

Methods: Mind the Gap  
Webinar Series

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# The Need for Experimental Evaluations of Community Interventions

Presented by:  
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# A Research and Public Health Agenda to Improve Population Health and Reduce Disparities

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# The Ultimate Goal Of Public Health

Reduce in the incidence and prevalence of psychological, behavioral, and physical disorders in order to prevent disability and premature death.



# However, We Are Making Limited Progress on that Goal

- On life-expectancy, we rank 28th out of 36 countries that are members of the Organization for Economic Cooperation and Development.
- Suicide rates have increased
- Drug overdose rates have reached historic highs
- Binge Drinking has increased among those over fifty
- By 2018, the prevalence of obesity in the US population of adults over 20 was 42.4% and the prevalence of severe obesity nearly doubled, from 4.7% to 9.2%.

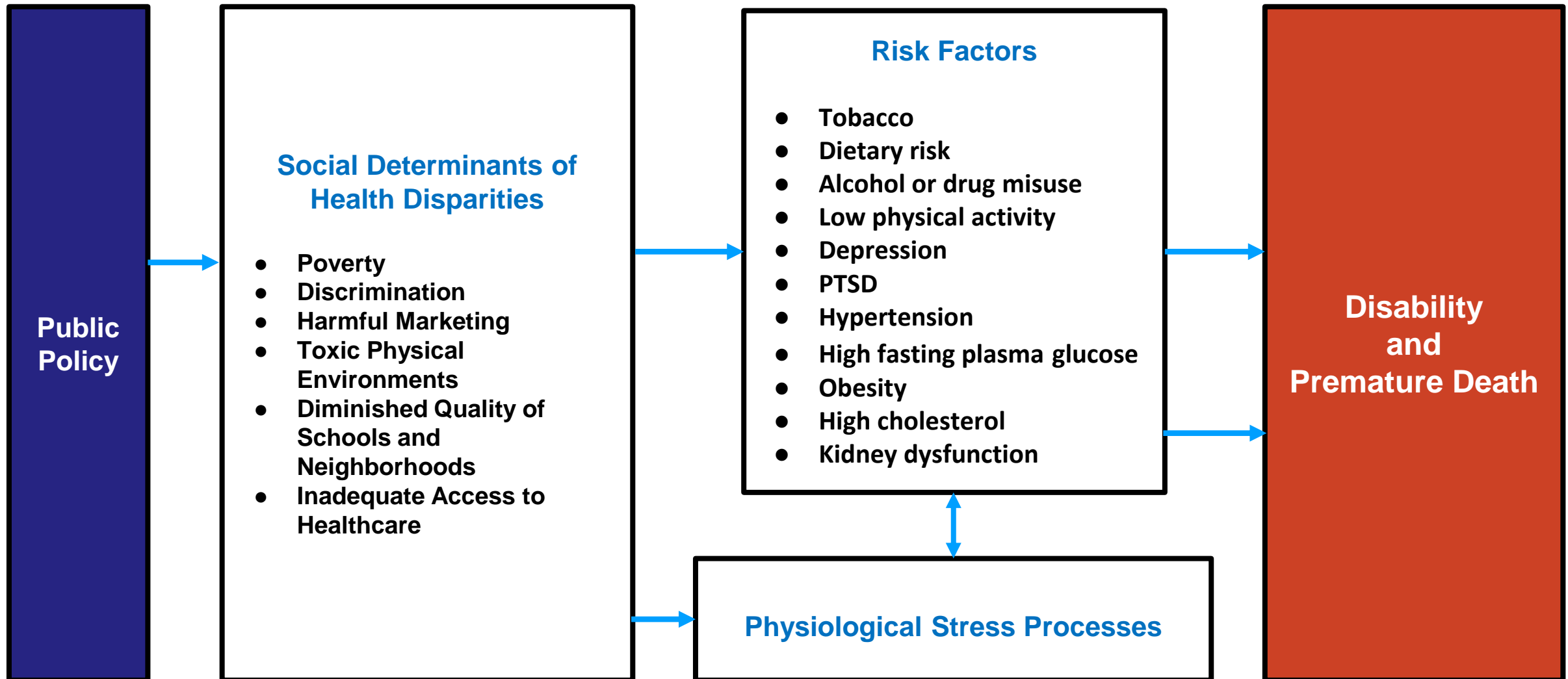


# Health Disparities

- As of 2015, Black people under 65 had higher death rates than Whites for all-cause mortality (Cunningham et al., 2017).
- Rate of all-cause mortality among Native Americans is 30% higher than the rate for all races (Indian Health Services, 2019)
- Mortality rates for Non-Hispanic whites in the USA stopped declining around 2000 and then increased (Case & Deaton, 2017), while they continued to decline six other countries
- Mortality rates also differ by socioeconomic status, with the disparities for low SES on the rise in recent years (Bosworth, 2018).



