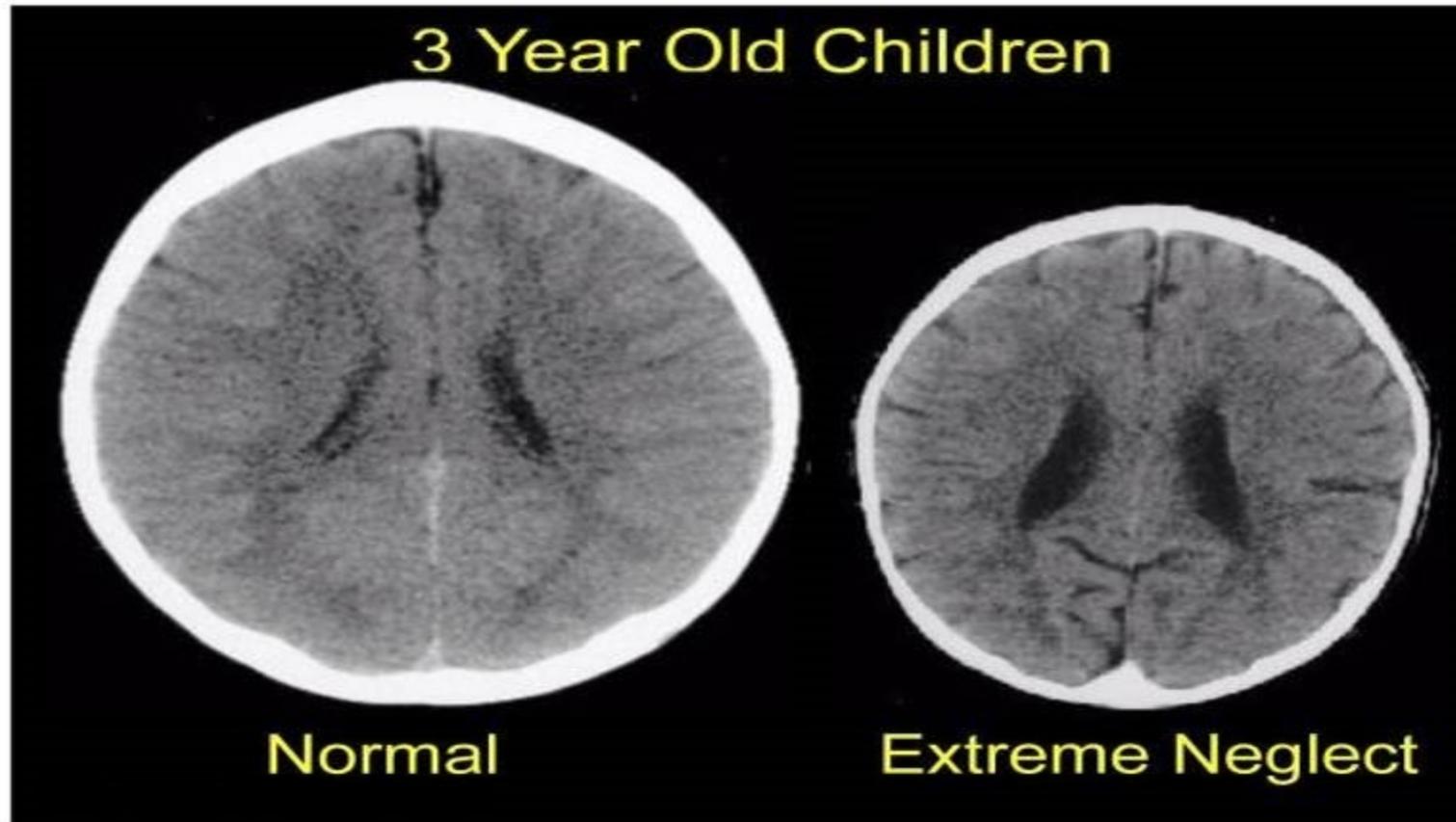


Investment in America's Most Important Infrastructure:

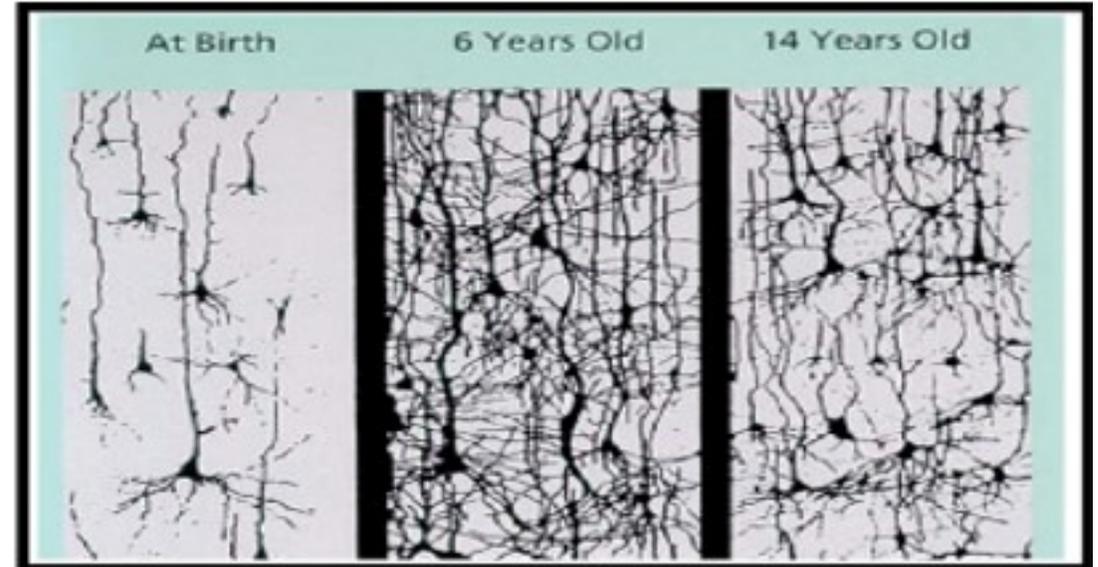
Promoting the Health and Wellness
of Families with Young Children
All Alaska Pediatric Partnership

Impact of Neglect



Synapses = Connections

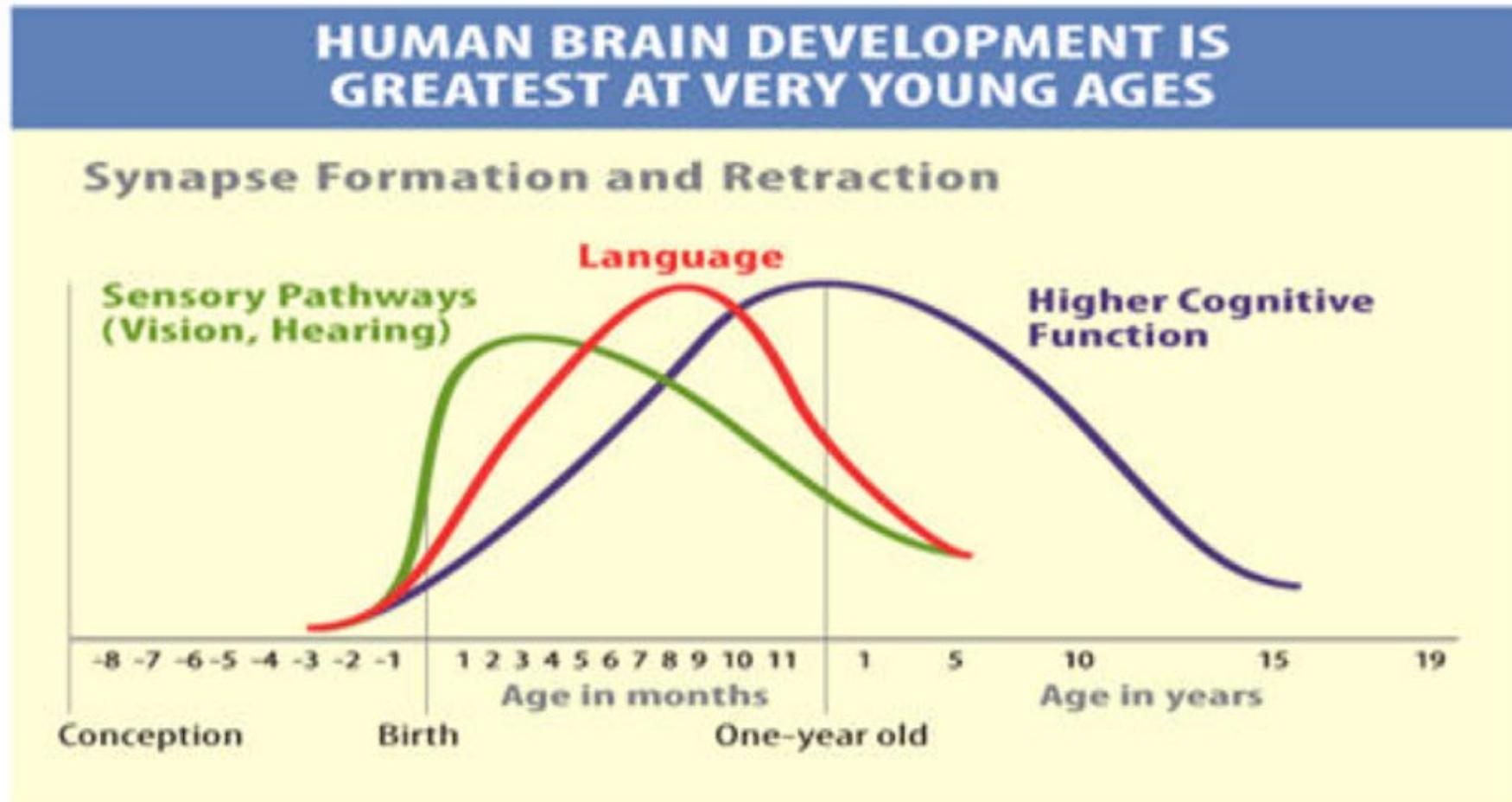
- The human brain is shaped through neuronal connections
- Changes in these connections
 - birth: 50 trillion synapses
 - 1 year: 1,000 trillion
 - 20 years: 500 trillion
- The remolded brain facilitates efficiency and learning



Synaptic Growth and Pruning

- Synaptic pruning occurs in areas that are infrequently used
 - Results in decreased number of synapses between neurons
 - Maximum number of synapses occurs around age 3 years old
- Allows for improved functionality and efficiency of synaptic transmission in the brain
- Plasticity (the ability to change your brain) essentially reaches adult levels by age 10 years old

