

Adverse Childhood Experiences in Minnesota: the Research, the Data and the Minnesota Response

How Communities can Reduce ACEs
and Build Resilience

This session will focus on:

- Brain Science Basics
- Adverse Childhood Experiences
- Resilience
- Minnesota Data on ACES, Trauma and Resilience
- Current Minnesota Trauma Prevention and Resilience Promotion Activities

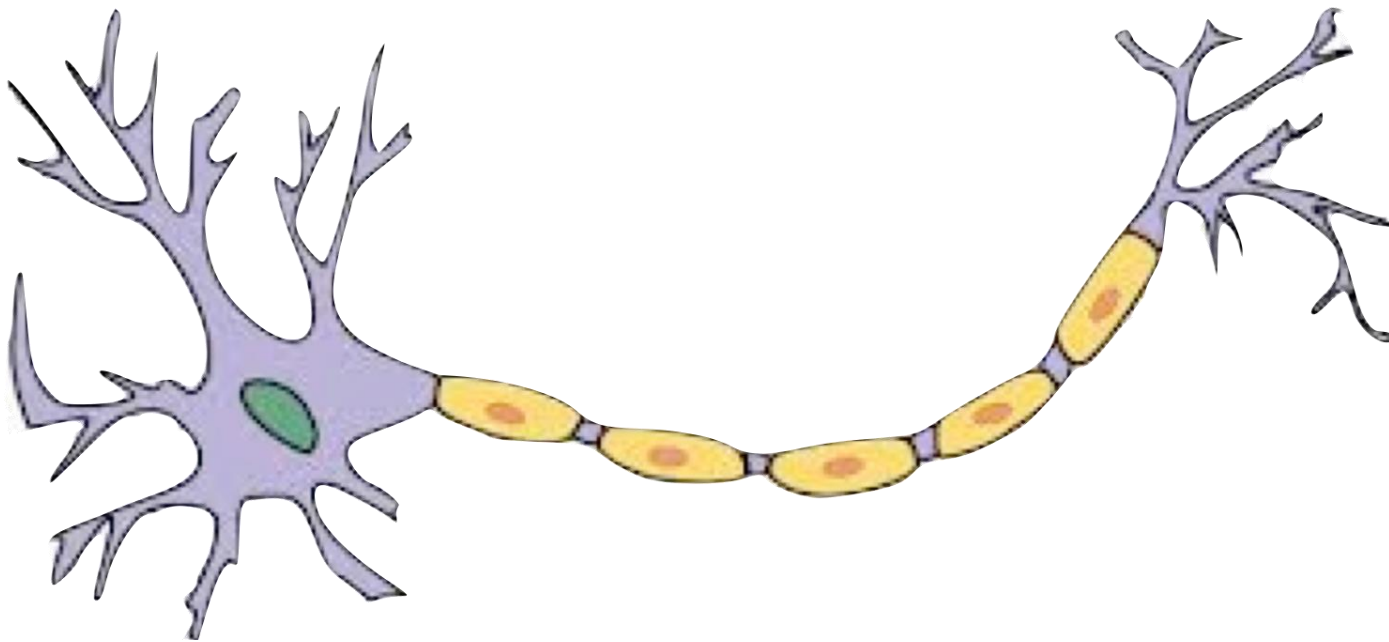
Agenda

1. Trauma and Resilience Research
2. Minnesota Data on Trauma + Resilience
3. Group Discussion of Current Efforts to Address Trauma and Resilience
4. Handouts and Q + A

Toxic Stress + Brain Development

PART 1: TRAUMA AND RESILIENCE RESEARCH

Neuron



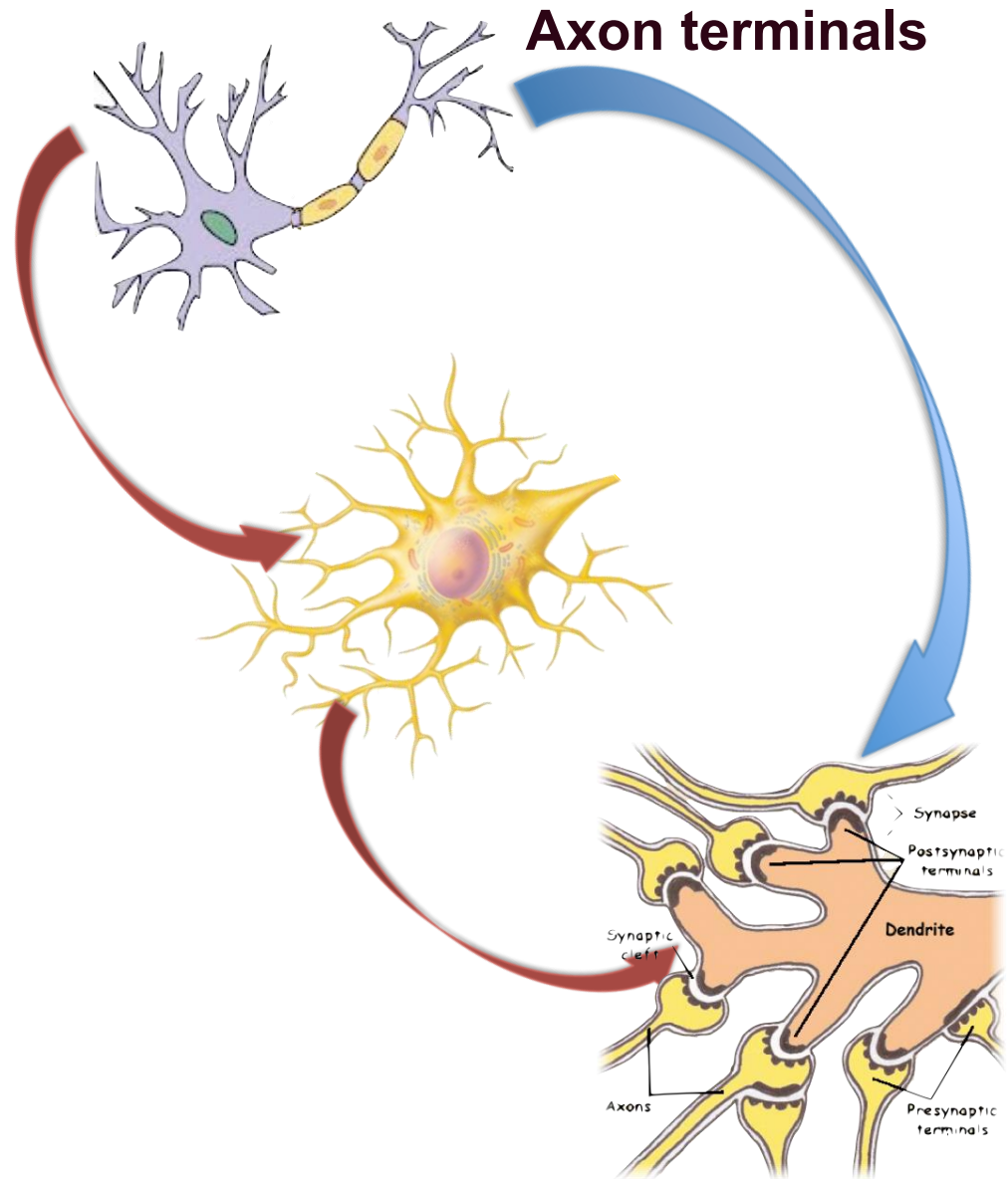
Neurons

Billions

Dendrites

Synapses

Trillions



Synaptically Challenged

- Every experience counts
- Every environmental input counts
- Synapses grow 700/second



Newborn

Synaptic Growth



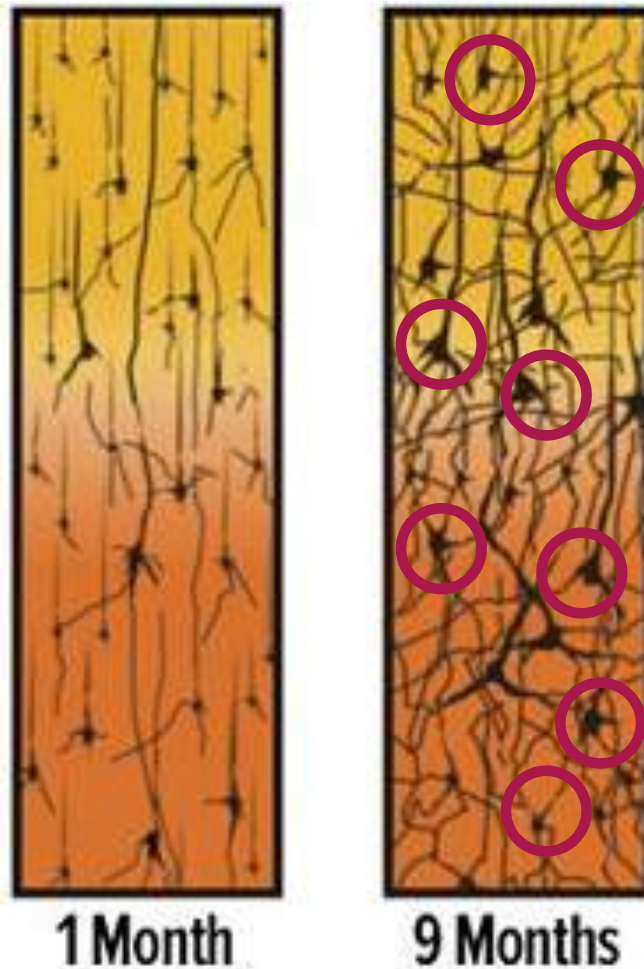
Newborn



1 Month

- Arborization
- 700 per second

Synaptic Growth



- All experience is captured
- Right brain > responsibility - sensory
- Verbal memory starts at 3 years

Dense Arborization

- Maximized synaptic density around 6 years of age



9 Months



2 Years

Pruning Begins

- Then the brain starts to sort through all those synapses to identify which ones are going to be the most important in this person's life
- Over the next several years the synapses that are not reinforced or utilized much get pruned away
- Those that are used get reinforced and eventually fixed in place



2 Years

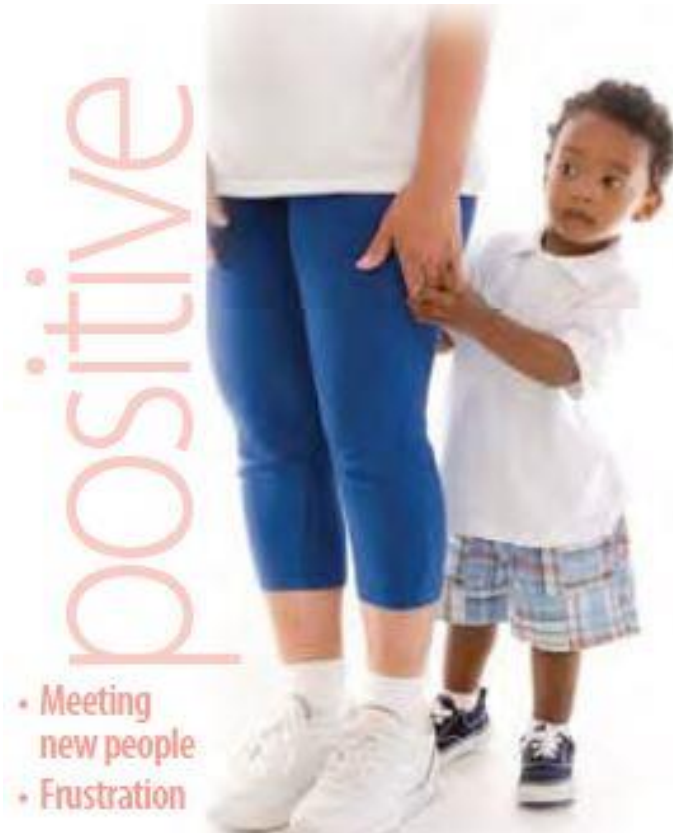


Adult

Human Brain

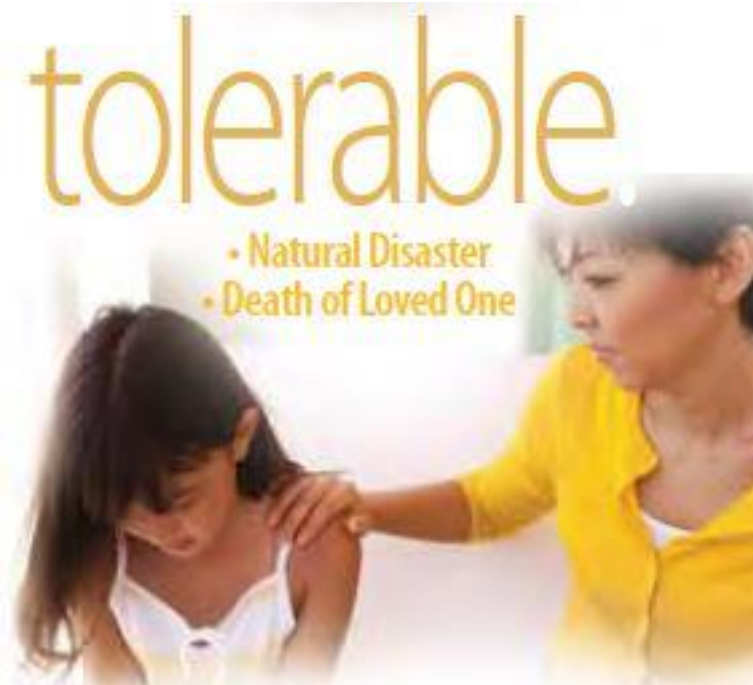
- Billions of neurons
- Trillions of synaptic interconnections
- Genes responsible for basic architecture
- Not enough genetic info to prescribe the final wiring
- Final form sculpted by experience

Defining Adversity or Stress



- Positive Stress
 - Brief, infrequent
 - Mild to moderate intensity
- Most normative childhood stress
 - Inability of 15 month-old to express their desires
 - The 2-year-old who stumbles while running
 - Beginning daycare or school
 - The big project in middle school
- **Social emotional buffers** allow child to return to baseline
- Builds motivation and resiliency
- *Positive stress is not the absence of stress*

Defining Adversity or Stress



- Tolerable stress
 - Potentially to trigger stress responses large enough to disrupt brain development
 - But don't—because they are relieved by supportive relationships

What Outcomes Might You See?

