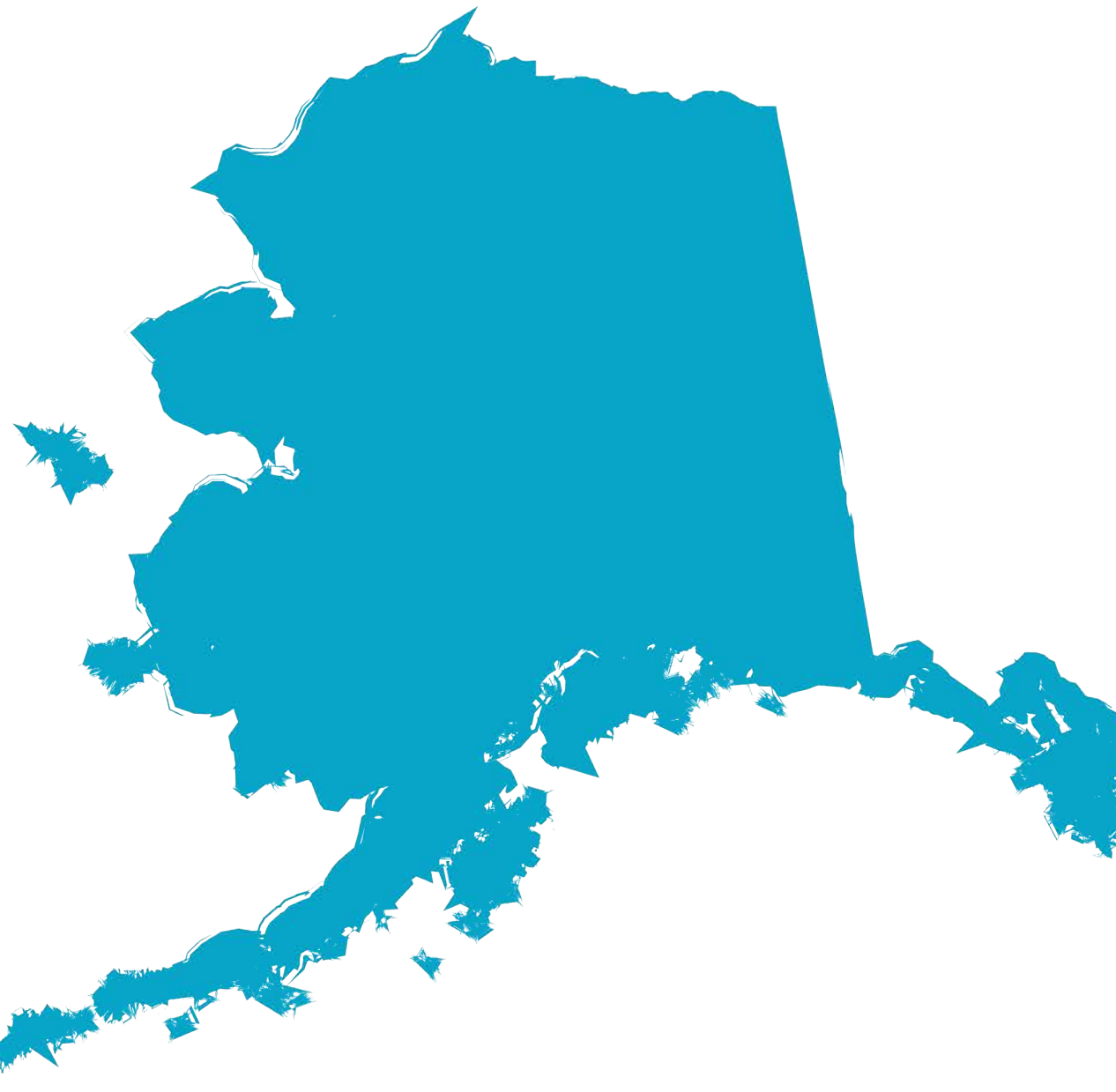


Alaska's Most Important Infrastructure:

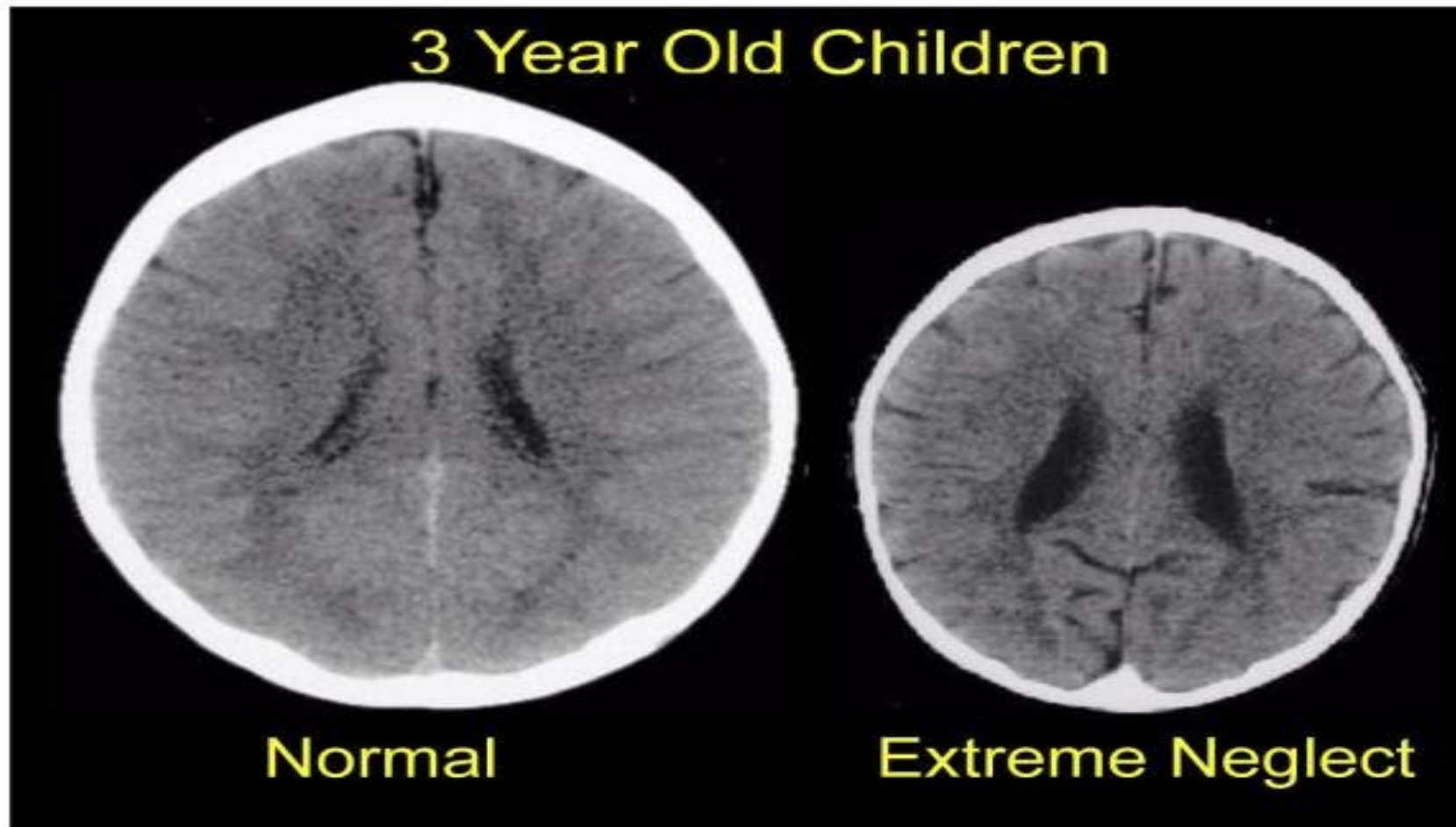
Improving the Health and Wellness of Families with Young Children



ALL ALASKA
PEDIATRIC
PARTNERSHIP



Impact of Neglect



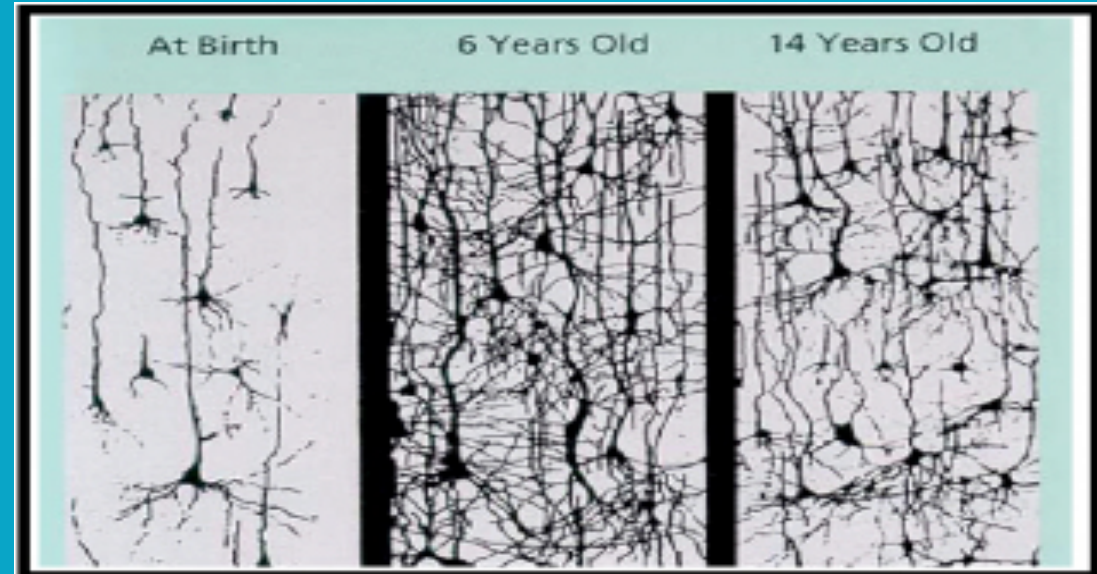
Critical Concepts in Early Brain Development



- Brain growth and plasticity
- Critical periods of sequential development
 - Molecules in the brain that stimulate neural plasticity
- Role of experience

Synapses = Connections

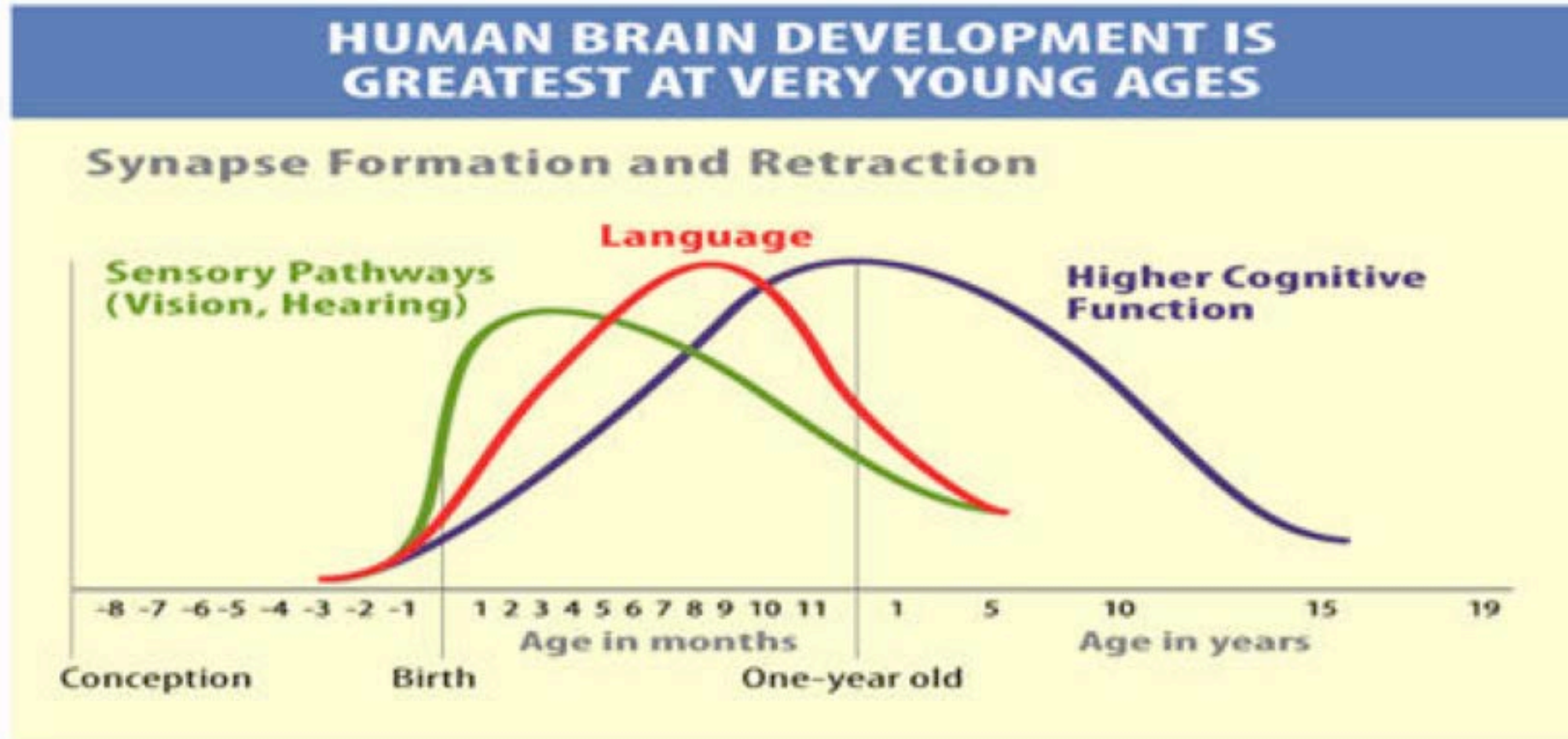
- The human brain is shaped through neuronal connections
- Changes in these connections
 - birth: 50 trillion synapses
 - 1 year: 1,000 trillion
 - 20 years: 500 trillion
- The remodeled brain facilitates efficiency and learning



