

# THE KIDS ARE (NOT) ALL RIGHT: EDUCATIONAL AND PSYCHOSOCIAL EFFECTS OF THE COVID-19 PANDEMIC ON CHILDREN AND ADOLESCENTS

GENEVIEVE DELROSARIO, MHS, PA-C

PROGRAM DIRECTOR, ASSOCIATE PROFESSOR

SAINT LOUIS UNIVERSITY AND

CARDINAL GLENNON CHILDREN'S MEDICAL CENTER



SAINT LOUIS  
UNIVERSITY.

EST. 1818



The background is a teal-to-blue gradient with a subtle pattern of small white dots. Overlaid on this are several white circular graphics. On the right side, there are two large circular gauges or progress indicators. The upper one has a scale from 0 to 210 in increments of 10, with a white arrow pointing to approximately 180. The lower one has a scale from 0 to 100 in increments of 20, with a white arrow pointing to approximately 80. There are also smaller circular elements, some with dashed lines and arrows, scattered across the background.

NOTHING TO DISCLOSE.

# LEARNING OBJECTIVES

Compare	Compare infant and early child development data pre- and post-pandemic
Recognize	Recognize factors that placed children at the highest risk of developmental delays following the COVID-19 pandemic
Describe	Describe the effect of the COVID-19 pandemic on scholastic achievement in mathematics and literacy
Identify	Identify the interplay of factors that has led to the worsening of mental health in children and adolescents following the COVID-19 pandemic
Recommend	Recommend action steps at the individual and policy levels to ameliorate these concerns

# MY FAMILY: MARCH 2020





# THE DELROSARIO KIDS CIRCA 2021



# NEUROPLASTICITY: CRITICAL PERIODS OF GROWTH

- Prenatal/first years of life
  - Language, other developmental domains
  - Social Emotional
  - This is why early intervention is critical for children with disabilities
- “Give me a child until the age of five and he is mine for life.”

~ Attribution unclear

# NEUROPLASTICITY: ADOLESCENTS

- Adolescence is about *learning*
- Significant neural changes occurring
  - Prefrontal cortex
  - Empathy, theory of mind
  - Profound reorganization of neurons based on behavior
    - Synaptic pruning
- “The reorganization of the adolescent brain renders it particularly susceptible to environmental influences, both positive and negative.” (Konrad)

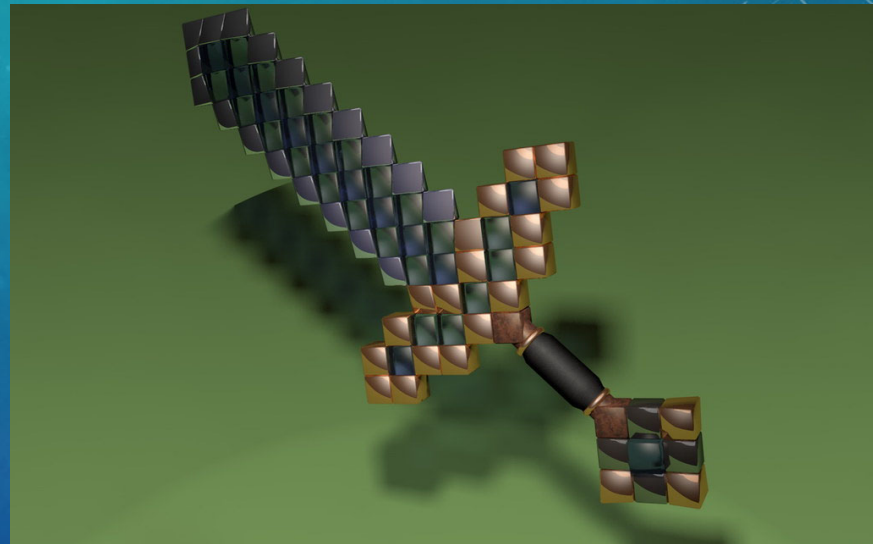


# NEUROPLASTICITY: A DOUBLE-EDGED SWORD

Infant brains have a tremendous ability to learn, remodel and adapt

BUT sensitive to neglect and environmental exposures, even in utero

(Missed visits during COVID)



[Minecraft Diamond Sword](#) by [Niq Scott](#) is licensed under [CC BY-NC-ND 2.0](#) Creative Commons Image.

*Deoni et al 2021.*

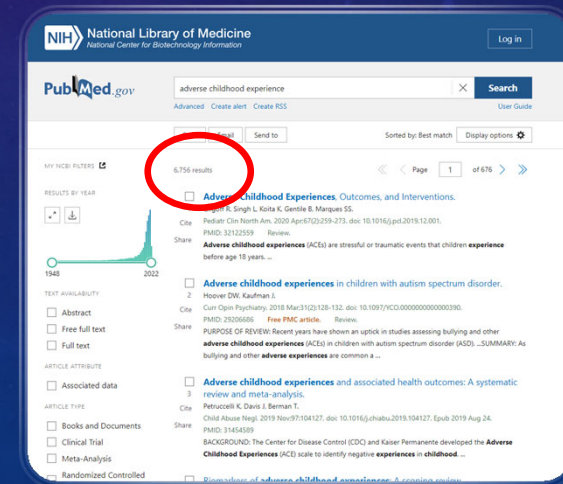


# EFFECT ON EARLY CHILDHOOD DEVELOPMENT

- Parental Stress
  - Financial concerns
  - Stress related to illness of self/others
  - Attentive childcare while working at home
  - Effect of maternal stress in utero
- Disruption of typical routines
  - Daycares and preschools
  - Playgrounds
  - Enrichment activities
- Masks (?)

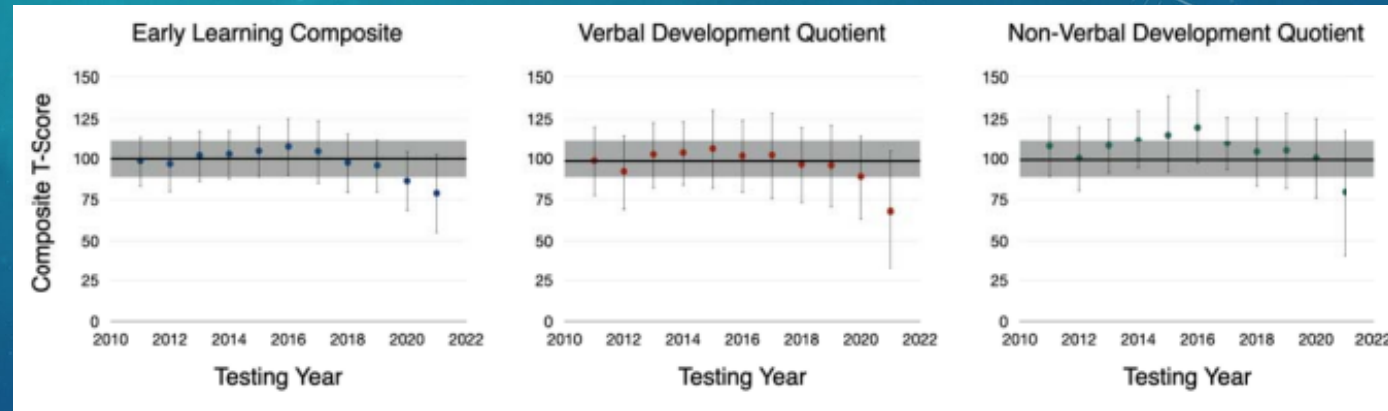
# NEUROPLASTICITY: ADVERSE CHILDHOOD EXPERIENCES (ACES)

- Potentially traumatic events that occur in childhood
  - Violence, abuse, neglect
- Includes aspects of the child's environment that can undermine their sense of stability, safety, and bonding
  - Substance use, mental health, parental separation due to incarceration
- Very common; increased during the pandemic
  - Prepandemic: 61% of adults had experienced at least one ACE before the age of 18
  - Pandemic: Almost ¼ of high school students reported at least one ACE *during high school*; 7.8% reported four or more ACEs.



