The Bullet as the Pathogen: Closing the Revolving Door of Violence

Rochelle A. Dicker, MD
Vice Chair, Department of Surgery
Professor of Surgery and Anesthesia
University of California, Los Angeles

A Scope of Practice

- Focus on the individual's acute needs *then*
- Concentrate on the broader context
- ASK BIGGER QUESTIONS
- Apply principles of public health and chronic disease

- Observe patterns with an eye on the population in need

Surgery and Public Health?

Perceptions of Surgery

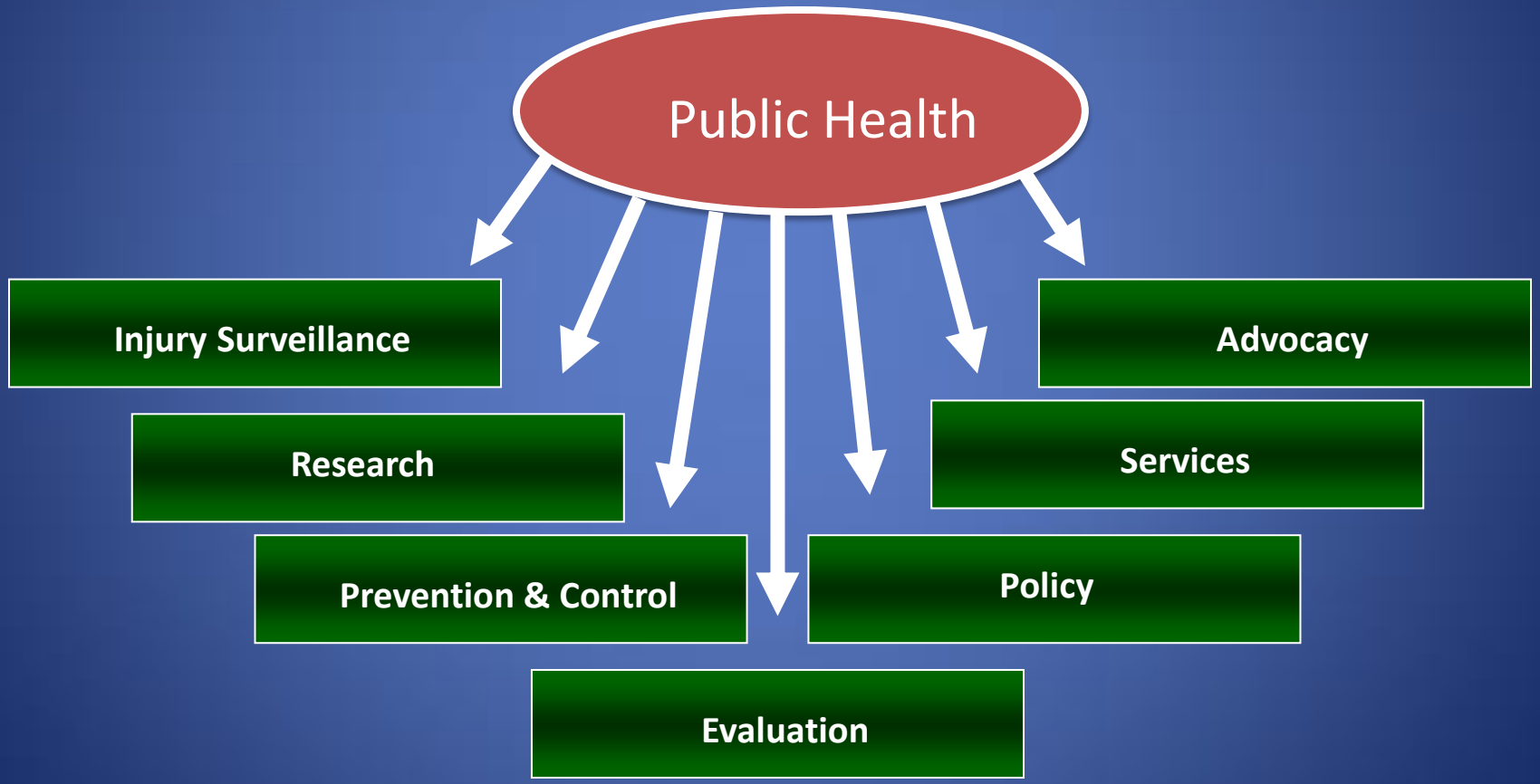
- Curative
- Focus is on the Individual
- High-tech, high-skills
- *Not Cost-effective*

Surgery and Public Health

Public Health

- Prevention approach
- Focuses on Populations
- Low-tech, variable skills
- More cost-effective
- Equity

NEARLY 6 MILLIONS LIVES
Injury is a Public Health Problem



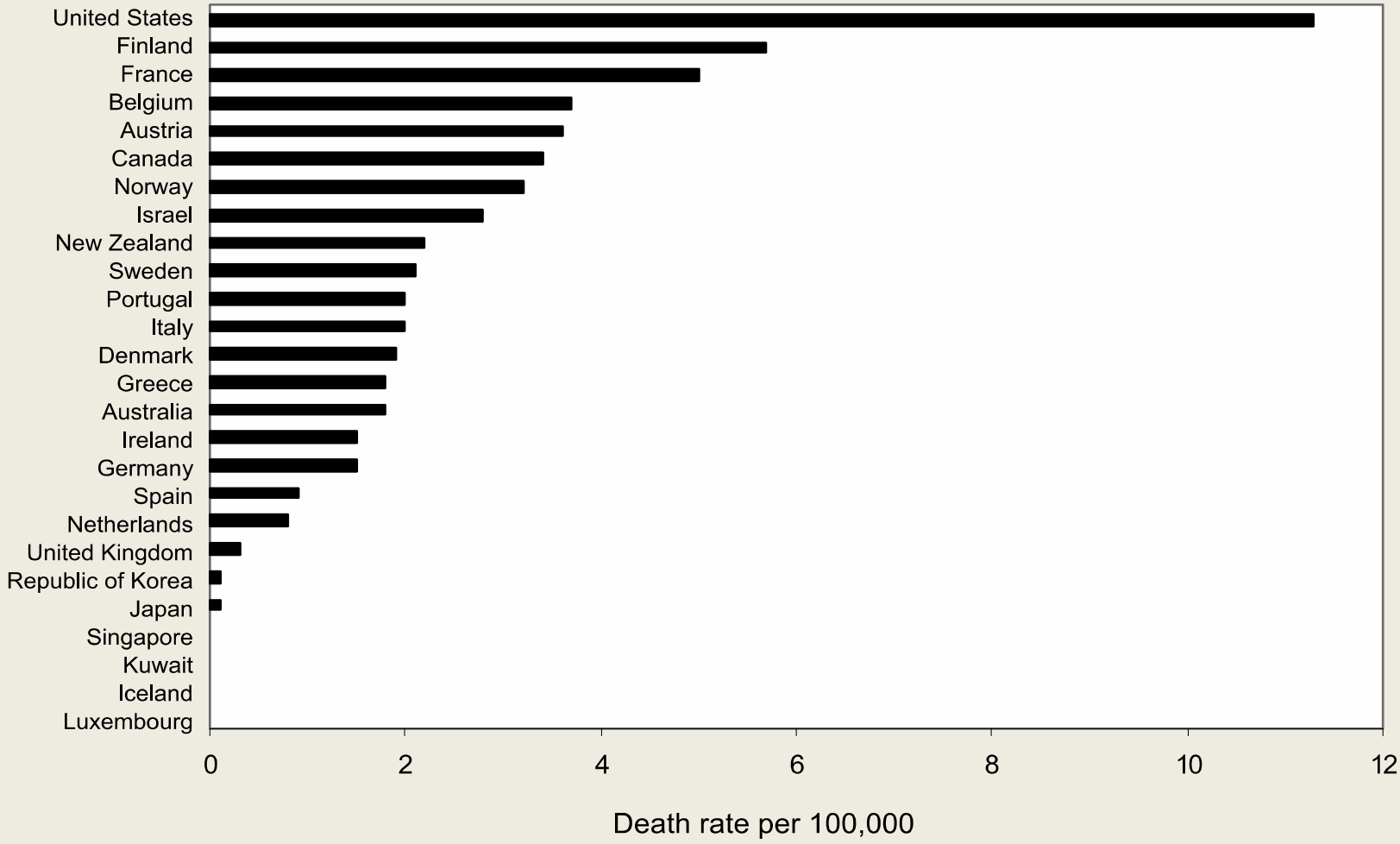


Figure 1. Firearm-related mortality for high-income World Health Organization Member States (most recent year available between 1990 and 2000). (Note: A firearm is defined as a weapon [e.g., handgun, rifle, or shotgun] in which a shot is propelled by gunpowder.)

