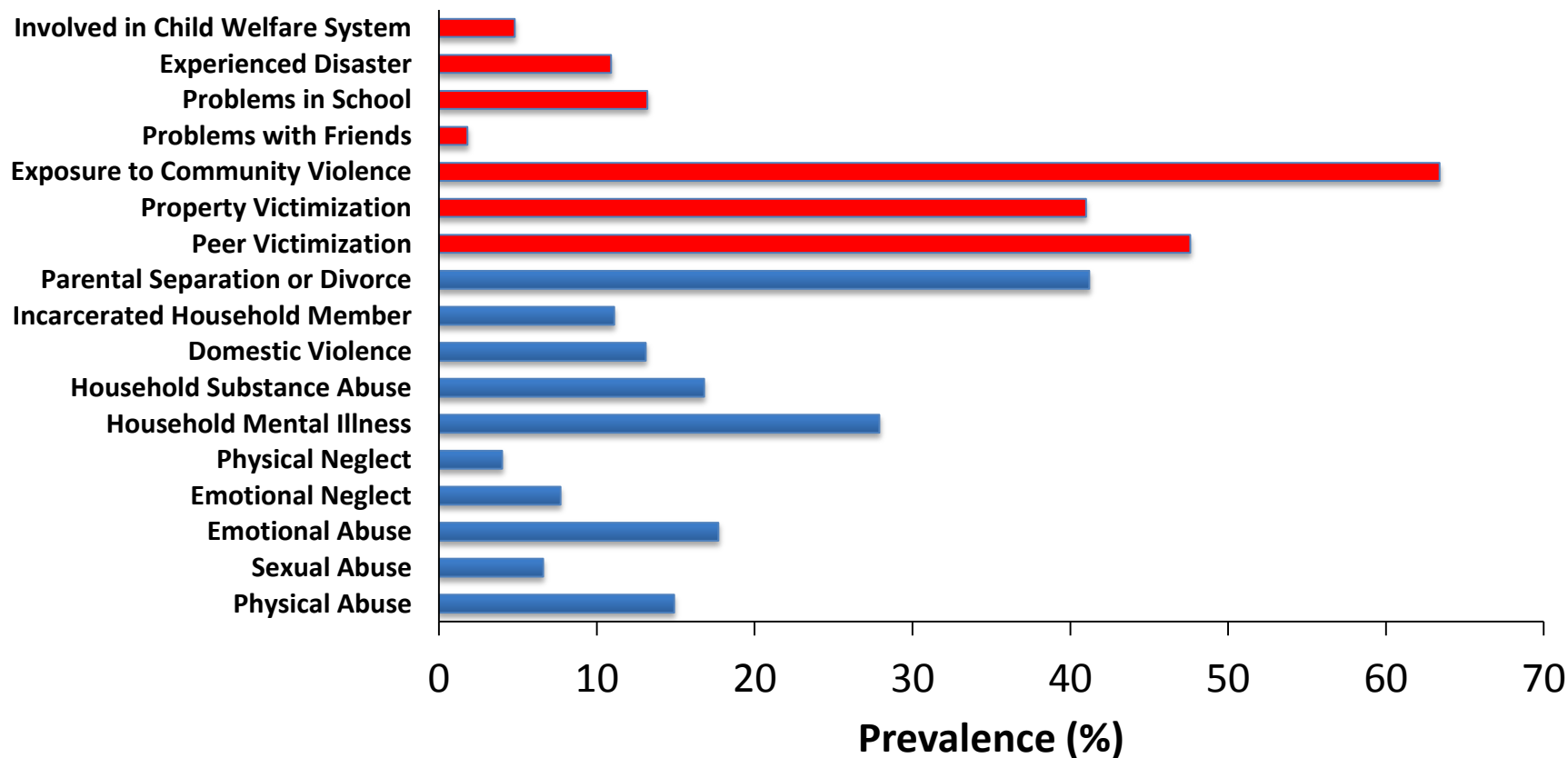
Additional Adversities

- Property victimization
- Peer victimization
- Exposure to community violence
- Socioeconomic status
- Someone close had a bad accident or illness
- Below-average grades
- Parents always arguing
- No good friends

Exposure to Community Level ACEs is Common Amongst Youth

Prevalence of Family & Community Level ACEs Amongst a Nationally Representative Sample of Youth (N = 2030)

Family & Community Level ACEs



Blue – Family Level ACEs

Red – Community Level ACEs

Adapted from Finkelhor et al., *Arch Pediatr Adolesc Med* 2013

The Philadelphia ACE Study

A collaborative, led by the Institute for Safe Families (ISF), to develop and implement research, practice, and policies in urban pediatric settings based on the Adverse Childhood Experiences (ACE) study.