# EARLY DATA: EFFECT ON EARLY CHILDHOOD DEVELOPMENT

- 1224 cognitive assessments from 672 healthy, full-term, neurotypical infants in Rhode Island
  - 154 assessments between March 2020 and June 2021
- Significant drop in development in children born since the start of the pandemic
- Boys, lower SES most greatly affected
  - Higher SES protective



*Deoni et al 2021.*

## EFFECT ON DEVELOPMENT: JURY'S OUT

- Multiple studies have linked various markers of infections and pandemics to various neurodevelopmental outcomes:
  - Influenza and schizophrenia
  - Any hospitalized infection and autism
  - Any infection and major depressive disorder
  - Caution: Hard to parse out true etiology



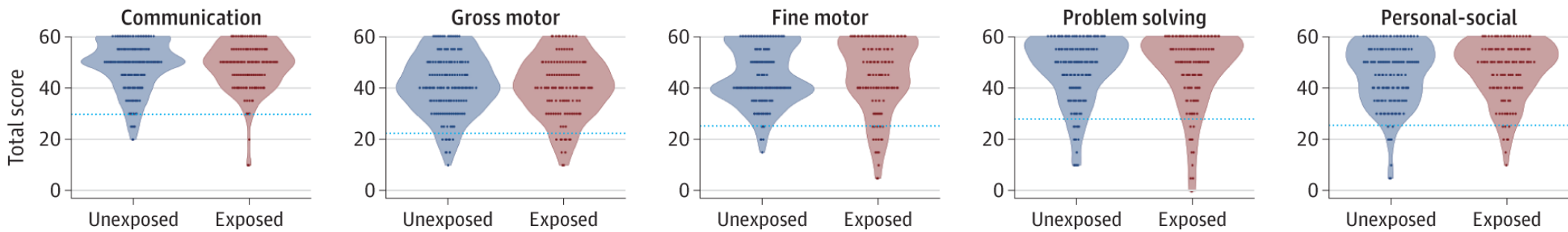
*Edlow et al 2023.*

IS THIS BECAUSE OF MATERNAL COVID-19 INFECTION  
DURING PREGNANCY?

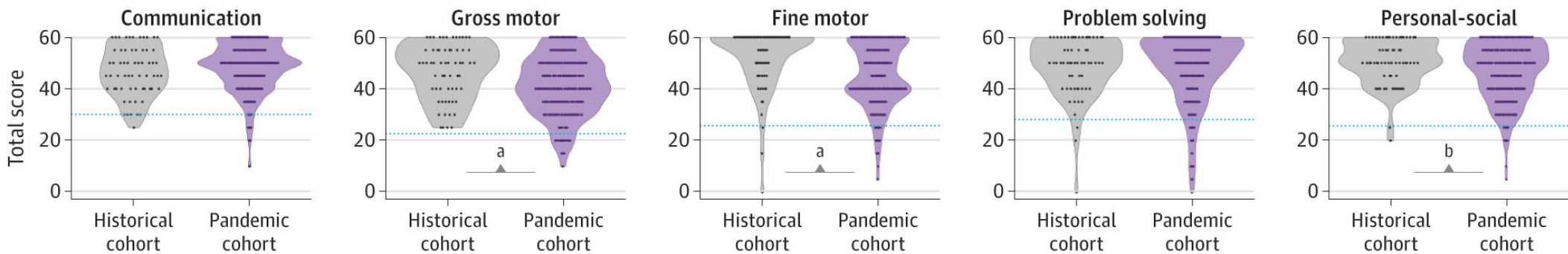
Relationship Status: It's Complicated  
*Or as my kids would say: FWIW IDK*

# NEURODEVELOPMENTAL STATUS AT SIX MONTHS (ASQ RESULTS)

**A** ASQ-3 scores at 6 mo in SARS-CoV-2 exposed vs unexposed infants



**B** ASQ-3 scores at 6 mo in pandemic vs historical cohorts



Population: 255 infants born March – December 2020 and data from 71 infants in the historical cohort

*Shuffrey et al 2022.*

# BUT...THE STORY CONTINUES

- Larger study of 18,000 infants suggest male offspring (but not female) were at an increased risk of neurodevelopmental diagnosis at 12 months of age; effect appeared to weaken at 18 months
- Adjusted Odds Ratio (male offspring):
  - Age 12 months: 1.94 (CI 1.12-3.17)
  - Age 18 months: 1.42 (CI .92-2.11)
  - (Female offspring, age 12 months: 0.89, CI 0.39-1.76)