Severity and Disparity of Homicide in Youth and Young Adults

#1 cause of death in young African Americans, 15-34 years old

#2 in Latinos, 15-34 years old

53 per 100,000 African Americans

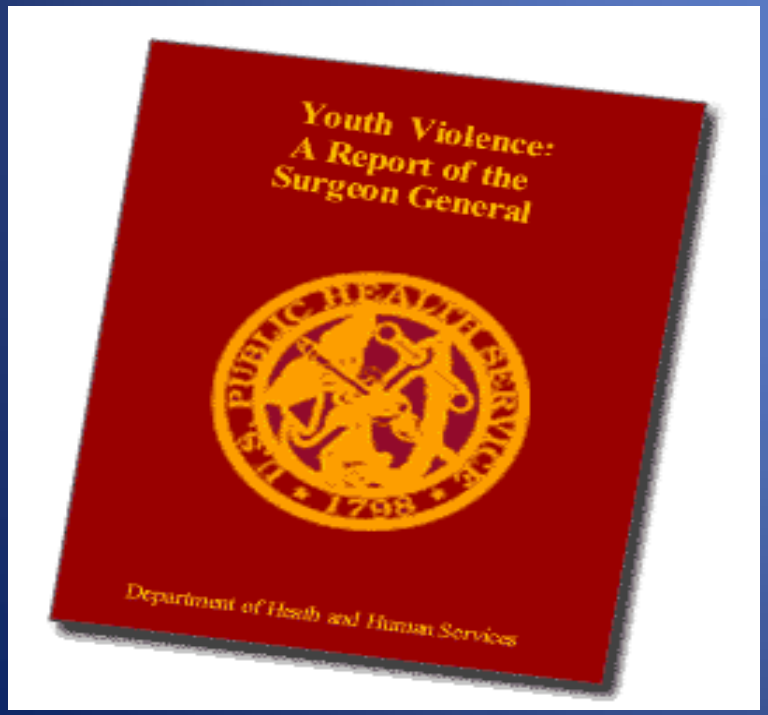
20 per 100,000 in Latinos

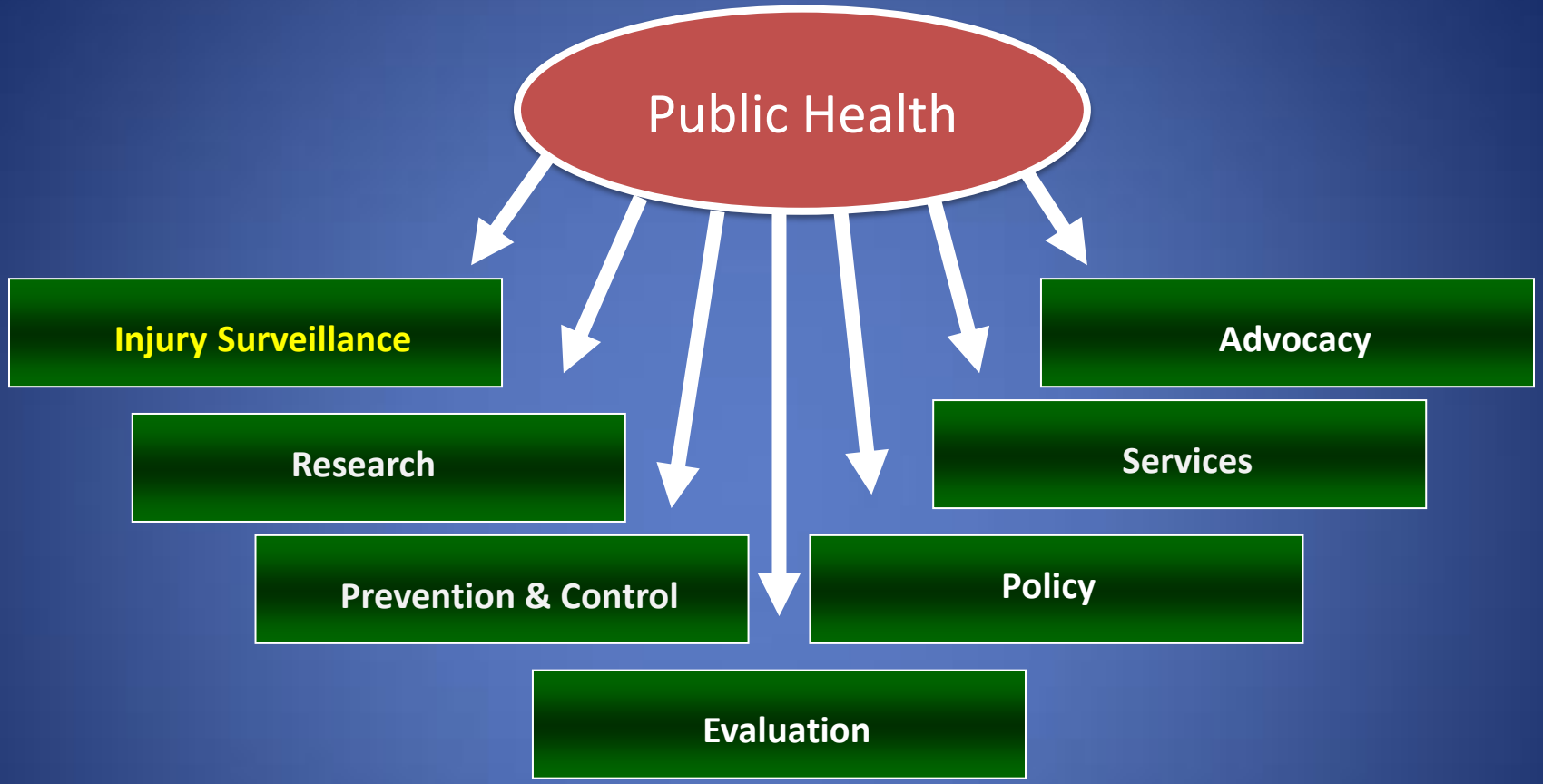
The San Francisco Story
The Urban America Story

Who Owns It?

“Violence is a public health issue”

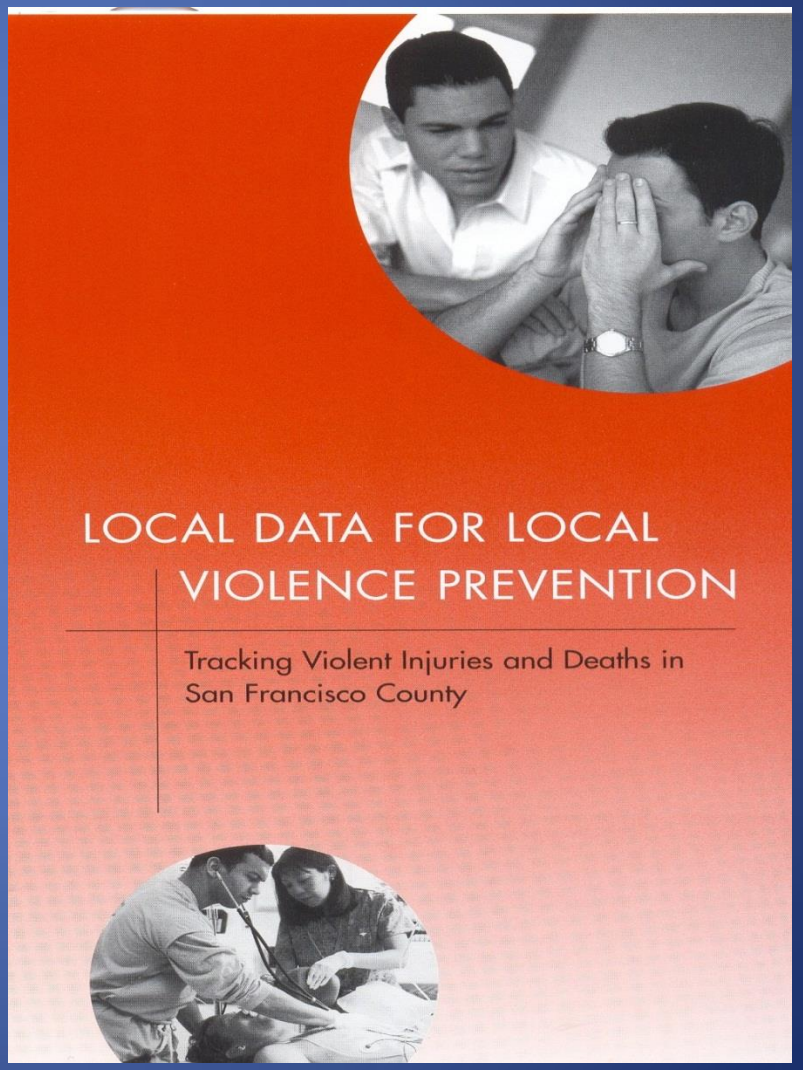
C. Everett Koop, US Surgeon General, 1984




Public Health
Injury Surveillance
Research
Prevention & Control
Evaluation
Policy
Services
Advocacy