# A Comprehensive Framework for Understanding Health Inequities and Disparities

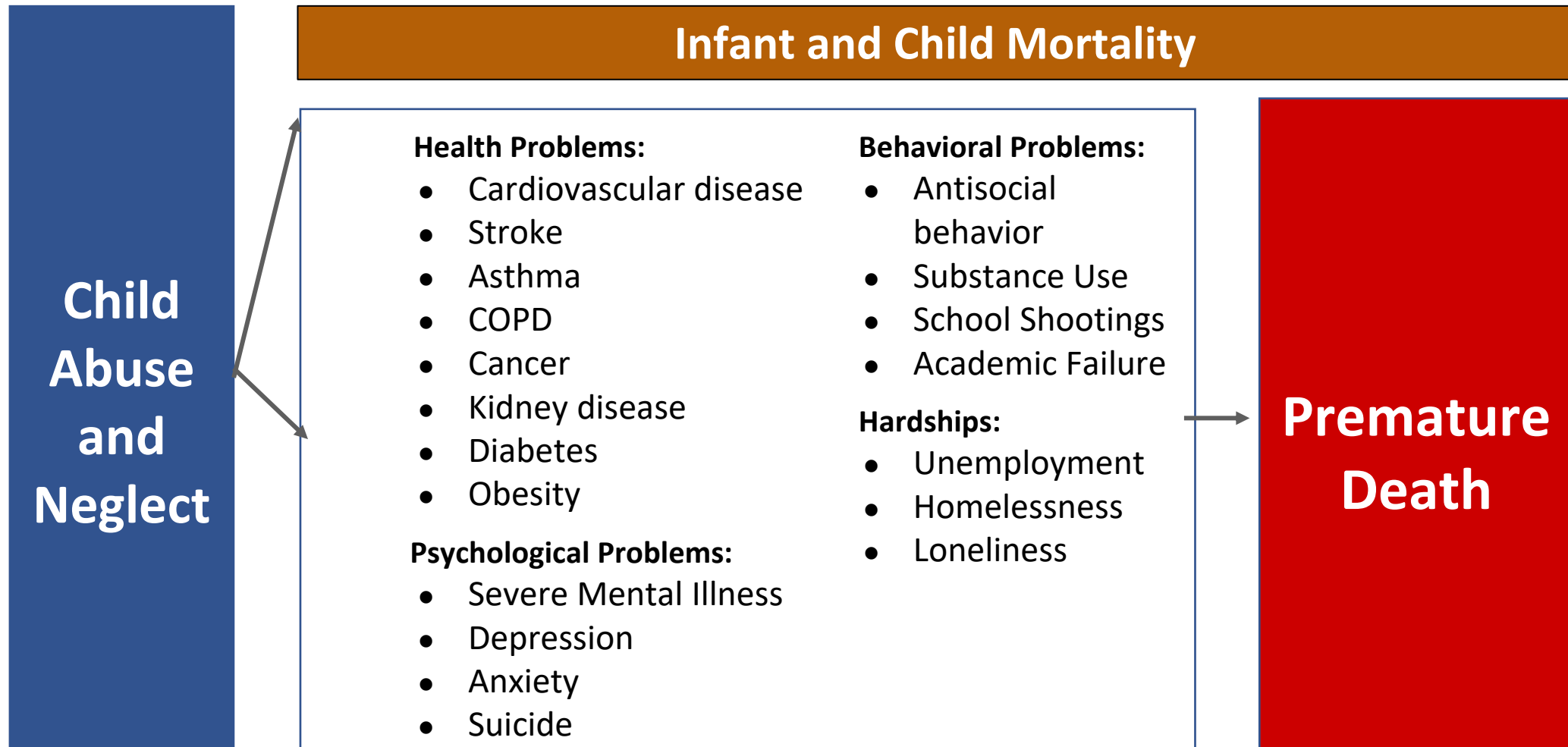


# I asked ChatOpenAI

- “What is a word for a risk factor that affects numerous outcomes?”
- It replied: “A word that describes a risk factor that affects numerous outcomes is ‘omnifactor.’ The term ‘omnifactor’ can be used to describe a risk element or variable that has a broad impact and influences multiple outcomes or situations. It suggests that the risk factor is pervasive and can have wide-ranging effects across various domains.”
- When I asked for another term, it suggested “Multifaceted Risk”



# The Devastating Effects of Child Abuse and Neglect





# Relative Risk of Problem Behaviors –in a Representative Sample of 22,898 8th Graders

	Substance Use	Antisocial Behavior	Risky Sexual behavior	Depression	Eating Disorders
Substance use		5.52	8.54	3.66	2.29
Antisocial Behavior	5.42		7.80	3.74	2.62
Risky Sexual Behavior	6.86	7.11		4.46	3.08
Depression	3.93	3.85	5.79		3.64
Eating disorder	2.45	2.89	3.59	4.00	

Boles, S., Biglan, A., Smolkowski, K. (2006) Relationships among negative and positive behaviors in adolescence. *Journal of Adolescence*, 29, 33-52.



# Given the inter-relationships among problems...

How likely is it that we can excise one of these problems if we do not alter the other problems and the conditions that contribute to multiple problems?



# Office of Disease Prevention Analysis of Prevention Research Portfolio

“...the leading risk factors and causes of death and disability were underrepresented in the NIH prevention research portfolio relative to their burden. Because so much is already known about these risk factors and causes, and because randomized interventions play such a vital role in the development of clinical and public health guidelines, it appears that greater attention should be given to develop and test interventions that address these risk factors and causes, **addressing multiple risk factors or causes when possible.**<sup>1</sup>” [emphasis added]



1. Vargas AJ, Schully SD, Villani J, Ganoza Caballero L, Murray DM. Assessment of Prevention Research Measuring Leading Risk Factors and Causes of Mortality and Disability Supported by the US National Institutes of Health. *JAMA Network Open*. 2019;2(11):e1914718-e1914718. doi:10.1001/jamanetworkopen.2019.14718

We need a research and public health agenda that gives greater attention to the most important risk factors

- Social determinants
- Policies
- Comprehensive community interventions
- Ultimately, we need a social movement that makes use of **all** of the empirical methods that are available to us.



# The Tobacco Control Provides a Model for Affecting Population Health

- Awareness, Public Education, and Advocacy
- Policy
  - Taxation
  - Smoke Free Policies
  - Restrictions on Marketing
- Access to Smoking Cessation Resources
- Community Interventions



# Media Advocacy

- Surgeon General Reports
- NASEM monographs
- Institute monographs
- Cultivation of New Media





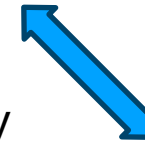
Epidemiological Studies



Media Advocacy



Policy



Public Opinion



# Research on POLICY



# What Current & Historic Systemic Inequities Put Families of Color at Disproportionate Risk of Economic Hardship?

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## Some examples include:

- Exclusion from homeownership via red-lining
- Denial of access to mortgages, banking & financial services
- Lending discrimination
- Exclusionary zoning policies
- Discriminatory federal housing policy
- Residential segregation
- Racially restrictive covenants & laws