*Edlow et al 2023.*

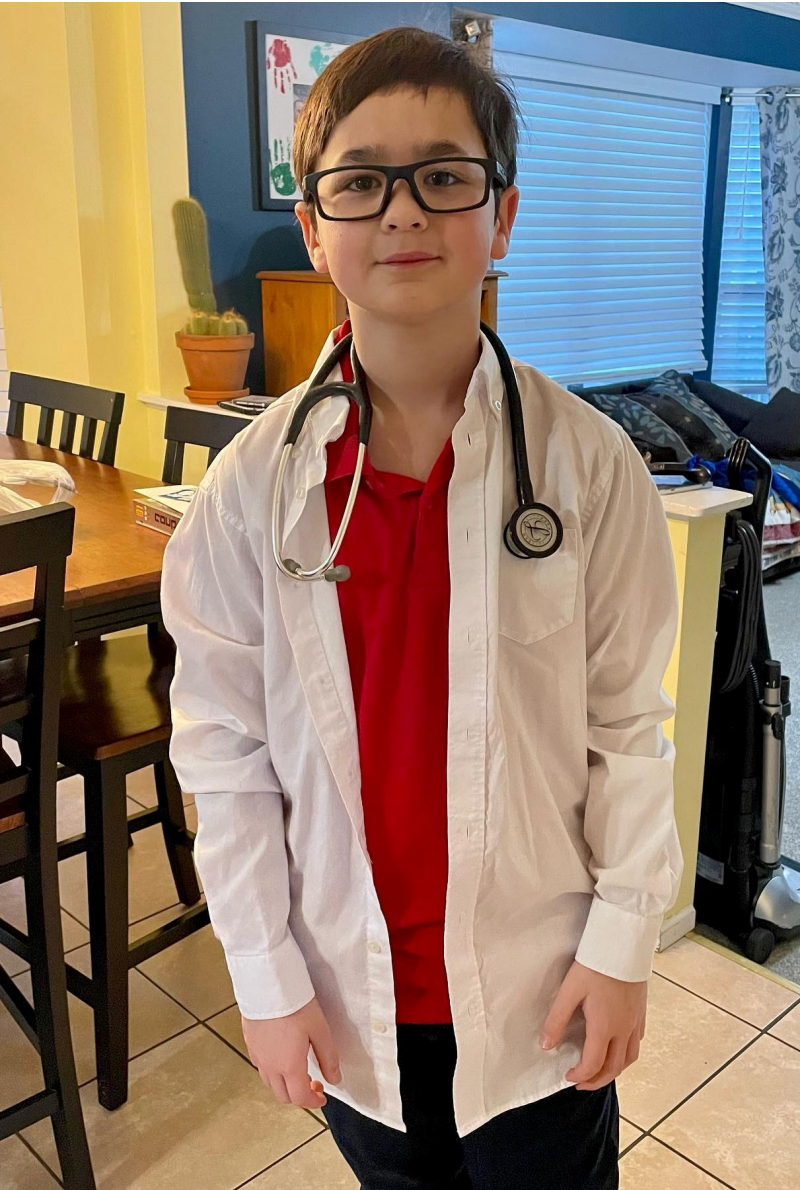
~ AND ~

- Maternal COVID infection during pregnancy was associated with increased risk of preterm delivery and SGA infants.\*
- Independent risk factors for developmental delay.

~AND~

- We're probably years away from final answers.

*\*Piekos et al 2022.*

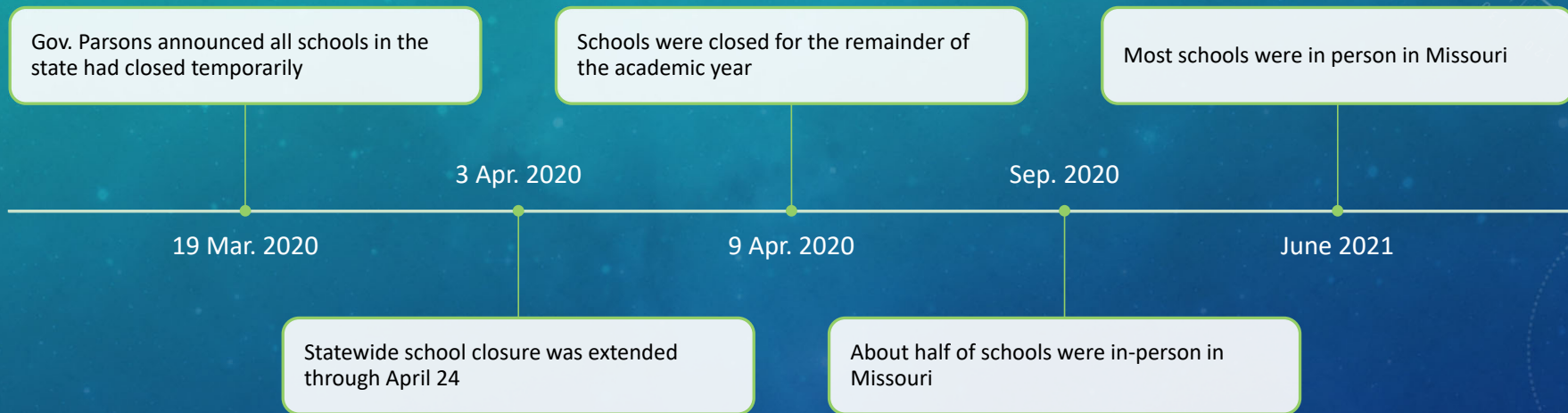


# ACADEMIC EFFECTS ON SCHOOL AGE CHILDREN

- Time schools were closed
- Time school went online
- Time students were out when schools were open
- “Lost” time at school
  - Social distancing/COVID protocols
  - Teachers, core staff out
  - Mental health effects



# HOW MUCH WERE SCHOOLS IN MISSOURI CLOSED?

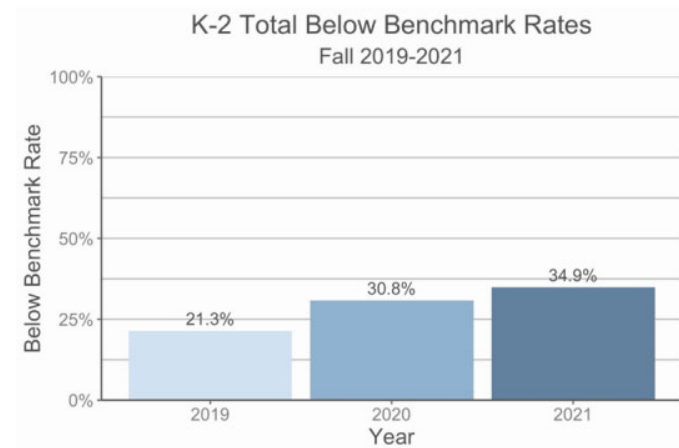


[https://ballotpedia.org/School\\_responses\\_in\\_Missouri\\_to\\_the\\_coronavirus\\_\(COVID-19\)\\_pandemic](https://ballotpedia.org/School_responses_in_Missouri_to_the_coronavirus_(COVID-19)_pandemic)

# LITERACY

- Most significant effect on early readers
- Affects all demographic groups, but most significant effect seen in:
  - Black and Hispanic Children
  - Those from low SES
  - Those who have disabilities
  - Non-native speakers
- Ongoing: Now a teacher crisis

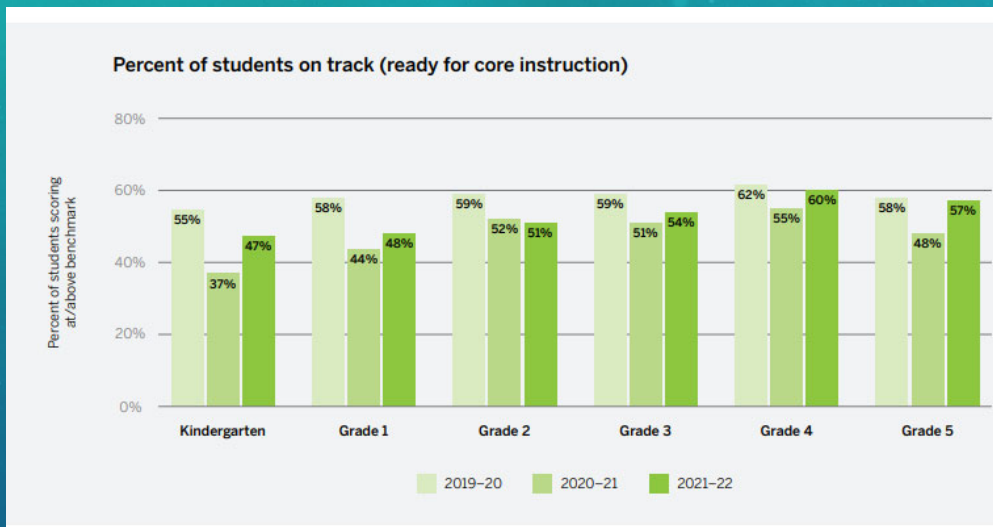
FIGURE 1



“Historic lows” in literacy in Virginia

[https://pals.virginia.edu/public/pdfs/login/PALS\\_StateReport\\_Fall\\_2021.pdf](https://pals.virginia.edu/public/pdfs/login/PALS_StateReport_Fall_2021.pdf)