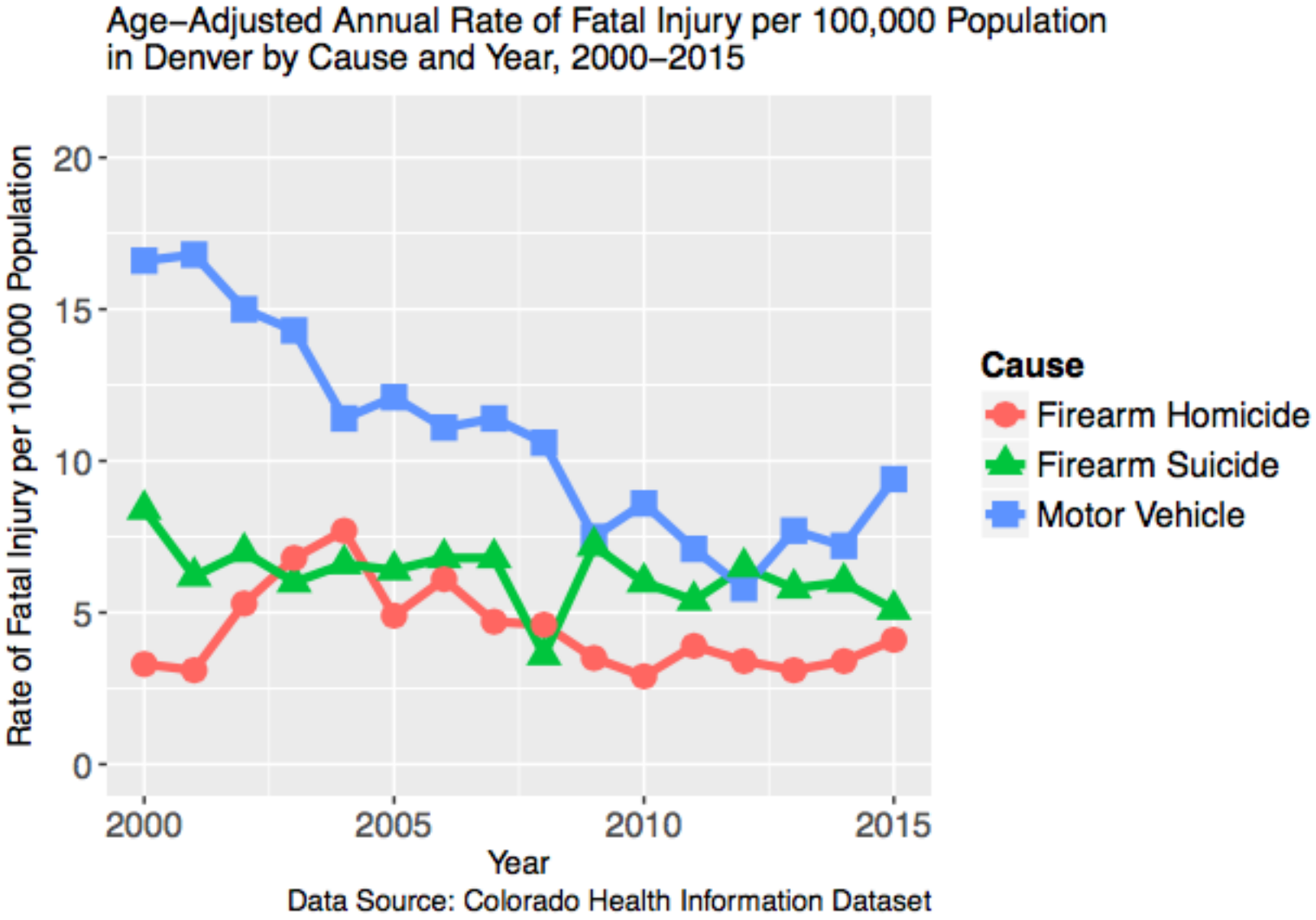
Surveillance

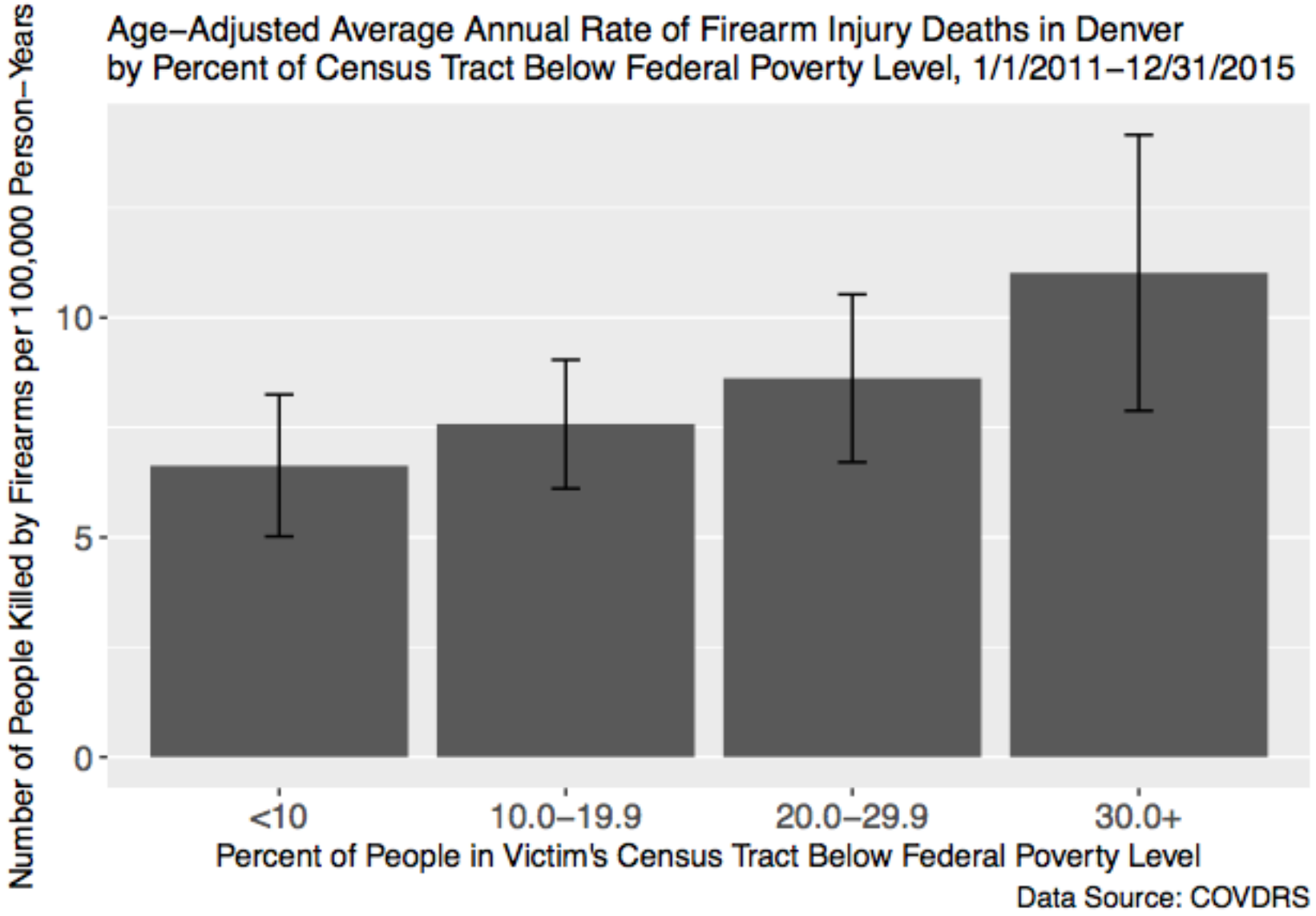
- 76% of homicide and assault victims had criminal histories
- African American men are 13 times more likely to be injured (15-34)
- 2 per 1000 AA men are injured from violence
- 4% of population and 60% of gunshot victims

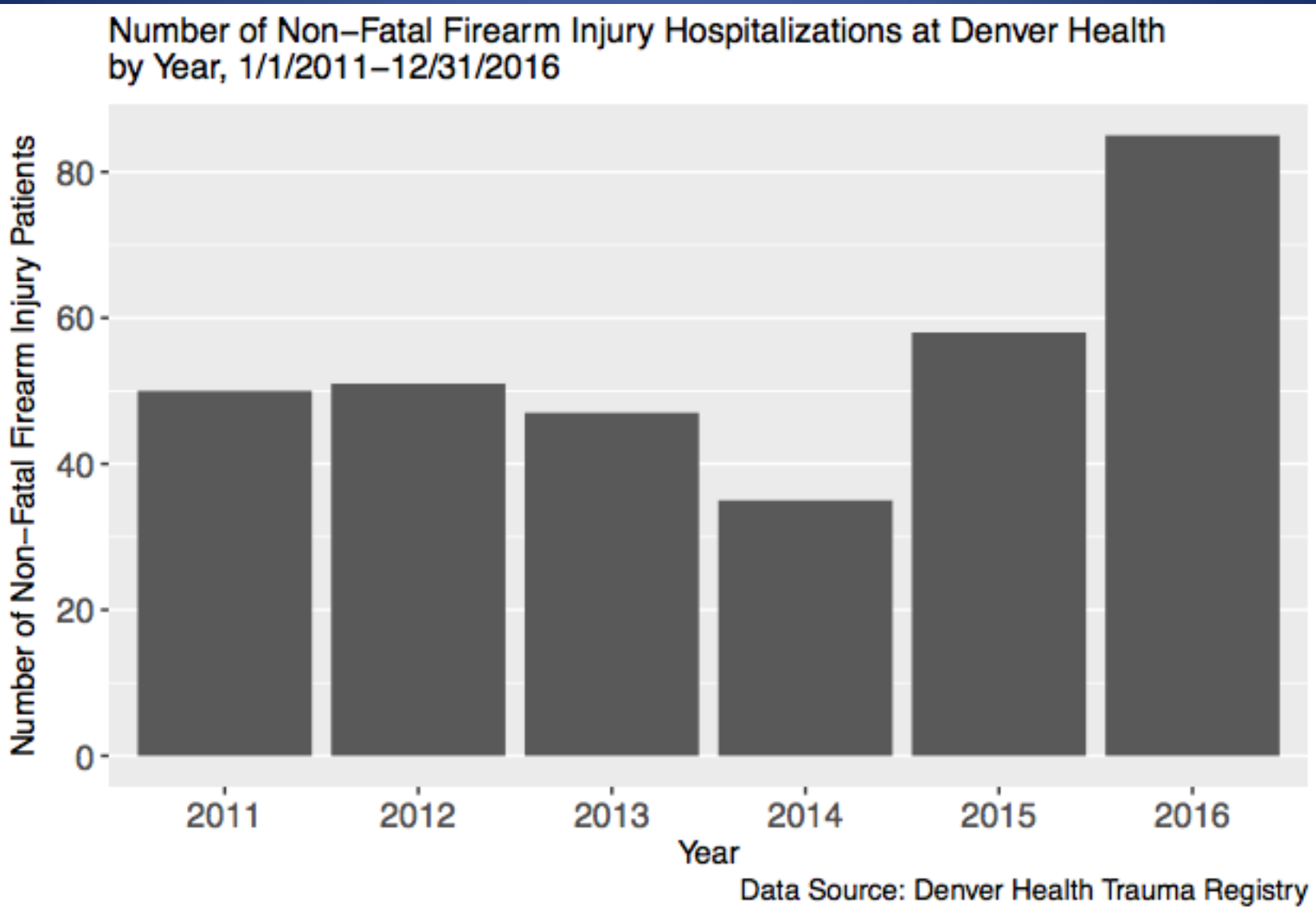


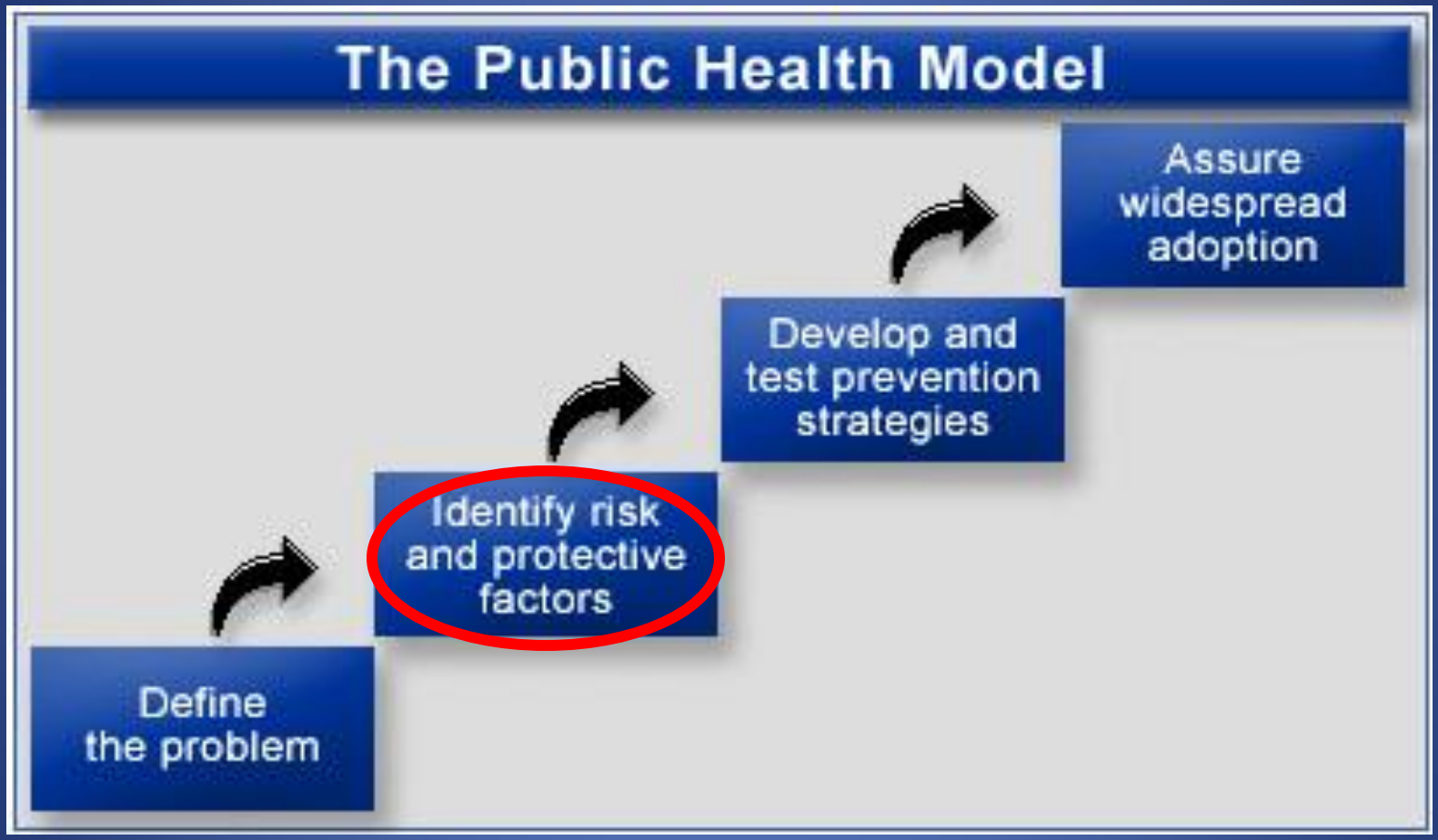
Epidemiology of Firearm Injuries in Denver

