

taming the epidemic...

of mental, emotional, behavioral and
related physical disorders



PAXIS Institute[™]

passion into action science to practice promoting solutions

Dennis D. Embry, Ph.D., Senior Scientist/
president, PAXIS Institute, Tucson, AZ

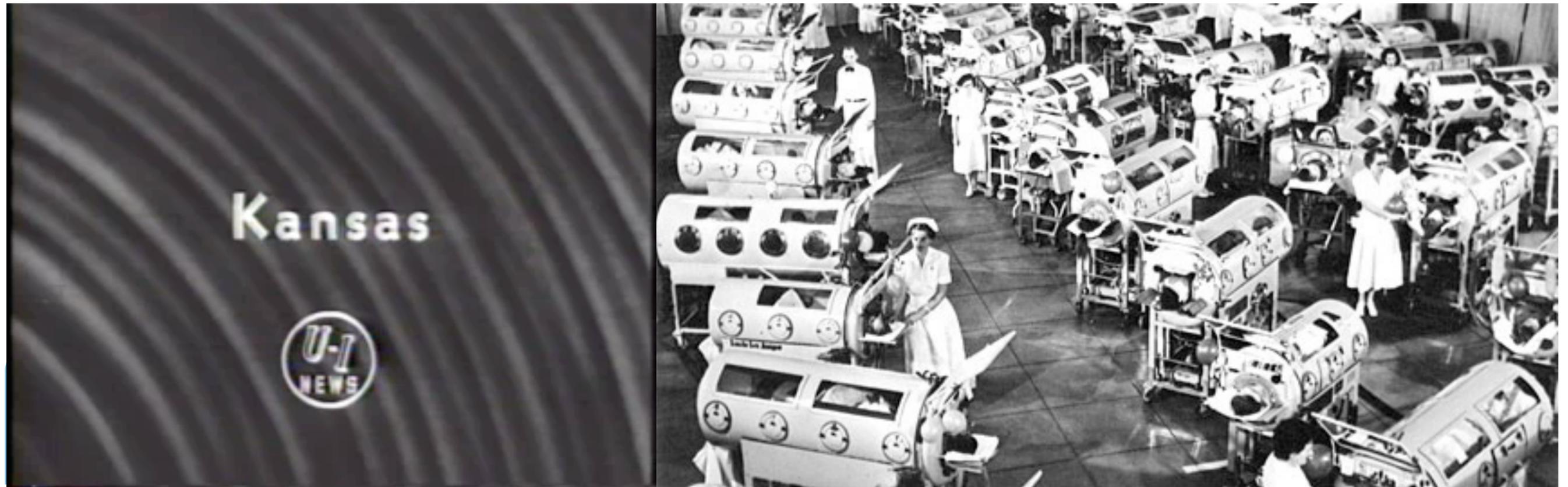


**Social
Marketing
Talk
Name**

Protecting All Our Children's Futures...



1950s Polio Epidemic: 3,000 deaths, 60,000 cases



Who was at risk? Who got the vaccine?



“The Salk Polio Trial by Thomas Francis

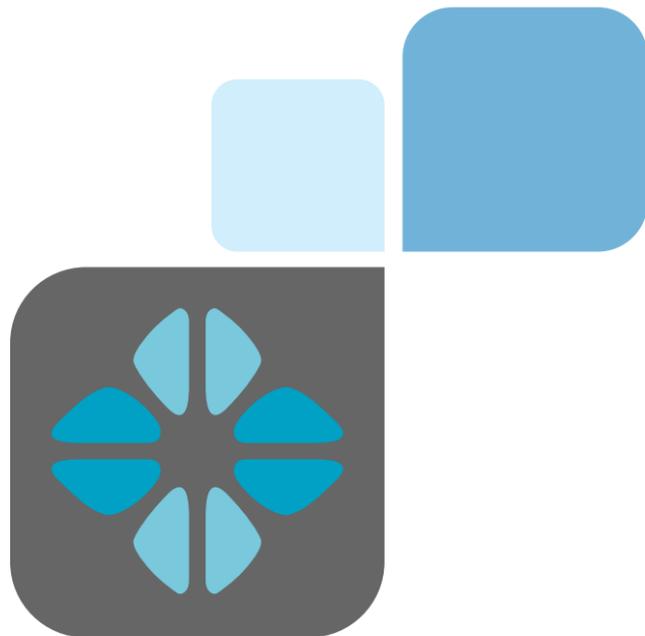


The polio field trials, directed Thomas Francis, involved approximately 1,830,000 children in 217 areas of the United States, Canada, and Finland. More than 300,000 individuals participated in the field trials—20,000 physicians and public health officers, 40,000 registered nurses, 14,000 school principals, and 200,000 volunteer workers.

In an age of house-sized computers, IBM punch cards, propeller planes, and rotary telephones, the field trial that Thomas Francis proposed to test the safety and effectiveness of Jonas Salk's polio vaccine could have been seen as madness.

In the end, 84 test areas in 11 states agreed to use Francis' randomized, double-blinded controlled design, whereas 127 test areas in 33 states opted for the observed control design. Francis decided to retain the original observed control design alongside his more internally valid design as a powerful means of maintaining public support for the vaccine...In the end, 623,972 school children were injected with either vaccine or placebo, and more than 1 million others participated as observed control..."

Jette, A. M. (2005). "From the brink of scientific failure." *Phys Ther* 85(6): 486-488.



The Current Epidemic of Mental, Emotional & Behavioral Disorders?



Who is at risk? Who gets the vaccine?





ROI:
Return on
investment

The Polio Vaccine
effort returned \$3 for
every \$1 spent



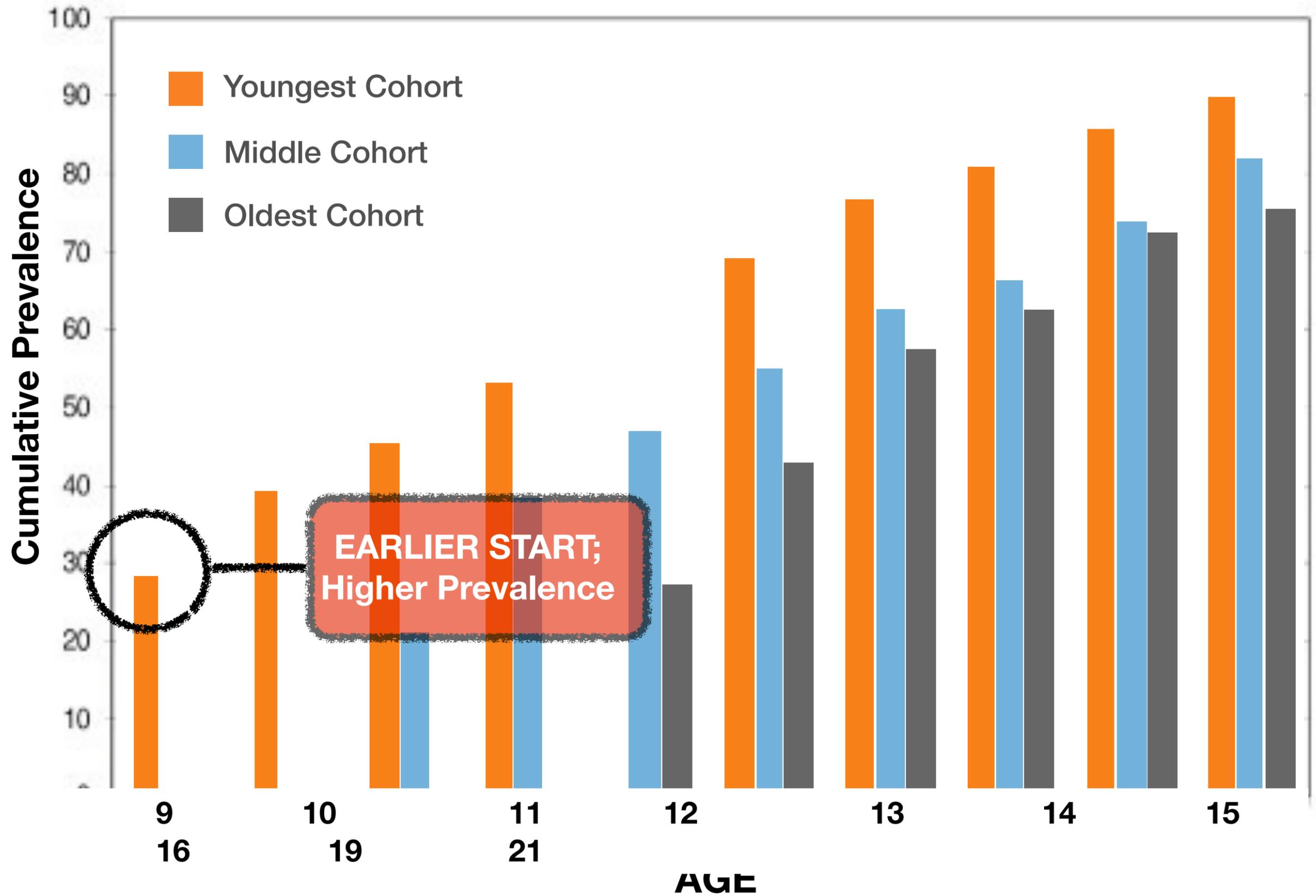
38,000

Deaths

708,000 Self
Inflicted Injuries
at ERs

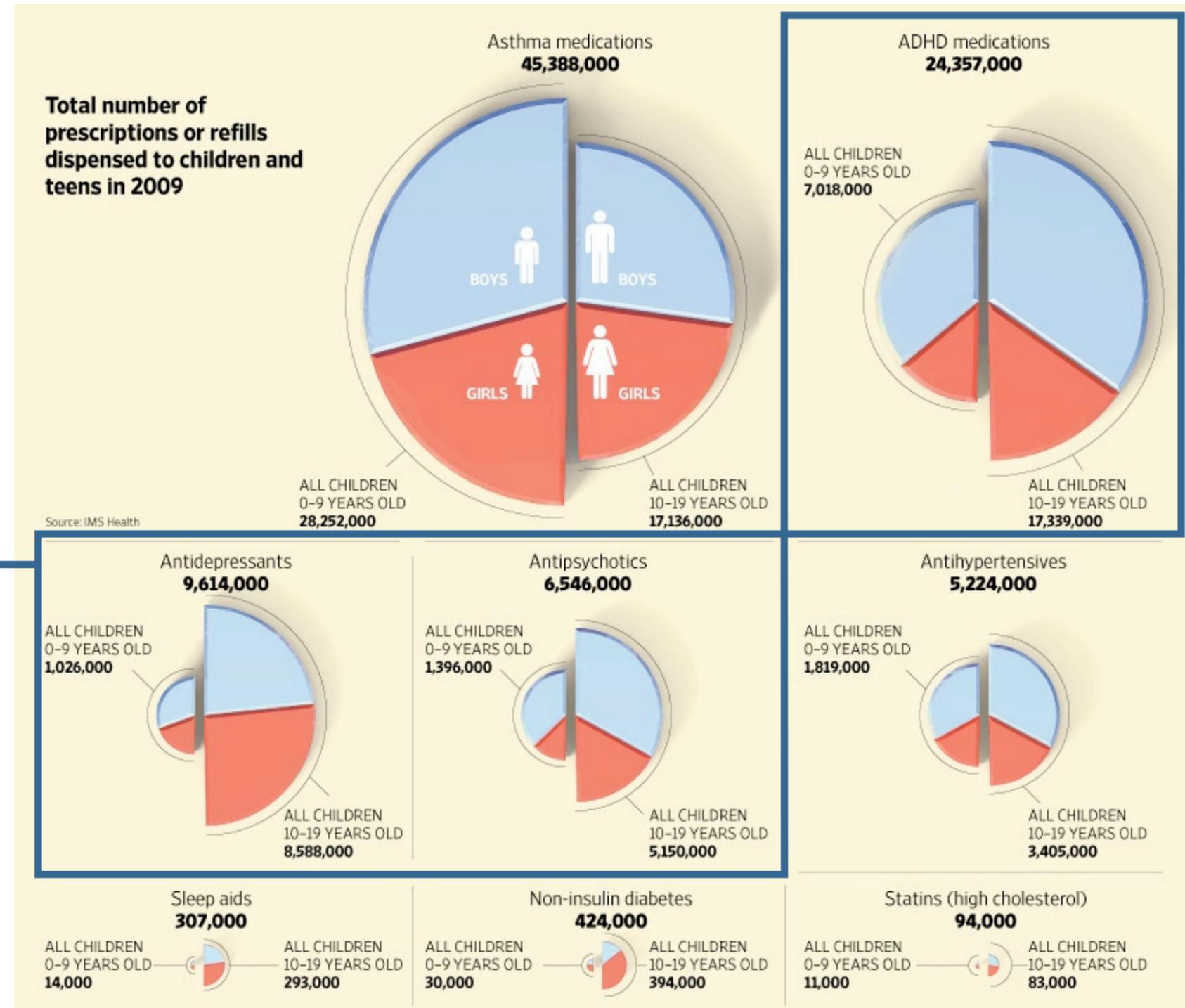


Cumulative prevalence of psychiatric disorders by young adulthood: a prospective cohort analysis from the Great Smoky Mountains Study.



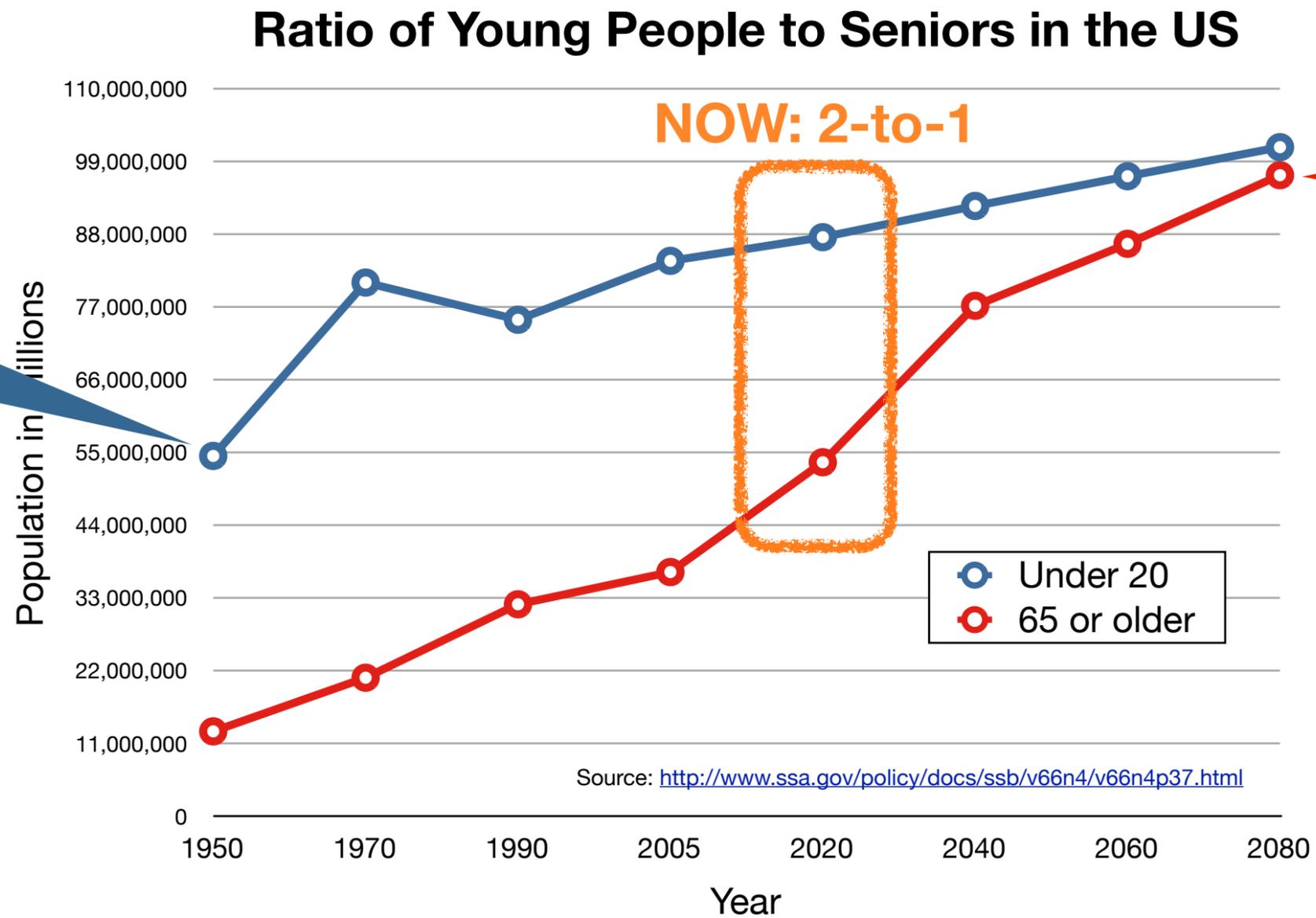
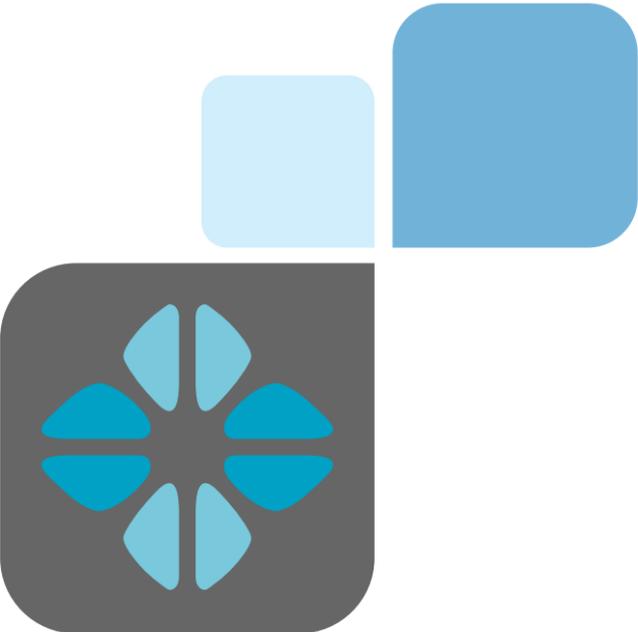
The US had 75 million children and teens 2009