- Emotion processing regions are robust and efficient
- There is an abundance of “happy” well regulated hormones
- More white matter especially in the emotional and executive functioning areas
- Less likely to self-medicate
- Less need for health care services
- Longer life span
- Better reproductive health
- Delayed pregnancies
- Lower average number of pregnancies

Defining Adversity or Stress

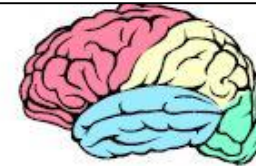


- Toxic stress
 - Long lasting, frequent, or strong intensity
 - More extreme precipitants of childhood stress (ACEs)
 - Physical, sexual, emotional abuse
 - Physical, emotional neglect
 - Household dysfunction
 - Insufficient social-emotional buffering
 - Potentially permanent changes with life-term consequences
 - Epigenetics—there are lifelong and intergenerational changes in how the genetic stress response is turned on or off
 - Brain architecture—the mediators of stress impact upon mechanisms of brain development and connectivity

What Outcomes Might You See?

- Emotion processing regions are smaller and less efficient
- Increased production of stress chemicals
- Less self-calming capacity
- Multiple health complaints
- Increased risk of self-medicating
- Seeking out dependent relationships
- Increased risk for
 - Cancer
 - Heart Disease
 - Diabetes
 - Arthritis
 - Reproductive risks
 - Immune system dysfunction
 - Hormonal problems
 - Thyroid
 - Menstrual complications

Out of Balance?



Prefrontal Cortex

Cold Cognition
Judgmental
Reflective
Calculating
Think about it

Biological maturity by **24**

Amygdala

Hot Cognition
Emotional
Reactive
Impulsive
Just do it

Biological maturity by **18**



Adapted from Ken Winters, Ph.D.

Let's pause.

Given the material we just covered on how early experiences shape brain development, can you think of a person you know whose behavior makes more sense to you now?

Adverse Childhood Experiences

PART 2: MINNESOTA DATA ON TRAUMA + RESILIENCE

CDC/Kaiser Permanente Adverse Childhood Experiences Study

ACE SCORE

What are ACEs?

- Adverse childhood experiences (ACEs) are stressful or traumatic experiences, including abuse, neglect and a range of household dysfunction
- *“ACEs have created a **Chronic Public Health Disaster**” —Dr. Robert Anda, CDC*

Kaiser/CDC ACE Study Design

- Ten ACEs identified through a comprehensive literature review
- 1996 survey on ACEs mailed to 13,494 adults who had completed a standardized medical evaluation (71% responded)
- Respondents followed over time to monitor morbidity, mortality, out-patient visits, ER visits, and pharmacy use

Findings: ACE are Common

- Abuse
 - Psychological (11%)
 - Physical (28%)
 - Sexual (21%)
- Neglect
 - Emotional (15%)
 - Physical (10%)
- Household Dysfunction
 - Substance abuse (27%)
 - Mental illness (19%)
 - Battered mother (13%)
 - Criminal behaviors (5%)
 - Parent separation (23%)

Centers for Disease Control & Prevention, 2010 www.cdc.gov/ace/index.htm

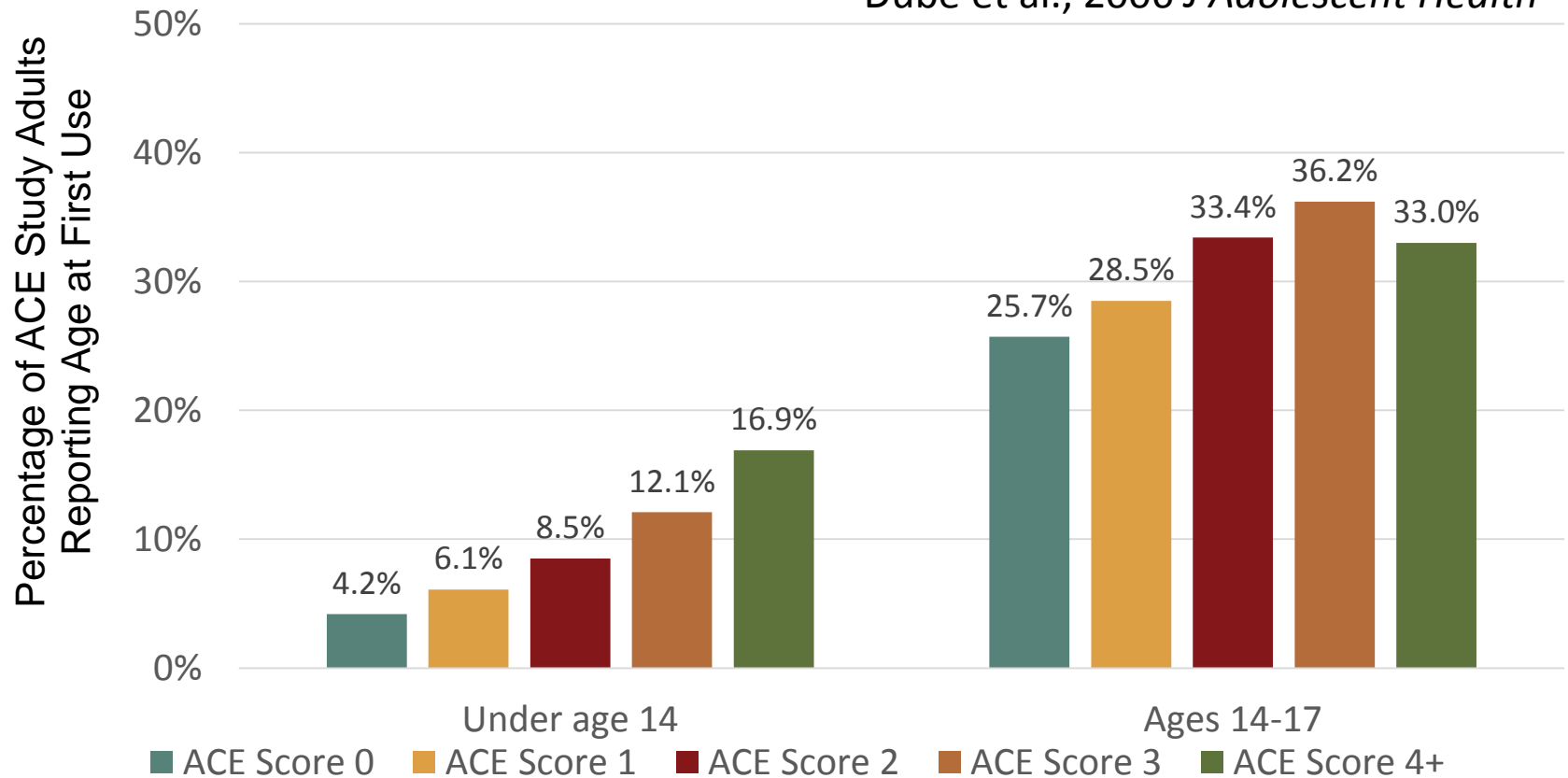
Findings: ACEs Cluster

| # ACEs | Women | Men | All |
|--------|-------|-------|-------|
| 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+ | 15.2% | 9.2% | 12.5% |

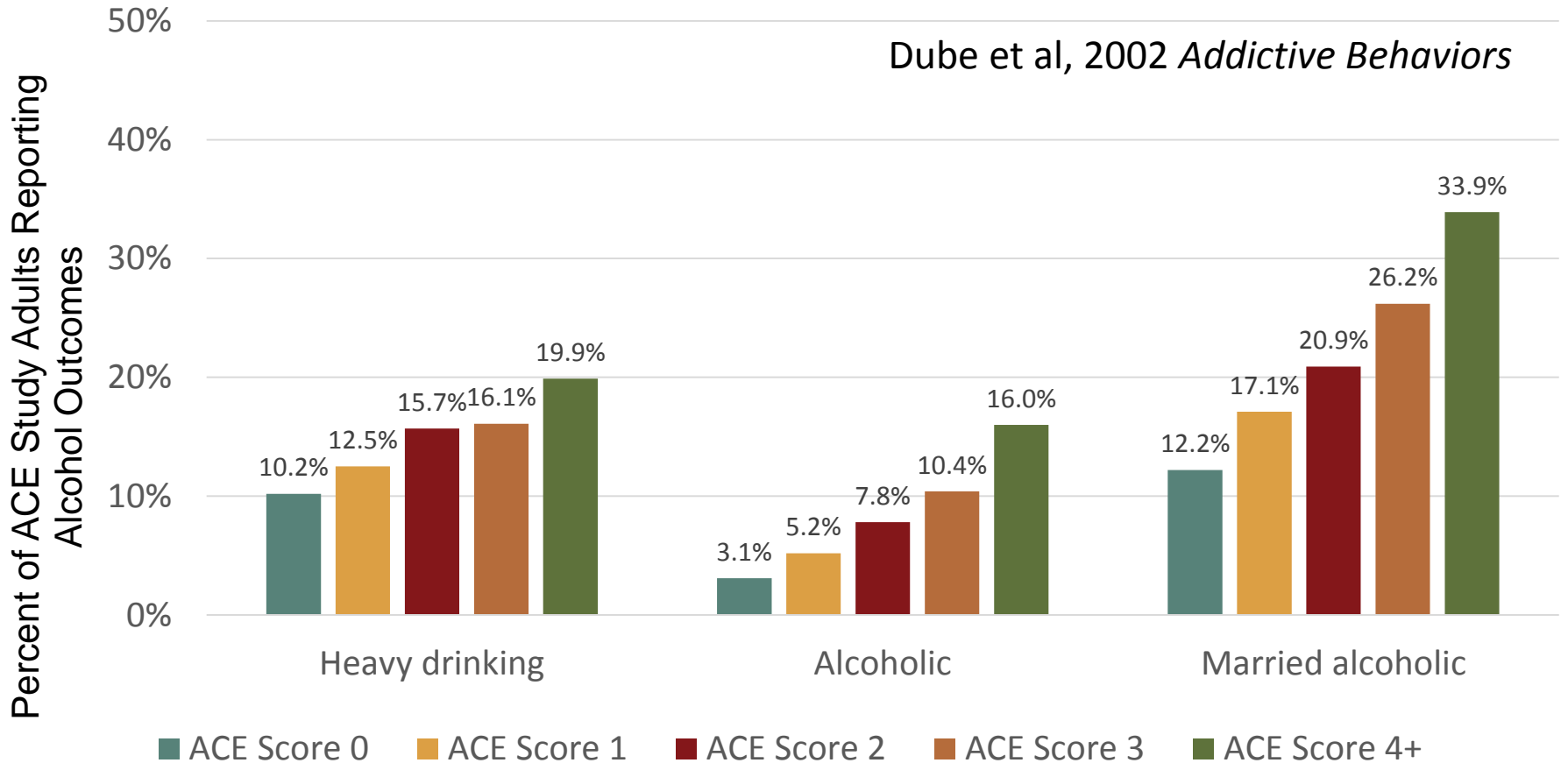
Centers for Disease Control & Prevention, 2010 www.cdc.gov/ace/index.htm

