Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT CENTER

What Policing Research Can Do

Greg Ridgeway, Ph.D.

Director

cqp.rand.org

Outline

- RAND's Center on Quality Policing
- What cost-of-crime research can tell us about investing in police
- Predictive policing
- Officer-involved shootings
- Police recruiting
- Police performance measurement
- Illegal gun markets

RAND Is an Ideal Setting for Research on Policing

- RAND's policing research program is one of the oldest in the country
- RAND has top scholars in criminology, law, economics, statistics, operations research, psychology, and other fields
- RAND's policing clients and collaborators are local, federal, and international:
  - New York, Chicago, Los Angeles, Philadelphia, Cincinnati, Oakland, San Diego, New Orleans, Dallas, Miami-Dade, Houston
  - Federal Bureau of Investigation, ATF, DEA, Capitol Police, US Postal Inspection Service
  - Israel Police, Liberian National Police
- RAND's objectivity and rigor make it a trusted arbiter in contentious policy debates (e.g., racial profiling)
- We aim to make findings accessible and applicable

RAND's Center on Quality Policing
Recent Activities

- Assessing progress in police-community relations in Cincinnati
- Evaluating the Caruth Police Institute in Dallas
- Comparing the US and UK on DNA evidence management
- Designing an evidence-based model for cold case units
- Developing a strategic plan for the Israel Police
- Assessing the effect of gay officers on recruiting, retention, and performance
- Convening a consortium of major police departments

RAND

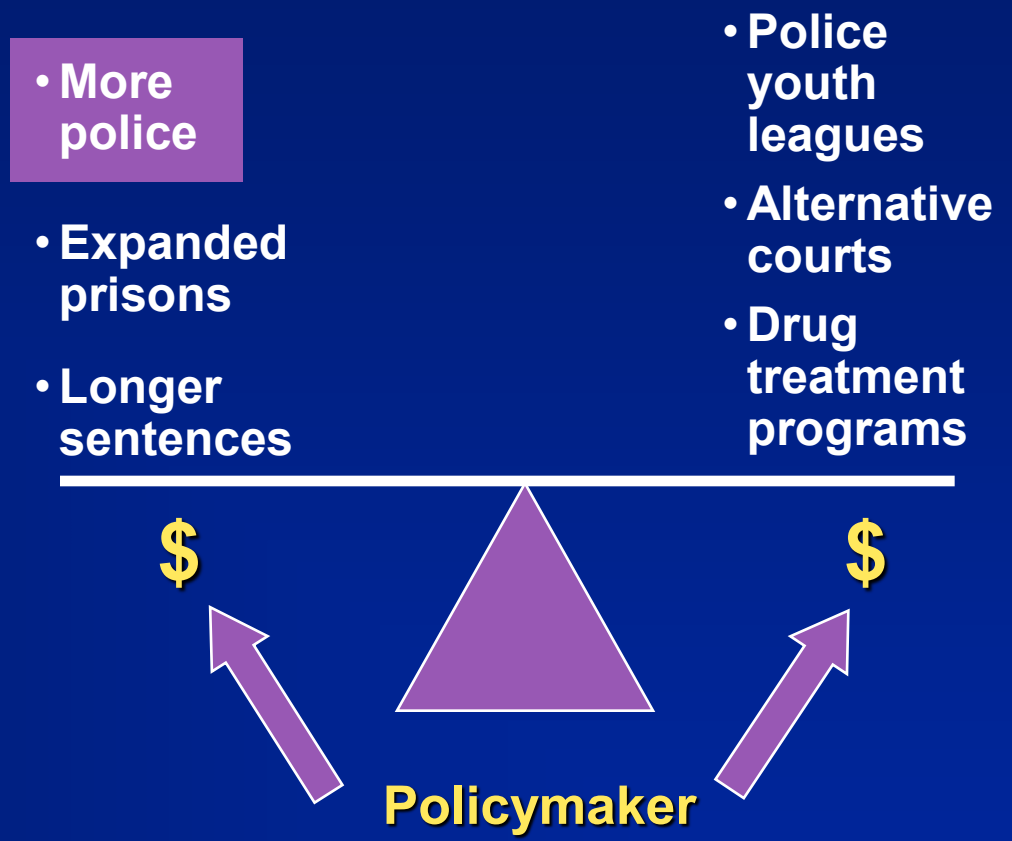
Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT CENTER

Hidden in Plain Sight: What Cost-of-Crime Research Can Tell Us About Investing in Police

Effective Cost-Benefit Analysis Is Needed to Help Determine Crime Control Policy

- Numerous stakeholders promote different policies to control crime
- Faced with many choices, policymakers often allocate resources without clear sense of benefits
- Current budget shortfalls heighten need for better info on value of public investments in controlling crime



This study considers the value of police hiring as a crime control policy

Key Questions for Today

- **What are the costs of crime, and how do we estimate them?**
- **How much does changing the size of the police force impact crime?**
- **How can we use the above information to conduct cost-benefit analyses of police personnel investments?**

Crime Costs Are More Than Simply Enforcement Costs

- **Correctly assessing total crime costs requires including:**
  - **Enforcement costs (costs of police, courts, incarceration)**
  - **Victim costs (lost property or treatment costs for injuries)**
  - **Crime avoidance costs (private security or reduced usability of public spaces)**
- **Crime costs are both tangible and intangible**
  - **Tangible: direct financial costs to individuals, businesses, or government from out-of-pocket expenditures or lost productivity**
  - **Intangible: lost quality of life**
- **Intangible costs harder to measure but can be a substantial part of the total cost of crime**

Three Approaches Are Used to Estimate the Costs of Crime

Accounting-Based Methods	• **Identify all individual crime cost components borne by individuals and society and place a dollar value on those costs** • **Can understate societal costs**

Three Approaches Are Used to Estimate the Costs of Crime

Accounting-Based Methods	• **Identify all individual crime cost components borne by individuals and society and place a dollar value on those costs** • **Can understate societal costs**
Contingent Valuation	• **Elicit information about individual willingness to pay for crime reduction using survey questions** • **Can better capture both tangible and intangible costs, but respondents may misreport true willingness to pay**

Three Approaches Are Used to Estimate the Costs of Crime

Accounting-Based Methods	• Identify all individual crime cost components borne by individuals and society and place a dollar value on those costs • Can understate societal costs
Contingent Valuation	• Elicit information about individual willingness to pay for crime reduction using survey questions • Can better capture both tangible and intangible costs, but respondents may misreport true willingness to pay
Hedonic Valuation	• Estimate relationship between neighborhood characteristics (e.g., crime) and housing prices to measure value of neighborhood amenities • Often difficult to separate effects of crime from other neighborhood characteristics

Existing Studies Estimate the Cost of a Representative Crime

	Accounting-Based Methods		Contingent Valuation Method	
Index Crime Type	Study 1	Study 2	Study 3	Average
Homicide	$5,000,000	$9,339,330	$11,608,317	$8,649,216
Rape	$150,000	$219,973	$283,626	$217,866
Robbery	$23,000	$51,117	$127,715	$67,277
Serious Assault	$55,000	$122,943	$83,771	$87,238
Burglary	$5,000	$4,370	$29,918	$13,096
Larceny	$2,800	$1,478	N/A	$2,139
Motor-Vehicle Theft	$9,000	$9,158	N/A	$9,079

Annual Crime Costs in Selected Localities Range from 1-7% of Total Economic Output

Locality	Law Enforcement Agency	Crime Costs, 2006 (billions)	Gross Municipal Product, 2006 (billions)	Crime Costs As Percentage of Total Output
Chicago	Chicago Police Department	$8.3	$144.6	5.7%
Dallas	Dallas Police Department	$3.4	$69.5	4.8%
Houston	Houston Police Department	$5.7	$133.4	4.2%
Los Angeles	LAPD	$6.4	$202.2	3.1%
Los Angeles County	L.A. County Sheriff's Department	$2.0	$131.3	1.5%
Miami-Dade County	Miami-Dade Police Department	$1.8	$109.0	1.6%
Philadelphia	Philadelphia Police Department	$6.2	$86.0	7.2%

Large Fraction of Violent Crime Costs Are Intangible; Property Crime Costs Mostly Tangible

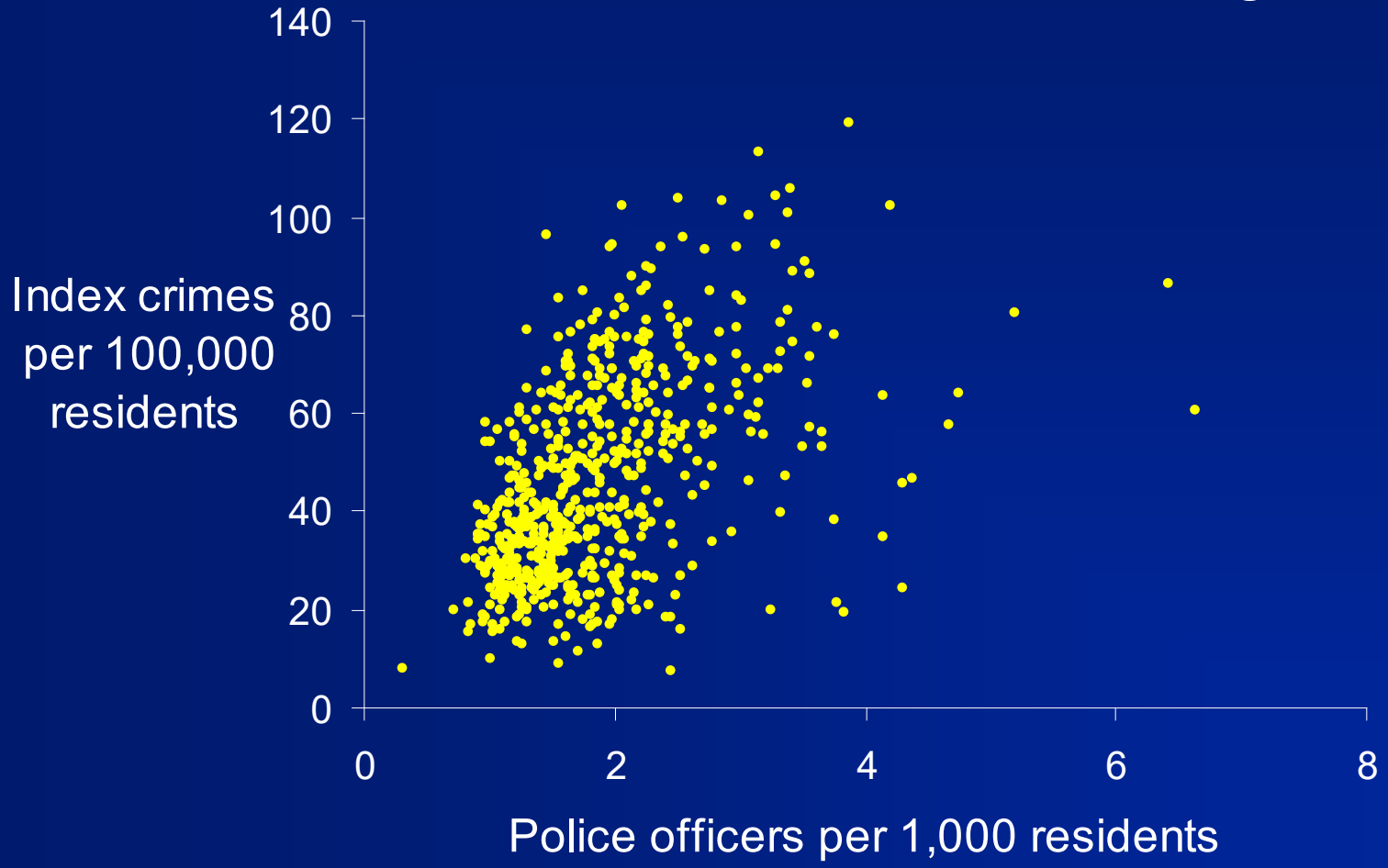
	Study 1		Study 2	
Index Crime Type	Tangible	Intangible	Tangible	Intangible
Homicide	34	66	13	87
Rape	6	94	13	87
Robbery	20	80	16	84
Serious Assault	29	71	43	57
Burglary	79	21	91	9
Larceny	100	0	99	1
Motor-Vehicle Theft	92	8	98	2