40.4 million kids had one psychotropic med in 2009



Generation Squeeze: Our Nation's Young People are Increasing, but Not Fast Enough to Support Our Seniors

In 1950,
Five children to 1 senior

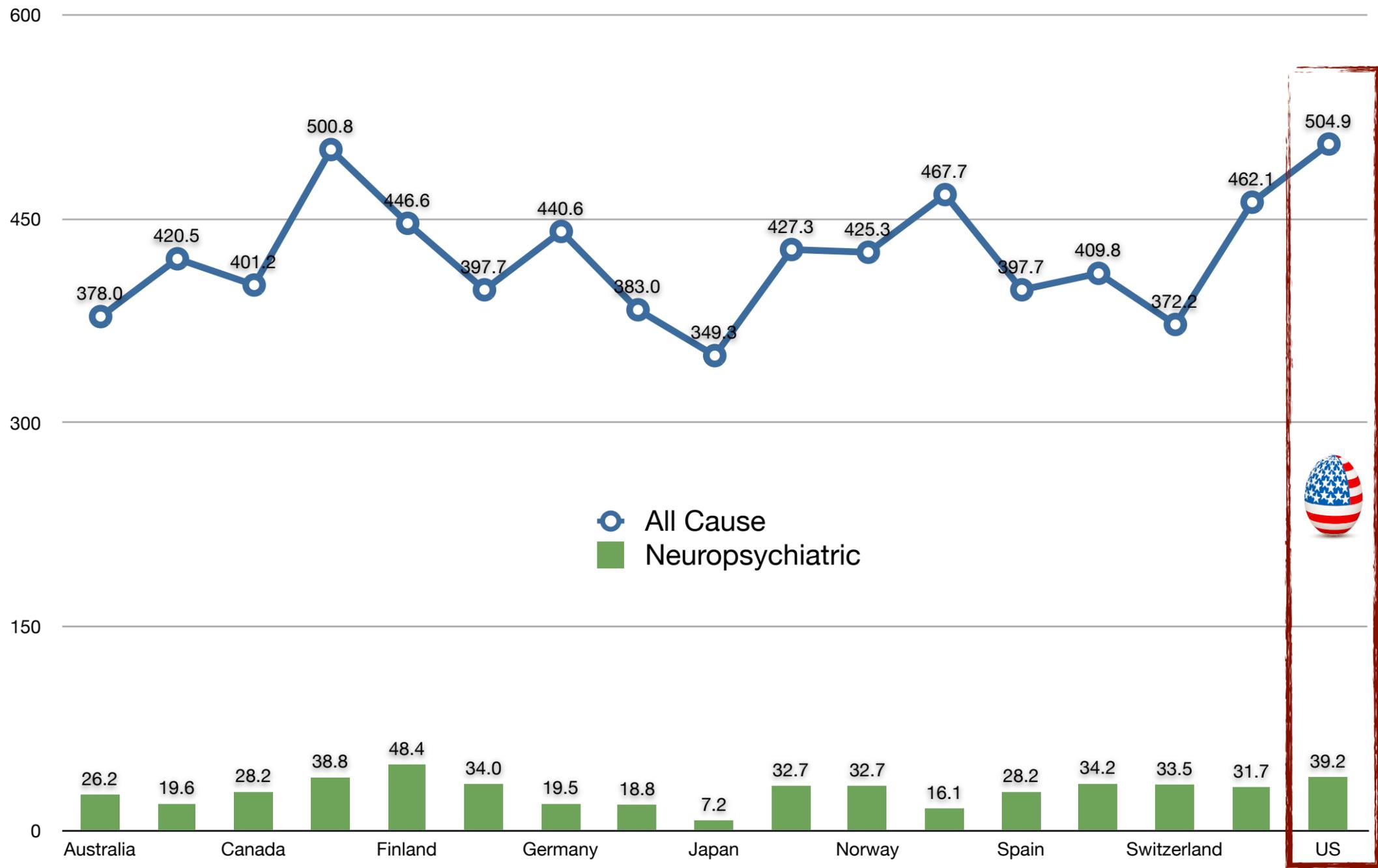


When current
teens retire,
there will be
one child to
one senior

Not only do people in the United States die sooner than people in other high-income countries, but American health is poorer than in peer countries at every stage of life — from birth to childhood to adolescence, in youth and middle age, and for older adults.



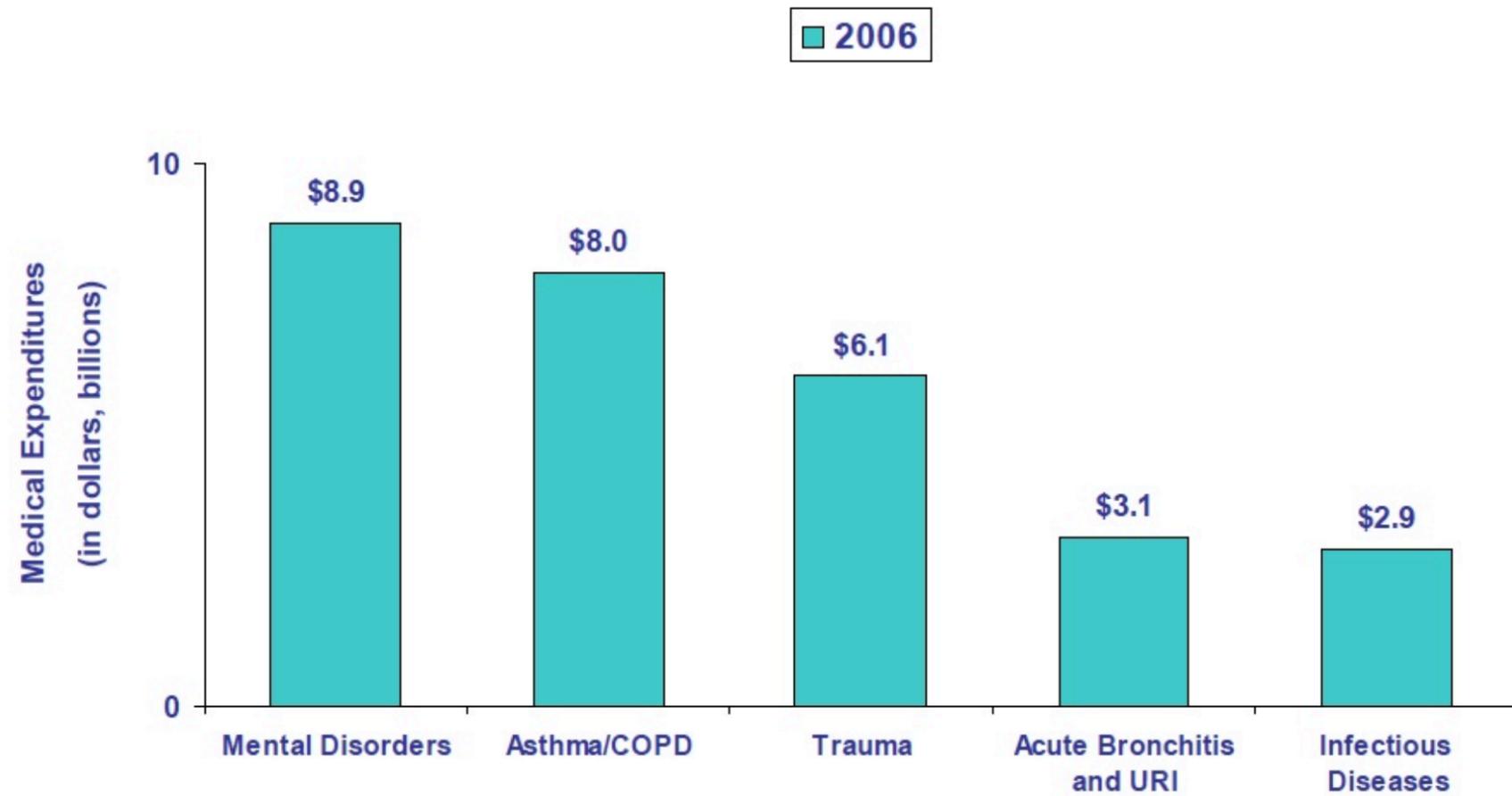
Morbidity Comparisons Across Rich Democracies



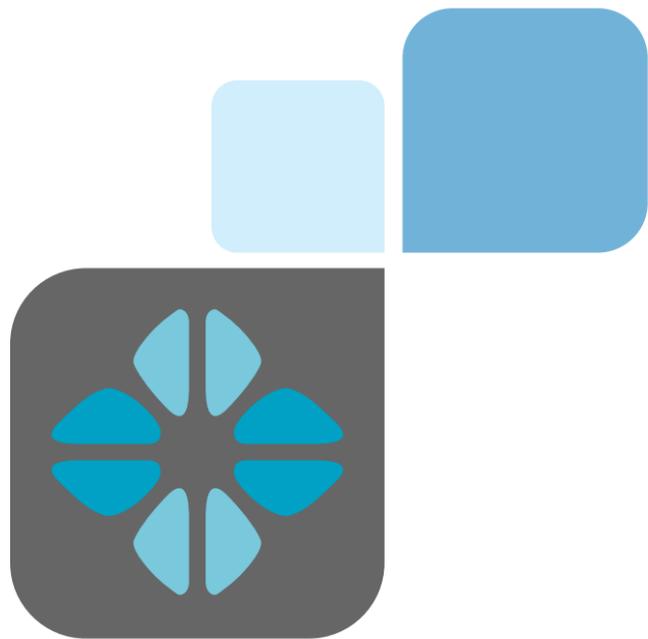
Dying young: Americans less likely to make it to 50:



Figure 1. Expenditures for the five most costly conditions in children, 2006



Source: Center for Financing, Access, and Cost Trends, AHRQ, Household Component of the Medical Expenditure Panel Survey 2006

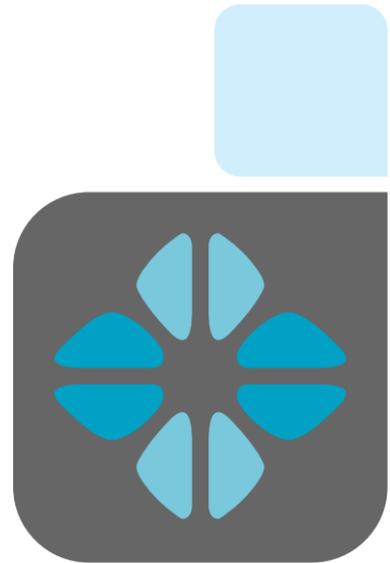




How many of you know a blue-collar, middle-class, or upper-class family who is reasonably intact...

with a child, teen, or adult child with a mental, emotional, or behavioral disorder?





What will the impact of these data be on Federal & State Governments on:

- Business competitiveness?
- Health care costs?
- Public safety & national security costs?
- Social Security?
- Global Competitiveness?

So what?

West Virginia has 229,000 young people between the ages of 10 to 19.

At least 39,000 will have a teen depression...

With collective lost lifetime income of... **\$11.7 billion loss**



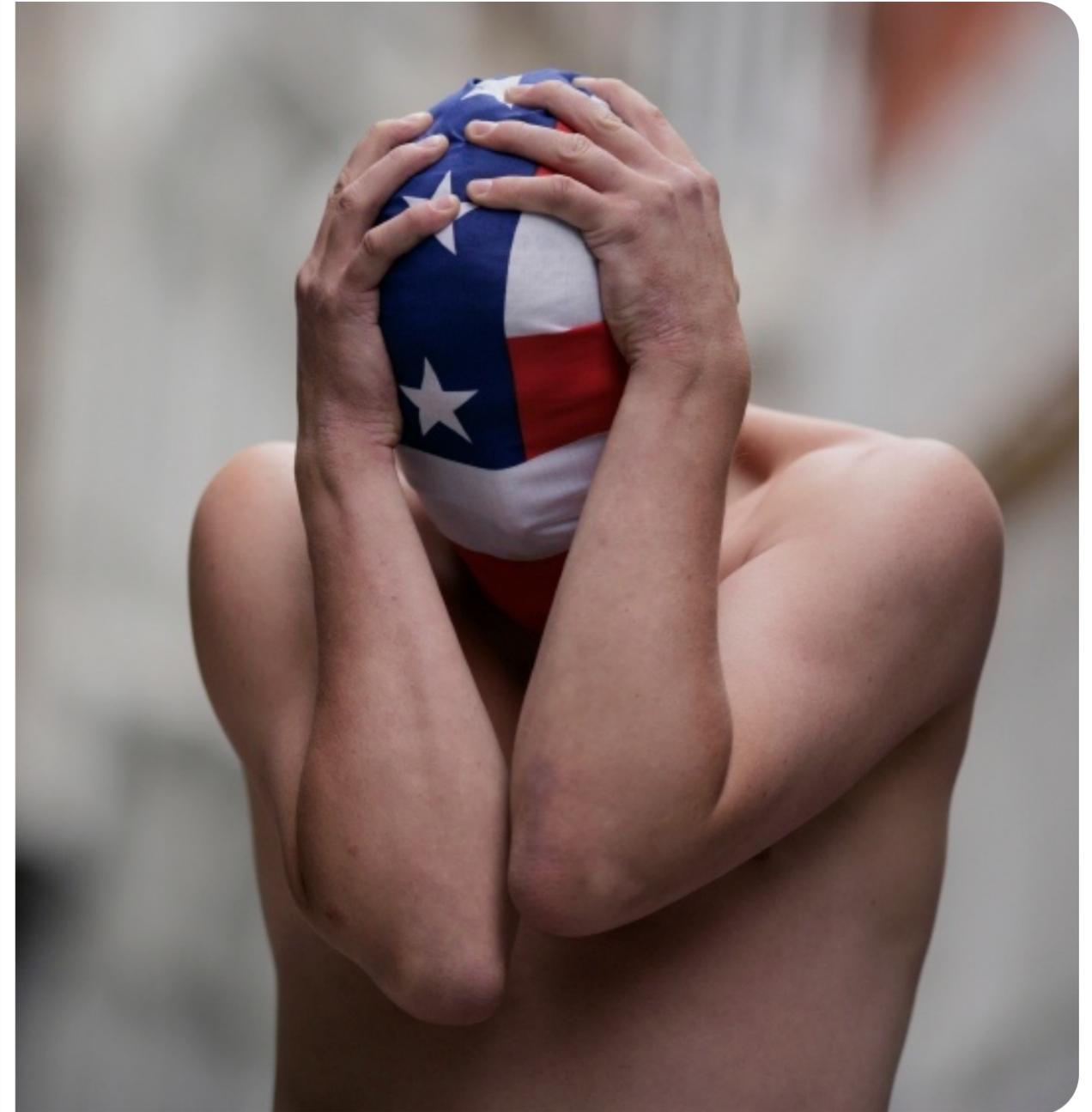
Adolescent Depression Lowers Later-Life Earning Power by an average of \$300K

So what?

American has 44,200,00 young people between the ages of 10 to 19.

At least 7,500,000 will have a teen depression...