Age at First Use of Alcohol, by ACE Score

Dube et al., 2006 *J Adolescent Health*

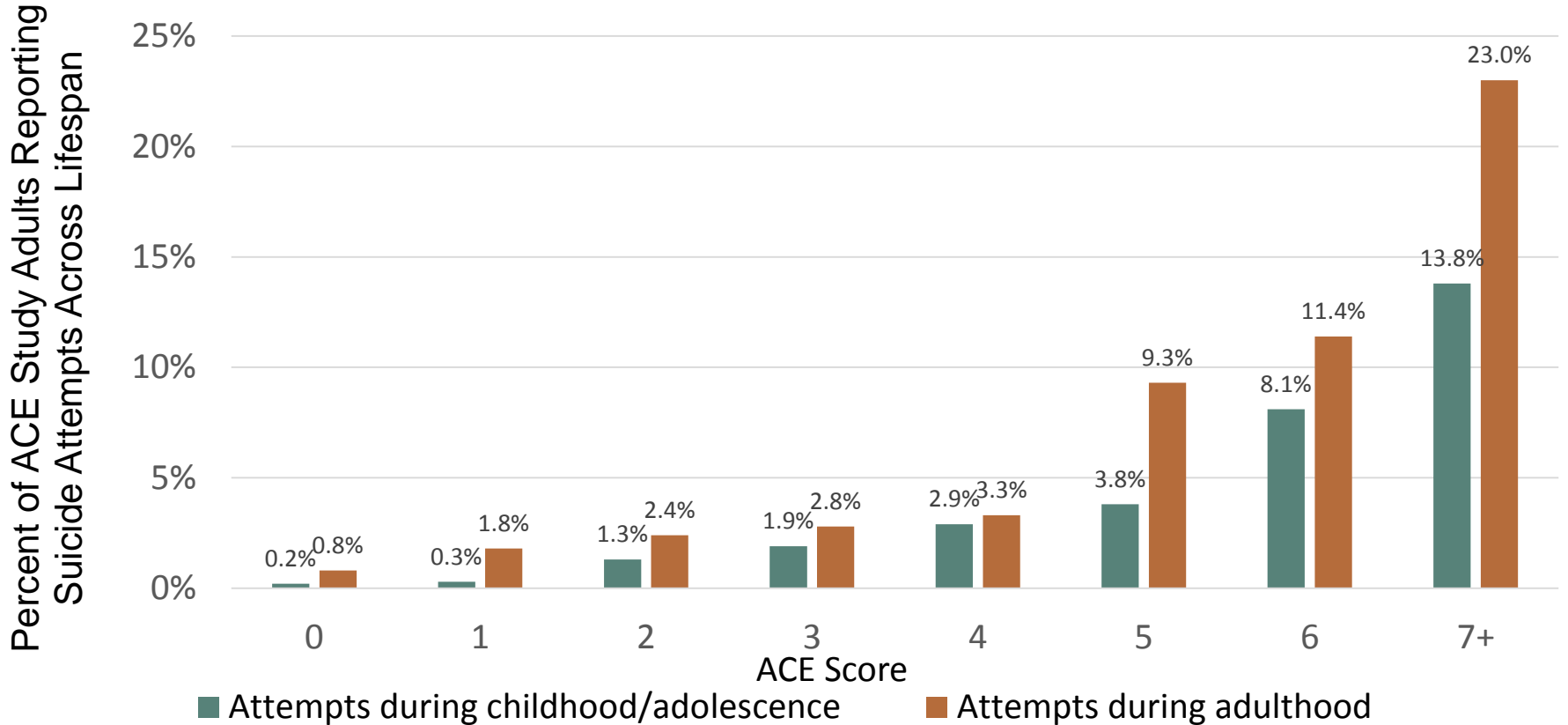


Adult Alcohol Use, by ACE Score



Suicide Attempts by ACE Score

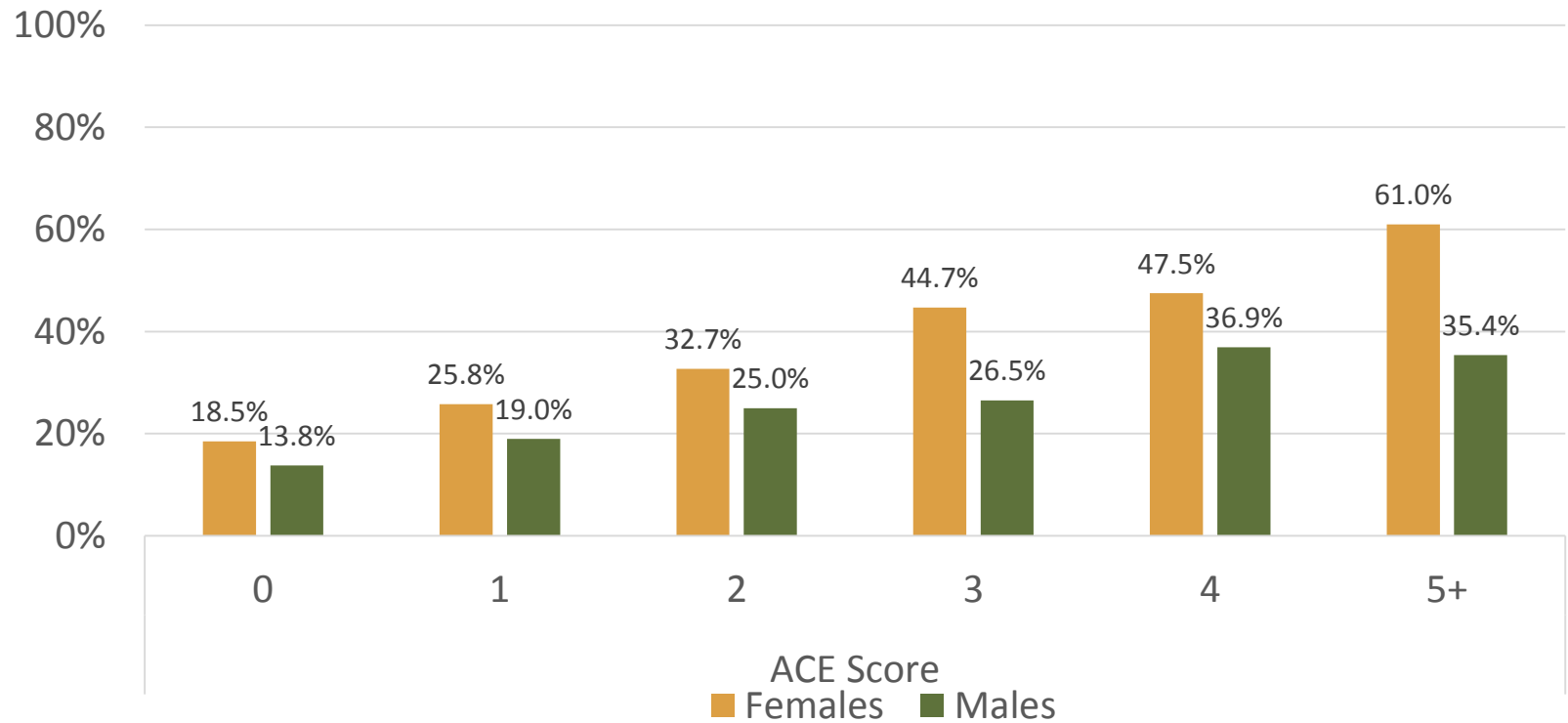
Dube et al., 2001 *JAMA*



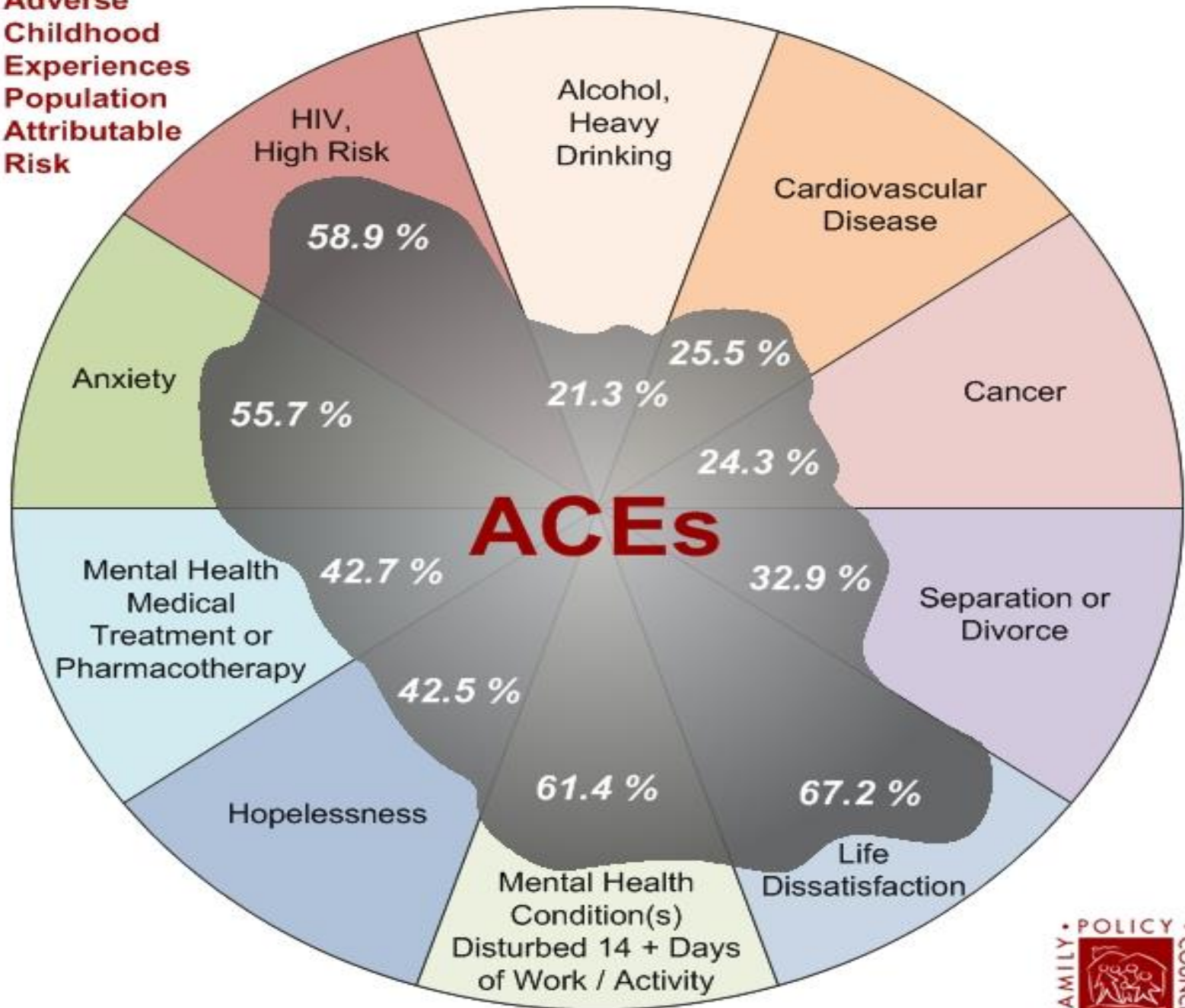
ACE Study Adults Reporting Lifetime Depressive Episodes, by ACE Score

Chapman et al., 2004, *Journal of Affective Disorders*

Percent of ACE Study Adults Reporting Any Lifetime Depressive Episodes



**Adverse
Childhood
Experiences
Population
Attributable
Risk**



2011 Behavioral Risk Factor Surveillance System (BRFSS)

ACES AMONG MINNESOTA ADULTS



adverse CHILDHOOD EXPERIENCES IN MINNESOTA

FINDINGS & RECOMMENDATIONS BASED ON THE
2011 Minnesota Behavioral Risk Factor Surveillance System



Minnesota Department of Human Services
+ Minnesota Department of Health 2014

MN BRFSS

- Neglect not included; drinking + drug use problem in household separated into two
- Over half of Minnesota adults experience one ACE—of those, 60% have two or more ACEs + 15% have five or more ACEs
- Results are consistent with the original ACE study, and with findings from other states