Key Questions for Today

- What are the costs of crime, and how do we estimate them?
- How much does changing the size of the police force impact crime?
- How can we use the above information to conduct cost-benefit analyses of police personnel investments?

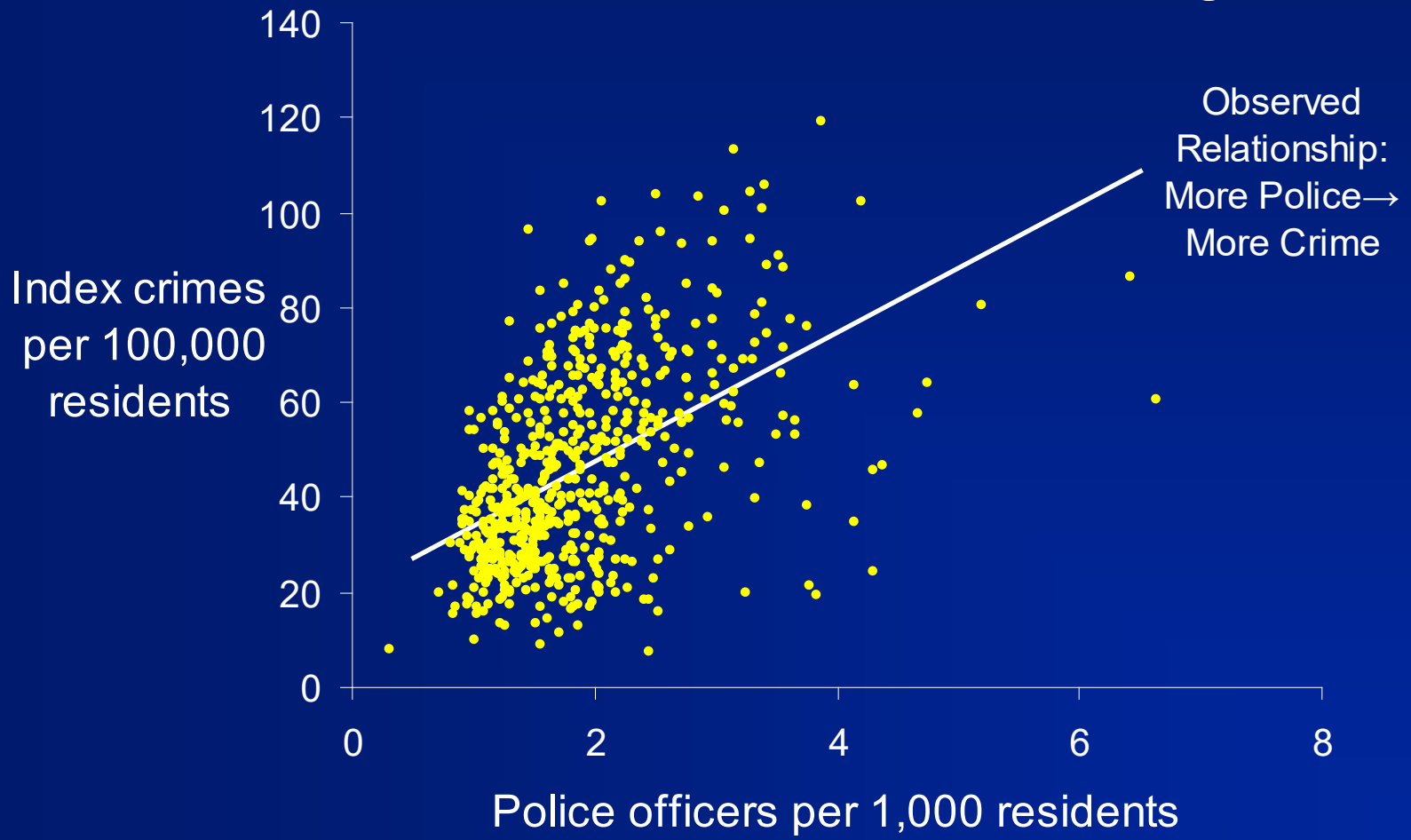
Examine the Relationship Between Police and Crime

Index Crime Rates and Police Force Size in 623 Large U.S. Cities



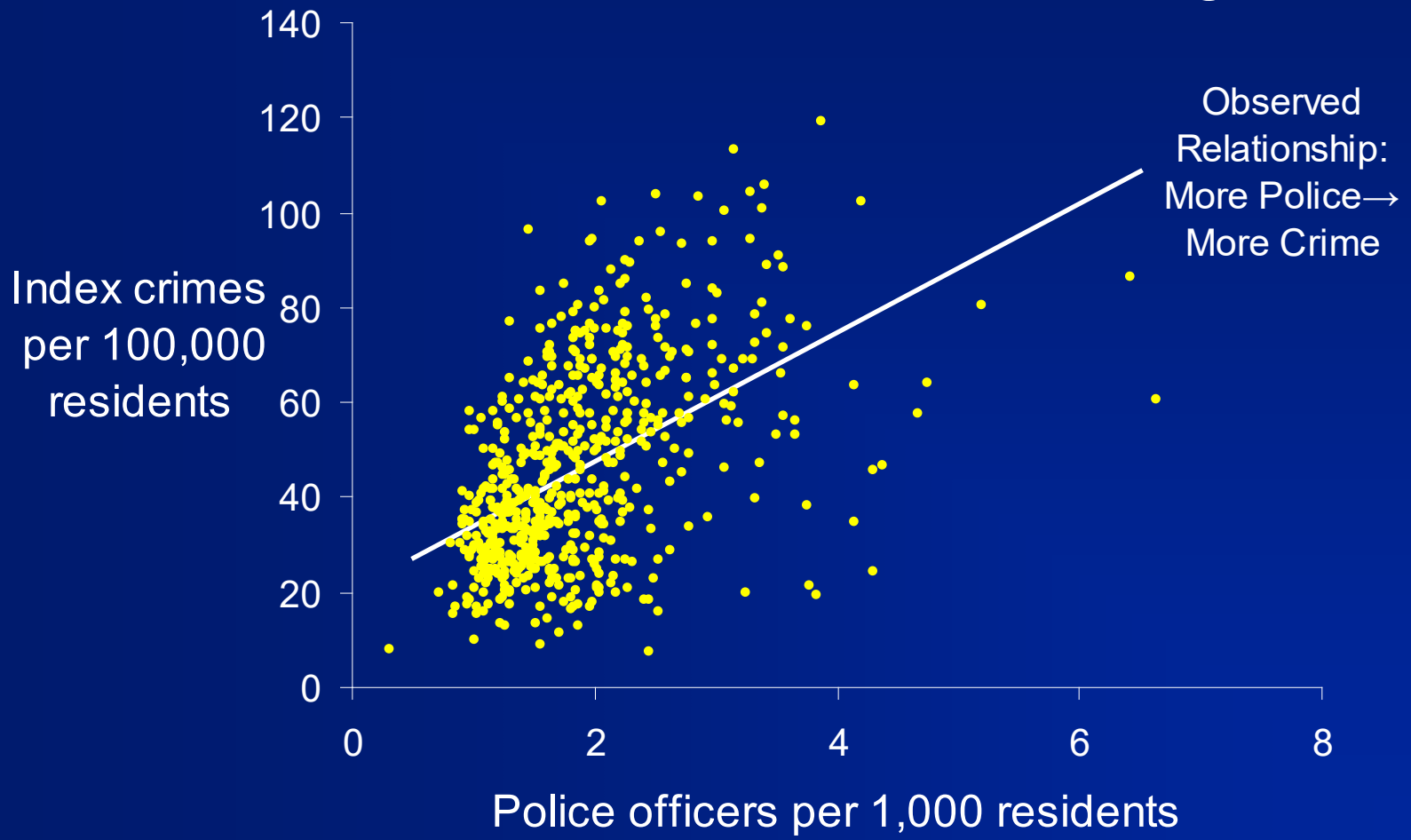
Do Police Cause Crime?

Index Crime Rates and Police Force Size in 623 Large U.S. Cities



~~Do Police Cause Crime?~~

Index Crime Rates and Police Force Size in 623 Large U.S. Cities



More likely, crime causes more police

Quasi-Experimental Studies Aim to Isolate the Effects of Additional Police From Other Factors

- To address the question more appropriately, researchers look for "random" variation in police force size

- Examples:
  - Focus on a large-scale federal hiring program that increased officers in a wide variety of different localities
  - Examine variations in crime around mayoral/gubernatorial elections, when police are often hired to appease voters
  - Measure how street crime changes when patrol officers are reallocated because of terrorist threats

Higher-quality studies consistently show police reduce crime

Studies Estimate % Change in Crime Caused by a 1% Increase in Police Personnel Levels

	Election Cycle	Hiring	Timing	Reallocation		
Index Crime Type	Study 1	Study 2	Study 3	Study 4	Study 5	Combined Impact
Homicide	–0.91	–0.84	–1.39	N/A	N/A	–0.93

We Can Estimate Crime Reduction from a 1% Increase in Police Personnel Levels

	Election Cycle	Hiring	Timing	Reallocation		
Index Crime Type	**Study 1**	**Study 2**	**Study 3**	**Study 4**	**Study 5**	**Combined Impact**
Homicide	**–0.91**	**–0.84**	–1.39	N/A	N/A	**–0.93**
Rape	–0.03	–0.42	N/A	N/A	N/A	–0.17
Robbery	**–0.45**	**–1.34**	**–0.53**	N/A	N/A	**–0.59**
Serious Assault	0.40	**–0.96**	–0.288	N/A	N/A	**–0.29**
Burglary	–0.20	**–0.59**	**–0.42**	–0.30	N/A	**–0.40**
Larceny	–0.14	–0.08	N/A	N/A	N/A	–0.10
Motor-Vehicle Theft	**–1.70**	**–1.85**	–0.452	**–0.86**	**–0.33**	**–0.44**

Key Questions for Today

- **What are the costs of crime, and how do we estimate them?**
- **How much does changing the size of the police force impact crime?**
- **How can we use the above information to conduct cost-benefit analyses of police personnel investments?**

We Can Conduct Cost-Benefit Analysis of Changes in the Size of a Local Police Force

- Can compute the dollar value of crime induced or prevented as the size of the police force changes
- Can compare to the cost of the officers in a cost/benefit analysis
- We consider two real-world examples to illustrate the approach:
  - In Los Angeles, impact of 10 percent increase in police force over 5-year period: expected cost = $125–150 million per year
  - In Toledo, impact of 12 percent decrease in police force on May 1, 2009: expected cost savings = $6 million

How Do We Calculate the Impact of a 10% Increase in Police In L.A.?