With collective lost lifetime income of... **\$2.2 trillion loss**



Adolescent Depression Lowers Later-Life Earning Power by an average of \$300K

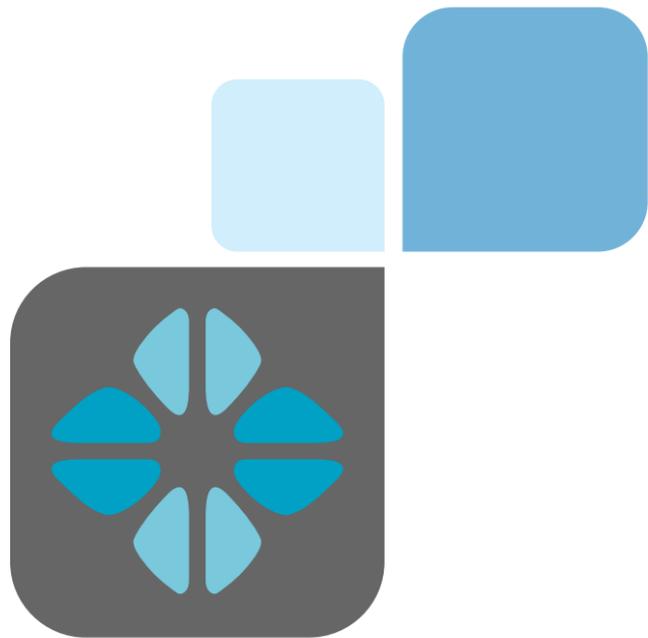
Which is true for your town, state and America:

1. Every family is being harmed by these trends;
2. Every business is being harmed by these trends;
3. Every taxpayer will suffer a bigger tax bill by these trends;
4. Every government agency is harmed by these trends;
5. Every family needs support to counteract these trends.

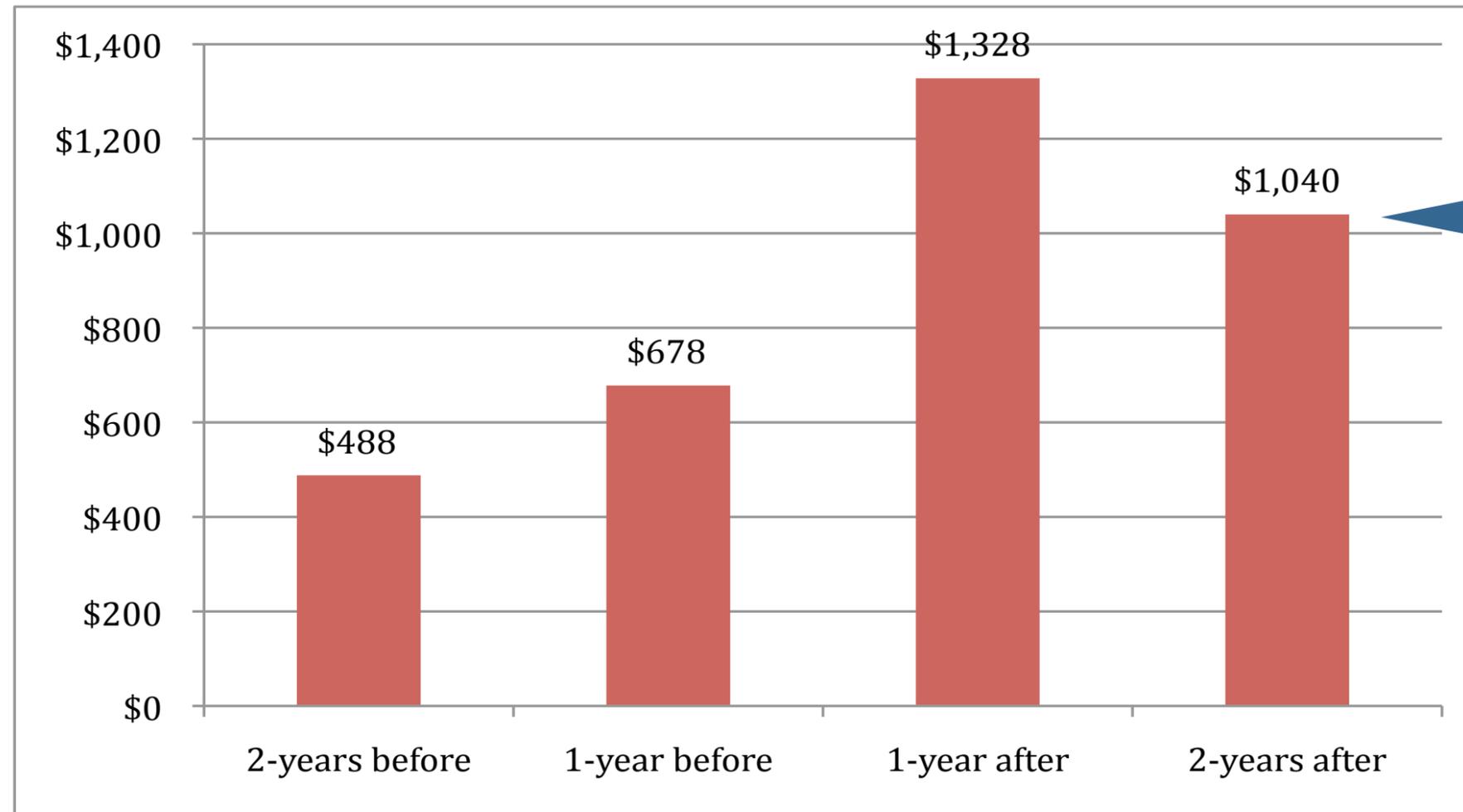




Think about the cost of ADHD?

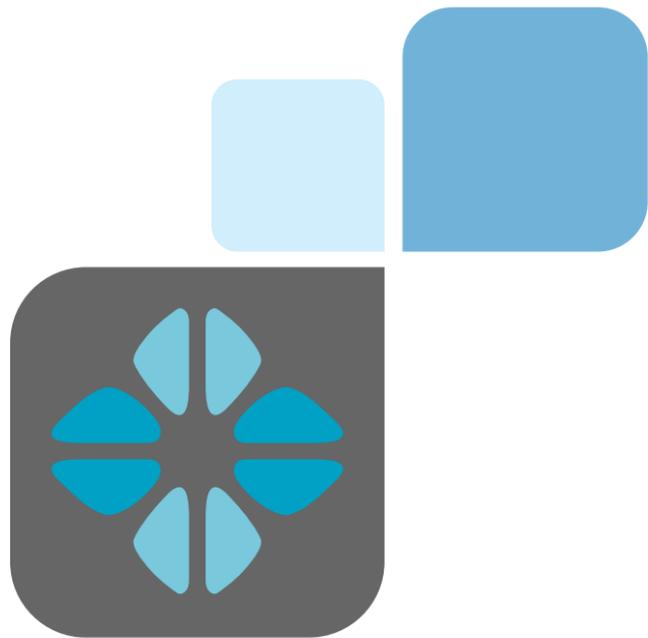


Excess Healthcare costs of ADHD



**\$3,534
Total**

These four years cost \$3,534—which could be used avert ADHD and other Psychiatric Diagnoses in 75-100 children.

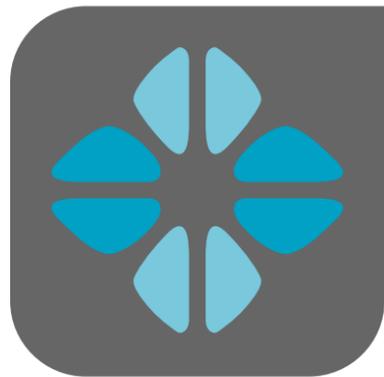


So what?

In 2007, 5.4 million children 4-17 years of age had ever been diagnosed

If each case average excess cost of \$3,534

That alone will cost... **\$18.9 billion**

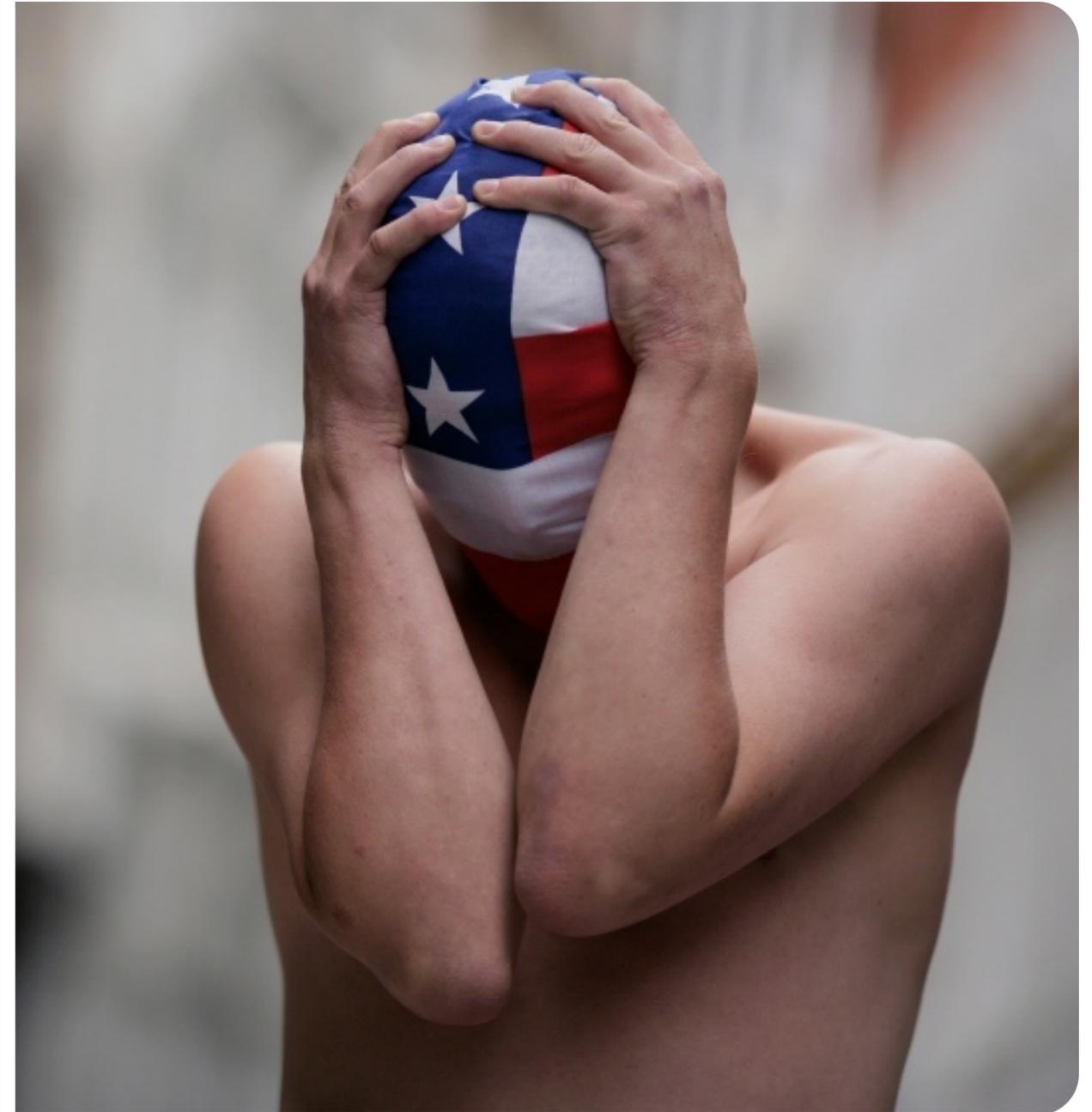


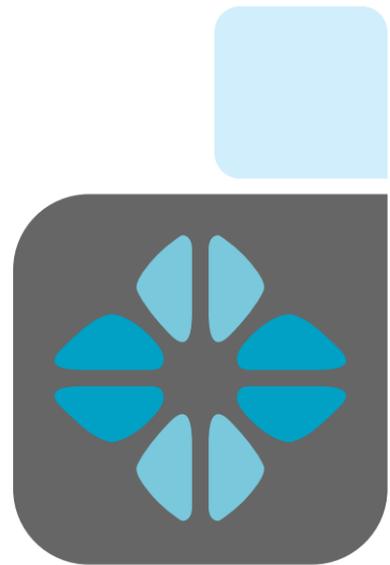
So what?

In 2009, but America had **24.3 million** children with ADHD medication scripts.