- 326 deaths from 2011-2015
  - Tip of the iceberg
  - Demographics
  - Non-fatal injuries have increased since 2015
  - Suicide rate is highest
  - Homicide rates are highest amongst African American men and lower socioeconomic communities
    - Social determinants of health


Age–Adjusted Annual Rate of Fatal Injury per 100,000 Population
in Denver by Cause and Year, 2000–2015
Rate of Fatal Injury per 100,000 Population
20
15
10
5
0
2000
2005
2010
2015
Year
Data Source: Colorado Health Information Dataset
Cause
Firearm Homicide
Firearm Suicide
Motor Vehicle

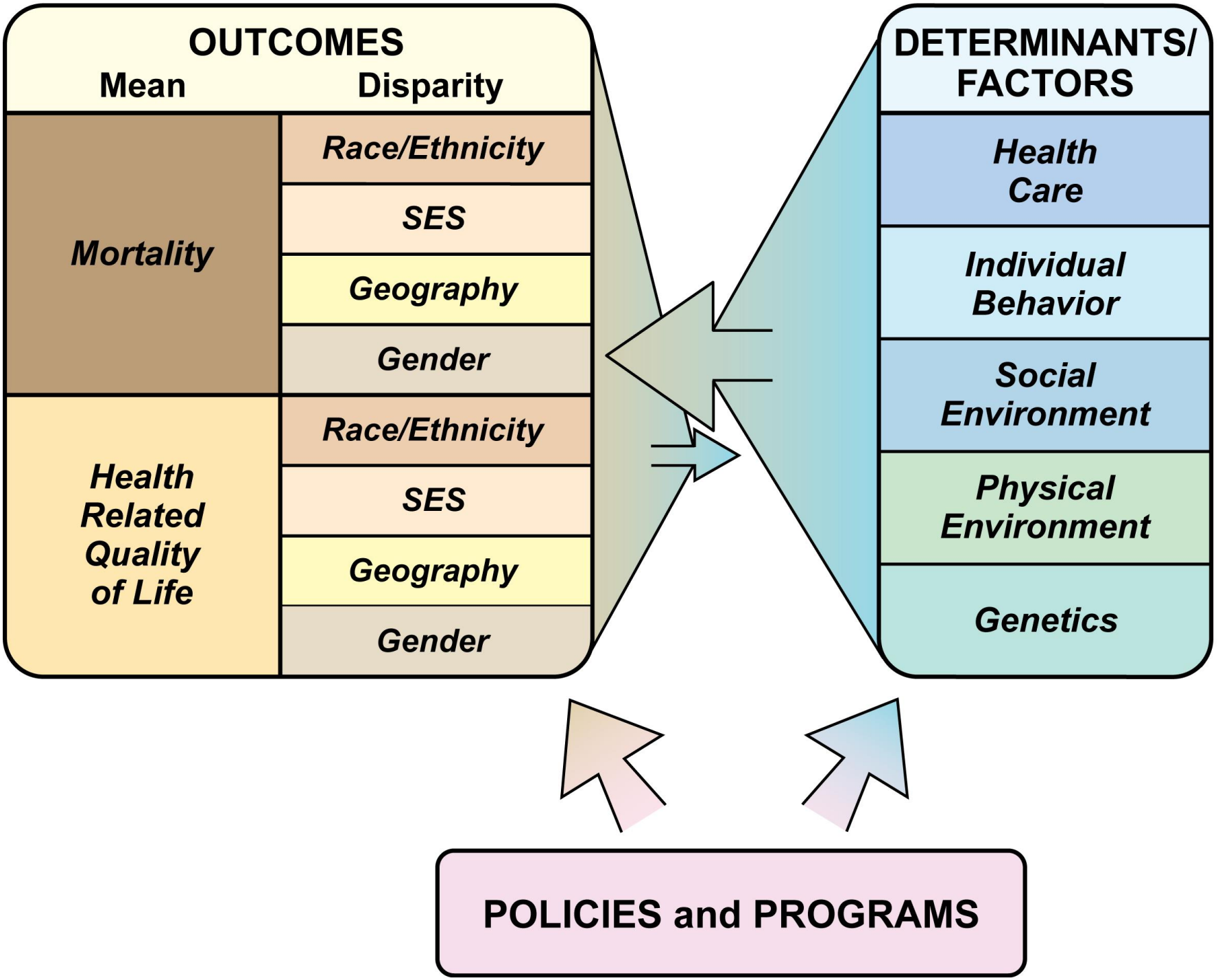

Age–Adjusted Average Annual Rate of Firearm Injury Deaths in Denver
by Percent of Census Tract Below Federal Poverty Level, 1/1/2011–12/31/2015
Number of People Killed by Firearms per 100,000 Person–Years
10
5
0
<10
10.0–19.9
20.0–29.9
30.0+
Percent of People in Victim's Census Tract Below Federal Poverty Level
Data Source: COVDRS


Number of Non–Fatal Firearm Injury Hospitalizations at Denver Health
by Year, 1/1/2011–12/31/2016
Number of Non–Fatal Firearm Injury Patients
0
20
40
60
80
2011
2012
2013
2014
2015
2016
Year
Data Source: Denver Health Trauma Registry


The Public Health Model
Define the problem
Identify risk and protective factors
Develop and test prevention strategies
Assure widespread adoption

Social Determinants of Health

- Complex interplay of social and economic systems
  - Social and structural systems in which people exist
  - Systems designed to address people's health issues
  - Shaped by income, power, and resources
    - Globally, nationally, locally
- What this means for PREVENTION
- Health and Wealth: Population Health in 2050 and implications for the US


OUTCOMES
Mean
Disparity
Mortality
Race/Ethnicity
SES
Geography
Gender
Health Related Quality of Life
Race/Ethnicity
SES
Geography
Gender
DETERMINANTS/ FACTORS
Health Care
Individual Behavior
Social Environment
Physical Environment
Genetics
POLICIES and PROGRAMS

Risk Factors for Violence: SOCIAL DETERMINANTS OF HEALTH

- Poverty
- Family dysfunction
- Access to Guns
- **Mental Illness**
- RECIDIVISM
- Intergenerational Health and Chronic Disease
- Substance abuse
- Lack of role models
- Educational deficiencies
- **Hopelessness**
- Joblessness
- Environment
- *Normalization*

Diffusion of Gun Violence
Transmission Patterns

JAMA Internal Medicine | Original Investigation | FIREARM VIOLENCE

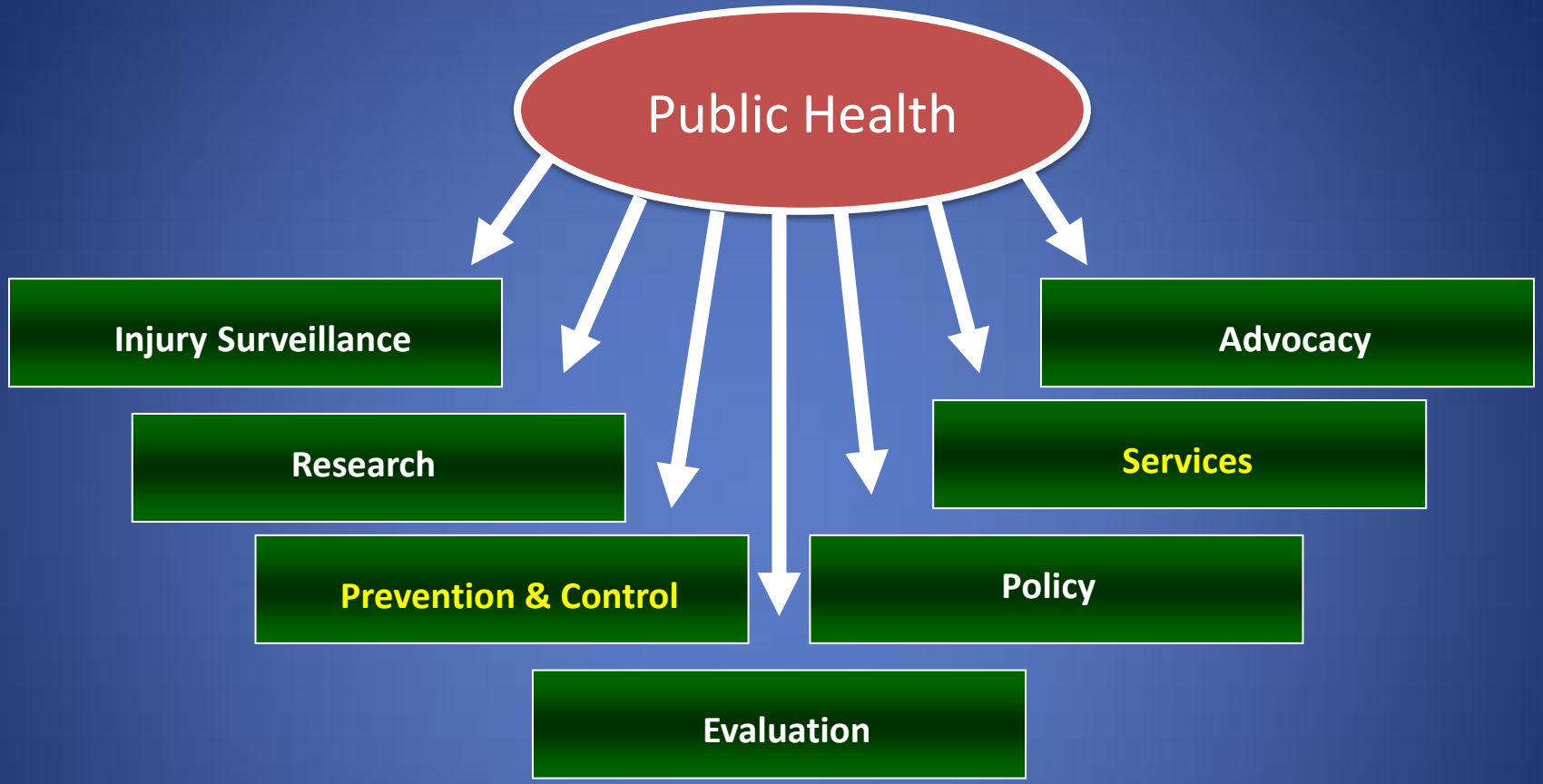
Modeling Contagion Through Social Networks to Explain and Predict Gunshot Violence in Chicago, 2006 to 2014