Index Crime Type	Ave Number of Crimes, 2005–07	Proj Crimes Averted from 10% Increase in Police	Cost Per Crime ($)	Projected Cost Savings ($ millions)
Homicide	453	42	8,649,216	363.27

- Average number of homicides per year in L.A. = 453 homicides
- 453 homicides X 0.1 (10% increase in number of officers) X -0.927 (effect of police on homicides) = 42 fewer homicides
- 42 fewer homicides X $8,646,216 (cost/homicide) = $363.27 million dollars

10% Increase in Police In L.A. Yields Substantial Projected Cost Savings

Index Crime Type	Ave Number of Crimes, 2005–07	Proj Crimes Averted from 10% Increase in Police	Cost Per Crime ($)	Proj Cost Savings ($ millions)
Homicide	453	42	8,649,216	363.27
Rape	951	0	217,866	0.00
Robbery	13,743	814	67,277	54.76
Serious Assault	14,169	414	87,238	36.12
Burglary	20,462	827	13,096	10.83
Larceny	59,704	0	2,139	0.00
Motor-Vehicle Theft	24,872	1,094	9,079	9.93
Aggregate Cost Savings ($ millions)				474.91

12% Decrease in Police in Toledo Leads to Substantial Additional Costs

Index Crime Type	Number of Crimes, 2008	Proj Additional Crimes from 12% Decrease in Police	Cost Per Crime ($)	Proj Additional Costs ($ millions)
Homicide	18	2	8,649,216	17.30
Rape	132	0	217,866	0.00
Robbery	1,383	82	67,277	5.52
Serious Assault	2,088	61	87,238	5.32
Burglary	6,522	263	13,096	3.44
Larceny	10,671	0	2,139	0.00
Motor-Vehicle Theft	447	20	9,079	0.18
Aggregate Costs ($ millions)				31.76

Approach Also Allows Us to Estimate Benefits of Hiring Additional Police Officers

Police Department	Expected Crime Reduction Benefits of Hiring One Additional Officer
Chicago Police Department	$391,655
Dallas Police Department	$673,316
Houston Police Department	$797,816
Los Angeles Police Department	$482,966
L.A. County Sheriff's Department	$151,369
Miami-Dade Police Department	$304,561
Philadelphia Police Department	$650,630

This Cost/Benefit Approach Can Easily Accommodate Alternative Assumptions

- Calculations can be easily modified to incorporate alternative viewpoints about proper notion of crime costs/benefits
- Examples:
  - What if we use smaller numbers for the cost of a homicide or exclude homicide altogether?
  - What if we expand the analysis to non-index crimes?
  - What if we adjust for the fact that crime is underreported?
  - What if we consider one particular study to be more reliable, so we use numbers from just that study?
- Analyses that consider range of assumptions about costs likely more credible to policymakers/public

LAPD Expansion Looks Beneficial Across a Range of Alternative Modeling Assumptions

Savings Based on Cost Scenario

Effect. Scen.	Ave.	Study A	COLA	Tangible Only	No Homicide	Reporting Adjust	Other Crimes
Ave.	474.9	264.9	516.9	101.6	116.6	543.3	491.6
Low	383.6	213.7	417.6	79.4	54.5	412.2	392.0
High	839.5	474.2	913.8	200.9	296.7	1,016.5	847.8

Cost of LAPD expansion = $125–150 million

Summary

- Cost-benefit analyses can help effectively adjudicate merits of crime control policies
- Existing academic research provides all the ingredients needed for simple cost-benefit calculations of police personnel investments
  - When properly understood, info from high-quality studies can be used in transparently and straightforwardly
  - Approach is flexible enough to readily accommodate differing assumptions and local circumstances
- The best research suggests that the crime-control benefits of additional officers are large

Questions to Consider

- How much does crime cost your community?
- How much is one of your officers worth?
- How can you use this information effectively in your community?

Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT CENTER

Predictive Policing

cqp.rand.org

Predictive Policing Has No Operational Definition

NIJ - "A framework to advance a group of strategies"

Elements

1. Integrated information and operations
2. Seeing the big picture
3. Cutting-edge analysis and technology
4. Linkage to performance
5. Adaptability to changing conditions

RAND - "A paradigm shift in which police use data to predict where crime will occur so that it can be prevented"

Elements

1. Prediction Model
2. Prevention Model

Predictive Policing as a Concept Has Yet to Be Validated

This evaluation project will investigate

1. **What is predictive policing?**
2. **Is predictive policing possible?**
3. **Can these techniques can be implemented in a policing environment?**
4. **How effective are these techniques in practice?**

Seven Sites Are Planning Predictive Policing Programs

Provided planning grants to researcher/police department collaborations:

1. **Boston Police Department**
2. **Chicago Police Department**
3. **DC Metropolitan Police Department**
4. **Los Angeles Police Department**
5. **Maryland State Police Department**
6. **New York City Police Department**
7. **Shreveport Police Department**

Seven Sites Are Planning Predictive Policing Programs

Provided planning grants to researcher/police department collaborations:

1. Boston Police Department
2. Chicago Police Department
3. DC Metropolitan Police Department
4. Los Angeles Police Department
5. Maryland State Police Department
6. New York City Police Department
7. Shreveport Police Department

Shreveport Is Focusing on Preventing Spikes in Crime

Program Theory	Prediction Models	Prevention Models	Intermediate Outcomes	Final Outcomes

Crime spikes are preceded by *leading indicators*

Predictions of crime spikes will enable police to strategize

Shreveport Will Integrate Predictions in COMPSTAT

Program Theory	Prediction Models	Prevention Models	Intermediate Outcomes	Final Outcomes