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 y/o
- 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 y/o**

Brain Development as a Measure of Synapse Formation



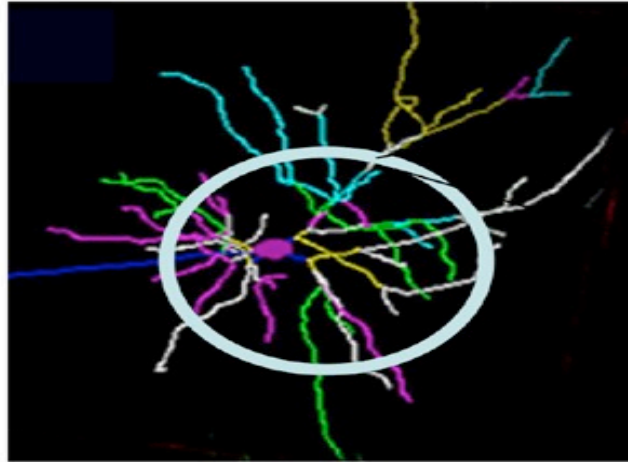
SOURCE: C. A. Nelson in *From Neurons to Neighborhoods*, 2000



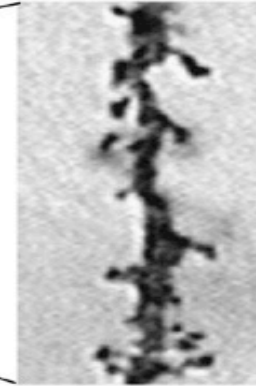


Persistent Stress Changes Brain Architecture

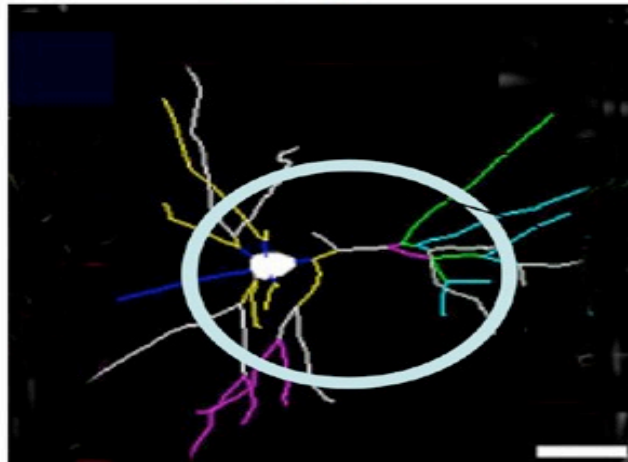
Normal



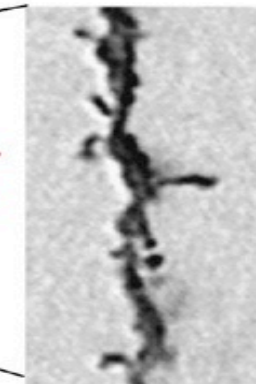
Typical neuron—
many connections



Toxic
stress



Damaged neuron—
fewer connections



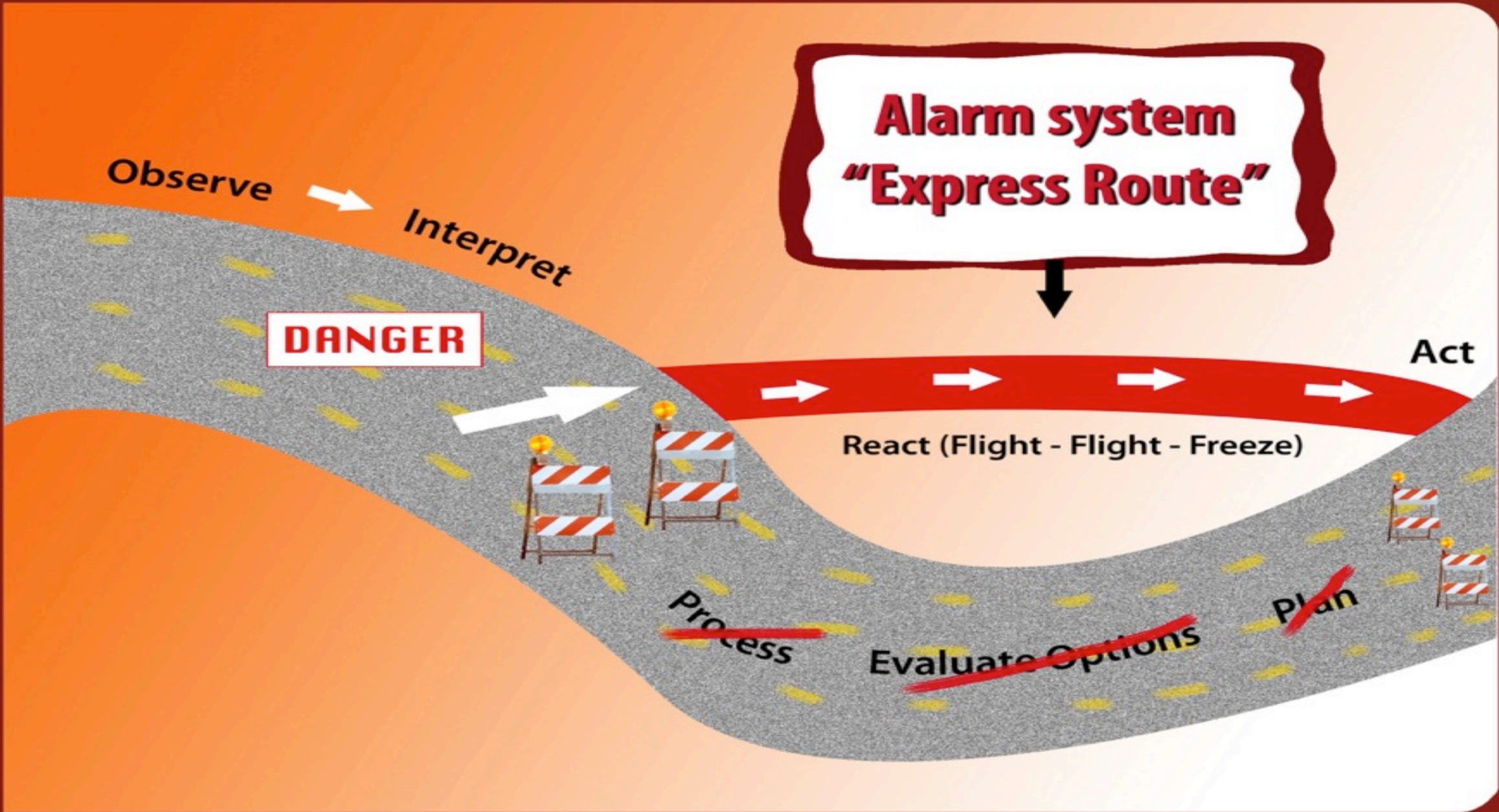
Prefrontal Cortex and
Hippocampus

Brain process under typical conditions

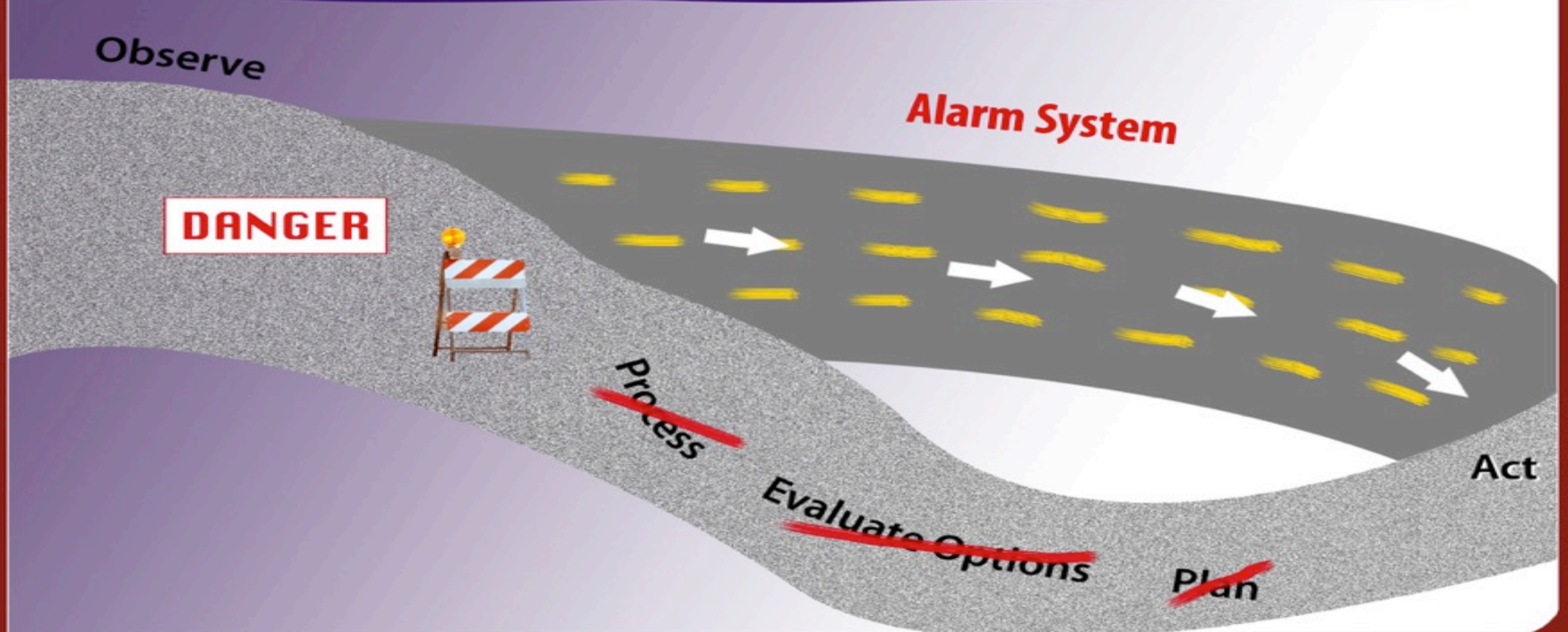
Observe → Input → Interpret → Process → Evaluate Options → Plan → Act

A diagram illustrating a brain process flow. It features a curved path that starts on the left and ends on the right. The path is represented by a grey, textured surface with a dashed yellow line running along its length. Below the path, a sequence of steps is listed, connected by right-pointing arrows: Observe → Input → Interpret → Process → Evaluate Options → Plan → Act. The background is a gradient of yellow and white, with a dark red border at the top and bottom.