Survey Methods

- Survey was completed as a follow up to the Southeastern Pennsylvania Household Health Survey (SEPA HHS).
 - Survey of over 13,000 children and adults in Southeastern Pennsylvania
 - Comprehensive survey on a broad range of topics
- Philadelphia ACE Survey re-contacted original SEPA HHS Philadelphia respondents who were 18 years or older
- Telephone survey (landline and cell phones)
- Completed by trained male and female interviewers
- Interviews were conducted in English and Spanish
- Interviewed 1,784 Philadelphia adults age 18 and older
- Response rate 67.1%

Philadelphia ACE Study Questions

Conventional ACEs	Expanded ACEs
Physical Abuse	Witnessing Violence
Emotional Abuse	Living in Unsafe Neighborhoods
Sexual Abuse	Experiencing Racism
Emotional Neglect	Living in Foster Care
Physical Neglect	Experiencing Bullying
Domestic Violence	
Household Substance Abuse	
Incarcerated Care Provider	
Mental Illness in the Home	

Many of the Traditional ACEs are More Prevalent in an Urban Setting

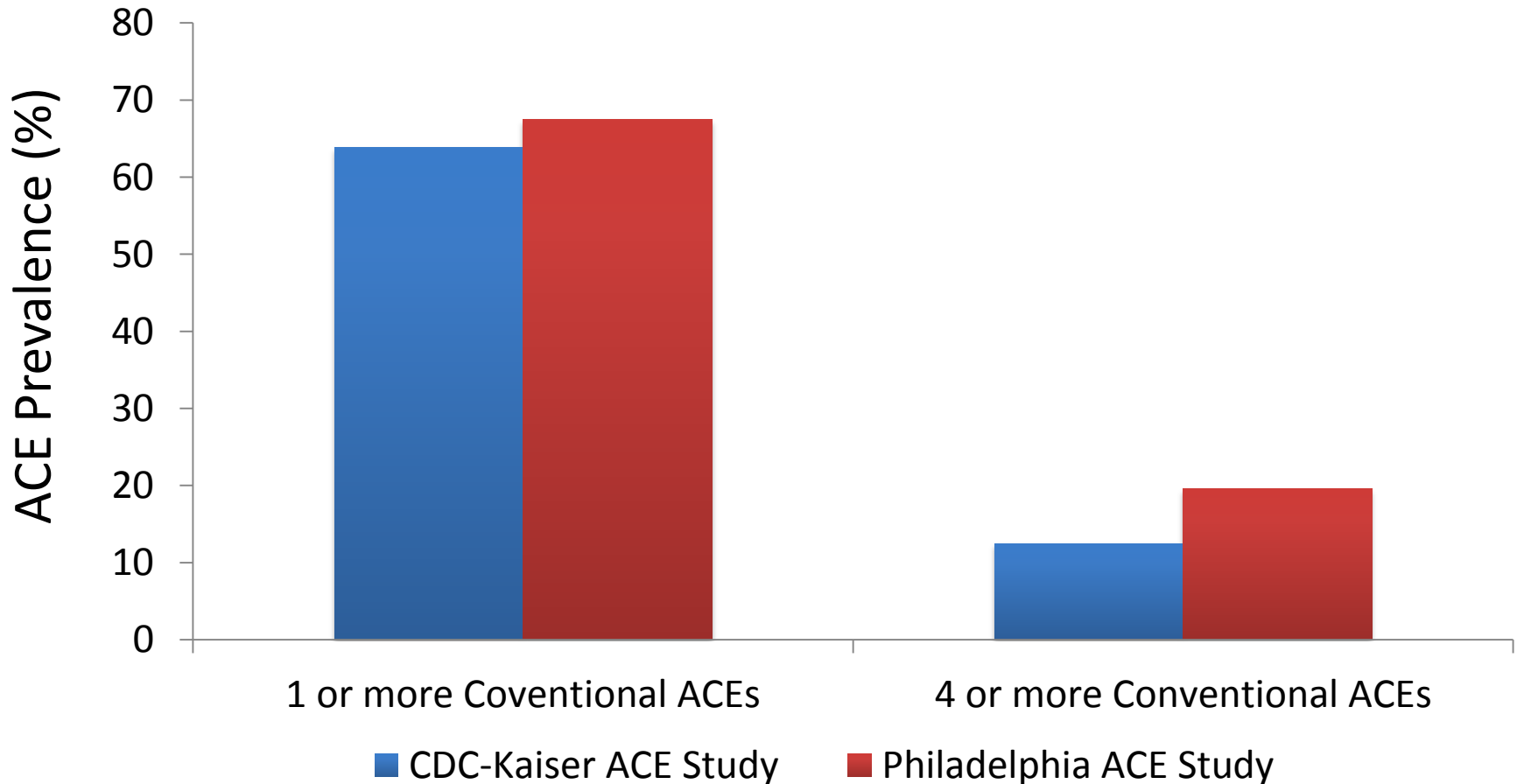
	Philadelphia ACE Study (N = 1,784)	CDC-Kaiser ACE Study (N = 17,337)
Emotional abuse	33.2%	10.6%
Physical abuse	35.0%	28.3%
Sexual abuse	16.2%	20.7%
Physical neglect	19.1%	14.8%
Emotional neglect	7.7%	9.9%
Substance abusing household member	34.8%	26.9%
Mentally ill household member	24.1%	19.4%
Witnessed domestic violence	17.9%	12.7%
Household member in prison	12.9%	4.7%