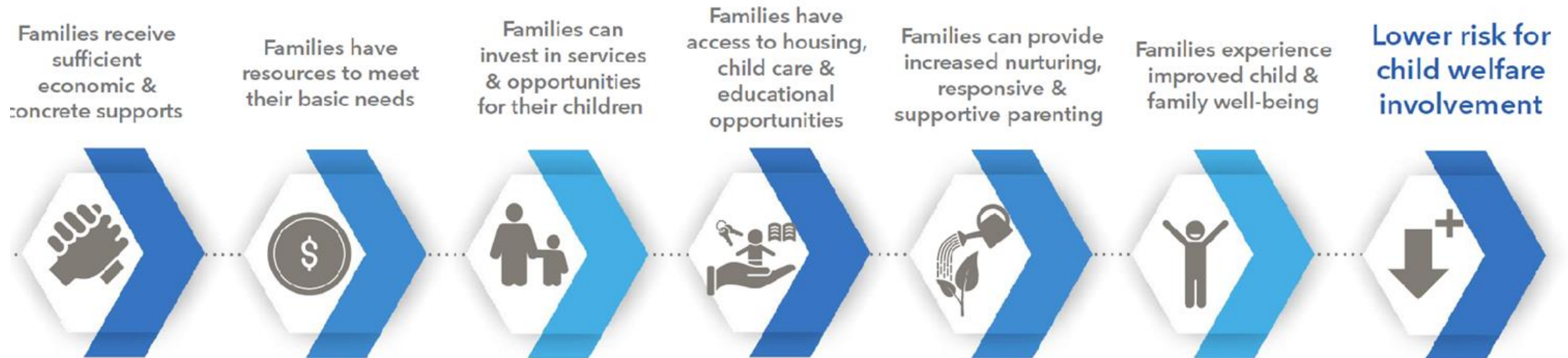
- Denial of access to quality housing
- Discrimination in labor markets & commerce
- Inequitable hiring practices
- Denial of access to quality education
- Lack of access to health care
- Discriminatory law enforcement & criminal legal system policies
- Political disenfranchisement

(AB 3121 Task Force Report, 2022)



# The Importance of Family Economic Stability

## Family Investment Model



# Natural Experiments

- The [Chapin Hall analysis of policies affecting family economic wellbeing](#) presents a wealth of evidence from natural experiments showing the benefits of economic support policies for families.
- David Card got the Nobel Prize in Economics for his research analyzing variability among states that differ on their minimum wage.



# Numerous natural experiments have shown the benefits of the Earned Income Tax Credit for reducing child maltreatment.

- Klevens, J., Schmidt, B., Luo, F., Xu, L., Ports, K. A., & Lee, R. D. (2017). Effect of the Earned Income Tax credit on hospital admissions for pediatric abusive head trauma, 1995-2013. *Public Health Reports*, 132(4), 505-511.
- Kovski, N. L., Hill, H. D., Mooney, S. J., Rivara, F. P., & Rowhani-Rahbar, A. (2022). Short-term effects of tax credits on rates of child maltreatment reports in the United States. *Pediatrics*, 150(1), e2021054939.
- Rostad W.L., Ports K.A., Tang S., Klevens J. (2020) Reducing the number of children entering foster care: Effects of state Earned Income Tax Credits. *Child Maltreatment*. 25(4):393-397.
- Biehl, A. M., & Hill, B. (2018). Foster care and the earned income tax credit. *Review of Economics of the Household*, 16(3), 661-680.



# Community Interventions



# COMPASS

- Community Partnerships to Advance Science for Society (ComPASS) - A Common Fund Proposal
- Attempting to change the “social, physical, economic, and political environments that shape or constrain health behaviors and outcomes.”
- Spans the Institutes and can thereby attend to Omnifactors.
- Addressing the social determinants of health.
- Organizing communities.







## THE VALUE OF MULTIPLE BASELINE DESIGNS IN THIS WORK



# Randomized trials are premature when we lack nomothetic principles.

- A nomothetic principle is one that applies to all cases in a particular category.
- The term is often used in contrast to idiographic principles, which apply to individual cases.
- The success of RCTs in family and school research resulted from the elucidation of nomothetic principles that emerged from numerous interrupted time series designs which consistently showed the impact of reinforcement on behavior.