Brain Development as a Measure of Synapse Formation

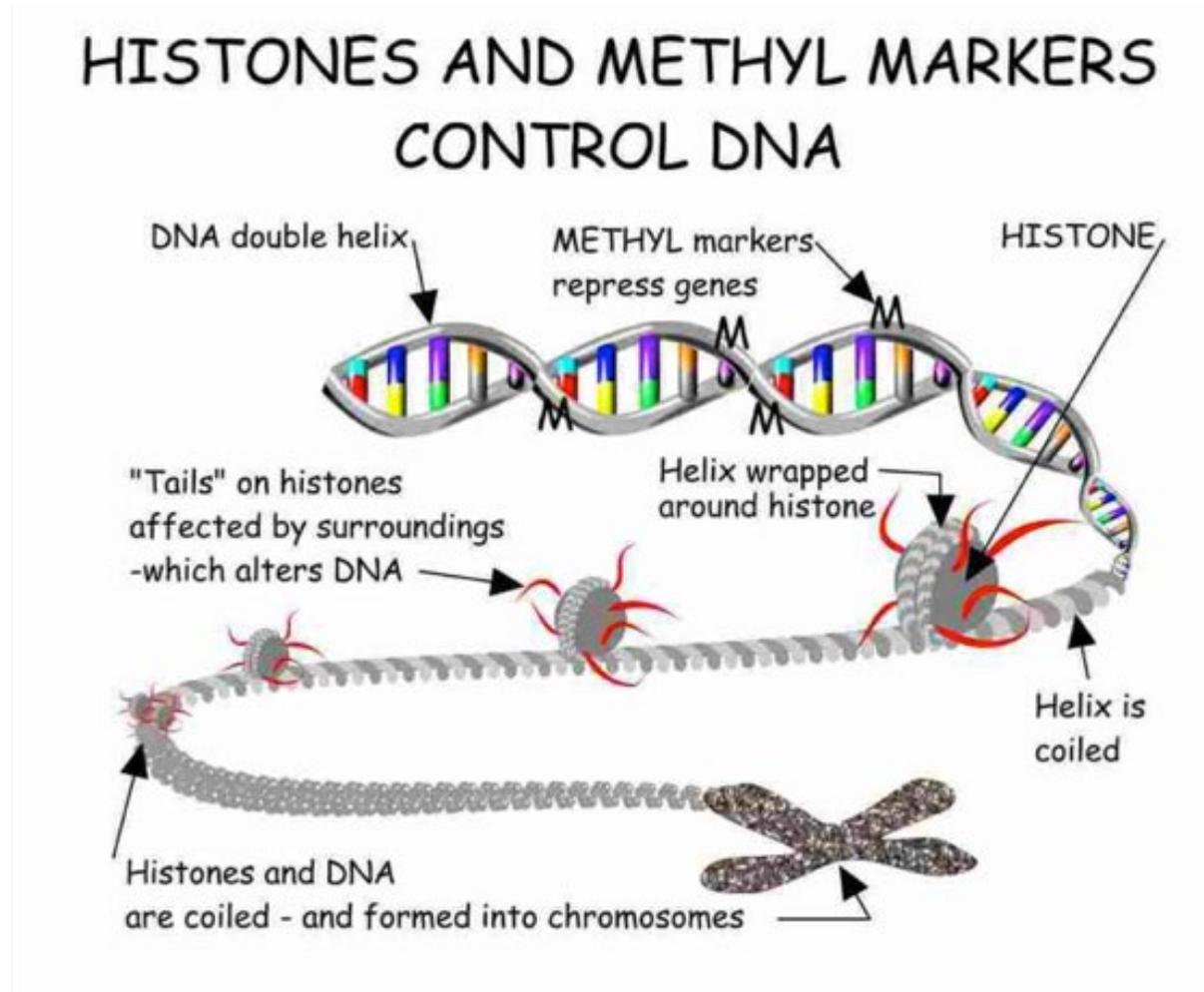


SOURCE: C. A. Nelson in *From Neurons to Neighborhoods*, 2000

Physiologic Response to Stress in Kids

- Stress without the buffering response of a strong adult relationship causes prolonged, brain-controlled secretion of stress hormones
 - Cortisol, norepinephrine, epinephrine, etc.
- Stress responses are beneficial in the short term with adult support, but can be damaging to health if they occur over long periods of time
 - Constant wear and tear
 - Potentially permanent changes in gene regulation

Epigenetics



Childhood Epigenetic Changes

- Kids raised in institutional environments (Romanian orphanages)
 - Epigenetic changes in regions of brain development
- Adults exposed to abuse as kids:
 - 997 different genes had methylation patterns that were different than from adults who were not abused
 - Genes were involved with cell signaling pathways, brain development, immune function, stress regulation, etc.
 - Similar results from adults from the foster care system, adults exposed to violence as kids, adults exposed to neglect as kids...

How Do These Epigenetic Changes Affect Stressed Kids

- Structural brain changes: Smaller hippocampus (memory), smaller corpus callosum (connections between the hemispheres of the brain), smaller prefrontal cortex (reasoning, emotional control), larger amygdala (anxiety and release of stress hormones from the pituitary)
- Inflammation/immunological changes: C-reactive protein, stress cytokine levels elevated in adults with history of early adversities
- Endocrine changes: Dysregulation of stress hormones, decreased oxytocin

Epigenetics Passed from Moms to Children

Fetal exposure to maternal stress influences future stress responses in a negative way through epigenetics.

- Moms who are stressed (stressful event—famine, increased anxiety, depression) during pregnancy are more likely to have kids with:
 - Preterm birth
 - Poor emotional coping skills
 - Decreased cognitive abilities
 - Increased fear response to stimuli
 - Increased anxiety
 - Decreased immune function
 - Autism
 - Lots of others....

Epigenetics Passed from Dads to Sons

- Offspring of Civil War prisoners (4600 kids)
 - Sons—died earlier
 - Sons born before the war didn't have any mortality differences
 - Daughters—unaffected
- Seems to occur through transmitted RNA molecules rather than methylation or histone modification

Telomeres and Stress

Telomeres appear to be impacted by trauma in childhood.

- Adults exposed to trauma as a child had shortened telomeres
 - Marker of accelerated ageing and disease



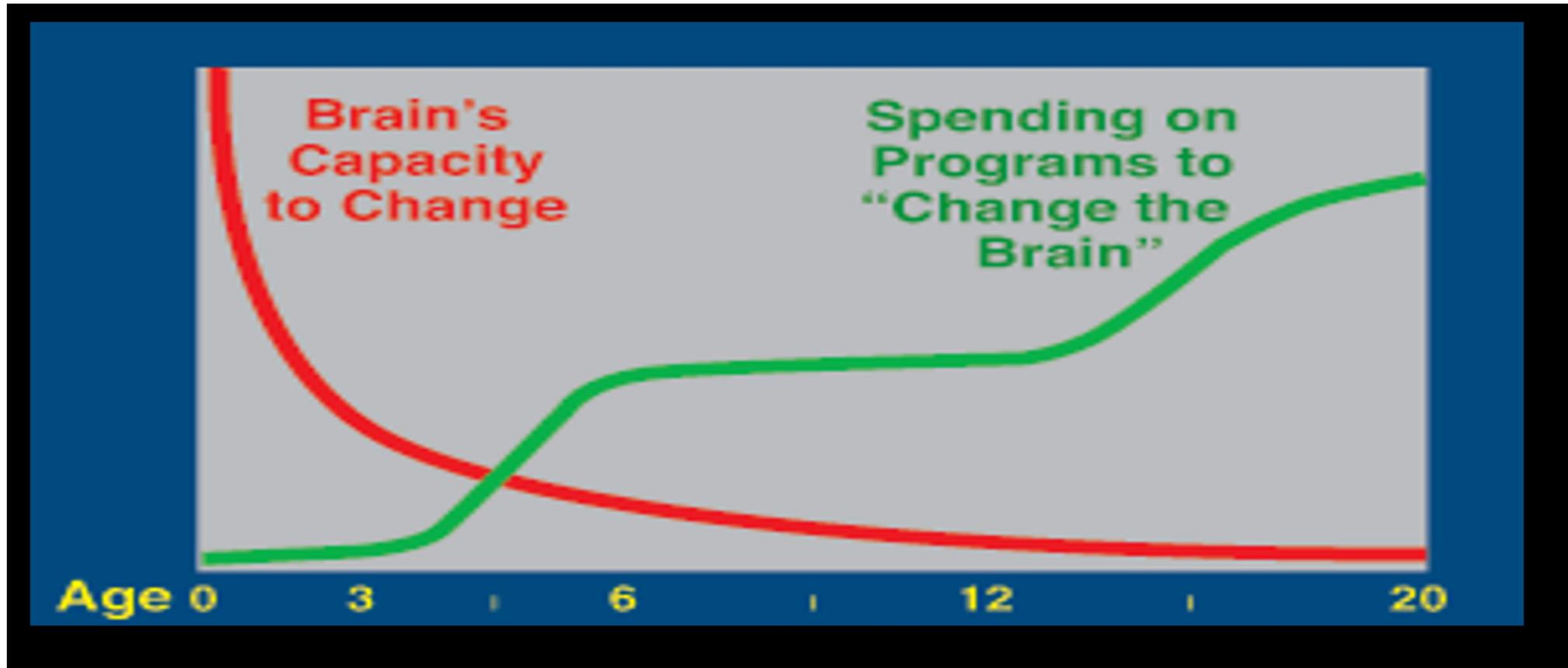
Pasieka/Photo Researchers Inc.

But These Epigenetic Effects Can Be Reversed

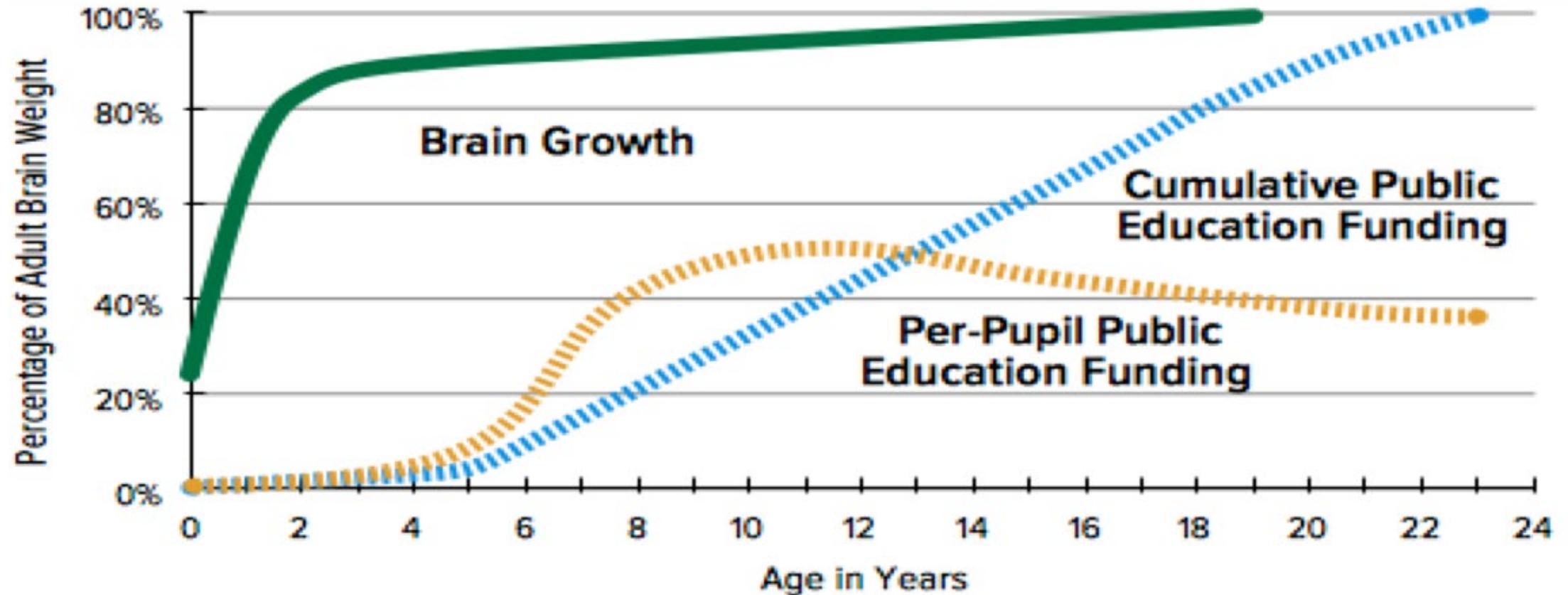
Prevention programs that result in improved family function and better parenting skills result in:

- Reversal of epigenetic changes in young children
 - Reverses the brain changes seen in adulthood
- Improved health outcomes
- Decreased mental health issues
- Decreased costs

Public Investment in Children by Age



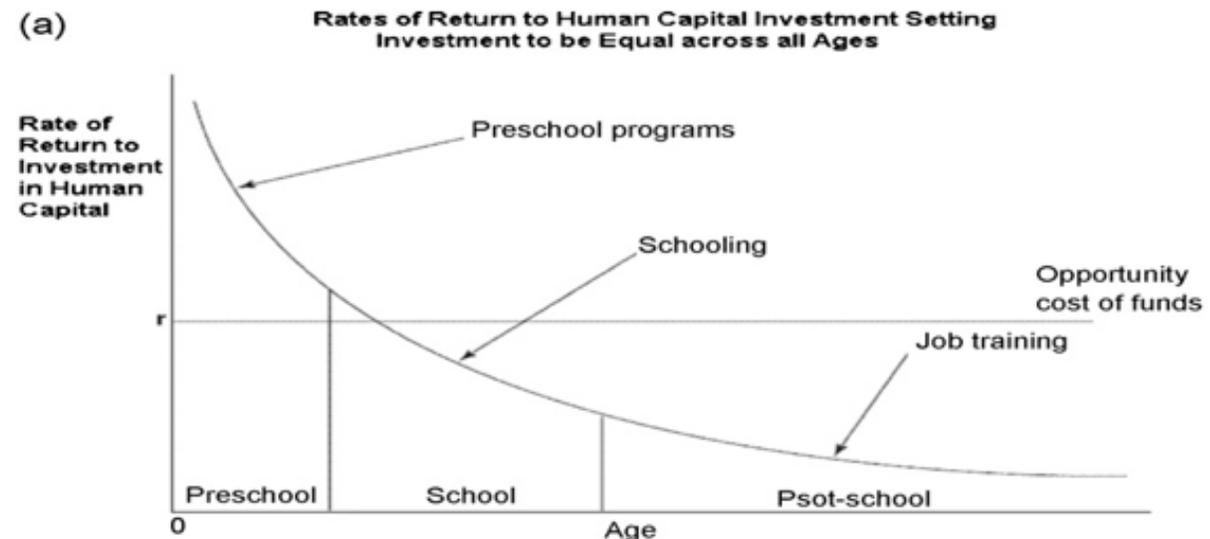
Public Investment in Children by Brain Growth