TABLE 16: NUMBER OF ACEs BY Chronic Mental Health

MINNESOTA 2011

Number of Aces

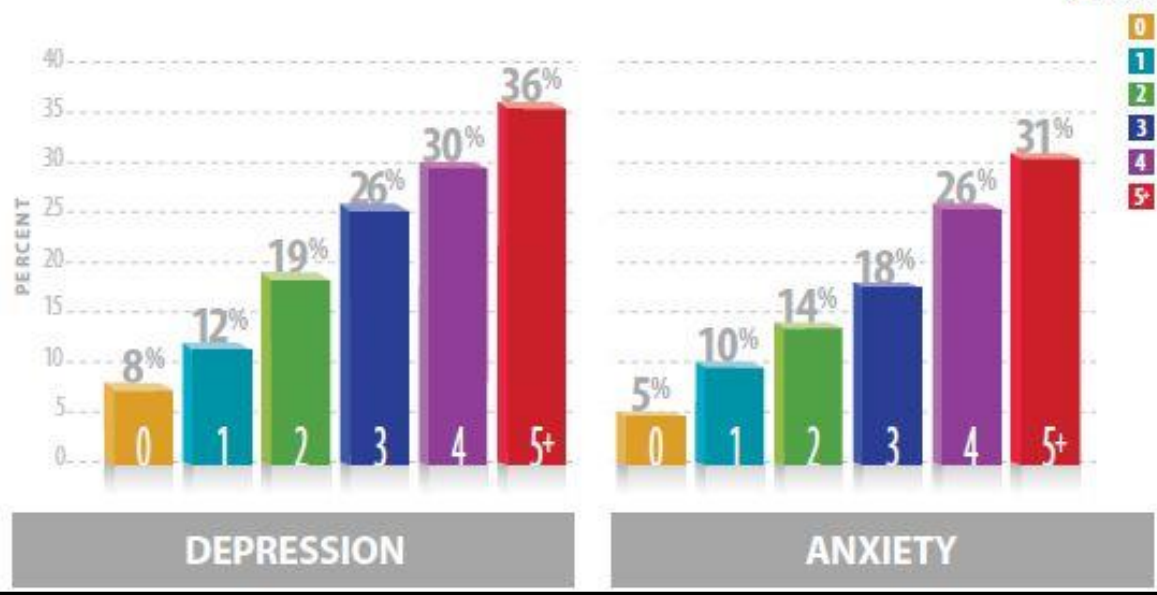


TABLE 17: NUMBER OF ACEs BY Chronic Health Conditions

MINNESOTA 2011

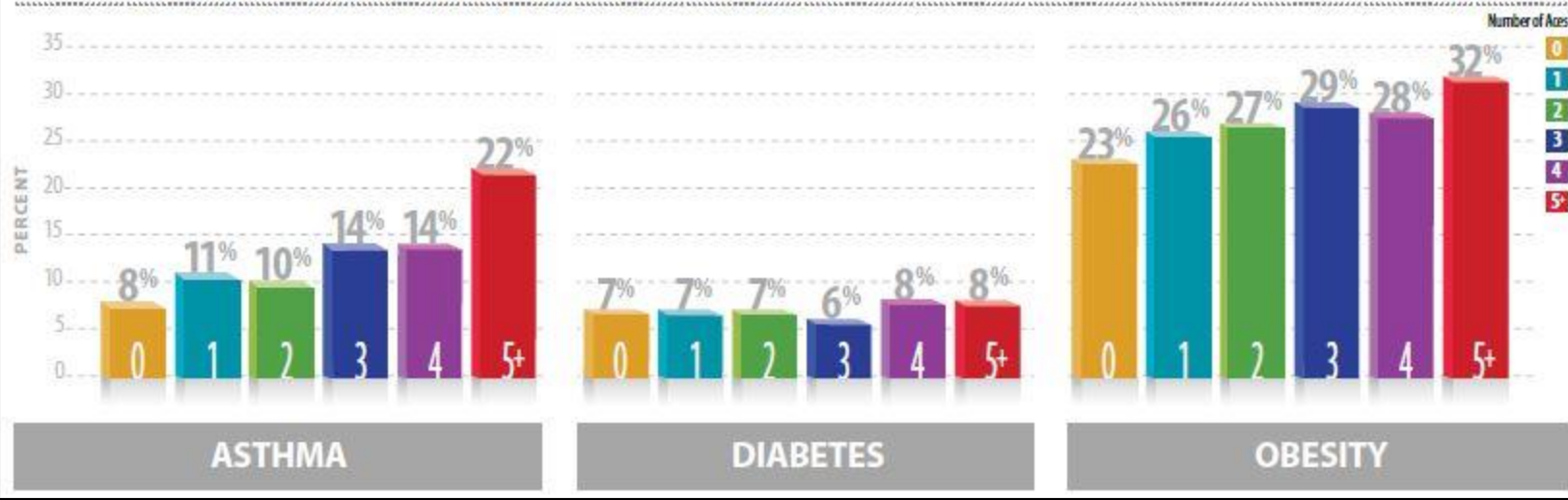
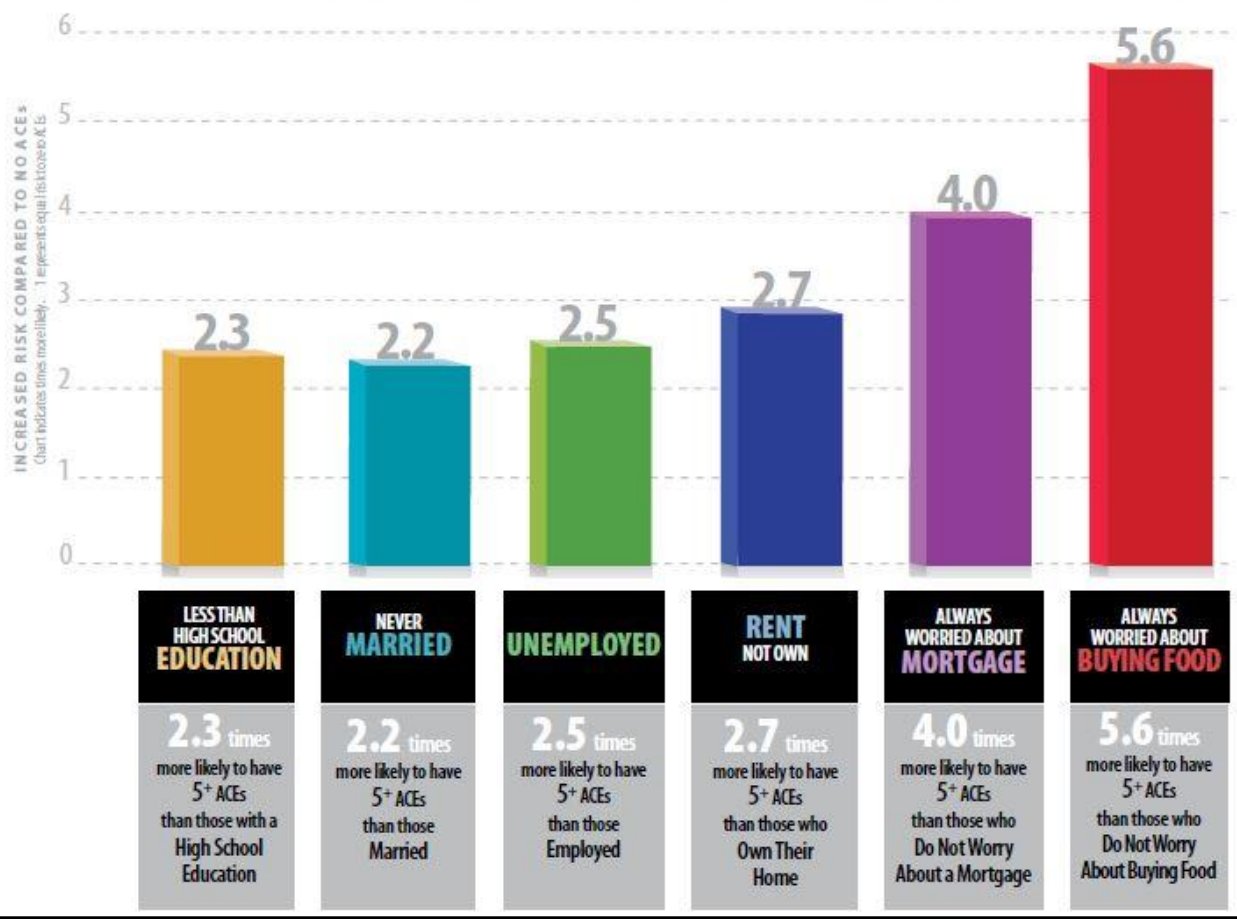


TABLE 13: RATIO OF SES Indicators AMONG THOSE WITH 5 OR MORE ACEs

MINNESOTA BRFSS 2011



Policy Recommendations—Data

- Disseminate data on ACEs and related outcomes to raise awareness, and describe the benefits of preventing/reducing ACEs
- Designate funds to continue the collection, analysis, and dissemination of ACEs data
- Develop an inventory of existing agency and community efforts to reduce ACEs and support resilience

2013 Minnesota Student Survey (MSS)

ACES AMONG MINNESOTA YOUTH

2013 Minnesota Student Survey

- 84% of public schools agreed to participate
- Across the state 66% of 5th graders, 71% of 8th graders, 69% of 9th graders, and 62% of 11th graders participated
- Some questions on adverse childhood experiences were new in 2013; some were reworded to better align with national surveys

MSS “ACE Score” (0-7)

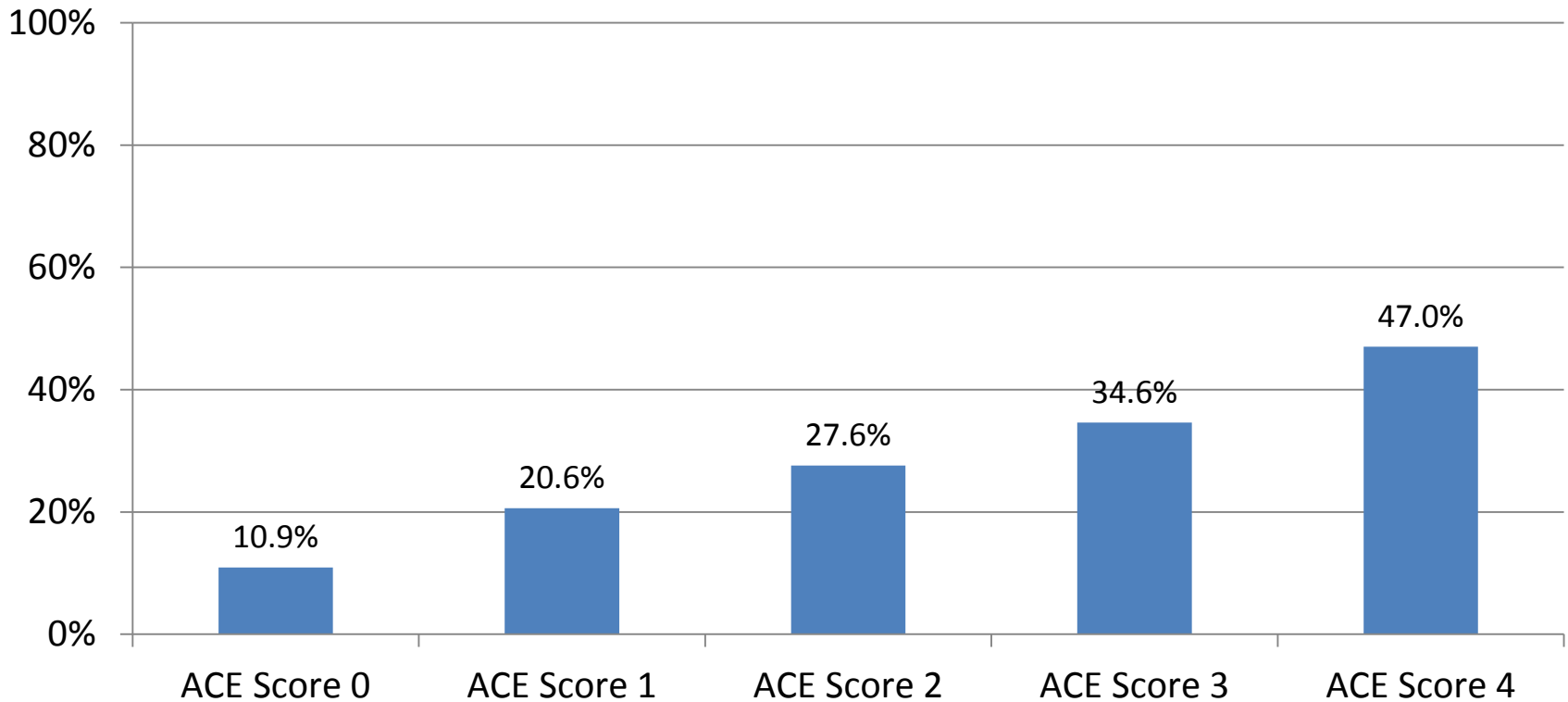
- Students reporting that they have a parent or guardian who is currently in jail, **and/or** who has been in jail in the past
- Students reporting they live with someone who drinks too much alcohol
- Students reporting they live with someone who uses illegal drugs or abuses prescription drugs
- Students reporting a parent or other adult in the household has verbally abuse them
- Students reporting a parent or other adult in the household has physically abused them
- Students reporting parents or other adults in the home physical abuse each other
- Students reporting and adult or other person outside the family, **and/or** an older or stronger family member, has ever sexually abused them

Distribution of ACEs

| ACE Score | Number | Percent |
|-----------|--------|---------|
| Zero | 70829 | 64.4% |
| One | 19945 | 18.1% |
| Two | 9444 | 8.6% |
| Three | 4995 | 4.5% |
| Four | 2690 | 2.4% |
| Five | 1258 | 1.1% |
| Six | 579 | 0.5% |
| Seven | 213 | 0.2% |

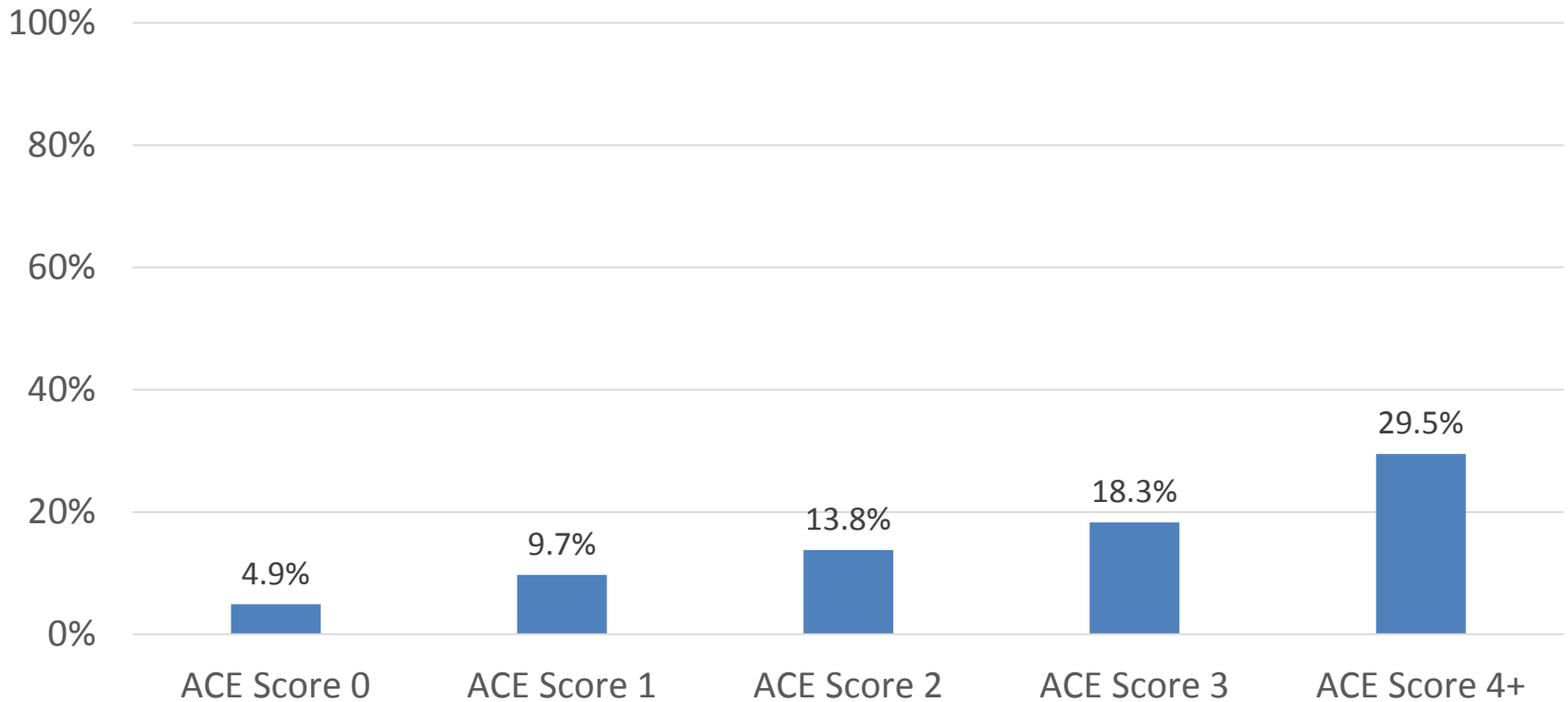
ACE Score + Past 30 Day Alcohol Use

Minnesota 8th, 9th, and 11th Graders Reporting Any Past 30 Day Alcohol Use, by ACE Score, 2013 MSS