Alarm system "Express Route"



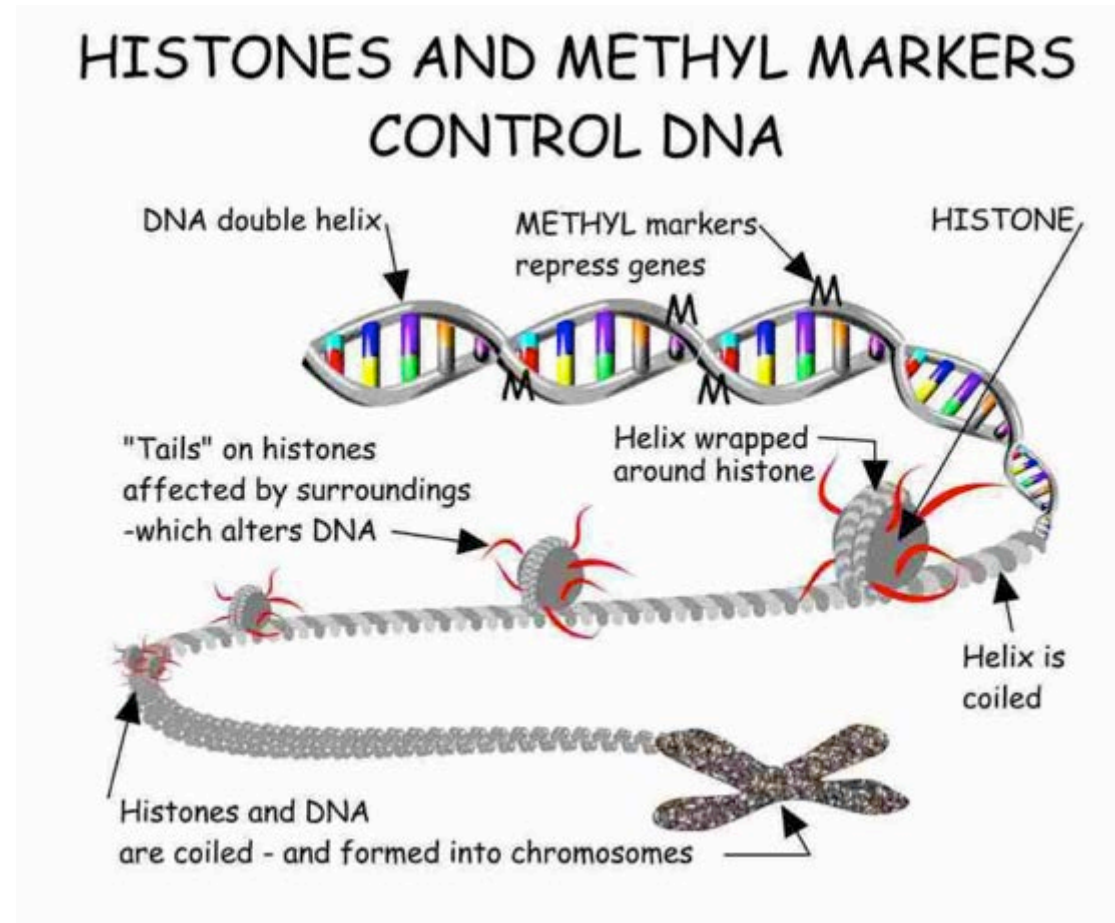
**With repeated stress, the Alarm System
"Express Route" becomes the main road**



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....

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**

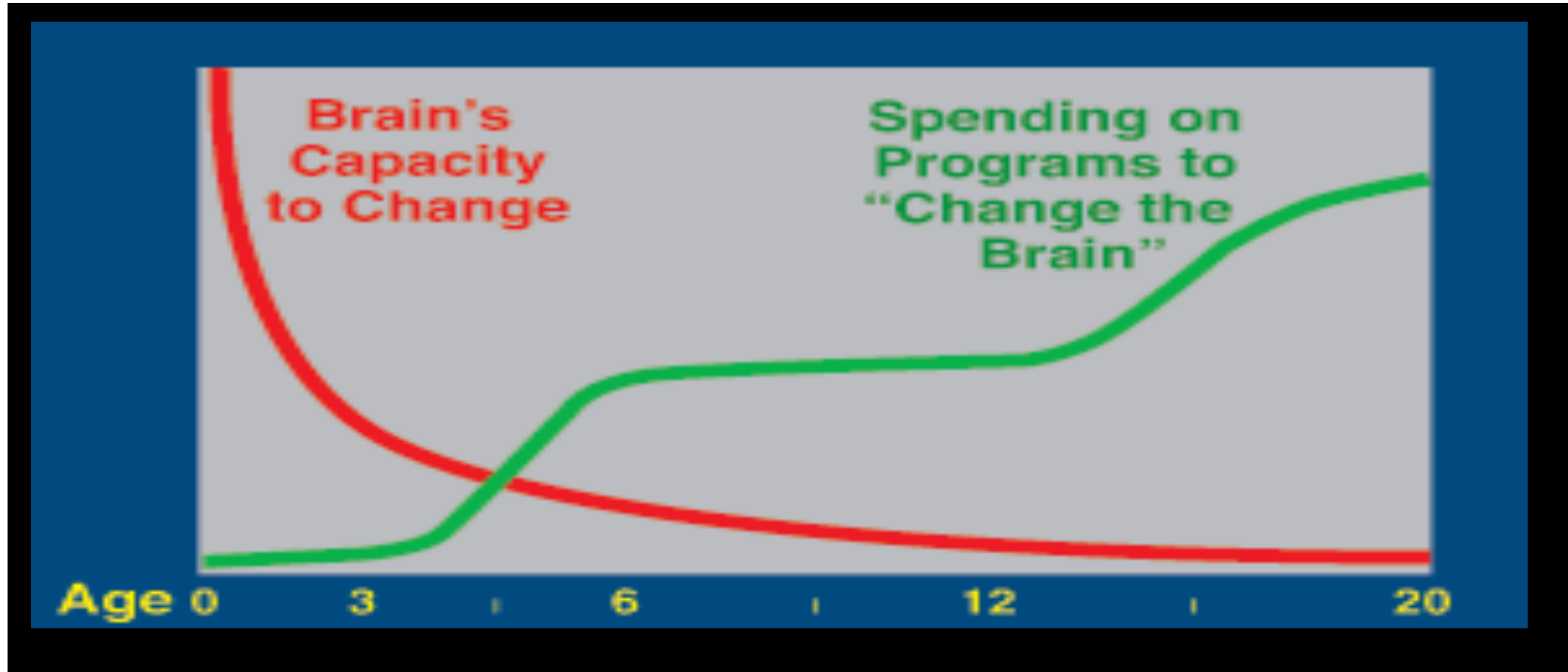


Pasleka/Photo Researchers Inc.

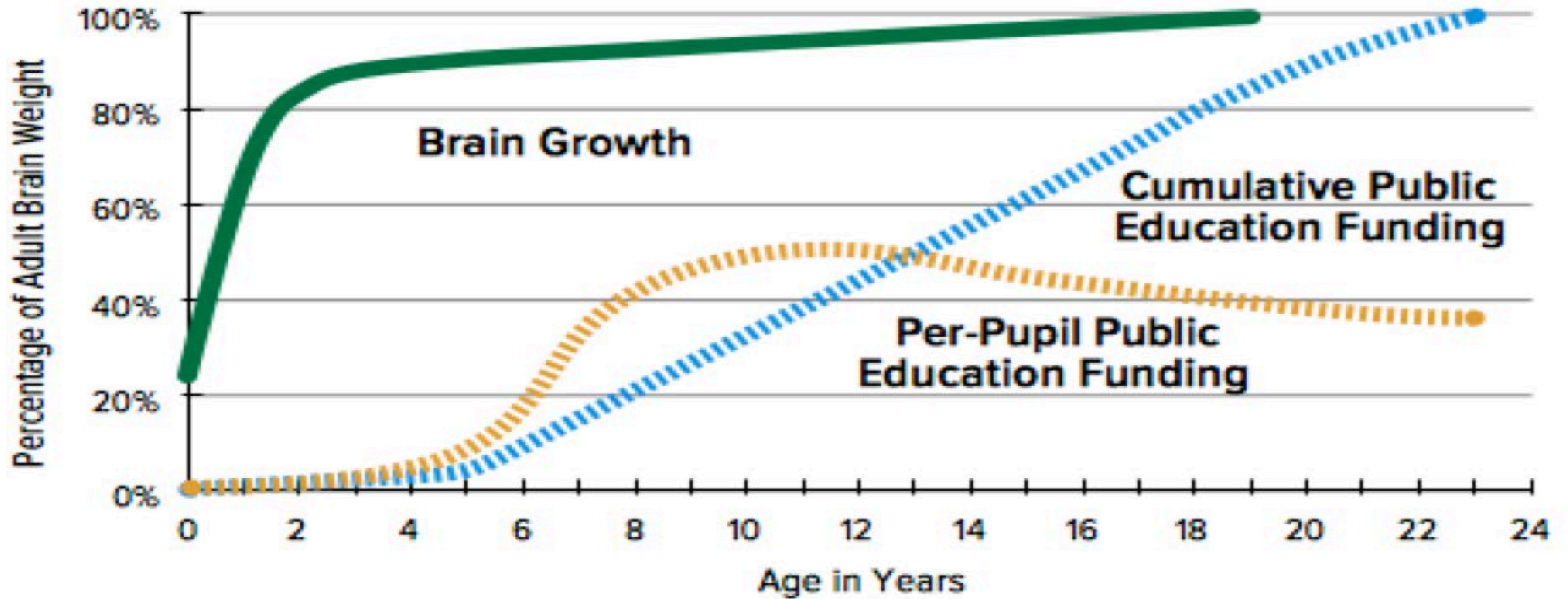
But These Epigenetic Effects Can Be Reversed

- 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



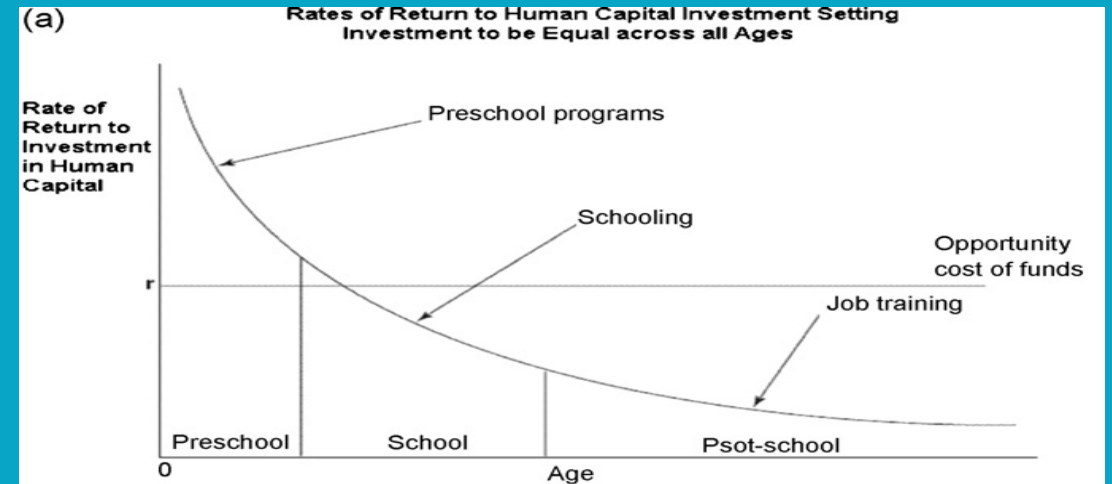
Public Investment in Children by Brain Growth



Econometrics of Early Intervention & Prevention

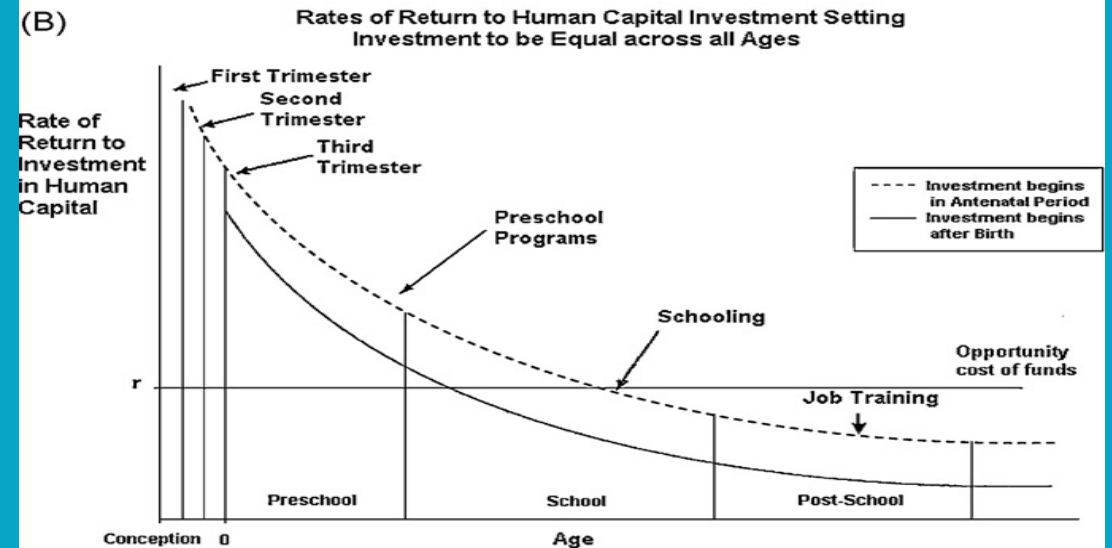
- Funding early interventions provides the largest possible return on investment

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

Washington State Institute for Public Policy—WSIPP

- Most early childhood interventions have a benefit to cost ratio of great than \$1.00
 - Evidence based interventions
 - Can be applied locally or statewide
 - Much more effective than intervening in later years, when the issues are much more ingrained

- <https://www.wsipp.wa.gov/>

Specific Examples

Benefit to Cost

- Strengthening Families: \$3.83/1
- Head Start: \$2.18/1
- In Orange County
 - Help Me Grow: \$3.98/1
- *All these programs provide support to both parents and kids to optimize emotional and cognitive development in order to be ready for kindergarten and beyond!*