Econometrics of Early Intervention & Prevention

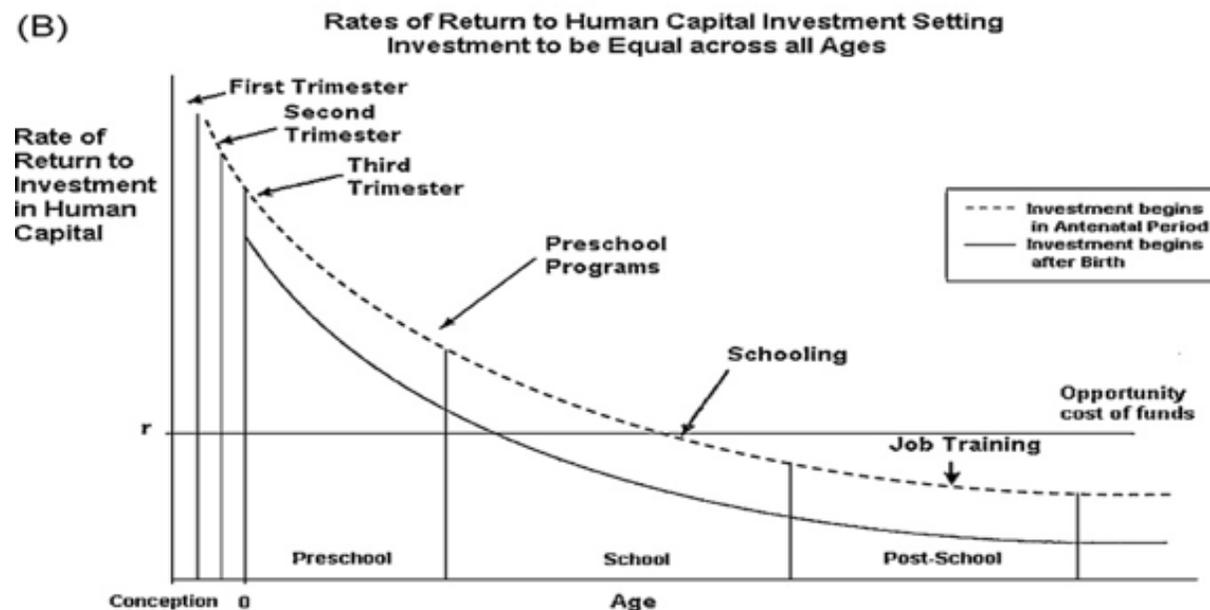
Funding early interventions provides the largest possible return on investment.

Doyle et al. (2009) Investing in Early Human Development.
 In: Economics and Human Biology v7:pp1-6



Rates of return to human capital investment setting investment to be equal across all ages

Source: Carneiro and Heckman, 2003



Rates of return to human capital investment setting investment to be equal across all ages

Costs of Child Abuse: USA

- Over \$124 billion in costs/year (Fang et al., 2012)
- Lifetime cost per victim of nonfatal child maltreatment is **\$210,012**:
 - \$144,360 productivity losses
 - \$6,747 criminal justice costs
 - \$32,648 childhood health care costs
 - \$10,530 adult medical costs
 - \$7,999 special education costs
 - \$7,728 child welfare costs

A Common Language to Explain Development

10 adverse childhood experiences surveyed:

1. Physical abuse
2. Sexual abuse
3. Emotional abuse
4. Emotional neglect
5. Physical neglect

6. Witness domestic violence
7. Mental illness in home
8. Family member incarcerated
9. Alcohol/drug problems
10. Parental separation or divorce

ACEs: Prevalence data

- Prevalence of ACEs in study group:
 - Sexual abuse = 21%
 - Domestic violence in childhood home = 13%
 - Substance abuse in home = 28%
 - Parental separation or divorce = 24%
 - Physical abuse = 28%
 - Emotional neglect = 15%
 - Emotional abuse = 11%
 - Physical neglect = 10%
 - Mental illness in home = 20%
 - Criminal household member = 5%

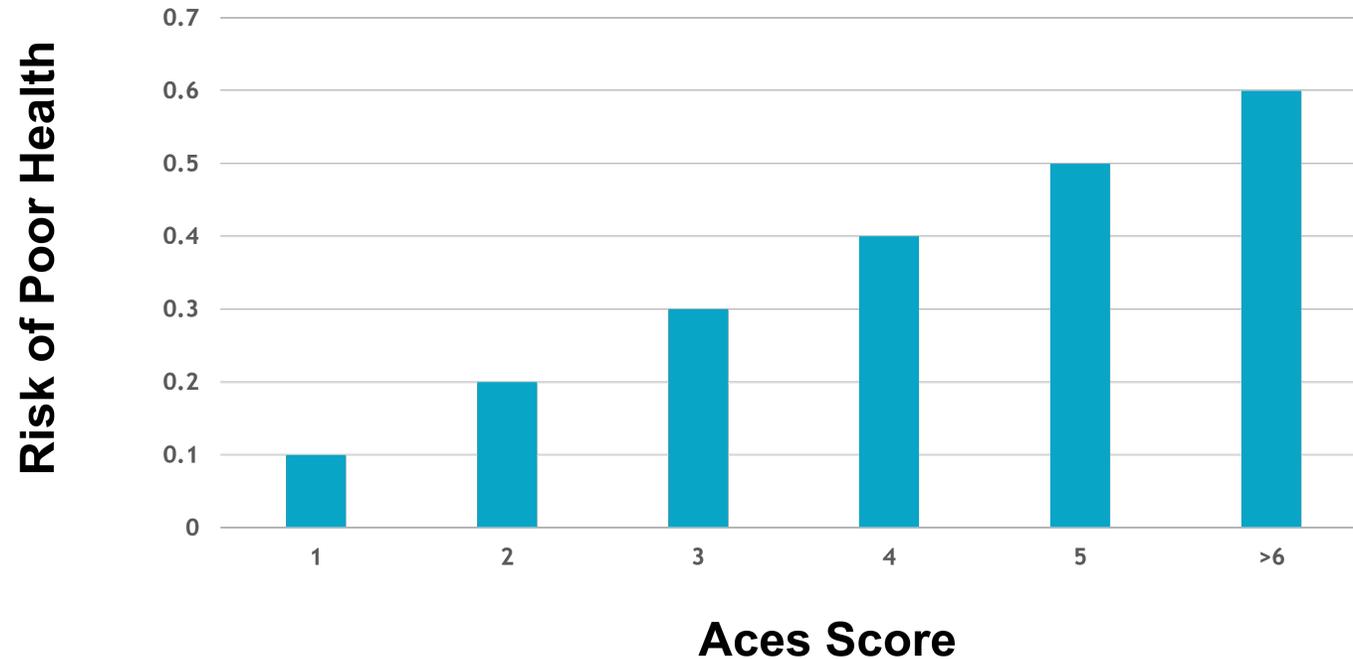
M Dong et al. (2003) Child Abuse and Neglect v27, pp 625-639.

ACEs: Adult Health

- Key Finding:
 - About 2/3rd of those surveyed reported at least one ACE.
 - The 1/3 of participants with no reported ACEs were consistently healthier across all measures.

ACEs Score = Dose Response

ACEs Score = Dose Response



Health Measures Now Linked to Adverse Childhood Experiences Score

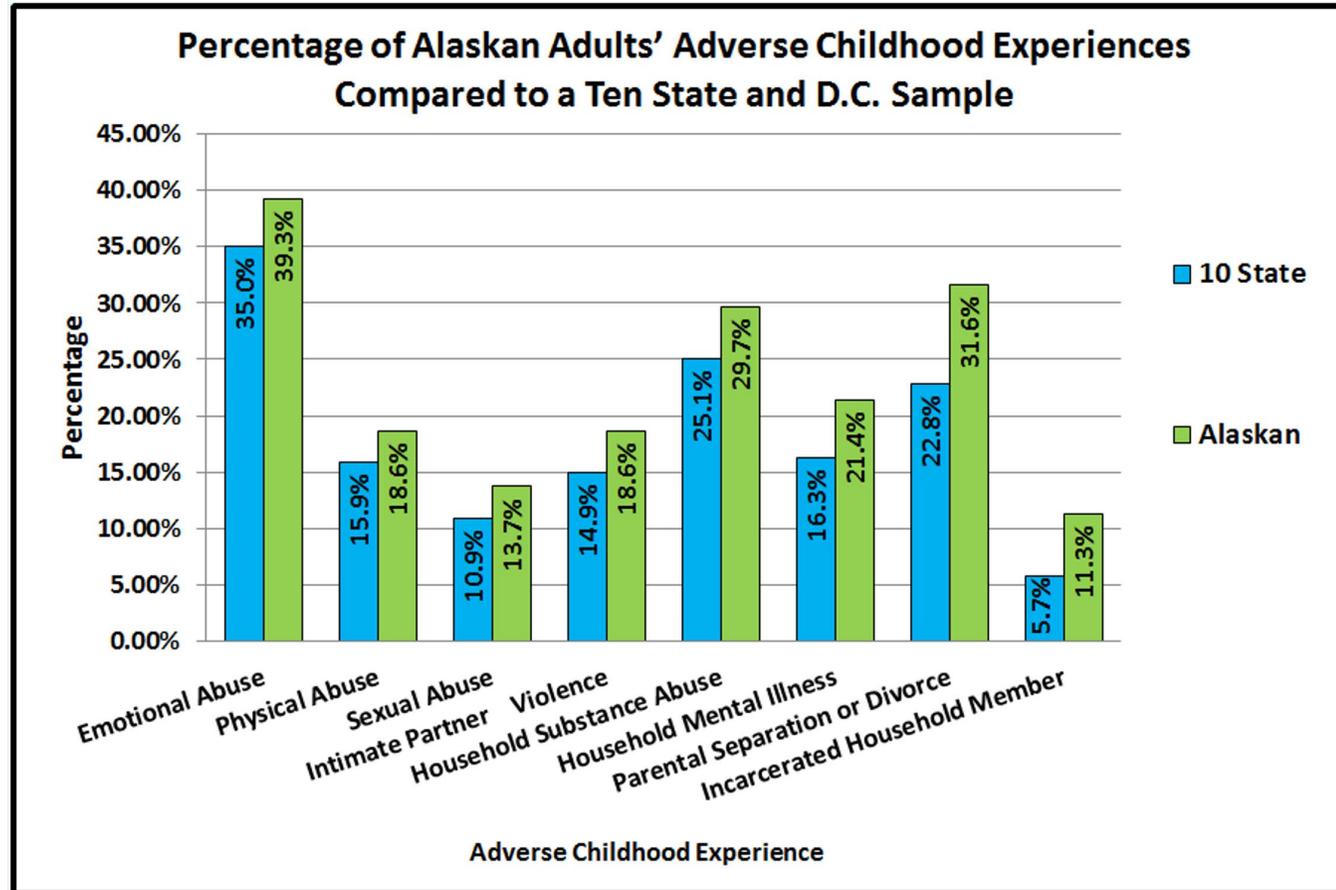
Stepwise increased risk for:

- Heart disease
- Asthma
- Diabetes
- Cancer
- COPD
- Skeletal fractures
- Sexually transmitted diseases
- Liver disease
- Autoimmune disorders
- Osteoarthritis
- Smoking
- Alcohol abuse
- Overeating and obesity
- Illicit drug use
- Promiscuity
- IV drug use
- Clinical depression

And

- Autobiographical memory disturbance
- Poor anger control
- Relationship problems
- Employment problems
- Early age at first intercourse
- Teen pregnancy
- Unintended pregnancy
- Teen paternity
- Fetal death
- Suicide
- Domestic violence
- Anxiety disorders
- Hallucinations
- Sleep disturbances
- Chronic pain
- Headaches
- Early death

ACEs: Alaska vs. 10 States



Alaska ACEs in Children

Alaska Children and Youth ACEs in the General Population.



