

Adolescent Gun Violence & Traumatic Stress

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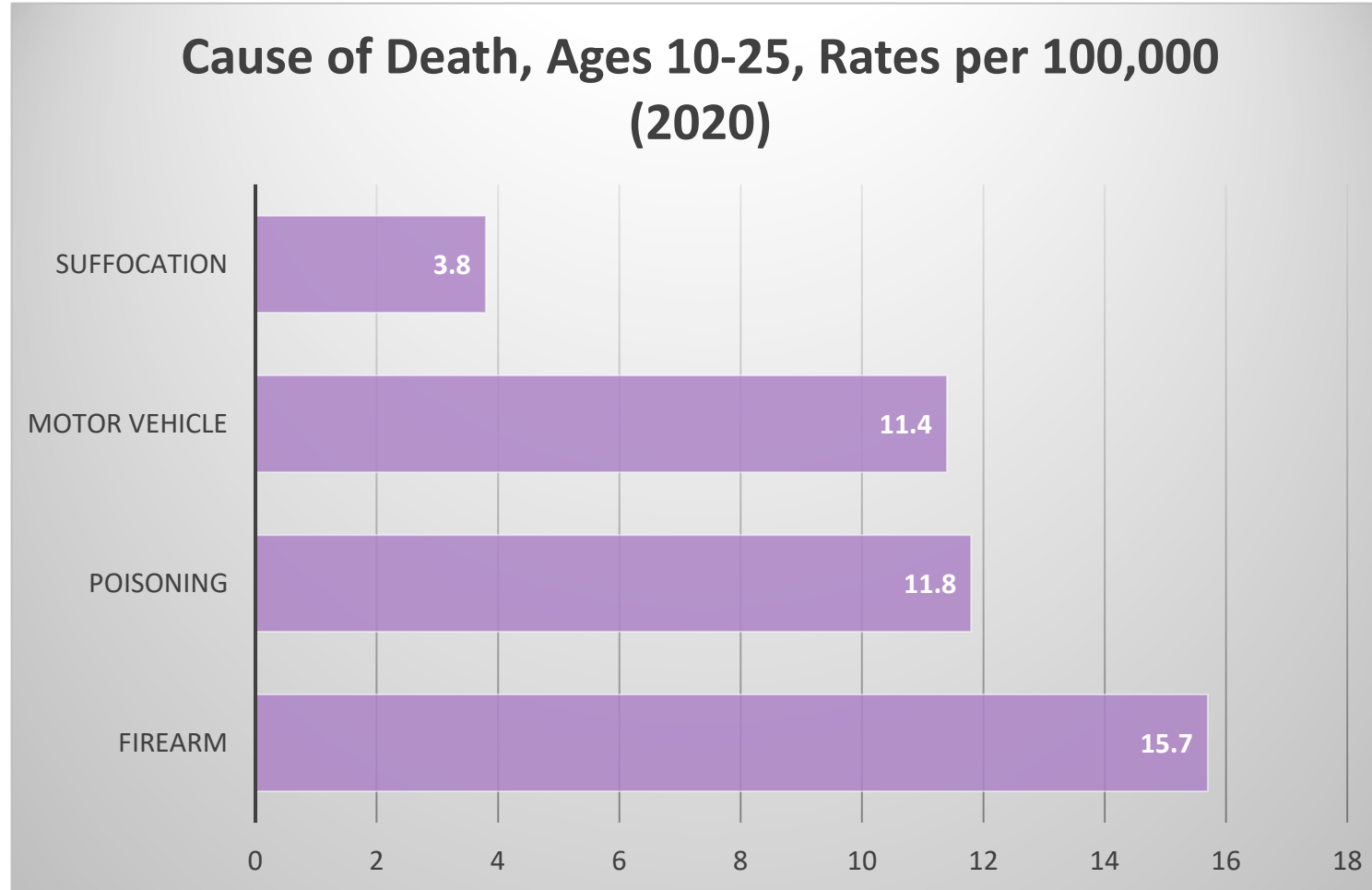
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Rahn Kennedy Bailey, MD is a member of the SAMHSA Advisory Board (2020-2024) and has a commercial interest with Janssen Pharmaceuticals.

No commercial interests or relationships are relevant to this lecture, presentation, and discussion.

Centers for
Disease
Control and
Prevention



Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Mortality 1999-2020 on CDC WONDER Online Database, released in 2021. Data are from the Multiple Cause of Death Files, 1999-2020, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program.

Accessed at <http://wonder.cdc.gov/ucd-icd10.html> on Oct 26, 2023 9:12:15 AM

**In a ten year study period of 2009-2018,
Black males accounted for the highest proportion
of firearm homicides nationally.**

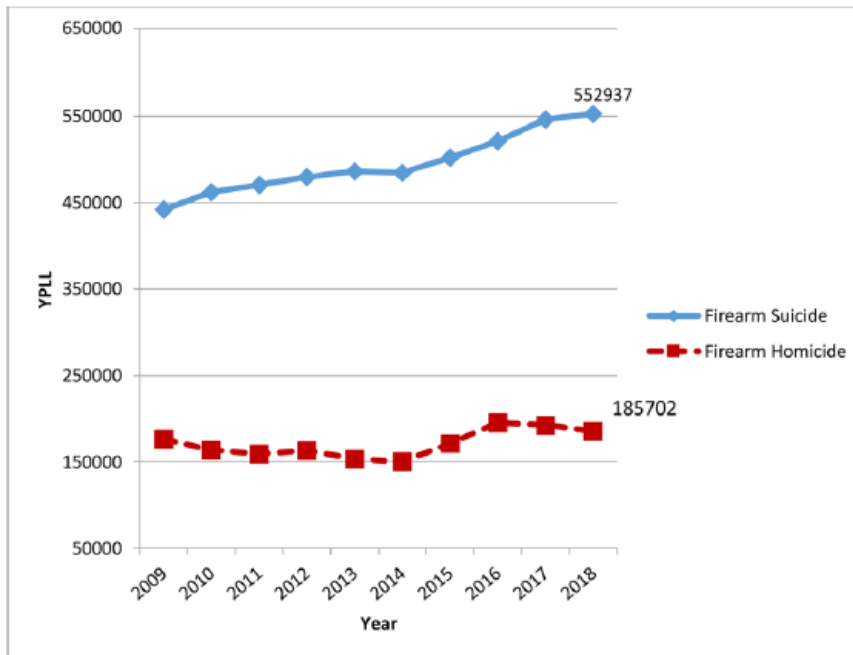


Figure 4 White male firearm suicide versus homicide YPLL. YPLL, years of potential life lost.

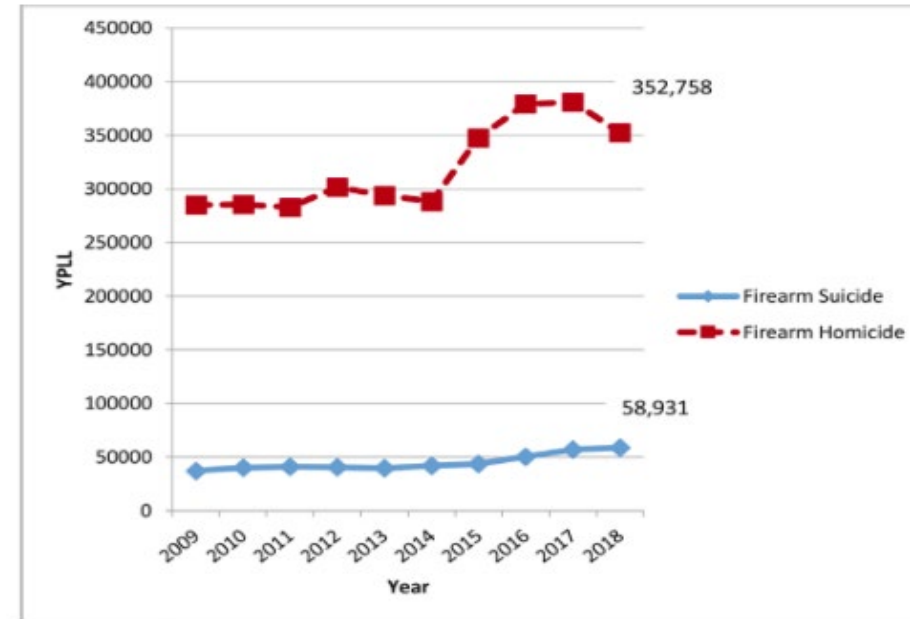


Figure 5 Black male firearm suicide versus homicide YPLL. YPLL, years of potential life lost.