Crime spikes are preceded by *leading indicators*

Predictions of crime spikes will enable police to strategize

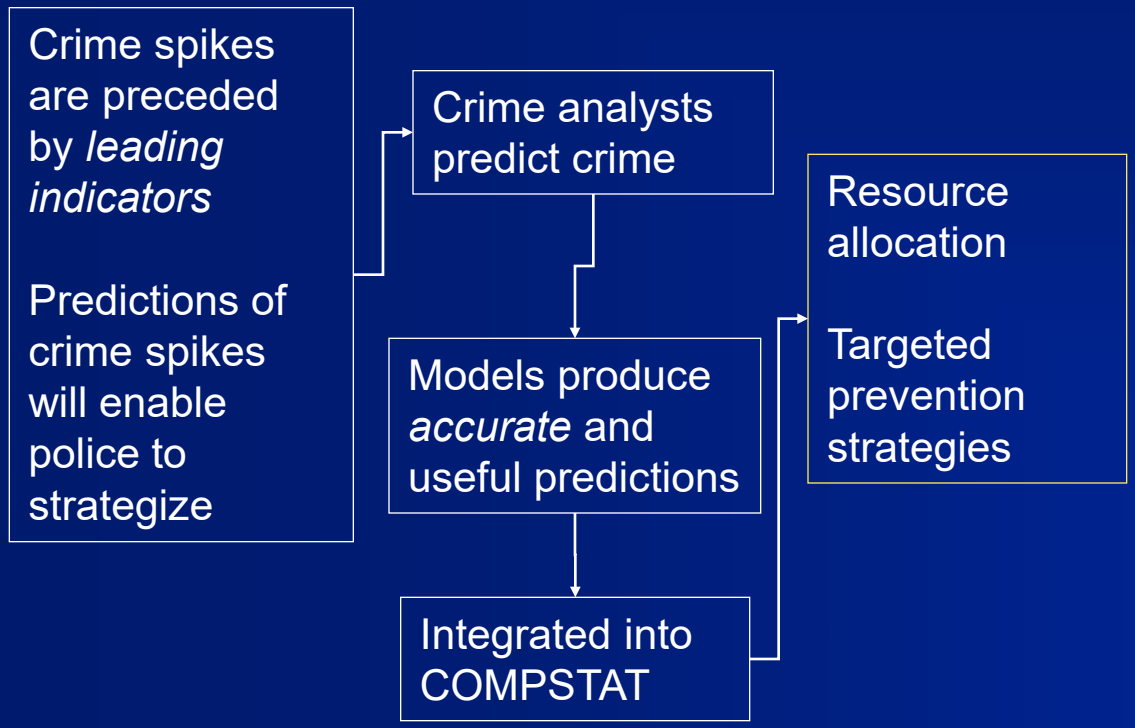
Crime analysts predict crime

Models produce *accurate* and *useful* predictions

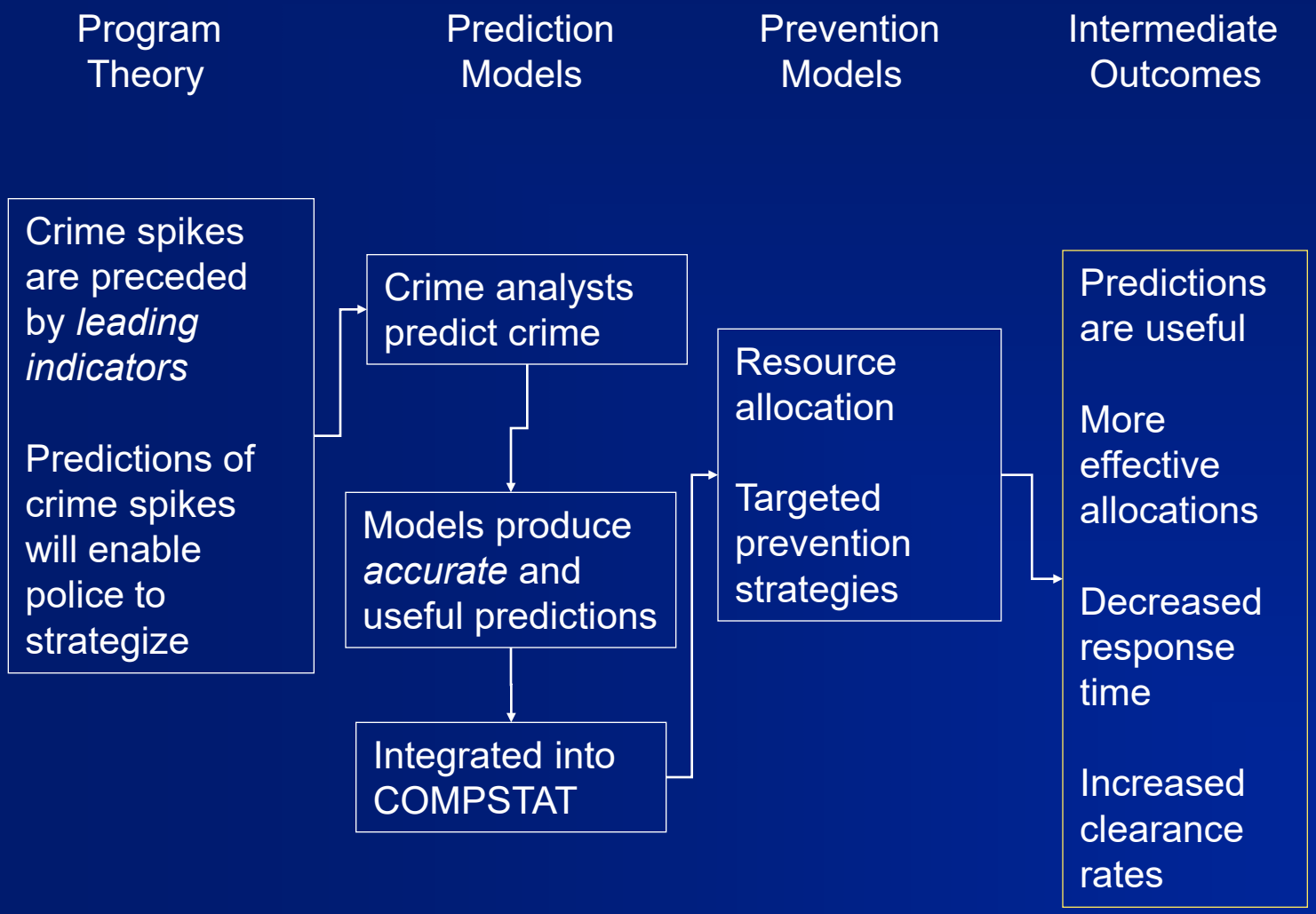
Integrated into COMPSTAT

Predictions Will Inform Staffing and Strategy

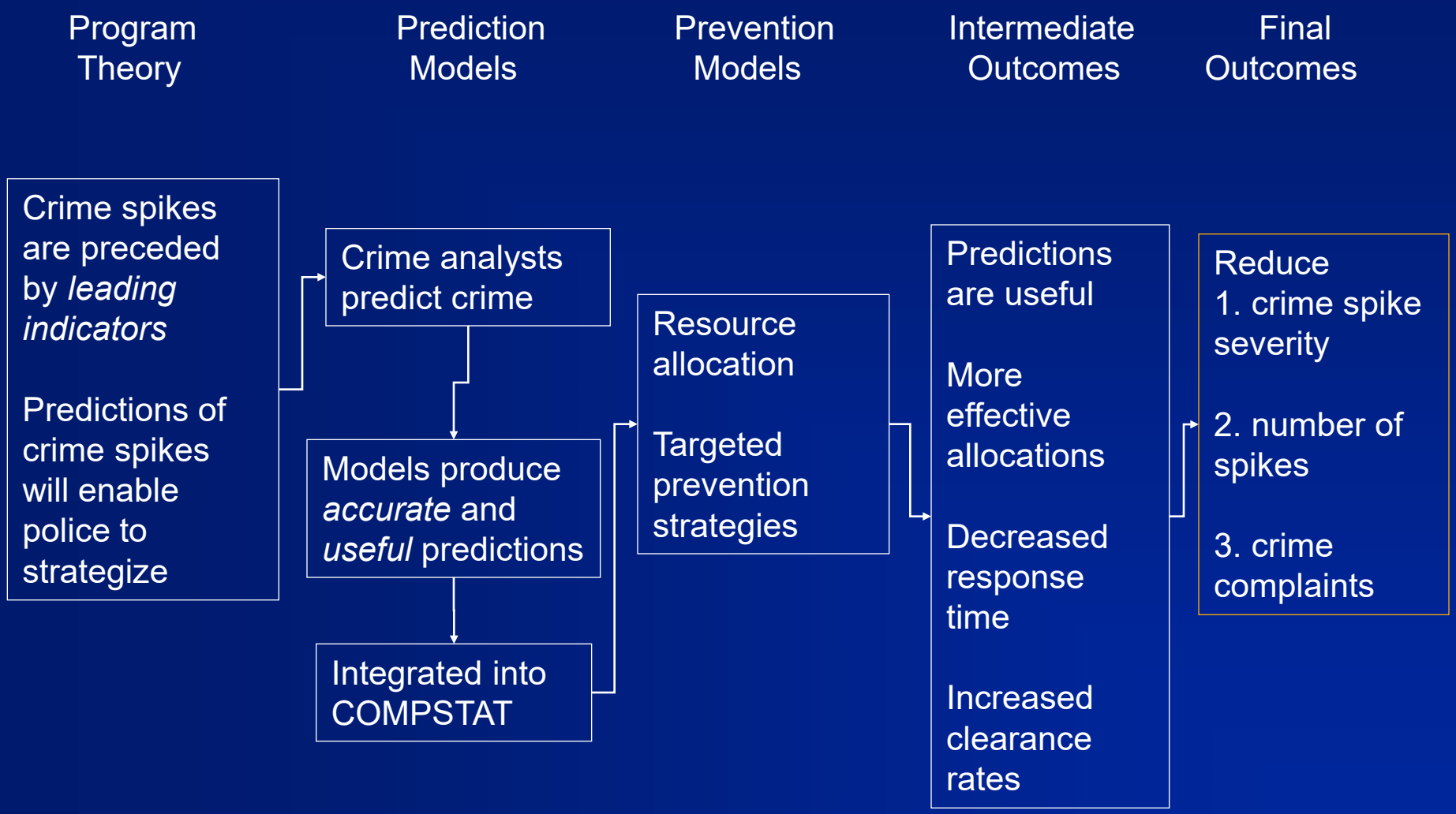
Program Theory	Prediction Models	Prevention Models	Intermediate Outcomes	Final Outcomes



We Will Assess If Predictions Have an Impact



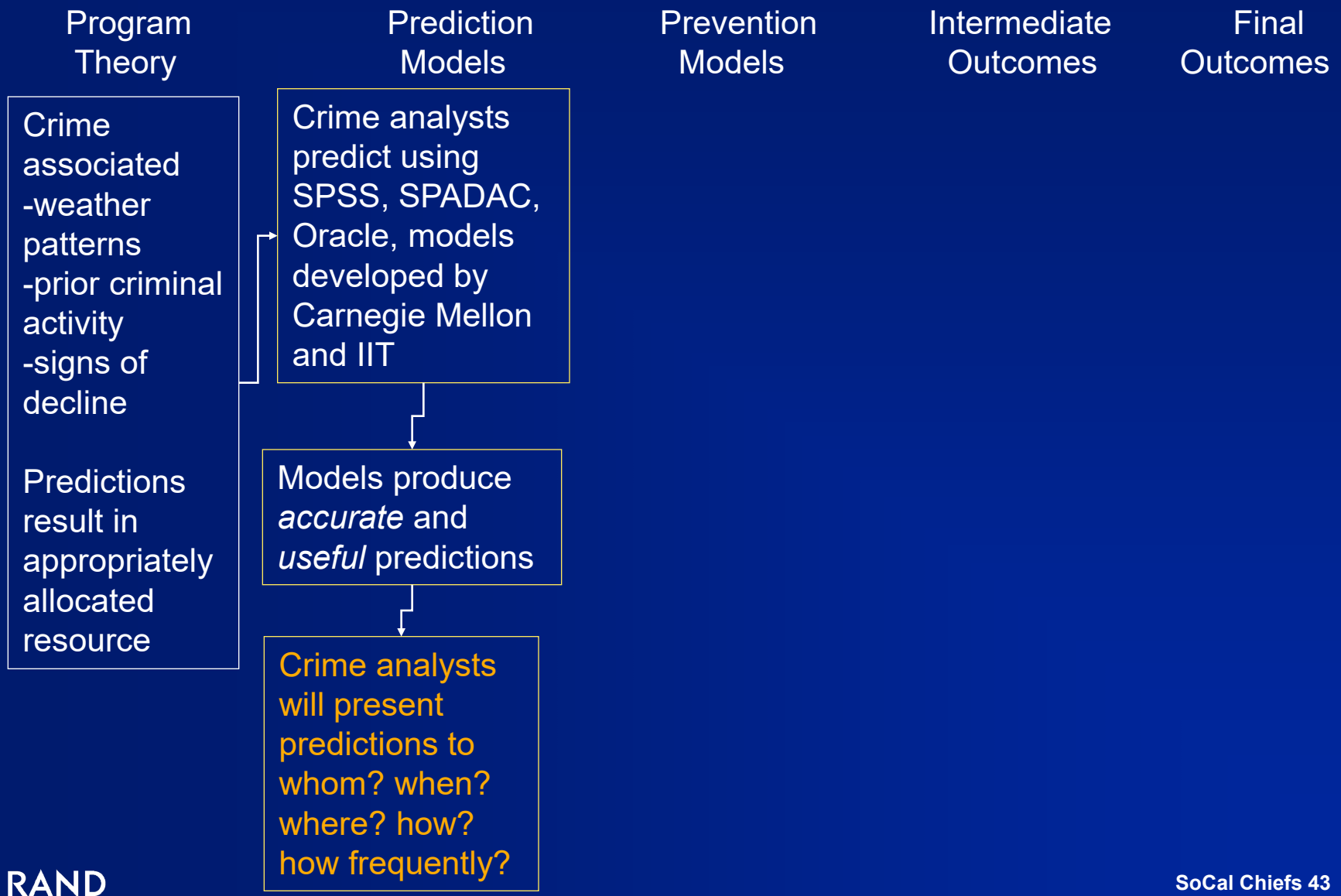
Predictions Should Reduce Spike Frequency, Intensity, and Duration