Prevalence of Expanded ACEs

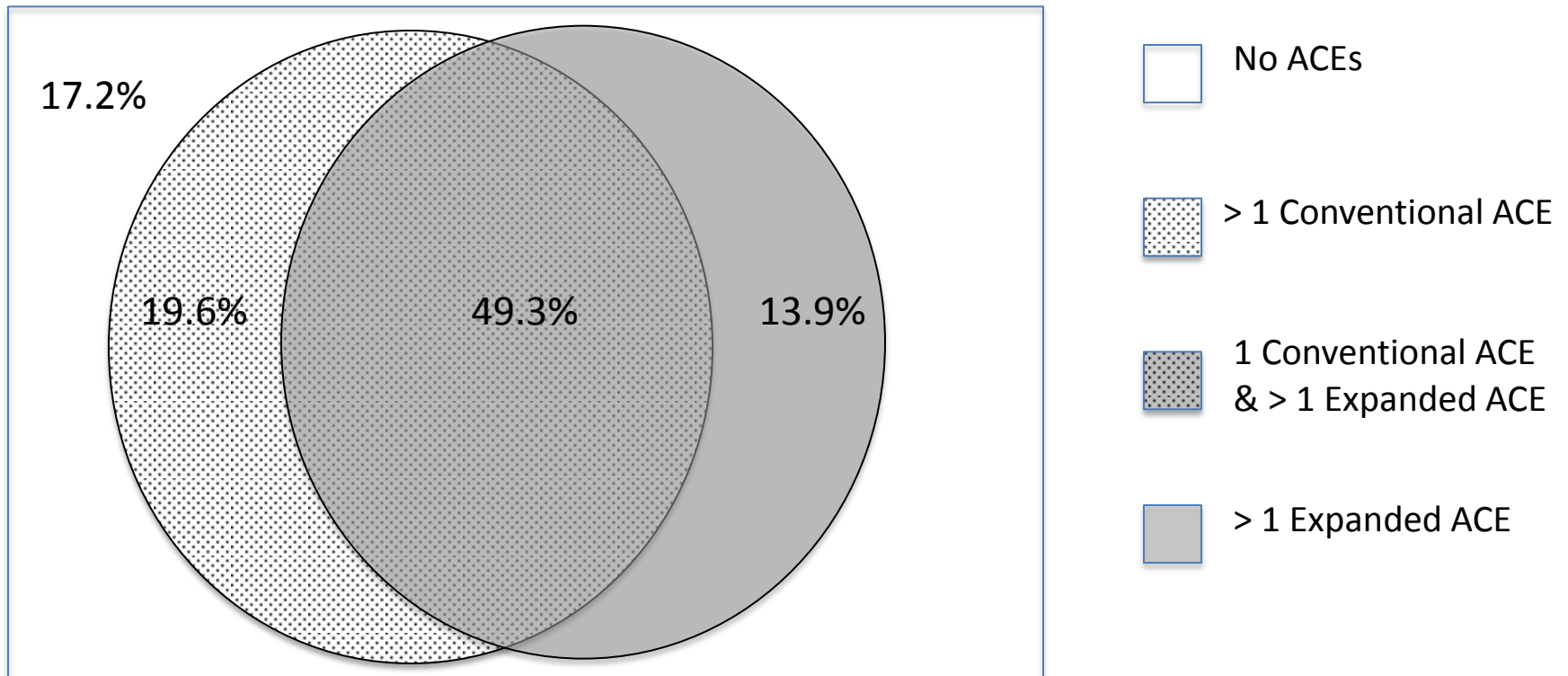
Expanded ACE Indicators	Respondents (N = 1,784)
Witnessed violence	40.5%
Felt discrimination	34.5%
Adverse neighborhood experience	27.3%
Bullied	7.9%
Lived in foster care	2.5%