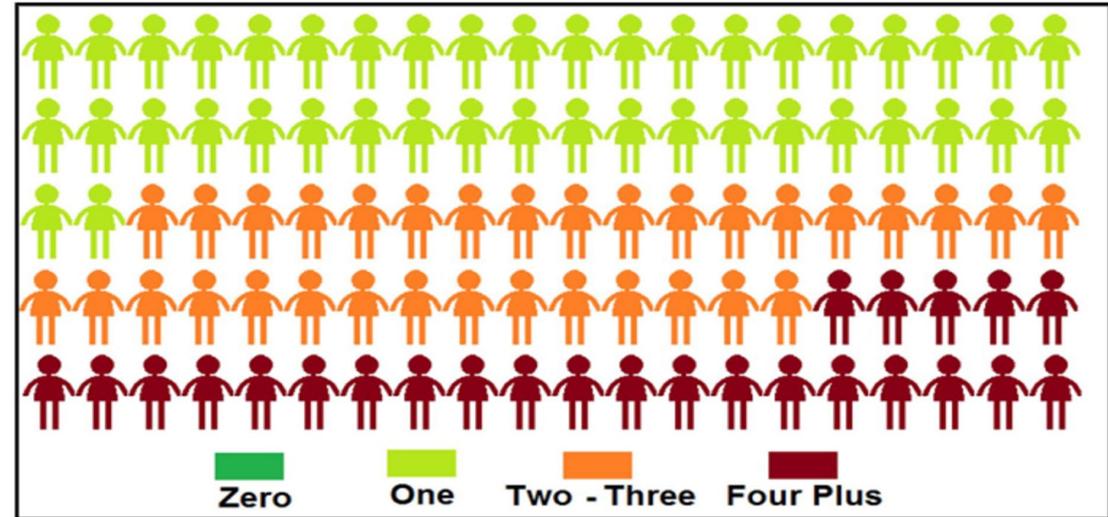
Advisory Board on Alcoholism
and Drug Abuse



Alaska Mental Health Board

Alaska ACEs in Children (con't)

Alaskan Children and Youth ACEs for those who Experienced Low Income.

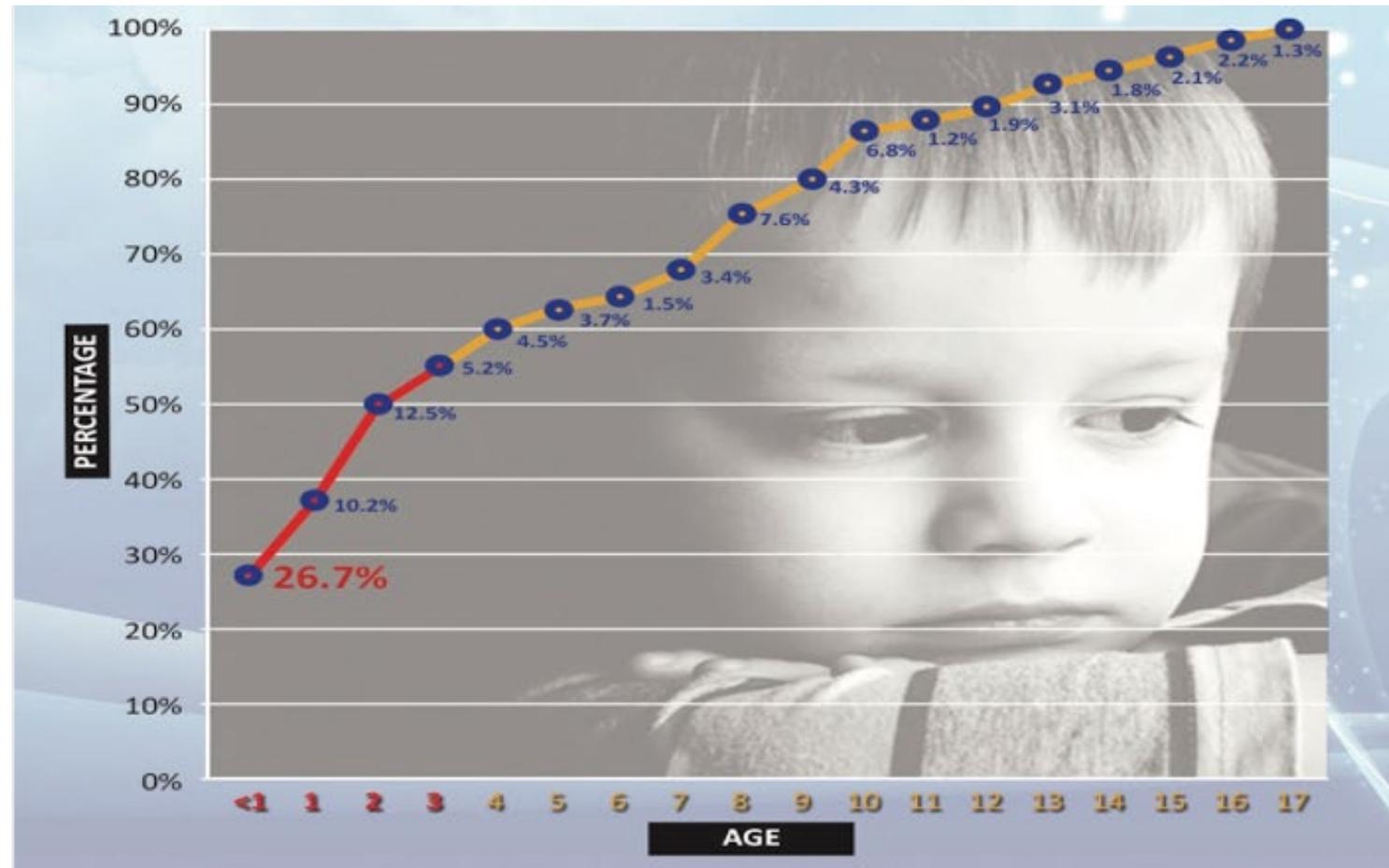


Alaska ACEs in Children (more)

Alaskan Children and Youth ACEs for those who Witness Domestic Violence.



Age When US Kids Accumulate Half of Their Lifetime ACEs



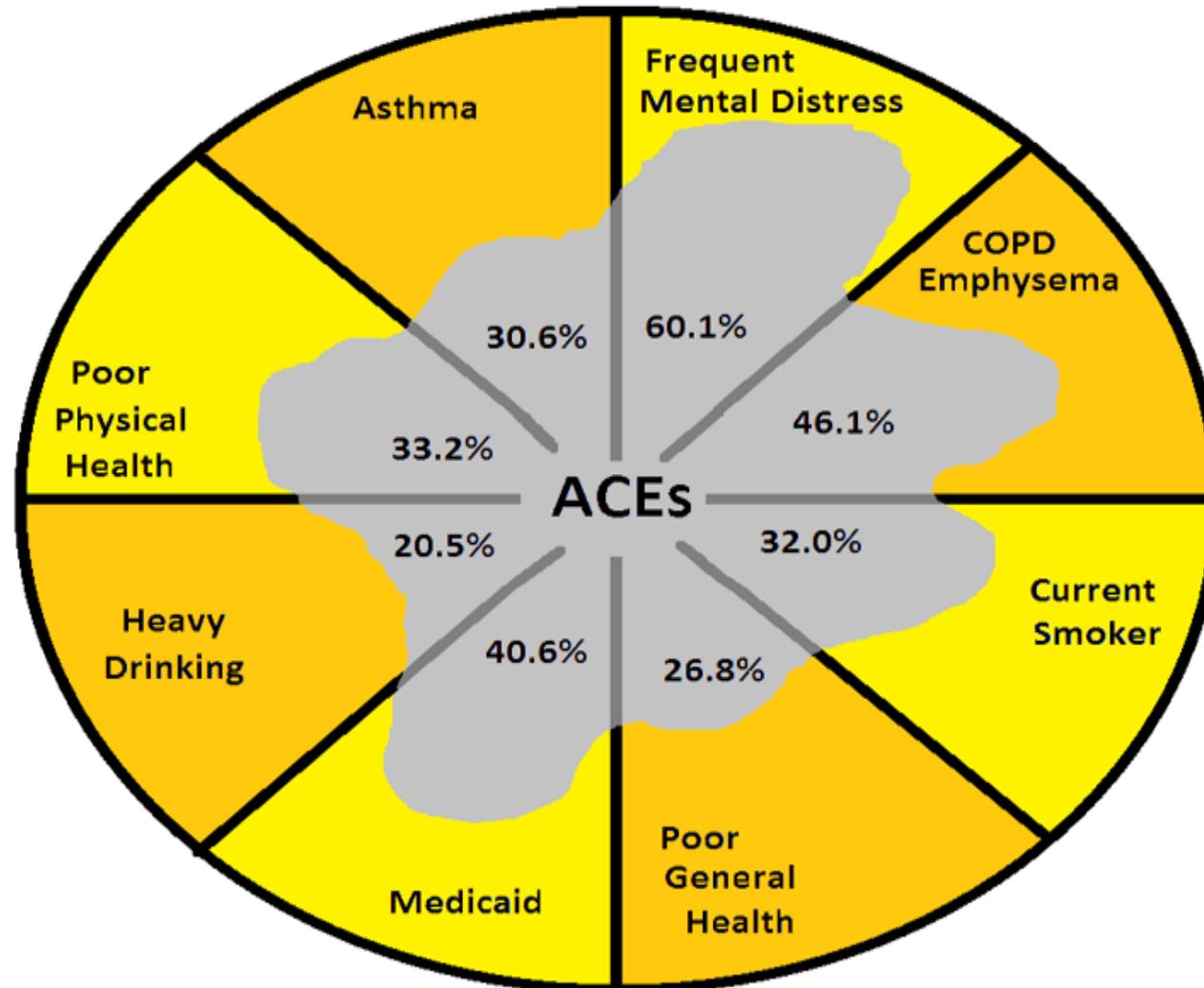
Costs

Alaskan adults who report four or more ACEs compared to Alaskan adults who report zero ACEs.

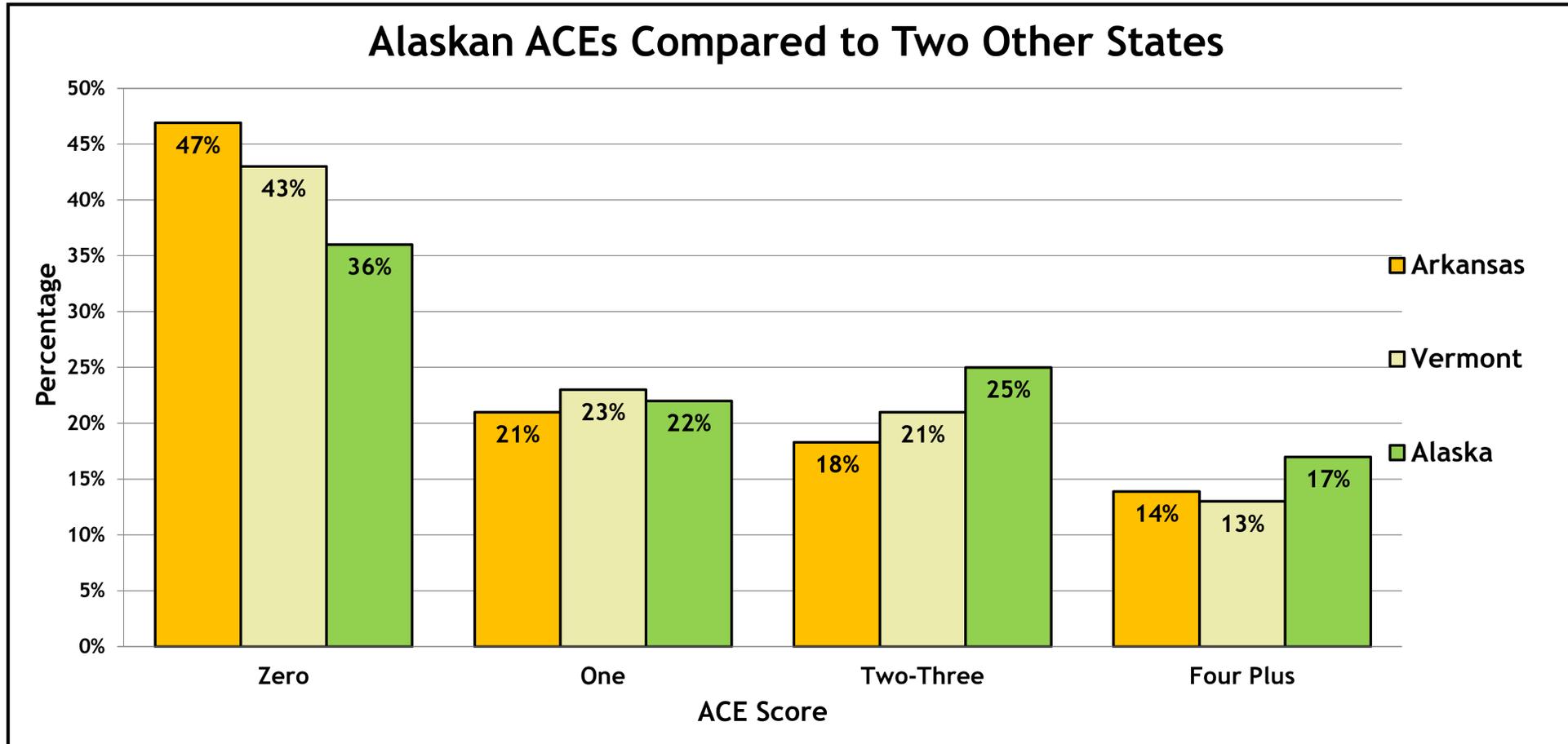
- 49% more likely to be unemployed
- 274% more likely to be unable to work
- 92% more likely to earn less than \$20,000 annually