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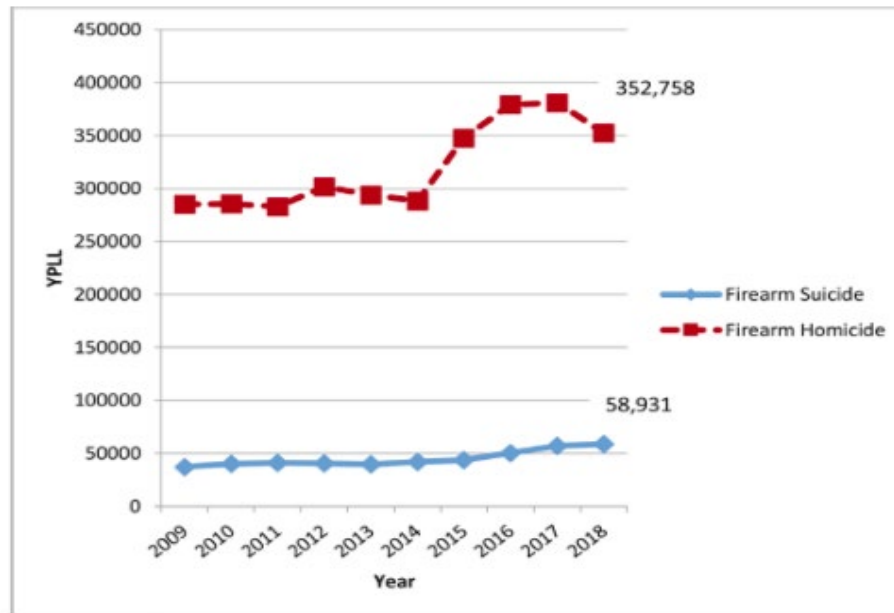


Figure 5 Black male firearm suicide versus homicide YPLL. YPLL, years of potential life lost.

Firearm Homicides among Black Males, 2009-2018:

- 63,414 firearm homicide deaths
- 24,601 among ages 15-24
- 21,599 among ages 25-34

Weapon-Carrying Practices in Adolescence



Gun Violence Risk Factors: Gun Carrying

- Youth who carry guns have 2.53 times the odds of gun victimization than those who do not carry guns.
- 6.8% of high school males reported carrying a gun in the past 12 months
 - 10.6% Black students
 - 7.2% Hispanic students
 - 6.1% White students
- Gun violence prevalence among adolescents increases at age 13 and peaks in the late teens to early 20s.



Why are they carrying in the first place?

Risk factors associated with firearm carrying and violence:

- Gun carrying “contagion effect”
 - Intergenerational transmission of violence from parents to children; Violent victimization associated with later perpetration
 - Peer delinquency, peers carrying
 - Pro-weapon/gun socialization and culture
- Self-protection
- Prior violence involvement
- Childhood trauma (exposure to domestic and community violence)

Why are they carrying in the first place?

- **Interpersonal trauma exposure and PTSD** have been linked to gun ownership and gun behaviors.
 - Prior victimization has been shown to precede gun carrying and gun behavior.
 - Exposure to firearm violence **doubles** the likelihood of perpetrating serious violence in adolescence.
 - The need for safety, or self-protection, corresponds with a stronger desire to own a gun.

The Developing Adolescent Brain and Traumatic Stress



A Review of the Developing Brain: Child & Adolescents

Childhood and adolescence is a very sensitive time period, developmentally.

Biological changes:

- Significant brain structure changes and function take place during puberty.
- Adaptive plasticity
 - Interacts with experience
 - Provides both risk and opportunity!
- Childhood stressors (maltreatment, trauma exposure) can accelerate pubertal timing and tempo, or level of maturity.
 - Associated with elevated depression symptoms, psychosomatic symptoms, lower academic performance, substance use, delinquency, and risky behaviors.

The adolescent brain

Sensation-seeking

- Adolescents' heightened attraction to novelty and exciting experiences despite risk
- Increases during adolescence, peaks at 19 for males and 16 for females

Impulsivity

- Tendencies to act without thinking about consequences, motor impulsivity
- Increases during adolescence

Both are highly correlated with teenage risk-taking behaviors.



Romer, D. (2010). Adolescent risk taking, impulsivity, and brain development: Implications for prevention. *Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology*, 52(3), 263-276.

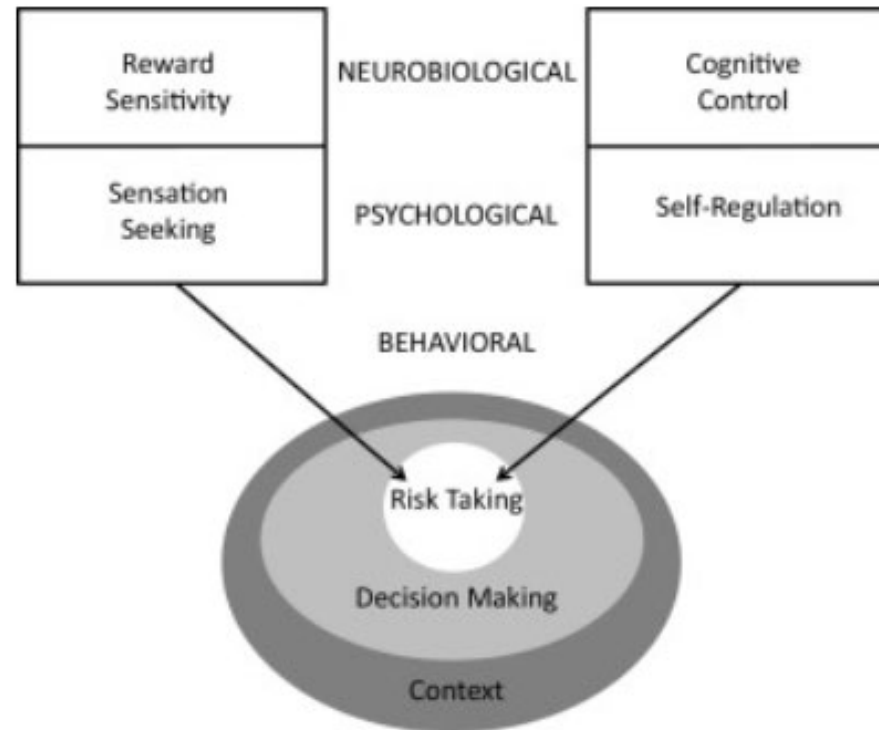
Shulman, E. P., Smith, A. R., Silva, K., Icenogle, G., Duell, N., Chein, J., & Steinberg, L. (2016). The dual systems model: Review, reappraisal, and reaffirmation. *Developmental cognitive neuroscience*, 17, 103-117.