# HAS IT BOUNCED BACK?



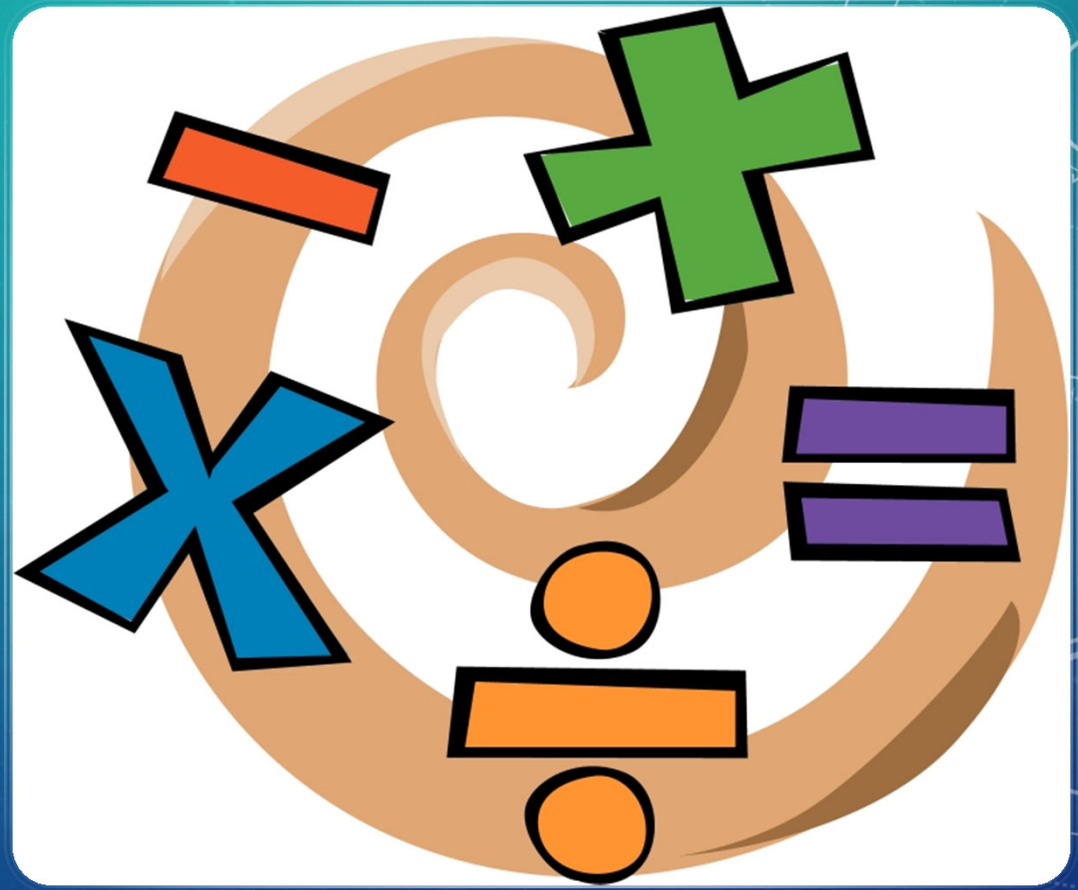
Evaluation of early literacy skills

~400,000 students in 1300 schools

37 states

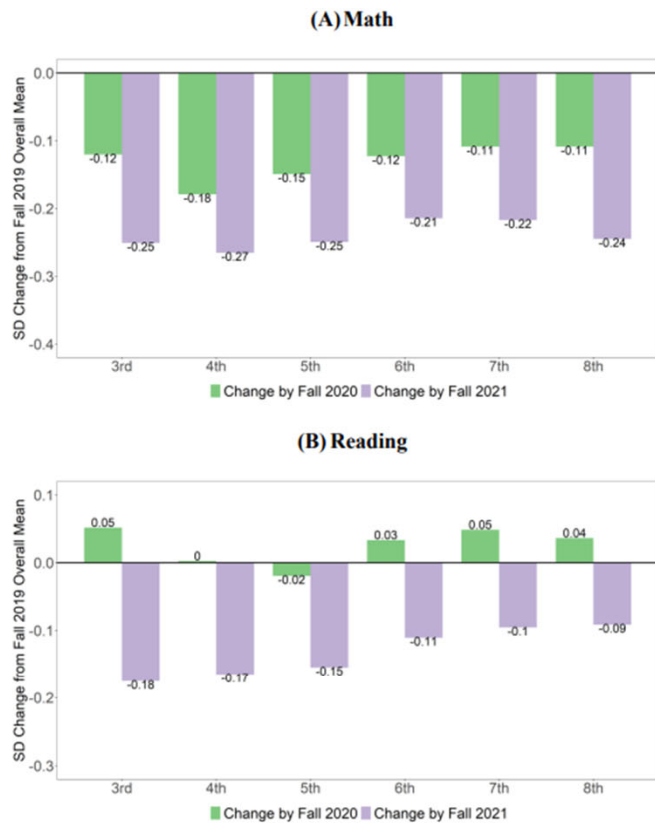
## EFFECT ON MATH SKILLS

- MAP scores 4.5 million 3<sup>rd</sup>-8<sup>th</sup> grade students
- 0.2-0.27 standard deviations lower
  - Fall 2021 compared to Fall 2019
- **Gaps between low-poverty and high-poverty elementary schools grew by 20%**



**Figure 1**

*Trends in MAP Growth test scores in fall 2020 and fall 2021 (relative to same-grade peers in fall 2019)*