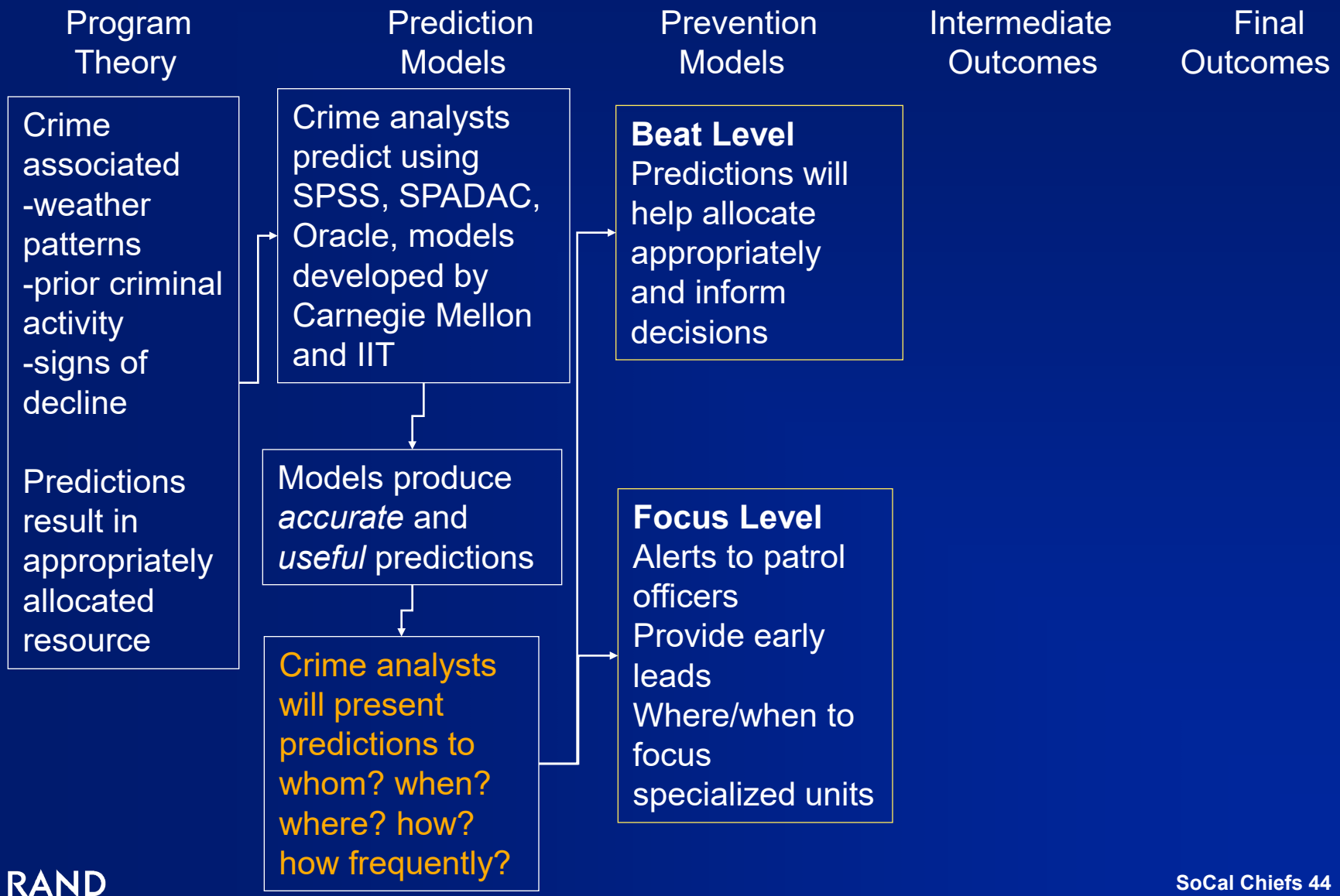
Chicago PD Assessing If Readily Available Data Predicts Crime

Program Theory	Prediction Models	Prevention Models	Intermediate Outcomes	Final Outcomes
Crime associated -weather patterns -prior criminal activity -signs of decline Predictions result in appropriately allocated resource				

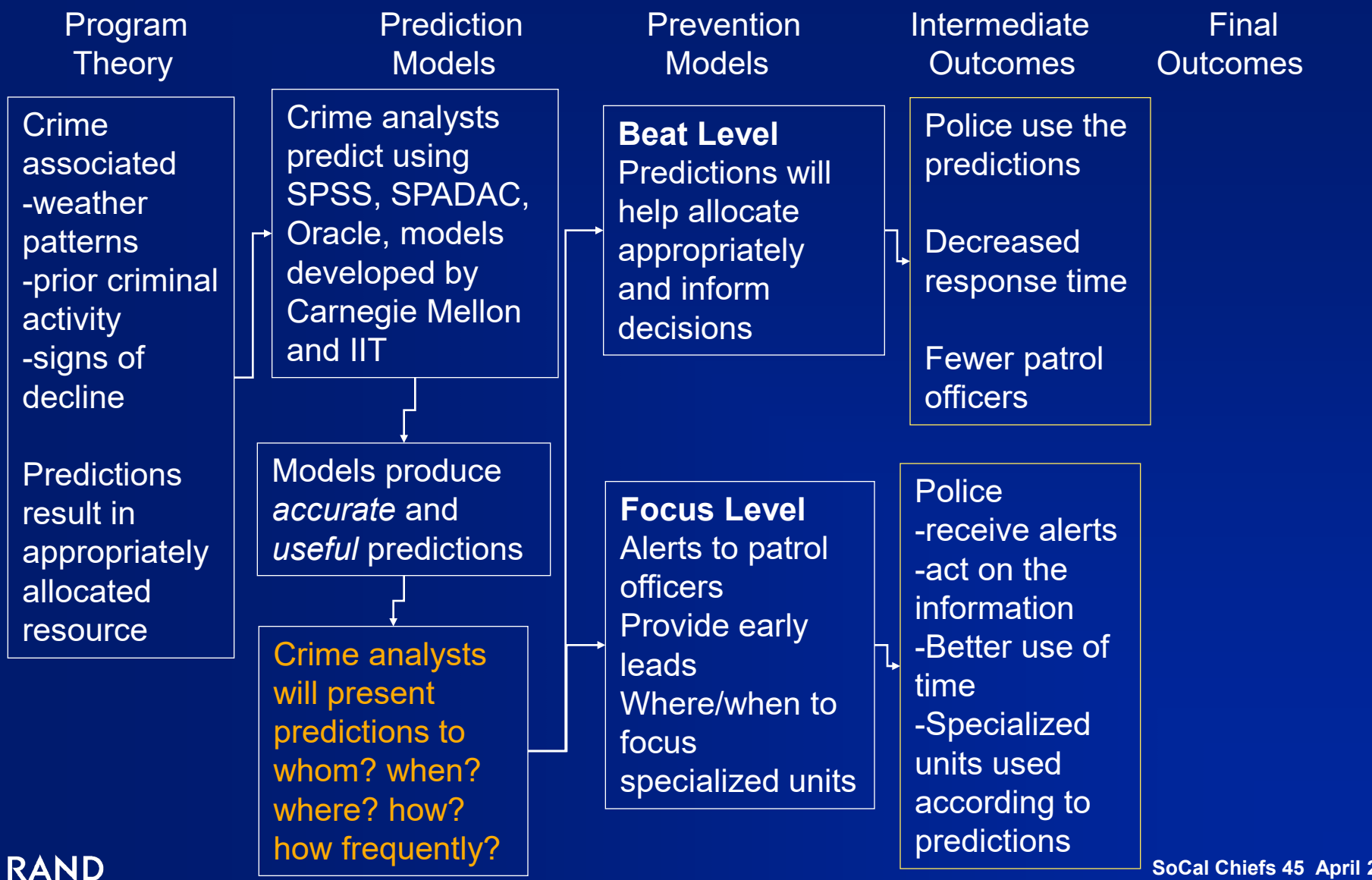
Sophisticated Models, But Dissemination Is Undetermined



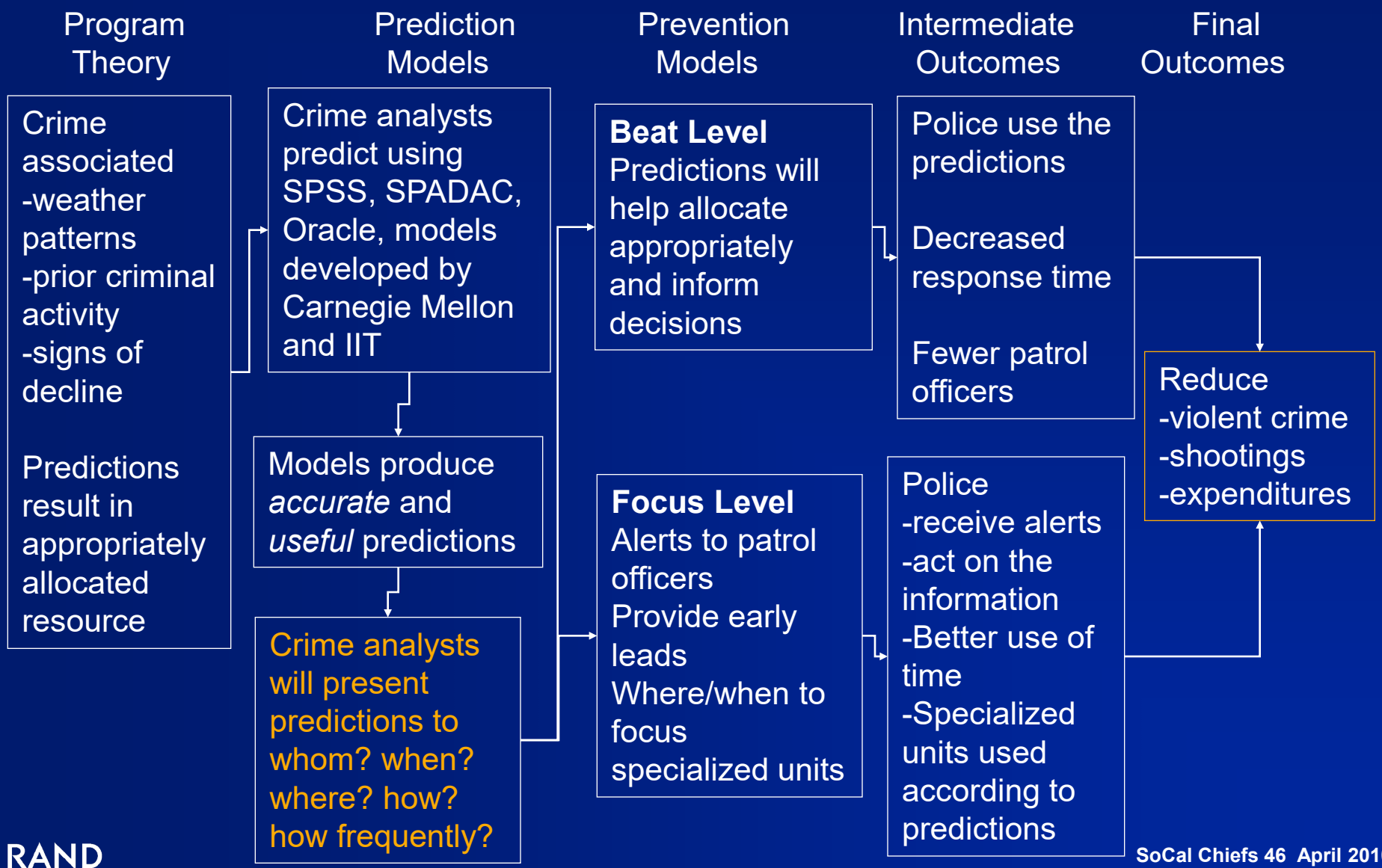
Chicago is Focusing on Two Types of Predictions



We Will Assess Whether the Predictions are Used and Useful



Chicago PD Aims to Ultimately Reduce Crime and Costs



Worksheet Exercise

1. What are your biggest crime problems?
2. Do you think that the crimes that you identified could be anticipated?
3. How specific (where, when, who) would the prediction need to be in order for you to use the information?
4. How could you use predictions in practice?
5. Does your department have the capacity to implement the predictive policing program you have envisioned?

