



Treating Violence like a Contagious Disease: Gun Violence: What do we know? What can Physicians do?



Dr. Rex Archer, MD, MPH, *Director of Health*







**AXIS OF
POWER/INFLUENCE
Nonviolent Persuasion**

****Values, Religious
Wisdom, or Philosophy**

**Radicality
Of God****

**Retributive Justice
(Punishment)**

**AXIS OF
JUSTICE**

WORLDVIEW
Mental Models

**AXIS OF
JUSTICE**

**Contributive/Distributive
And Restorative
(Social) Justice**

**Normalcy of
Civilization***

**AXIS OF
POWER/INFLUENCE
Violent Force**

***History/Cultural Norms,
Political/Military/Industrial
Economic Complex**

Socio-Ecological (society)



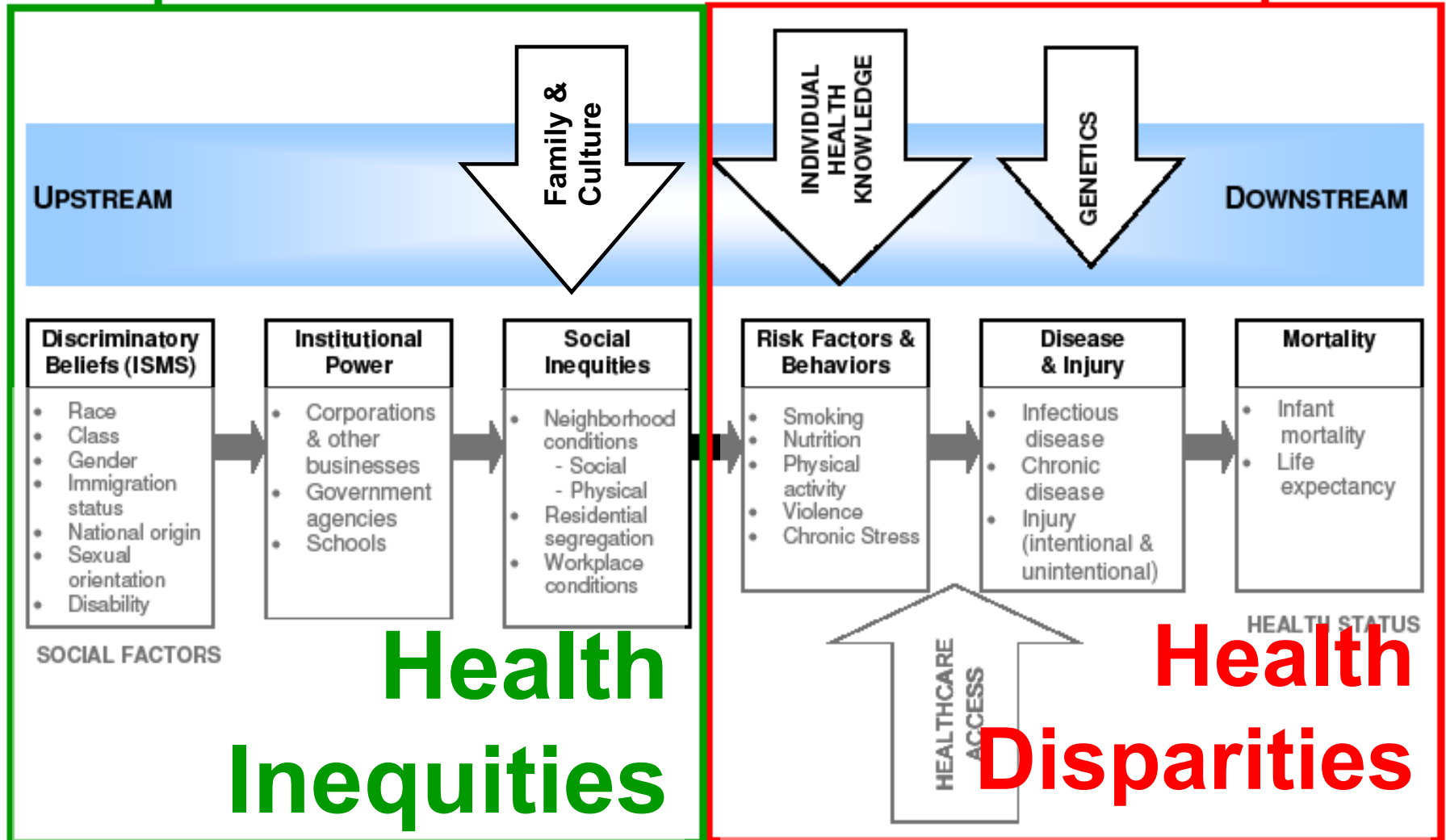
Medical Model (individuals)



A Framework for Health Equity

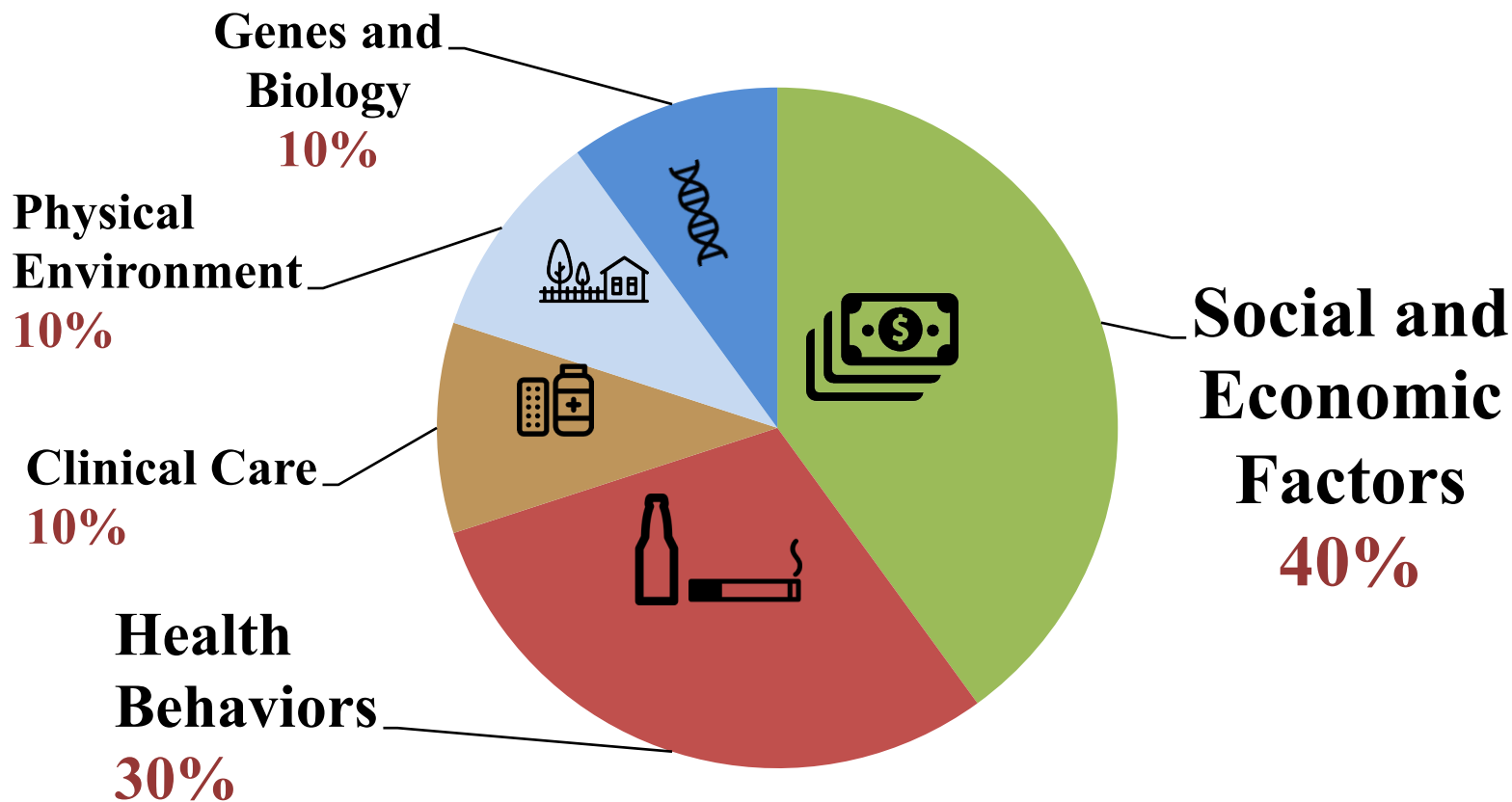
Socio-Ecological

Medical Model



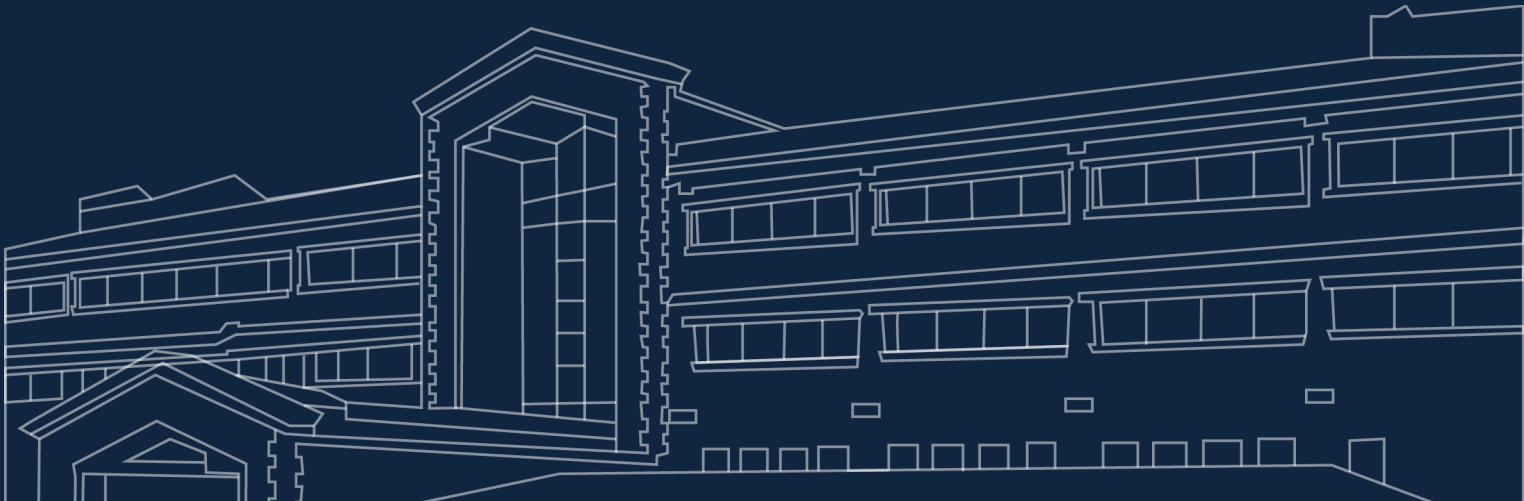
WHAT CREATES HEALTH?

what are the Determinants of Health?



Punishment theory

Everything theory



Public Health

The everything theory

dysfunctional communities

poverty

poor schools

family & mental disorders

racism

absent fathers

broken homes

lead exposure

and more...

SCIENTIFIC APPROACH

New Understanding



1. Violence behaves like a *contagious disease (epidemic)*
2. *Treating* violence like an epidemic gets *results* in communities



plague

typhus

leprosy

smallpox

cholera

yellow fever



Old View

Bad People

Enemies

Isolated Incidents

Punishment

Intractable

Healthier View

Learned Behavior

Negative Norms

Contagious Process

Disease Control

Solvable



STOPPING EPIDEMICS

- 1. Interrupt transmission**
- 2. Prevent future spread**
- 3. Change group norms**