# Effects of Reducing Attention to Aggressive Behavior

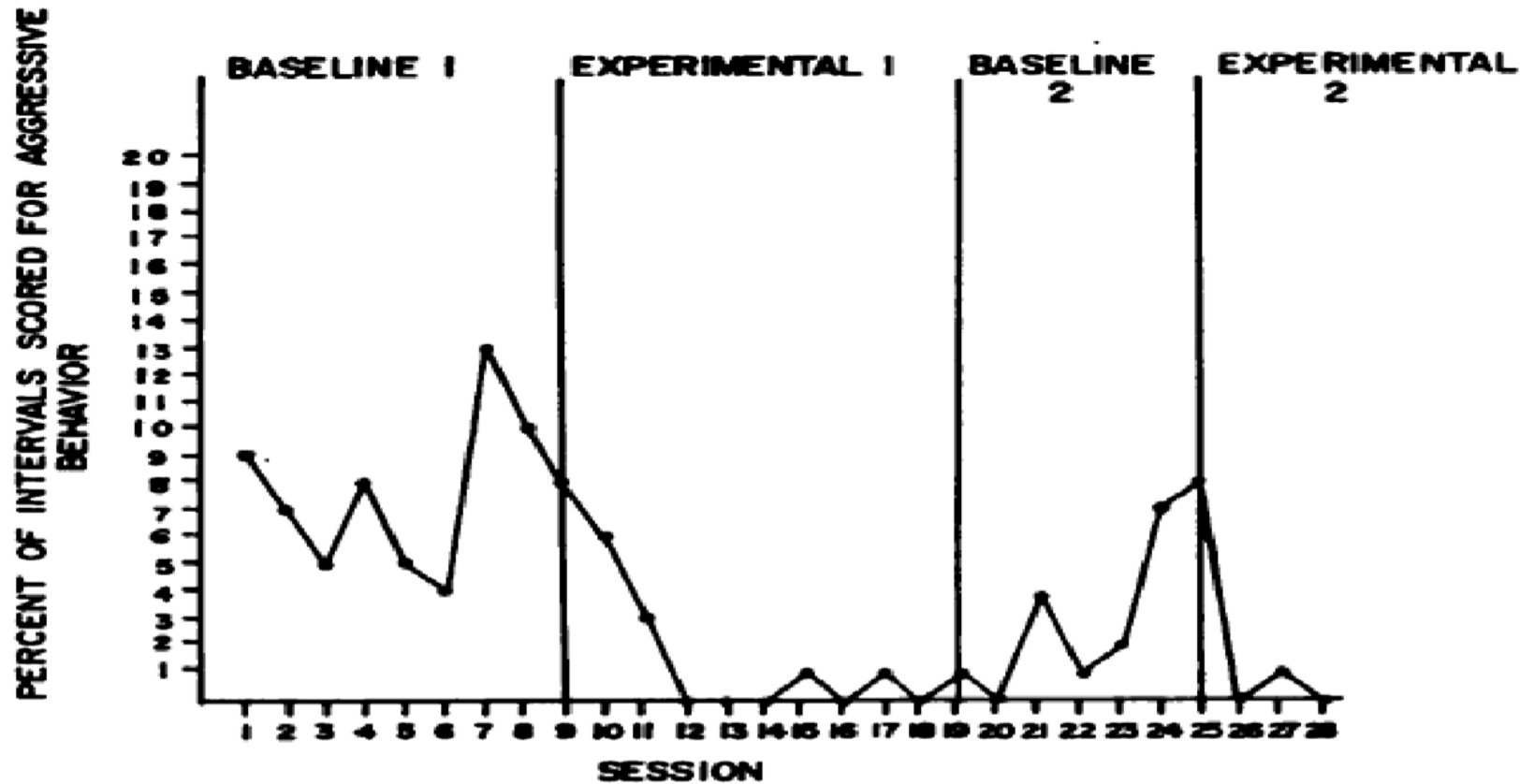


Fig. 2. Per cent of intervals scored for aggressive behavior.

Zeilberger, J., S.E. Sampen, and H.N. Sloane, *Modification of a child's problem behavior in the home with mother as therapist*. Journal of Applied Behavior Analysis, 1968(1): p. 41-53.



# Evidence-Based Family Interventions through the Lifespan

Leslie et al., 2016

Program (Target age)	Impact
Family Foundations (0-2)	Antisocial-aggressive Behavior, Anxiety, Conduct Problems, Depression, Externalizing, Internalizing, Prosocial with Peers
Nurse-Family Partnership (0-2)	<b>Child Maltreatment</b> , Delinquency and Criminal Behavior, Early Cognitive Development, Internalizing, Mental Health - Other, Physical Health and Well-Being, Preschool Communication/Language Development, Reciprocal Parent-Child Warmth
Family Check-up (Toddler Version; 0-2)	<b>Reciprocal Parent-Child Warmth</b> , Conduct Problems, Externalizing, Internalizing,
Triple P System (0-11)	<b>Child Maltreatment</b> , Mental Health, Externalizing Behavior
Incredible Years – Parent (3-11)	<b>Close Relationships with Parents</b> , Antisocial-aggressive Behavior, Conduct Problems, Depression, Externalizing, Internalizing, Positive Social/Prosocial Behavior
Parent Management Training – Oregon Model (3-18)	<b>Coercive Parent-Child Interactions</b> , Antisocial-aggressive Behavior, Conduct Problems, Delinquency and Criminal Behavior, Externalizing, Internalizing
Parent-Child Interaction Therapy (PCIT; 3-11)	<b>Child Maltreatment</b> , Antisocial-aggressive Behavior, Conduct Problems
New Beginnings (For children of divorce; 5-18)	<b>Antisocial-aggressive Behavior</b> , Close Relationships with Parents, <b>Externalizing</b> , Internalizing, Mental Health - Other, Reciprocal Parent-Child Warmth, Sexual Risk Behaviors



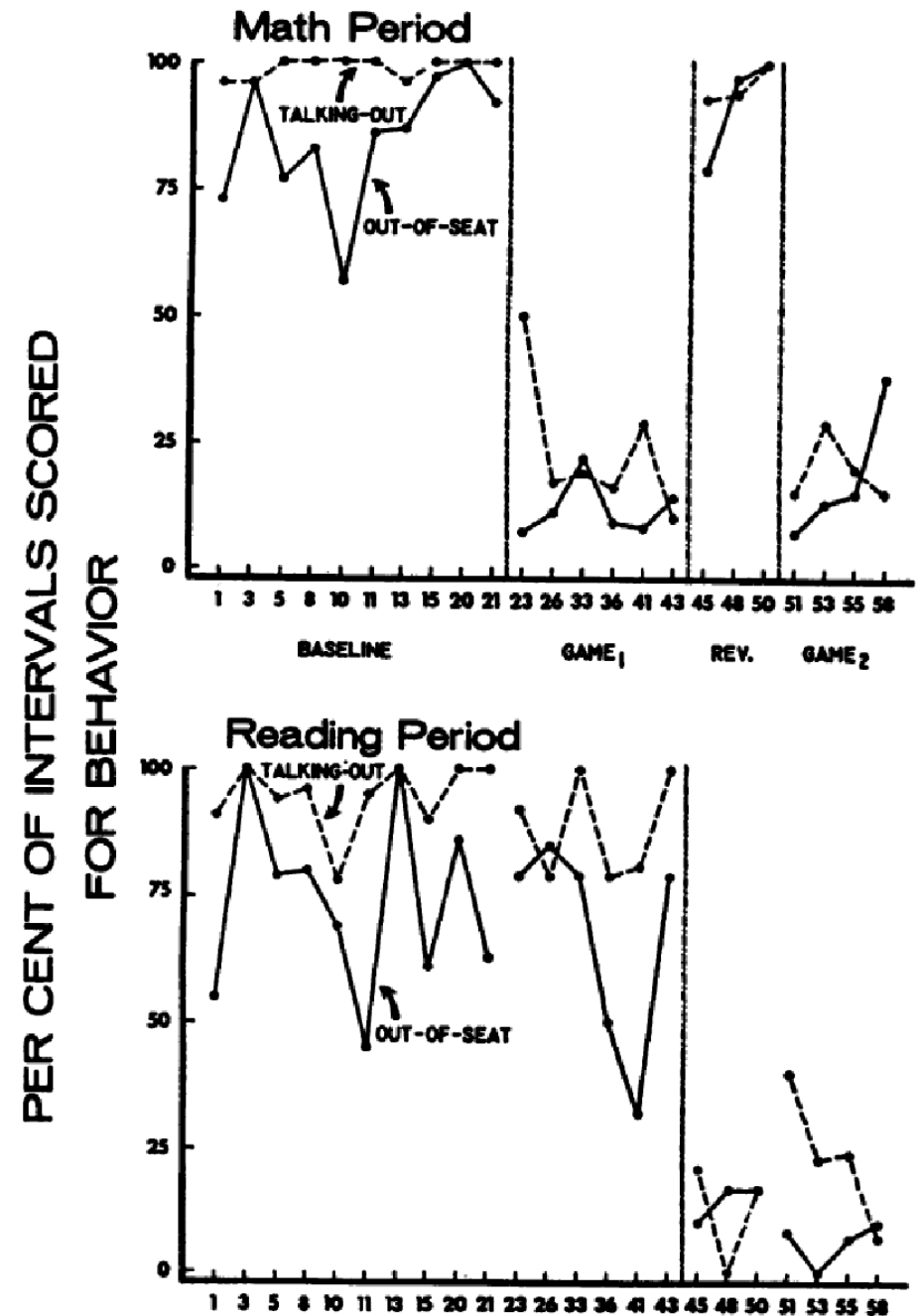
# Evidence-Based Family Interventions through the Lifespan