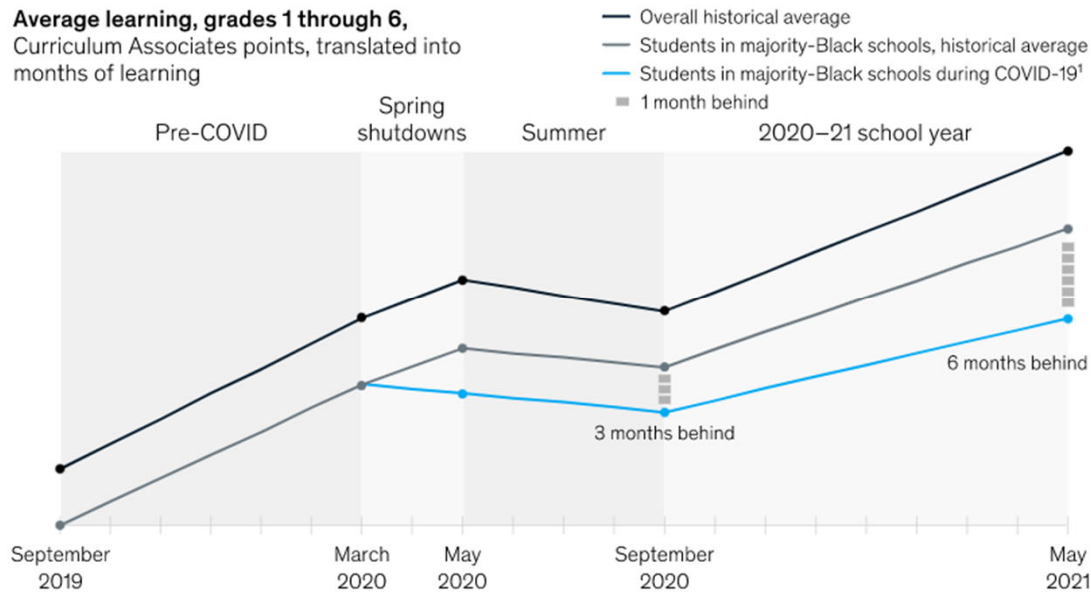
*Note.* Reported estimates are calculated based on the fall 2019 mean and standard deviation (SD) in a given grade/subject.

# COMPARISON: EFFECT ON MATH AND LITERACY

*Kuhfeld et al 2022*

## Unfinished learning through the pandemic exacerbates historical inequities, especially for Black students.

**Average learning, grades 1 through 6,**  
Curriculum Associates points, translated into months of learning



<sup>1</sup>Average fall 2020 achievement and learning loss represents schools with students who are >50% Black, Indigenous, and people of color because there were not enough majority-Black schools that had in-school assessments; average spring 2020 achievement and learning loss represents schools with >50% Black enrollment.  
Source: Curriculum Associates i-Ready assessment data

# WORSENING HISTORIC INEQUALITIES

- Achievement gaps between students in low-poverty and high-poverty elementary schools grew by .1-.2 SDs, primarily during the 2020-2021 school year.
- Gaps increased by 20% in math and 15% in reading.

Kuhfeld 2022

# SO WHAT DOES THAT LEARNING LOSS DO?

## Worldwide

- \$17 trillion in lost lifetime earnings
- Low and middle-income countries, children living in **learning poverty** could increase from 53% to 70%
- Most significant effects on younger learners, low income learners, and girls
- Many may never return to school

[www.worldbank.org](http://www.worldbank.org)

## United States

- Financial impact: \$49,000-\$61,000 less in lifetime learning
  - \$128 -\$188 billion annual negative effect on US economy as they begin working
- 17% of high school seniors who planned on attending post-secondary education did not
  - 26% of low-income seniors
  - Cited cost being too high, joined work force

Mckinsey.com



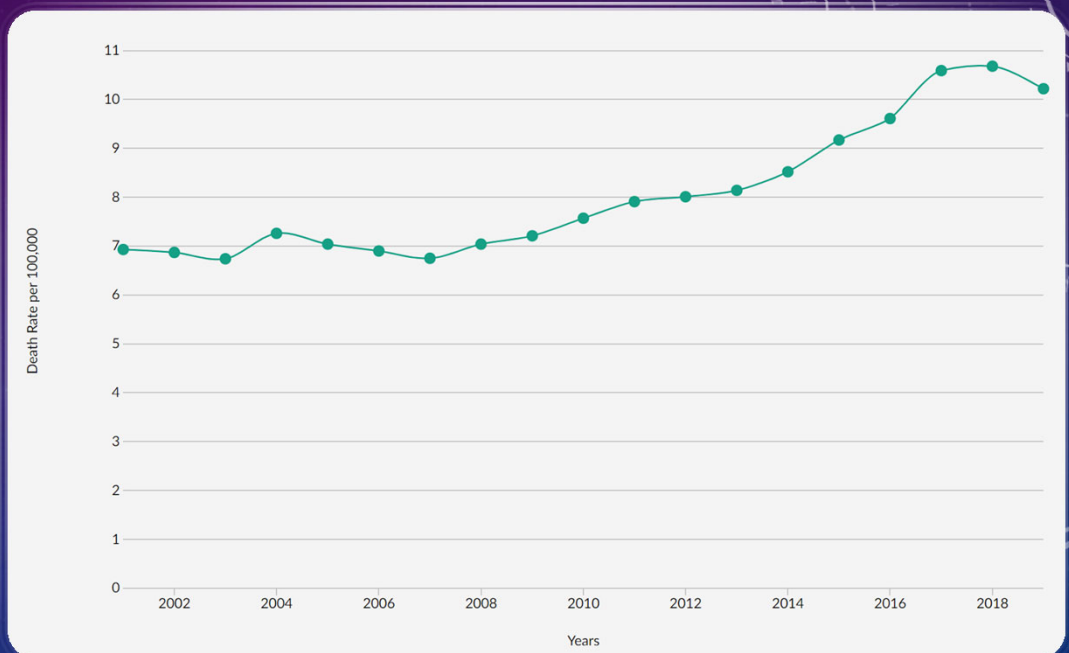
# EFFECTS ON MENTAL HEALTH

"MENTAL HEALTH AWARENESS" by Chloe  
Capture is marked with Public Domain Mark 1.0.