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

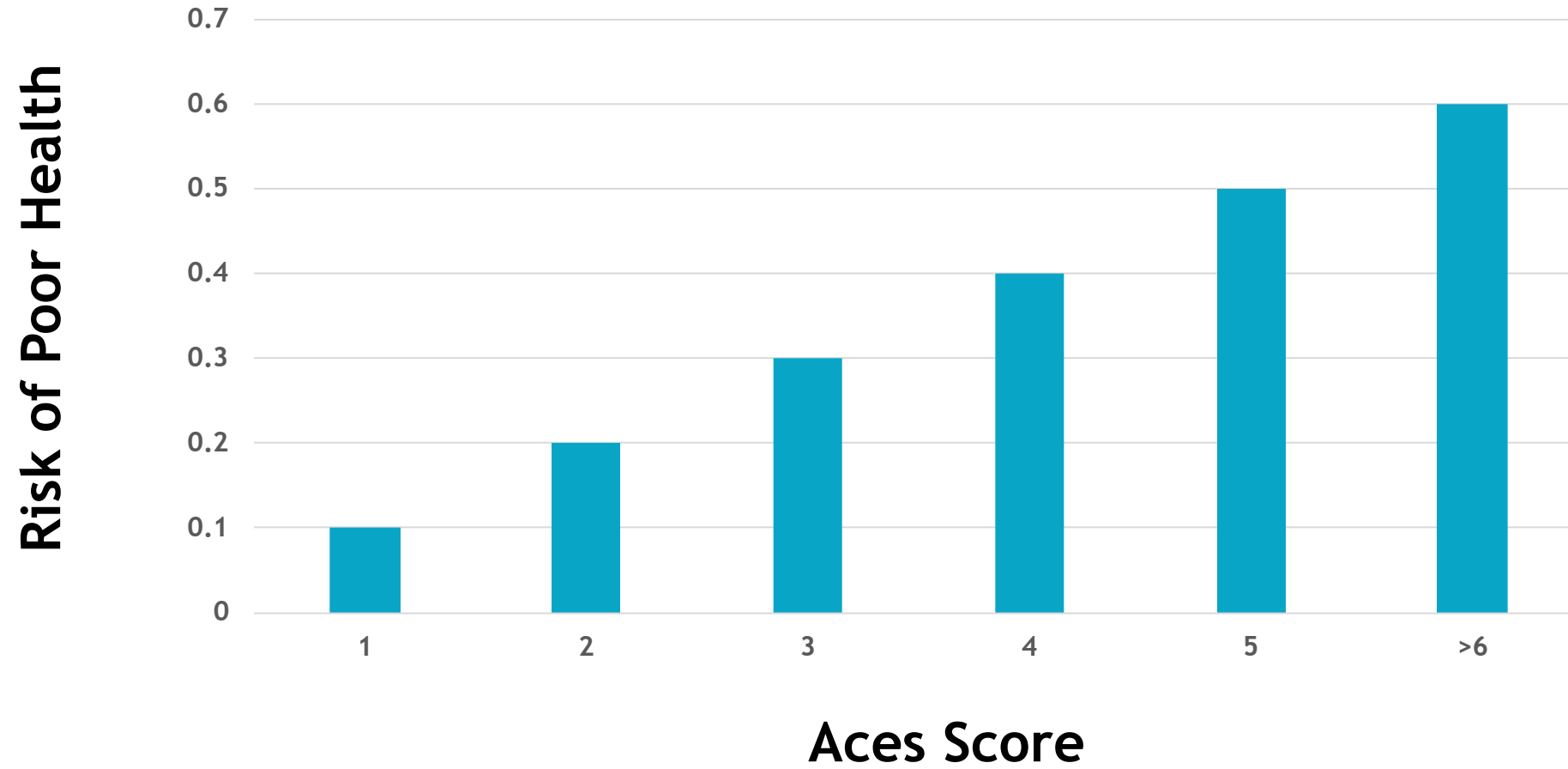
- Prevalence of ACEs in study group:
 - Sexual abuse = 21%
 - Domestic violence in childhood home = 13%
 - Substance abuse in home = 28%
 - Parental separation or divorce = 24%
 - Physical abuse = 28%
 - Emotional neglect = 15%
 - Emotional abuse = 11%
 - Physical neglect = 10%
 - Mental illness in home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



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
- Over eating and obesity
- Illicit drug use
- Promiscuity
- IV drug use
- Clinical depression

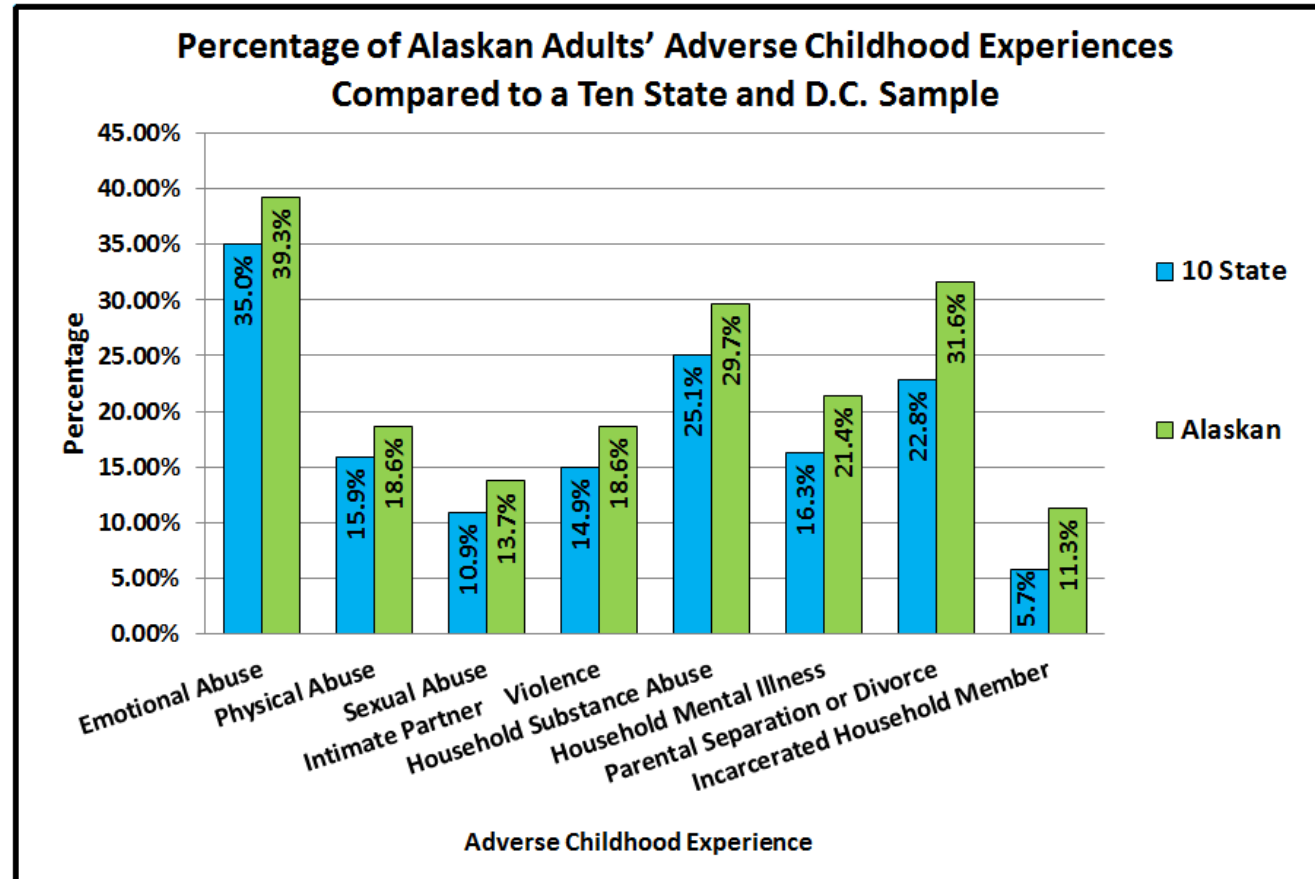
▶ And

- 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

Increasing ACEs in Elementary School Children

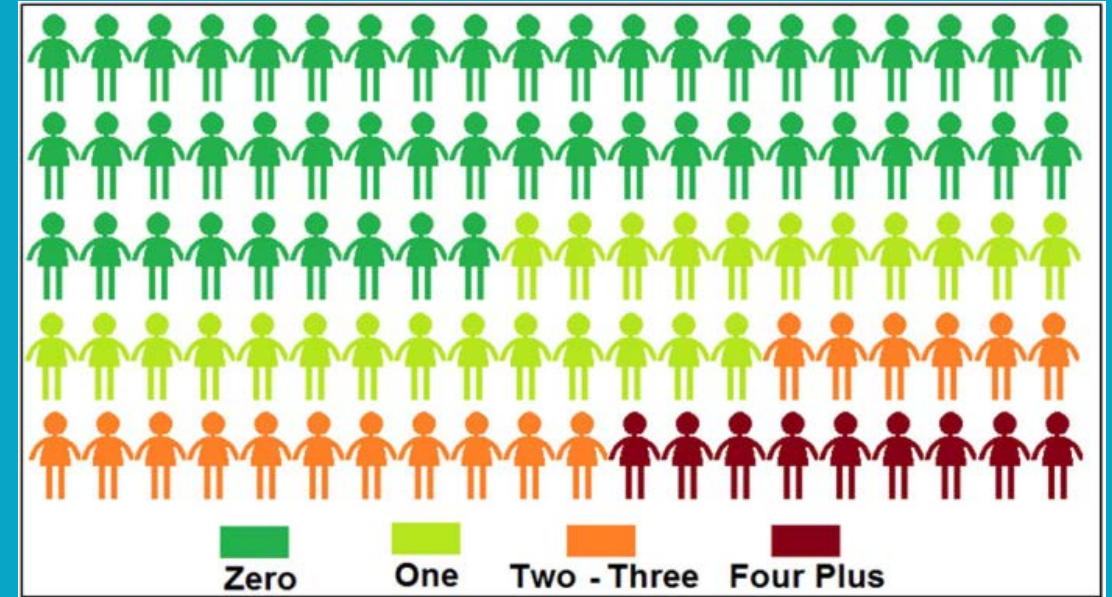
	Academic Failure	Severe Attendance Problems	Severe School Behavior Concerns	Frequent Reported Poor Health
Three or More ACEs N =248	3	5	6	4
Two ACEs N=213	2.5	2.5	4	2.5
One ACE N=476	1.5	2	2.5	2
No Known ACEs =1,164	1.0	1.0	1.0	1.0

ACEs: Alaska vs. 10 States



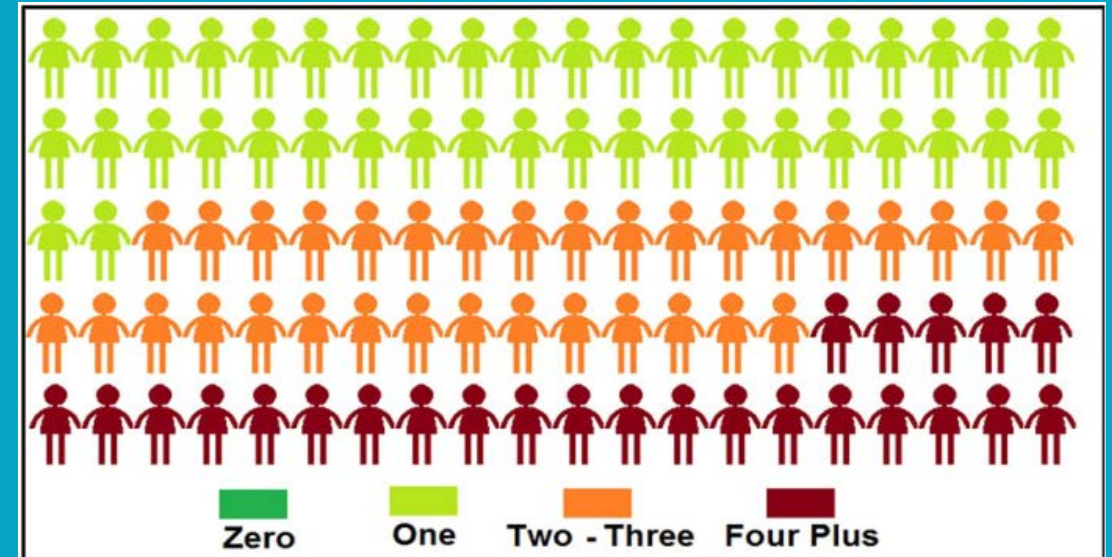
Alaska ACEs in Children

- Alaska Children and Youth ACEs in the General Population



Alaska ACEs in Children

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



Alaska ACES in Children

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



Intimate Partner Violence and Child Maltreatment

- 8.4% of Alaska moms report some form of intimate partner violence during the 12 months prior to or during pregnancy
 - >60% of children born to these moms experienced a report to OCS
- And.....intimate partner violence was present in 19.6% of children who had an OCS report