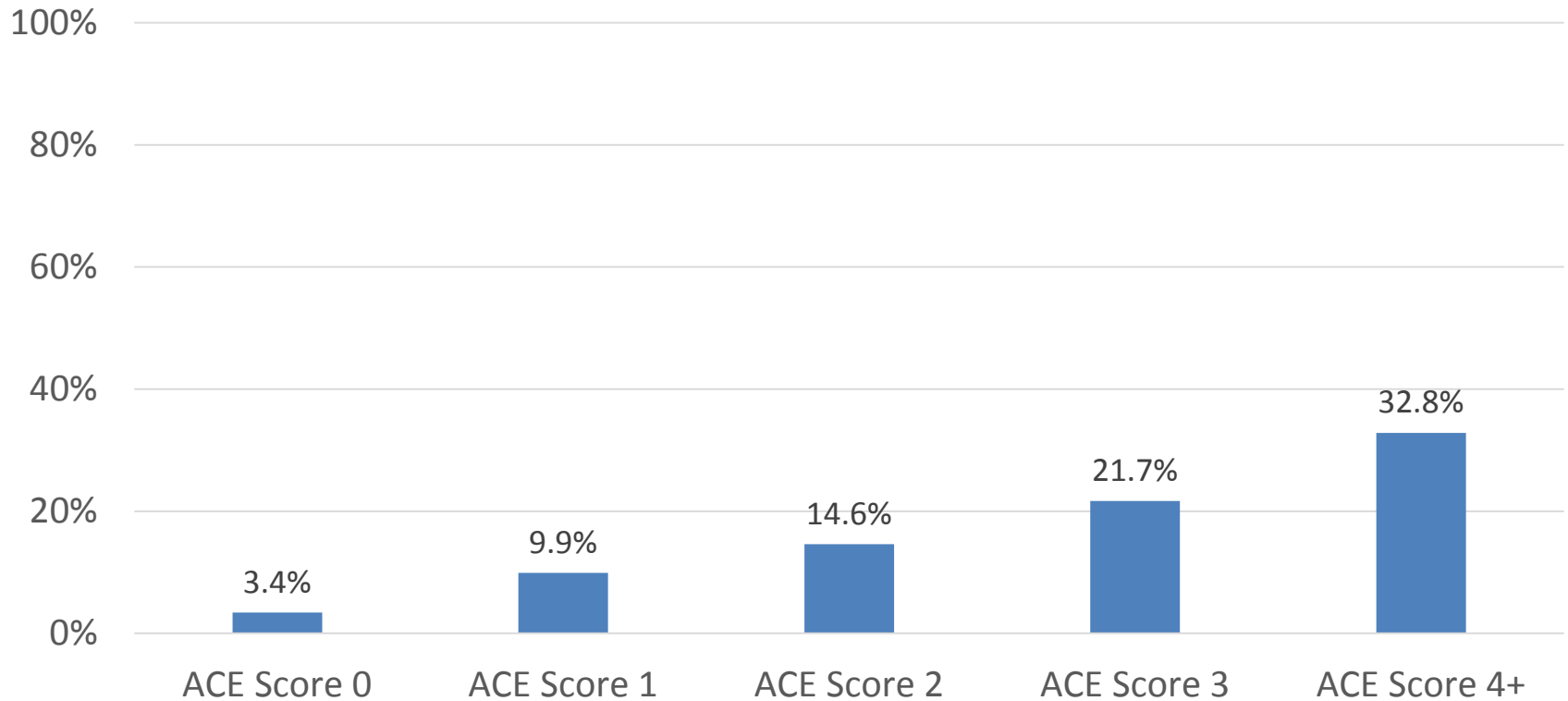
ACE Score + Binge Drinking

Minnesota 8th, 9th, and 11th Graders Reporting Any Past 30 Day Binge Drinking, by ACE Score, 2013 MSS



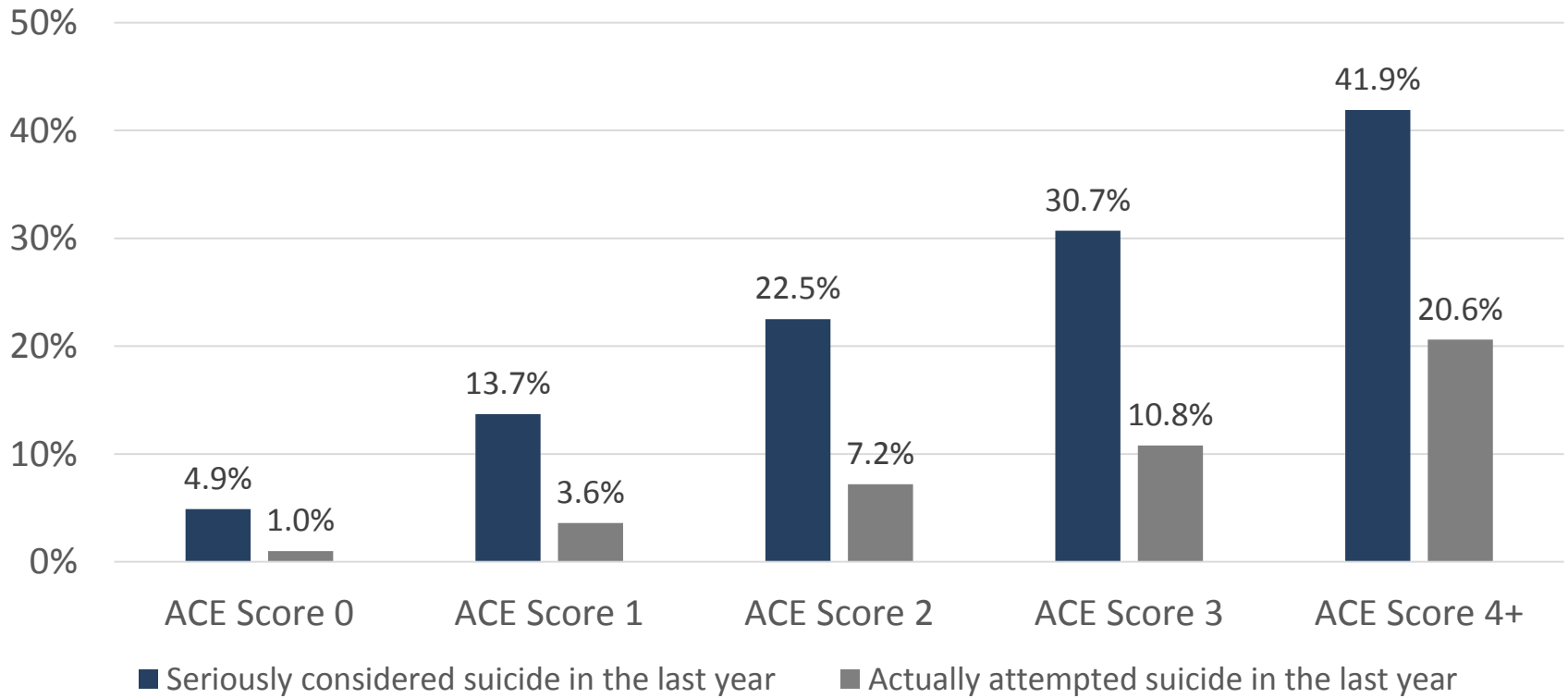
ACE Score + Cigarette Smoking

Minnesota 8th, 9th, and 11th Graders Reporting Any Past 30 Day Cigarette Smoking, by ACE Score, 2013 MSS



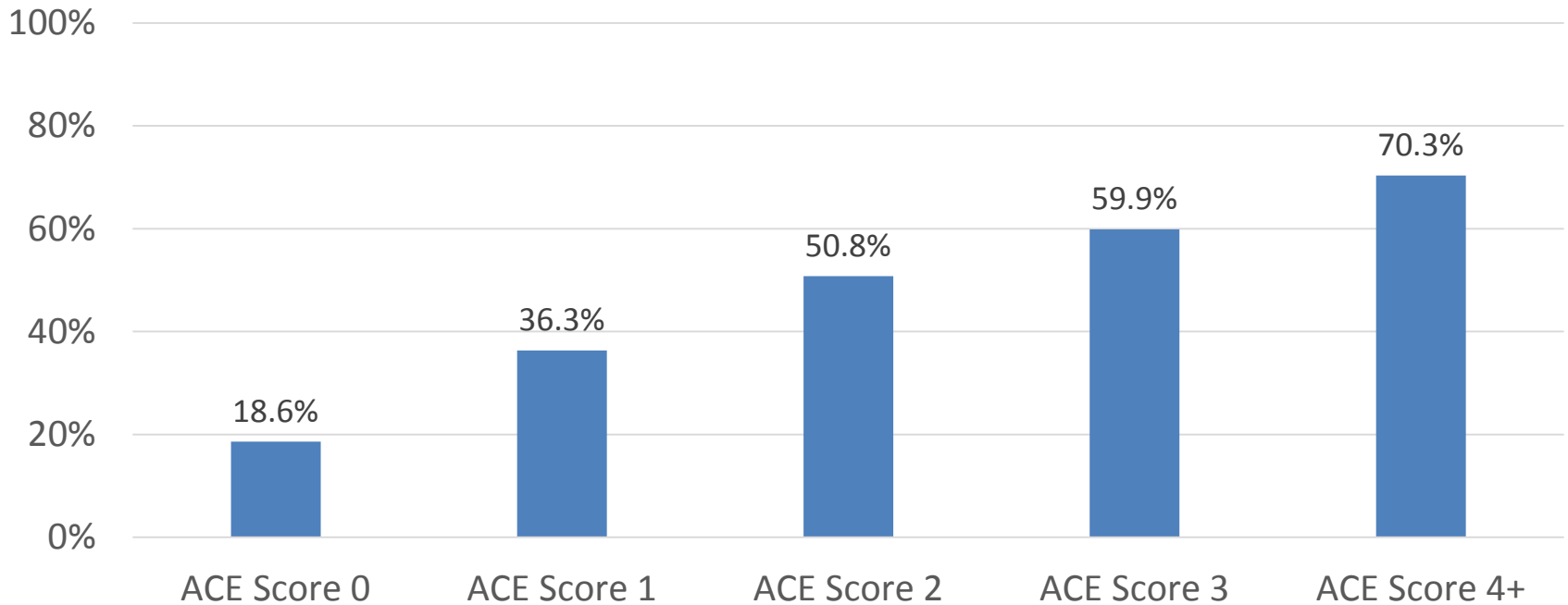
ACE Score + Suicide

Minnesota 8th, 9th, and 11th Graders Reporting Past Year Suicidal Ideation and Attempts, by ACE Score, 2013 MSS



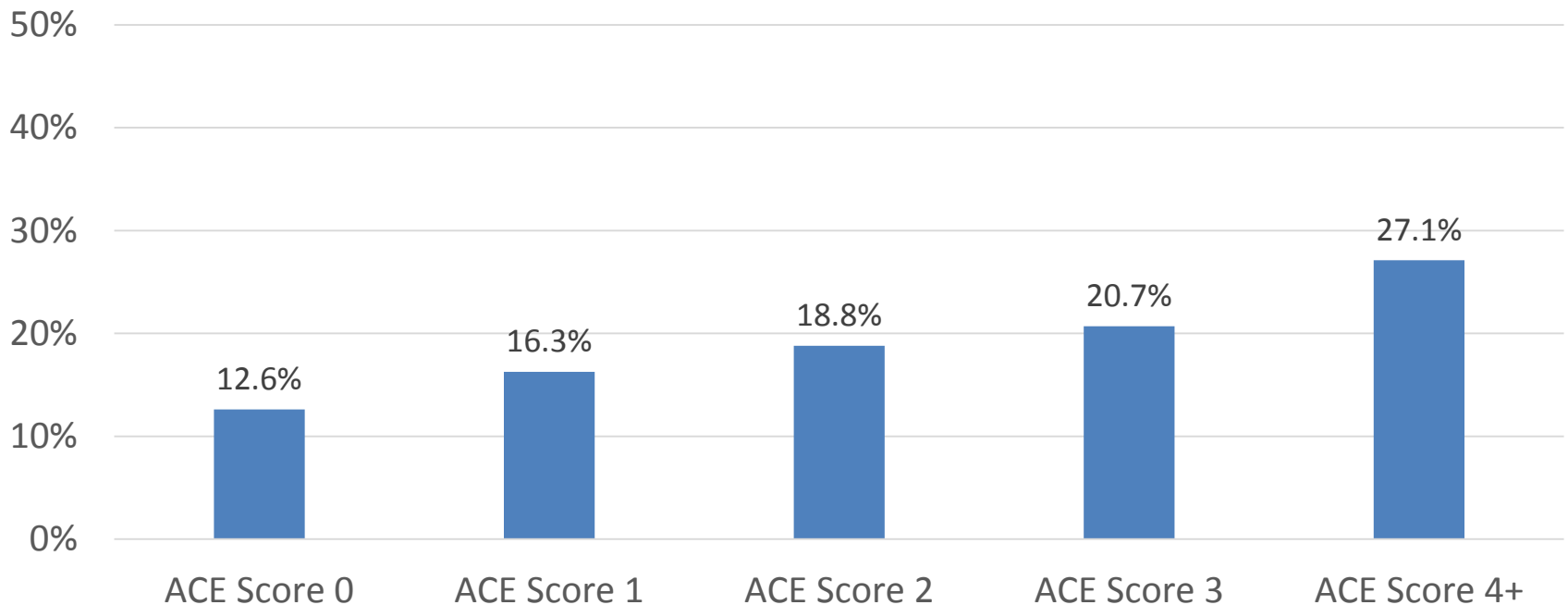
ACE Score + Mental Health

Minnesota 8th, 9th, and 11th Graders Reporting Having Significant Problems in the Last 12 Months with Feeling Very Trapped, Lonely, Sad, Blue, Depressed, or Hopeless About the Future, by ACE Score, 2013 MSS