Program (Target age)	Impact
Strong African American Families Program (5-11)	Alcohol, <b>Close Relationships with Parents</b> , Delinquency and Criminal Behavior, Truancy - School Attendance, Prevention of CVD Risk
Strengthening Families (10-14)	<b>Child Abuse</b> , Alcohol, Antisocial-aggressive Behavior, Close Relationships with Parents, Illicit Drug Use, Internalizing, Tobacco
EFFEKT (12-14)	<b>Positive Parenting</b> , Alcohol, Delinquency and Criminal Behavior
Familias Unidas Preventive Intervention (12-18)	<b>Family Functioning</b> , Externalizing, Illicit Drug Use, Sexual Risk Behaviors
Guiding Good Choices (12-14)	<b>Enhanced Family Bonding</b> , Alcohol, Delinquency and Criminal Behavior, Depression, Illicit Drug Use
<b>Positive Family Support – Family Check-up (12-14)</b>	<b>Enhanced Family Relationships</b> , Alcohol, Depression, Sexual Risk Behaviors, Tobacco, Delinquency
Functional Family Therapy (FFT; 12-18)	<b>Child Abuse</b> , Delinquency and Criminal Behavior, Illicit Drug Use
Multisystemic Therapy – Problem Sexual Behavior (MST-PSB; 12-18)	<b>Child Neglect and Parental Stress</b> , Academic Performance, Adult Crime, Delinquency and Criminal Behavior, Illicit Drug Use, Mental Health - Other, Prosocial with Peers, Sexual Risk Behaviors, <b>Sexual Violence</b>

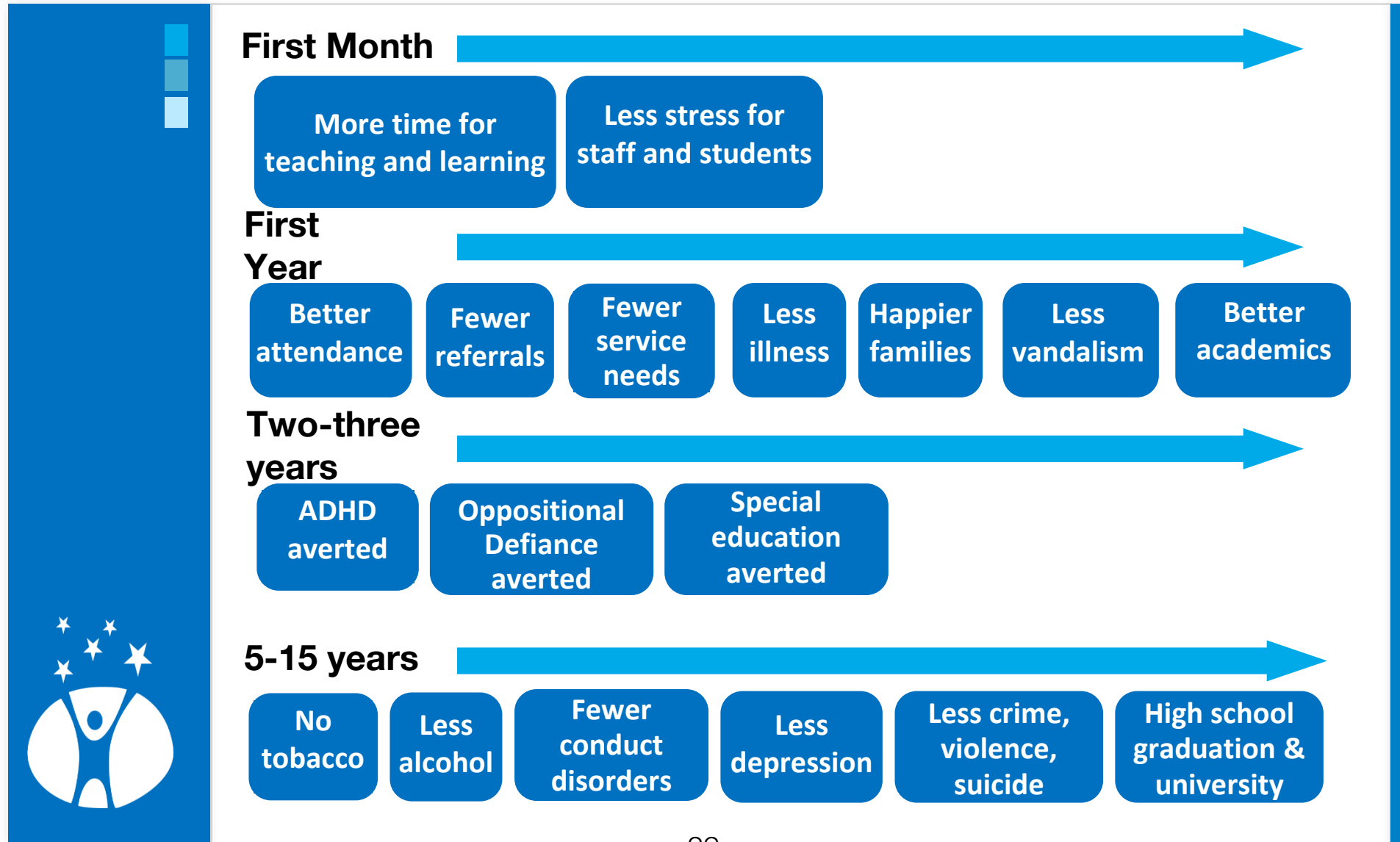


# The Good Behavior Game: Effects of Reinforcement for Non-Disruptive Behavior In Schools

Barrish, H.H., M. Saunders, and M.M. Wolf, *Good behavior game: Effects of individual contingencies for group consequences on disruptive behavior in a classroom*. Journal of Applied Behavior Analysis, 1969. 2(2): p. 119-124.