If each case costs of \$1,000 for meds & doc,

Those 1 year alone will cost... **\$24.3 billion**

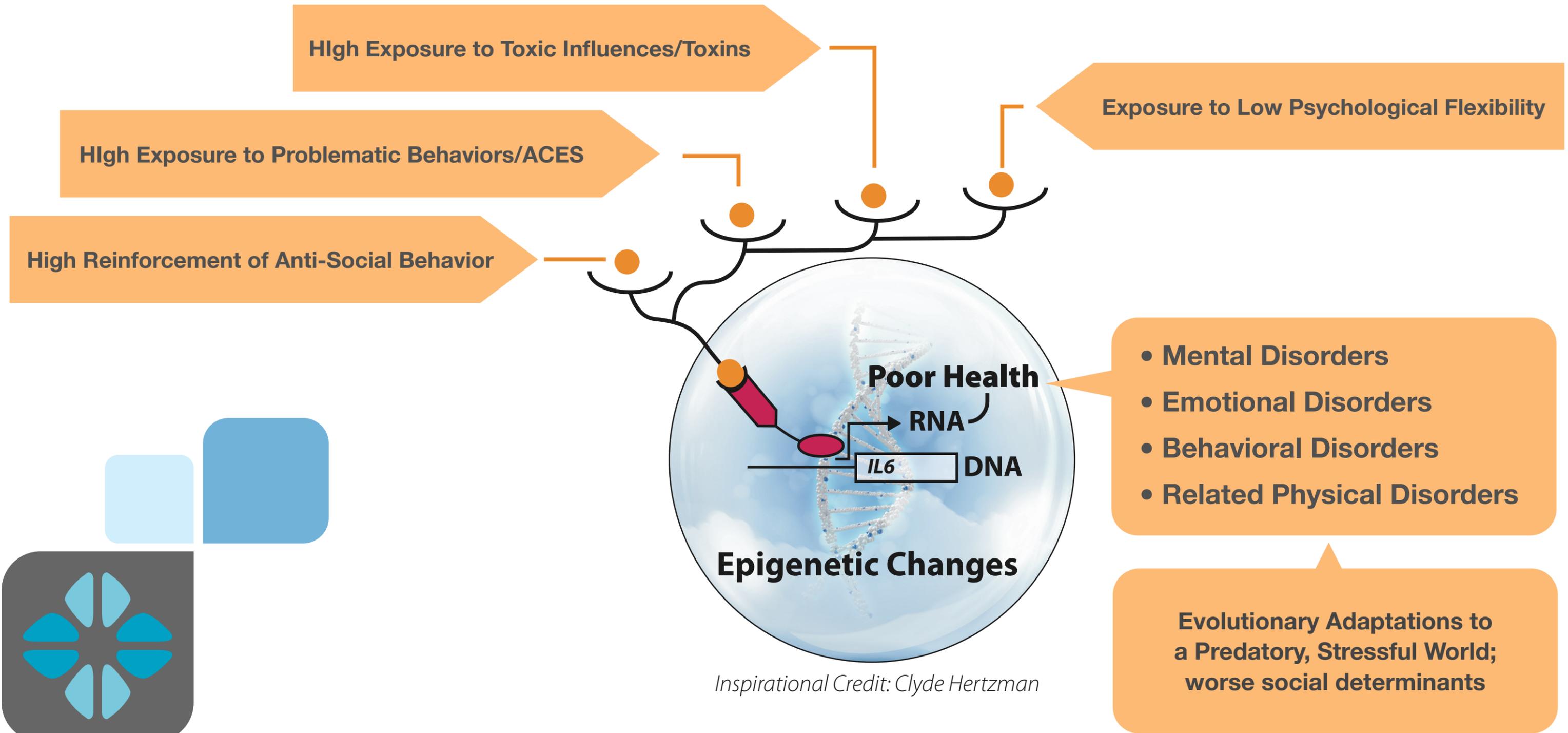




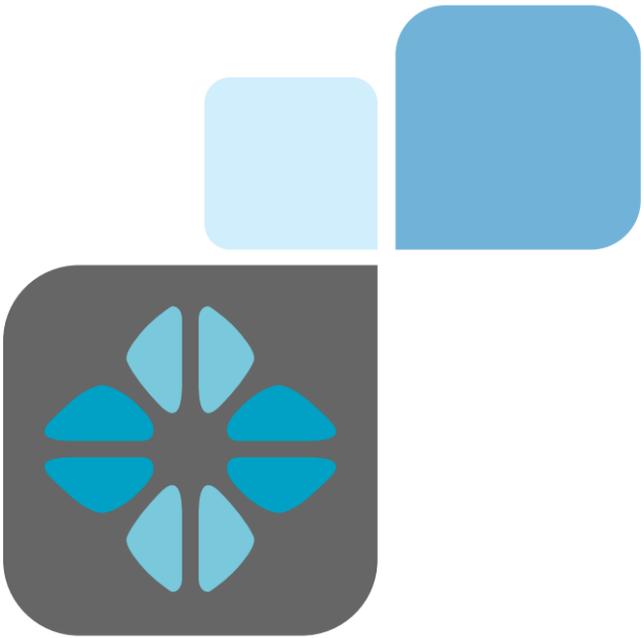
Youthanasia

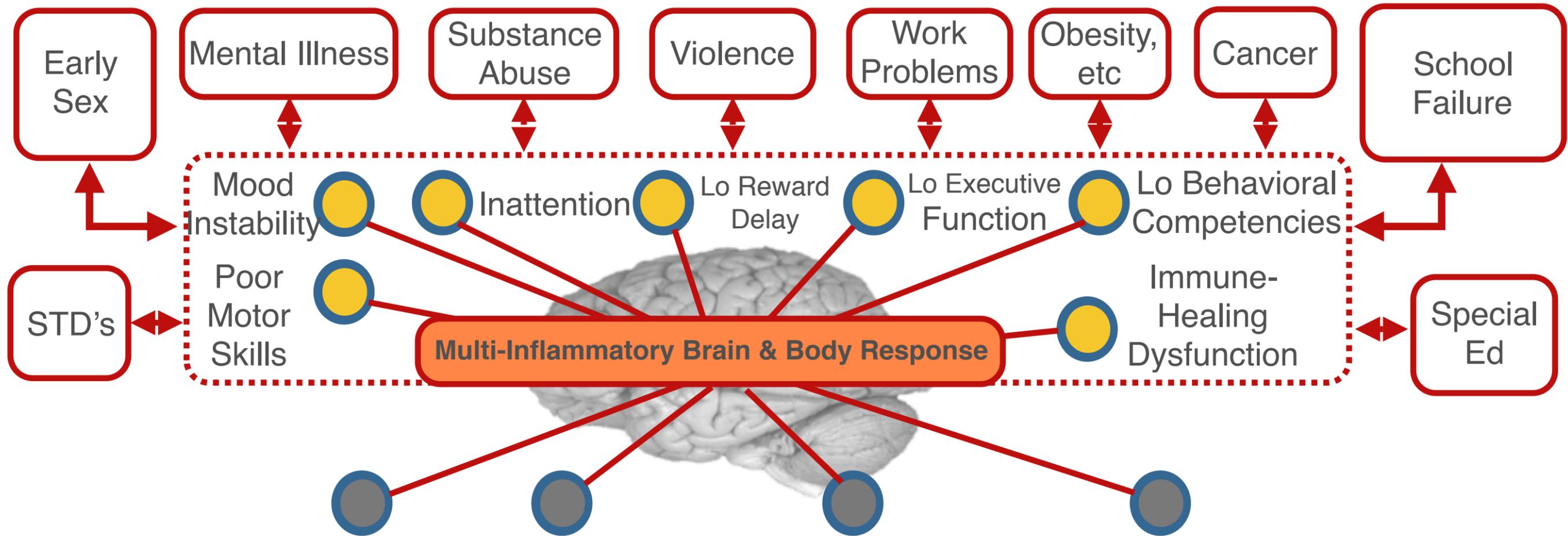
Here lies the future of America.

Common set of conditions producing these negative trends...



Inspirational Credit: Clyde Hertzman

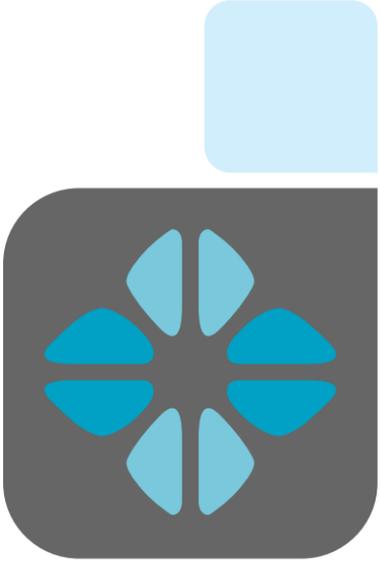




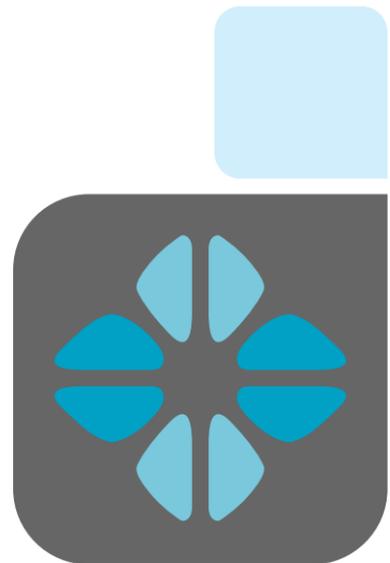
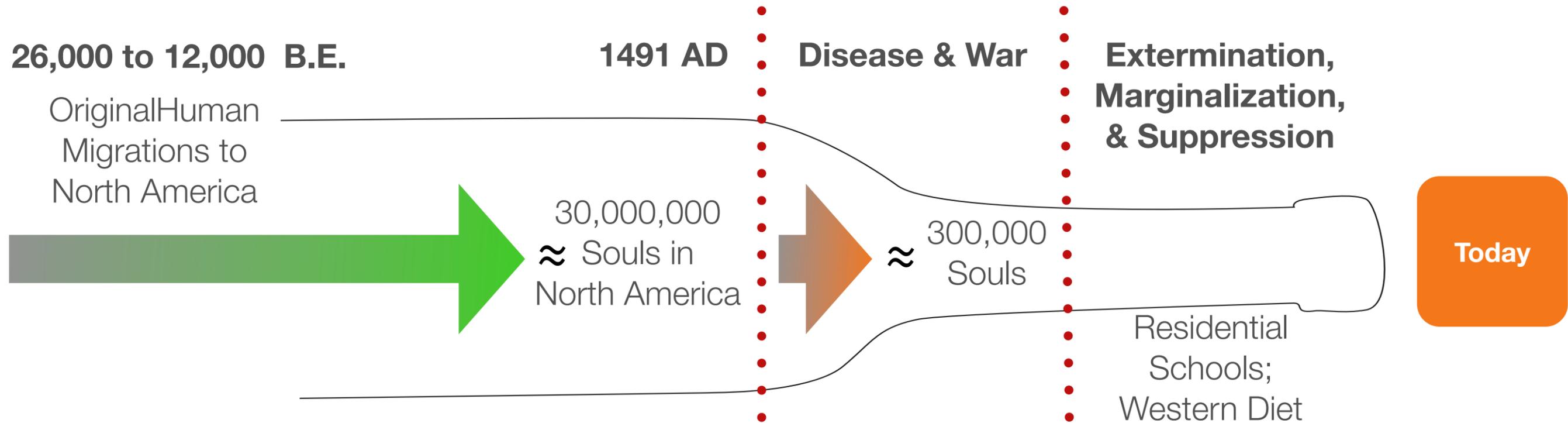
Major Connected Causes of the Adverse Trends Predicting MEBs & Related Illnesses

- Reinforcement**
more for anti-social than prosocial behaviors
- Antecedents**
cue problematic behaviors
- Physiological**
influences trigger adverse biological mechanisms
- Verbal Relations**
occasion perceived threats and inflexibility

The Same Conditions Predict Multiple Disorders

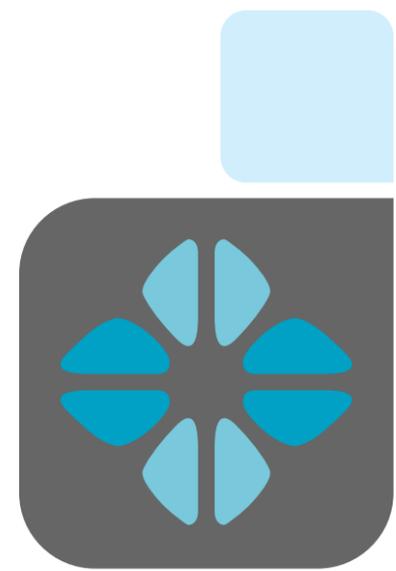
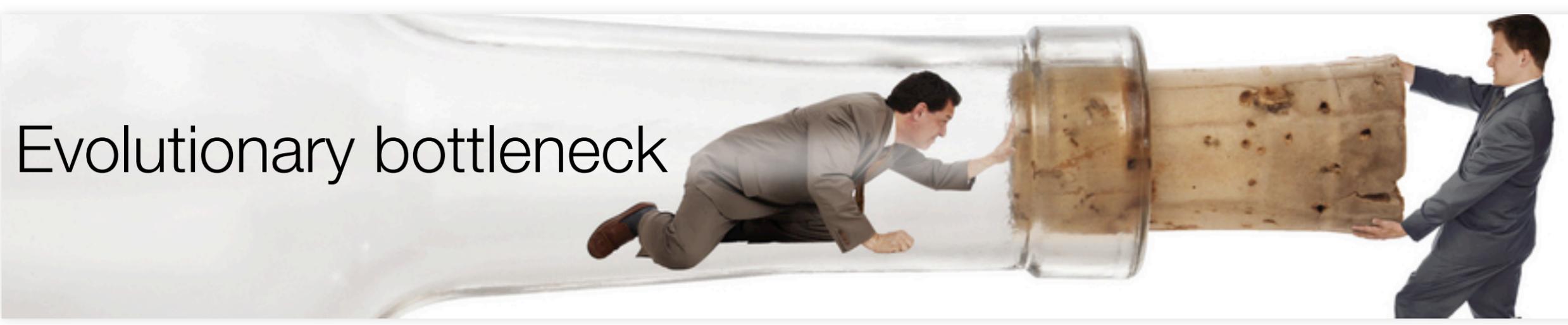
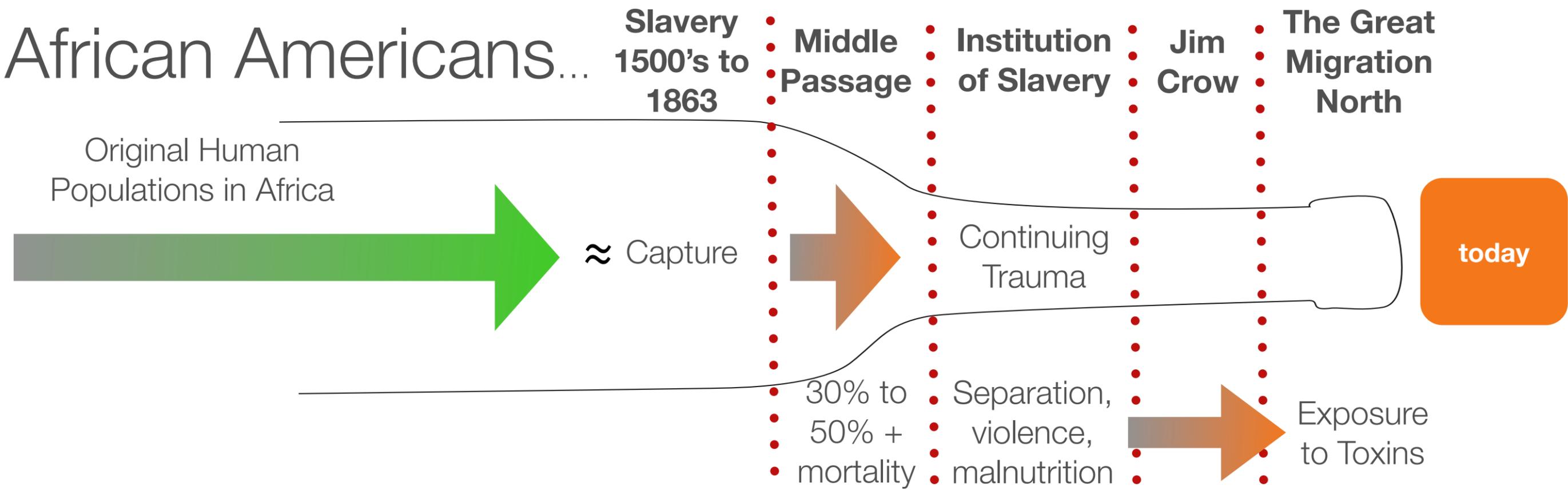


The America's First Peoples...



Evolutionary bottleneck

African Americans...

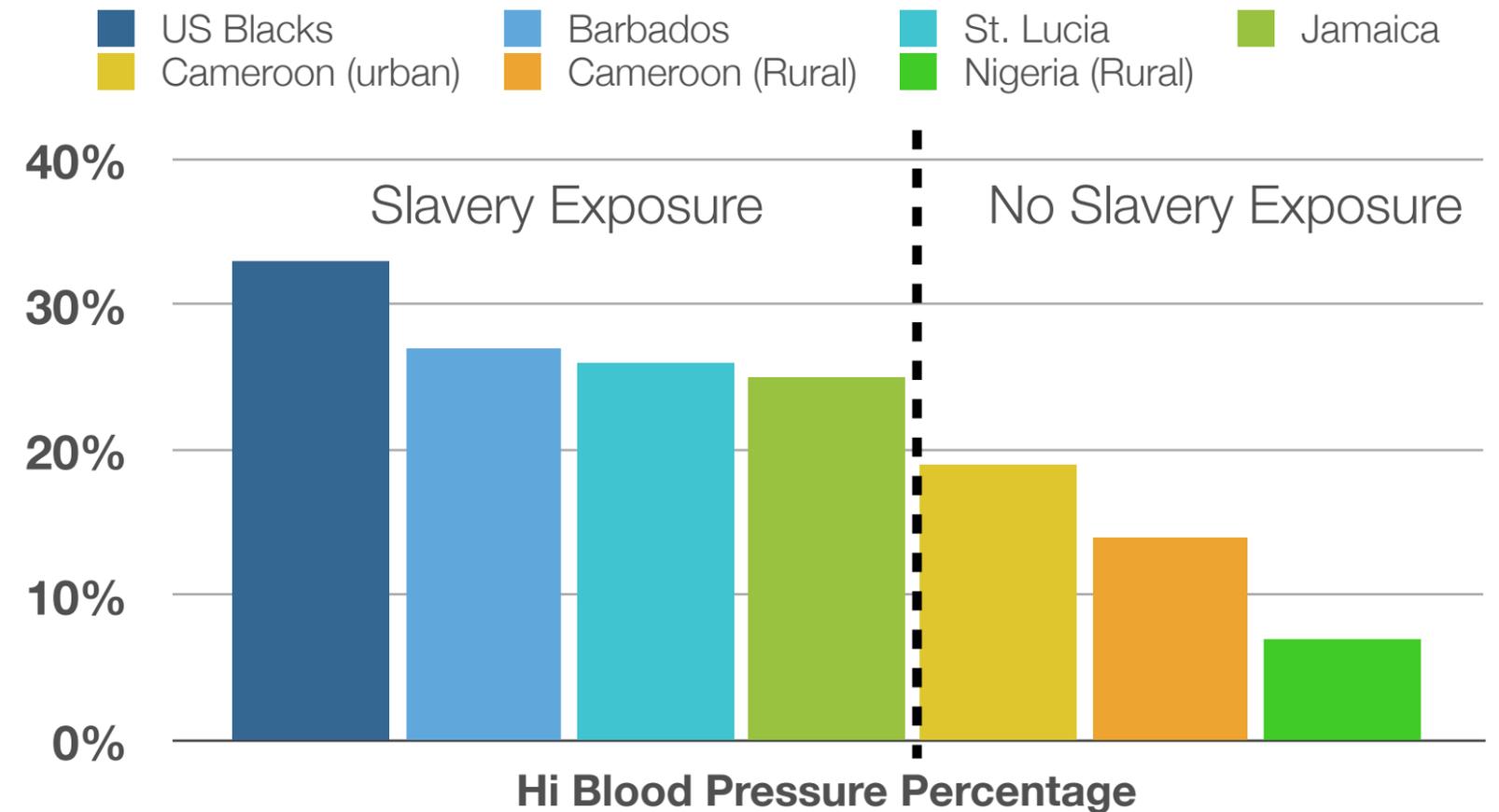
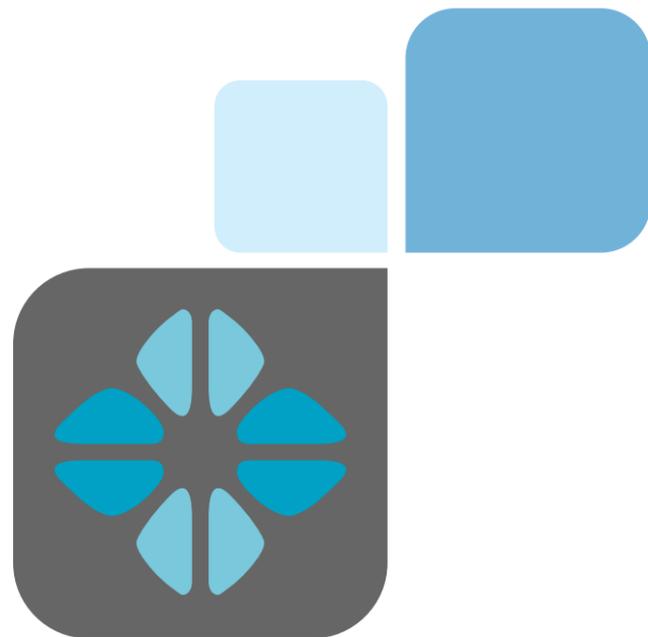


Example Lasting Effects of Evolutionary Bottlenecks

Political pundits say:

“Slavery is over. Jim Crow is over. Everybody should be over all this.”