Break

Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT CENTER

Officer Risk Factors to Be Involved in a Shooting

NYPD Asked RAND for a Comprehensive Review of Firearm Practices

- **Prompted by controversy surrounding an officer-involved shooting (OIS), NYPD Police Commissioner Kelly asked RAND to focus on:**
  - **Initial firearms training provided to new recruits**
  - **In-service firearms training**
  - **Firearms Discharge Review Board functions and processes**
  - **The phenomenon of reflexive shooting**

"The characteristics of officers involved in discharge incidents will be examined for patterns in training, experience, supervision, and other factors that may help predict, and thus reduce, firearms discharges generally and inappropriate discharges in particular"

Assessing Officer Risk Factors Requires Careful Comparison

- Officers that discharge their weapons often look different from other officers in obvious ways, such as
  - In the field
  - In particular neighborhoods
  - Conducting higher risk operations
  - Not at a desk
- Compare shooting officer to other non-shooting officers on the scene
  - Does not judge shooting justification
  - But if there is a consistent pattern it could inform training or assignments

Utilized Data on a Review of Three Years of OIS Records

- Gathered data on all shooting incidents adjudicated in 2004, 2005, and 2006
- For each shooting we recorded
  - department ID numbers for shooters in the incident
  - department ID numbers for non-shooting officers that were witnesses or in the immediate vicinity of the shooting
- 106 incidents involving 150 shooting officers and 141 non-shooting officers
- Collected data on age, experience, education, training, and past performance

Who Is More Likely to Shoot?

Variable
Rank
Police officer
Detective
Sergeant
Lieutenant
Captain

- **If an OIS occurs and an officer at each of these ranks is on the scene, who is most likely to be the shooter?**

Supervisors and Management Ranks Are Less Likely to Shoot

Variable	Risk difference
Rank	
Police officer (reference)	
Detective	No difference
Sergeant	-72%
Lieutenant	-95%
Captain	-94%

Who Is More Likely to Shoot?

Variable	Risk difference
Rank	
Police officer (reference)	
Detective	No difference
Sergeant	-72%
Lieutenant	-95%
Captain	-94%
Years at NYPD	
Age	
Education	
Special assignment	

Each Additional Year of Age Decreases Shooting Risk by 10 Percent

Variable	Risk difference
Rank	
Police officer (reference)	
Detective	No difference
Sergeant	-72%
Lieutenant	-95%
Captain	-94%
Years at NYPD	No difference
Age	-10%
Education	No difference
Special assignment	No difference

Who Is More Likely to Shoot?

Variable	Risk difference
Rank	
Police officer (reference)	
Detective	No difference
Sergeant	-72%
Lieutenant	-95%
Captain	-94%
Years at NYPD	No difference
Age	-10%
Education	No difference
Special assignment	No difference
Average annual	
Evaluation score < 3.5	
Range score < 86	
Complaints > 0.6	
Medal count/ year > 3.8	
CPI points > 3.1	
Gun arrests > 2.4	
Felony arrests > 9.3	
Misdemeanor arrests > 10.0	
Days of leave	

Rapid Accumulation of Negative Marks Signals Elevated Shooting Risk

Variable	Risk difference
Rank	
Police officer (reference)	
Detective	No difference
Sergeant	-72%
Lieutenant	-95%
Captain	-94%
Years at NYPD	No difference
Age	-10%
Education	No difference
Special assignment	No difference
Average annual	
Evaluation score < 3.5	
Range score < 86	
Complaints > 0.6	
Medal count/ year > 3.8	
CPI points > 3.1	+201%
Gun arrests > 2.4	
Felony arrests > 9.3	
Misdemeanor arrests > 10.0	-76%
Days of leave	

Some Evidence That the More "Active" Officer Might Be the Key Factor

Variable	Risk difference
Rank	
Police officer (reference)	
Detective	No difference
Sergeant	-72%
Lieutenant	-95%
Captain	-94%
Years at NYPD	No difference
Age	-10%
Education	No difference
Special assignment	No difference
Average annual	
Evaluation score < 3.5	No difference
Range score < 86	+73%
Complaints > 0.6	+66%
Medal count/ year > 3.8	+164%
CPI points > 3.1	+201%
Gun arrests > 2.4	No difference
Felony arrests > 9.3	+107%
Misdemeanor arrests > 10.0	-76%
Days of leave	No difference

Summary of Findings

- Closely monitor CPI point accumulation
- Review of discharge reports did reveal examples of reflexive shootings
- Expand scenario-based training
- Increase availability of less-lethal weapons
- Institute formal lessons-learned process—tactics, training, equipment
- Promptly provide recommended training

Questions to Consider

- Do you know the scenarios that concern you the most?
- Could your youngest officers handle those scenarios?
- The FAA investigates "close calls," not just air disasters. What kind of close calls in policing would be useful to examine?
- Are reviews of tactics investigating only the facts of a specific case… or is there a process that could detect patterns across cases?

Center on Quality Policing

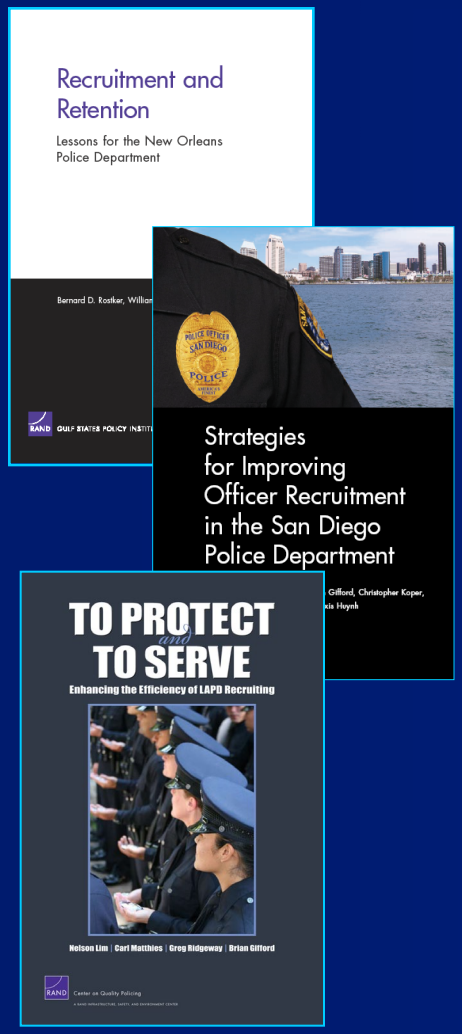
A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT CENTER

Evidence-based Management of Police Recruiting

RAND Assists Police Departments with Their Recruiting Efforts

- For several decades, RAND has assisted the United States military and other government agencies (FBI, CIA, NSA) with their human resources management
  - Recruiting
  - Leadership development
  - Promotion decisions
  - Retention
- RAND now applies our analytical approach to improve police recruiting
  - Marketing strategies
  - Selection process
  - Recruiter management
  - Process management

Police Recruiting Is Challenging... Regardless of the Economy

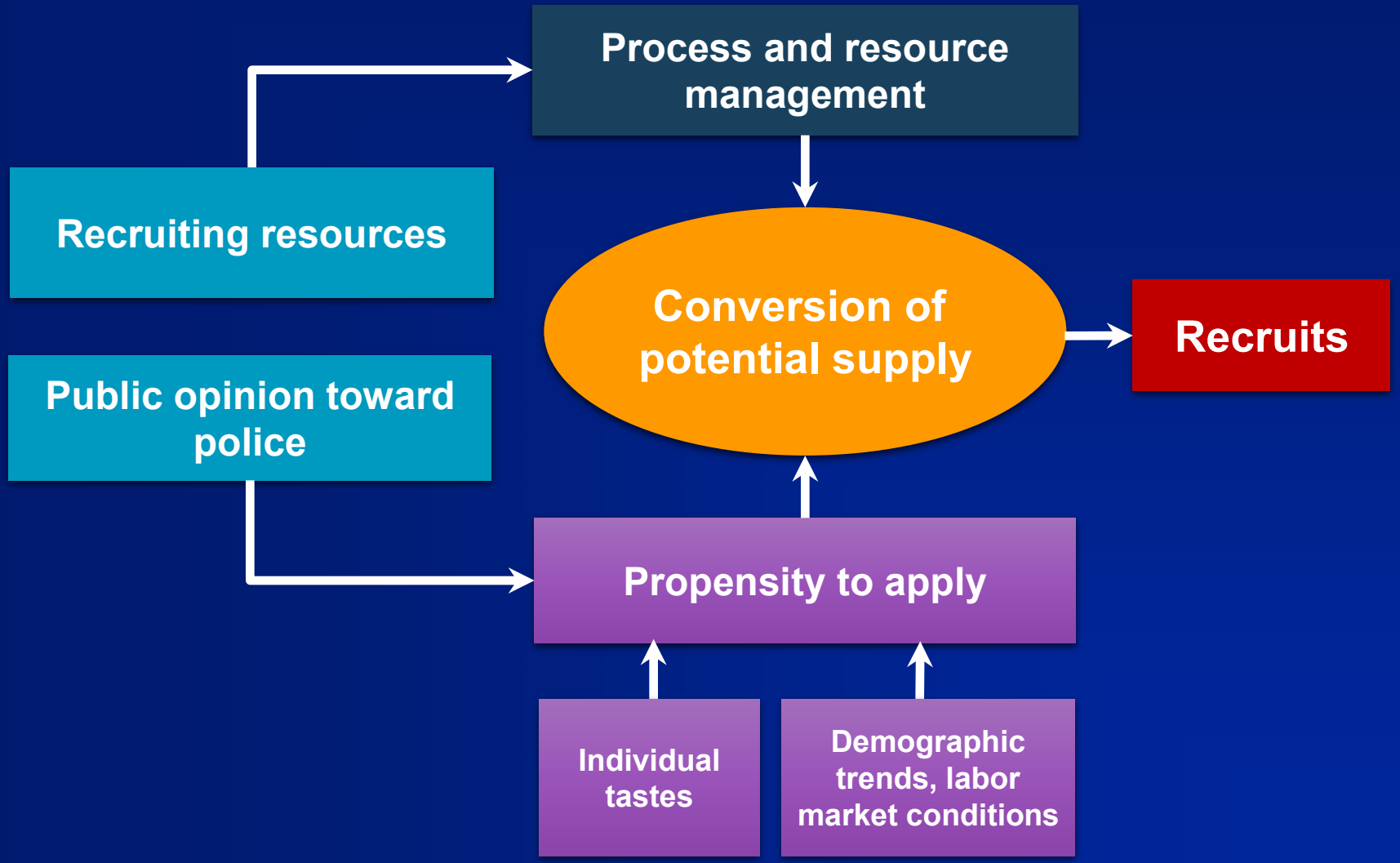


- **Several trends have worked against police recruiting in the last decade**
  - **Increases in obesity**
  - **Competition from federal agencies post-9/11**
  - **A tight labor market**
  - **Debt**
- **New Orleans PD lost 20% of its officers post-Katrina**
- **San Diego PD struggled against the popular belief that there was a hiring freeze**
- **Los Angeles PD was under political pressure to add 1,000 new officers**