TRANSMISSION

Exposure

TB



Exposure

TB



Source: Mullins et al. 2004; Devries et al. 2011

TRANSMISSION OF VIOLENCE

Exposure
Violence



Exposure
Violence



Public Health

Source: Mullins et al. 2004; Devries et al. 2011

African American Youth With Poverty, Crowding, Same Housing Projects



Communicable

Clustering

CONTAGIOUS DISEASE

Epidemic waves

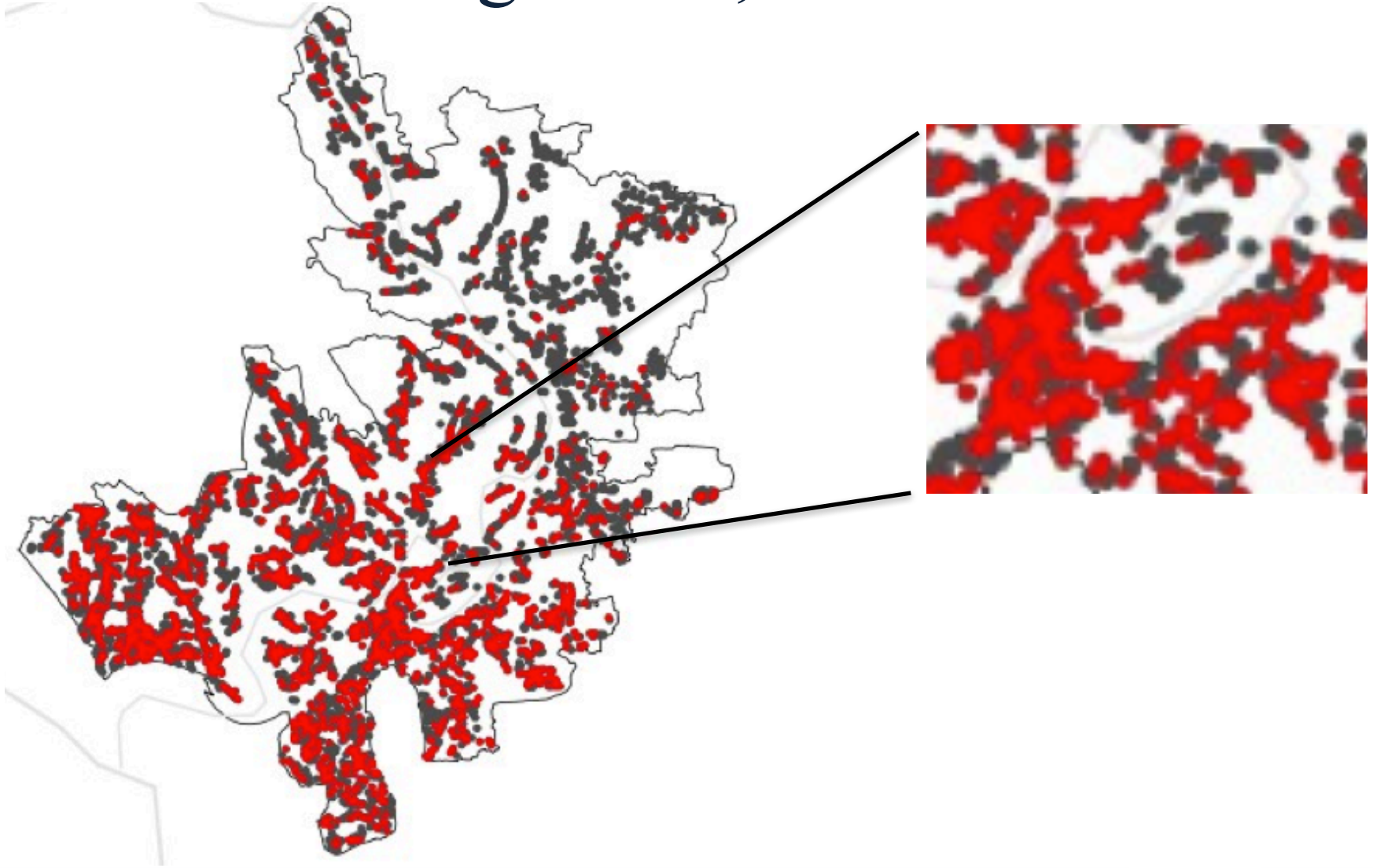
*Population
characteristics*

Transmission



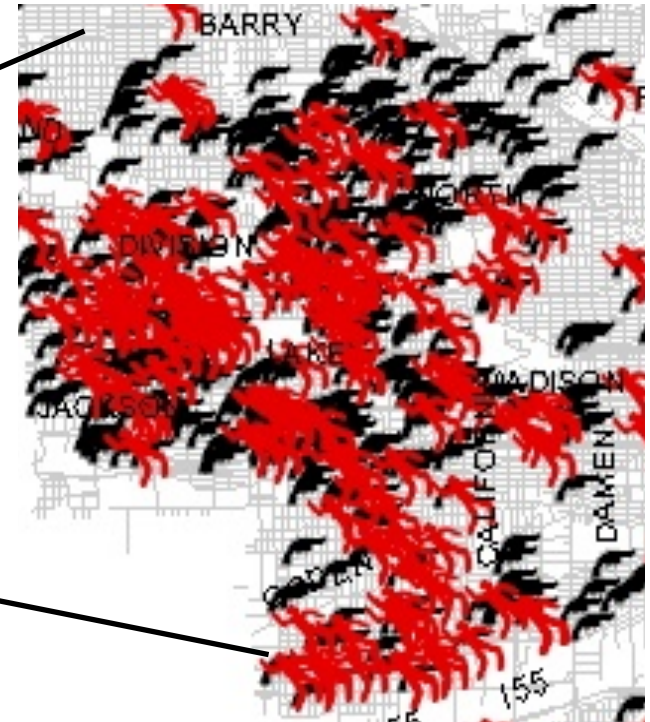
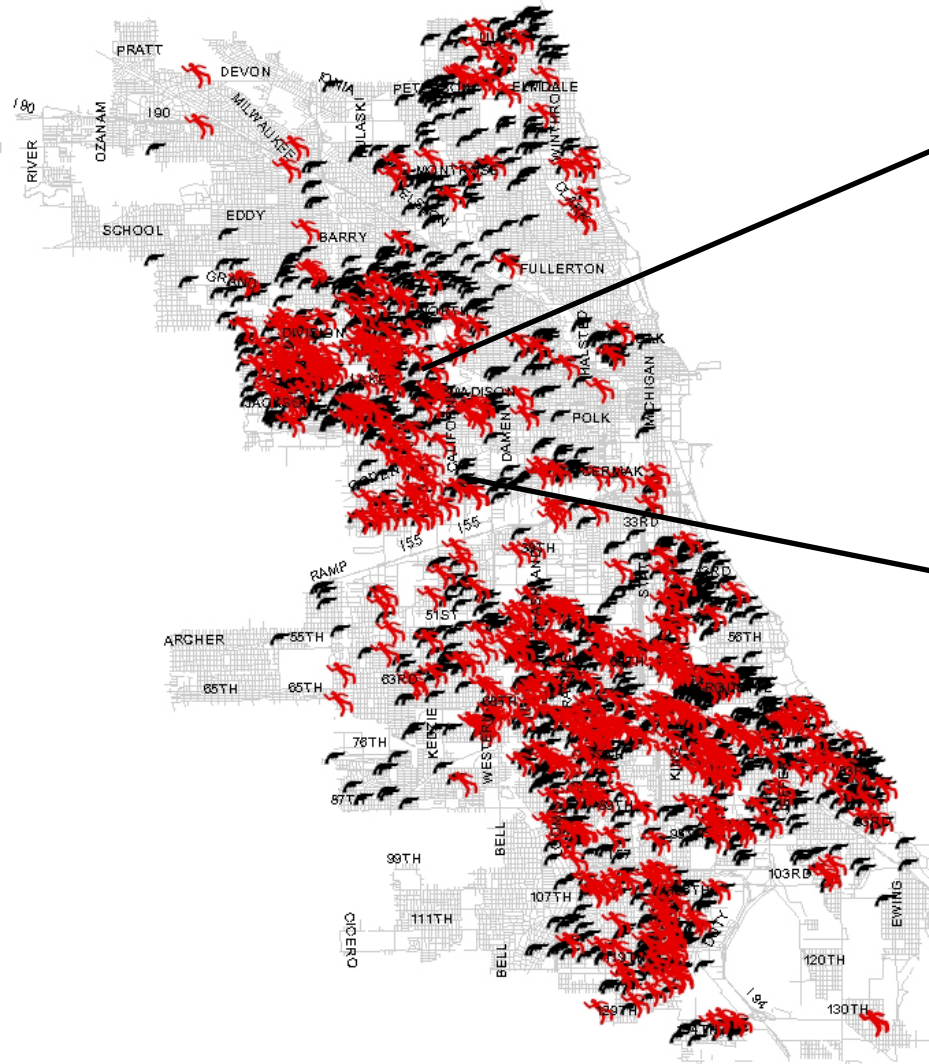
Public Health

Cholera in Bangladesh, 1983-2003

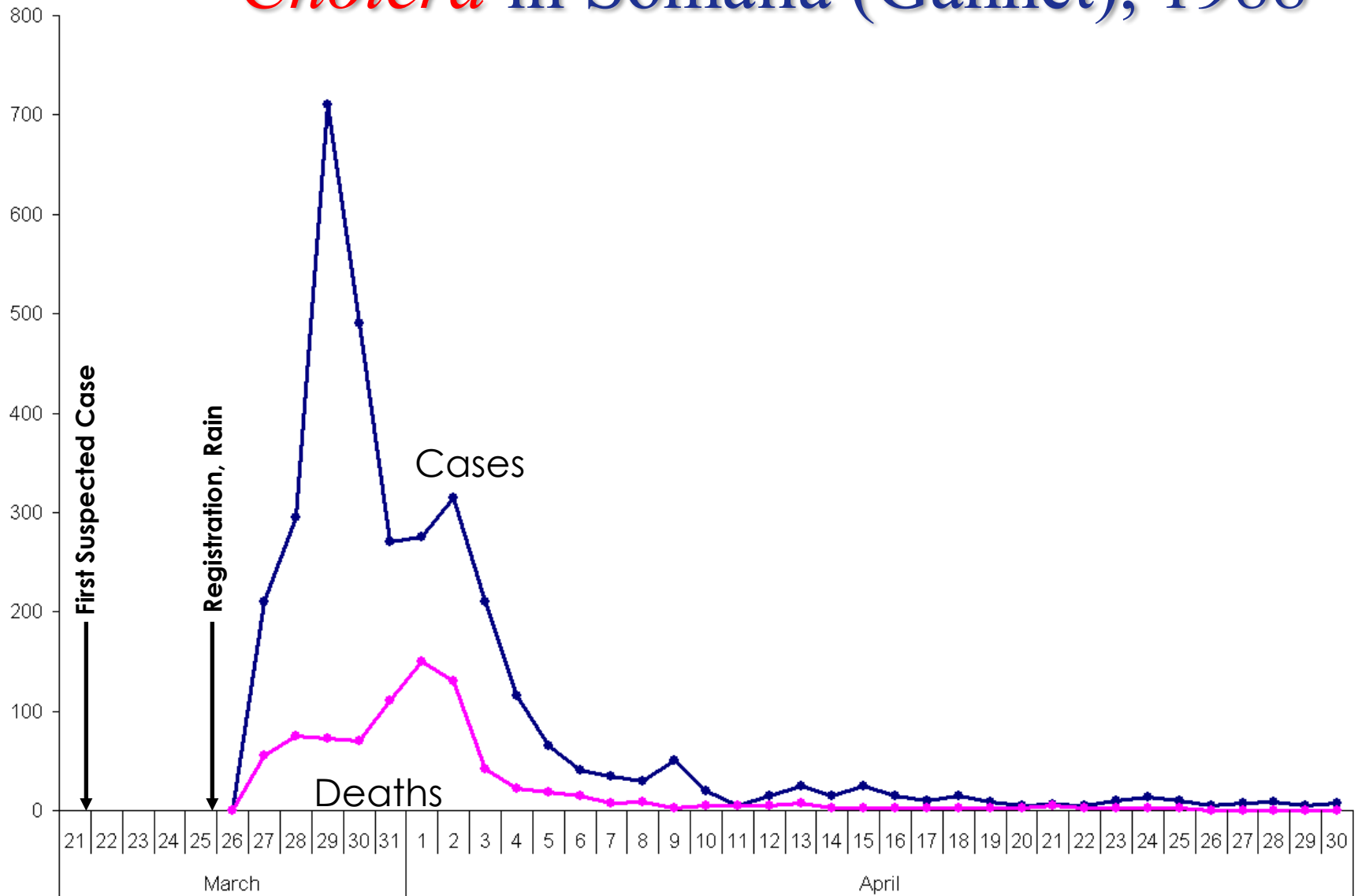


Ruiz- Moreno, 2009

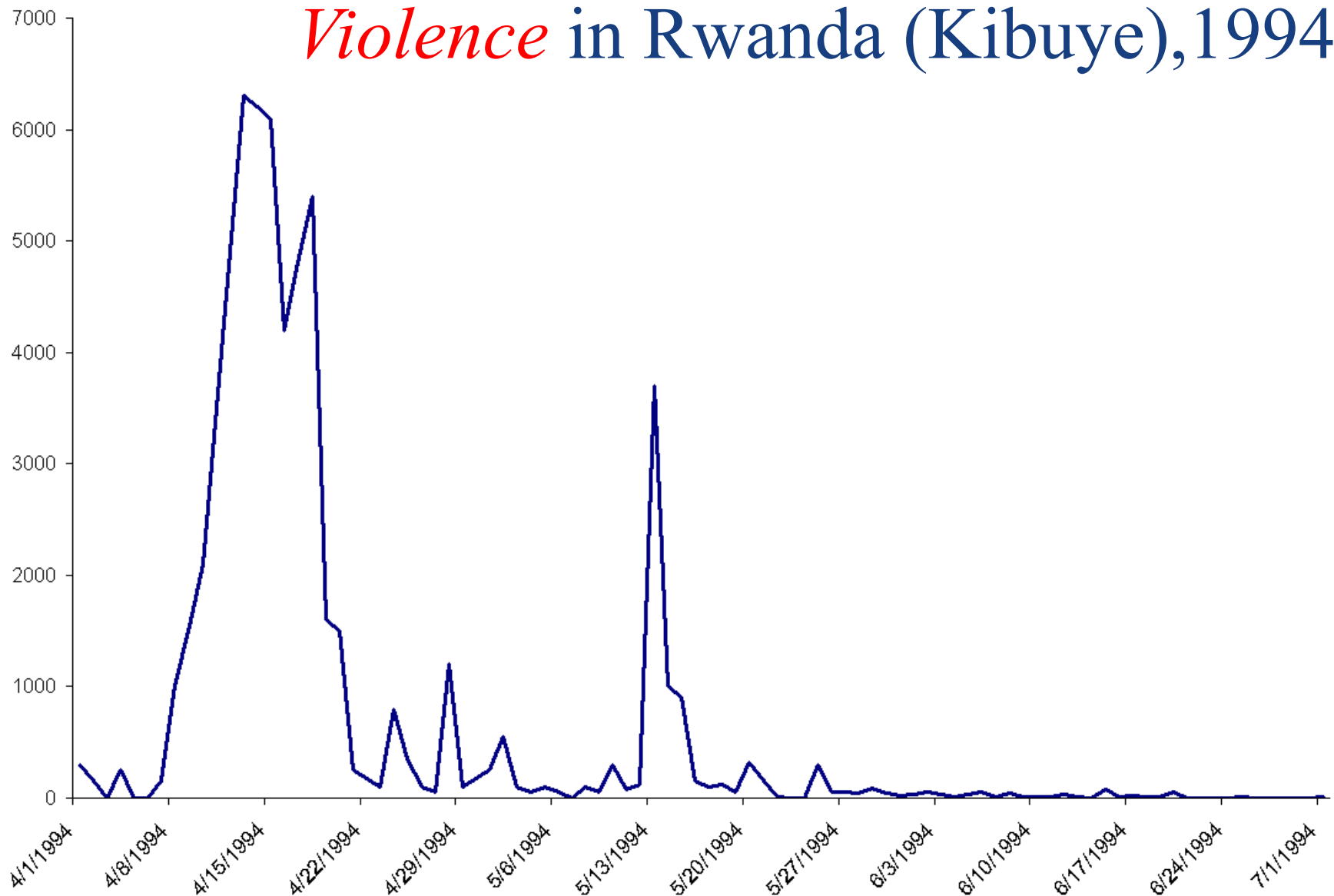
Violence in Chicago, 2010



Cholera in Somalia (Gannet), 1988



Violence in Rwanda (Kibuye), 1994



Spread of Violence, WWI

June 28, 1913 - Assassination of Archduke Franz Ferdinand in Sarajevo, Bosnia



Spread of Violence, WWI

July 28, 1914 - Austria-Hungary declares war on Serbia



Spread of Violence, WWI

July 29, 1914 - Russia enters war to aid Serbia and assert influence in the region