Ben Green, MSc; Thibaut Horel, MSc; Andrew V. Papachristos, PhD

Protective Factors

- Adult mentorship
- Interpersonal skills
- Commitment to school
- Access to resources
- Community morés:
  - **Social cohesion + willingness to intervene for the common good = reduction in violence**

  -***Science*** RJ Sampson, SW Raudenbush, F Earls. Vol 277; 15 August 1997


Public Health
Injury Surveillance
Research
Prevention & Control
Evaluation
Policy
Services
Advocacy

APPROACHES TO PREVENTION

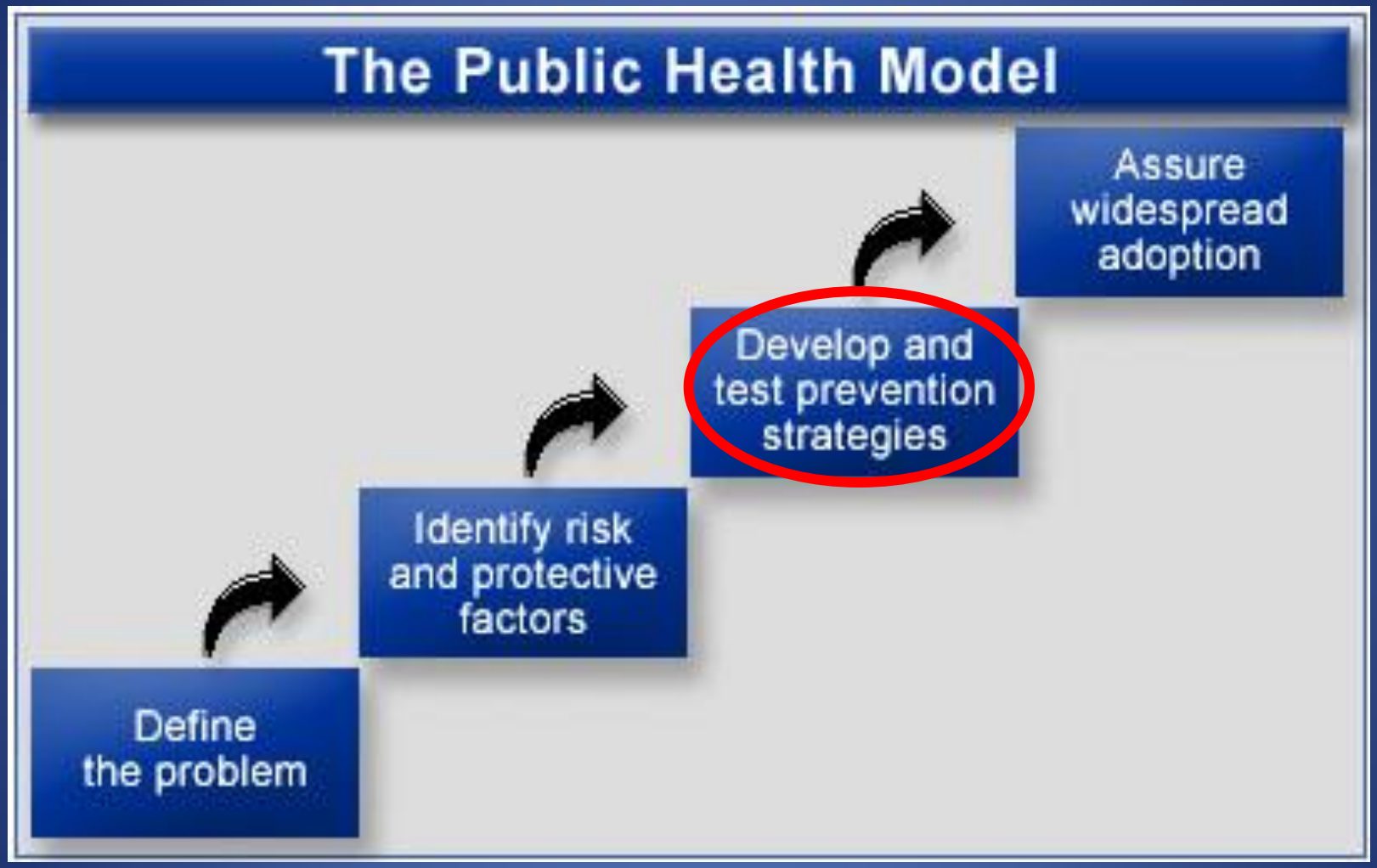
Scared safe? Abandoning the use of fear in urban violence prevention programmes

Purtle J, Cheney R, Wiebe DJ, Dicker RA

Injury Prevention 2015;21:140-141

The Trauma Center's Role in Public Health and Prevention

- The Teachable Moment:
  - Precedent for it
- Risk reduction strategies
  - Public Health Model
  - Culturally Competent Case Management
  - Community and City partnerships


The Public Health Model
Assure widespread adoption
Develop and test prevention strategies
Identify risk and protective factors
Define the problem

THE WRAPAROUND PROJECT: A HOSPITAL BASED VIOLENCE INTERVENTION PROGRAM

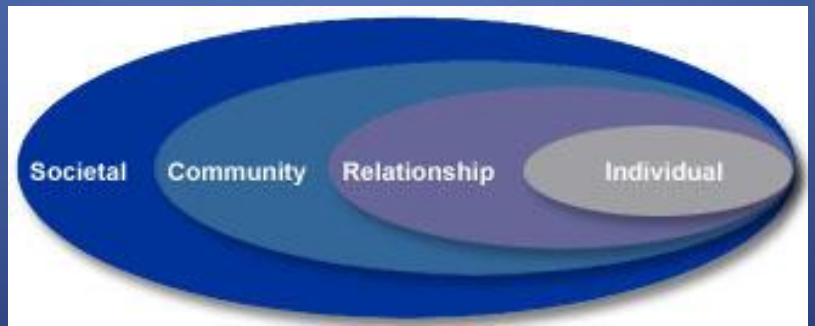
Cornerstones

The Public Health Model for Injury Prevention

Seizing the Teachable Moment

Long-term Culturally Competent Case Management

Providing Links to Risk Reduction Resources



The Wraparound Project

AIMS

- Provide intervention to reduce recidivism and incarceration

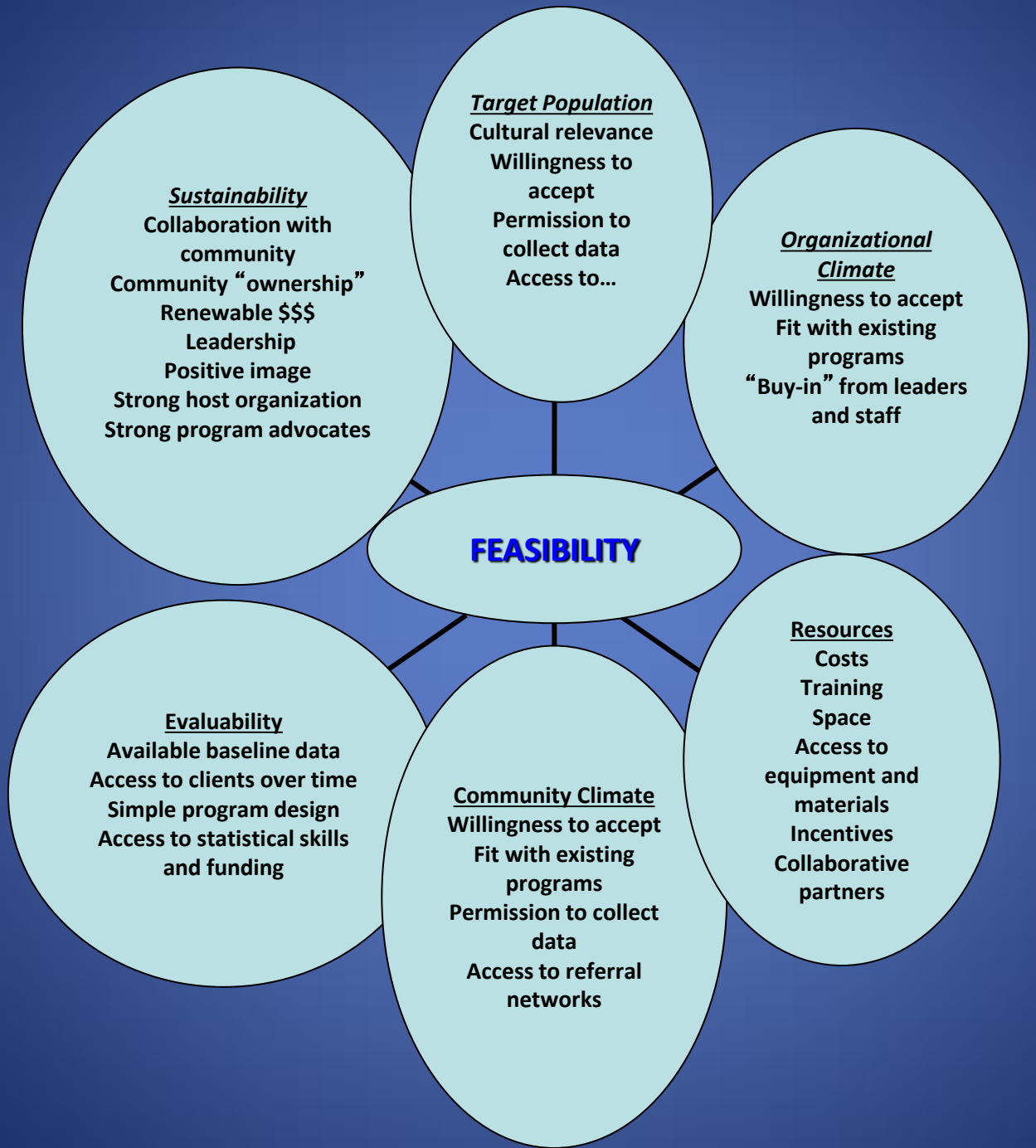
- Reestablish **standard of care** for violent injury in trauma centers serving communities affected by violence