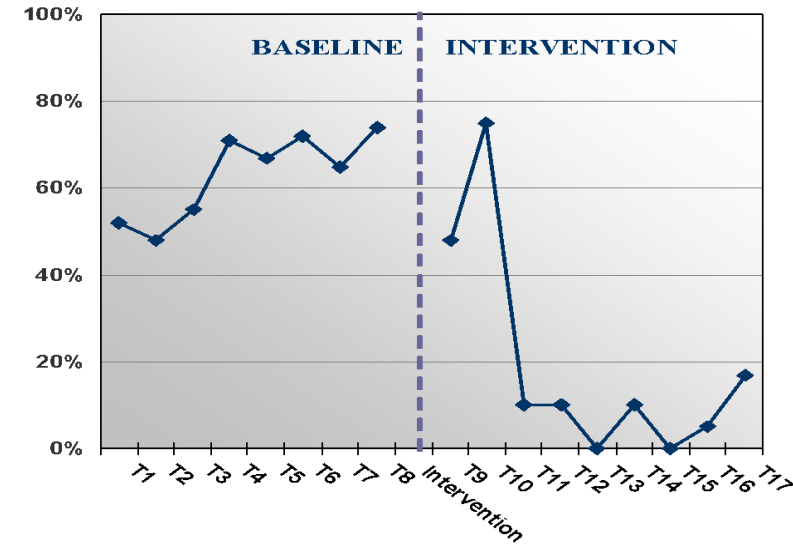
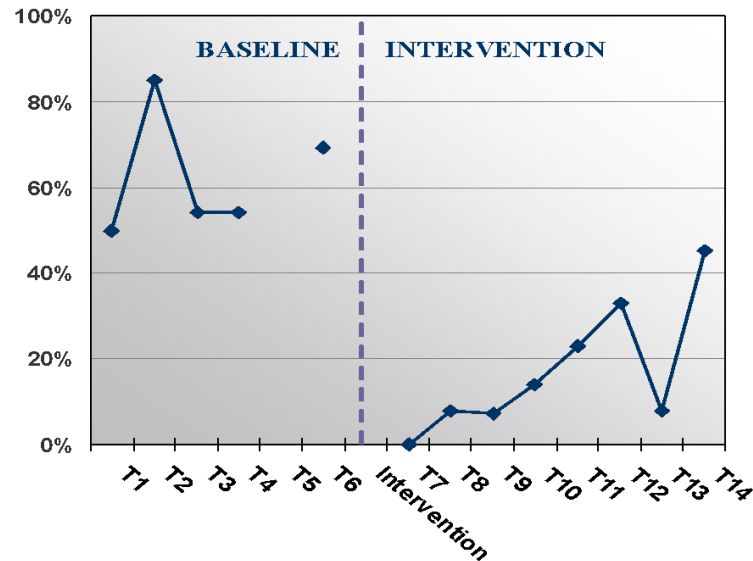
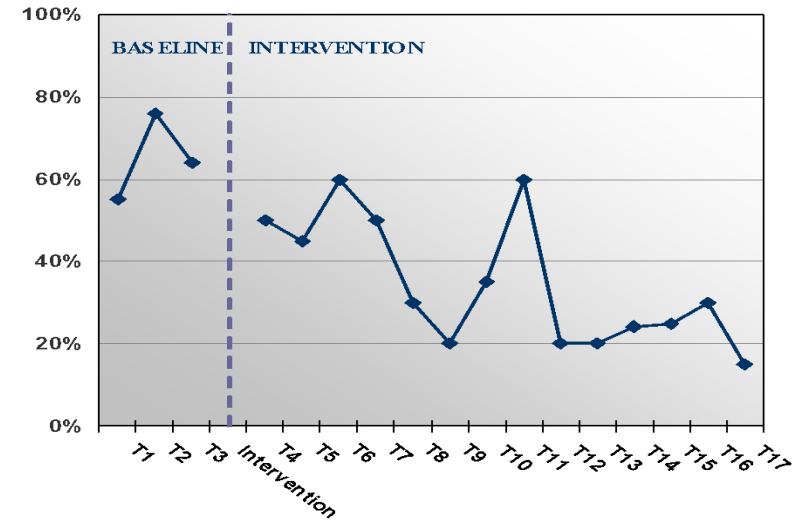
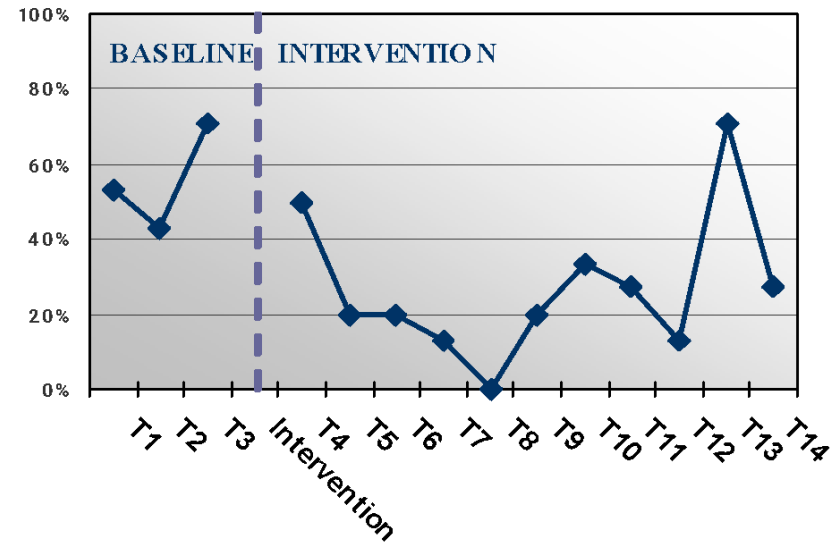
# Benefits of the Good Behavior Game