Source: 2013 Alaska Behavioral Risk Factor Surveillance System, Analysis by Alaska Mental Health Board/Advisory Board on Alcoholism and Drug Abuse Staff

Population Attributable Risks in Alaska



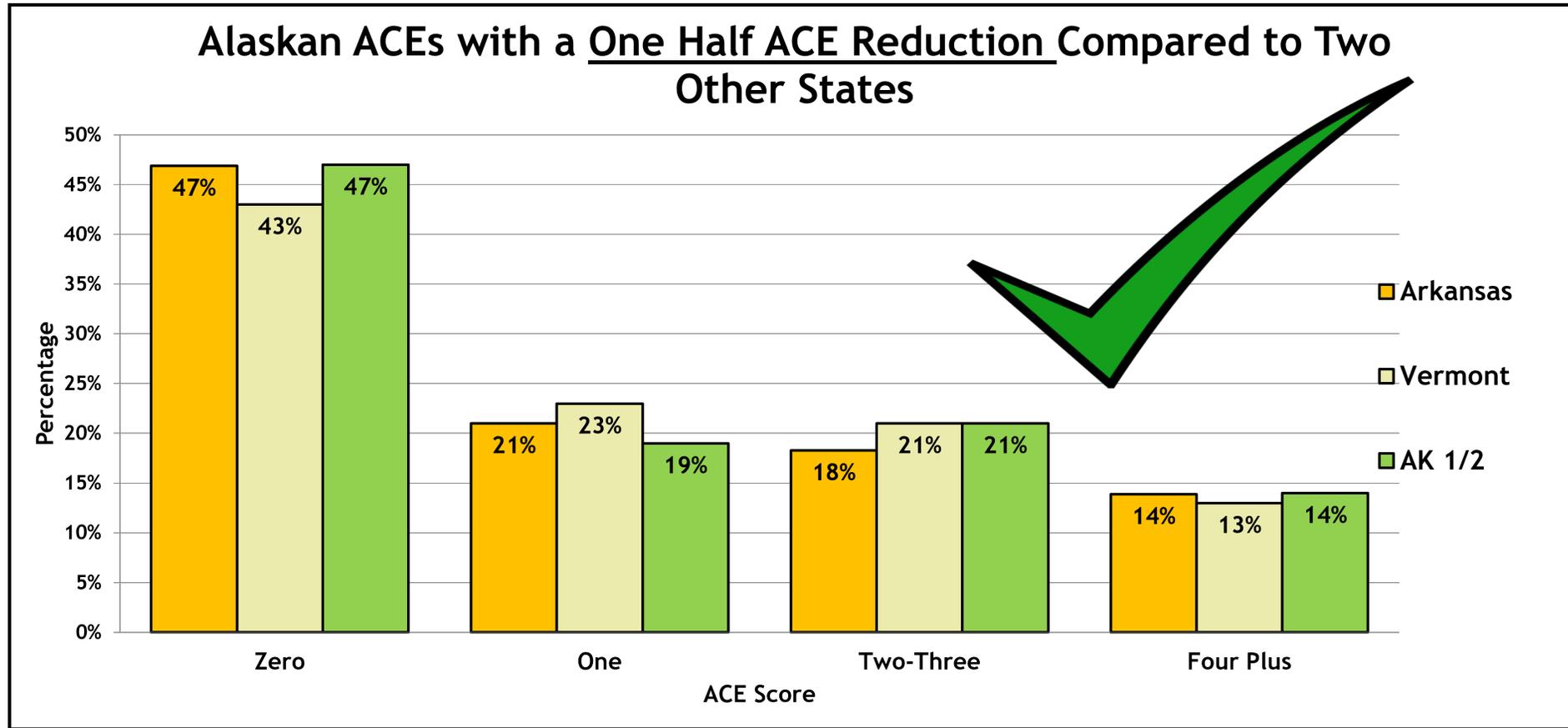
Alaskan ACEs Compared to Two Other States



https://www.healthvermont.gov/sites/default/files/documents/2016/12/summary_brfss_2010.pdf

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5949a1.htm>

Alaskan ACEs with a One-Half ACE Reduction Compared to Two Other States



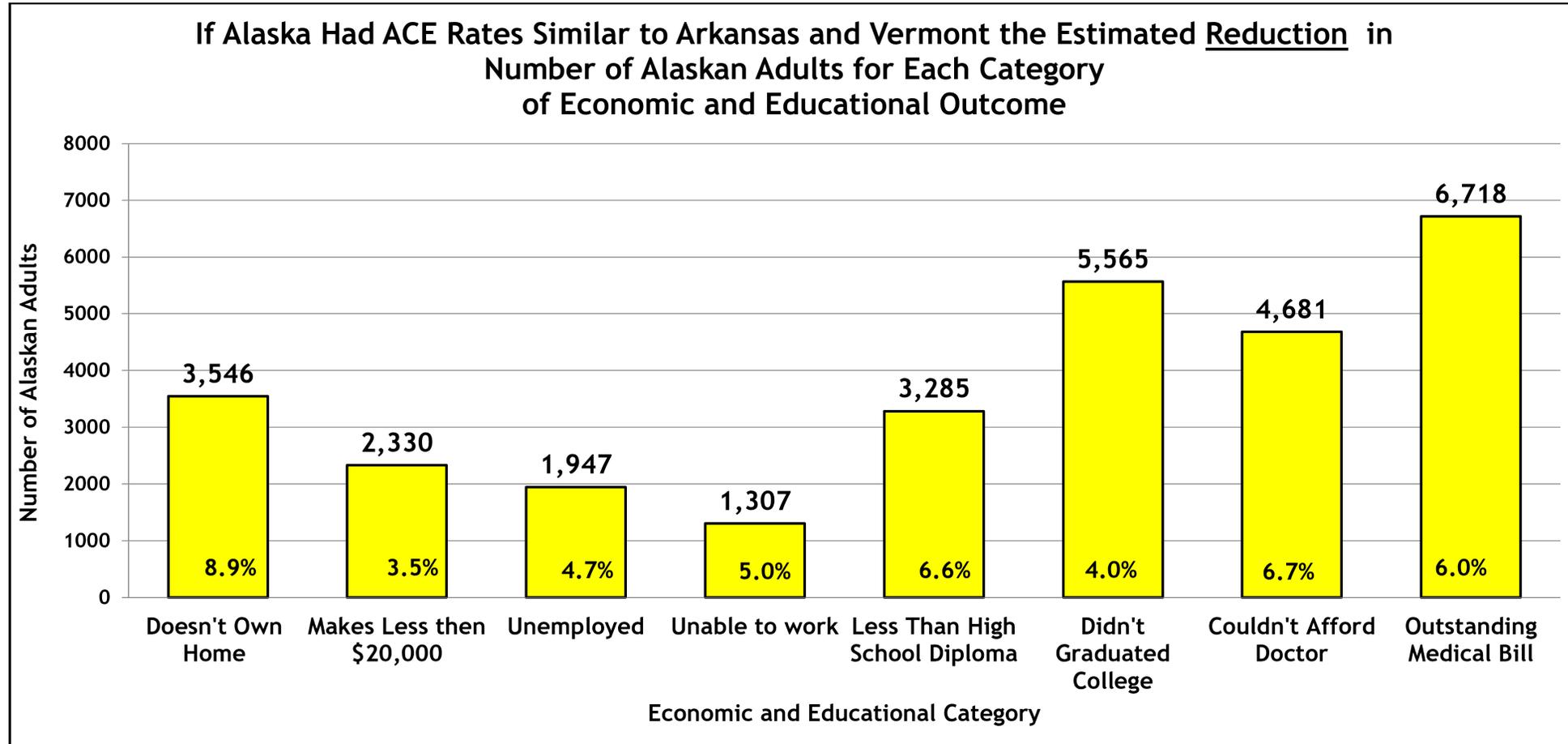
https://www.healthvermont.gov/sites/default/files/documents/2016/12/summary_brfss_2010.pdf

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5949a1.htm>

Reducing Alaska's ACE Score by ½ Point

- If we just look at the reduction of
 - Obesity
 - Adult Medicaid recipients
 - Smoking
 - Binge drinking
 - Diabetes
 - Arthritis
- Alaska will save \$90 million annually

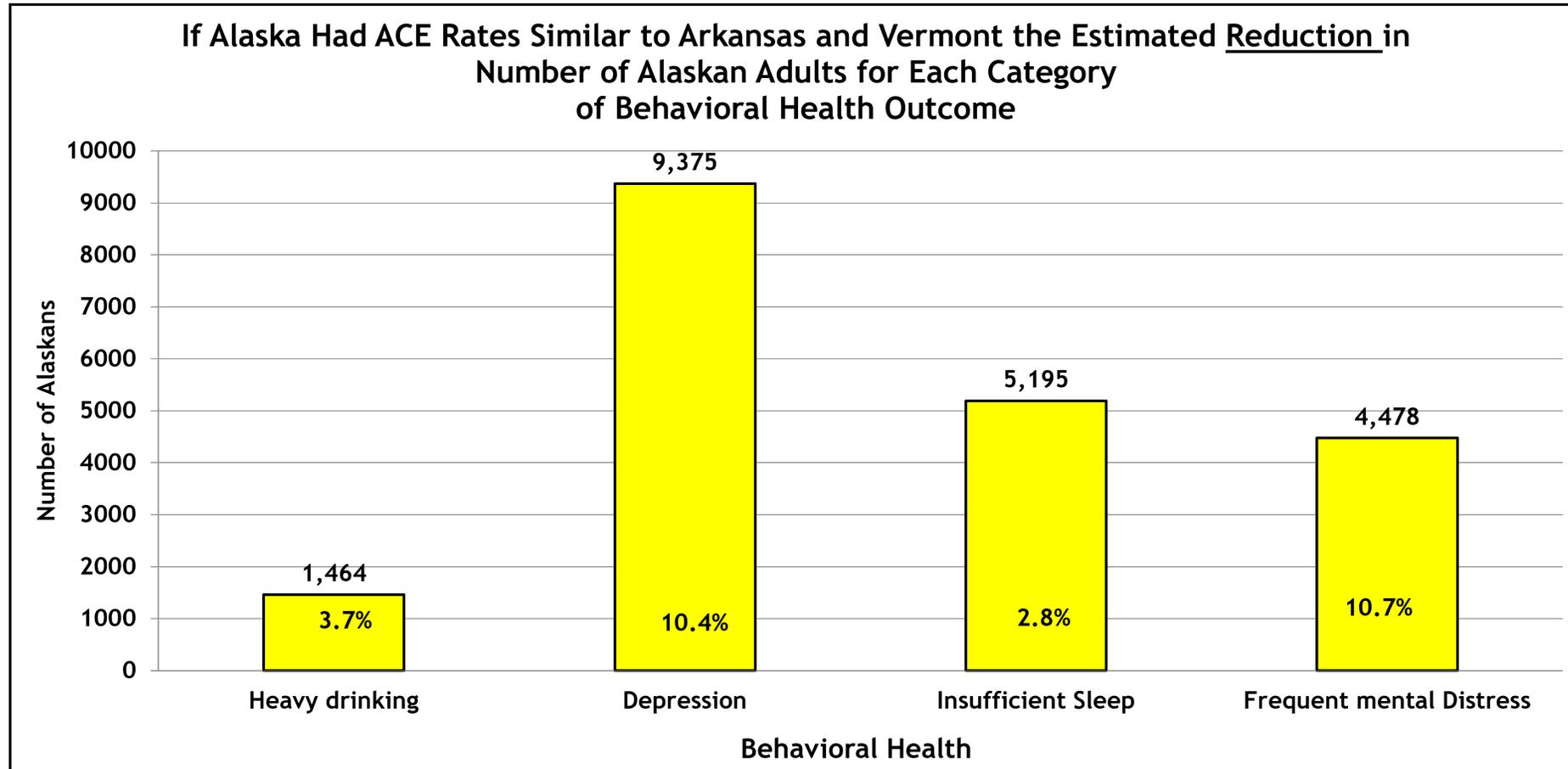
Estimated Reduction in Number of Alaskan Adults for Economic and Educational Outcomes