The Wraparound Project

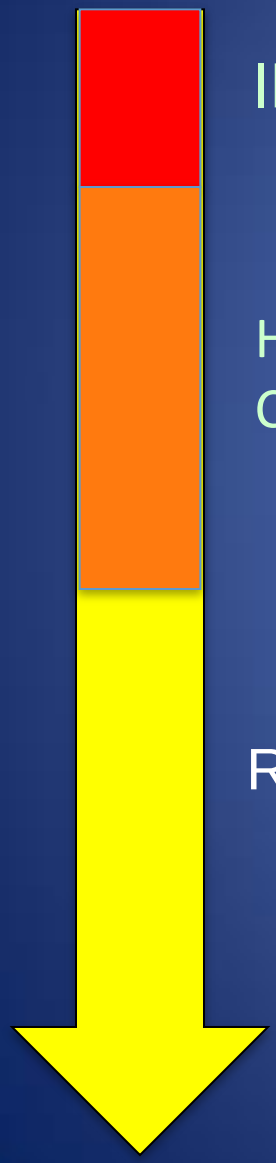
Seize the Teachable Moment

The Case Manager

- Working knowledge of urban violence
- Experience overcoming violence
- Crisis management
- Positive force in the community


Target Population
Cultural relevance
Willingness to accept
Permission to collect data
Access to…
Sustainability
Collaboration with community
Community "ownership"
Renewable $$$
Leadership
Positive image
Strong host organization
Strong program advocates
Organizational Climate
Willingness to accept
Fit with existing programs
"Buy-in" from leaders and staff
FEASIBILITY
Resources
Costs
Training
Space
Access to equipment and materials
Incentives
Collaborative partners
Evaluability
Available baseline data
Access to clients over time
Simple program design
Access to statistical skills and funding
Community Climate
Willingness to accept
Fit with existing programs
Permission to collect data
Access to referral networks

Intervention Program Design



INJURY

HOSPITAL CARE

RECOVERY

Initial Trauma Care

Teachable Moment

Assessment by Case Managers at Bedside

High Risk

Low Risk

The Wraparound Project

Referral to Appropriate Resources

Key Partnerships

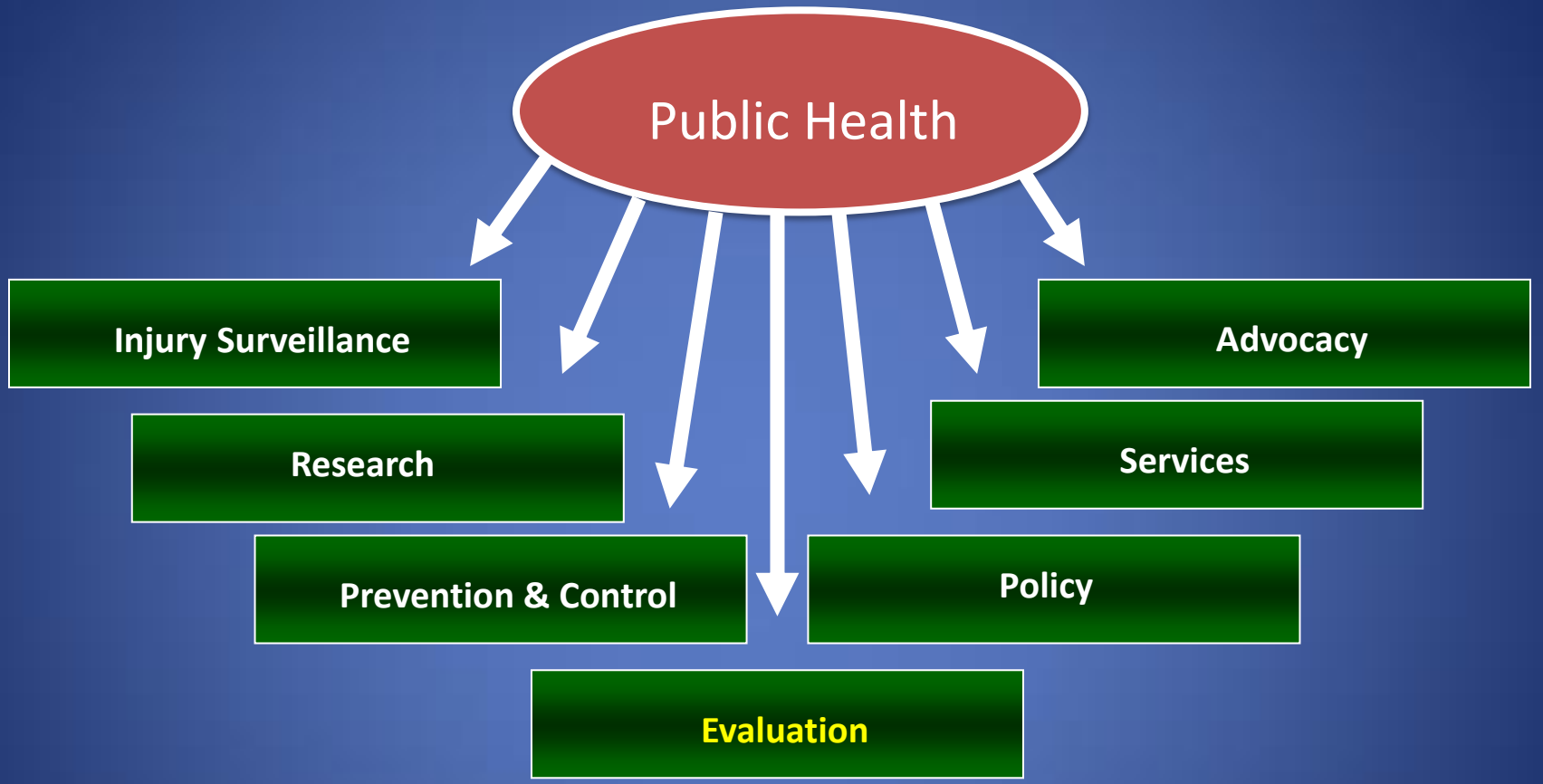
- Community morés:
  - **Social cohesion + willingness to intervene for the common good = reduction in violence**
- **Community Response Networks**
- **Glide Memorial Church**
- **Carecen tattoo removal**
- **Family Mosaic of Bayview**
- **Arriba Juntos**
- **Community GED Programs**
- **Instituto Familia de la Raza**
- **Healthright 360**
- **Trauma Recovery Center**

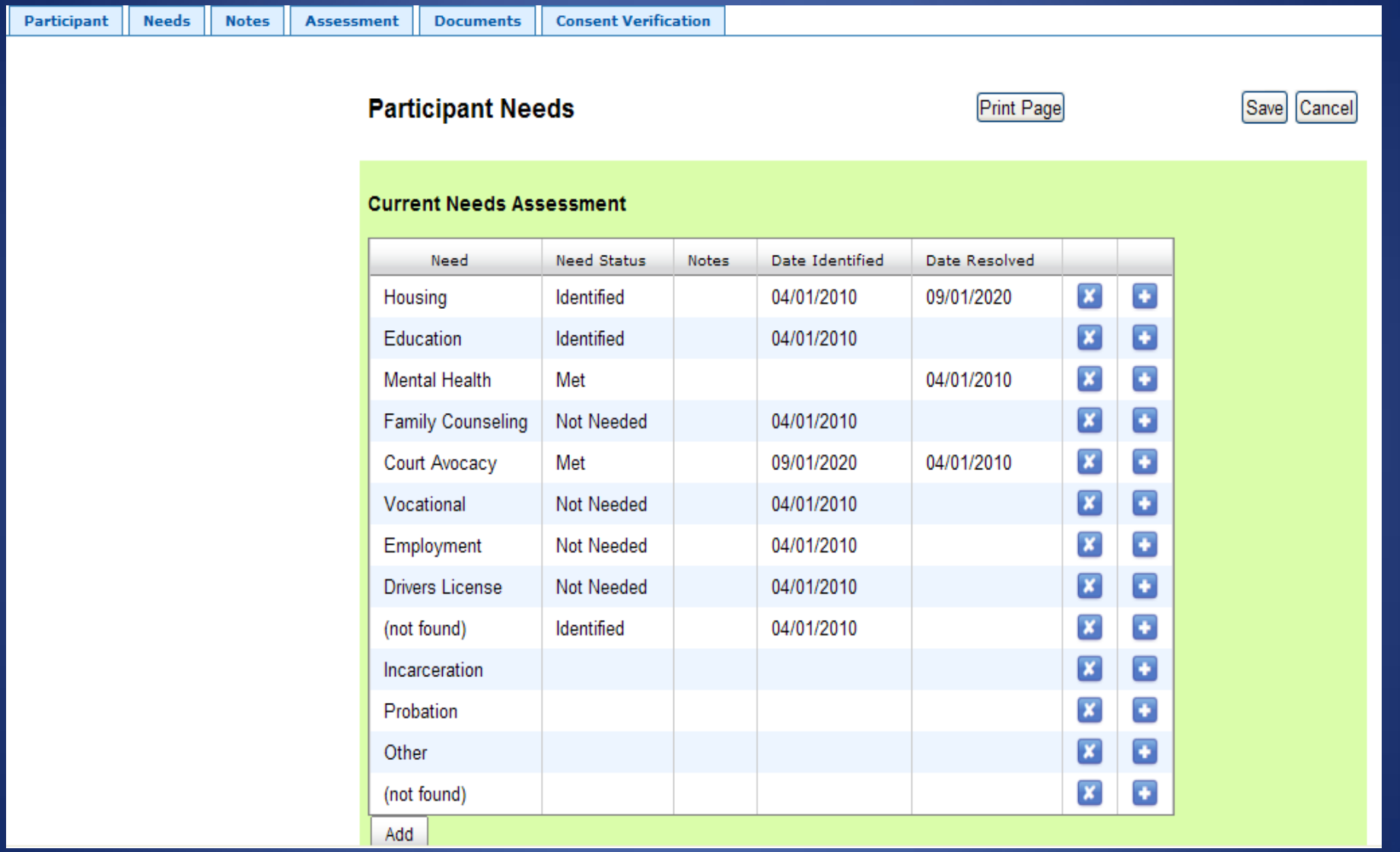
Vocational Training Program with Friends of the Urban Forest

- Teaches victims of violence skills and knowledge to be arborists
- GREAT job opportunities
- Funded by Metta, Bank of America, Hearts

AT and T Advocacy Center

- Tutorial Services
- Partnership with School District
- Life skills
- Success Center Job Readiness
- Project Rebound at SFSU
- Men’s Group