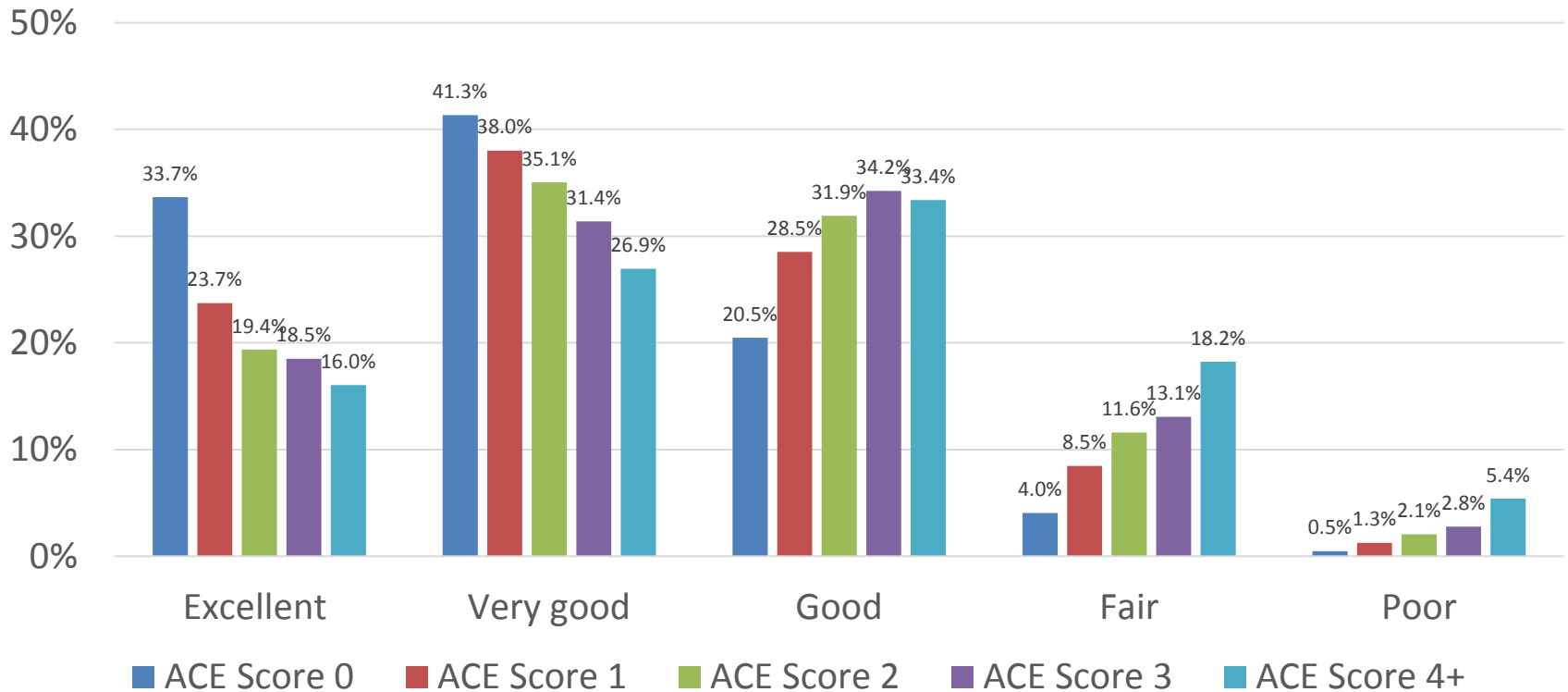
ACE Score + Physical Health

Minnesota 8th, 9th, and 11th Graders Reporting They Have Any Physical Disability or Long-term Health Problems (Such as Asthma, Cancer, Diabetes, Epilepsy, or Something Else), by ACE Score, 2013
MSS



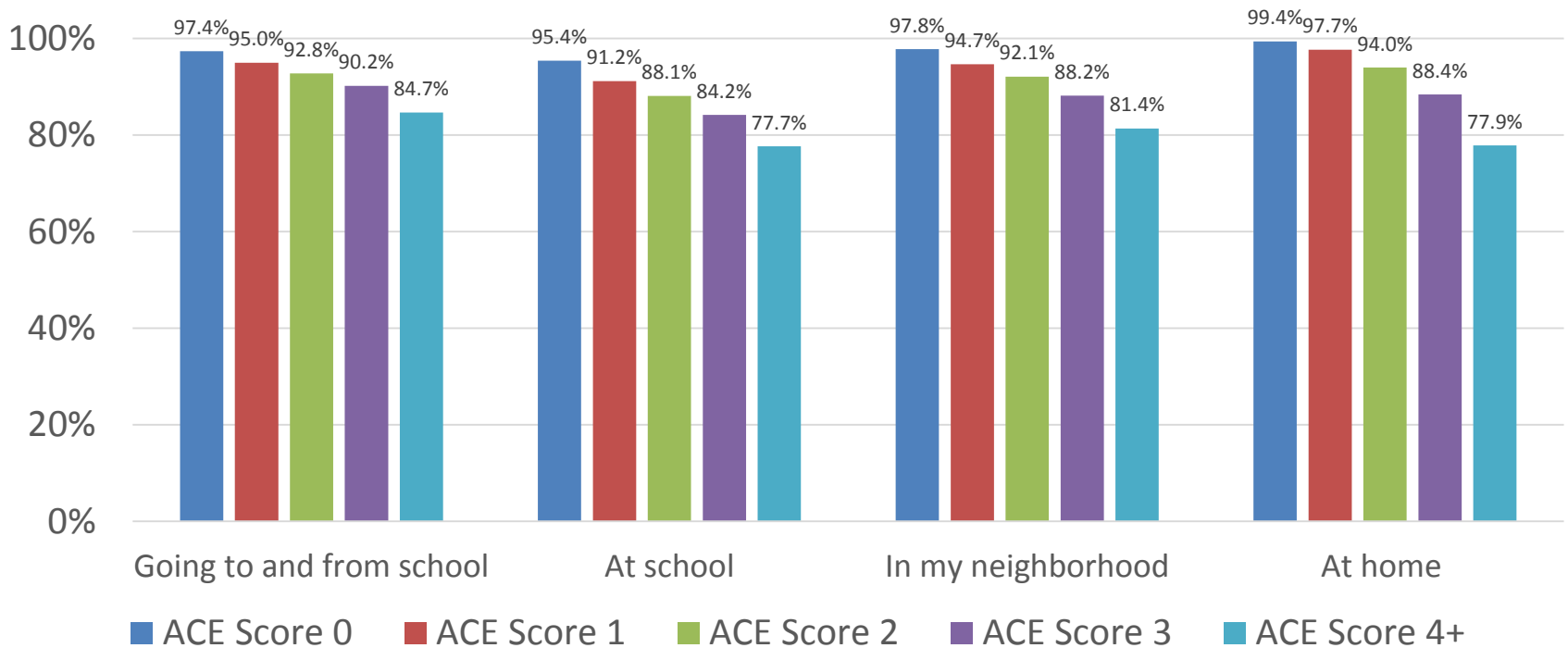
ACE Score + General Health

Minnesota 8th, 9th, and 11th Graders Describing Their General Health, by ACE Score, 2013 MSS



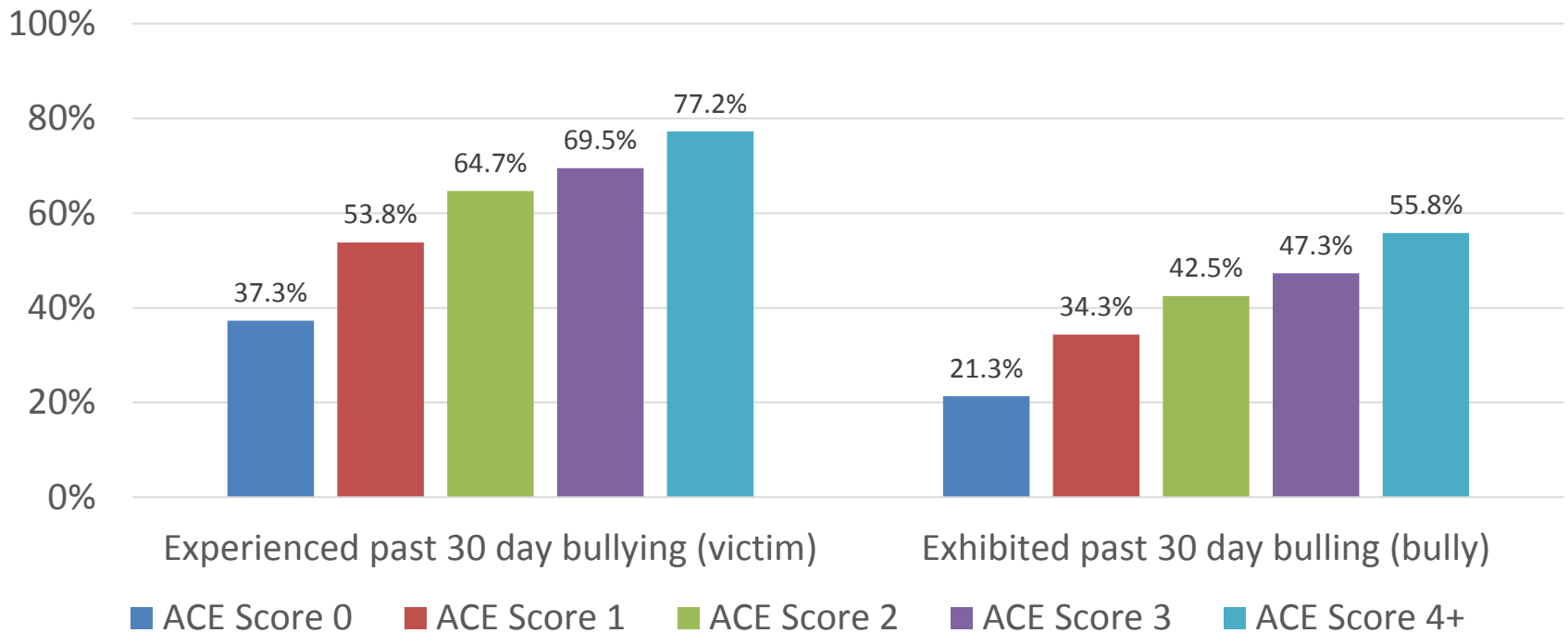
ACE Score + Safety

Minnesota 8th, 9th, and 11th Graders Reporting They "Strongly Agree" or "Agree" They Feel Safe..., by ACE Score, 2013 MSS