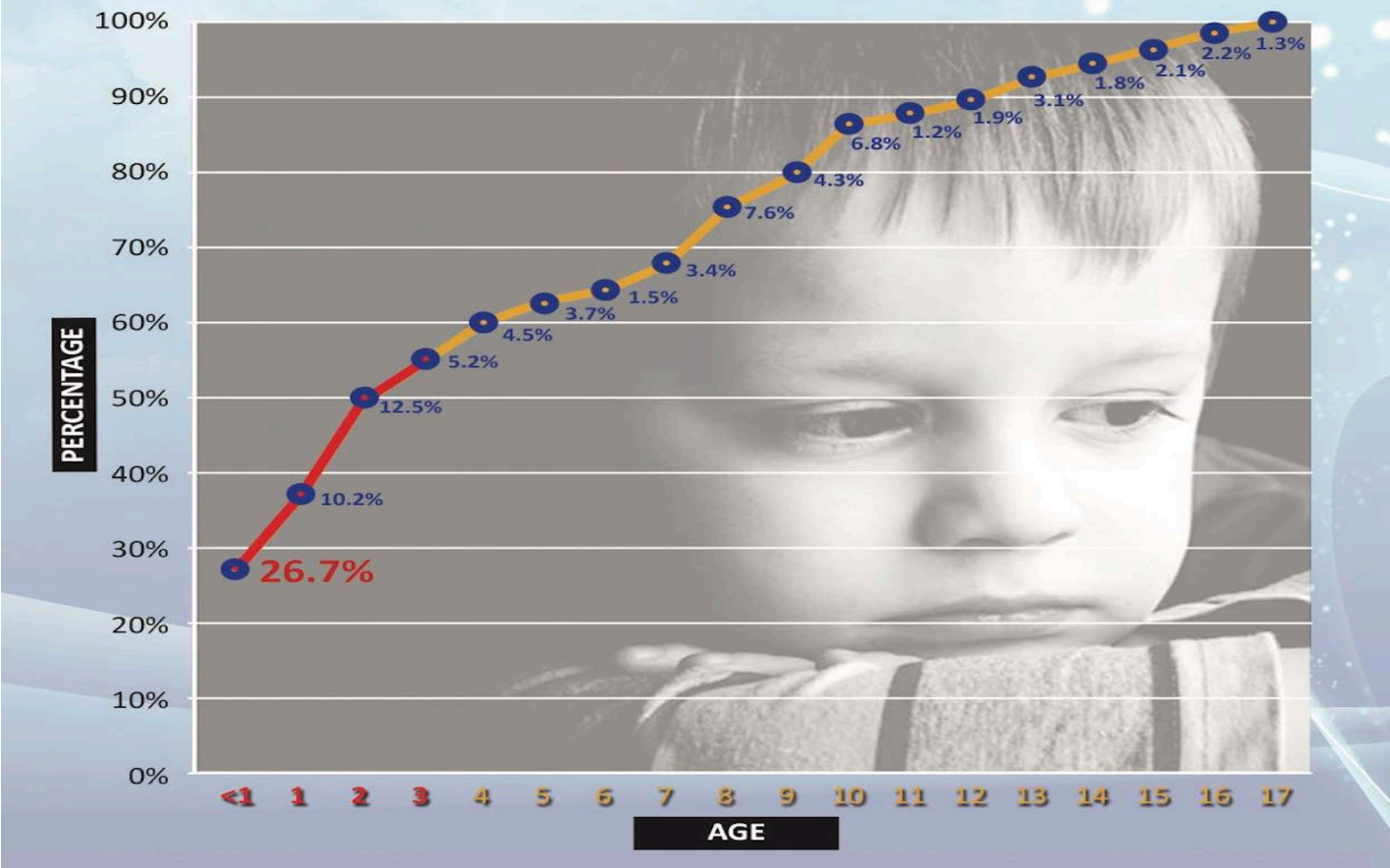
Maternal Stress and OCS Referrals

- Before 7 y/o, half of all children born to moms with 4 or more stressors are reported for child maltreatment

Stressors:

1. Being homeless
2. Husband/partner went to jail
3. Being in a fight
4. Loss of job even though wanted to keep working
5. Husband/partner lost job
6. Argued with husband/partner more than usual
7. Close family member very sick or hospitalized
8. Separated/divorced
9. Moved to a new address
10. Husband/partner said they didn't want pregnancy
11. Has a lot of bills couldn't pay
12. Someone close had problem with drinking/drugs
13. Someone close died

Age When US Kids Accumulate Half of Their Lifetime ACEs



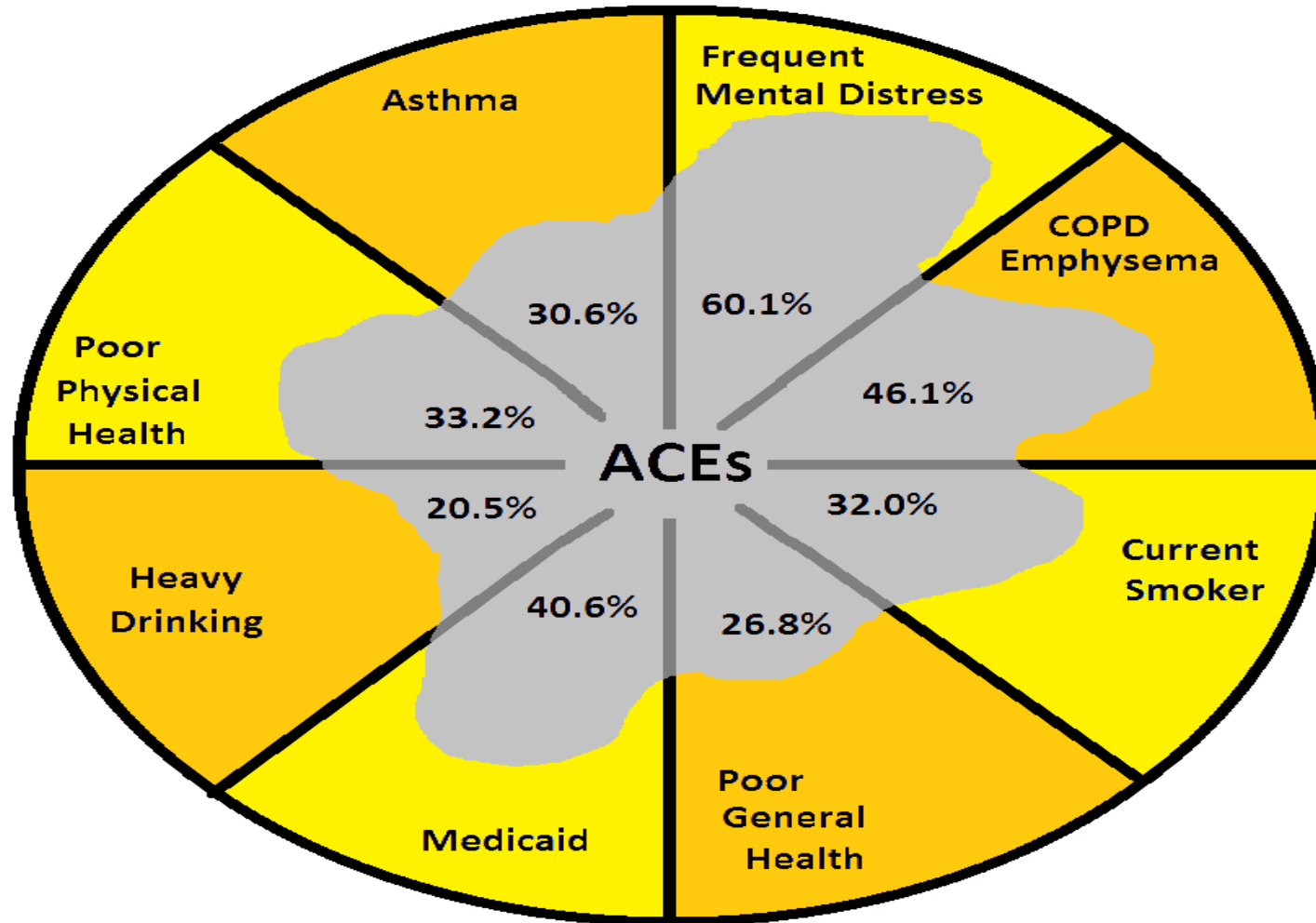
Costs

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

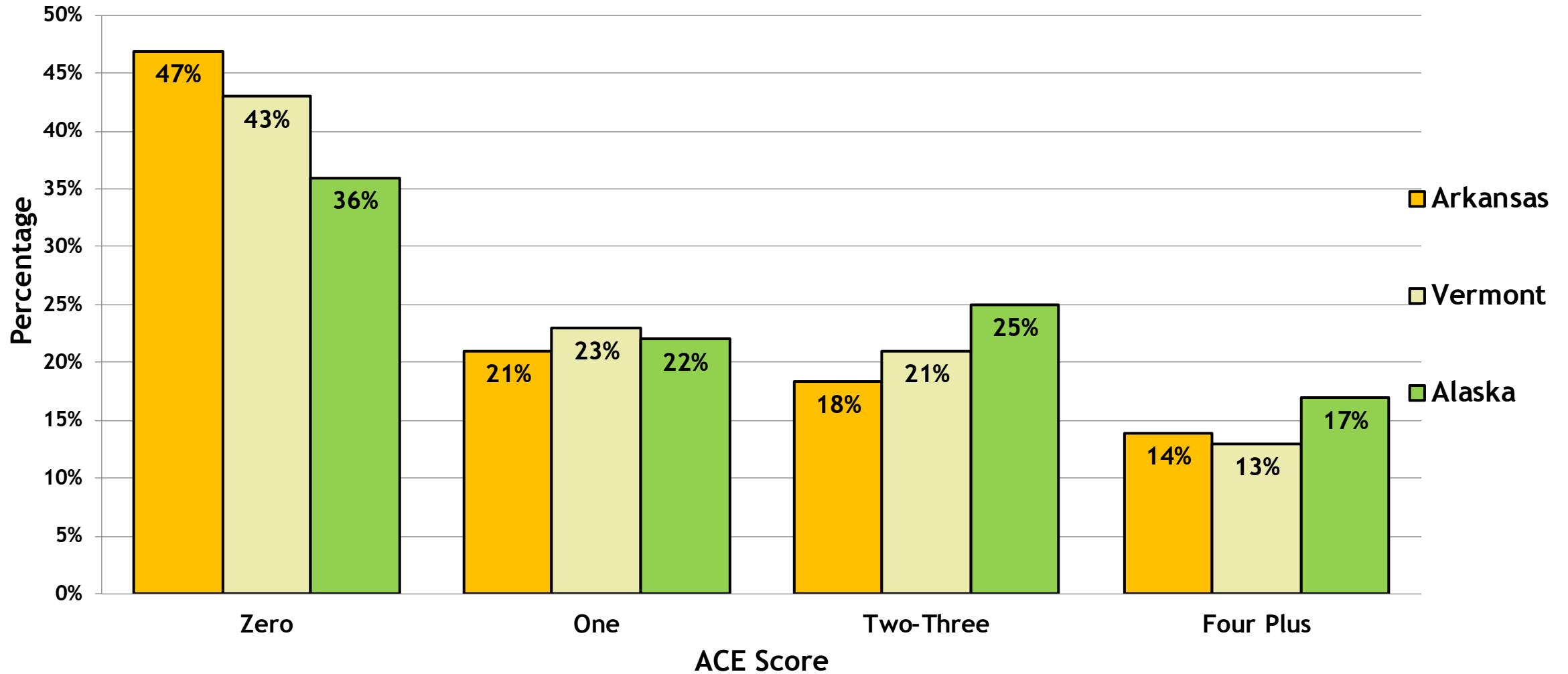
- 49% more likely to be unemployed
- 274% more likely to be unable to work
- 92% more likely to earn less than \$20,000 annually