The adolescent brain

Socioemotional system v. Cognition control system

Socioemotional system:
how we respond to reward and motivation.

- develops early in combination with changes to dopaminergic activity, or surges of dopamine that may magnify or reinforce risky behaviors.



Cognition control system:
allows us to regulate emotions, thoughts, behaviors.

- Develops gradually over time and does not become fully mature until mid 20's
- Controlled by the prefrontal cortex

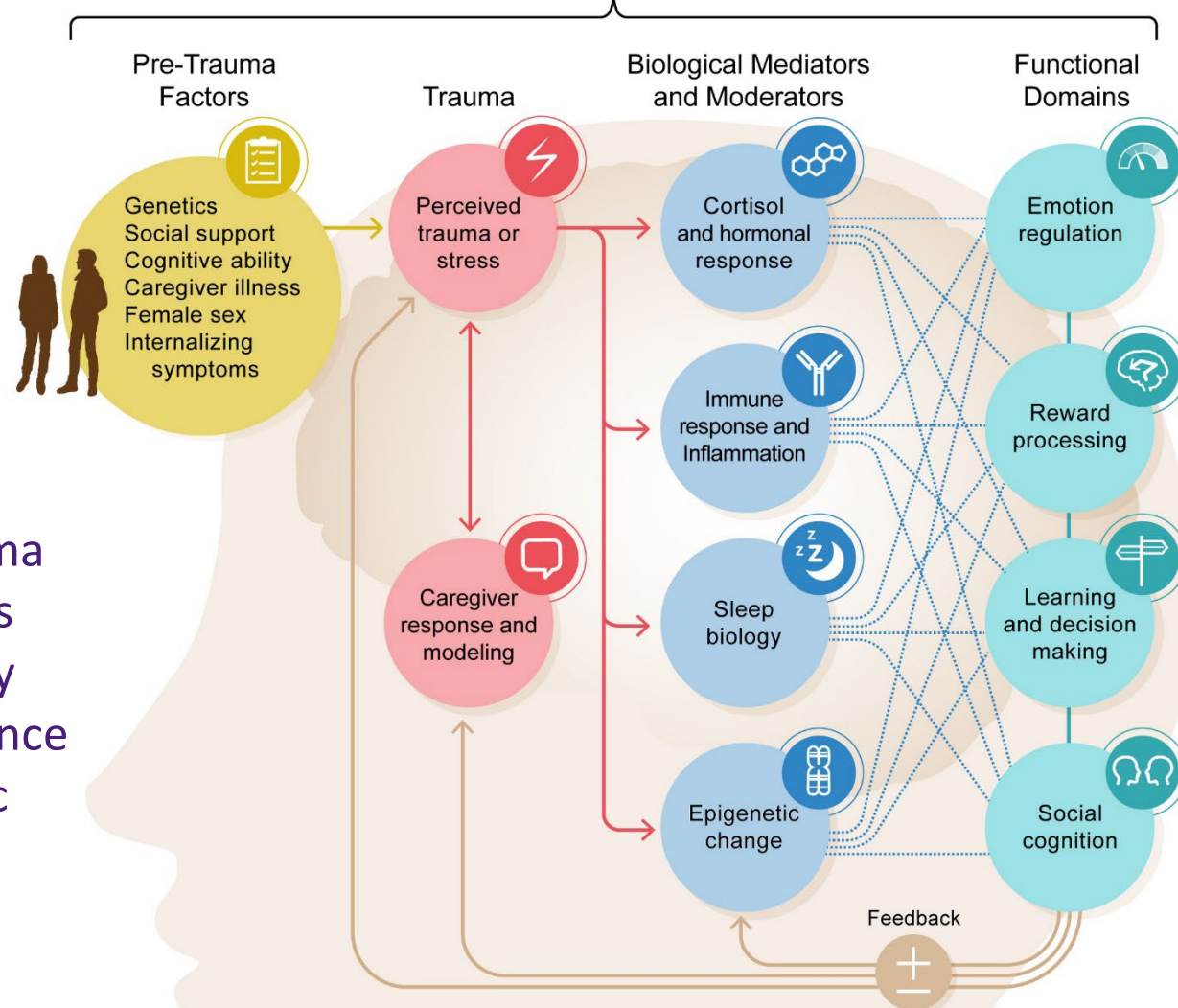
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Traumatic Stress

- **Heightened stress levels can increase risky decision-making in adolescents**
- Overacting socioemotional system and decreasing cognitive control system
- A decrease in the cognitive control system may limit one's ability to overcome automatic responses, which can make teens vulnerable to threatening and uncertain situations.

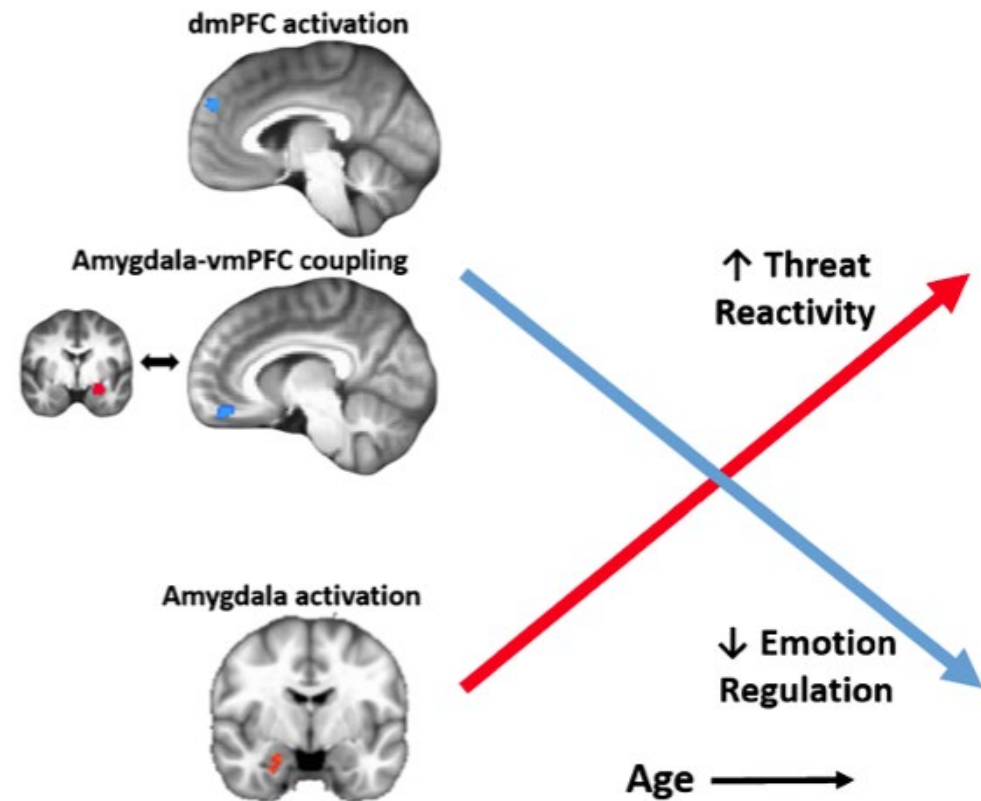
Adolescent Neurodevelopment | Stress-Induced Circuit Remodeling