Calculations based on 2013 Alaska BRFSS data conducted by the Alaska Mental Health Board and Advisory Board on Alcoholism and Drug Abuse Staff

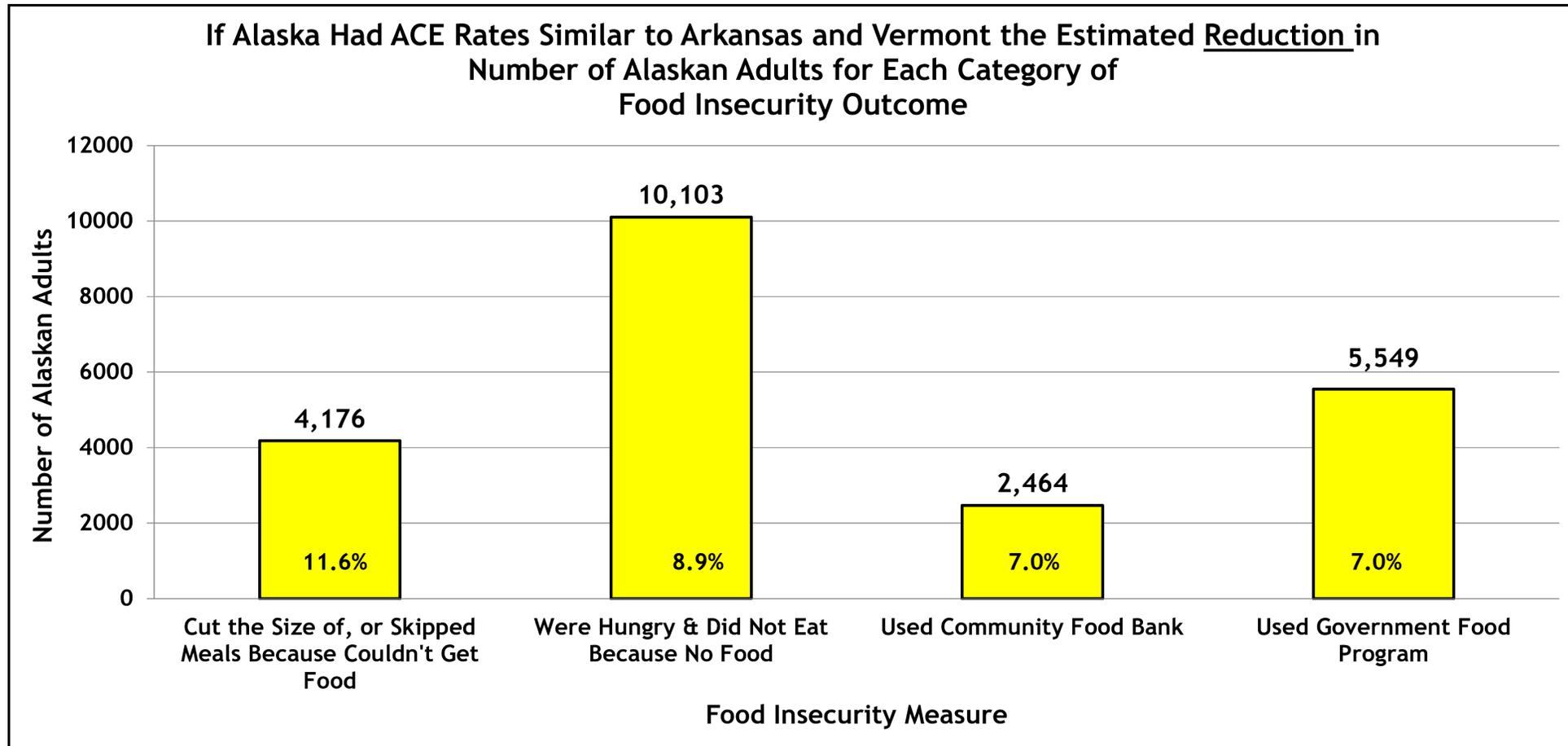


Estimated Reduction in Number of Alaskan Adults for Behavioral Health Outcomes



Calculations based on 2013 Alaska BRFSS data conducted by the Alaska Mental Health Board and Advisory Board on Alcoholism and Drug Abuse Staff

Estimated Reduction in Number of Alaskan Adults for Food Insecurity Outcomes



Calculations based on 2013 Alaska BRFSS data conducted by the Alaska Mental Health Board and Advisory Board on Alcoholism and Drug Abuse Staff

How Do We Identify These Kids?

What We're Really Talking About Is..... Conversations

This means we ask the question, “Let’s have a conversation....” rather than “What’s wrong with you?”

- This fundamentally changes the way we interact with people
- Changes an interaction with a family from “I must fix you” to “I will listen to you”

Behaviors Associated with Early Childhood Trauma

Ages: 0-2

- Dysregulated eating, sleeping patterns
 - Developmental regression
 - Irritability, sadness, anger
 - Poor appetite, low weight gain
 - Increased separation anxiety, clinginess
-
- https://www.ecmhc.org/tutorials/trauma/mod3_1.html
 - <https://www.samhsa.gov/child-trauma/recognizing-and-treating-child-traumatic-stress>

Ages 3-6

- Increased aggression
- Somatic symptoms
- Sleep difficulties/nightmares
- Increased separation anxiety
- New fears
- Increased distractibility/high activity level
- Increased withdrawal/apathy
- Developmental regression
- Repetitive talk/play about the event
- Intrusive thoughts, memories
- Absenteeism

Four Questions—Gets Almost Everything

- Has anything really stressful happened to your child since the last time I saw you?
- How has that affected your child's behavior?
 - Corollary question: How has this event and any changes in your child's behavior affected you?
- What have you done that you've enjoyed with your child since the last time I saw you?
- Give me three words that describe your child to you.

Resilience to ACEs

The most important protective resource to enable a child to cope with exposure to violence is a strong relationship with a competent, caring, positive adult, often a parent—but doesn't have to be!



Resilience—Ordinary Magic

With the support of good parenting by either a parent or other significant adult, a child's cognitive and social development can proceed positively even with adversity.



If a Traumatic Stressor Is Identified:

- Assess for child and family safety
- Provide education/guidance about behavior management, routines and daily living activities to promote recovery and sense of safety
- Refer to social work, child protection, domestic violence team or for mental health intervention, if needed
- Alaska Child Trauma Center
- Help Me Grow Alaska

So....Where Is the Best Place to Focus Society Efforts to Improve Family Health?

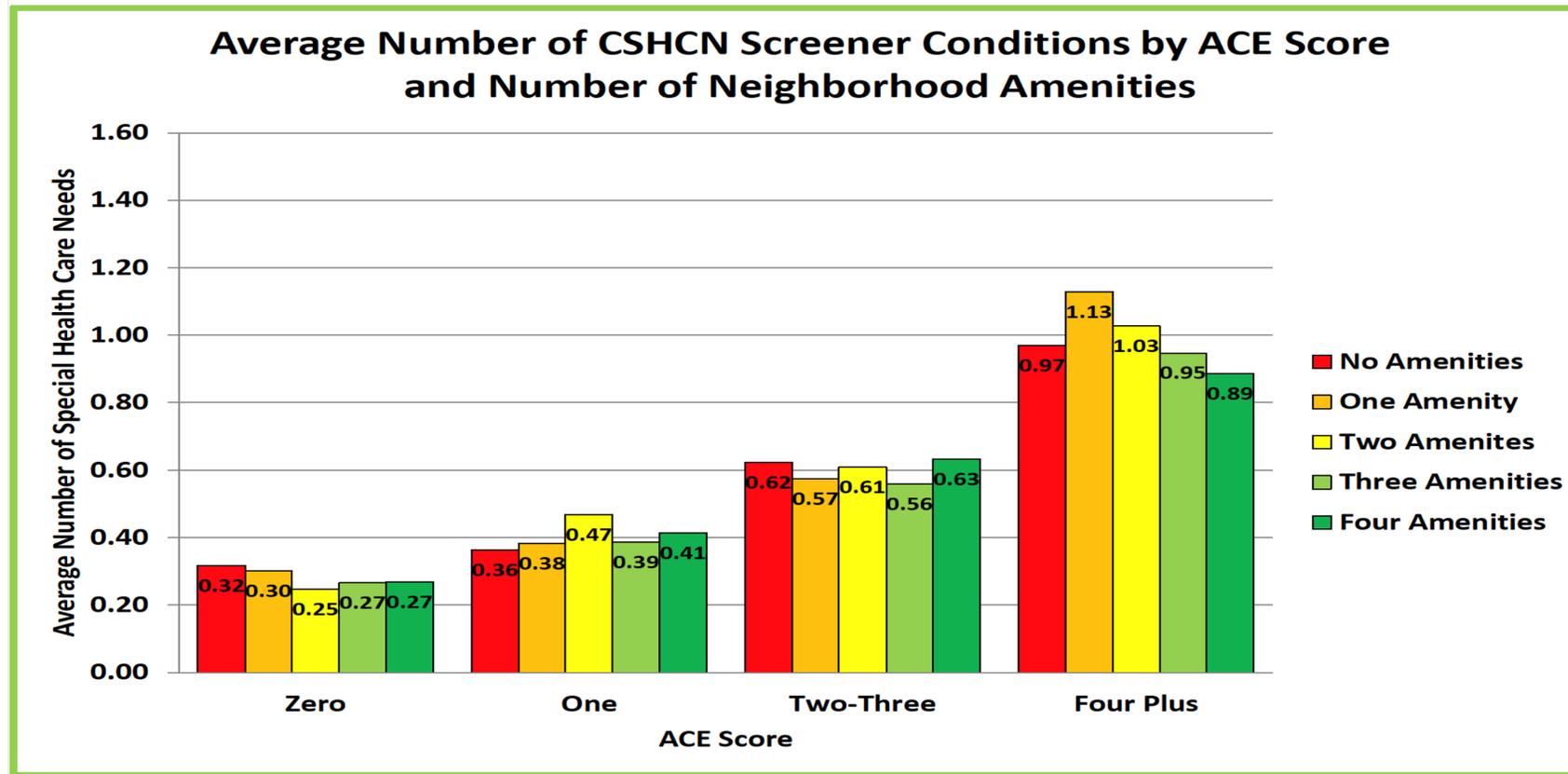
Data from the National Survey on Children's Health (2011-12) combining ACEs data with chronic child health outcomes and overlaying environmental changes to see if there is an effect.



Effect of Neighborhood Amenities on Child Health

1. Sidewalks
2. Parks
3. Recreational Center
4. Library

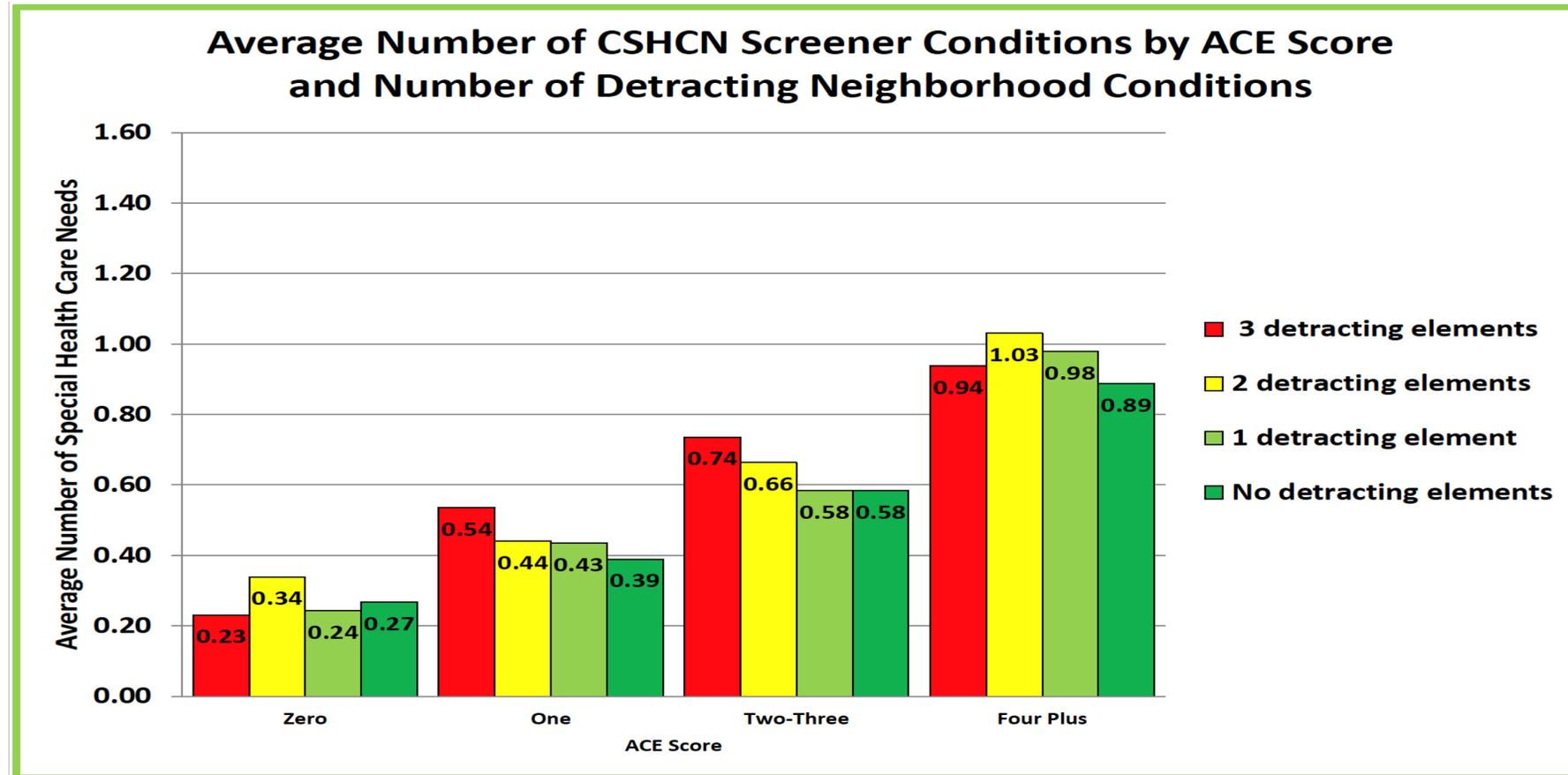
Effect of Neighborhood Amenities on Child Health (con't)