Spread of Violence, WWI

August 1, 1914 - Germany declares war on Russia and France
mobilizes its troops



Spread of Violence, WWI

August 4, 1914 - Britain declares war on Germany



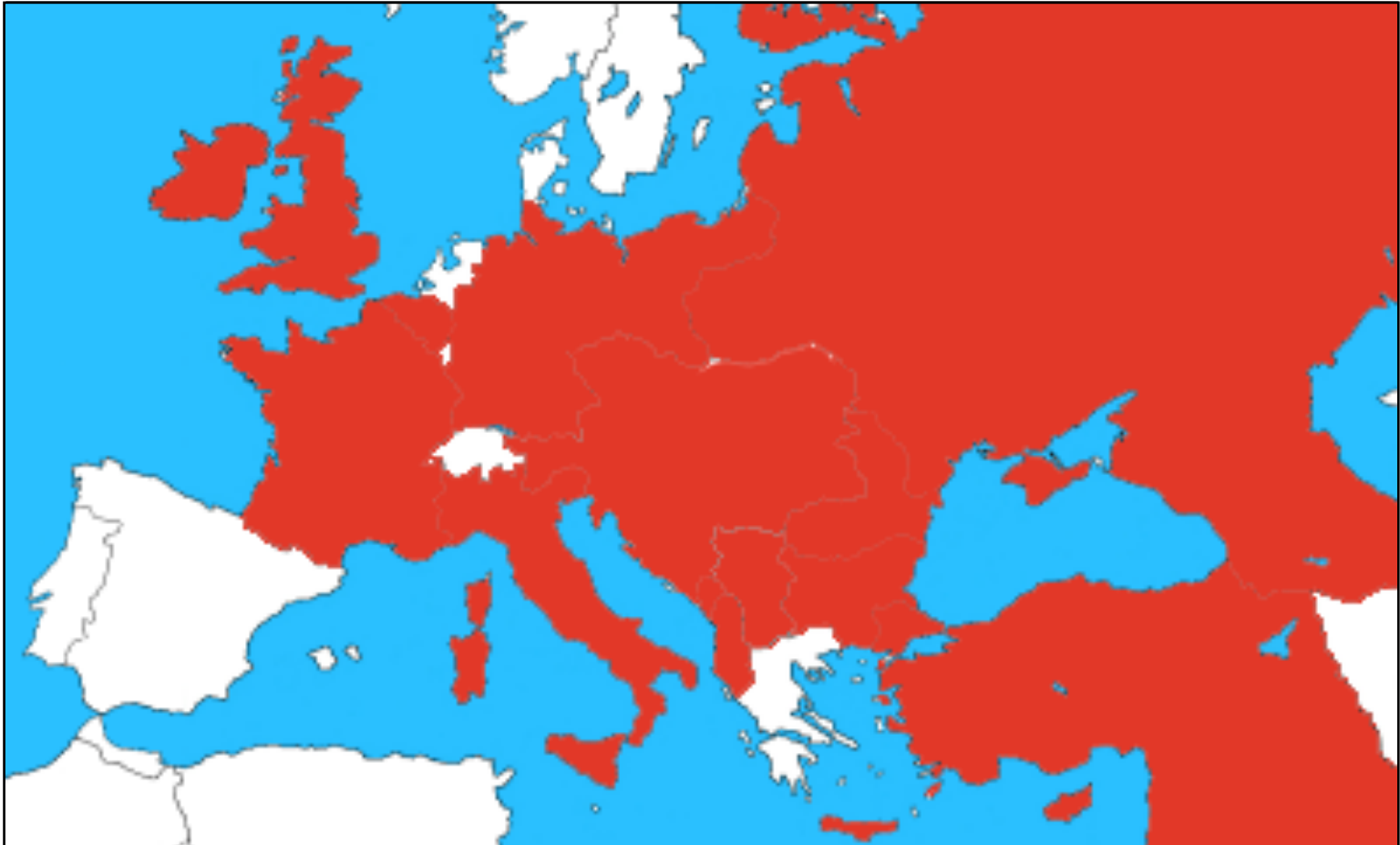
Spread of Violence, WWI

October 29, 1914 - Turkey enters war in aid of Germany



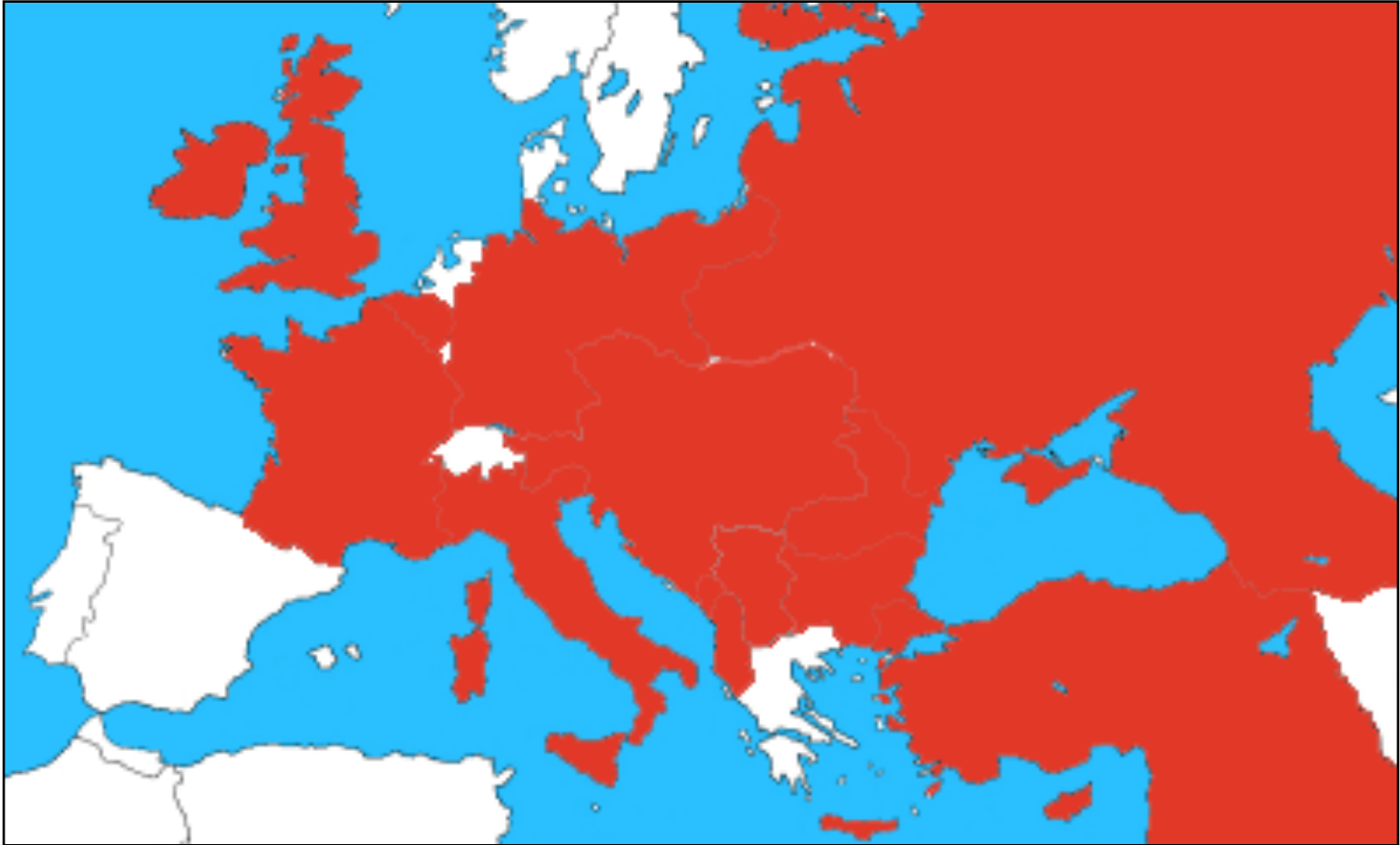
Spread of Violence, WWI

April 15, 1915 - Romania enters the war



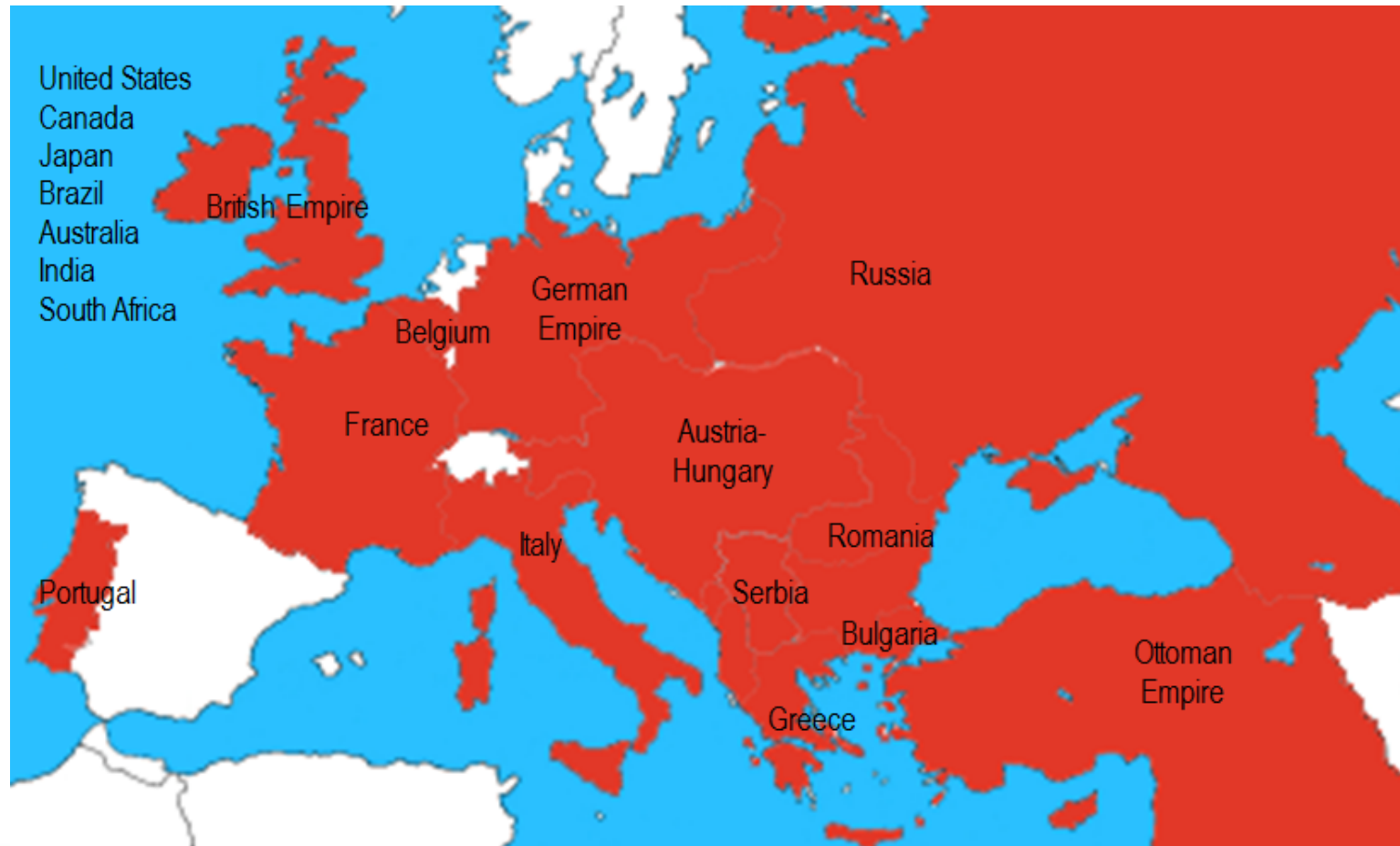
Spread of Violence, WWI

May 23, 1915 - Italy enters the war



Spread of Violence: WWI

June 28, 1914 – November 11, 1918 - Countries directly involved



Spread of Violence, WWI

June 28, 1914 – November 11, 1918



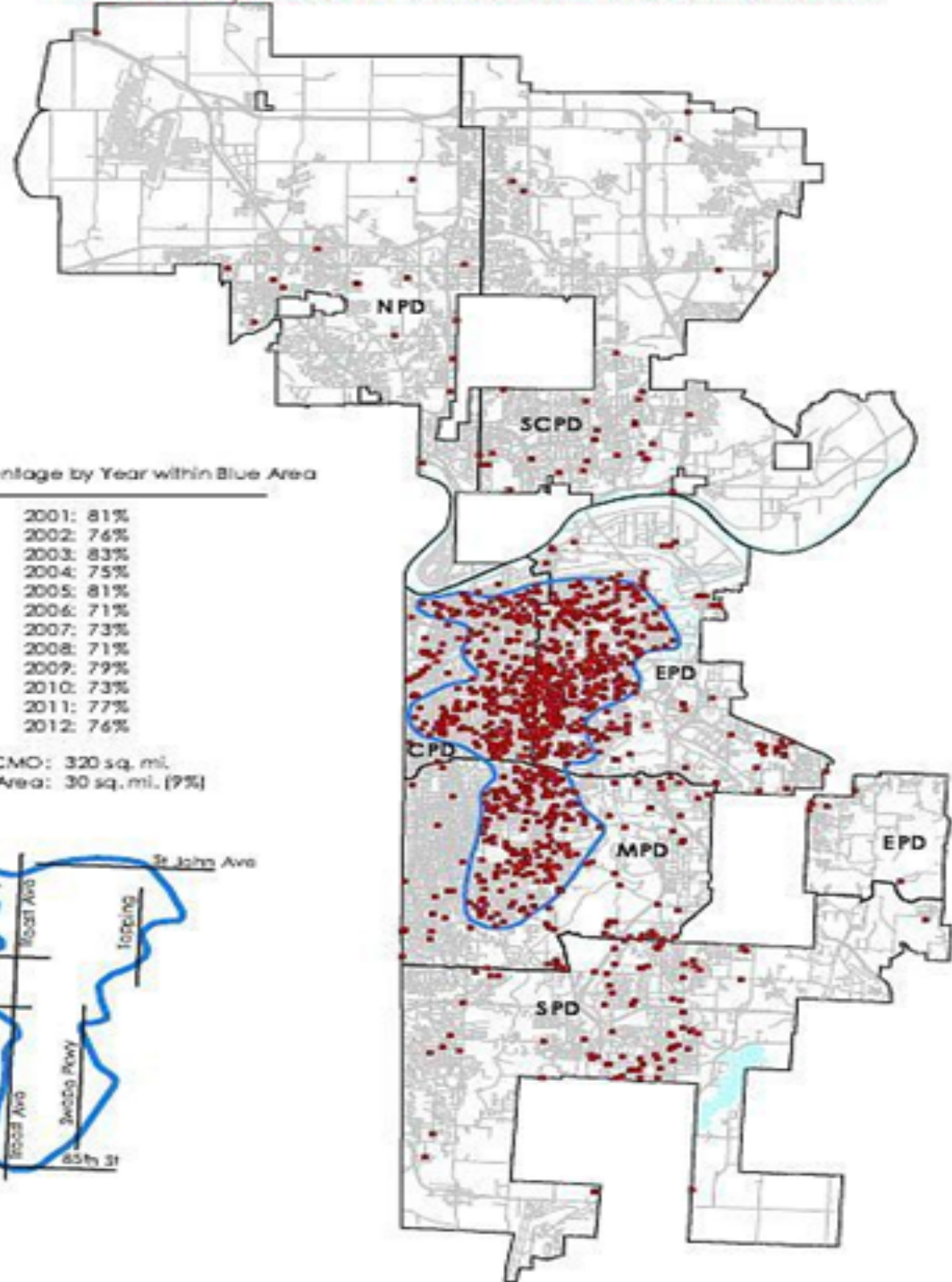
Public Health Framework

Treating
Violence
like a
communicable,
contagious
disease