Evolution is bigger than pundits, and epigenesis is a solution to a past evolutionary problem that might come back. Evolution is conservative.



Source: *Scientific American*, February, 1999

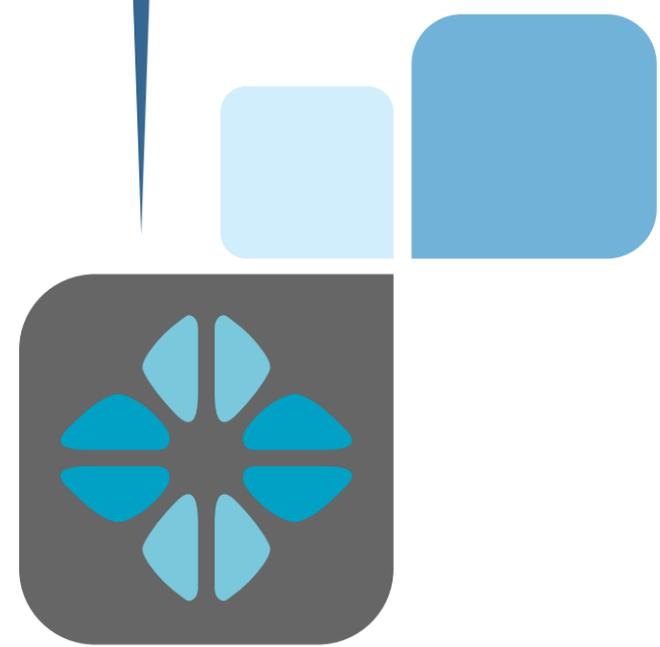
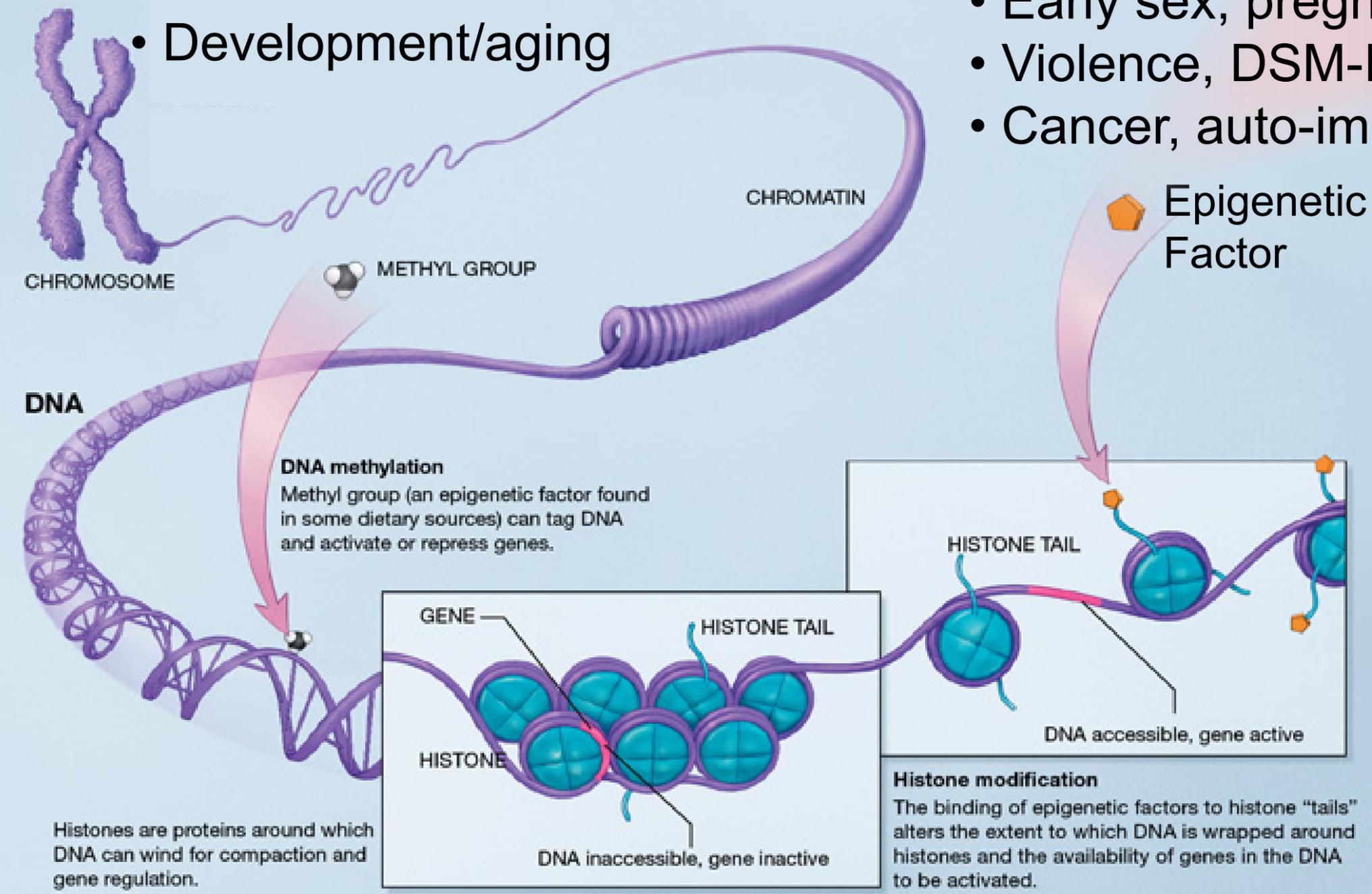
Yes, the social and physical environment of humans changes gene expression.

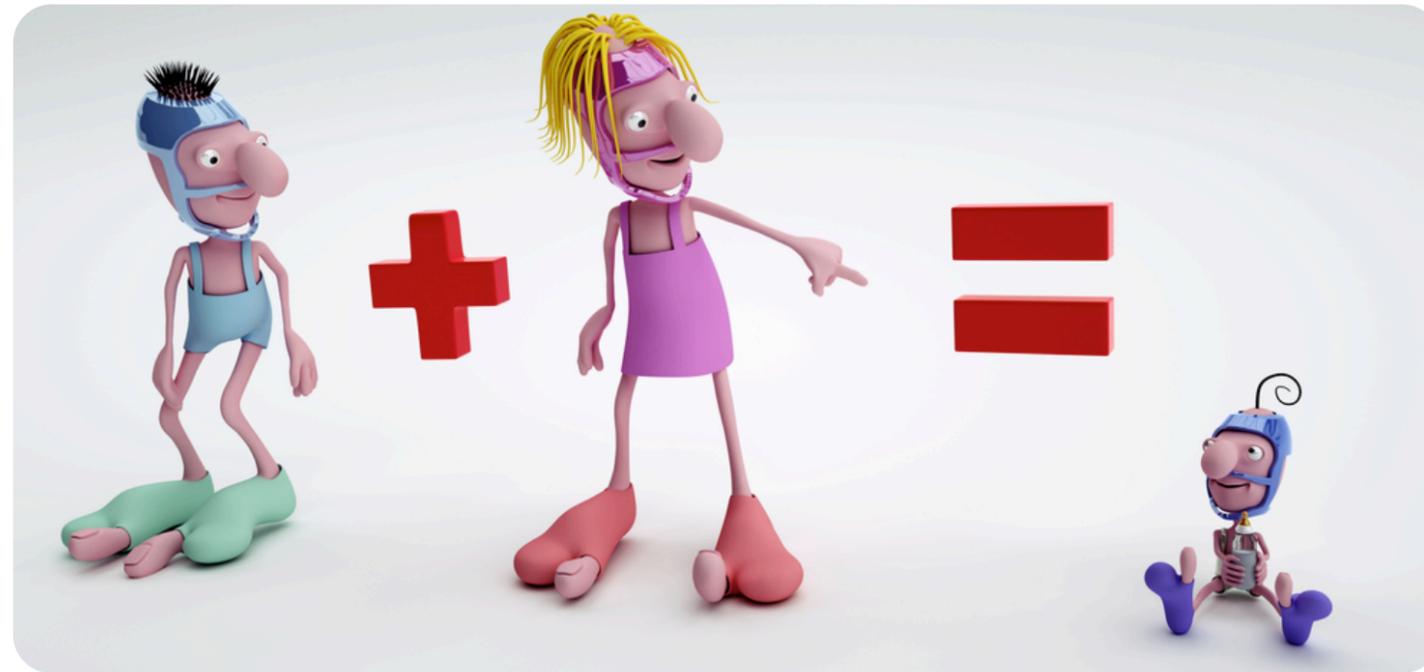
Epigenetic Mechanisms

- Nurturing environments
- Toxic environments
- Development/aging

Health & Behavior

- Obesity, asthma, diabetes
- Early sex, pregnancy
- Violence, DSM-IV
- Cancer, auto-immune



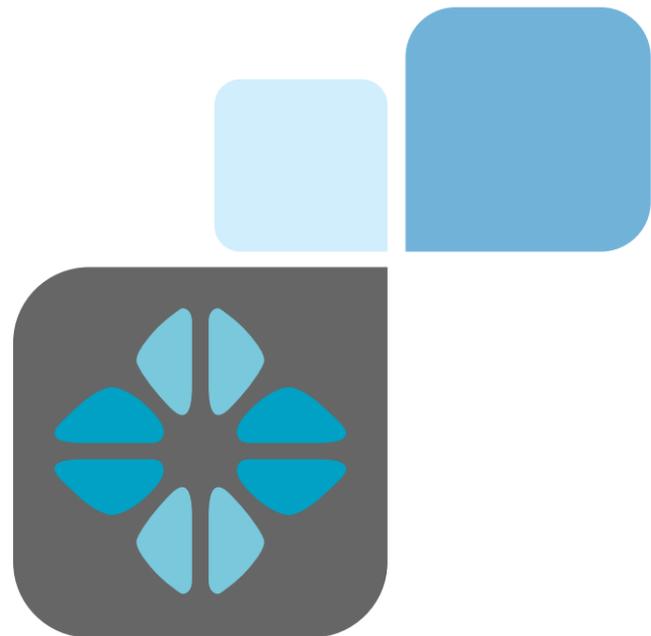


Adverse Life History Strategy (brain/gene training)

=

Gene X Human Stressful Environments,
Mediated by Selection by Consequences (at
multiple social levels)

AKA, "Matching Law"

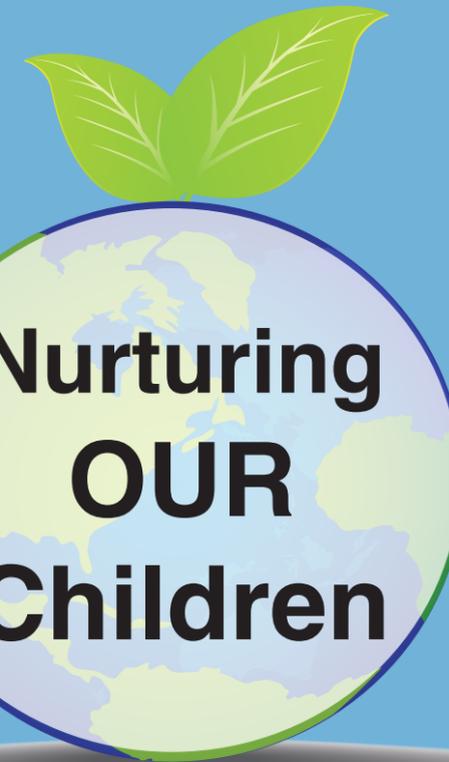


Select proven, cost-effective strategies for protection and prevention for all ages



Richly Reinforce
Pro-social
Behaviors

Limit
Problematic
Behaviors



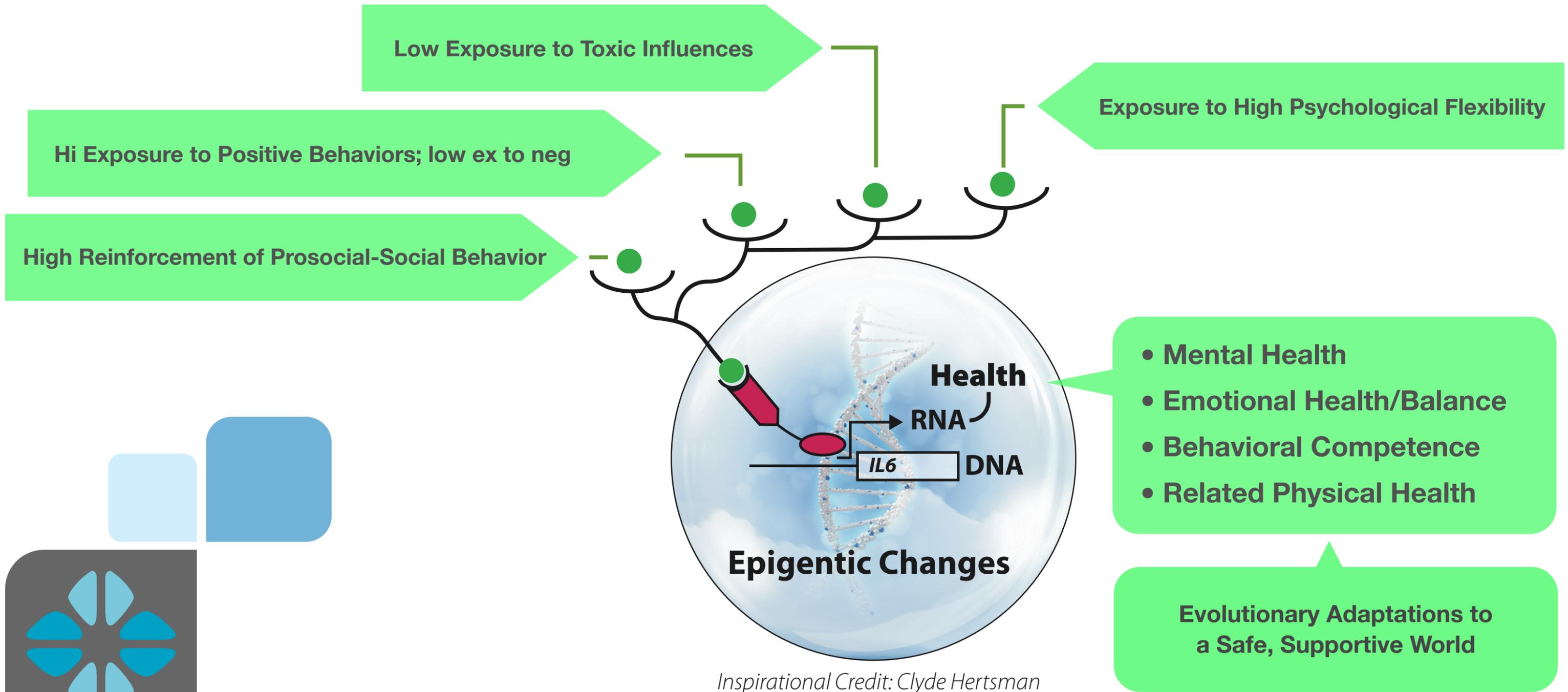
Reduce
Toxic
Influences

Increase
Psychological
Flexibility

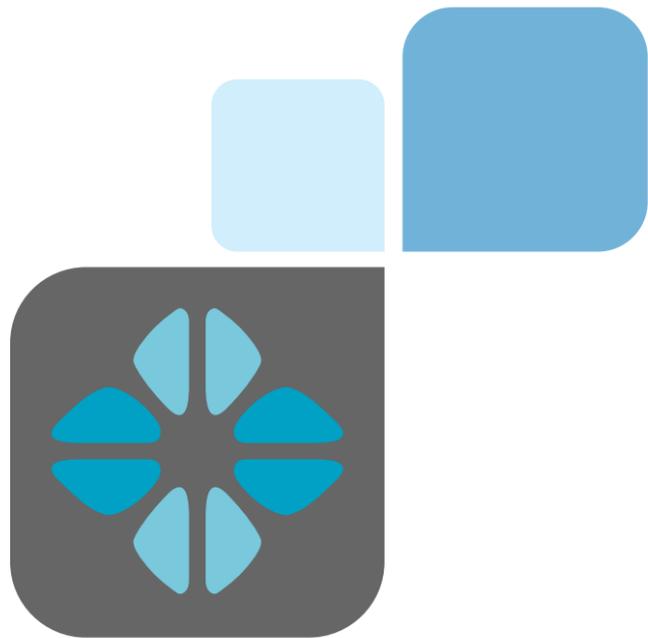
Biglan et al., American Psychologist, (4), 2012

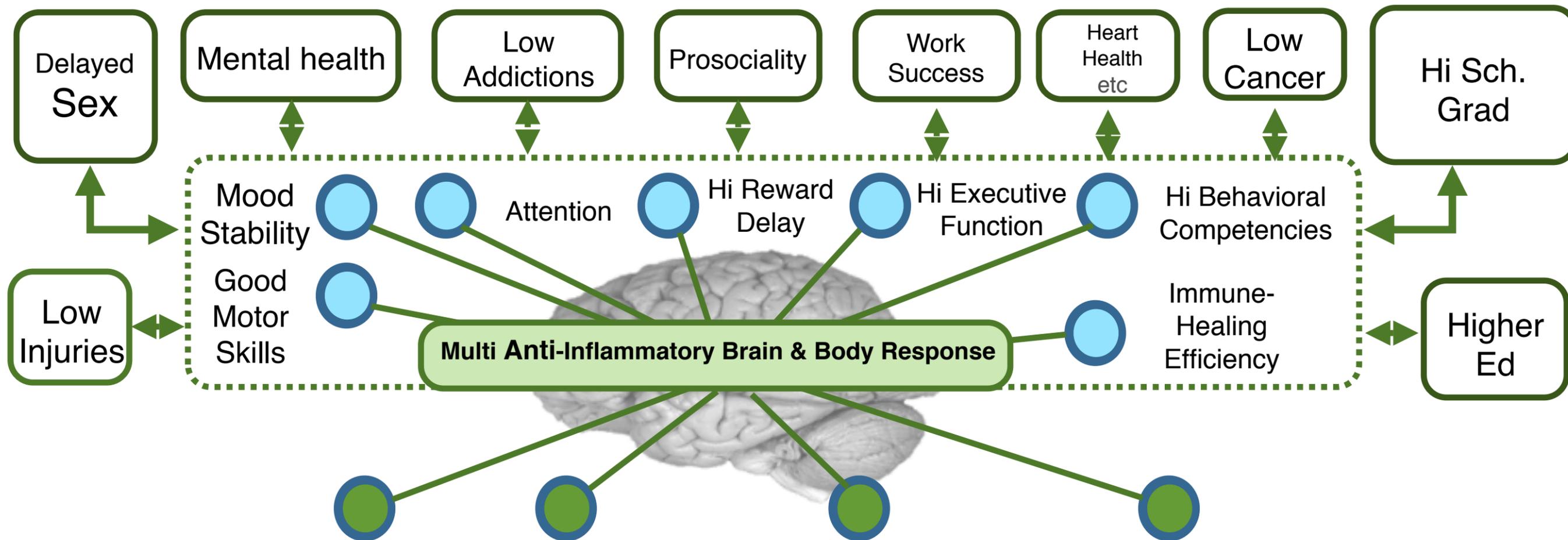


Conditions producing positive trends...