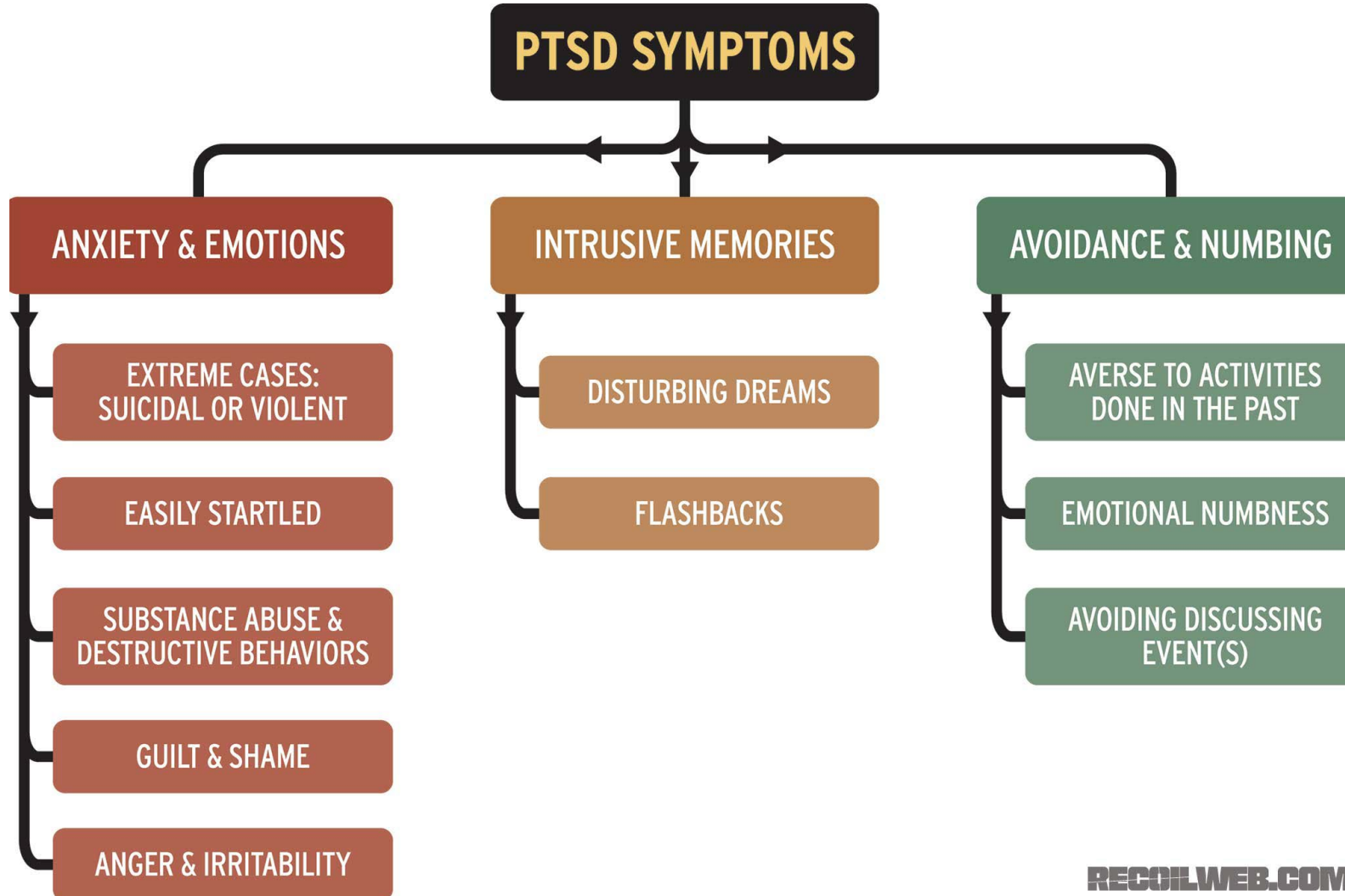


Psychosocial and biological model linking early-life trauma exposure to multiple systems and functional domains likely contributing to risk or resilience for adolescent posttraumatic stress disorder.

PTSD and the adolescent brain

- Abnormal frontolimbic development, compared to typically developing youth
 - Declining hippocampal volume
 - Increasing amygdala reactivity (threat-promoting region)
 - Declining amygdala-prefrontal coupling with age
- Abnormal frontolimbic development associated with
 - Increased threat reactivity
 - Weaker emotion regulation