## MENTAL HEALTH IN ADOLESCENTS: BEFORE THE PANDEMIC

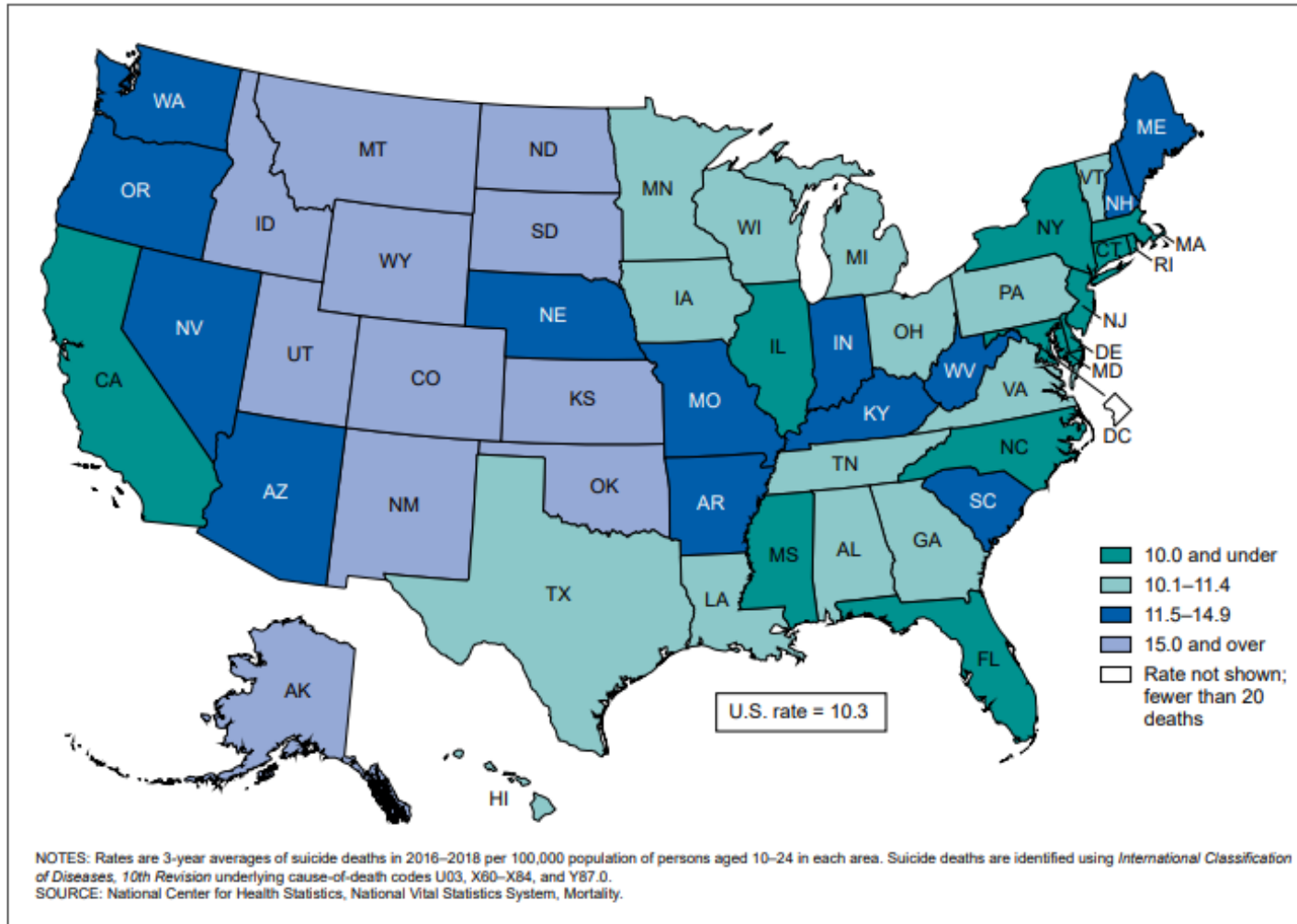
- Up to 20% of children and youth experience a mental health disorder in any given year\*
- 2018: Suicide second leading cause of death ages 10-24\*\*



\* Mmwr May 2013

\*\* cdc.gov


**Figure 2. Suicide death rates for persons aged 10–24: United States, 2016–2018**



TAKE A NUMBER

## *How Many Teenage Girls Deliberately Harm Themselves? Nearly 1 in 4, Survey Finds.*

Rates of self-injury are even higher in parts of the United States, according to government data. Boys are half as likely to harm themselves.

 Give this article



By **Emily Baumgaertner**

July 2, 2018



## CAUSES OF ADOLESCENT MENTAL HEALTH CONCERNS: PRE-PANDEMIC

- Social inequities have been at the forefront of the national conversation for several years
  - Racism, gender equality, sexism....
- Safety
- Relationships with family and in the community
- **Social media!!**



# CAUSES OF MORE ADOLESCENT MENTAL HEALTH CONCERNS: PANDEMIC ISSUES

- Loneliness
- Adolescence: a time to be more independent from parents and caregivers
- Isolation
  - From social supports
- Loss
  - >140,000 children have lost a caregiver during the pandemic
- Financial instability
  - 2021 study: 29% report a parent/caregiver had lost a job during COVID
- Inability to take part in activities to blow off steam

"FIRE" by [stbjr](#) is licensed under [CC BY-NC-ND 2.0](#) for use under creative commons license.

# GLOBAL RATES OF DEPRESSION AND ANXIETY IN ADOLESCENTS

- **Pandemic:**
  - **Depression: 25.2%**
  - **Anxiety: 20.5%**
- Pre-pandemic
  - Depression: 12.9%
  - Anxiety: 11.6%
- Risk factors:
  - Female gender
  - Older adolescents (depression only)
  - Lower baseline self-esteem
  - Students who identify as lesbian, gay, bisexual, other, or questioning\*
  - Neurodiversities and/or chronic physical conditions

JAMA Pediatrics 2021.

\*cdc.gov

# WHAT DO US TEENS SAY?

44% feelings of sadness

9% had attempted suicide

- 20% had considered

55% emotional abuse from a parent/adult at home

- 2013: 14% reporting emotional abuse

11% physical abuse at home

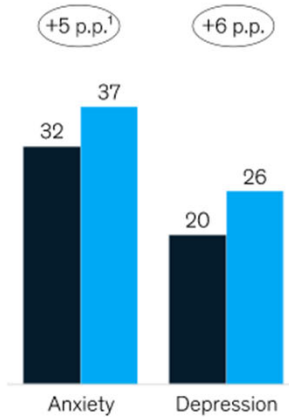
- 2013: 5%

Other concerns

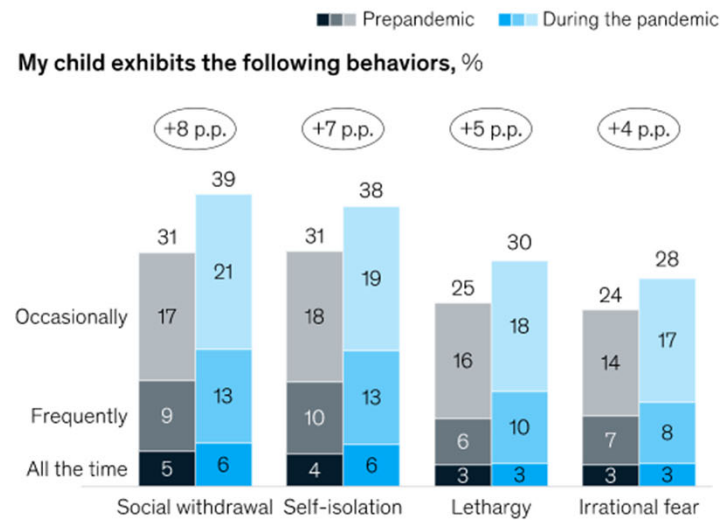
- Eating disorder visits doubled during pandemic
- 24% of teens have experienced hunger
- Increased risk of drug use, high risk sexual behaviors

## Parents reported increases in mental health conditions and concerning behaviors in their children.

My child suffers from the following conditions, %



My child exhibits the following behaviors, %



Note: Figures may not sum to totals, because of rounding.

<sup>1</sup>Percentage points.