Prevalence of Conventional ACEs

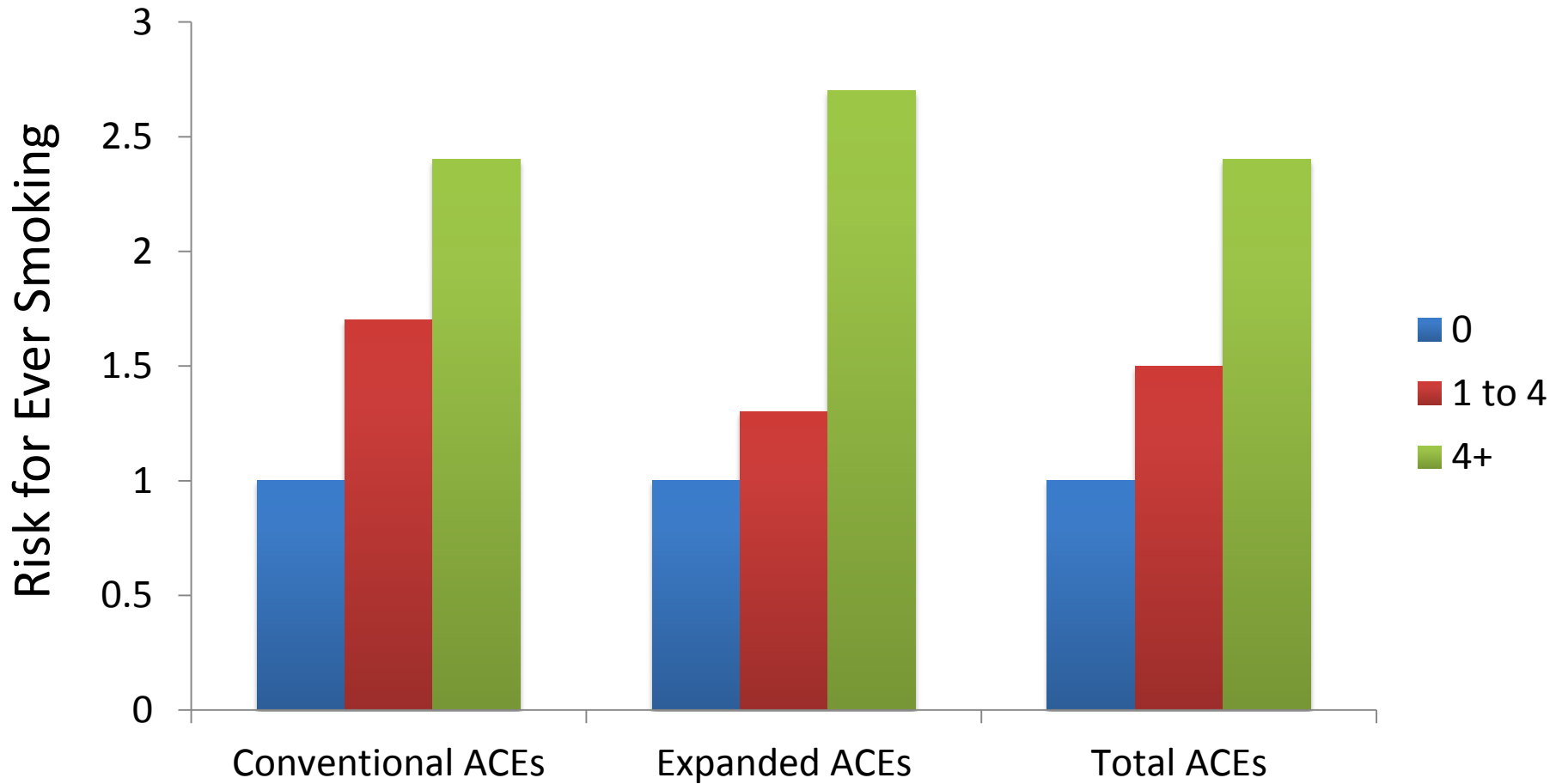
CDC-Kaiser vs. Philadelphia ACE Study



Overlap Between Exposure to Conventional and Expanded ACEs



Relationship Between Philadelphia ACE Score and Smoking History



Demographic Characteristics for Philadelphia Adults with Four or More ACEs

Demographics		Respondents (N = 1,784)
Sex**	Male	58.2%
	Female	41.8%
Race***	Black	48.6%
	White	34.0%
Poverty Level***	Below 150% of poverty guidelines	68.2%
	Above 150% of poverty guidelines	31.8%