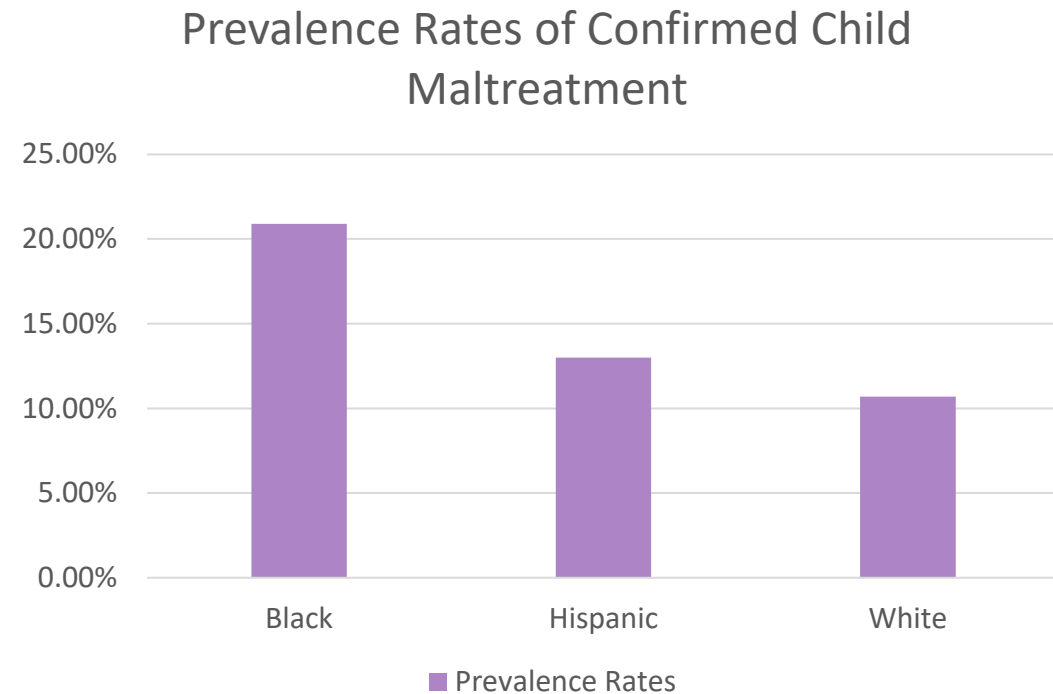




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Childhood Maltreatment

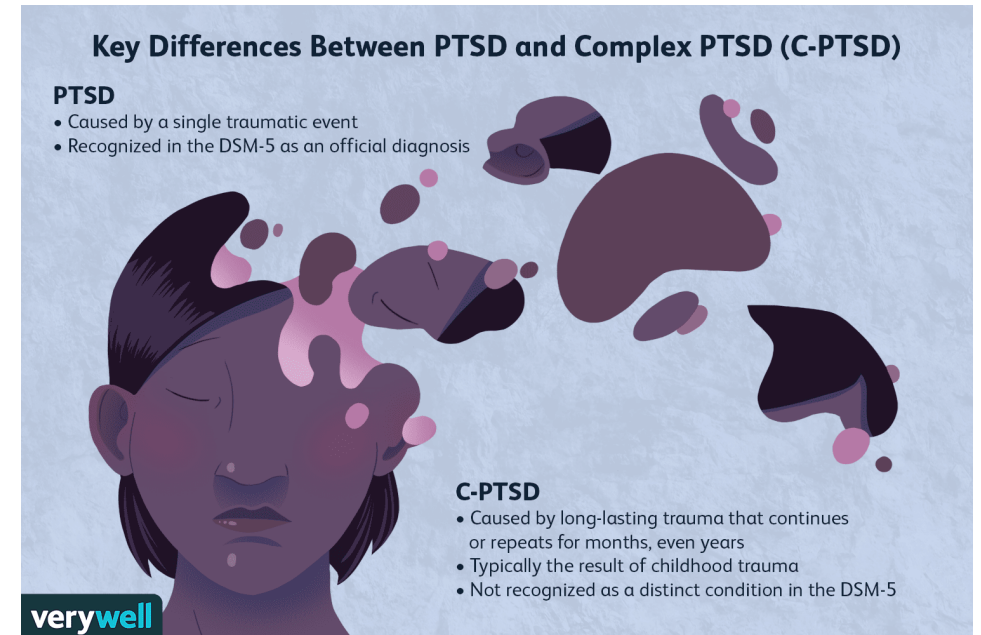
- Black children are involved with the child welfare system in disproportionate rates compared to other racial/ethnic groups.
- Combination of factors recognized
 - Social disadvantage (poverty/resources)
 - Racial bias in reporting to child welfare agencies



Maquire-Jack et al., 2015; Wildeman et al., 2014

Complex trauma

- Repeated victimization or exposure to multiple traumatic events over the course of a lifespan can result in posttraumatic stress disorder (PTSD)
- Multiple trauma exposures associated with emotion dysregulation, and mental illness comorbidities, anxiety, depression, attention deficit hyperactivity disorder, oppositional defiant disorder, dissociation, as well as impulsivity, substance abuse, and attachment issues.
- **Represents complex outcomes, which can intensify symptoms and increase maladaptive coping mechanisms.**



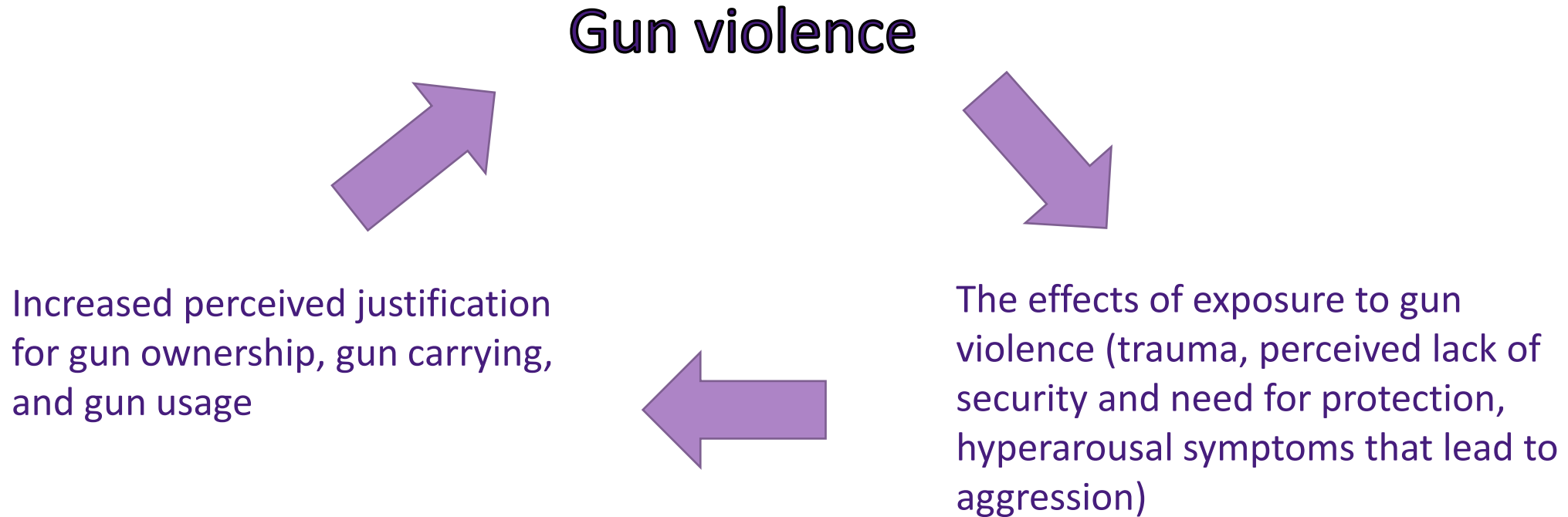
The Revolving Cycle of Violence

- The effects of gun violence– trauma– also reinforces the need for violence.
- The highest rates of gun carrying and violence among adolescents belong to those who live in poor neighborhoods with high levels of crime and report high levels of exposure to violence.
- Adolescents who report high levels of exposure to violence are more likely than non-victimized peers to carry weapons in later adolescence as well as early adulthood.

Cycle of Violence

- Cycle of violence: those who experience violent victimization are more to perpetrating violence.
- Victim-offender overlap
- Childhood trauma is a risk factor for later aggression throughout lifespan.
 - A longitudinal study, collected between 1998 and 2002 found that youth exposed to chronic violence are **31.5** times or **3,150%** more likely to engage in violent behavior.
- Prior victimization has been shown to precede gun carrying and gun behavior.
 - Exposure to firearm violence **doubles** the likelihood of perpetrating serious violence in adolescence.

Simplified Cycle of Gun Violence



Community Trauma



Community-Wide Traumatic Events

- Community gun violence
- Mass shootings
- Police violence
- Increased police surveillance
- COVID-19 pandemic
- Racial Trauma
- Natural and Technological Disasters
- War/Genocide



Community-Wide Trauma

“Community trauma is defined as systematic and social injustices through structural violence that prevents people and communities from meeting their basic needs.”

Symptoms of community trauma:

- Lack of social capital
- Disorganized social networks
- Collective feeling of hopelessness among community members

Community-Wide Trauma

Community trauma framework identifies issues through 3 dimensions:

1. **Socio-cultural environment**
2. **Physical/built environment**
3. **Educational and economic environment**