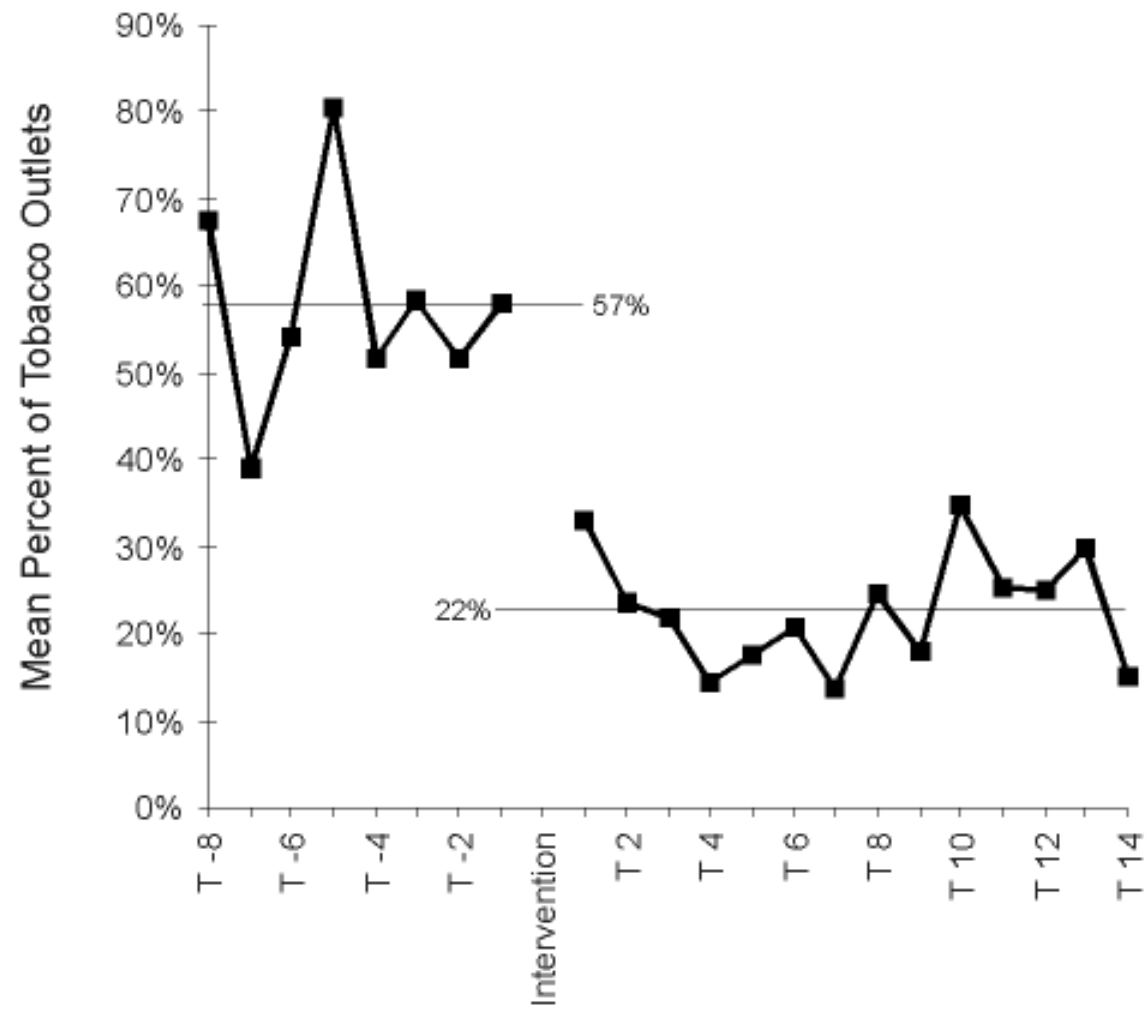


THE POTENTIAL OF MULTIPLE BASELINE  
DESIGNS TO IDENTIFY LARGE CHANGES THAT  
CAN AFFECT POPULATIONS EVEN IN THE  
ABSENCE OF RCTs