Effect of Neighborhood Detracting Elements on Child Health

1. Litter or garbage about
2. Dilapidated housing
3. Broken windows or graffiti

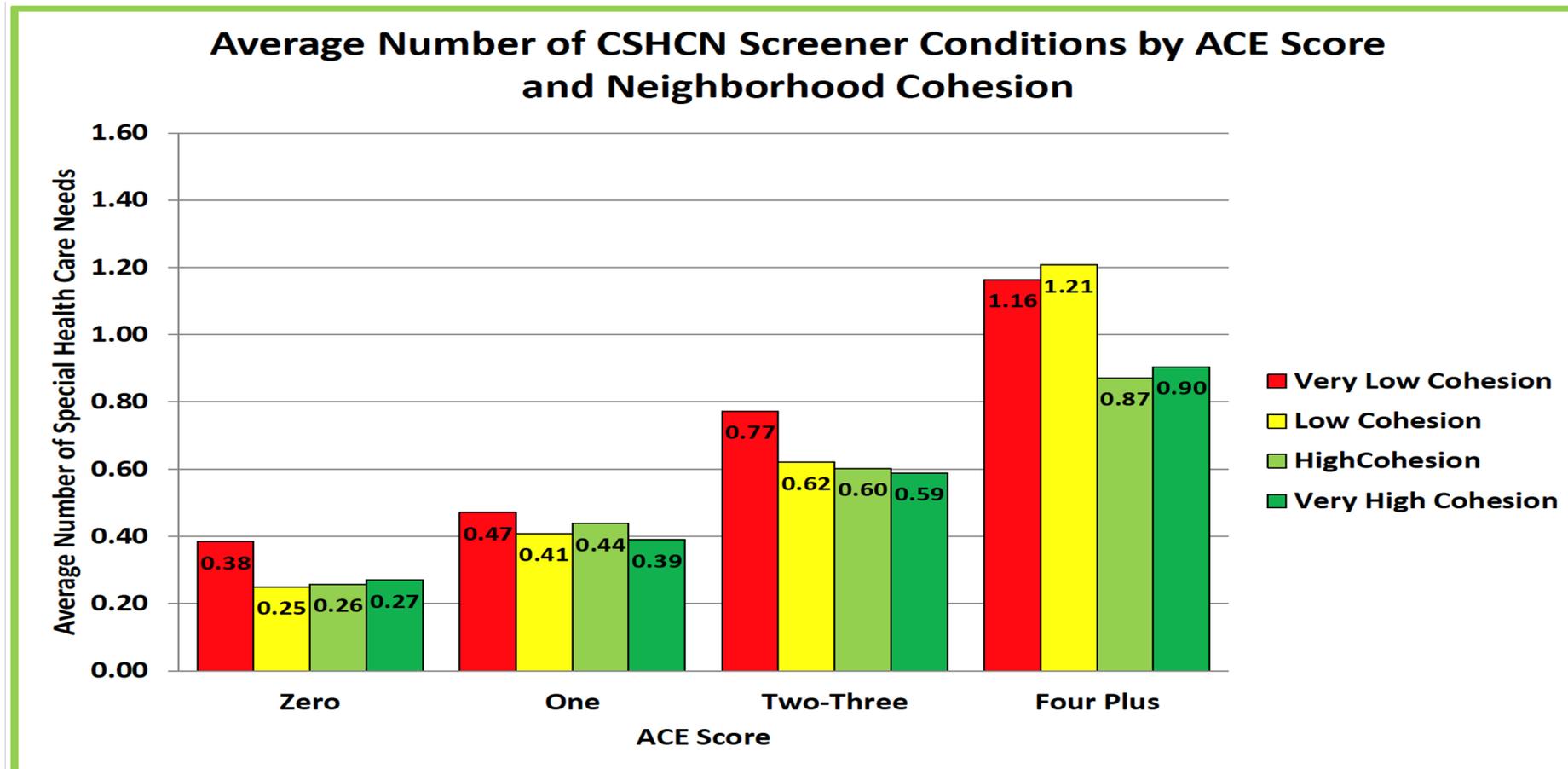
Effect of Neighborhood Detracting Elements on Child Health (con't)



Effect of Neighborhood Cohesion on Child Health

1. People help each other out
2. People watch each other's children
3. People to count on
4. Adults I can trust

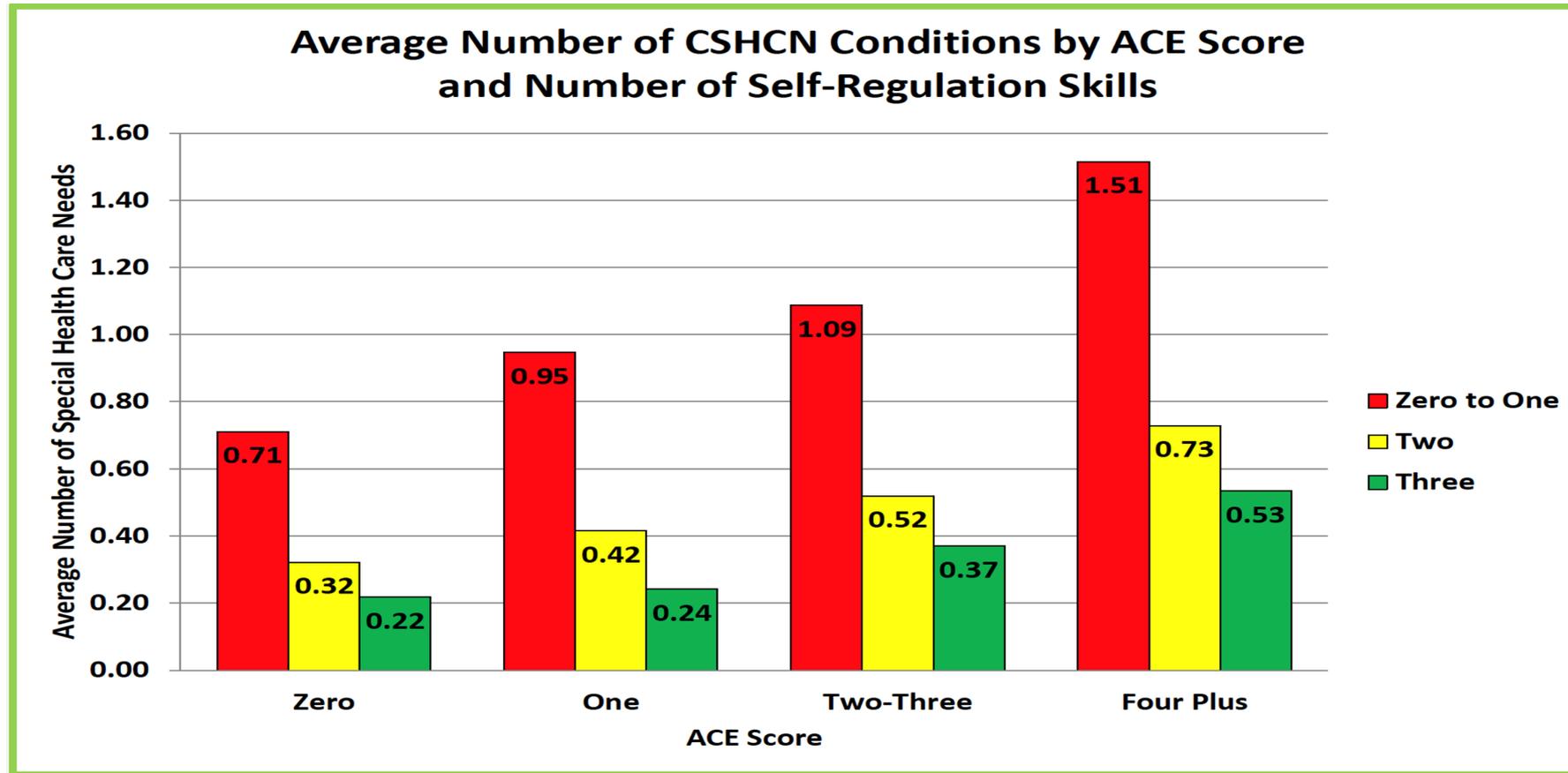
Effect of Neighborhood Cohesion on Child Health (con't)



Effect of Self-Regulation Skills on Child Health

1. Finishes tasks and follows through on commitments
2. Stays calm and in-control when facing a challenge
3. Shows interest and curiosity in learning new things

Effect of Self-Regulation Skills on Child Health (con't)



Self-Regulation: ARC Framework

- **Attachment**
 - Caregiver affect management
 - Attunement
 - Consistent response
- **Regulation**
 - Identification
 - Modulation
 - Expression
- **Competency**
 - Executive function
 - Self development
- Alaska Child Trauma Center—training available for organizations to implement ARC
 - <https://www.acmhs.com/programs-services/child-family-services/alaska-child-trauma-center>



Foundations of Healthy Development

- Healthy relationships
 - Consistent
 - Nurturing
 - Protective
- Healthy environment
 - Free from toxins
 - Safe and active exploration
- Healthy nutrition
 - Breastfeeding support
 - Maternal nutrition**
 - **Traditional diet



Systems Changes

SB 105 (2018)