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

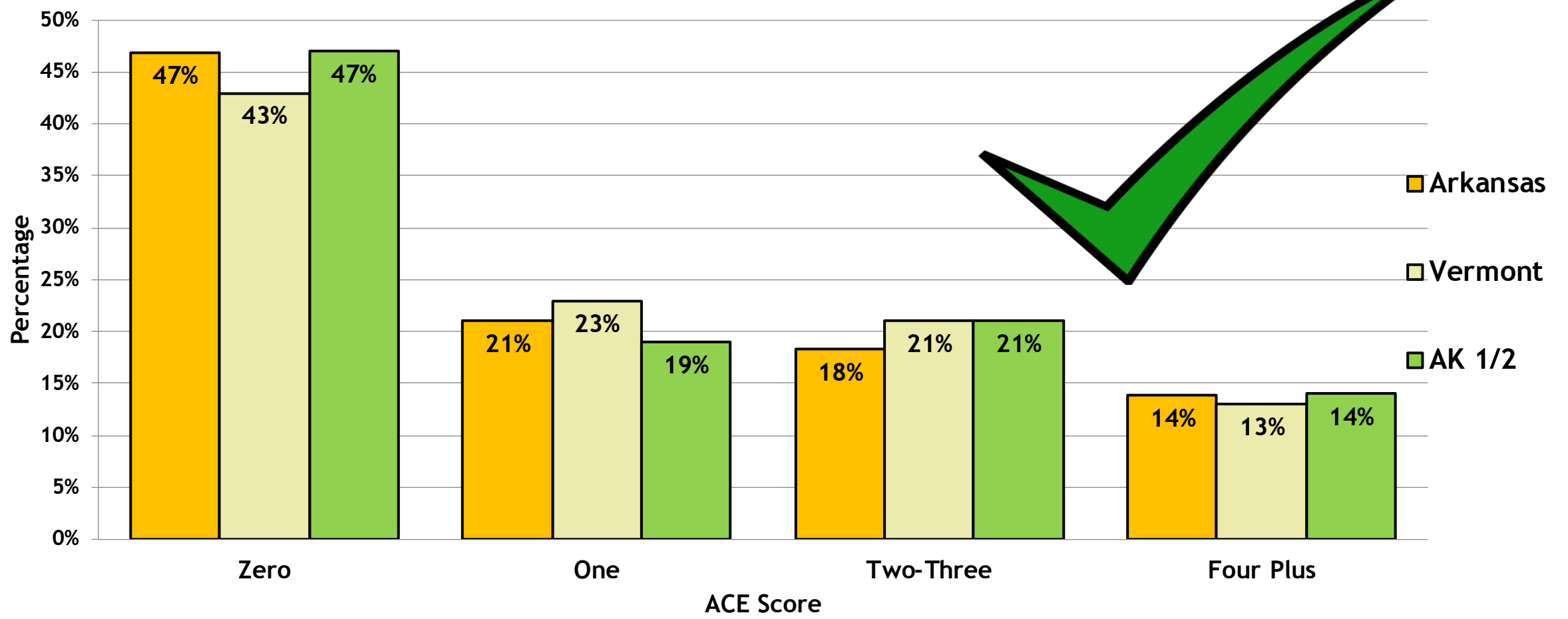
Population Attributable Risks in Alaska



Alaskan ACEs Compared to Two Other States



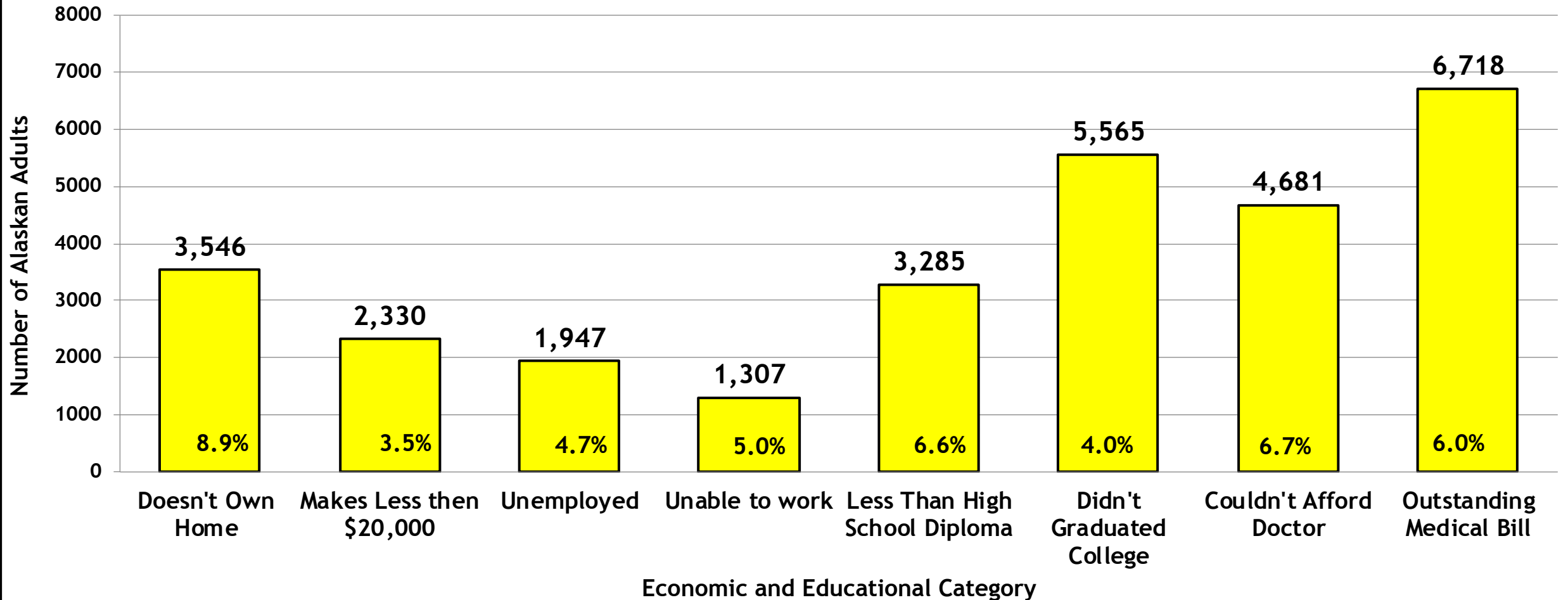
Alaskan ACEs with a One Half ACE Reduction Compared to Two Other States



Reducing Alaska's ACE Score by ½ Point

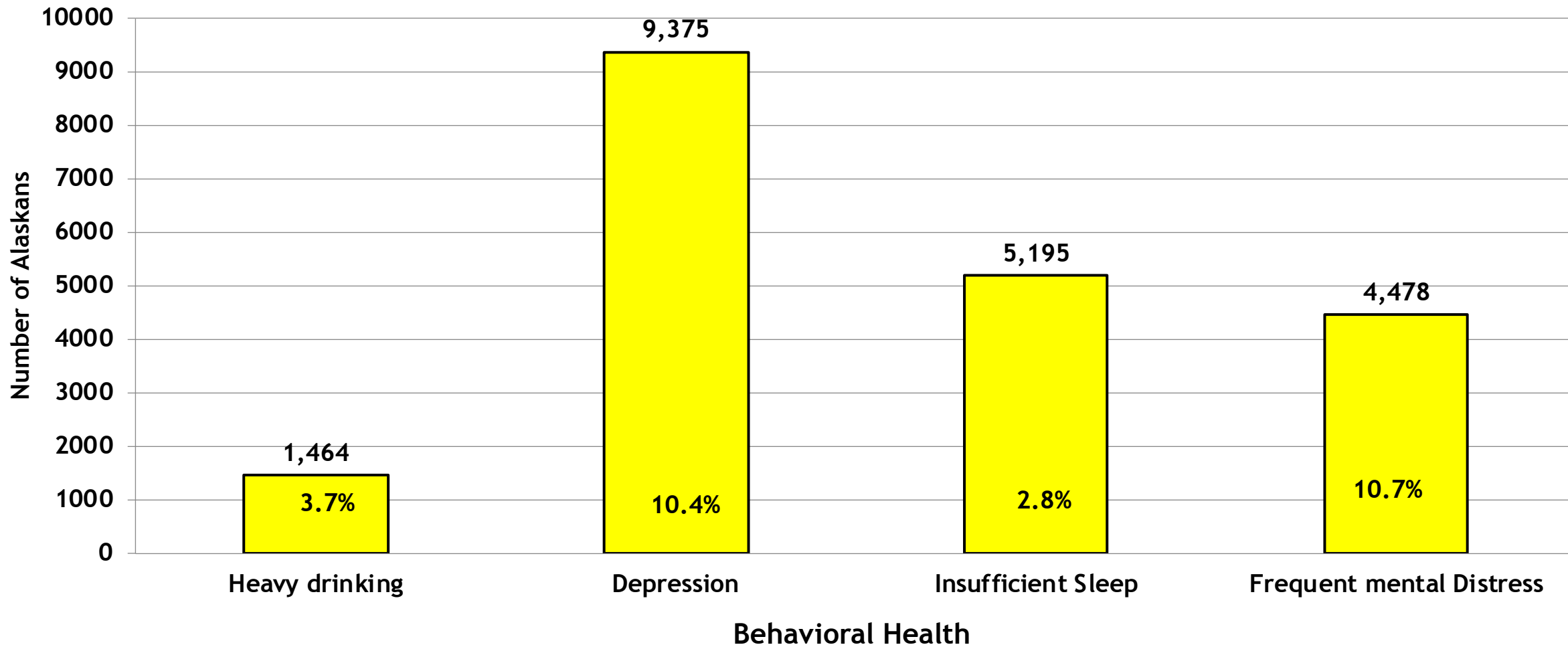
- If we just look at the reduction of
 - Obesity
 - Adult Medicaid recipients
 - Smoking
 - Binge drinking
 - Diabetes
 - Arthritis
- *Alaska will save \$90 million annually*

If Alaska Had ACE Rates Similar to Arkansas and Vermont the Estimated Reduction in Number of Alaskan Adults for Each Category of Economic and Educational Outcome



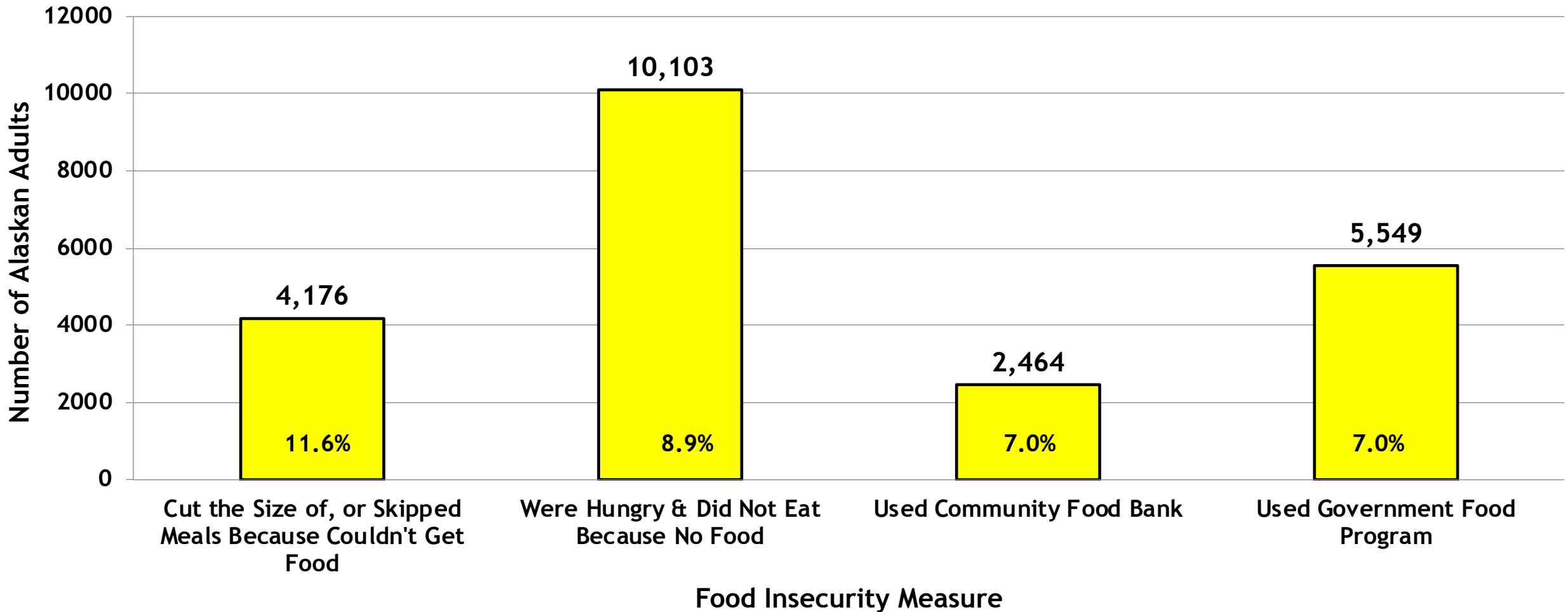
Calculations based on 2013 Alaska BRFSS data conducted by the Alaska Mental Health Board and Advisory Board on Alcoholism and Drug Abuse Staff

If Alaska Had ACE Rates Similar to Arkansas and Vermont the Estimated Reduction in Number of Alaskan Adults for Each Category of Behavioral Health Outcome



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

If Alaska Had ACE Rates Similar to Arkansas and Vermont the Estimated Reduction in Number of Alaskan Adults for Each Category of Food Insecurity Outcome



How Do We Identify These Kids?