Homicide Percentage by Year within Blue Area

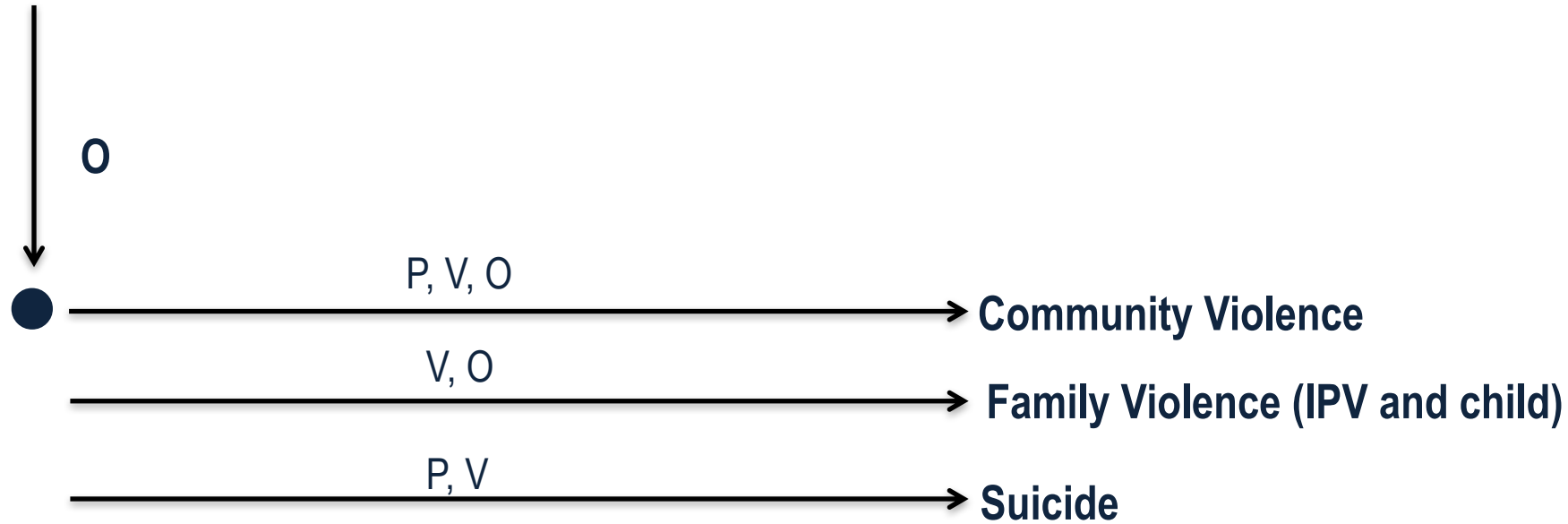
2001:	81%
2002:	76%
2003:	83%
2004:	75%
2005:	81%
2006:	71%
2007:	73%
2008:	71%
2009:	79%
2010:	73%
2011:	77%
2012:	76%

KCMO: 320 sq. mi.
Blue Area: 30 sq. mi. (9%)



Transmission Across Syndromes

Community Violence

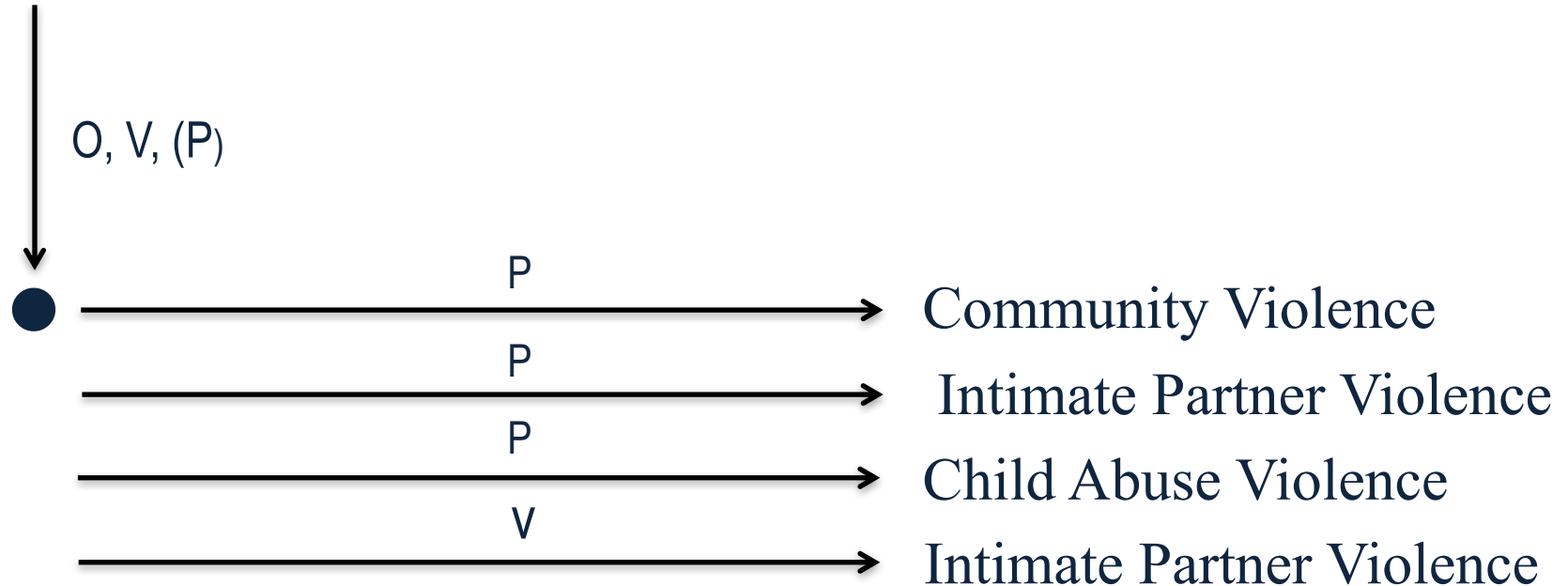


Note: Perpetration for males and females, higher risk for males;

Barkin et al. 2001; Hanson et al. 2006

Transmission Across Syndromes

Ethnic/political
violence (war)



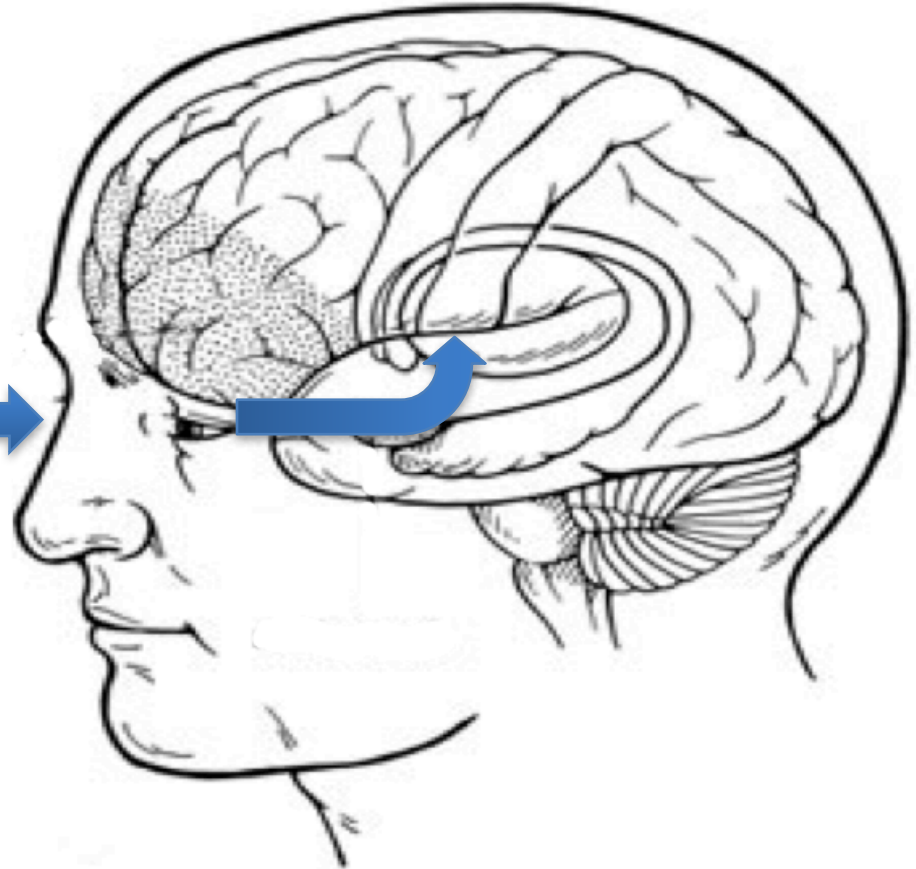
Note: Studies included analysis of post WWI, Vietnam War, and religio-political violence (Israel/Palestine)

Dubow, Huesmann, & Boxer 2009; Archer & Gartner 1976, 1984; Landau 1997, 2003; Landau & Pfeffermann 1998; Al-Krenawi et al. 2007; Clark et al. 2010; Catani et al. 2008