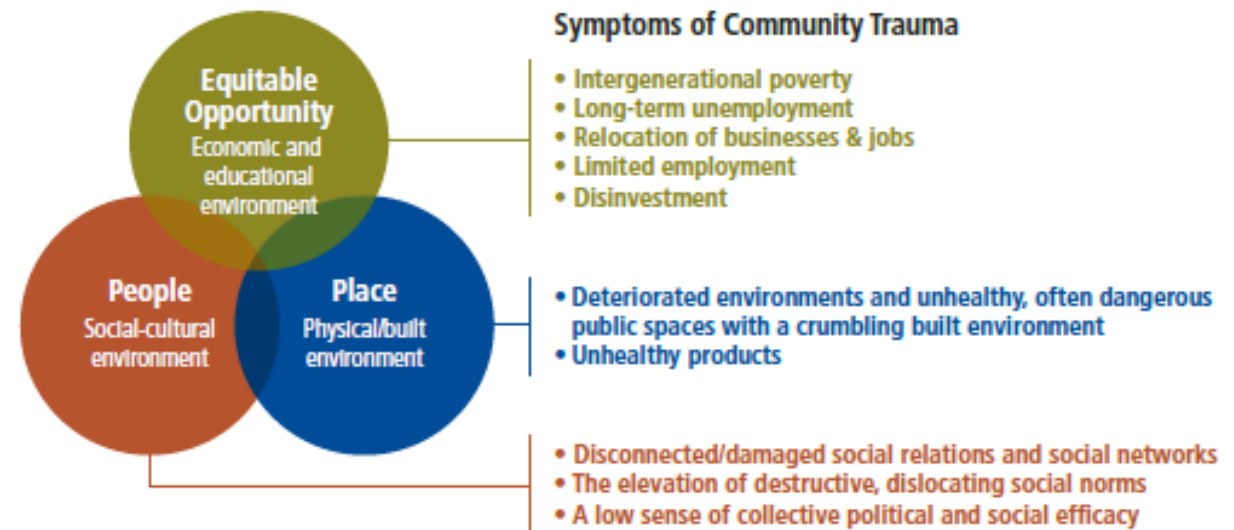
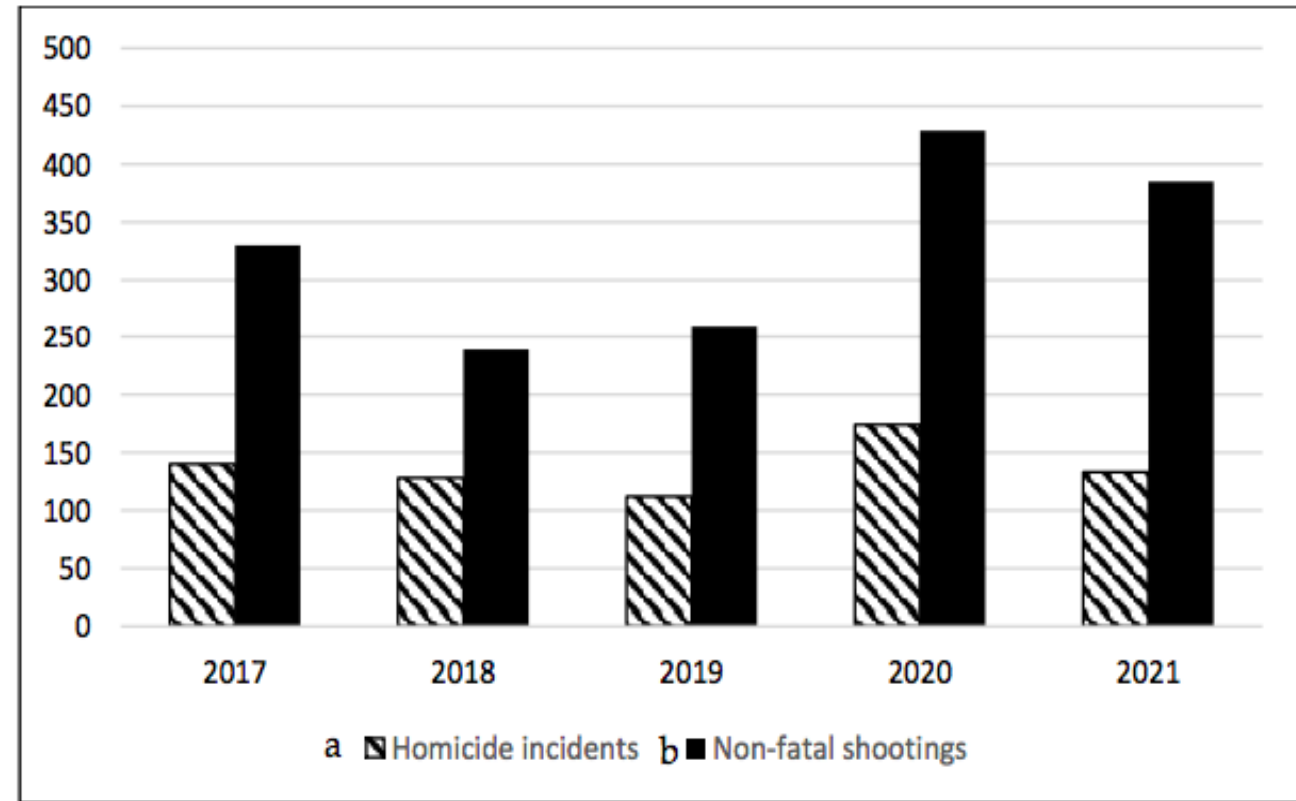


Figure 1 The Community Environment

Gun violence increased following the COVID-19 pandemic:

In New Orleans, year-to-date statistics from 2020 to 2021 indicated a 2.4% increase in homicide incidents with firearms, while non-fatal shootings increased by 37%

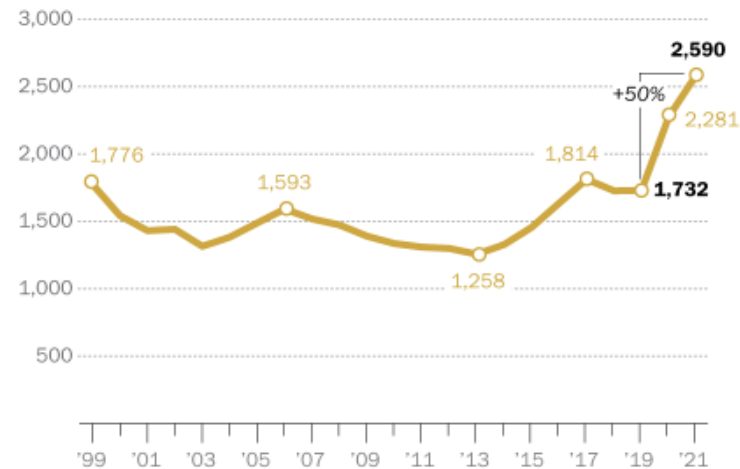


Homicide and non-fatal shooting incidents in New Orleans between 2017 and 2021^{a,b}
 a Homicide and non-fatal shooting incidents reported through September 2021
 b Data collected from the city of New Orleans Office of Criminal Justice Coordination.

Gun Violence among children and adolescents increased by **50%** following the COVID-19 pandemic.

Gun deaths among U.S. kids increased 50% between 2019 and 2021

Gun deaths among U.S. children and teens under 18

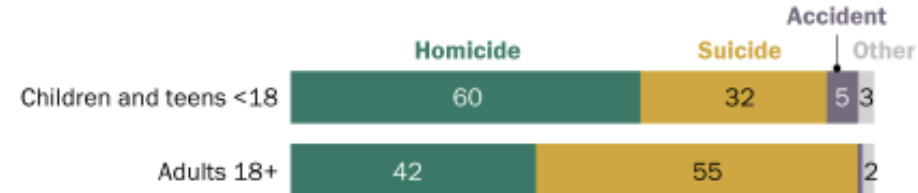


Note: Includes homicides, suicides, accidents and all other categories of gun deaths.
Source: Centers for Disease Control and Prevention.

PEW RESEARCH CENTER

Most gun deaths among U.S. kids are homicides; most gun deaths among adults are suicides

% of gun deaths, by type, in 2021



Note: "Other" includes gun deaths that involved law enforcement or had undetermined circumstances.