Inspirational Credit: Clyde Hertsman





Multiple Behavioral Vaccines Protect the Futures of ALL Children, Youth and Adults

↑

Reinforcement
more for prosocial behaviors

↑

Antecedents
cue prosocial behaviors

↑

Physiological
influences trigger protective biological mechanisms

↑

Verbal Relations
occasion perceived safety and flexible minds

The Same Conditions Protect and Prevent



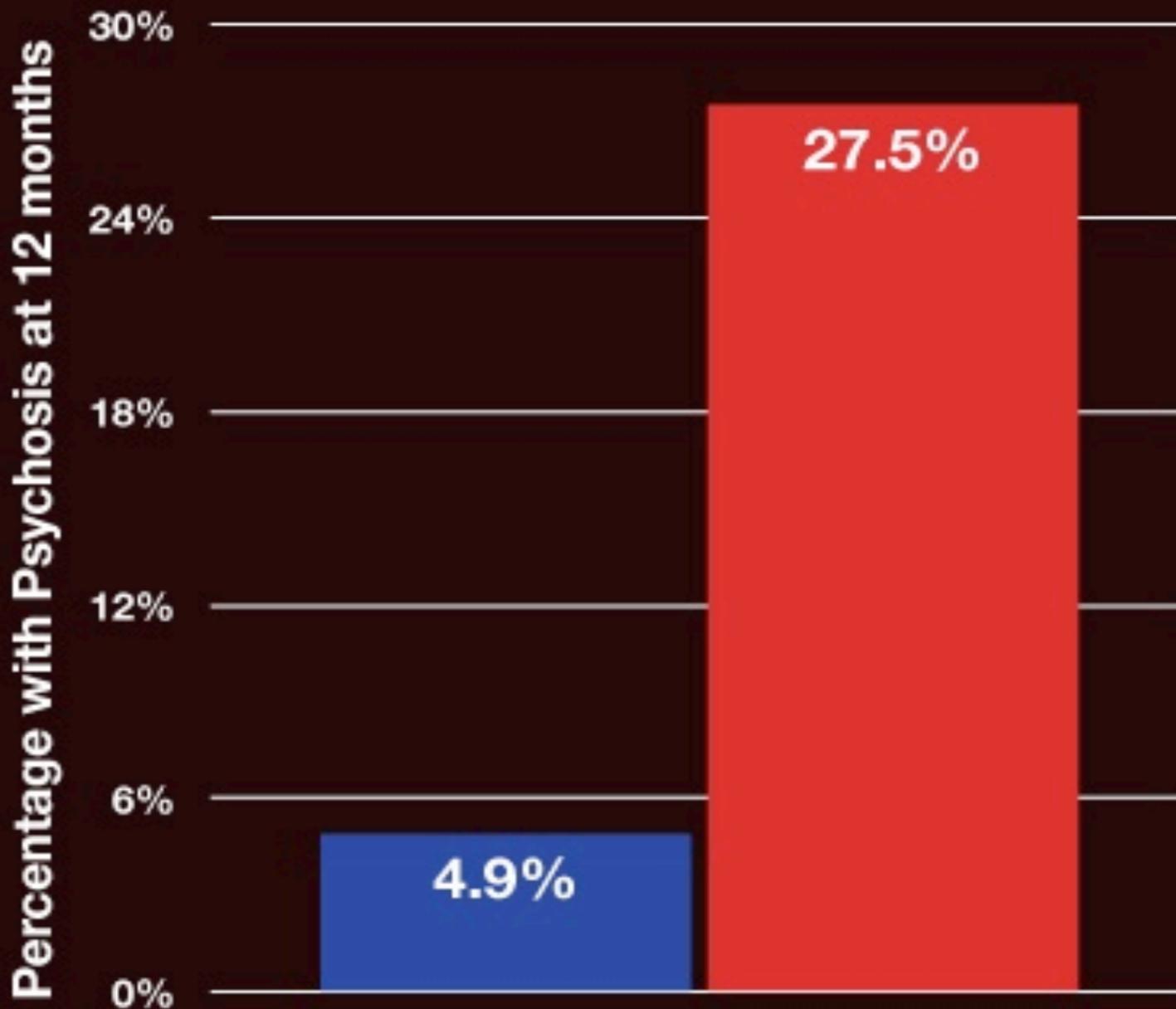
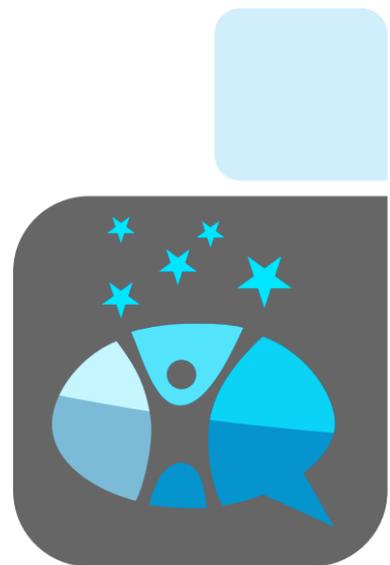


- Richly Reinforce Pro-social Behaviors
- Limit Problematic Behaviors
- Reduce Toxic Influences
- Increase Psychological Flexibility

Biglan et al., American Psychologist, (4), 2012



Case Study from Ancient Wisdom: Universal Access to a Behavioral Vaccine for All



Omega-3 Placebo
Psychosis Prevention
in prodromal adolescents & young adults

Amminger, G. P., M. R. Schafer, et al. (2010). "Long-Chain {omega}-3 Fatty Acids for Indicated Prevention of Psychotic Disorders: A Randomized, Placebo-Controlled Trial." *Arch Gen Psychiatry* 67(2): 146-154.

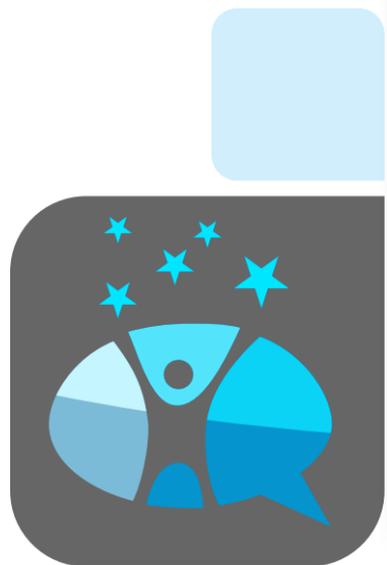


Before Omega 3

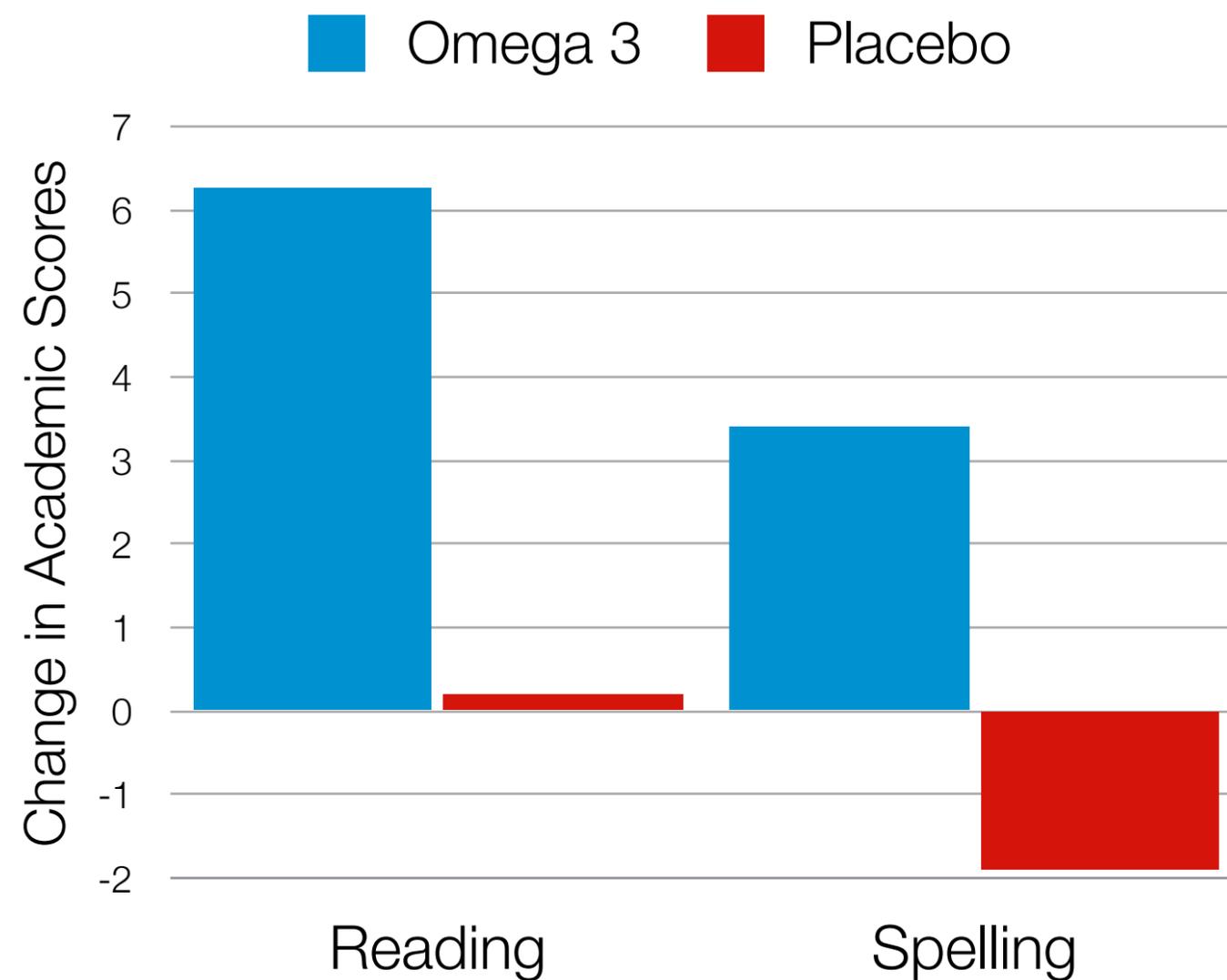
to pay Mrs Twit back
for the worms in his
spaghet Mr Twit thought
up a really clever trick

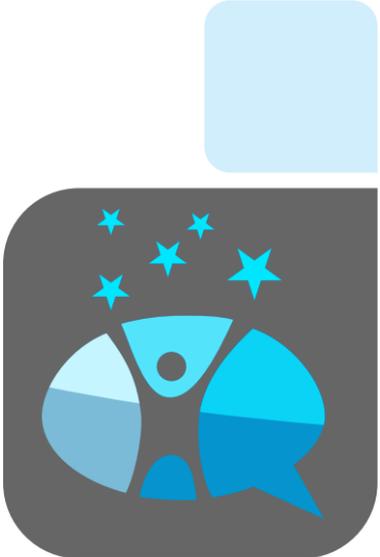
After Omega 3

To pay Mrs Twit back
for the worms in his
spagetti Mr Twit thought
up a really clever trick



Three Months Omega-3 can improve school success





Case study

What if anthropological wisdom in classrooms

Muriel Saunders invented the Game in 1967 as a first-year, 4th grade teacher.

Published as a study in 1969.



Harriet Barrish



Montrose Wolf



Scientific Heroes of the Randomized Trials



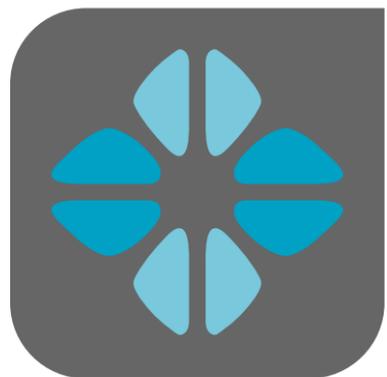
Shep Kellam



Nick Ialongo



Jaylan Turrkkan



Timeline of Benefits...

First Month

- More time for teaching and learning
- Less stress for Staff & Students

First Year

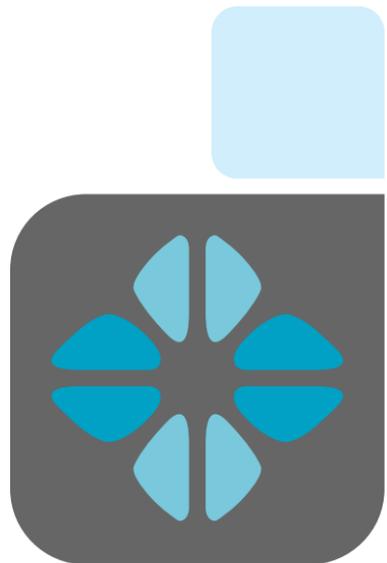
- Better Attendance
- Fewer Referrals
- Fewer Service Needs
- Less Illness
- Happier Families
- Less Vandalism
- Better Academics

2nd & 3rd Years

- ADHD Averted
- Oppositional Defiance Averted
- Special Education Averted

5-15 Years

- No Tobacco
- Less Alcohol
- Less Conduct Disorders
- Less Depression
- Less Crime, Violence, Suicide
- High School Grad & University





First graders exposed to GBG for one year had these benefits at age 21.

OUTCOMES	STUDENT GROUPS	GBG CLASSROOM	STANDARD CLASSROOM
Drug abuse and dependence disorders	All males	19 percent	38 percent
	Highly aggressive males	29 percent	83 percent
Regular smoking	All males	6 percent	19 percent
	Highly aggressive males	0 percent	40 percent
Alcohol abuse and dependence disorders	All males	19 percent	38 percent
Antisocial personality disorder (ASPD)	All males	29 percent	83 percent
Violent and criminal behavior (and Alcohol Abuse)	All males	29 percent	83 percent
Service use for problems with behavior, emotions, drugs, or alcohol	All males	25 percent	42 percent
Suicidal thoughts	All females	9 percent	19 percent
	All males	11 percent	24 percent

Trans-problem results



SOURCE: Kellam, S. G., Mackenzie, A. C., Brown, C. H., Poduska, J. M., Wang, W., Petras, H., & Wilcox, H. C. (2011). The good behavior game and the future of prevention and treatment. *Addict Sci Clin Pract*, 6(1), 73-84.