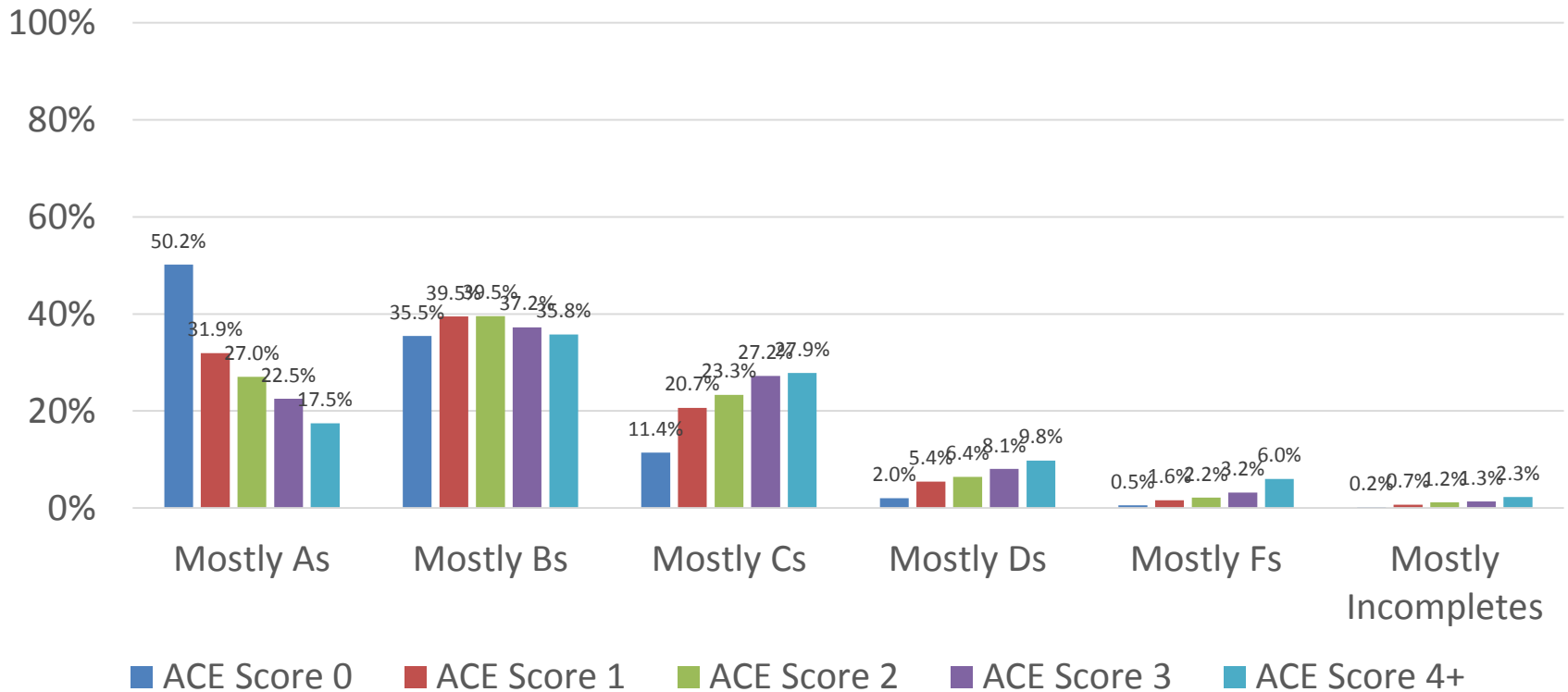
ACE Score + Bullying Behavior

Minnesota 8th, 9th, and 11th Graders Reporting Experiencing or Exhibiting Bullying Behaviors in the Past 30 Days, by ACE Score, 2013 MSS



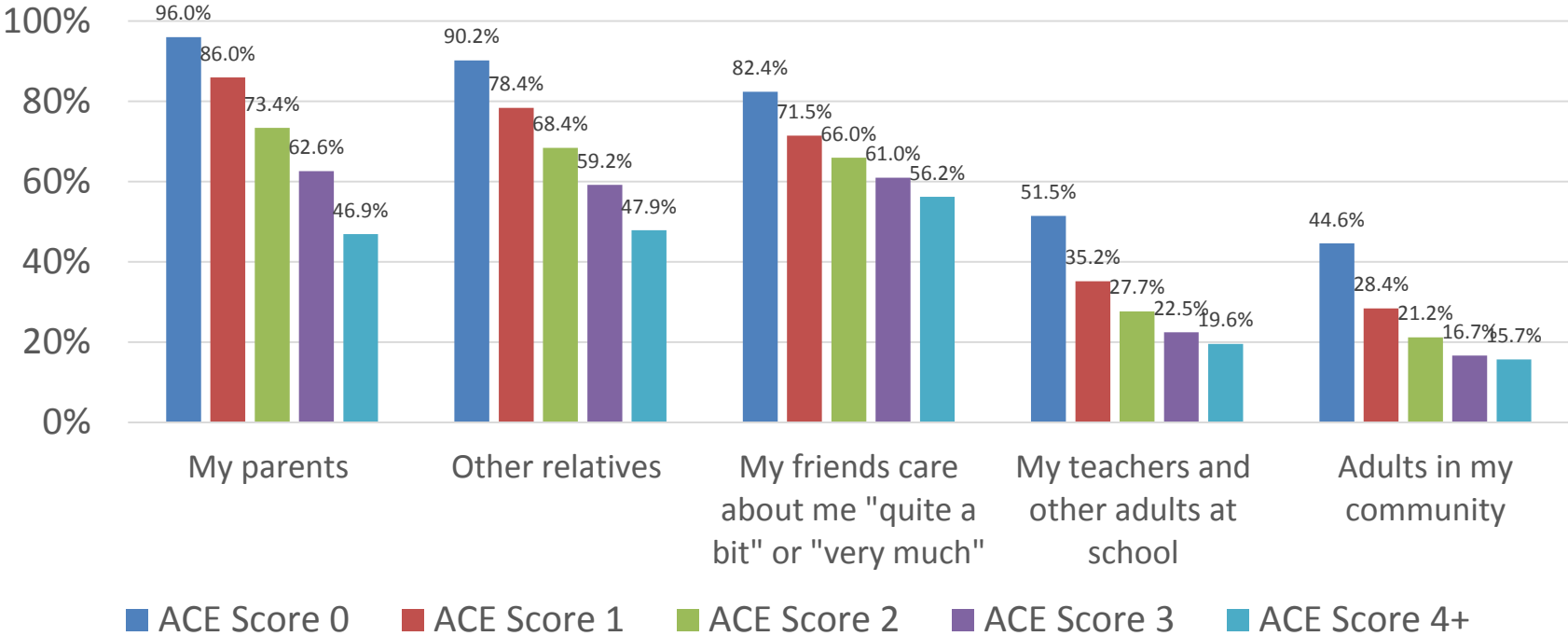
ACE Score + Grades

Minnesota 8th, 9th, and 11th Graders Describing Their Grades for the School Year, by ACE Score, 2013 MSS



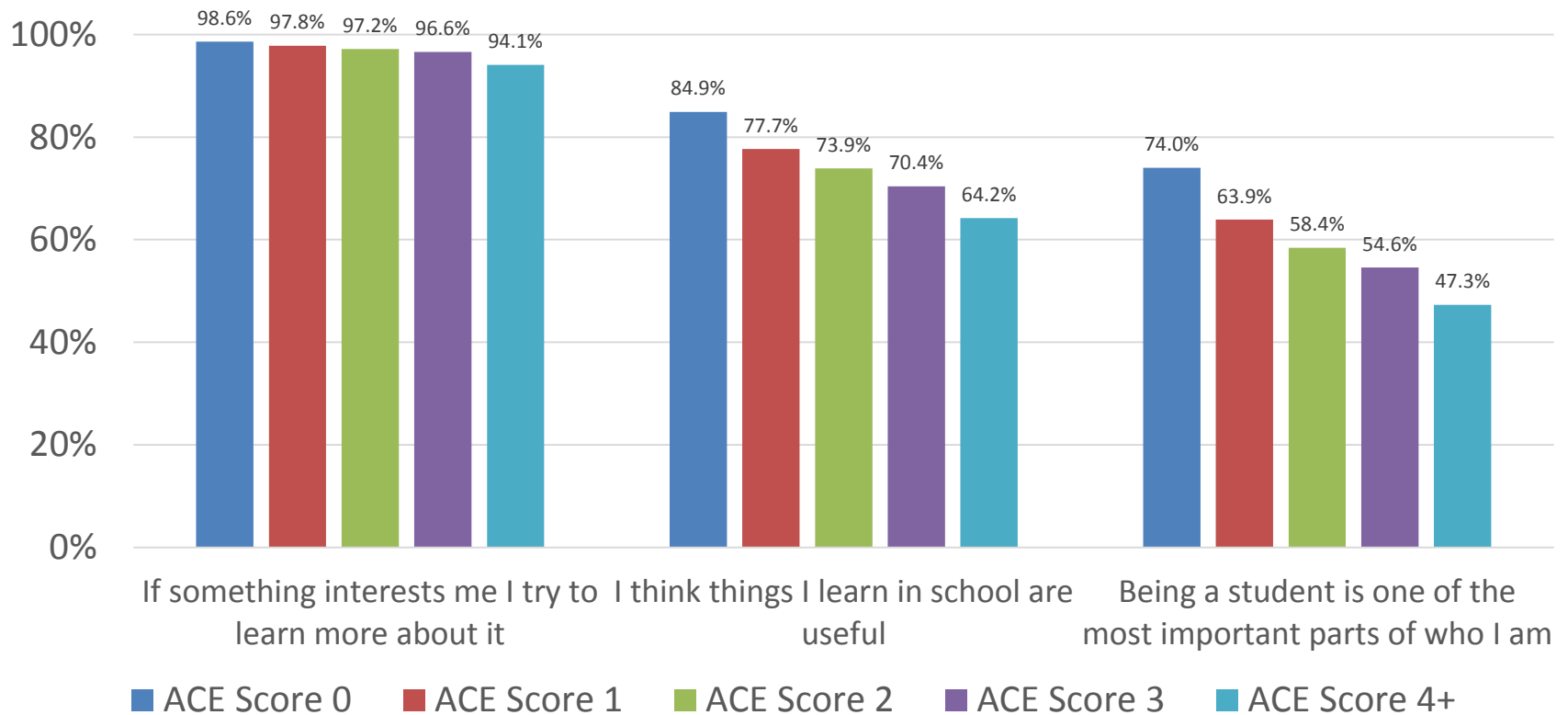
ACE Score + Caring Relationships

Minnesota 8th, 9th, and 11th Graders Reporting Others Care About Them "Quite a Bit" or "Very Much", by ACE Score, 2013
MSS

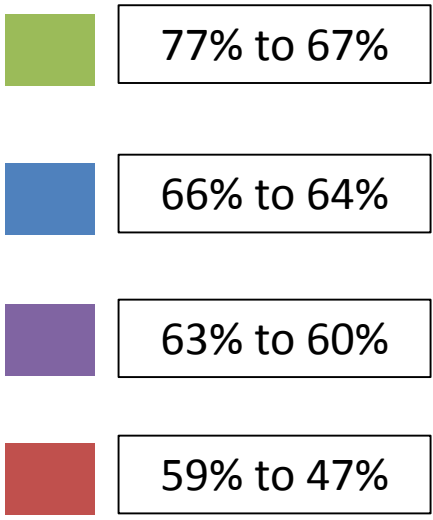
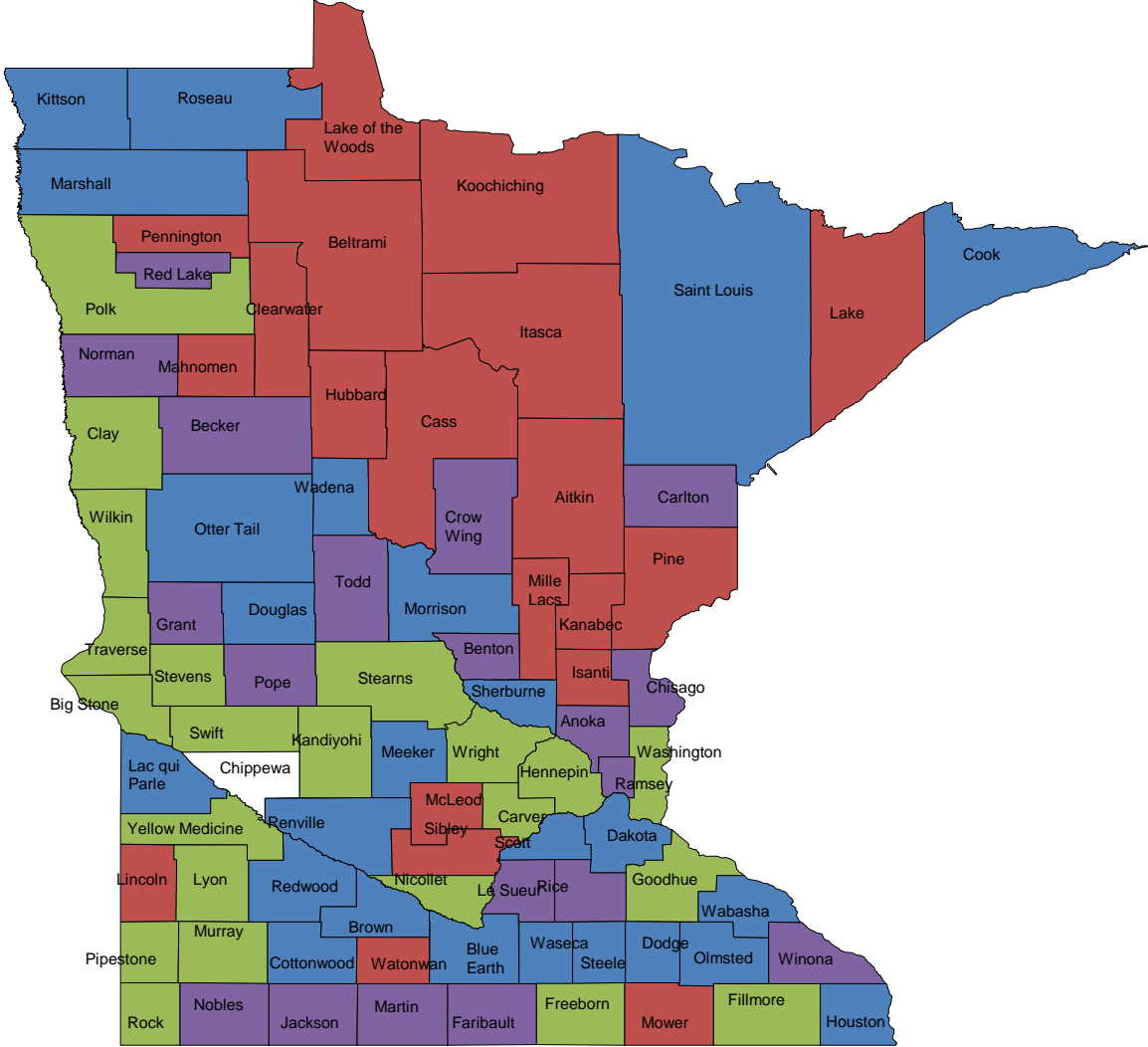