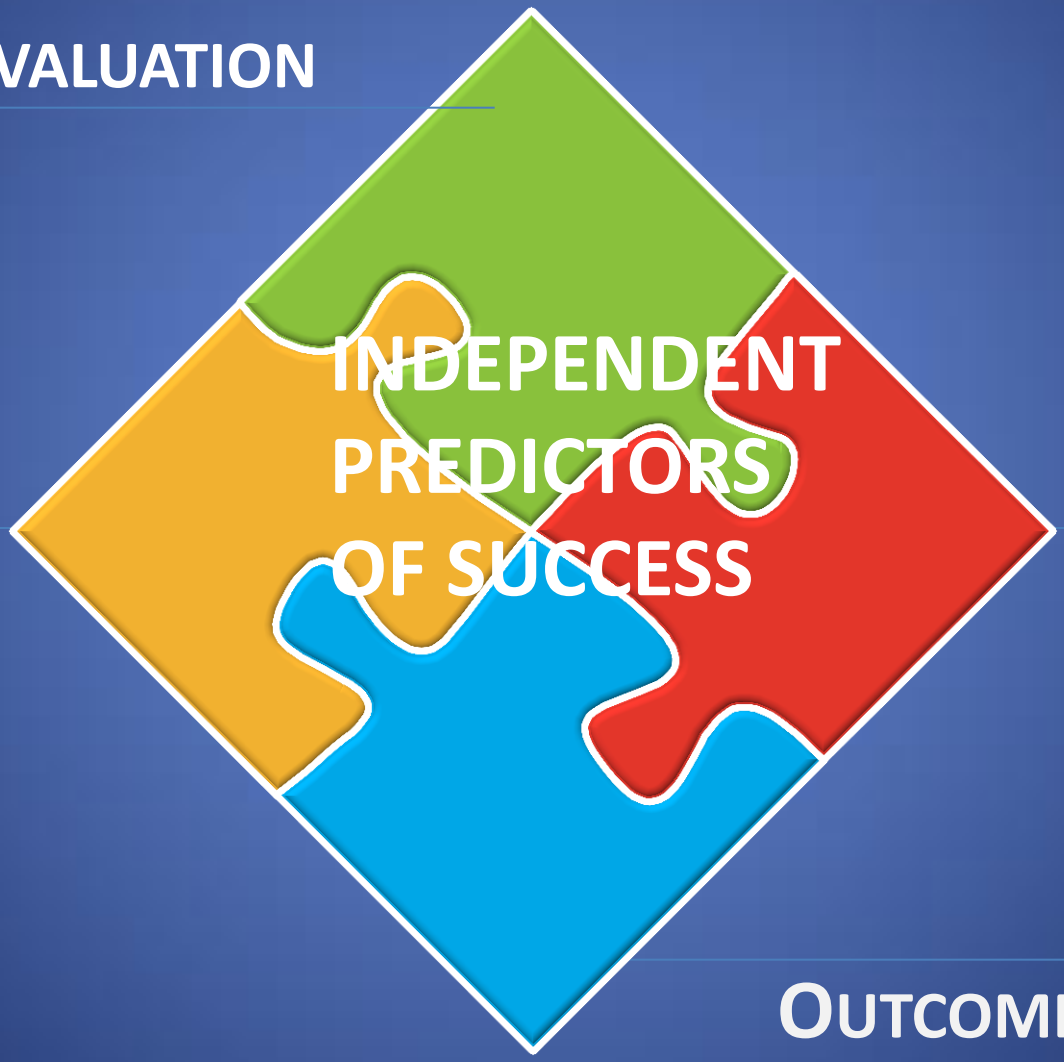

Public Health
Injury Surveillance
Research
Prevention & Control
Evaluation
Policy
Services
Advocacy


Participant
Needs
Notes
Assessment
Documents
Consent Verification
Participant Needs
Print Page
Save
Cancel
Current Needs Assessment
Need
Need Status
Notes
Date Identified
Date Resolved
Housing
Identified
04/01/2010
09/01/2020
Education
Identified
04/01/2010
Mental Health
Met
04/01/2010
Family Counseling
Not Needed
04/01/2010
Court Avocacy
Met
09/01/2020
04/01/2010
Vocational
Not Needed
04/01/2010
Employment
Not Needed
04/01/2010
Drivers License
Not Needed
04/01/2010
(not found)
Identified
04/01/2010
Incarceration
Probation
Other
(not found)
Add

COMPONENTS OF PROGRAM EVALUATION

FORMATIVE EVALUATION

PROCESS EVALUATION



IMPACT EVALUATION

OUTCOME EVALUATION

Hospital-based violence intervention: Risk reduction resources that are essential for success

Randi Smith, MD, MPH, Sarah Dobbins, MPH, Abigail Evans, BA, Kimen Balhotra, BS, *and* **Rochelle Ami Dicker, MD,** *San Francisco, California*

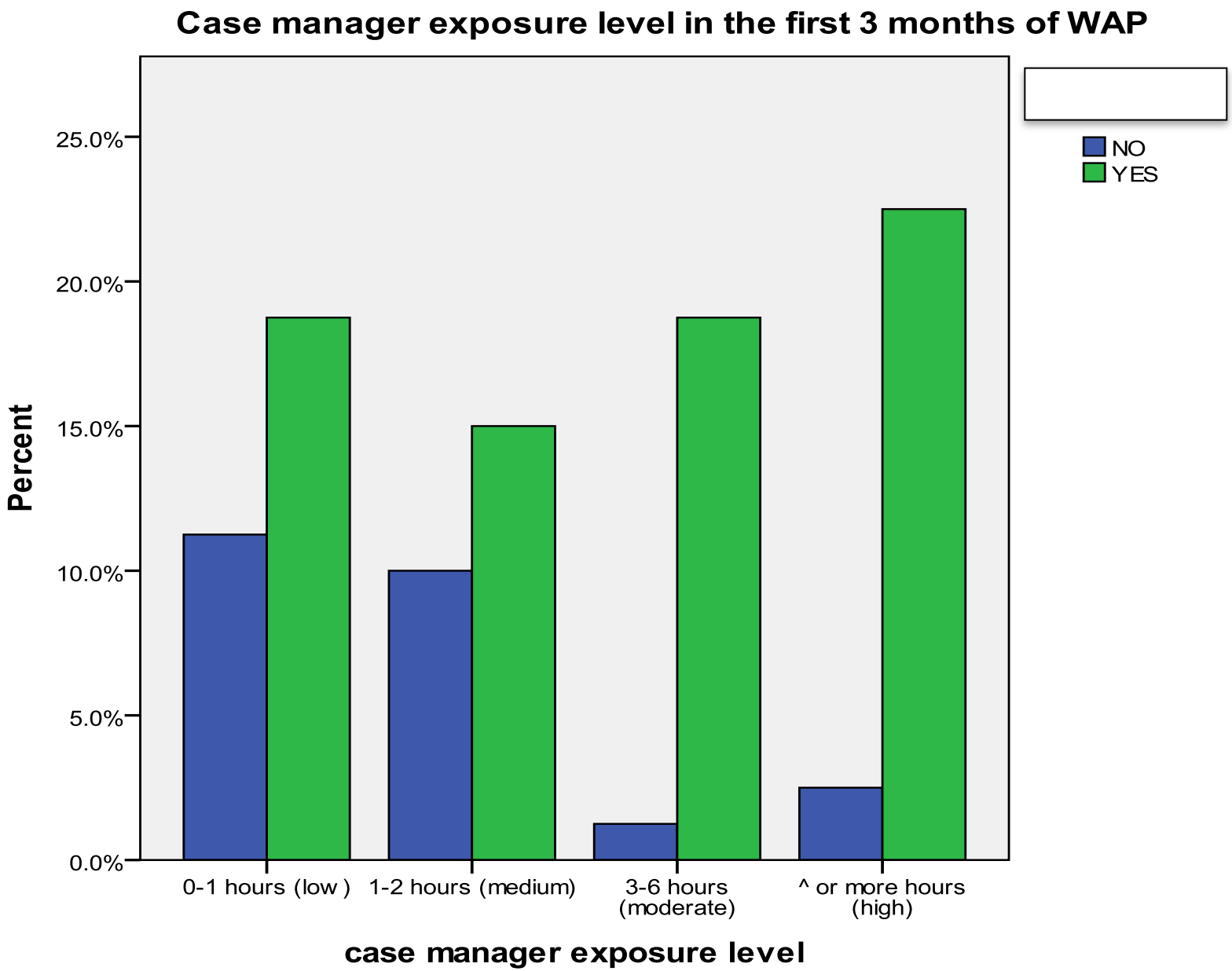
Journal of Trauma and Acute Care Surgery
2013; 74:976-982

Specific Aims

1. PROCESS EVALUATION: To determine the screening, approached and enrollment rates of clients
2. IMPACT EVALUATION: To determine capacity at meeting individual risk reduction needs
3. OUTCOME EVALUATION: To determine the overall injury recidivism rate and compare it to our historical institutional control
4. To determine which risk reduction resources are independent predictors of program completion and success

Need	Success Rate
Mental Health	86%
Employment	86%
Housing	75%
Education	72%
Family Counseling	80%
Court Advocacy	76%
Vocational Training	70%
Driver’s License	89%
Other	66%

Need	Success Rate	Odds Ratio
Mental Health	86%	5.97
Employment	86%	4.41
Housing	75%	1.12
Education	72%	0.63
Family Counseling	80%	2.26
Court Advocacy	76%	1.29
Vocational Training	70%	0.69
Driver's License	89%	3.53
Other	66%	1.48


Case manager exposure level in the first 3 months of WAP
Percent
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
NO
YES
0-1 hours (low)
1-2 hours (medium)
3-6 hours (moderate)
^ or more hours (high)
case manager exposure level

Conclusion

- Providing mental health care and employment opportunities Is predictive of success.

- The value of early “high dose” intensive case management is essential.


LIFE TOO MAINEY
EDUCATE TO LIBERATE

A decade of hospital-based violence intervention: Benefits and shortcomings

Catherine Juillard, MD, MPH, Laya Cooperman, MPH, Isabel Allen, PhD, Romain Pirracchio, MD, PhD, Terrell Henderson, Ruben Marquez, Julia Orellana, Michael Texada,
and **Rochelle Ami Dicker, MD**, *San Francisco, California*

- 466 clients enrolled
- Most common needs: Mental health, housing, employment
- Recidivism rate: 50% less than historical controls
- Meeting education needs was associated with success
- Housing: A risk factor?