Read this and other studies about the Good Behavior Game at www.pubmed.gov

The beginnings of the neuro-psych mechanisms

Journal of Personality and Social Psychology

Self-Determination, Self-Regulation, and the Brain: Autonomy Improves Performance by Enhancing Neuroaffective Responsiveness to Self-Regulation Failure

Lisa Legault and Michael Inzlicht

Online First Publication, October 29, 2012. doi: 10.1037/a0030426

Error-Related Negativity = (ERN)

CITATION

Legault, L., & Inzlicht, M. (2012, October 29). Self-Determination, Self-Regulation, and the Brain: Autonomy Improves Performance by Enhancing Neuroaffective Responsiveness to Self-Regulation Failure. *Journal of Personality and Social Psychology*. Advance online publication. doi: 10.1037/a0030426

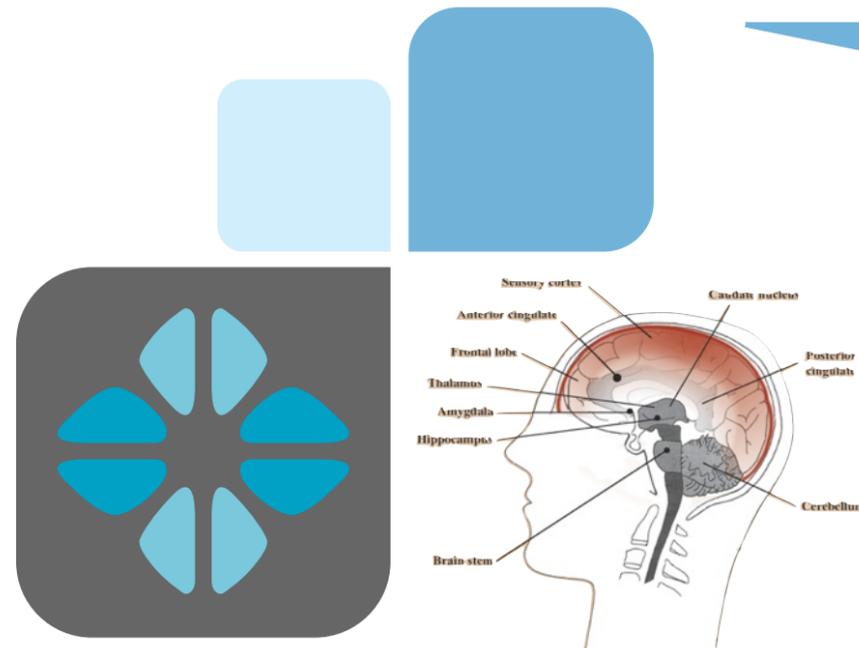
TORONTO LABORATORY FOR SOCIAL NEUROSCIENCE



DR. MICHAEL INZLICHT

Self-regulation thru use of matching law in classroom to create a nurturing environment

Denni Fishbein, Rob Santos, Leanne Boyd plus the Public Health Agency of Canada (PHAC) and others in Canada & US are recruiting others to work on the linked health, education, social services, GIS, direct measures of impact, plus neuro-psych and epigenetic mechanisms on the **PAX Good Behavior** in a longitudinal, RCT of 9,000 Grade One students in Manitoba.





Loss by not protecting each Grade 1 cohort with example behavioral vaccine:

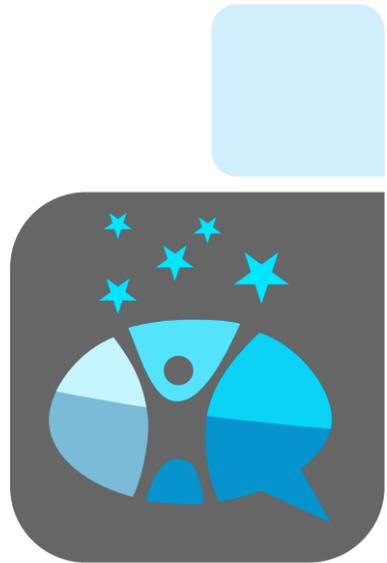
\$18 Billion in the US

\$93 Million in West Virginia

And **\$4,637** kid in your city



Estimates based on Washington State Institute for Policy Research:
Aos, S., S. Lee, et al. (2011) Return on Investment: Evidence-Based Options to Improve Statewide Outcomes. 8



Case Study: In ancient wisdom, every parent needs support



- Richly Reinforce Pro-social Behaviors
- Limit Problematic Behaviors
- Reduce Toxic Influences
- Increase Psychological Flexibility

Biglan et al., American Psychologist, (4), 2012



Credit: ITV



Case Study #1: Universal Access to a Behavioral Vaccine for Families

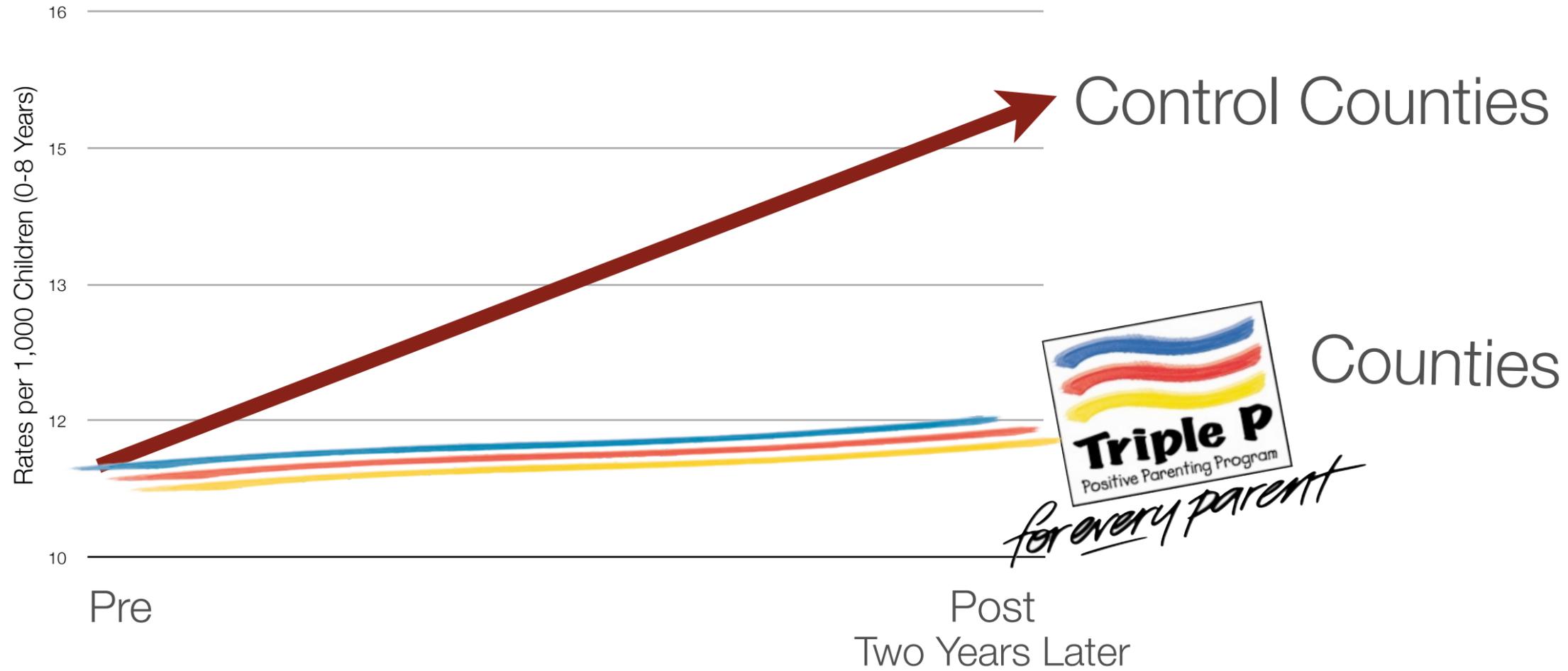


25%

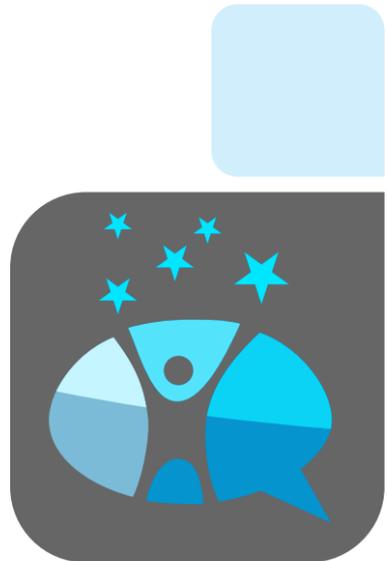
Universal Access to Parenting Supports reduces child maltreatment in two years by...



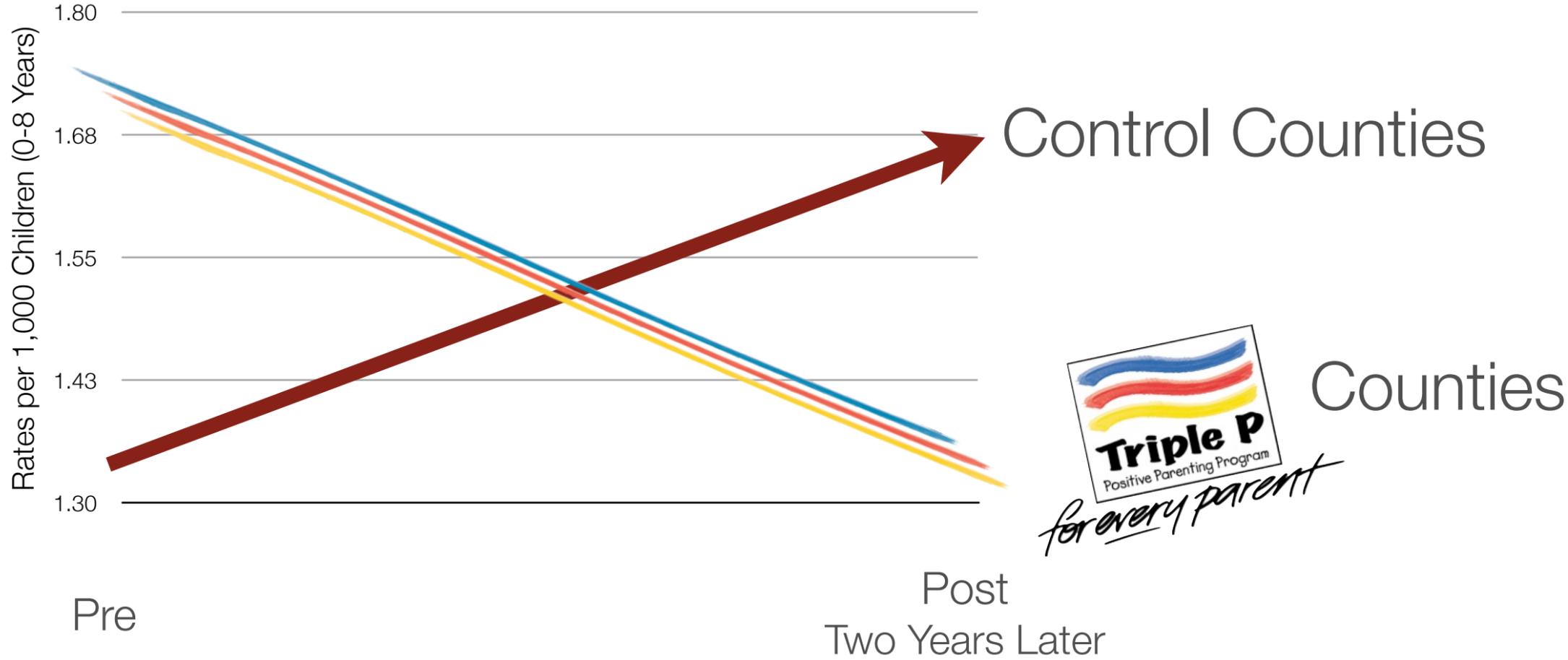
Substantiated Child Maltreatment



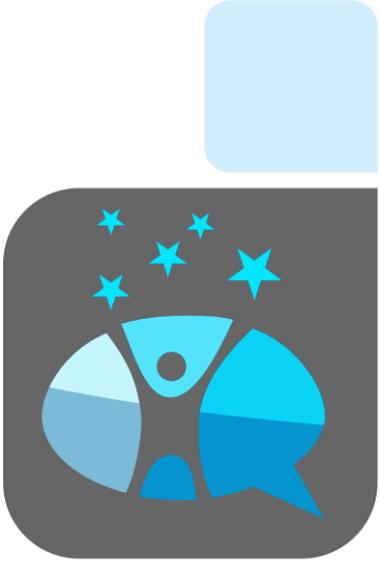
Prinz et al., 2009, *Prevention Science*



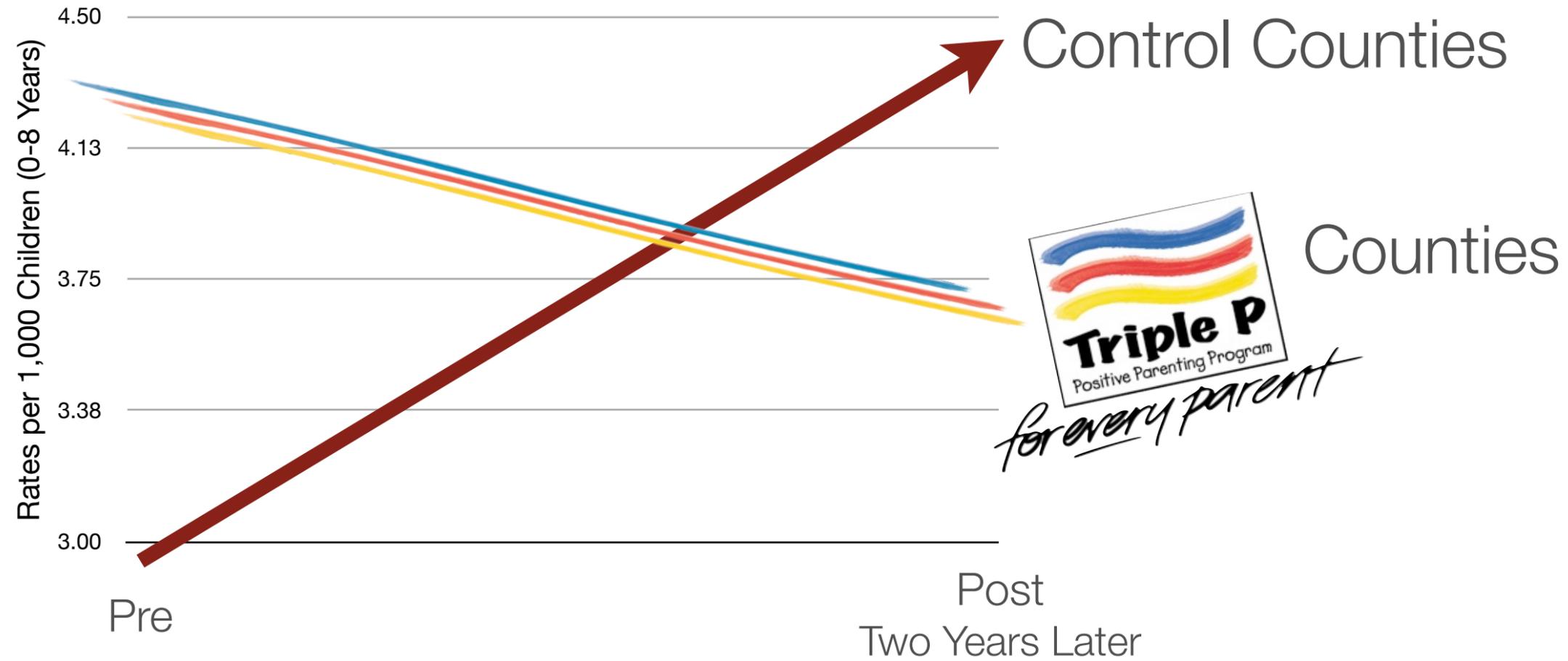
Child Abuse Hospital Injuries



Prinz et al., 2009, *Prevention Science*



Child Out-of-Home Placements



Prinz et al., 2009, *Prevention Science*





What do these results mean fiscally?

Building models policy change

Use personalized business models to communicate to cost-efficiency and benefits.

Show short-term benefits

Allow decision makers and advocates to adjust cost savings to their location.