ACE Score + Student Engagement

Minnesota 8th, 9th, and 11th Graders Reporting They "Strongly Agree" or "Agree" That..., by ACE Score, 2013 MSS



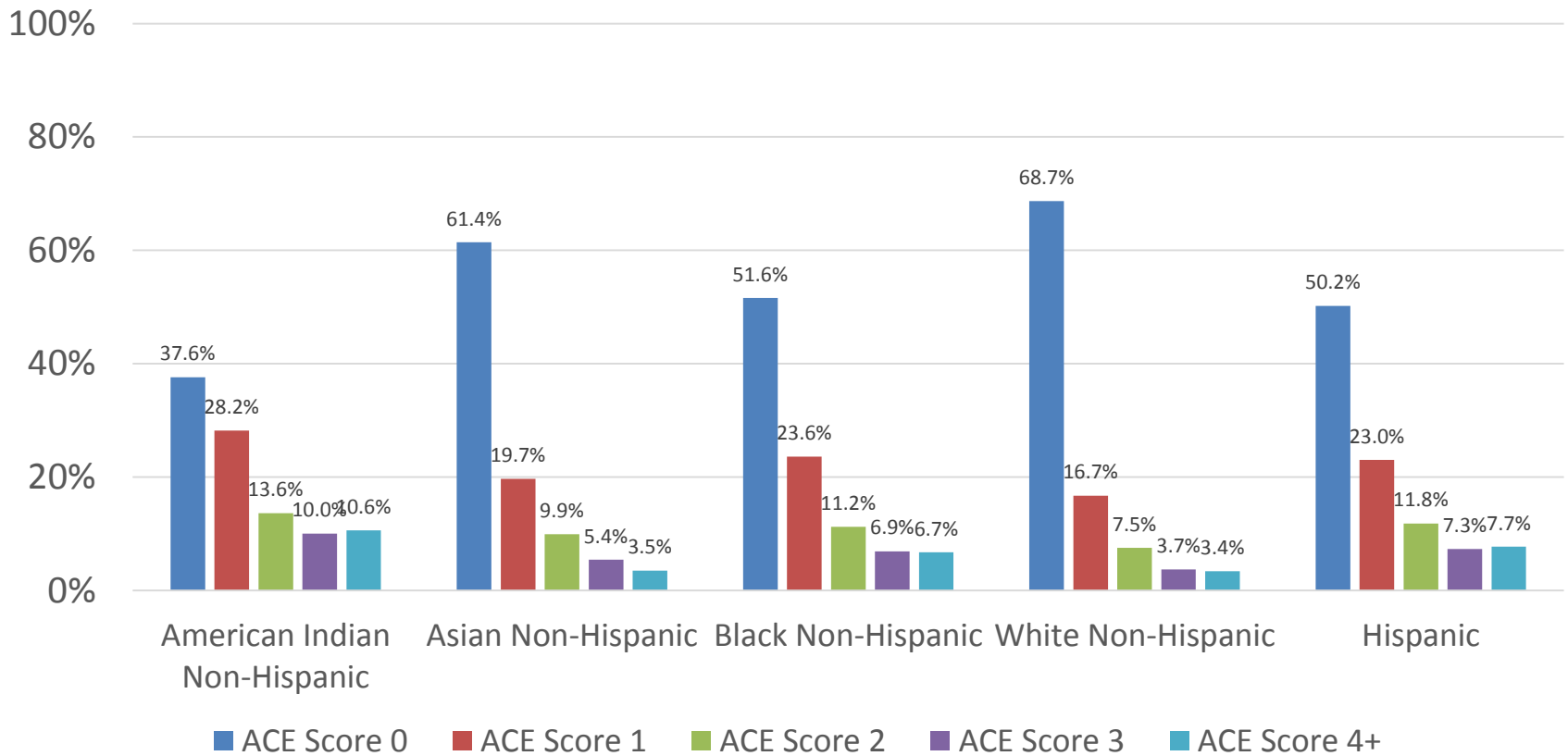
Percentage of Minnesota Students Reporting Zero ACEs, 2013



*No data for Chippewa County

ACE Score + Race/Ethnicity

Minnesota Students' ACE Score by Race/Ethnicity, 2013



Caring Teachers

Students reporting any past 30 day alcohol use...

| | Among Students Who “Strongly Agree” or “Agree” Teachers at Their School Care About Students | Among Students Who “Strongly Disagree” or “Disagree” Teachers at Their School Care About Students |
|----------------|--|--|
| ACE Score = 0 | 10% (n = 6217) | 21% (n = 1194) |
| ACE Score = 1 | 19% (n = 3036) | 30% (n = 863) |
| ACE Score = 2 | 26% (n = 1859) | 36% (n = 635) |
| ACE Score = 3 | 32% (n = 1151) | 43% (n = 500) |
| ACE Score = 4+ | 42% (n = 1314) | 58% (n = 784) |

Caring Teachers

Students reporting any past year suicidal ideation...

| | Among Students Who “Strongly Agree” or “Agree” Teachers at Their School Care About Students | Among Students Who “Strongly Disagree” or “Disagree” Teachers at Their School Care About Students |
|----------------|--|--|
| ACE Score = 0 | 4% (n = 2744) | 10% (n = 571) |
| ACE Score = 1 | 13% (n = 2013) | 20% (n = 577) |
| ACE Score = 2 | 21% (n = 1525) | 28% (n = 494) |
| ACE Score = 3 | 28% (n = 1009) | 38% (n = 439) |
| ACE Score = 4+ | 40% (n = 1232) | 47% (n = 641) |

Student Engagement

Students reporting any past 30 day alcohol use...

| | Among Students Who Care About Doing Well in School "All" or "Most" of the Time | Among Students Who Care About Doing Well in School "Some" or "None" of the Time |
|----------------|--|---|
| ACE Score = 0 | 10% (n = 6313) | 24% (n = 1288) |
| ACE Score = 1 | 18% (n = 3019) | 33% (n = 1008) |
| ACE Score = 2 | 24% (n = 1813) | 41% (n = 750) |
| ACE Score = 3 | 30% (n = 1126) | 48% (n = 569) |
| ACE Score = 4+ | 41% (n = 1300) | 61% (n = 872) |

Useful Roles + Responsibilities

Compared to students who are “very/often” or “extremely/almost always” given useful roles and responsibilities, those who are not:

- Almost **2x** more likely to report current alcohol use
- **2.5x** more likely to report current marijuana use
- Over **3x** more likely to misuse prescription drugs
- Over **2x** more likely to report feeling depressed or hopeless
- Almost **3x** more likely to report past-year self-harm
- Over **3x** more likely to report past-year suicidal ideation

Parental Support + Communication

Compared to students who can talk to their mother “most” or “some” of the time about problems they are having, those who can not:

- Almost **2x** more likely to report current alcohol use
- Over **3x** more likely to report past-year suicidal ideations

Youth who cannot talk to their father “very often” or “at all” about problems are:

- **2x** more likely to report current marijuana use
- Almost **3x** more likely to report past-year self-harm

A red speech bubble with a dark red outline, containing the text "What surprised you?".

What
surprised
you?

A blue speech bubble with a dark blue outline, containing the text "What additional data would you like to see?".

What additional data
would you like to
see?

Current Minnesota Trauma Prevention and Resilience Promotion Activities

***Resilience is common and... arises
from normal rather than
extraordinary human capabilities,
relationships, and resources.
In other words, resilience emerges
from ordinary magic.
Ann Masten, 2009***



Key Components of Resilience

**How is your
community
nurturing these
three components
for resilience
throughout the
lifespan?**

**INDIVIDUAL
CAPABILITY**

**ATTACHMENT &
BELONGING/
(RELATIONSHIPS)**

**COMMUNITY, CULTURE,
SPIRITUALITY**

3 Core Protective Systems

1. Capabilities
2. Attachment & Belonging
3. Community, culture, Spirituality

Think of a difficult time in your life... what helped you get through?

Then, Please
Name, What helped?

Core Protective Systems:

INDIVIDUAL CAPABILITIES



Several Key Individual Competencies

- Hope, positive narrative about life
- Self-efficacy and purpose
- Ability to gauge one's internal state and self-regulate

Individual Competencies Impacted by Toxic Stress

- Same capabilities are significant in both resilience and in the effects of toxic stress
- More effort is not always the answer

Core Protective Systems:

RELATIONSHIPS

CARING & COMPETENT RELATIONSHIPS

- Family, Friend,
- Teacher, Mentor, etc.
- Provide Security & Belonging
- Share skills with each other
- Help learn social cues
- Security to improve skills and competencies



Core Protective Systems:

COMMUNITY, FAITH & CULTURAL PROCESSES



Opportunity:

- Social Connections
- Safety and belonging
- Develop new skills
- Opportunity for relationships
- Important for adults and children

Community capacity

- A distinct resilience building mechanism
- Leadership & growth opportunities
- Community self-determination
- Impact on health and ACE in community

Example: Washington State

Community Capacity-

A public health approach to solving interrelated problems by improving people's connections, their shared responsibility and the collective impact of their efforts

Leadership Expansion



www.resiliencetrumpsaces.org

Basic System Principles For Reducing Toxic Stress

- First, do no harm, universal precautions
- Maximize stability
- Explain transitions, transition slowly
- Involve families in appropriate ways
- Reduce Stress and Provide Safe Environment
- Refer Families with Trauma to Mental Health Professionals with Experience in Trauma Evidence Based Practices

Reducing Risk for Trauma

- Prenatal care - prevent premature birth
- Reduce stress of pregnant women
- Screen and treat depression in mothers
- Reduce child maltreatment
- Avoid multiple foster care placements
- Reduce family violence
- Reduce neighborhood violence
- Clean up toxins
- Prevent homelessness

Asset-Focused Strategies Within Communities

- Financial resources
- Food, water, shelter, medical and dental care
- Tutor, nurse, Guardian ad litem
- Educate parents (ECFE)
- Educate teachers and first responders
- Quality childcare, early education programs
- Build schools, playgrounds, libraries
- Build or restore community services
- Stabilize housing, schooling, case managers
- Scholarships from early childhood into adulthood


System Focused Strategies

- Foster secure attachment relationships
- Promote bonds with competent/caring adults
- Support healthy family life and function
- Protect and nurture brain development
- Facilitate school bonding and engagement
- Foster friendships with pro-social peers
- Integrate systems of care
- Provide opportunities to succeed & develop talents
- Support cultural traditions that provide children with adaptive tools and opportunities to connect with pro-social adults

Public Health Client Dialogue

- Jefferson County, Washington
- www.jeffersoncountypublichealth.org/index.php?famil-health-services
- Intake Process includes ACE questions
 - Improved identification of appropriate services
 - Clients felt respected and empowered

Creating Compassionate, Caring Schools

-  **School-Wide Positive Behavioral Interventions and Supports: a framework for safe, predictable environments**

- **Social Emotional Learning: the skills of relationship**



Collaborative for
Academic, Social, and Emotional Learning

- **Restorative Practices:
building community and
repairing harm**



Trauma-informed teaching resources

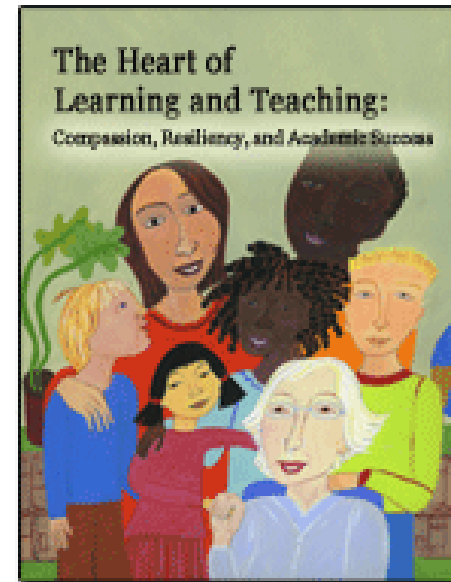
- <http://www.k12.wa.us/CompassionateSchools/>
- http://www.ccyp.vic.gov.au/childsafetycommissioner/downloads/calmer_classrooms.pdf

Calmer classrooms

A guide to working with
traumatised children



Minnesota
Human Services +
Minnesota Department of
Health 2014



[The Heart of Learning:
Compassion, Resiliency,
and Academic Success](#)

Universal Responses To Trauma



- The Wakanheza Project is a community-wide effort that provides tools and strategies for creating welcoming environments.

www.co.ramsey.mn.us/ph/cp/wakanheza.htm

- Policies and programs that support healthy sleep, food and physical activity.

Reflection

- How might you share this trauma and resilience information
- How might public discussion of resilience be challenging for people?

Additional Resilience Data/Measures

- Flourishing Children Project, Child Trends:
http://www.childtrends.org/docdisp_page.cfm?LID=0D4A5339-82B7-4F9A-87334D04ED13E922#Constructs
- A Public Health Approach to Children's Mental Health: A Conceptual Framework—Chapter 6, Georgetown University Center for Child and Human Development:
<http://gucchdtacenter.georgetown.edu/publications/PublicHealthApproach.pdf>
- Strengthening Families: The Protective Factor Framework, Center for the Study of Social Policy:
<http://www.cssp.org/reform/strengthening-families/basic-one-pagers/Strengthening-Families-Protective-Factors.pdf>

Additional Trauma Data

- National Child Abuse and Neglect Data System (NCANDS), National Resource Center for Child Welfare Data + Technology: <http://www.nrccwdt.org/ncands>
- Kids Count Data Center, The Annie E. Casey Foundation: <http://datacenter.kidscount.org>
- Child Trends DataBank: <http://www.childtrendsdatbank.org>