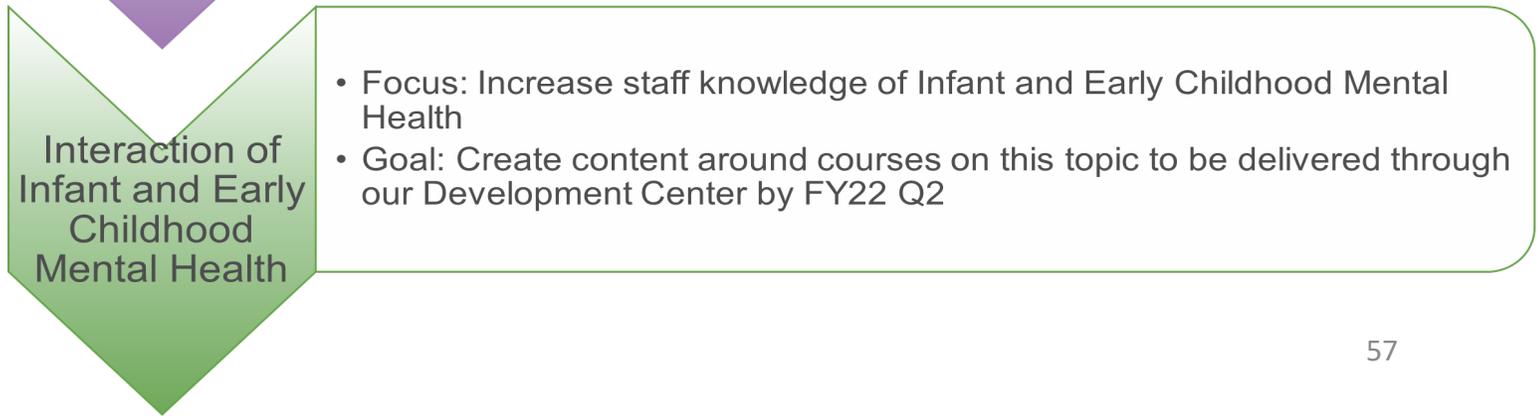
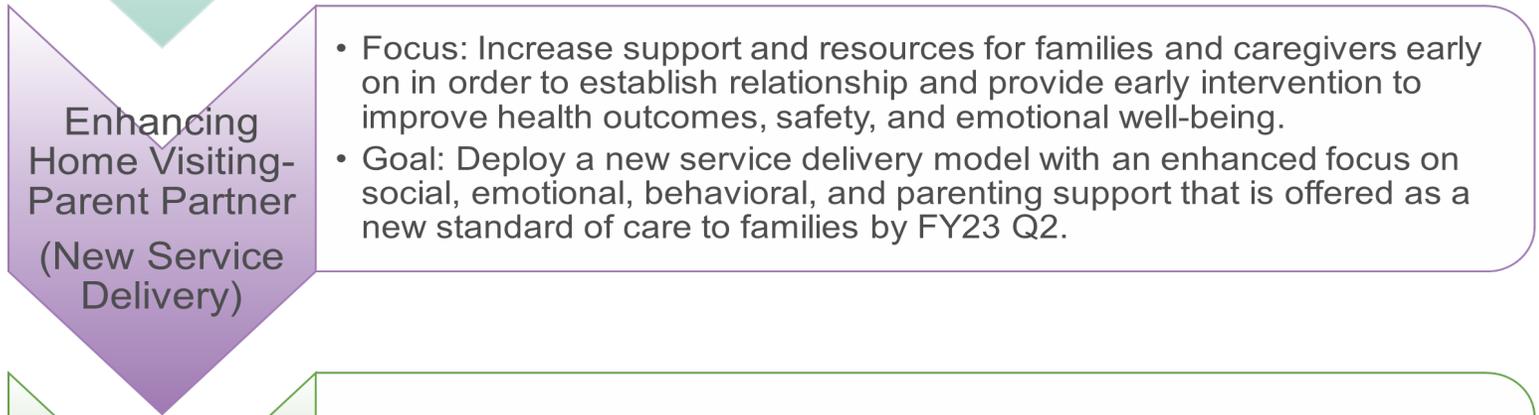
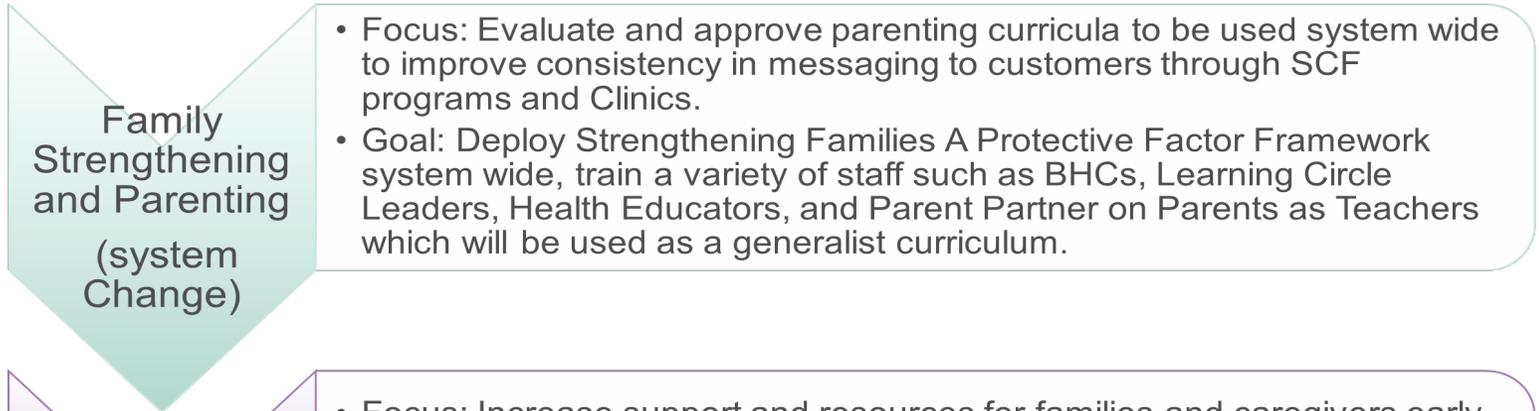
It is the policy of the state to acknowledge and take into account the principles of early childhood and youth brain development and, whenever possible, consider the concepts of early adversity, toxic stress, childhood trauma, and the promotion of resilience through protective relationships, supports, self-regulation, and services.

New Generations Project Aim



Alaska Native families will increase their physical, mental, emotional and spiritual wellness by optimizing the effectiveness of services that support families in the preparation for and care of new generations by inventorying current work, learning from internal and external best practices, engaging SCF and community stakeholders and creating a coordinated, system approach to be deployed by December 2023.

Prevention and Promotion Strategies



Alaska's Comprehensive Integrated Mental Health Program Plan 2020-24

Alaskan Mental Health Program Plan



The plan can be found here:
<http://dhss.alaska.gov/Commissioner/Pages/MentalHealth/default.aspx>

Goal 1 (Early Childhood)

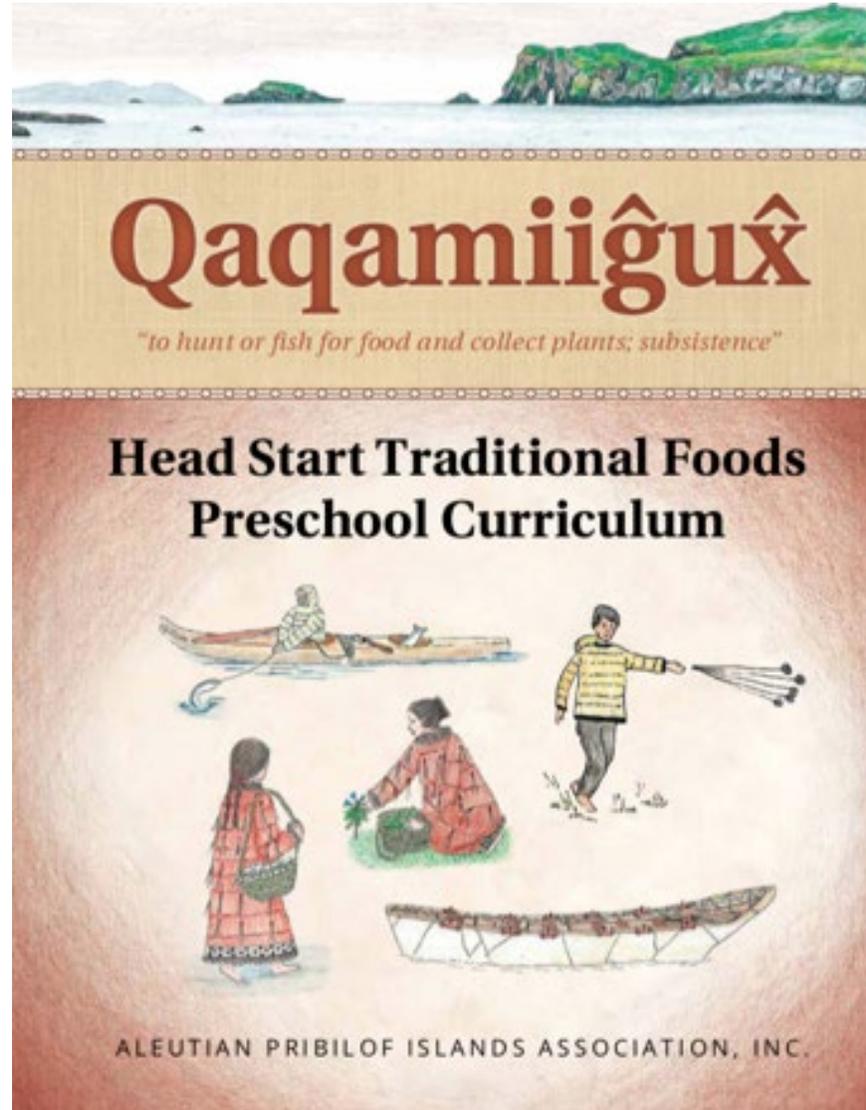
Programs Serving Young Children Promote Resiliency, Prevent and Address Trauma, and Provide Access to Early Intervention Services.

http://dhss.alaska.gov/Commissioner/Documents/MentalHealth/StrengtheningSystem-CompPlan_Goal1_2020-24.pdf

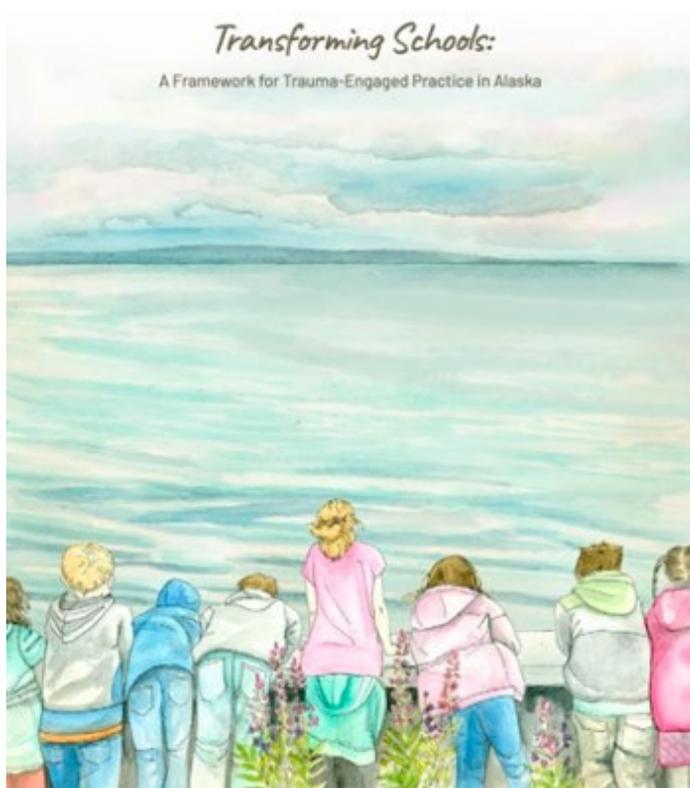
Goal 1 (Early Childhood), Objectives:

- **1.1 Objective:** Promote practice-informed, universal screening efforts and early intervention services.
- **1.2 Objective:** Provide ongoing support to ensure accurate identification and treatment of social-emotional needs for children and their caregivers, congruent with their cultural identification.
- **1.3 Objective:** Reduce the instances and impact of Adverse Childhood Experiences (ACEs) through community engagement and by improving social determinants of health.

APIA Head Start



Transforming Schools



Integrates school-wide, trauma-engaged approach to improve academic outcomes and well-being for all students using stories, research, and best practices.

<https://aasb.org/wp-content/uploads/Transforming-Schools-A-Framework-for-Trauma-Engaged-Practice-Final.pdf>

Building an Agenda for Families

- Support systems of Primary Care
 - Medicaid
 - 1115 Waiver
 - Mental health provider in all clinics
- Childcare and early education
 - Universal, high-quality childcare
 - Alaska SB 6
- Family economic stability
 - Including employment support for parents
 - Paid parental leave
 - Flexible work hours to attend school activities
- Community development
 - Including zoning regulations that influence the availability of open spaces and sources of nutritious food
 - Housing
 - Environmental protection

Building an Agenda for Families (con't)

- Support food security for families
 - The Children's Lunchbox
 - Food Bank of Alaska
- Support programs that train caregivers and parents to care for their children
 - Strengthening Families and Positive Parenting Program
- Support affordable, high-quality childcare for all families so that parents may work without compromising their child's development
 - Thread
- Support the development of trauma-informed schools
 - Transforming Schools: A Framework for Trauma Informed Practice in Alaska
 - Juneau Trauma-Informed Schools Pilot Project
- Support a safe place for kids to go after school
 - Campfire Alaska

Building an Agenda for Families (more)

- Support improved mental health services for families in all areas of Alaska
 - Judge Vanessa White's Court in Palmer
 - Alaska Child Trauma Center
- Support safe housing for families
- Support a living wage and ongoing training for teachers, Head Start workers, and childcare workers
- In general.....
 - Intensive intervention and support for families at high risk of experiencing toxic stress!!!

Basically....

Families with young children are the infrastructure of Alaska, and there's nothing more important to Alaska's successful future.



Thank you!!!

Matthew Hirschfeld MD/PhD

Board Member

All Alaska Pediatric Partnership

mhirschfeld@scf.cc

www.a2p2.org