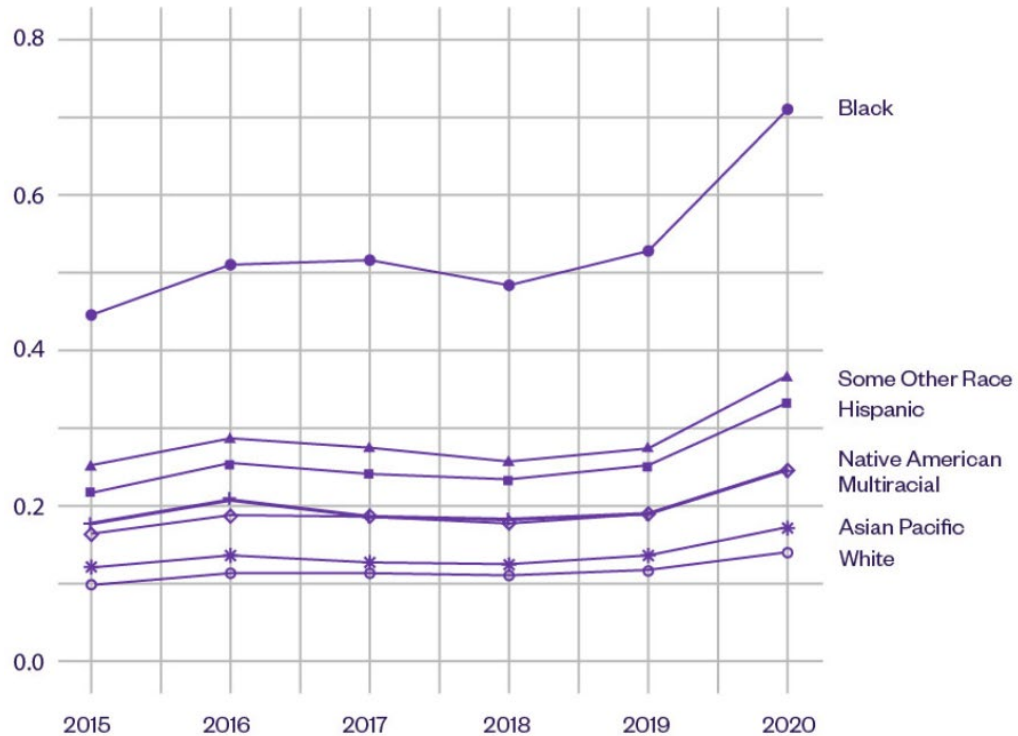
Source: Centers for Disease Control and Prevention.

PEW RESEARCH CENTER

- Boys accounted for 83% of all gun deaths in 2021.
- 86% of all gun deaths were among the ages of 12-17.
- Black children made up 46% of gun deaths in 2021.
- 86% of gun deaths involving Black children were homicides.

Racial disparities in child exposure to gun deaths grew wider during COVID-19

Average annual (March 15 to March 14) gun deaths in home neighborhoods of 5-17-year-olds in US, by race



Source: Boston University School of Public Health

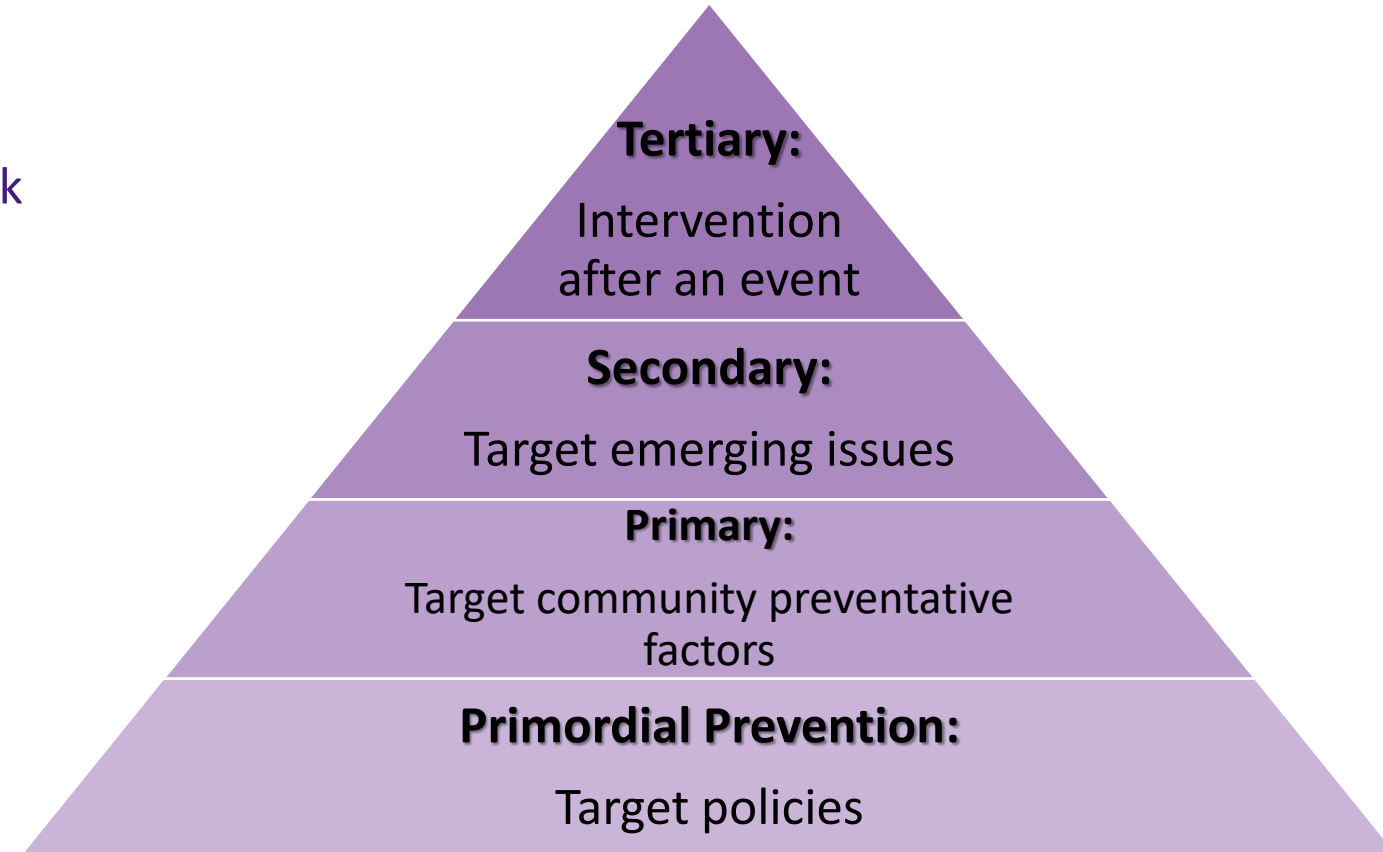
- Gun violence disparities continue into adolescence with black and Hispanic children seeing disproportionately high levels of gun violence.
- Before the pandemic, prior to March 14, 2020, Black children were **4.4** times more likely to experience gun violence than White children.
- During the pandemic, as measured on March 15, 2021, Black children experienced the largest increase in gun violence exposure, **1.42 times their baseline rate**.