Triple P[®] Prevention Estimator

BEGIN HERE

SELECT A STATE: West Virginia

Save Scenario Print Reset

2006 Child Census and Federally Reported Maltreatment Data

Total Population 0-9	Cases of Maltreatment	Out of Home Placement
212,955	5,340	502

Substantiated Cases of Maltreatment Out of Home Placements Cases of Lifetime Conduct Disorder

CHILDREN 742
Saved Annually

DOLLARS \$6,816,916
Saved Annually

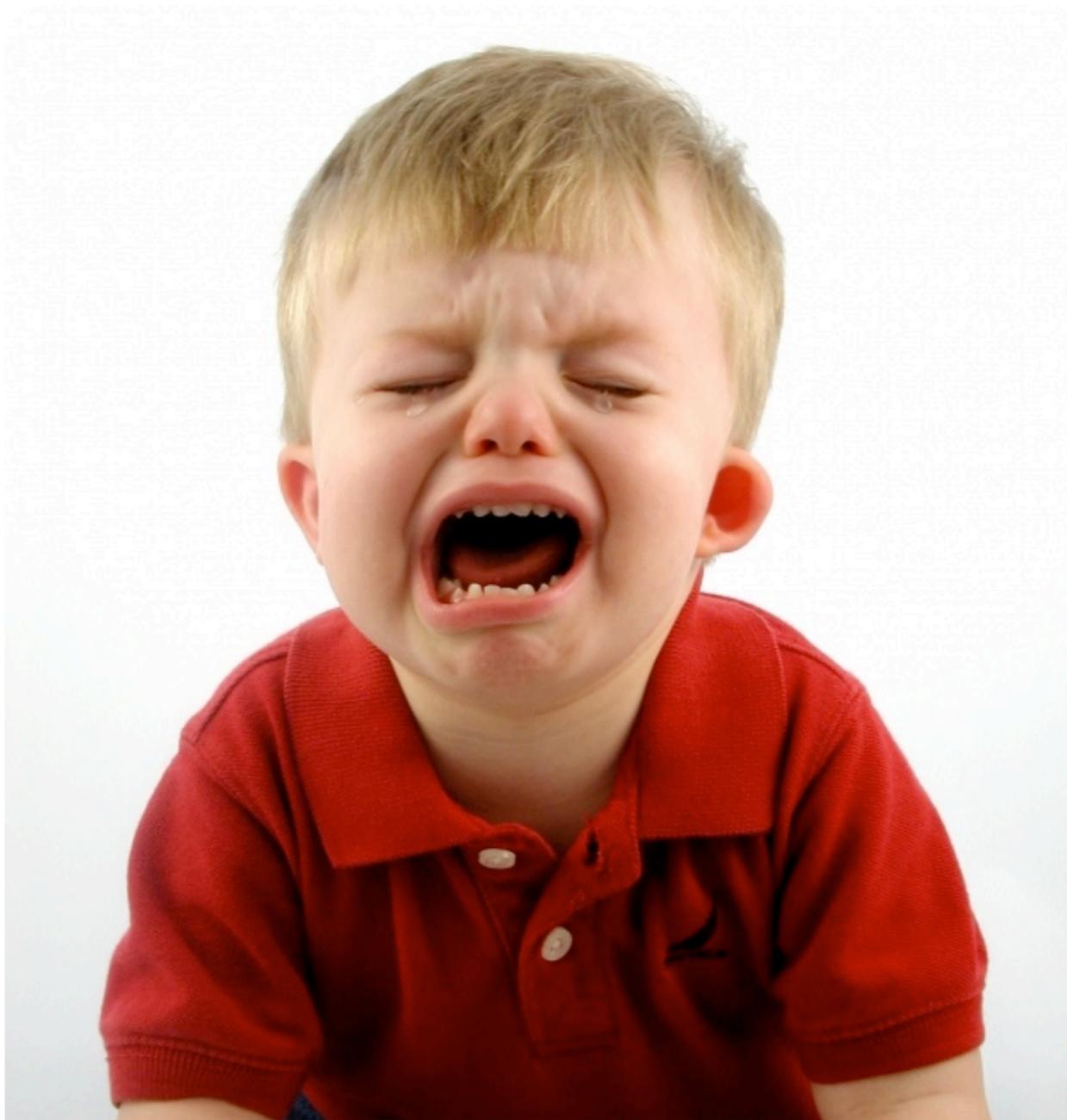
Adjust the the value to display the total estimated savings.

Annual Cost Per Case
\$9,184 9184

Expert Adjustor

\$0 \$27,552

Prinz, Sanders, Shapiro, Lutzker & Whitaker (2009). Population-based prevention of child maltreatment: The U.S. Triple P System Population Trial. Volume 10, March Issue. <http://www.springerlink.com/content/104965/>



What parent doesn't need know how to solve meltdowns?

PS. Children who don't learn to self-regulate well tend to have many problems as teens and adults.



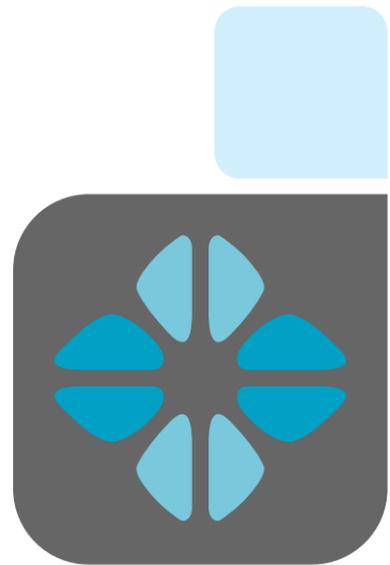


How many parents have to deal with a very aggressive child?

PS. Children who have such aggression problems when young tend to develop more serious problems as adolescents.



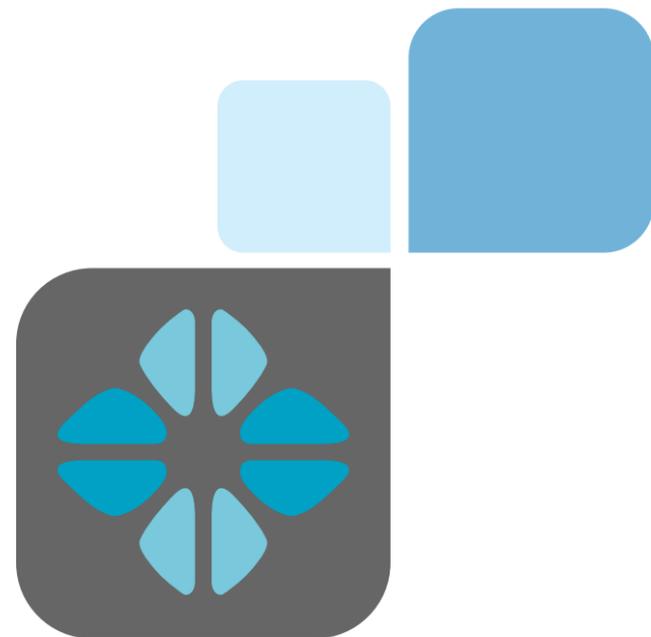
The Big Idea



Big Longitudinal, Planned Variation, RCT of a Behavioral Vaccine for Mental, Emotional & Behavioral Disorders

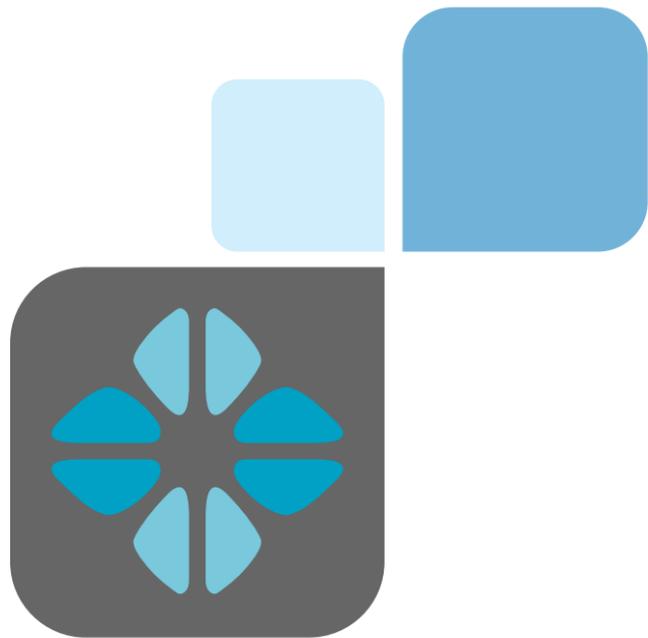


- Focusing on Grade One Children (About 4 million in US)
- A factorial design across the entire country
- Main Protective Strategy: Enhanced GBG
- Variations/Additions Tested (possible examples)
 - PBIS or No with special supports for non responders
 - PATHS
 - Family Checkup
 - Level 1,2 and on the 4 of Triple P
 - Mass media campaign
 - NHRN strategies for implementation
 - Teacher burn-out support
 - Omega 3 Vitamin D
 - Media management at home
 - Sleep management at home
 - Play ground/physical activity
 - Social media component
 - Other ideas?



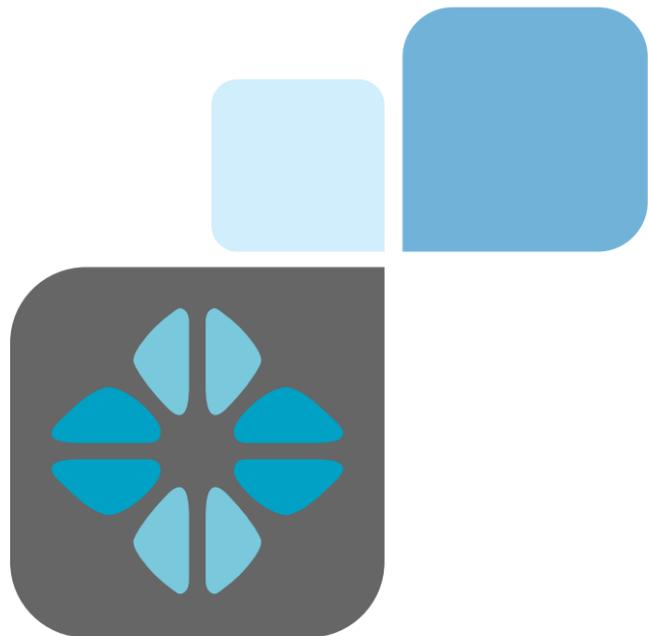
Why? Practical Politics & Good Science

- SAMSHA has proven that Enhanced GBG is replicable and scalable in more than 30 diverse sites across the US rapidly. Canada is doing likewise.
- Early protective/prevention wins measurable in 2-3 months.
- Important clinical and fiscal outcomes in 1-3 years.
- Very cost-effective long-term outcomes that are measurable.
- Can fit into existing delivery systems
- The short and long term outcomes allow measurement of epigenetic and brain mechanism in randomized RCT context, along with all sorts GIS info.
- Factorial design answers a whole bunch of questions (Thx, Linda Collins).
- Will make practical prevention science a household conversation in every community of America.
- When it works, everybody wins (except the prison-industrial complex, pharmaceutical industry, and the illegal drug trade)



The Price of Implementation of the Behavioral Vaccine?

- Between **\$35** to **\$150** per child for lifetime depending on what costs you assume (This is about the range of most medical vaccines for childhood disorders).
- For 4 million grade one children, this ranges from \$140 to \$600 million.



Paying for this?

- **The Implementation** from these existing funding streams:

- The Prevention Fund from ACA.
- Various existing block grants scattered across HHS.
- Title I Education funds and related Education funds (ah, it does increased reading achievement, too)
- Delinquency prevention grants

- Authorization of 3rd Party Reimbursement via Medicaid and S-CHIP, and private insurances
- Plus foundations and private donors
- Even, consider a telethon

- **The Science** of all this:

- Rapid competitive grants across NIH for different outcomes and factorial design strategies
- Plus aligned foundations & donors

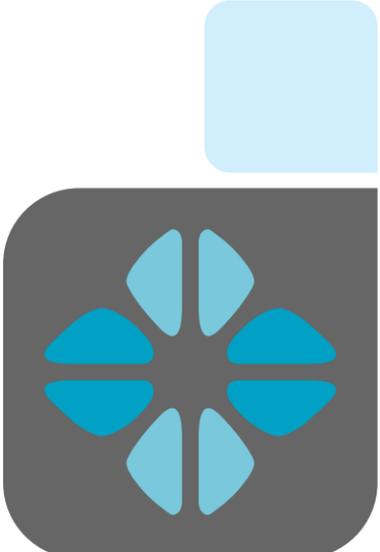




ROI: Return on investment

The Polio Vaccine effort
returned \$3 for every \$1
spent

GBG Behavioral
Vaccine ROI varies from
31 to 1 to 75 to 1



Create policy, advocacy, and organizational supports to foster cooperation for common good



ELINOR OSTROM

2009 Nobel Laureate
in Economic Sciences

Nobel medal © © The Nobel Foundation



Policy Example: Children's Futures as Common Pool Resource





Develop community prevention scoreboards to monitor progress

Launch Social Marketing: Advocacy & Media

Products have catchy, positive name (a meme)

Performance names benefits & little pain

Place for getting product is easy & non-stigmatizing

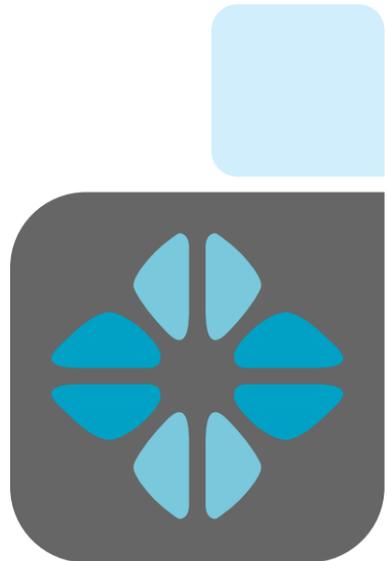
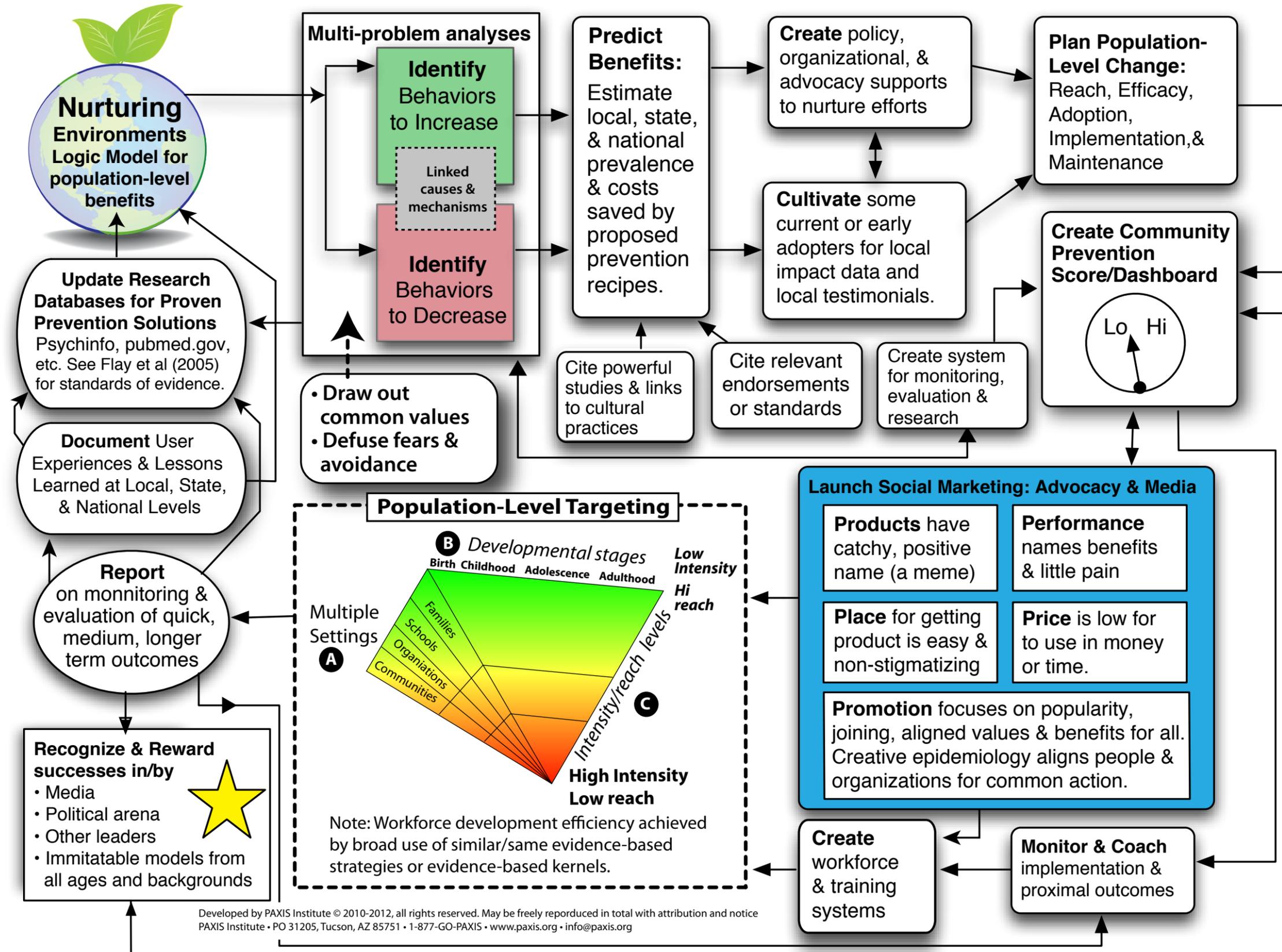
Price is low for to use in money or time.

Promotion focuses on popularity, joining, aligned values & benefits for all. Creative epidemiology aligns people & organizations for common action.

**Social Marketing of
Mental Health Prevention and Promotion**

It's NOT about the Problem





In this room, we have the knowledge and skill avert >25% of mental, emotional, and behavioral disorders in less than a decade...

Now is this the time...