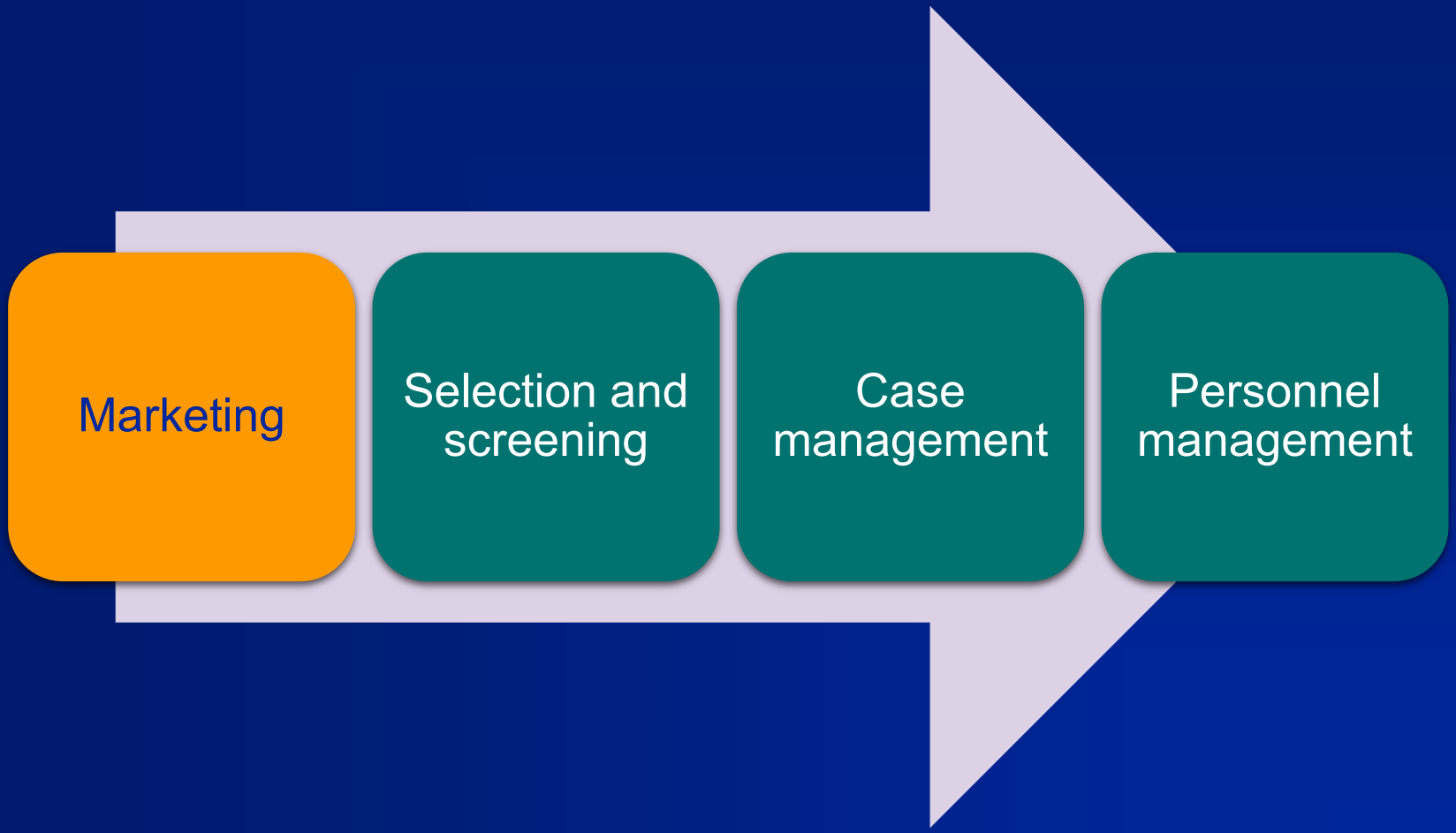
Police Recruiting Will Continue to Be a Challenge

- **Today's environment offers different challenges**
  - **Unemployment rates have expanded the labor pool**
  - **Municipal budgets have resulted in canceled academies, furloughs, and layoffs**
- **The next decade suggests more of the same**
  - **Current unemployment rates provide a large disincentive to leaving a law enforcement career**
  - **Between 1996 and 2000, police departments increased by 5 percent and sheriff departments increased by 10 percent**
  - **COPS-funded cohort will reach 20 years of service in 2015**

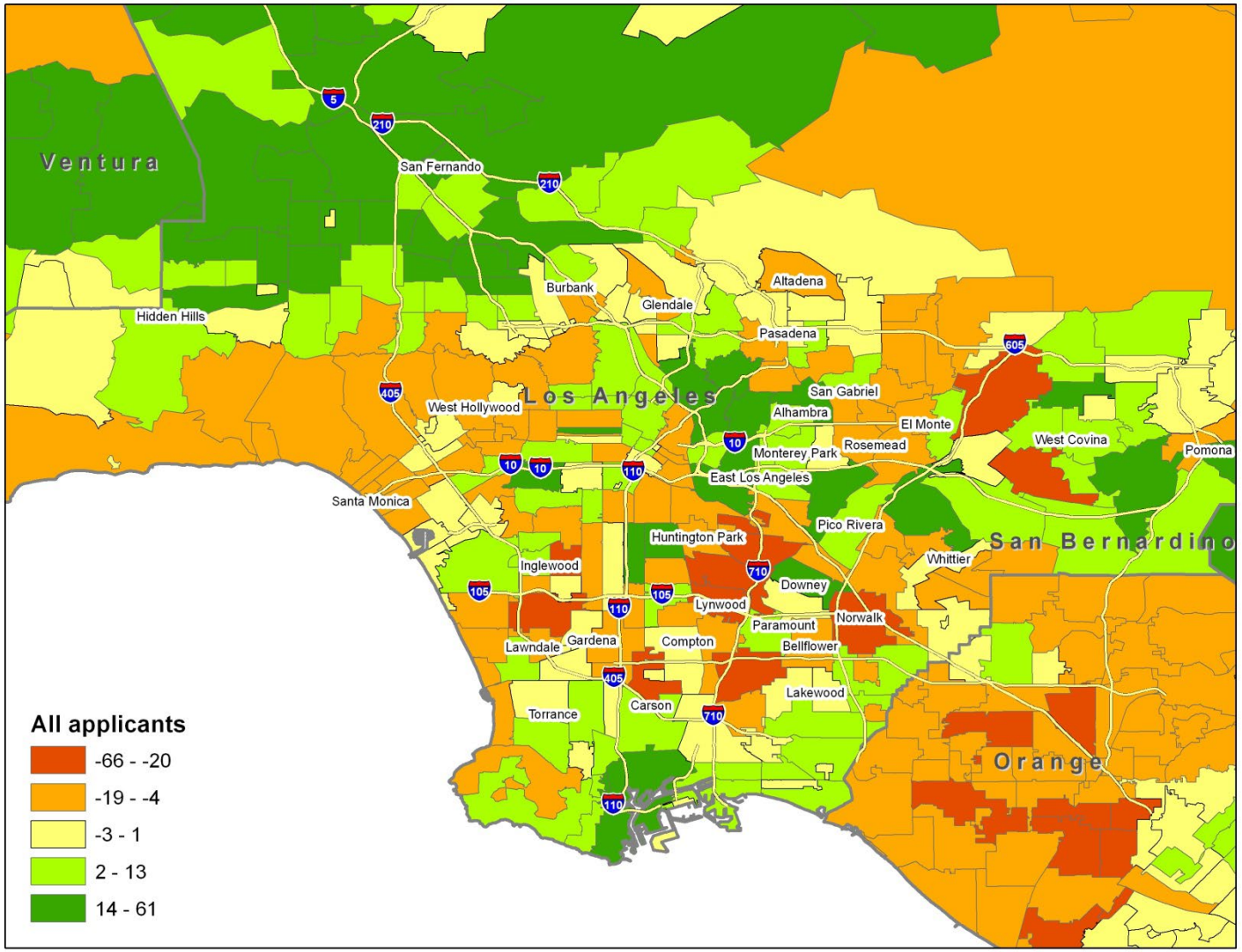
Effective Process and Resource Management is the Key Factor to Improve Recruiting