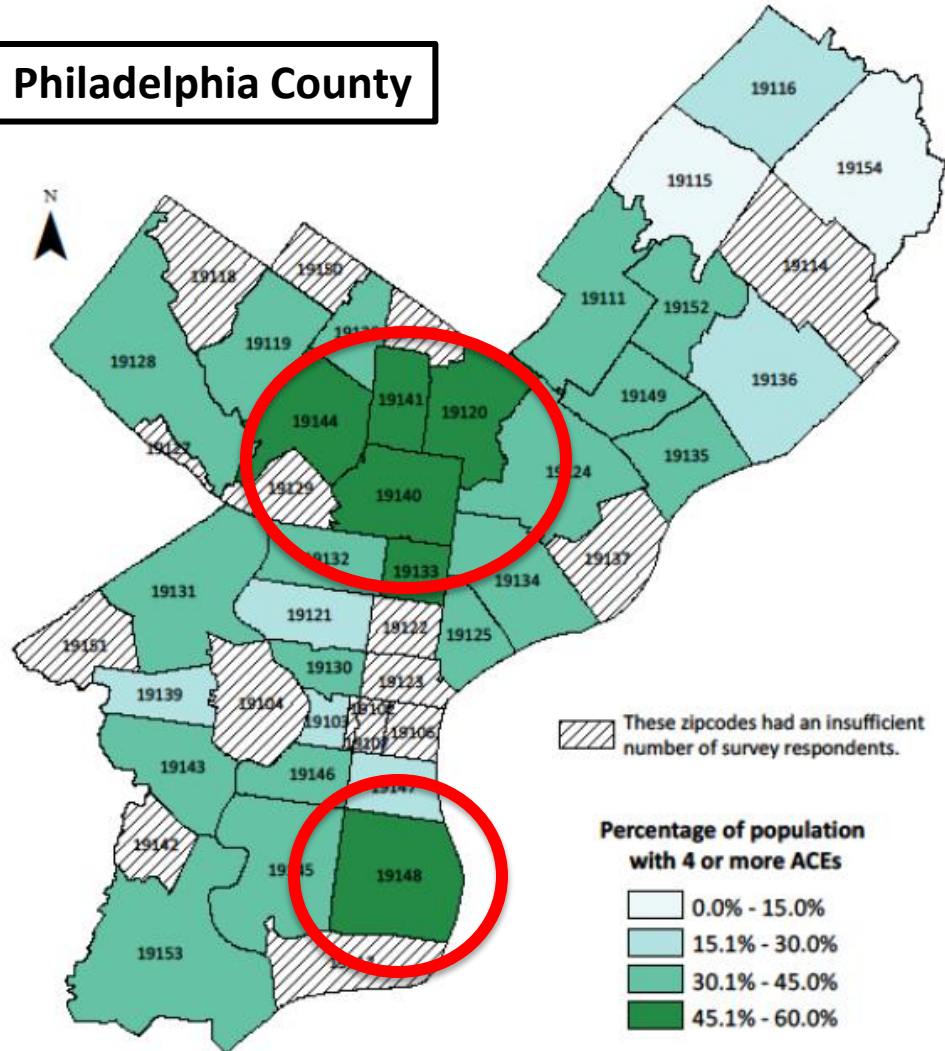
*p<0.05; **p<0.01; ***p<0.001

Total ACE Score ≥ 4 by Zip Code

Health Statistics from these 5 Zip Codes

- 22% of adults unemployed
- 46% of residents live in poverty
- Life expectancy for males age 68
- 22% of children obese
- Homicide rate 30 to 40 deaths per 100,000

Philadelphia County



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Current Childhood Adversity Screening Tools are Insufficient

Adversity Measures	Constructs Assessed
Childhood Trauma Questionnaire Anatomical Doll Questionnaire Checklist of Sexual Abuse and Related Stressors Abusive Sexual Exposure Scale Checklist for Child Abuse Evaluation Child Abuse & Neglect Interview Schedule	Physical Abuse Emotional Abuse Sexual Abuse Neglect
Children's Exposure to Community Violence Adolescent Self Report Trauma Questionnaire My Worst Experience Scale	Exposure to Violence Routine Stressors
Urban Hassles Index Adolescent Perceived Events Scale*	Routine Stressors
Traumatic Events Screening Inventory Childhood Trust Events Survey Life Events & Coping Inventory* Lifetime Incidence of Traumatic Events	Abuse/Neglect Exposure to Violence Routine Stressors

* Youth Informed Measures

A Youth Informed Approach to Assessing ACEs

- Series of focus groups with young adults
- Nominal Group Technique
 - Generate list of adverse childhood experiences
 - Prioritize items on list based on relative significance
- Analyze ranked lists for common themes