What We're Really Talking About Is Trauma-Informed Care

- 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 a interaction with a family from “I must fix you” to “I will listen to you”

Parent Screening Questionnaire

- One-page questionnaire, completed by the parent
- Targets risk factors that jeopardize children's health, development and safety
- Administered at selected well-child visits
- Free, available in 4 languages
- <https://www.seekwellbeing.org/the-seeking-parent-questionnaire->

**SEEK™**
Safe Environment for Every Kid

Parent Questionnaire (PQ)

Dear Parent or Caregiver: Being a parent is not always easy. We want to help families have a safe environment for kids. So, we're asking everyone these questions. They are about problems that affect many families. If there's a problem, we'll try to help.

Please answer the questions about your child being seen today for a checkup. If there's more than one child, please answer "yes" if it applies to any one of them. This is voluntary. You don't have to answer any question you prefer not to.

Today's Date: ___/___/___ Child's Name: _____
Child's Date of Birth: ___/___/___

PLEASE CHECK

<input type="checkbox"/> Yes	<input type="checkbox"/> No	Do you need the phone number for Poison Control?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Do you need a smoke detector for your home?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Does anyone smoke tobacco at home?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	In the last year, did you worry that your food would run out before you got money or Food Stamps to buy more?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	In the last year, did the food you bought just not last and you didn't have money to get more?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Do you often feel your child is difficult to take care of?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Do you sometimes find you need to hit/spank your child?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Do you wish you had more help with your child?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Do you often feel under extreme stress?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	In the past month, have you often felt down, depressed, or hopeless?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	In the past month, have you felt very little interest or pleasure in things you used to enjoy?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	In the past year, have you been afraid of your partner?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	In the past year, have you had a problem with drugs or alcohol?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	In the past year, have you felt the need to cut back on drinking or drug use?
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Are there any other problems you'd like help with today?

Please give this form to the doctor or nurse you're seeing today. Thank you!

©2012, University of Maryland School of Medicine

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 enjoy doing with your child since the last time I saw you?
- Give me three words that describe your child to you

Ok...so screening is
positive...



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, etc, if needed
 - Behavioral health/social work embedded into all clinics
- Alaska Child Trauma Center
- Help Me Grow Alaska

Help Me Grow—Alaska

- Connects at-risk families with the services they need
 - Provides online ASQ developmental screening to facilitate early detection of developmental issues
 - Builds collaboration across sectors to improve access
 - Identifies gaps and barriers to access systems
 - Four Core Components
 - Child health care provider outreach to support screening
 - Community outreach to identify resources
 - Centralized telephone access point with active care coordination
 - Collection of data, including service gap analysis
 - <https://www.a2p2.org/help-me-grow-alaska>

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*



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

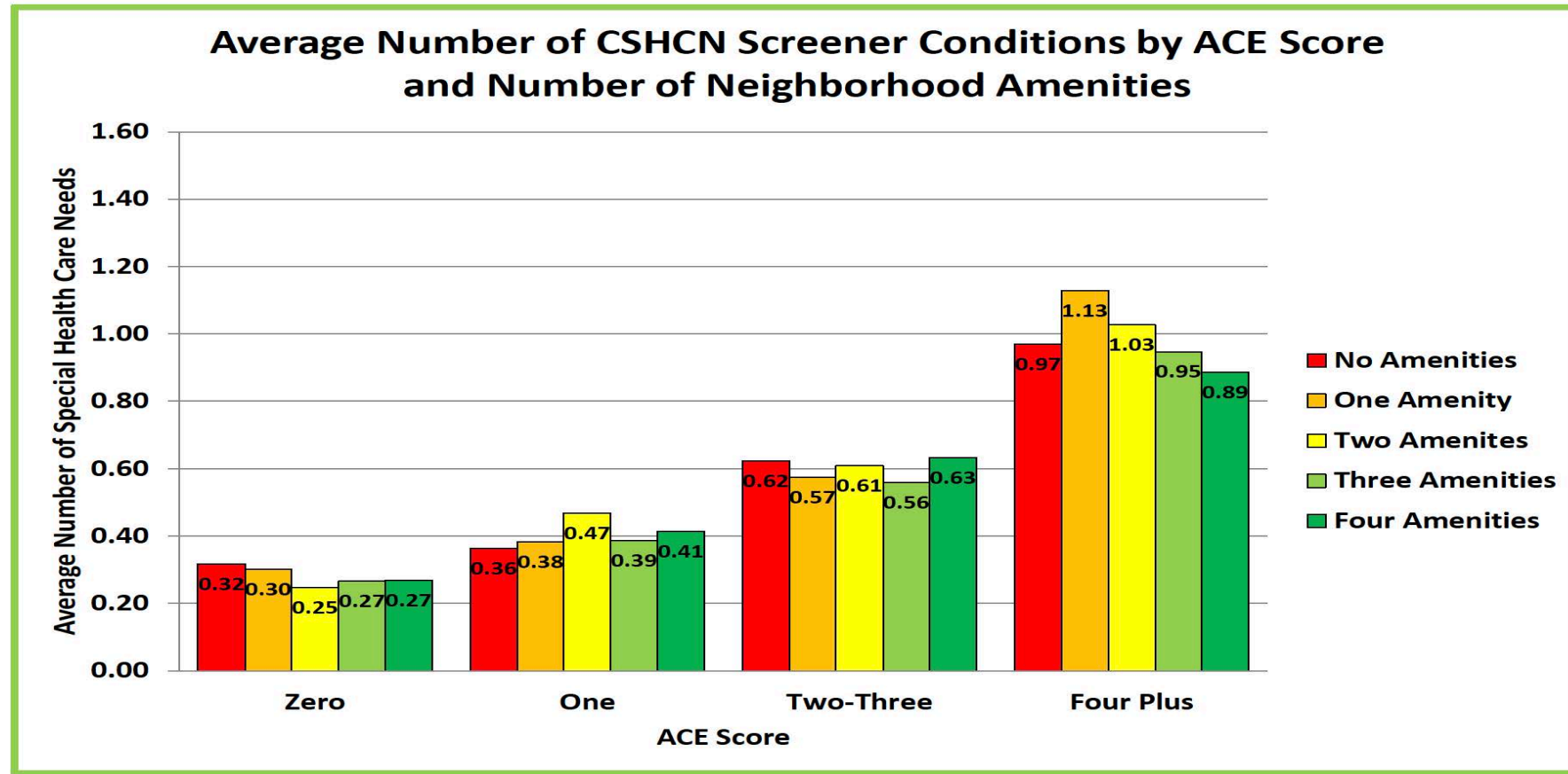
- Data from the National Survey on Children's Health (2011-12) combining ACEs data with chronic child health outcomes, and overlaying environmental changes to see if there is an effect



Effect of Neighborhood Amenities on Child Health

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

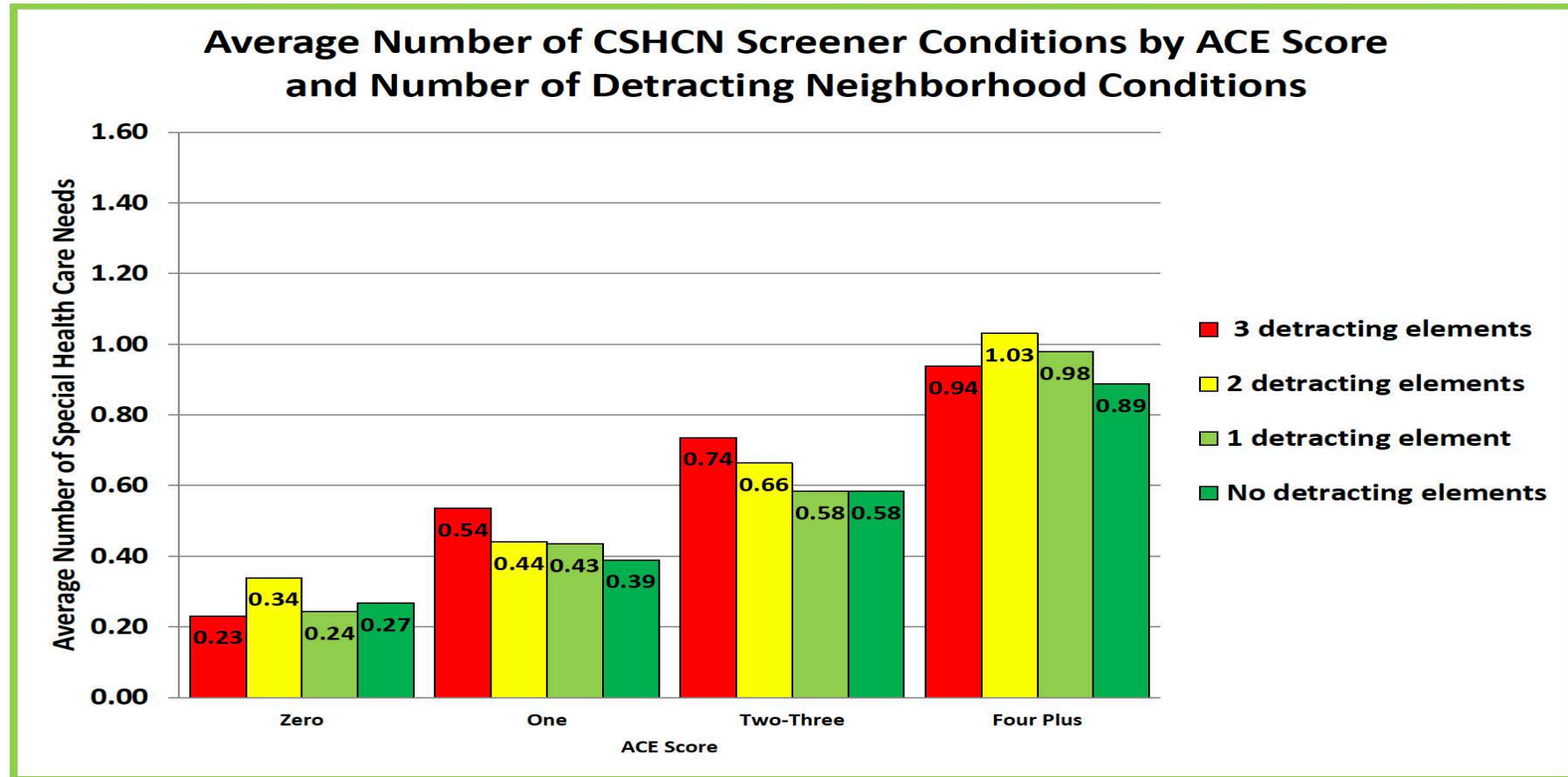
Effect of Neighborhood Amenities on Child Health



Effect of Neighborhood Detracting Elements on Child Health

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

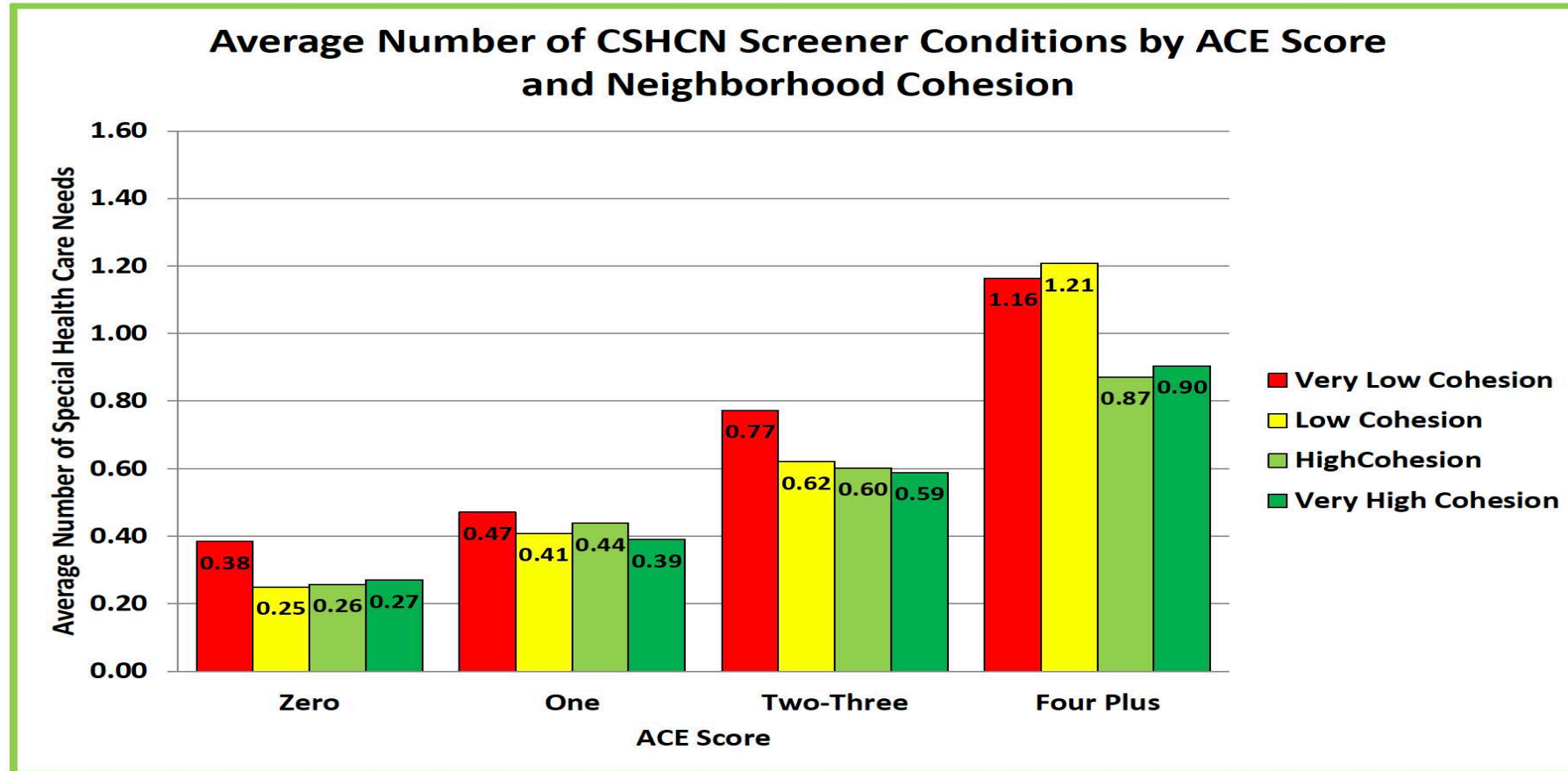
Effect of Neighborhood Detracting Elements on Child Health