Source: McKinsey survey of 16,370 parents across all 50 states

McKinsey  
& Company

## WHAT DO THEIR PARENTS SAY?

- Survey of 16,000 parents across the US
- Despite these numbers, mental health visits for teenagers declined, especially in the early portions of the pandemic.
  - However, ED visits for suicide attempts increased 50% for adolescent girls.\*

[www.mckinsey.com](http://www.mckinsey.com); \*[cdc.com](http://cdc.com)





## PROTECTIVE FACTORS

- Physical exercise
- Access to entertainment
- Positive familial relationships
- Access to social supports

\*Child and Adolescent Mental Health 2021.  
Image: "[The R Family - 2](#)" by [RebeccaVC1](#) is licensed  
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# NATIONAL EMERGENCY IN CHILD AND ADOLESCENT HEALTH

- October 2021
- Joint Declaration from:
  - American Academy of Pediatrics
  - American Academy of Child and Adolescent Psychiatry
  - Children's Hospital Association
- Soaring rates of:
  - Depression
  - Anxiety
  - Trauma
  - Loneliness
  - Suicidality

# AND ALSO: CHILDHOOD OBESITY

- The pandemic is estimated to have worsened the pediatric obesity crisis
- Between 2018-2020, the rate of BMI increase in persons aged 2-17 approximately doubled as compared to the pre-pandemic time period.\*
- Multifactorial
  - Closure of gyms, parks, rec centers, cancellation of sports
  - Early modeling suggested the longer school would be out, the greater the increase in obesity^



"Fat Kid" by [\\_anke\\_](#) is licensed under [CC BY-NC-SA 2.0](#) used under creative commons license.

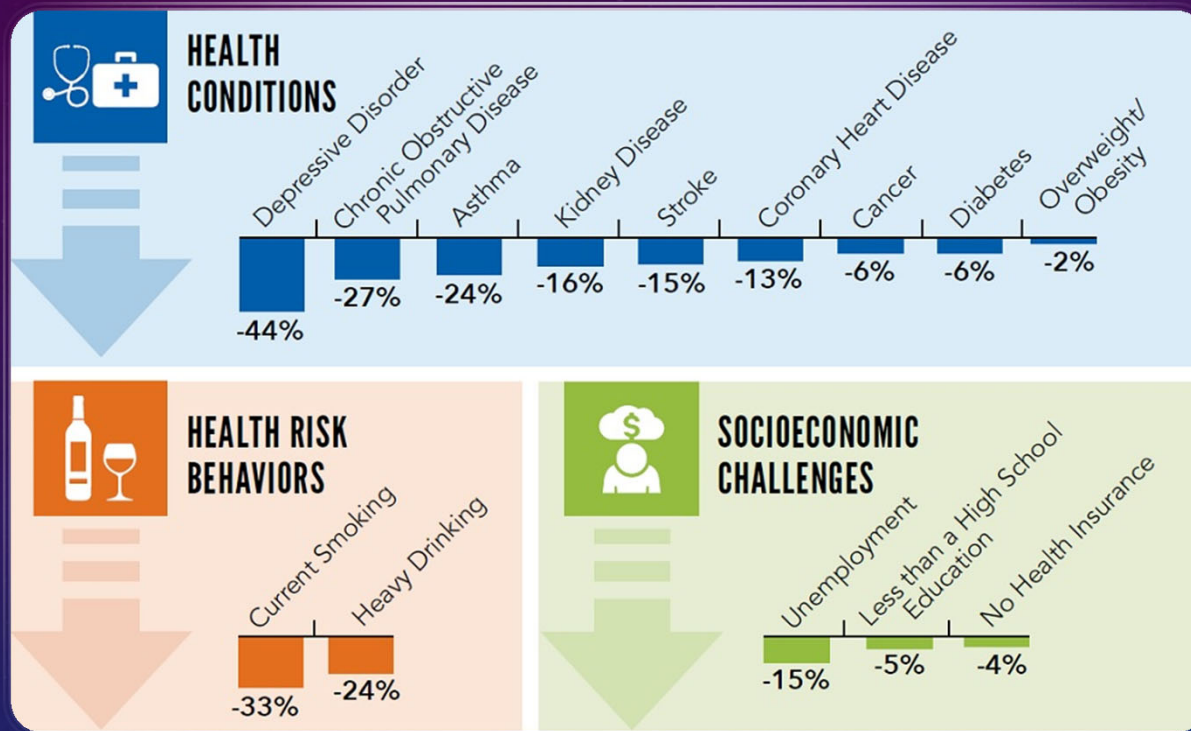
\*Lang et al 2021. ^Ruopeng 2020.



## SO IN A NUTSHELL, WE'RE WORRIED ABOUT:

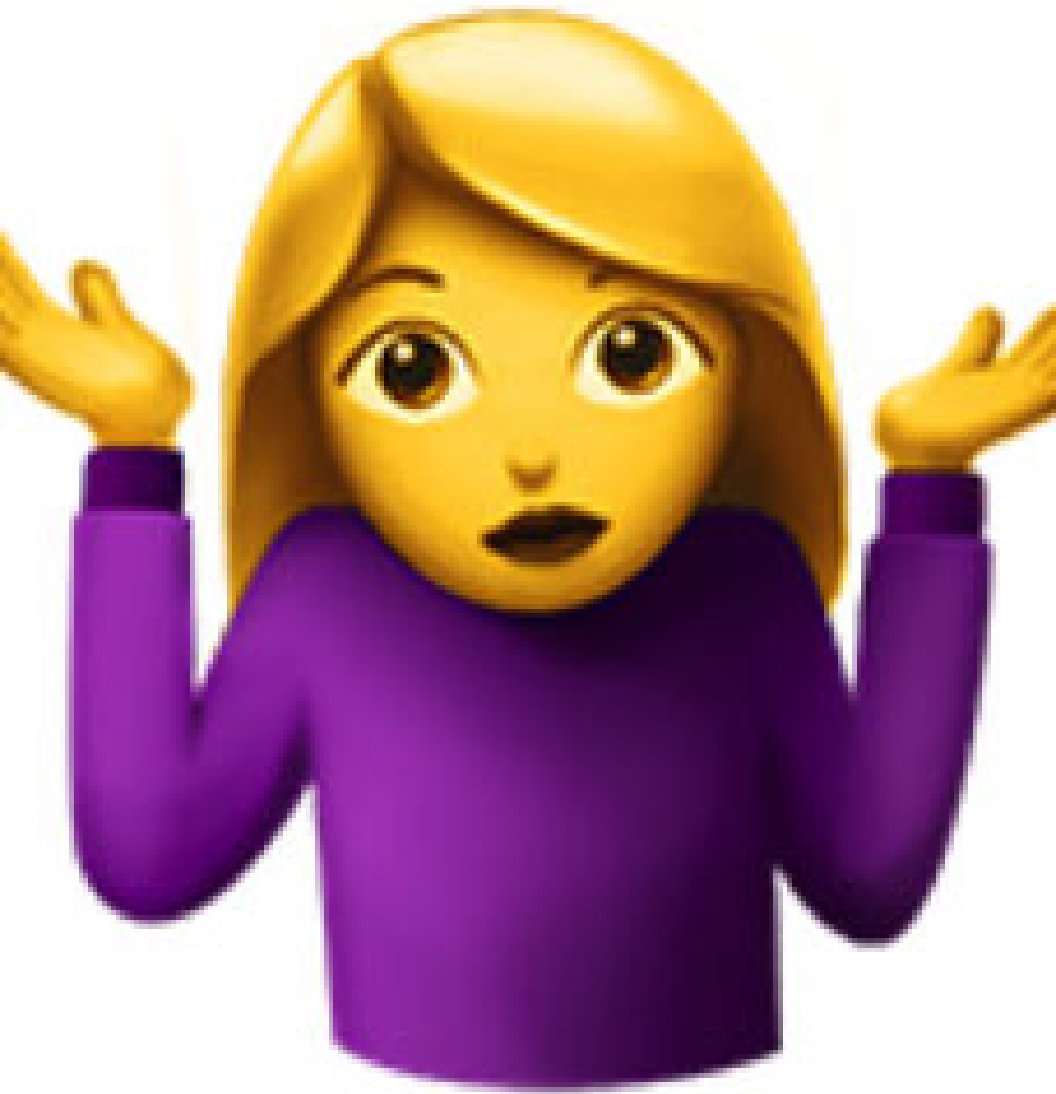
- The impacts of prenatal exposure
- Early development, with concerns for missed developmental opportunities
- The impact on missed education, both in the United States and globally
- Teenagers – all of it. Development, mental health, high risk behaviors
- Long term effects of the increase in obesity.