MEANS OF TRANSMISSION

VIOLENCE TRANSMISSION

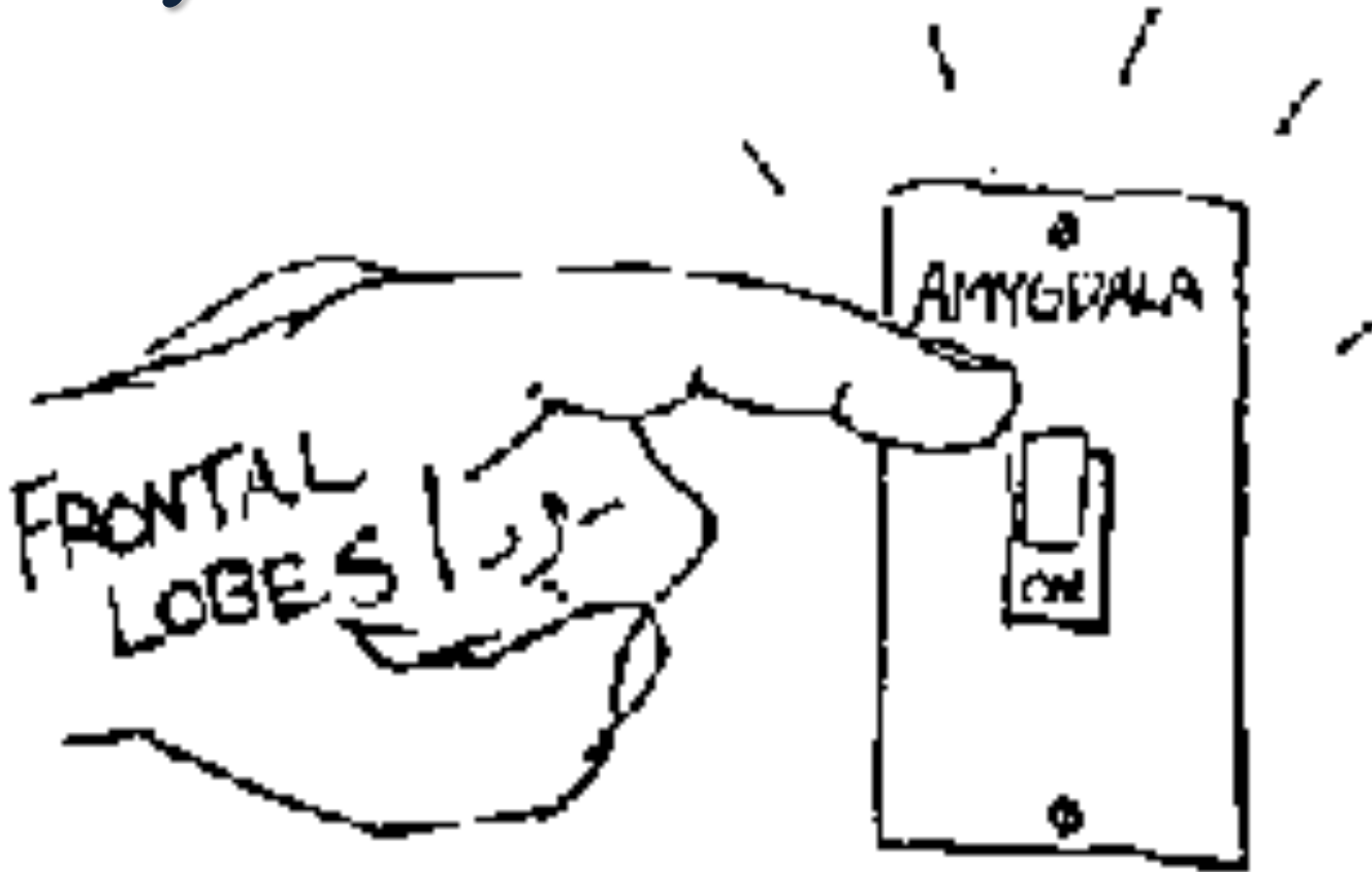
Observing
Witnessing
Trauma



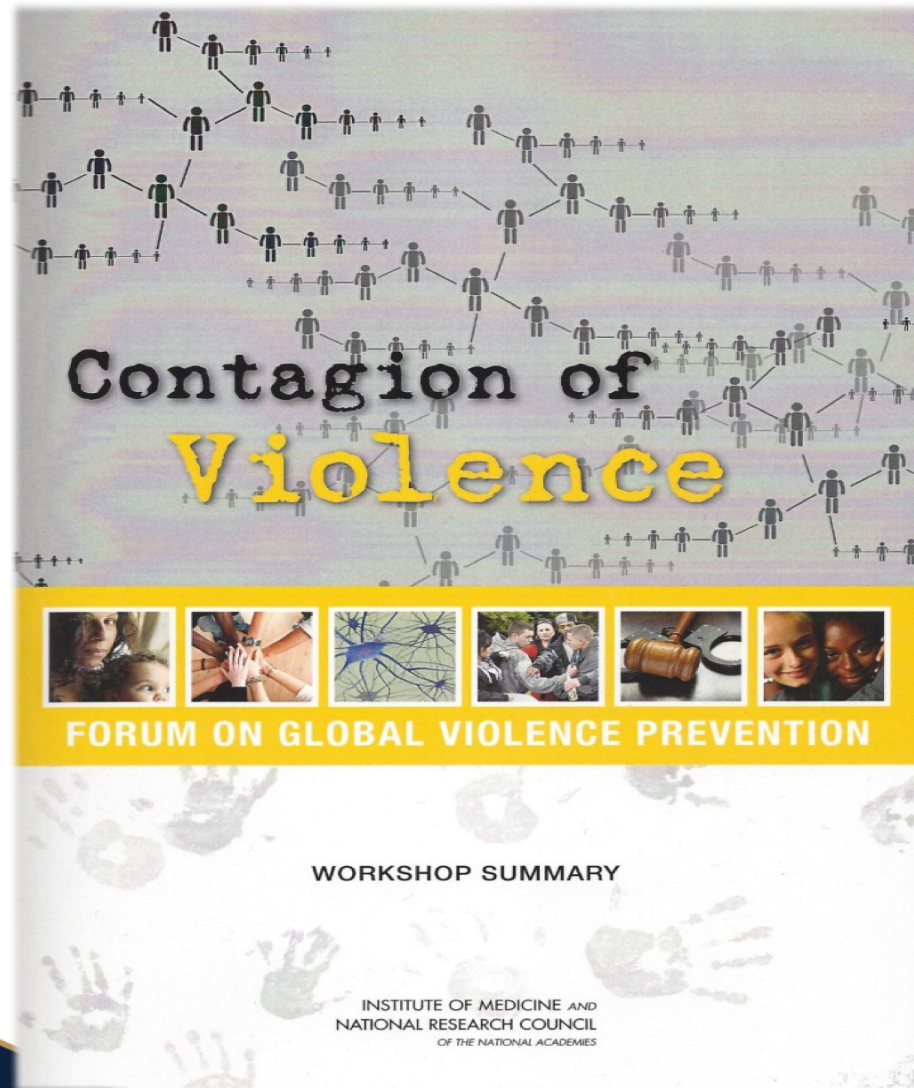
BRAIN PROCESSING

Cortical
Dopamine/Pain centers
Limbic

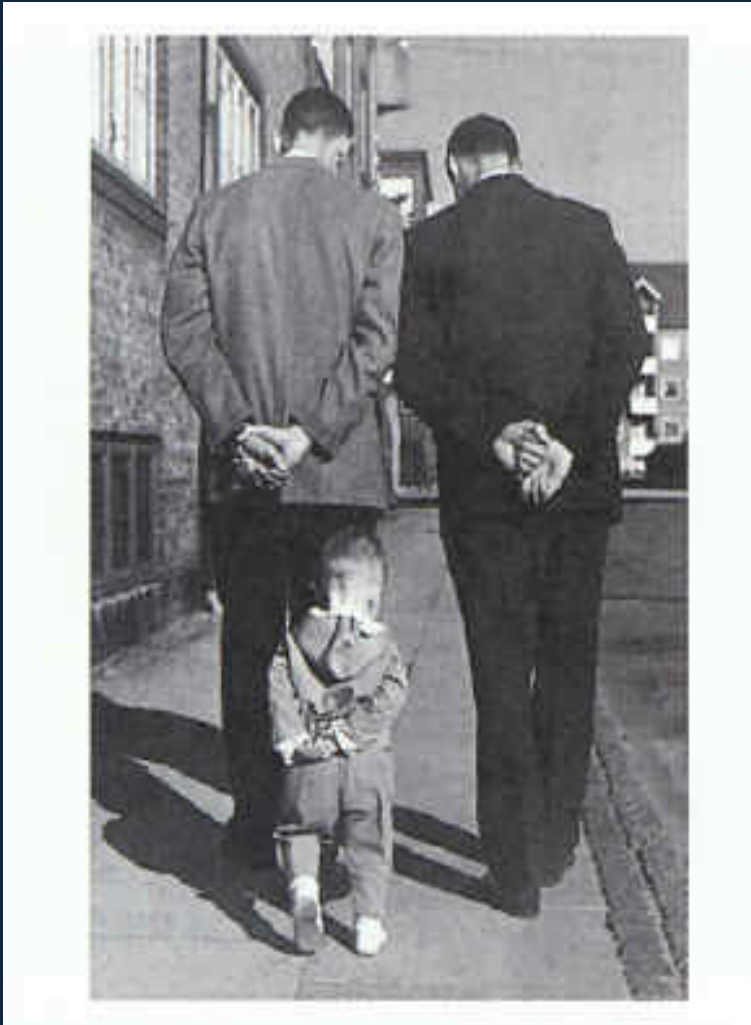
You may have to be the frontal lobe of your friend



Seeing Violence through a Public Health Lens



Behavior: Formation



Modeling:

- Imitation
- Start of infectivity of behaviors

Trial and error:

- Intentional or unintentional
- Consequences
 - Physical
 - Social
- Prediction in future action



New Strategies



- Water and sanitation
 - Hand washing
- Sexual behavior change
 - Immunization
- Impregnated bed nets
 - Mosquito control



New Methods



Early detection

Case finding and therapy

New categories of workers

New systems for disease control

New Language



Exposure

behavior

susceptible

transmission

contagious

social pressure

trauma interruption

behavior change

norm change

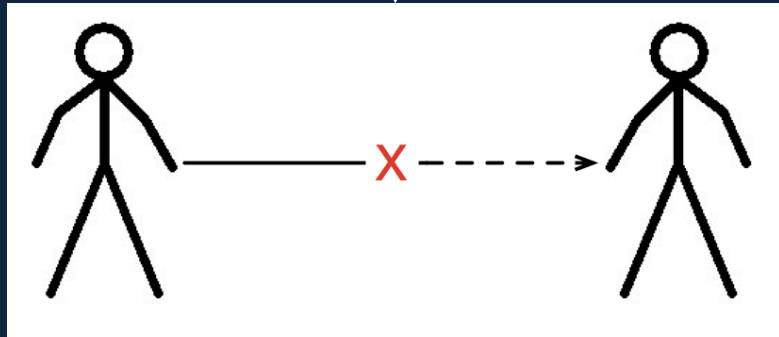


G. Slutkin, 2010



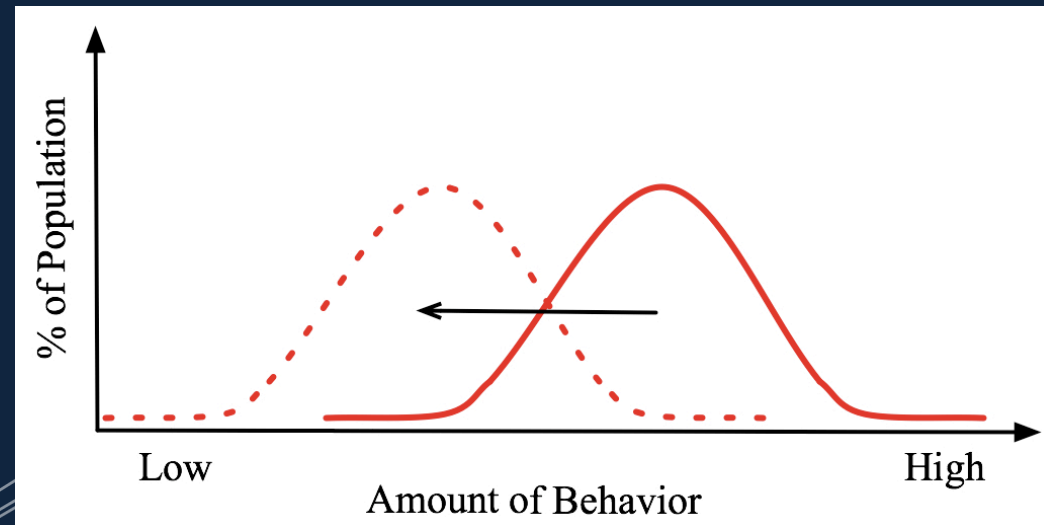
How Are Epidemics Reversed?

1. INTERRUPT
TRANSMISSION



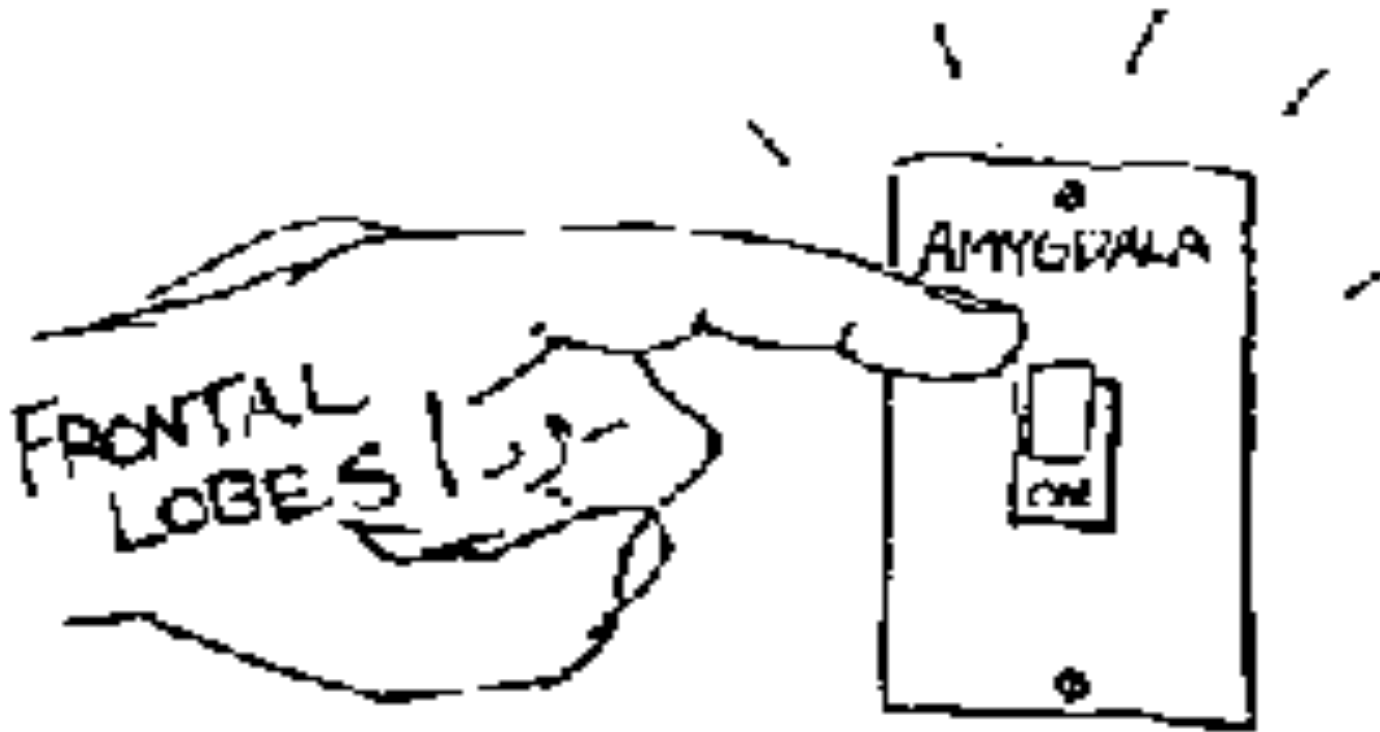
2. BEHAVIOR CHANGE

3. CHANGE
COMMUNITY NORMS



Public Health

Interrupt Transmission: Anger



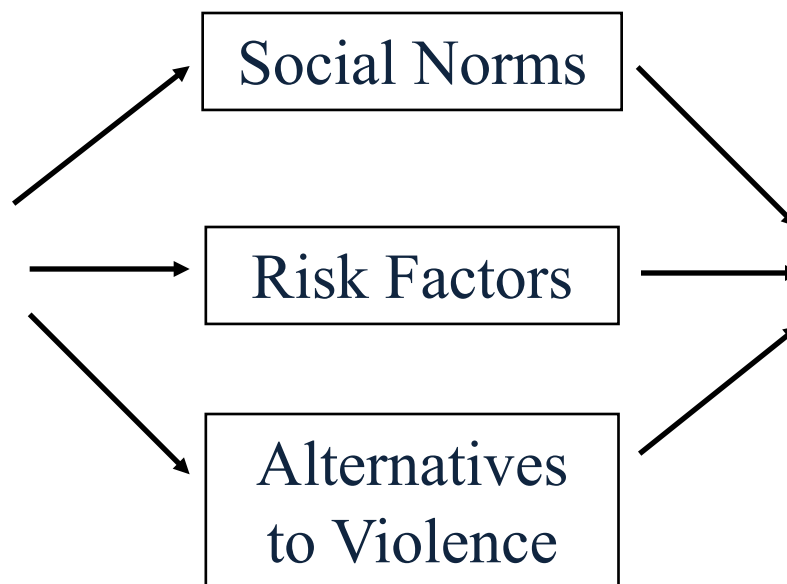
Changing Individual and Group Behaviors



Messengers

- Outreach workers
- Violence interrupters
- Hospital responders
- Program managers
- Peers
- Family members
- Community members
- Faith leaders
- Doctors
- Police
- Champions

The 3 Variables



Behavioral Outcome

No Shooting



HEALTH PROBLEM

Scientifically effective

20 replications;

3 independent evaluations

Less violence – 30-70% drops

Safer neighborhoods



Guns and Kids

Evidence Supporting Physician Counseling on Firearms.