- Develop final ranked list of adverse experiences
- Member checking process & discussion of context surrounding each theme

Study Participant Demographics

Demographics		Percent of Individuals (N = 119)
Sex	Male	55%
	Female	45%
Race/Ethnicity	Caucasian	5%
	Hispanic	18%
	Non-Hispanic Black	71%
	Other	6%
	Other	6%
Neighborhood Poverty Level (100% FPL)	Less than 10%	5%
	10 to 20%	11%
	20 to 40%	51%
	Greater than 40%	33%

Domains of Most Stressful Experiences

Domain	Number of Responses
Family Relationships	195
Community Stressors	119
Personal Victimization	72
Economic Hardship	67
Peer Relationships	35
Discrimination	23
School	22
Health	17
Child Welfare/Juvenile Justice	8
Media/Technology	5

Family Relationships

Family Relationship Subdomains	Number of Responses
Family Members Abusing Alcohol & Drugs	37
Lack of Love & Support in the Family	33
Single Parent Homes	30
Death & Illness of Family Members	21
Violence in the Home	20
Poor Parenting & Lack of Guidance	20
Criminal Activity by Family Members	15
Having to Take on Adult Responsibilities	14
Violent Victimization of Family Members by Individuals Outside of the Home	4

Summary

- ACEs are common across sociodemographic backgrounds
- ACEs impact outcomes across sectors and throughout the lifecourse
- Numerous strategies to address ACEs – importance of awareness
- Certain populations at higher risk for ACEs
- Contextual issues surrounding ACEs for certain populations

Acknowledgements

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