Effect of Neighborhood Cohesion on Child Health

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

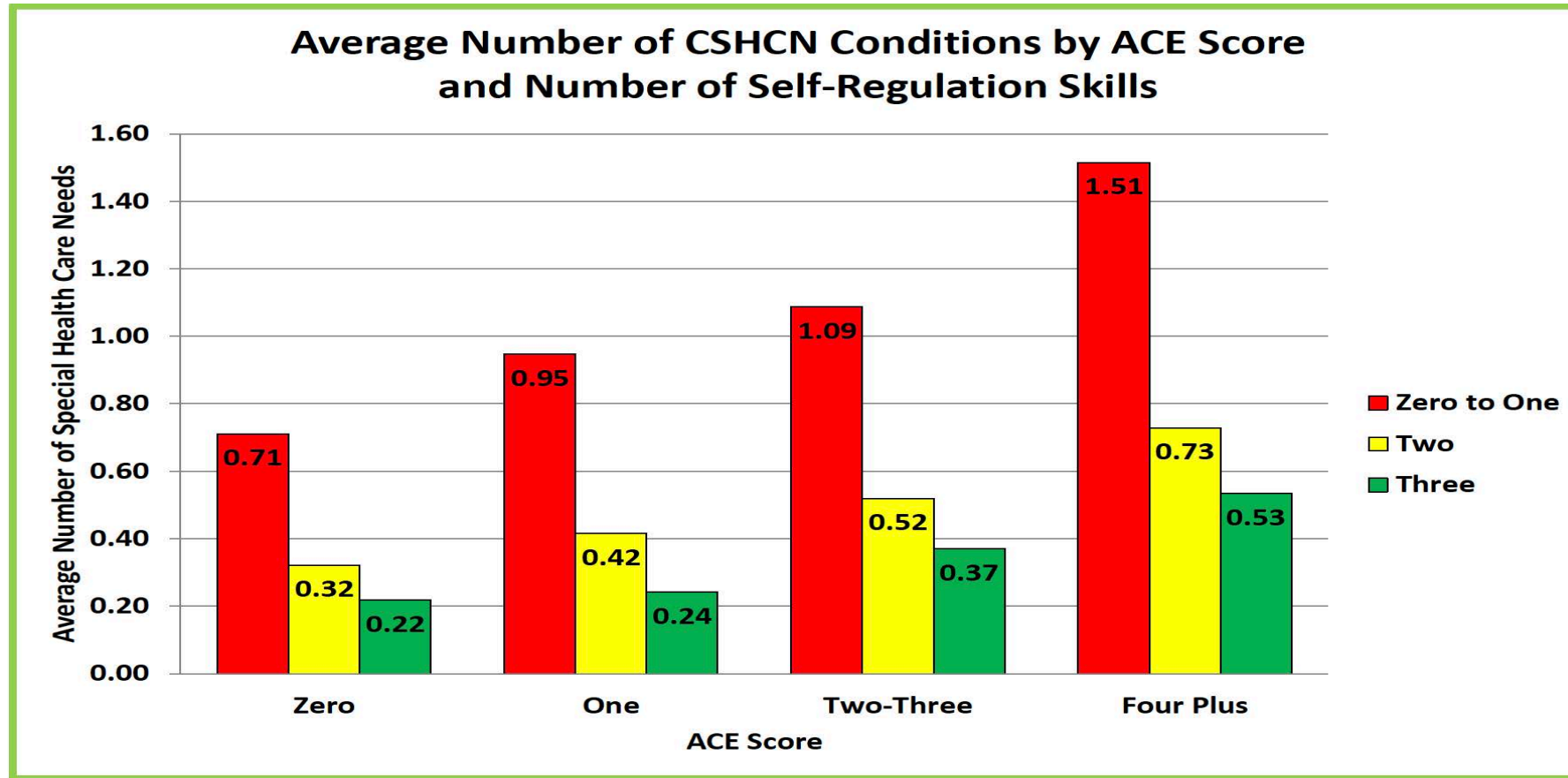
Effect of Neighborhood Cohesion on Child Health



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



Self-Regulation: ARC Framework

- **A**ttachment
 - Caregiver affect management
 - Attunement
 - Consistent response
- **R**egulation
 - Identification
 - Modulation
 - Expression
- **C**ompetency
 - 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>

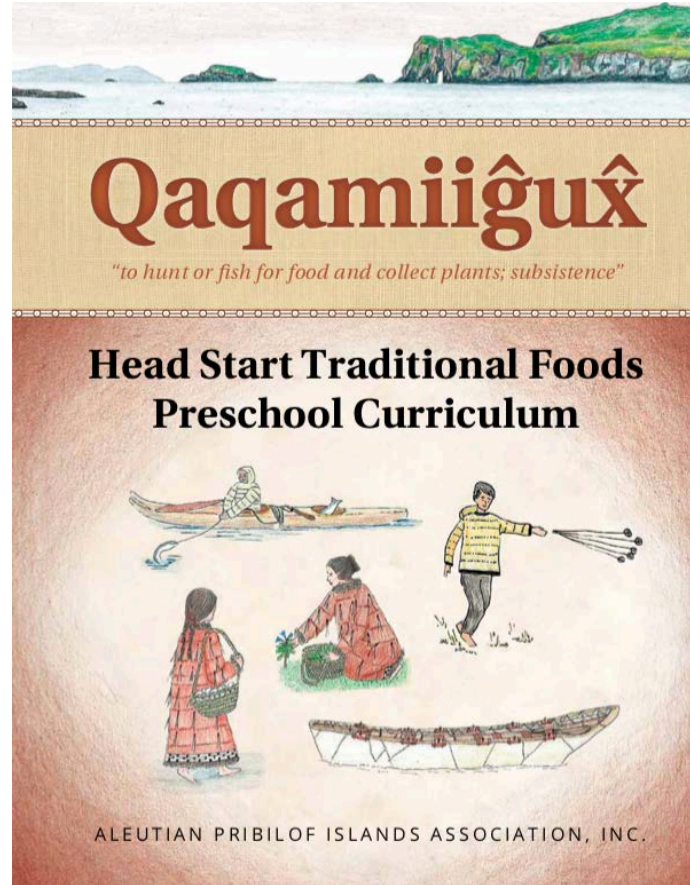


Foundations of Healthy Development

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



APIA Head Start



SB 105 (2018)

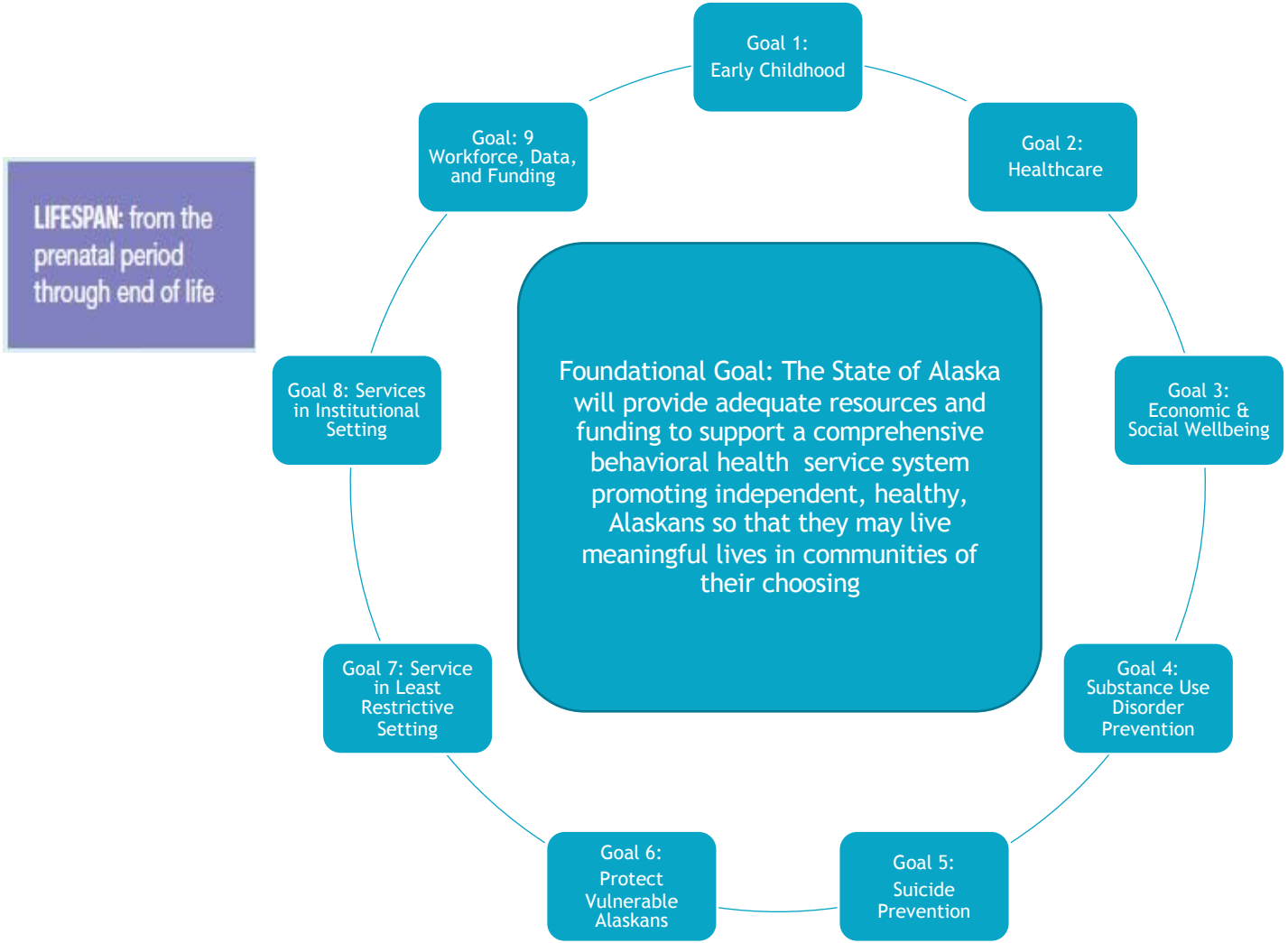
- It is the policy of the state to acknowledge and take into account the principles of early childhood and youth brain development and, whenever possible, consider the concepts of early adversity, toxic stress, childhood trauma, and the promotion of resilience through protective relationships, supports,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

Strengthening Families

- 5 Protective Factors
 - Parental Resilience
 - Social Connections
 - Knowledge of Parenting and Child Development
 - Concrete Support in Times of Need
 - Social-Emotional Competence of Children



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



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

Goal 1 (Early Childhood):

- **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.

Building an Agenda for Families

- Universal screening for Social Determinants of Health to identify families at risk
 - <https://www.texaschildrens.org/sites/default/files/uploads/documents/83176%20BRIEF%20Social%20Determinants%20of%20Health%20Policy%20Digital.pdf>
- Support systems of Primary Care and Behavioral Health
 - Medicaid
 - Alaska 1115 Waiver
- Child care and early education
 - Universal, high-quality child care
 - Alaska SB 6
- Family economic stability
 - Employment support for parents
 - Paid parental leave
 - Flexible work hours to attend school activities

Building an Agenda for Families

- 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 Parenting Programs](#)
- 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

- Community development
 - Housing
 - Environmental protection
- Support improved mental health services for families in all areas of Alaska
 - Judge Vanessa White's Family 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 President

All Alaska Pediatric Partnership

mhirschfeld@scf.cc

www.a2p2.org