AAP NCJ October 2012



What Else We Know

- Parents are receptive of discussion of risk of guns during pediatric visits (Webster DW,. Pediatrics 1992;89:908-14)
- Anticipatory guidance on safe storage of firearms is likely to result in more guns being safely stored (Barkin SL.et al. Pediatrics 2008;122:e15-e25. McGee KS, Coyne-Beasley T, et al.. Inj Prev 2003;9:108-11; Grossman DC, et al. Am J Public Health. 2012;102(suppl 2): S291-S297)

Child-focused Education

Does it Work?

- Gun Safety Programs
 - Ineffective for injury reduction among adults
 - No effect on safe storage
 - No effect on youth accessing for self harm
- Gun Avoidance Programs
 - Examples: Eddie Eagle (NRA), STOP (AAP)
 - A single, small evaluation demonstrates no effect on pre-schoolers
 - No effect on youth accessing for self harm.

- Hardy. J Dev Behav Pediatr. 2002;23(2):71-76
- Jackman, et al. Pediatrics. 2001;107(6):1247-50
- Himle, et al. Pediatrics 2004;113(1 pt1):70-77.

American Academy of Pediatrics Firearm Injury Prevention Policy 2012

- Pediatricians, as part of their anticipatory guidance with families should inquire about guns in the home and offer most effective child protection strategies
- *Best:* Guns kept out of the environment of children
- *Good:* Guns in the home should be stored safely: guns separate from ammo, both locked.

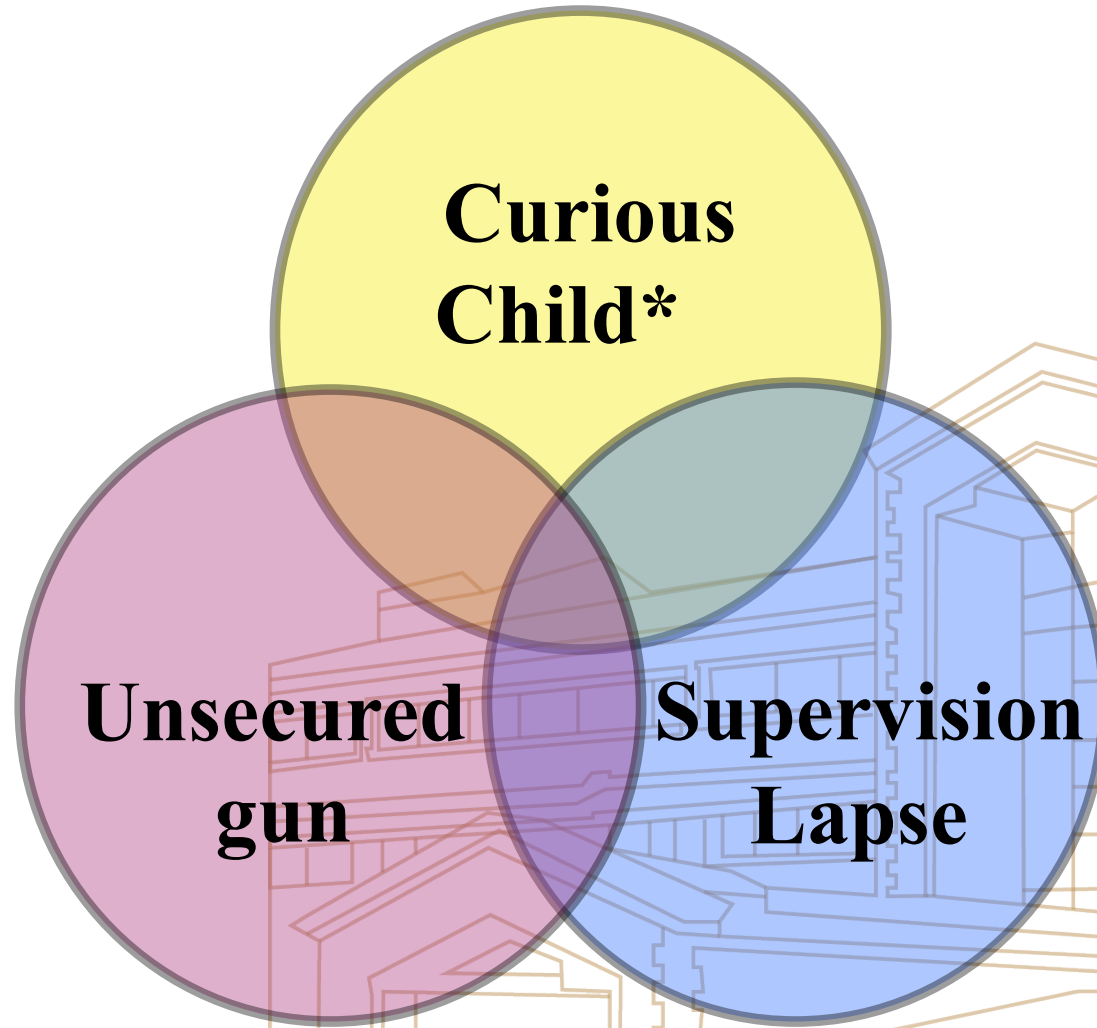
American Academy of Pediatrics Firearm Injury Prevention Policy 2012

- Regulations of guns
 - Child access prevention laws
 - Regulation of manufacture, sales. Waiting periods, closure of gun show loophole, background checks
 - Restoration of assault weapons ban
- Research in firearm injuries , including public health surveillance
- Continued physician education

Child Injury Prevention = *Layers of Protection*

<i>Pool Drowning</i>	<i>Gun Death</i>
Pool fencing	Gun Lock
Supervision	Supervision
Teach child	Teach child

A Perfect Storm



*** or depressed/impulsive teen**

What Can You Do?: Provider

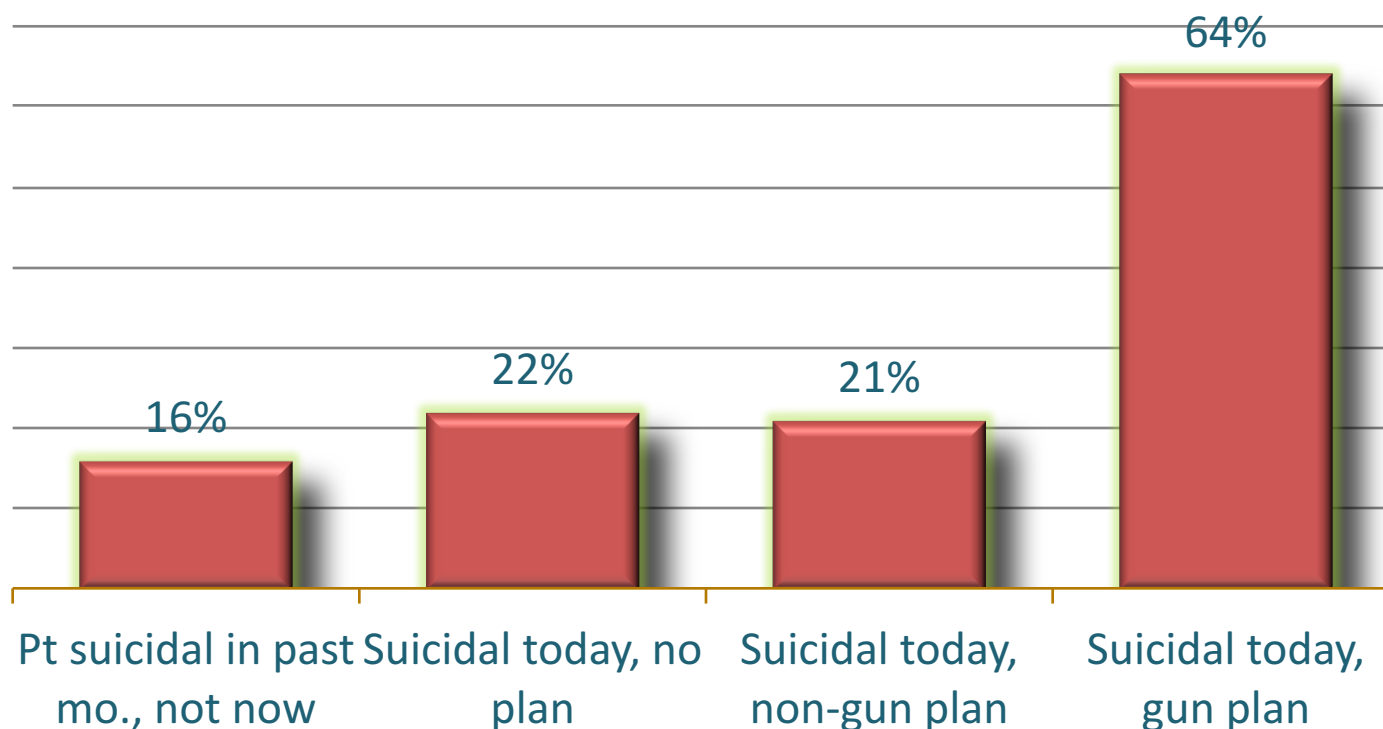
- ASK your families and advise to : keep guns in the home safety secured: unloaded, locked, ammo locked separately; no access to key by kids
- Encourage families to talk to their family, friends, neighbors about the danger of unsecured guns.
- For children with behavioral or mental health issues of concern: advise removal guns from home. This is SAFETY planning!



When Providers Ask about Gun Access



% Reporting they almost always ask



Anonymous survey completed by nurses & physicians at 8 EDs (2010/11). Item prompt says, “I ask if there are firearms at home...” and poses patient scenarios. Response categories are “Almost always,” “Often,” “Sometimes,” “Hardly ever.”

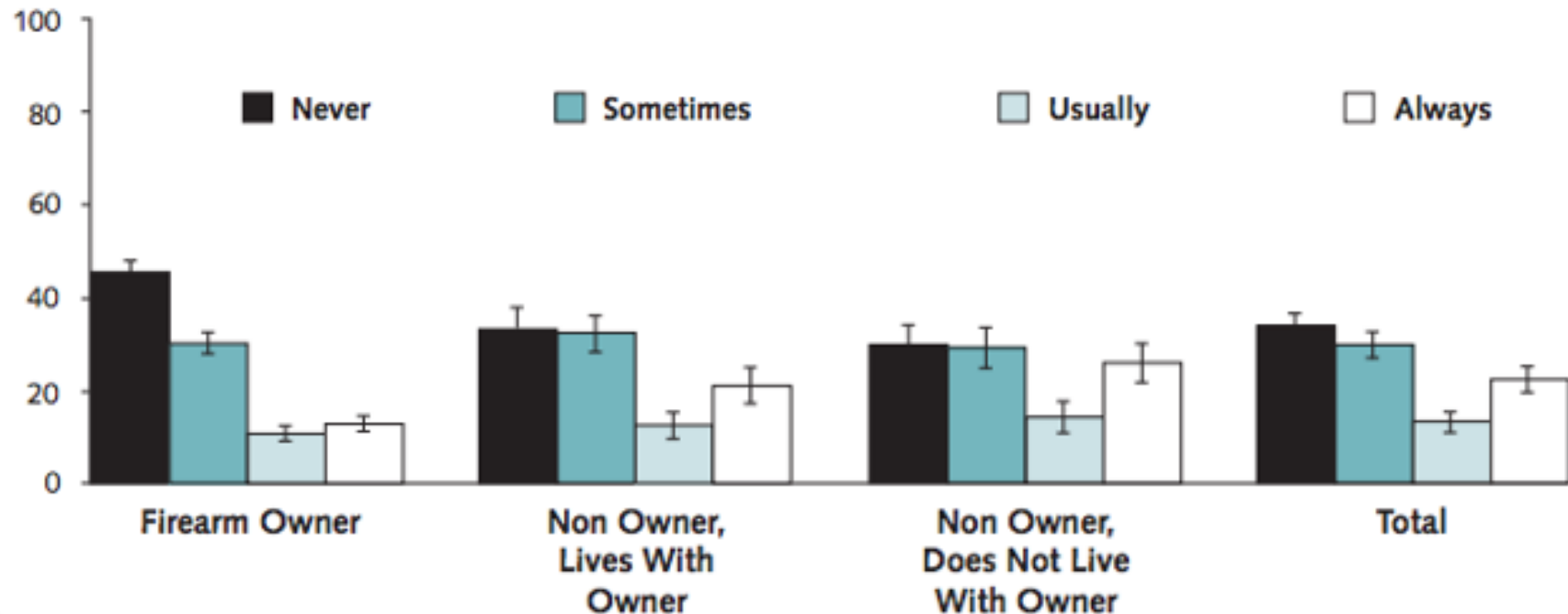
Are we trying hard enough?

Psychiatrists' Practices and Perceptions Regarding Anticipatory Guidance on Firearms

Adult psychiatrists in Ohio Mail Survey

- 45% had never thought seriously about discussing firearm safety issues with patients
- < 1/3 believed anticipatory guidance would result in fewer firearms in patients' homes
- 21% provide AG to suicidal patients

Is it Okay for Doctors to Ask Patients about Firearms?



Marian E. Betz, MD, MPH; Deborah Azrael, PhD; Catherine Barber, MPA; and Matthew Miller, MD, ScD *Ann Intern Med.* July 26, 2016

What Can You Do? Parent

- Keep guns in the home safety secured: unloaded, locked, ammo locked separately; no access to key by kids
- Talk to your family, friends, neighbors about the danger of unsecured guns.
- If you have a family member at home whose state of mind worries you, remove guns from home. Seek mental health for safety planning
- ASK adults about guns in homes where your child visits.

The Final Bill

- Restricted physicians from asking about guns unless “relevant to the medical care or safety of the patient.”
- Allowed patients to report physicians, nurses, and other medical professionals to the Florida Board of Medicine for “harassment”
- Restricted information about firearm ownership into the patient’s medical record if it is not “relevant to the patient’s medical care or safety.”