**Recommendations
from Psychiatrist's
Perspective
#ThisIsOurLane**



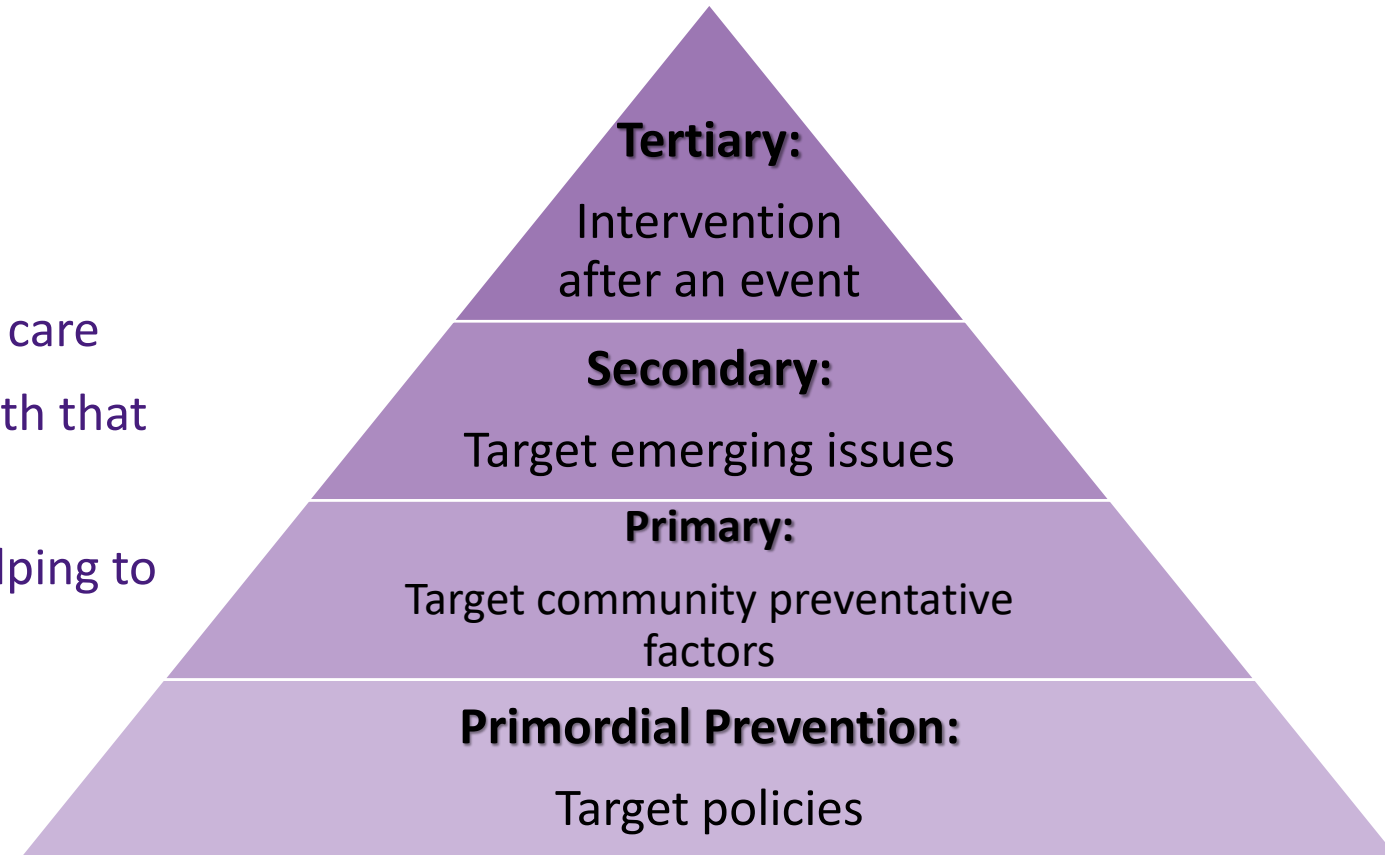
Tertiary and Secondary Interventions

- Expand access to services targeting risk factors and interventions post-event.
 - Multidimensional model of care
- Assessment of violence risk and presence of guns



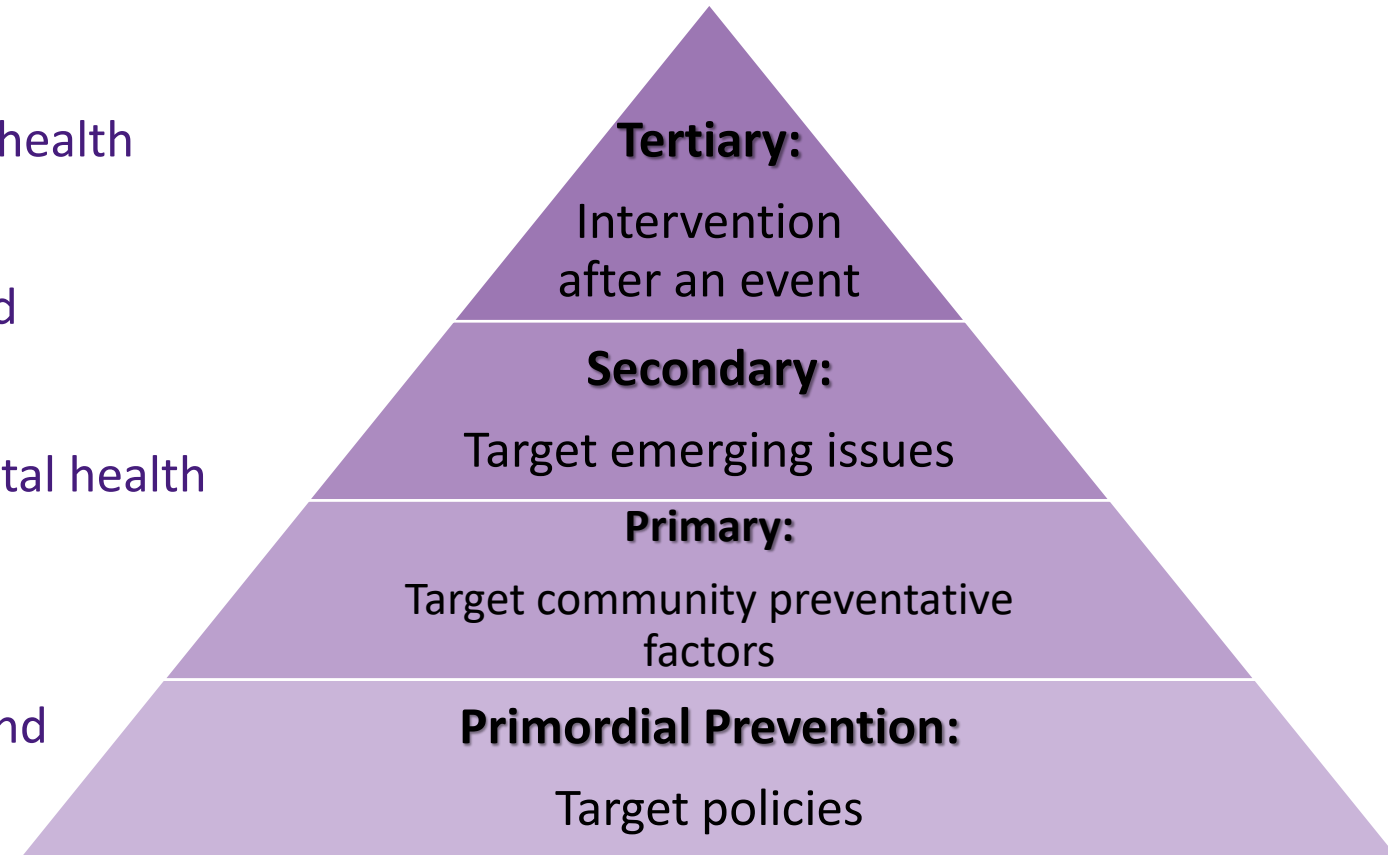
Primary-Level Targets

- Address community preventative factors
 - Forming partnerships with community organizations and schools.
 - Sustainable and long-lasting models of care
 - Addressing social determinants of health that increase risk for gun violence.
 - Working with community members helping to resolve issues leading to violence.
 - Extracurricular activities for youth.
 - Community policing



Primordial Prevention: Target Policies

- Integration of mental health services into health care and school settings
- Trauma-informed, culturally-informed, and evidence-based care.
- Focus research on the intersection of mental health and sociological/public health framework
- Public Health Advocacy:
 - Work with organizations on a local and national level
 - Access to Guns
 - Barriers to research: Dickey Amendment



Change the Narrative

- Firearm violence is not the result of mental illness.
- Individuals with mental illness are more likely to be victims
- In most cases, firearm violence is a symptom of multiple factors



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