## FUTURE CONCERN: COVID 19 PANDEMIC INCREASING ADVERSE CHILDHOOD EXPERIENCES (ACES) AND THEIR LONG-TERM IMPACTS



<https://www.cdc.gov/vitalsigns/aces/index.html>

- Potentially traumatic events that occur in childhood
- Changes brain development, bodies' responses to stress
- Linked to chronic health problems (asthma, cancer, heart disease, obesity), mental illness, substance misuse



CHEERFUL, HUH? SO  
WHAT CAN WE DO?

# INDIVIDUAL LEVEL: WHAT PARENTS CAN DO

## Look for:

- Clinginess
- Distance from friends and family
- Irritability
- Academic decline
- Anxiety
- Bed-wetting
- Changes in sleep patterns
- Lack of appetite or overeating
- Substance use

## And Act on:

- Read, read, read!
- Self-refer to early intervention
- Talk to teachers
- Get students involved in activities
- Access (and block apps, and limit use) to kids' phones, Ipads, etc
- Get referrals and recommendations for counselors
- Talk, Talk, Talk!
- ....And hug them a little tighter.



## INDIVIDUAL LEVEL: WHAT PROVIDERS CAN DO

- **Screen, Screen, Screen!!!**
  - For depression, substance abuse, developmental delay, and school failure
- **Refer, Refer, Refer!!!**
- Encouraging routines at home
- Encourage sleep
- Encourage healthy outside relationships
- Jail the phone at bedtime!
- Make pacts with other parents to not have their children use social media
- Encourage parents to talk, talk, talk
- ....and to hug their kids a little tighter

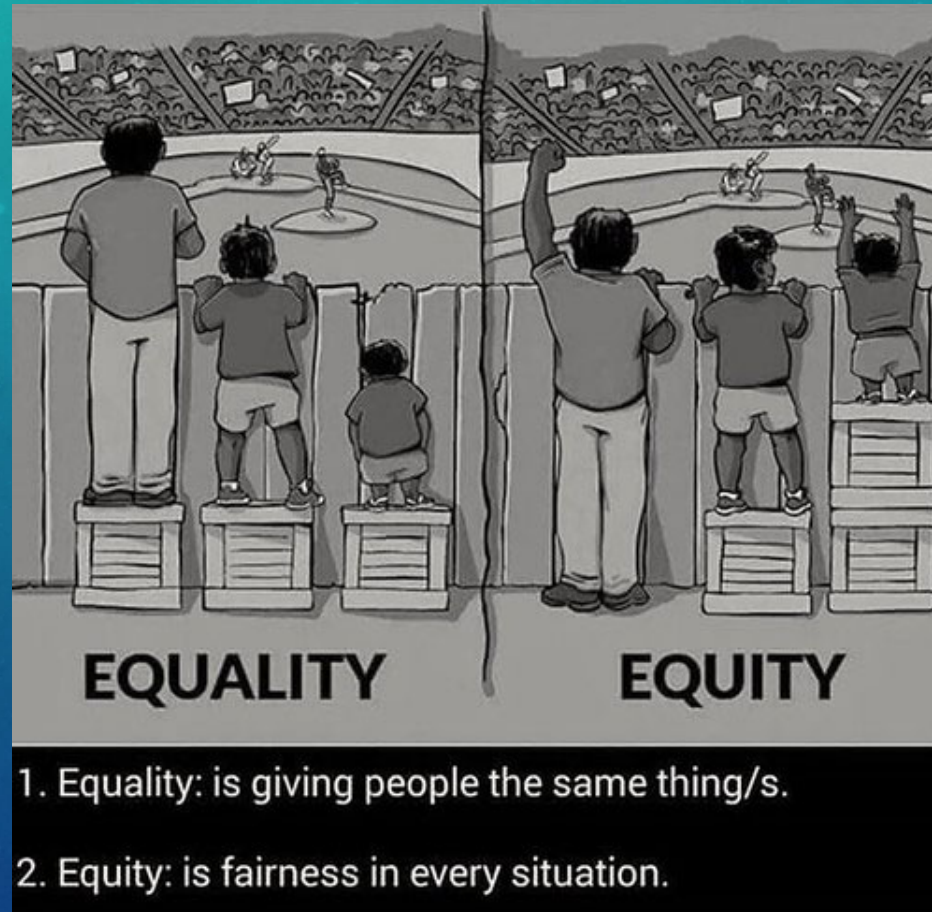
Image "[roller coaster](#)" by [hounddiggity](#) is licensed under [CC BY-NC 2.0](#) under Creative Commons



# POLICY LEVEL: WHAT CAN BE DONE TO ADDRESS THE MENTAL HEALTH CRISIS?

- Increase federal funding to ensure all children can access mental health screening, diagnosis, and treatment
- Improve access to technology to assure availability of telemedicine to provide mental health care
- Increase school-based mental health care
- Provide integrated mental health care in primary care pediatrics
- Reduce the risk of suicide in children and adolescents through prevention programs
- Expand access to step-down programs, short-stay stabilization units, and community-based response teams
- Fully fund comprehensive, community-based systems that connect families with appropriate interventions
- Promote and pay for trauma-informed care services that support relational health and family resilience
- Address workforce challenges in child mental health
- Advance policies that ensure compliance with and enforcement of mental health parity laws
- (Support legislation to limit children and adolescents' access to social media).

# OUR ROLE AS ADVOCATES



[#equality](#) but I still don't know what banks mean by [#equity](#) by [leighblackall](#) is licensed under [CC BY 2.0](#) used under Creative Commons license.

# RESOURCES

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- <https://www.worldbank.org/en/news/press-release/2021/12/06/learning-losses-from-covid-19-could-cost-this-generation-of-students-close-to-17-trillion-in-lifetime-earnings#:~:text=WASHINGTON%2C%20DC%2C%20Dec.Bank%2C%20UNESCO%2C%20and%20UNICEF>. Accessed 3.29.22.

QUESTIONS?