The Final Bill

–Exceptions

- Patient's safety is at risk
- Psychiatrists and other mental health providers

Passage Imminent

- AAP Connected FPS with Brady Center
- Ropes & Gray agreed to take case pro bono
- Lawsuit filed a week after bill signed



Legal Challenge Timeline

2012

- June 2: Gov. Scott signs bill into law
- June 6: FPS, FL Chapters of AAFP and ACP, along with 6 physicians file suit in federal court
- July 13: Judge hears formal arguments in case
- September 14: Judge Marcia G. Cooke grants preliminary injunction

2014

- July 25: 11th Circuit court upholds the law

Injunction blocking enforcement stands, pending hearing by full court

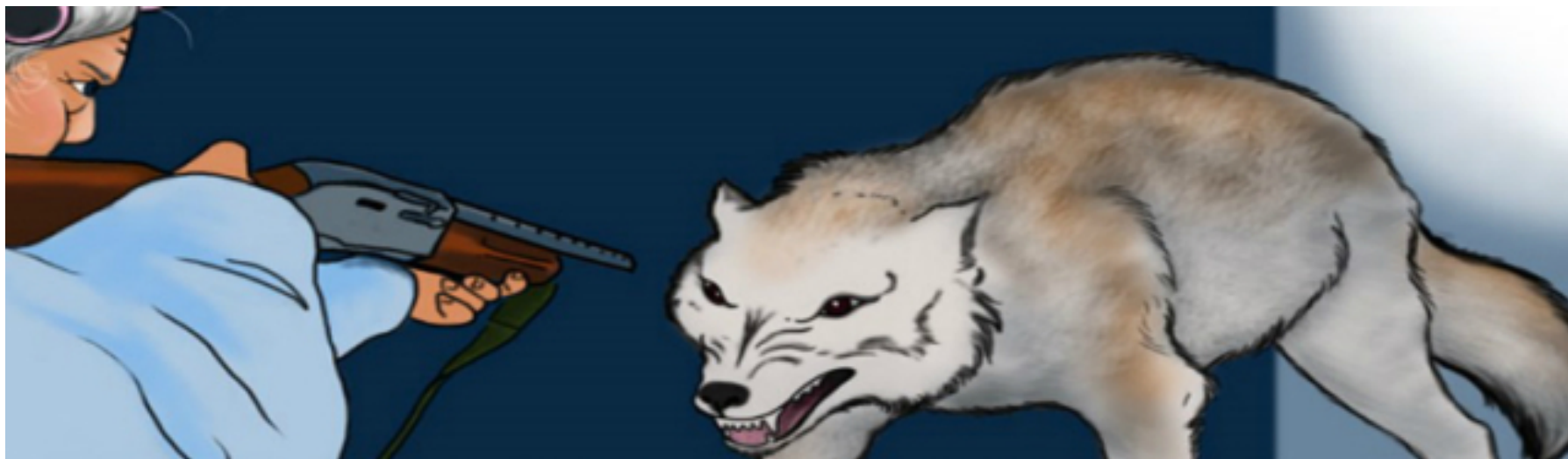
After Newtown, Sales Boom for Kids' Body Armor

—By [Tim Murphy](#) | Tue Dec. 18, 2012 9:24 AM PST [192](#)









Role of Pediatricians

Focus on the **CHILD**,
not the **Gun**



Every parent knows.....

It just takes a minute.



Additional Resources

- AAP Policy Statement: Firearm-Related Injuries Affecting the Pediatric Population
- (<http://aappolicy.aappublications.org/cgi/content/full/pediatrics;105/4/888>)
- “Censorship of the Patient-Physician Relationship” *JAMA* (<http://jama.ama-assn.org/content/306/10/1131.full>)
- “Counseling About Firearms: Proposed Legislation is a Threat to Physicians and Their Patients” *Pediatrics*
- (<http://pediatrics.aappublications.org/cgi/content/full/118/5/2168>)
- AAP Connected Kids (www.aap.org/ConnectedKids/default.htm)

References

1. Schuster MA, Franke TM, Bastian Am, Sor S, Halfon N. Firearm storage patterns in US homes with children. *Am J Public Health* 2000;90:588-94.
2. "Prevalence of Household Firearms and Firearm-Storage Practices in the 50 States and the District of Columbia: Findings from the Behavioral Risk Factor Surveillance System, 2002" *Pediatrics* (<http://pediatrics.aappublications.org/cgi/content/abstract/116/3/e370>)
3. [Naureckas SM](#), [Galanter C](#), [Naureckas ET](#), [Donovan M](#), [Christoffel KK](#). Children's and women's ability to fire handguns. The Pediatric Practice Research Group. [Arch Pediatr Adolesc Med](#). 1995 Dec;149(12):1318-22.
4. http://www.cdc.gov/violenceprevention/suicide/statistics/case_fatality.html
5. Brent DA, Perper JA, Allman CJ, Moritz GM, et al. The presence and accessibility of firearms in the home of adolescent suicides: a case-control study. *JAMA*. 1991;266:2989-2995.
6. Grossman DC, Mueller BA, Riedy C, et al. Gun storage practices and risk of youth suicide and unintentional firearm injuries. *JAMA* 2005;293:707-14.
7. Brent DA, Perper JA, Moritz G, Maugher M, et al. Firearm and adolescent suicide: a community case-control study. *AJDC* 1993;147:1066-1071.
8. Webster DW, Wilson ME, Duggan AK, Pakula LC. Parents' beliefs about preventing gun injuries to children. *Pediatrics* 1992;89:908-14
9. McGee KS, Coyne-Beasley T, Johnson RM. Review of evaluations of educational approaches to promote safe storage of firearms. *Inj Prev* 2003;9:108-11.
10. Barkin SL, Finch SA, Ip ED, Scheindlin B, et al. Is office-based counseling about media use, timeouts, and firearm storage effective? Results from a cluster-randomized, controlled trial. *Pediatrics* 2008;122:e15-e25.
11. <http://webappa.cdc.gov/cgi-bin/broker.exe> (WISQARS,CDC, 2008)

Your Nationally Accredited . . .



Public Health

CITY OF KANSAS CITY, MISSOURI

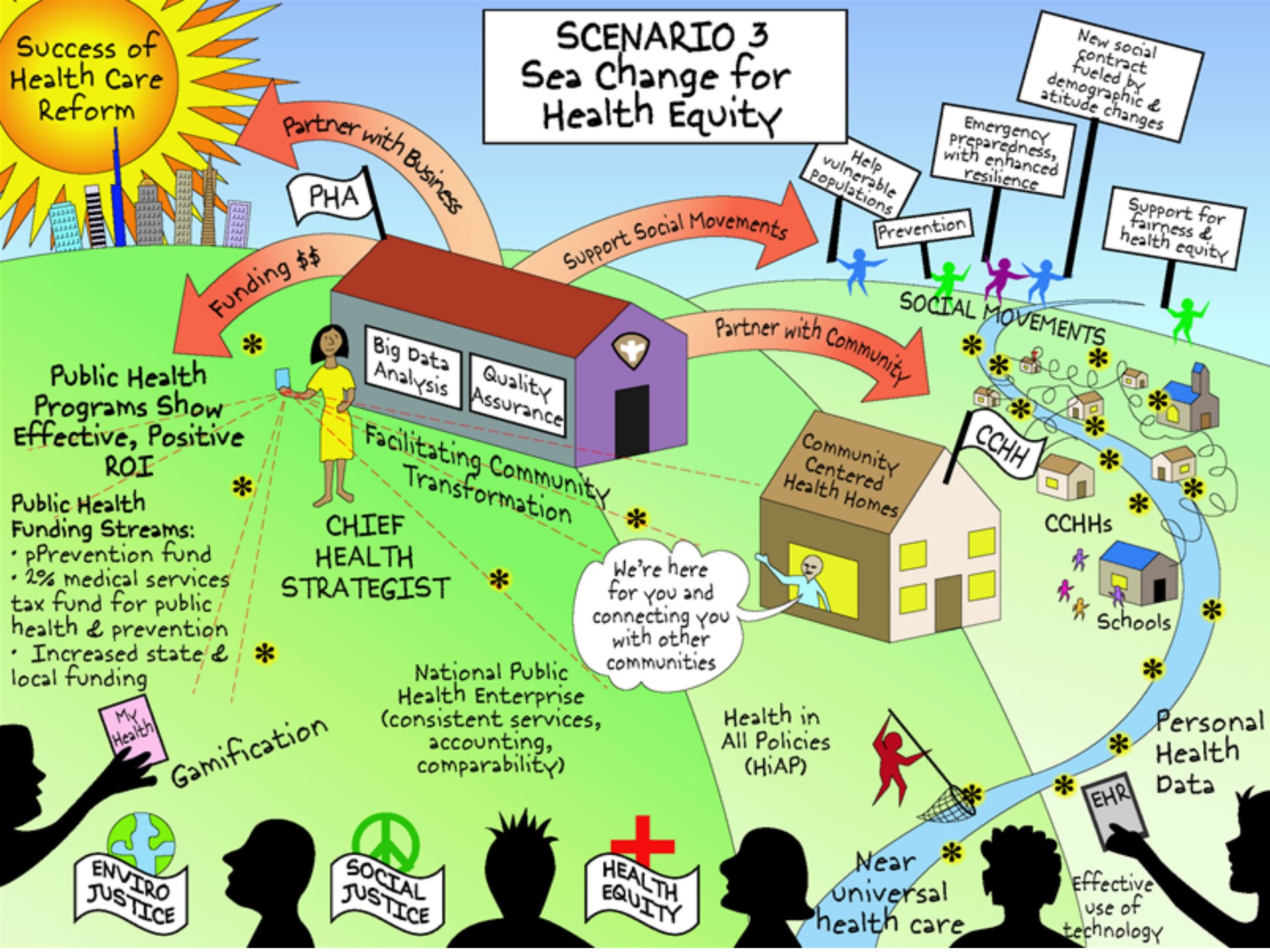
Health Department

QUESTIONS/COMMENTS?

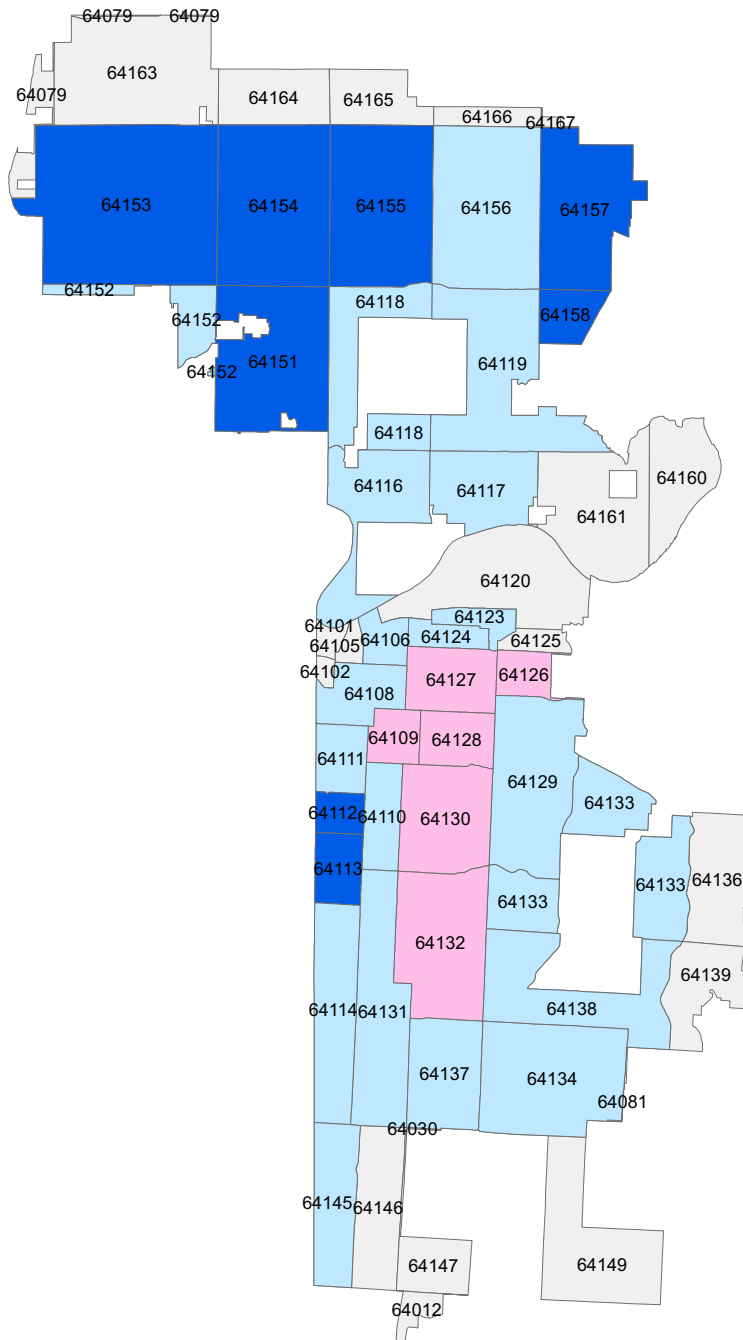


CONNECT!