# Reduction of Youth Access to Tobacco in Four Oregon Communities

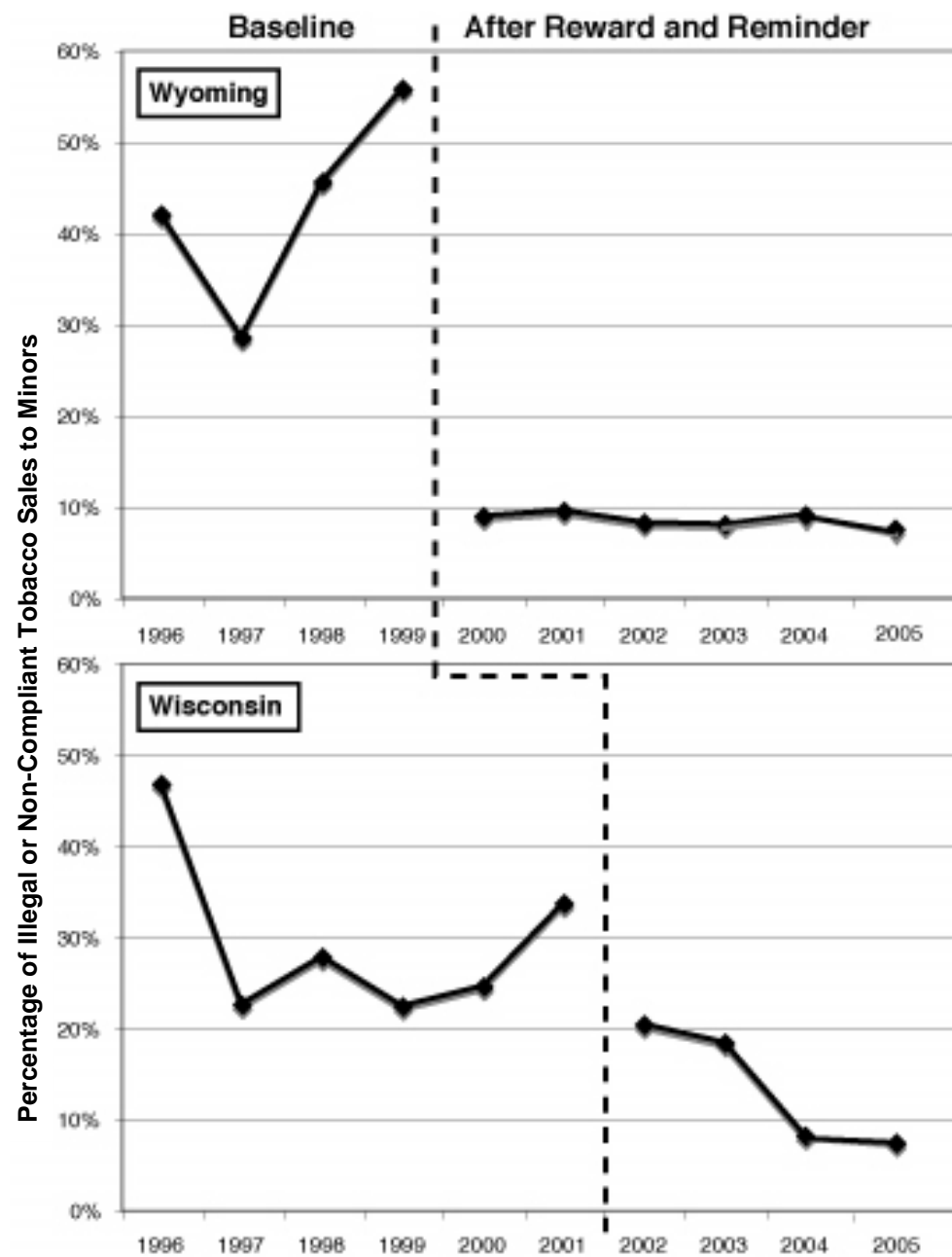




Mean percent of tobacco outlets in eight communities willing to sell tobacco to minors







# Community Intervention Trial for Smoking Cessation: COMMIT

- Randomized trial of a community intervention to reduce smoking among heavy smokers.
- Eleven pairs of communities
- Cost was about \$100 million
- At four years, no difference in smoking rates among heavy smokers.
- Was a small effect for light to moderate smokers.



# A Better Strategy

- Develop each component in a series of communities.
- For example: Physician advice
- Implement a set of tested components in a series of communities over time.
- RCT if you can get effects in that series.



# Many of the areas of research that are vital to progress do not yet have nomothetic principles

- The variables that influence adoption and implementation of programs and policies
  - Tabak et al., identified 61 models.\*
- The variables that influence communities to improve community member health and wellbeing
- Strategies for reducing police violence
- Strategies for reducing conflict in communities

\* Tabak RG, Khoong EC, Chambers DA, Brownson RC. Bridging research and practice: models for dissemination and implementation research. *American journal of preventive medicine*. 2012;43(3):337-350.



# MB Designs Are Useful in

- Any situation where you have a time-series the level or slope of which is expected to change as a function of a strategy, policy, or program.
  - Sales of sugar sweetened beverages
  - Sales of Alcohol
  - Rates of child abuse or neglect
  - Unemployment rate
  - Assaults
  - Murder
  - Delinquent acts
  - Contributions to nonprofits working for policy changes
  - Graduation rates







# ACTION CIRCLES

# The Action Circle Proposition

- If your troubled by the state of things in your community
- If you don't see how you could make a difference
- If you are unwilling to give up your work, your education, your family and your recreation to try to make a difference...
- Action Circles give you a way to contribute.





# Action Circles

- Consist of 8 to 12 people who agree to work toward a very specific and delimited goal that can be a building block for further progress.
- Rather than trying to take on a huge task, they break our problems down into small steps, each of which makes a concrete contribution to addressing a larger problem.
- Members agree to participate for about two months, attending eight meetings and volunteering two to four hours a week to the effort.





# Action Circles Thus Far

- Increasing the use of Evidence-based Social-Emotional Learning in Schools.
- Increasing the use of Effective Reading Instruction
- Increasing Prosocial Values, Norms, and Behaviors in Communities
- Increasing Availability of Behaviorally Skilled Personnel in Healthcare
- Reforming Juvenile Justice in Your Community
- Regulating Harmful Marketing
- Reducing Greenhouse Gas Emissions
- A National Plan for Reducing Child Abuse and Neglect



<https://www.valuestoaction.org/actioncircles>

# Excessive and Underage Alcohol Consumption

- Document the extent of the problem.
- Identify evidence-based policies that could be implemented at the community level.
- Get data on barriers and facilitators of policy adoption.
- Identify the influentials and organizations that might be persuaded to support a policy.
- Develop an Advocacy Plan.
- Create the Next Action Circle to implement the plan.



# Generic Features of ACs working to Improve Community Wellbeing

- Compose a cross section of people who wish to improve wellbeing in the community.
- Identify a risk that is an omnifactor affecting a wide range of problems.
- Identify policies and practices that have proven benefit in affecting that risk factor.
- Identify influentials and organizations that might support the policy or program objective and enlist their support.
- Develop an advocacy plan.
- Create one or more Action Circles to implement the plan.



# In sum

- The Compass Initiative has the potential to bring about population change and a reduction in disparities that could drive a social movement.
- However, this work will require experimental evaluations.
- Much of the experimentation will require multiple baseline designs that pinpoint generalizable principles that could enable randomized trials.
- However, the results of MBDs may often support applications to multiple communities or states even in the absence of RCTs.



# For Further Information

- [tony@ori.org](mailto:tony@ori.org)
- Values to Action
- <https://www.valuestoaction.org/actioncircles>



# Reference on Health Disparities

- Cunningham, Lu, H., Eke, P. I., & Giles, W. Vital signs: Racial disparities in ages specific mortality among blacks or African Americans — United States, 1999–2015. *MMWR Morb Mo* <https://www.cdc.gov/mmwr/volumes/66/wr/mm6617e1.htm>
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