$282 Billion Each Year
Physical
Hospital Care
Skilled Nursing
Rehabilitation
Functional Impairment
Economic
The Costs of Violence
Emotional
Hospital Costs
Lost Wages
PTSD
Depression
Anxiety
Fear
Societal
Unsafe Neighborhoods

Saving lives and saving money: Hospital-based violence intervention is cost-effective

Catherine Juillard, MD, MPH, Randi Smith, MD, MPH, Nancy Anaya, MD, MS, Arturo Garcia, MD, James G. Kahn, MD, MPH, *and* Rochelle A. Dicker, MD, *San Francisco, California*

JOURNAL OF TRAUMA AND ACUTE CARE SURGERY
VOLUME 78, NUMBER 2

Specific Aims

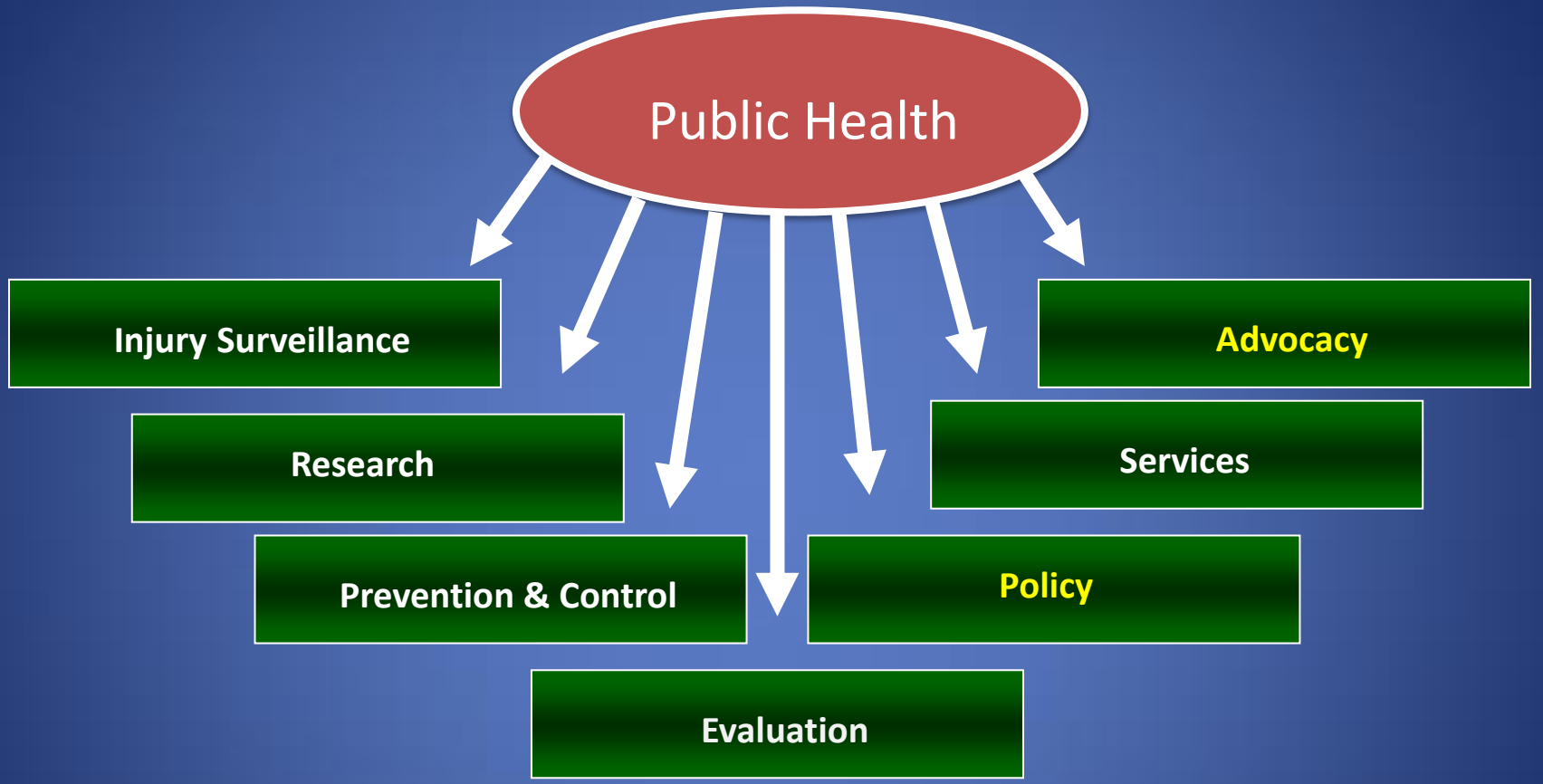
1. To determine the mean cost of trauma per individual at our institution
2. To determine the mean cost of our hospital-centered violence intervention program per individual
3. To compare the cost-utility of hospital-based violence intervention programs to no intervention in young adults victims of interpersonal violence

Markov Analysis

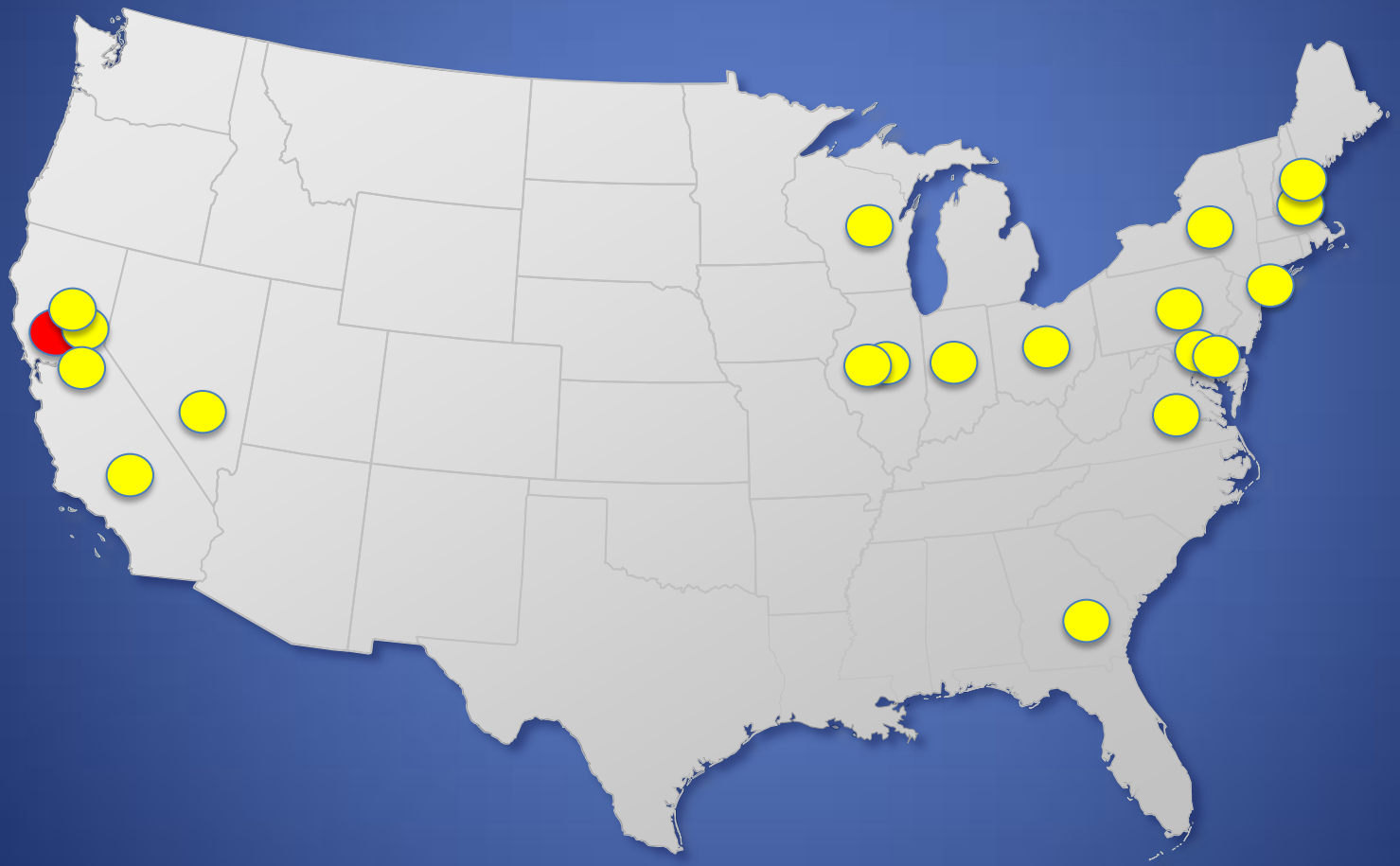
- Hospital-centered violence intervention programs cost money but cost less than caring for patients after re-injury.

WHO FUNDS THIS?
What do they want to see?

- Mayors and Supervisors
- Departments of Public Health
- Foundations
- Federal government
- Private donors
- …POLICY CHANGE


Public Health
Injury Surveillance
Research
Prevention & Control
Evaluation
Policy
Services
Advocacy

National Network of Hospital-Based Violence Intervention Programs



NNHVIP

- Now over 30 programs
- Multiple working groups
- Best practices and curriculum development
- New health care taxonomy development
  - California AB 1629 through Crime Victims Compensation Program
- Annual conferencing with Cure Violence

At Denver Health

- At Risk Intervention and Monitoring (AIM)
  - Katie Bakes
- Denver Health Trauma Team
  - Chief of Surgery Mitch Cohen

American College of Surgeons Committee on Trauma

- Set criteria for Trauma Center verification

- Subcommittee: Hospital Based Violence Intervention:
  - Best practices guide
  - Research agenda
  - Potentially change criteria

Future Directions

- Multi-Institutional Database
  - Sponsored by California Wellness
  - Over 4000 clients
- Policy to incorporate “Trauma Informed Care”
- Development of screening criteria
- Demonstrating value beyond recidivism

Explicating Hospital-Based Violence Intervention Program Risk-Assessment via Qualitative Analysis

Erik J. Kramer BA[1,2], James Dodington MD[1], Ava Hunt BA[1], Terrell Henderson BA[2], Rochelle Dicker MD[2], Catherine Juillard MD, MPH[2]; Yale School of Medicine[1], University of California San Francisco[2]

Erik J. Kramer BA
Yale School of Medicine
M.D. Candidate 2019

University of California
San Francisco

Category A: Elevated-Risk Indicators

Category A: elevated-risk indicators		
A.1 Imminent threat of violence (real or perceived, unresolved conflict)	Yes/no	
A.2 Heavily connected with gangs, gang/criminal lifestyle (carrying weapons, involved in aggravated robbery(s), associates with elevated-risk individuals, views injury as "badge of honor")	Yes/no	
A.3 History of 2+ GSW, SW, other assaults	Yes/no	
A.4 Incarceration/probation/parole history	Yes/no	
A.5 Heavy family/social network history of violence	Yes/no	
A.6 Disengaged/unreceptive (does not want services)	Yes/no	

WHY Health Care providers?

Thank you