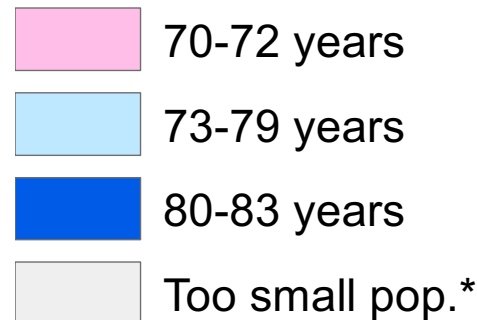
Life expectancy by zip code, Kansas City, MO 2010-2014



Life expectancy (year)	Nonwhite %	Below poverty@ %	Median family@ income (\$)
81-83 years	16.2	5.8	97,382
73-79 years	34.7	10.6	59,701
70-72 years	83.6	37.5	30,470

@ 2010-2014 American Community Survey 5-Year Estimates

Life expectancy

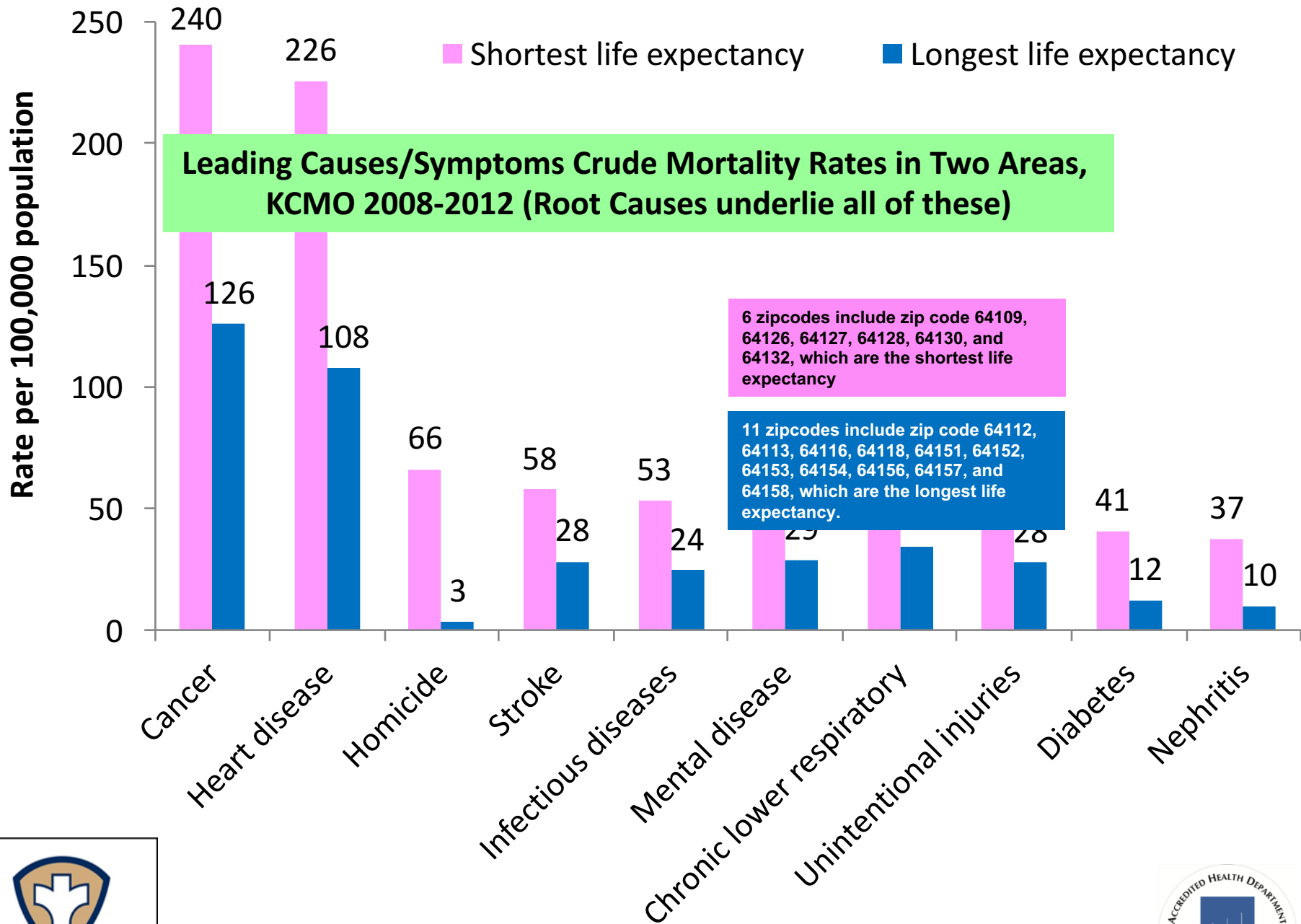


*Too small population to calculate life expectancy

Check out YouTube: tale of two zip codes

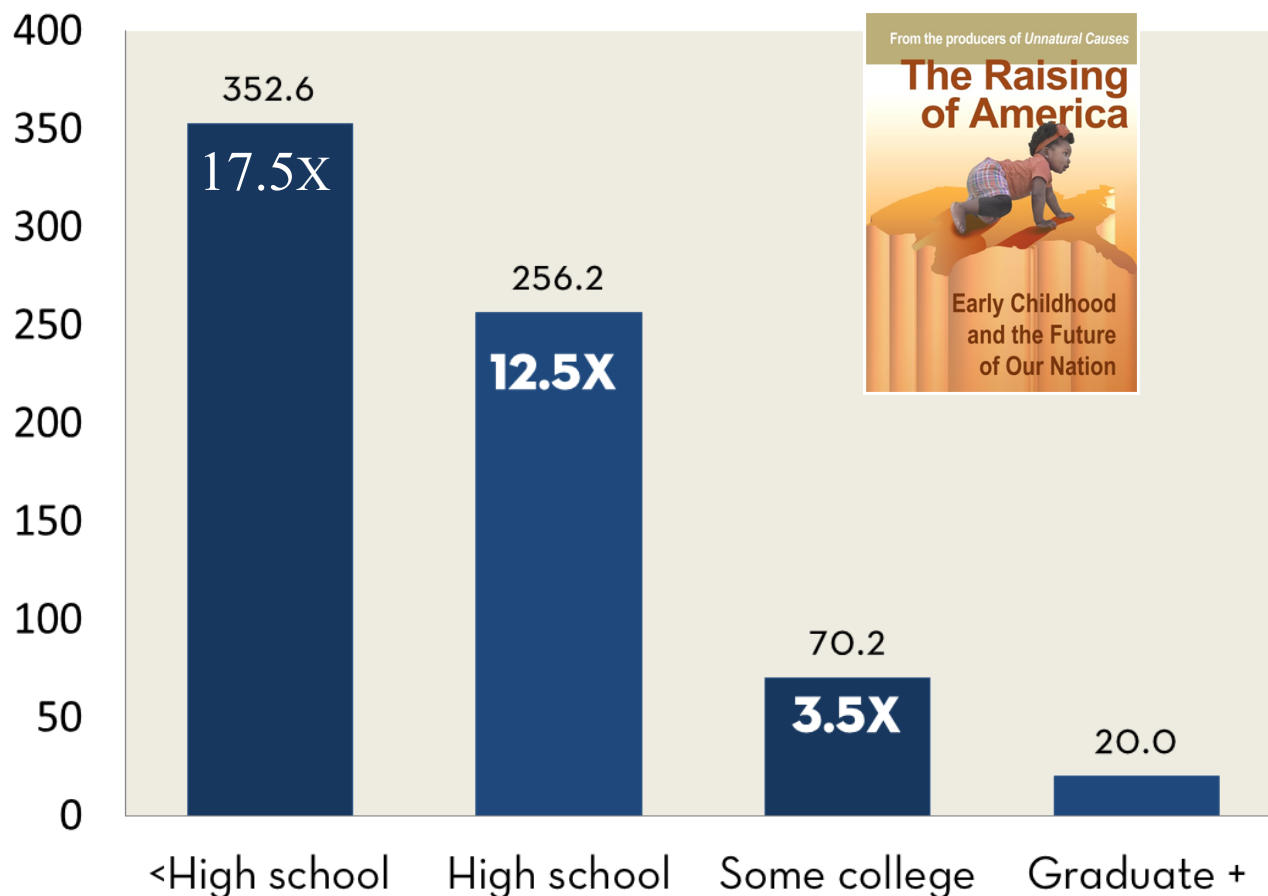
<https://www.youtube.com/watch?v=DUfccUJoZhE>





Death rate by education among persons 25 -34 years KCMO 2009 - 2013

Death rate per 100,000 population

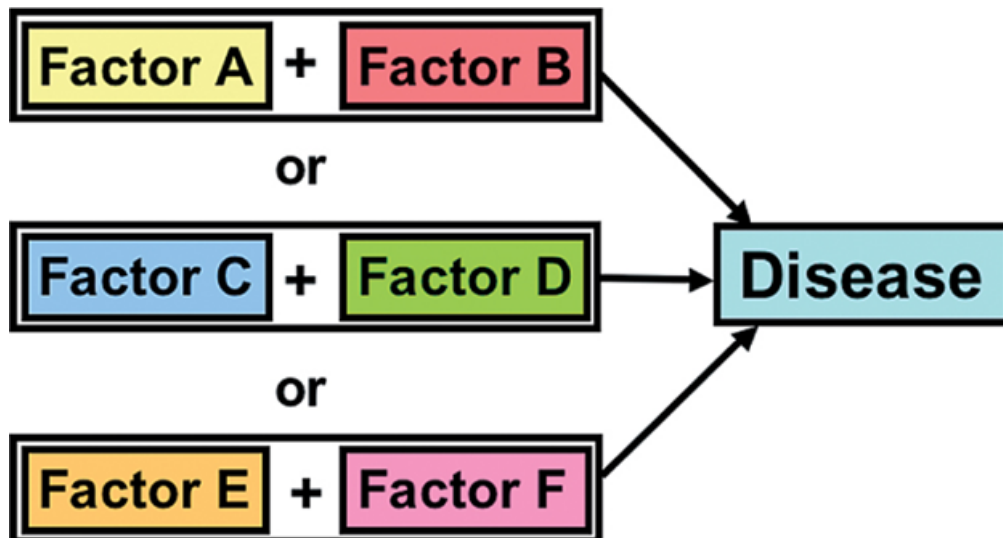


Hennekens' Criteria

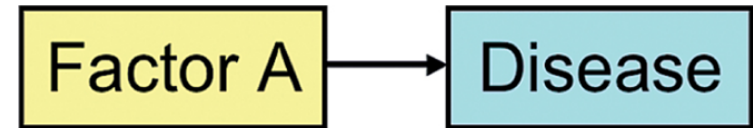
- Is there a valid statistical association?
 - Chance
 - Bias
 - Confounding
- Can this valid association be causal?
 - Strong association
 - Biologic credibility
 - Consistency with other studies
 - Time sequence/Temporality
 - Dose-response

When is an association causal?

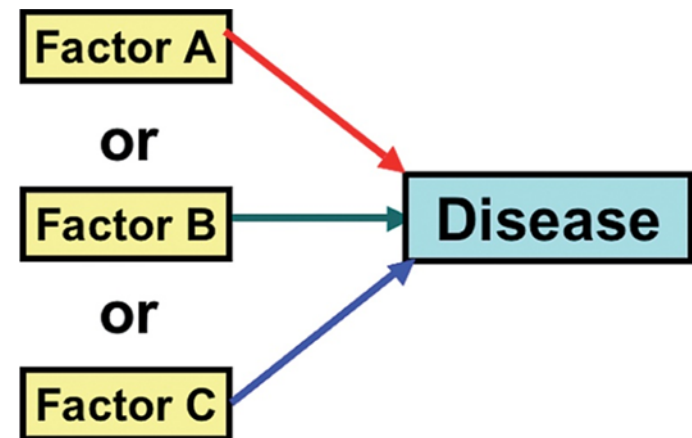
- Types of causal relationships
 - (i) necessary and sufficient
 - (ii) necessary but not sufficient
 - (iii) sufficient but not necessary
 - (iv) neither sufficient nor necessary



Gordis: Epidemiology, 4th Edition.
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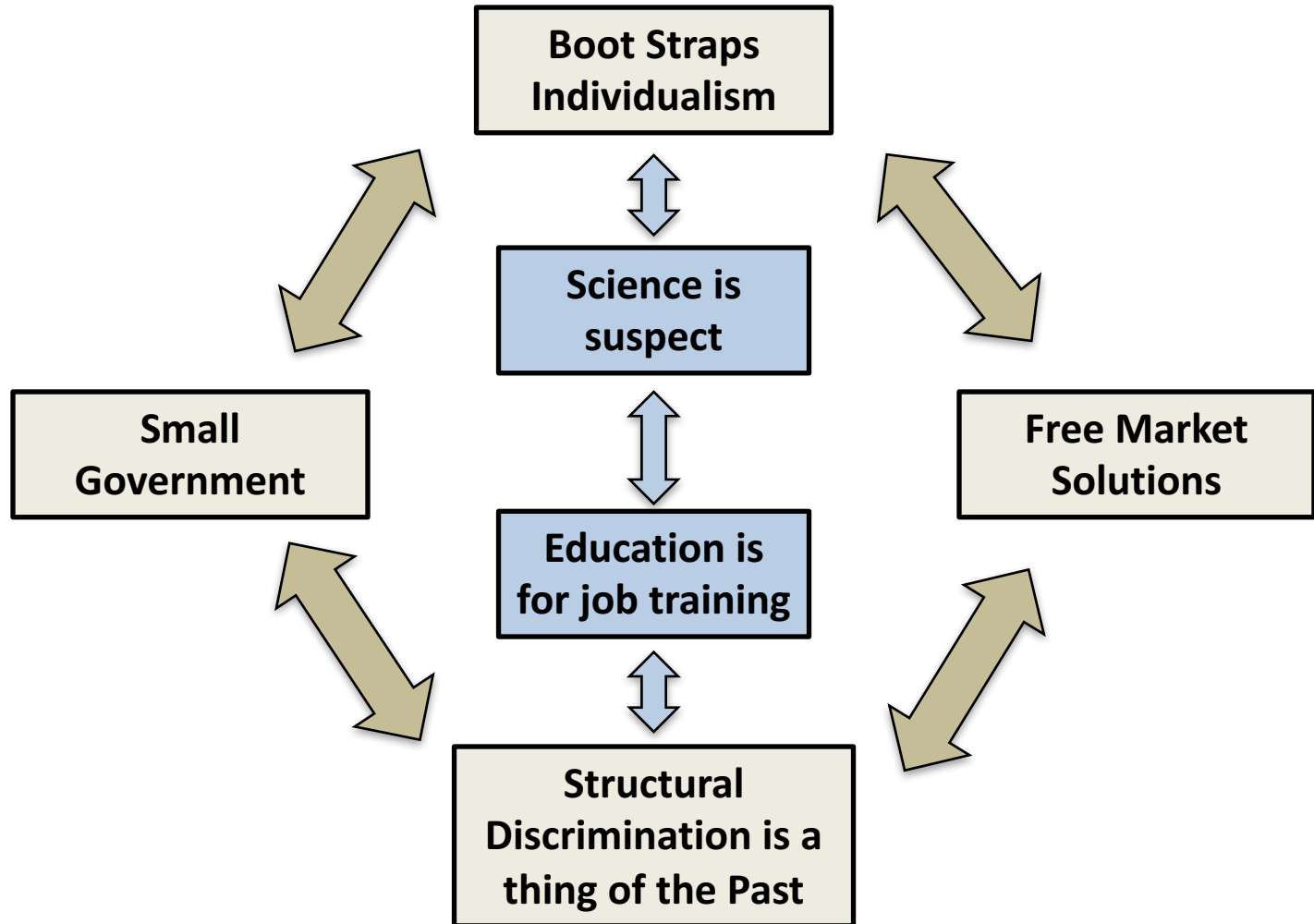
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Themes of the

Dominant Worldview (US) Narrative (primary motivation - fear of other)



Themes of the

Alternate Worldview Narrative (compassion for the other/no other)