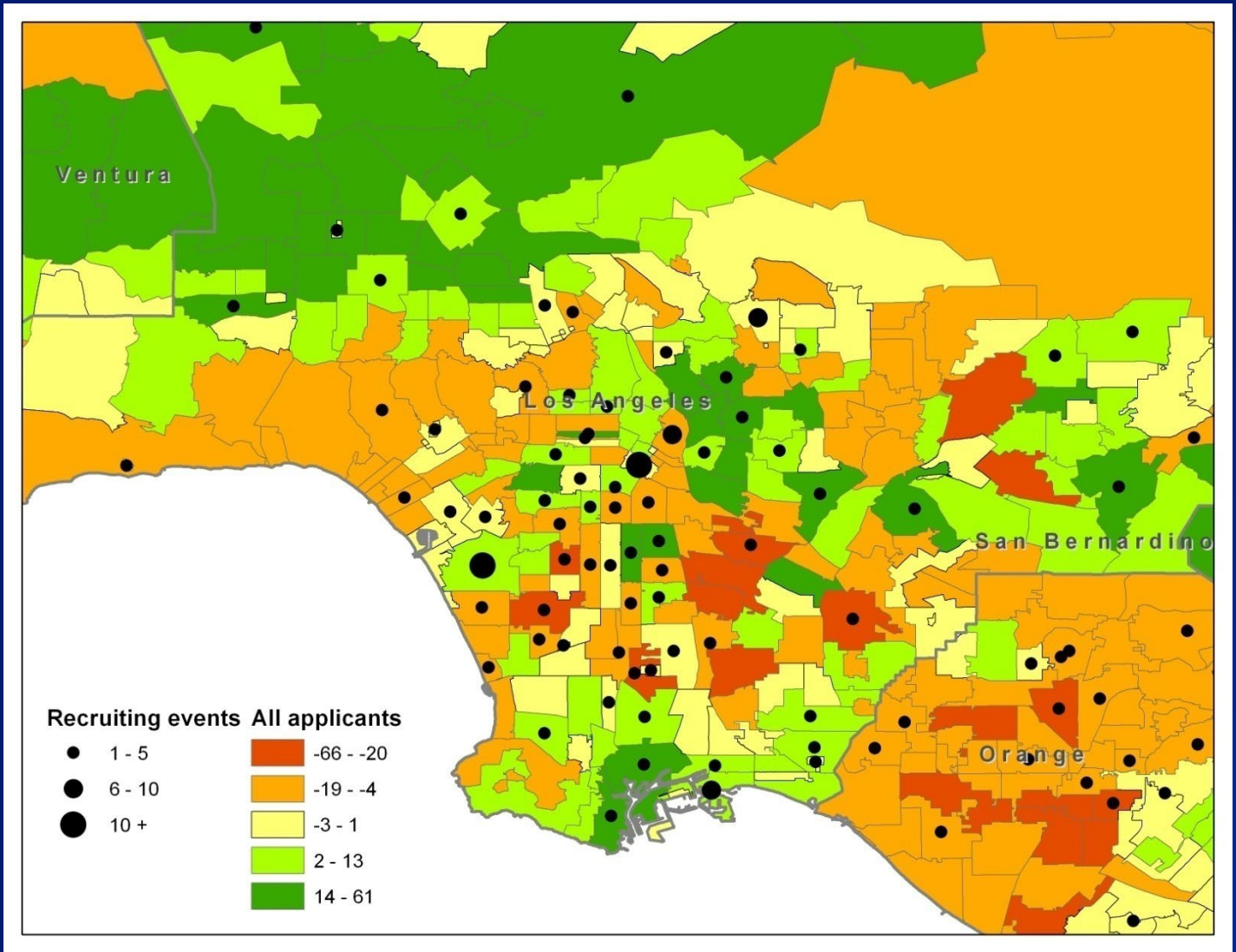
We Examine Key Aspects of Recruiting Process and Resource Management



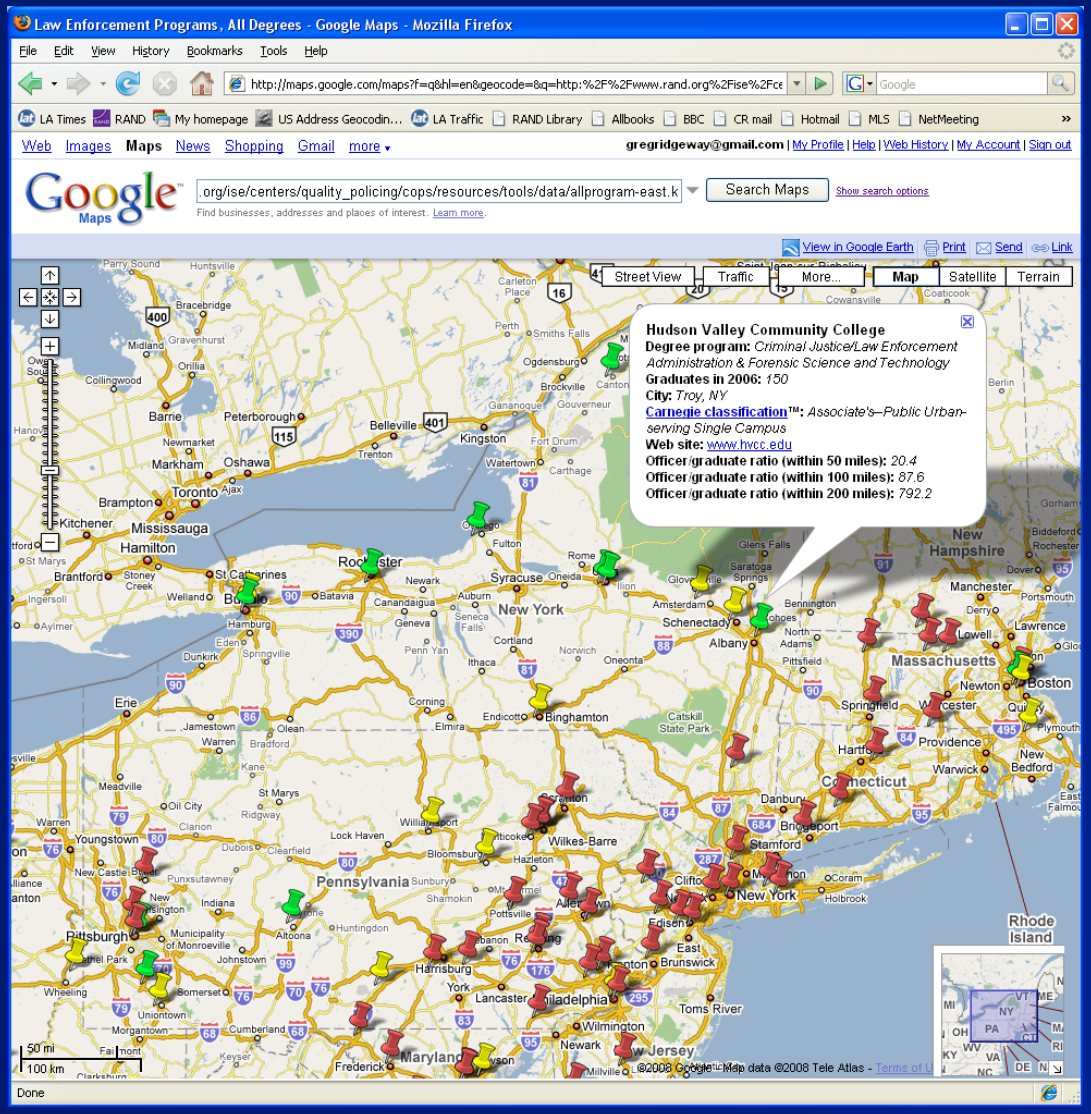
For LAPD, RAND Identified Under-producing Communities Across Southern California



Then, We Examined the Association Between Recruiting Events and Production



And, Identify College Programs Graduating Students Near Small Policing Labor Markets

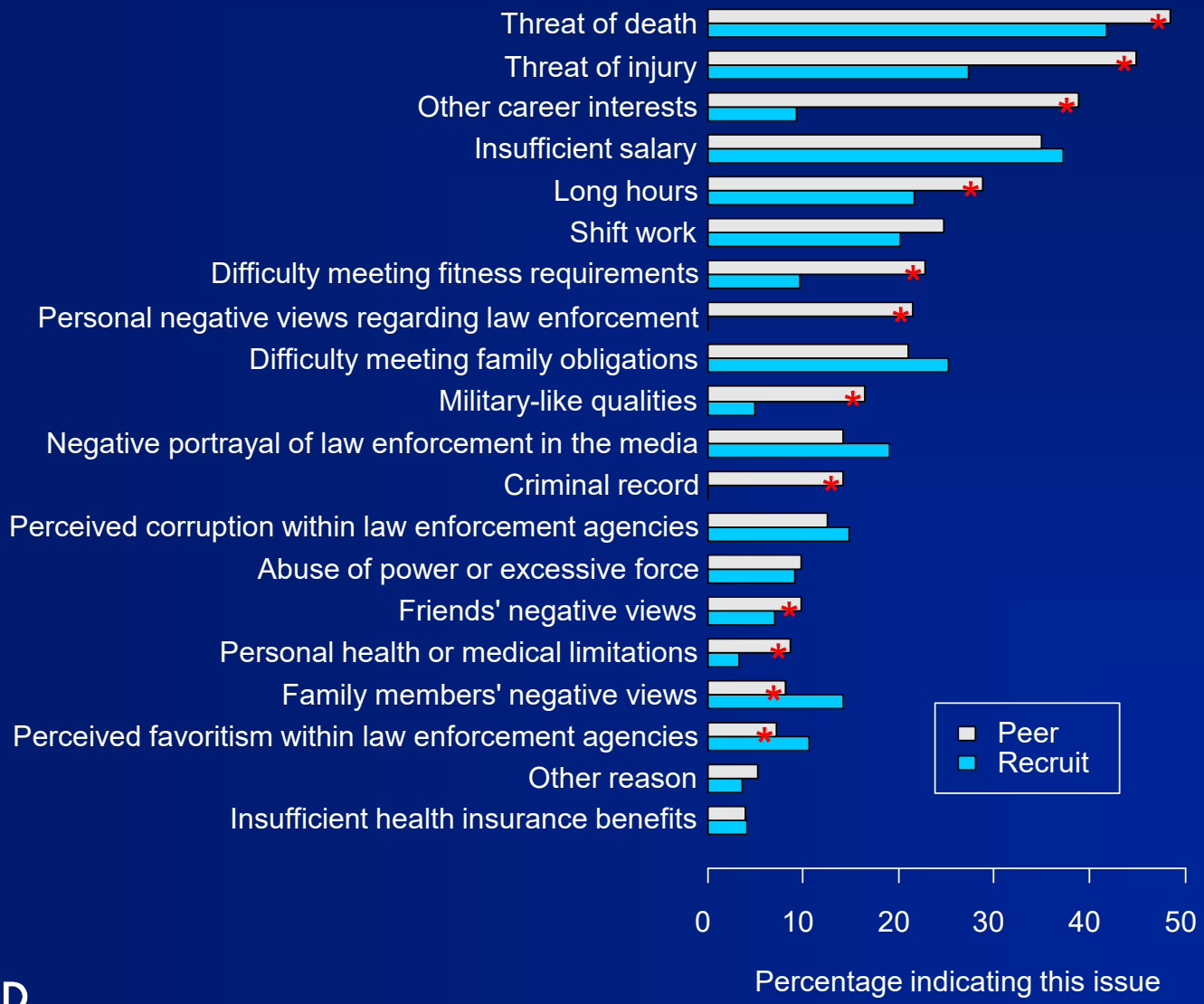


Programs marked in green graduate a large number of students relative to the number of local police jobs

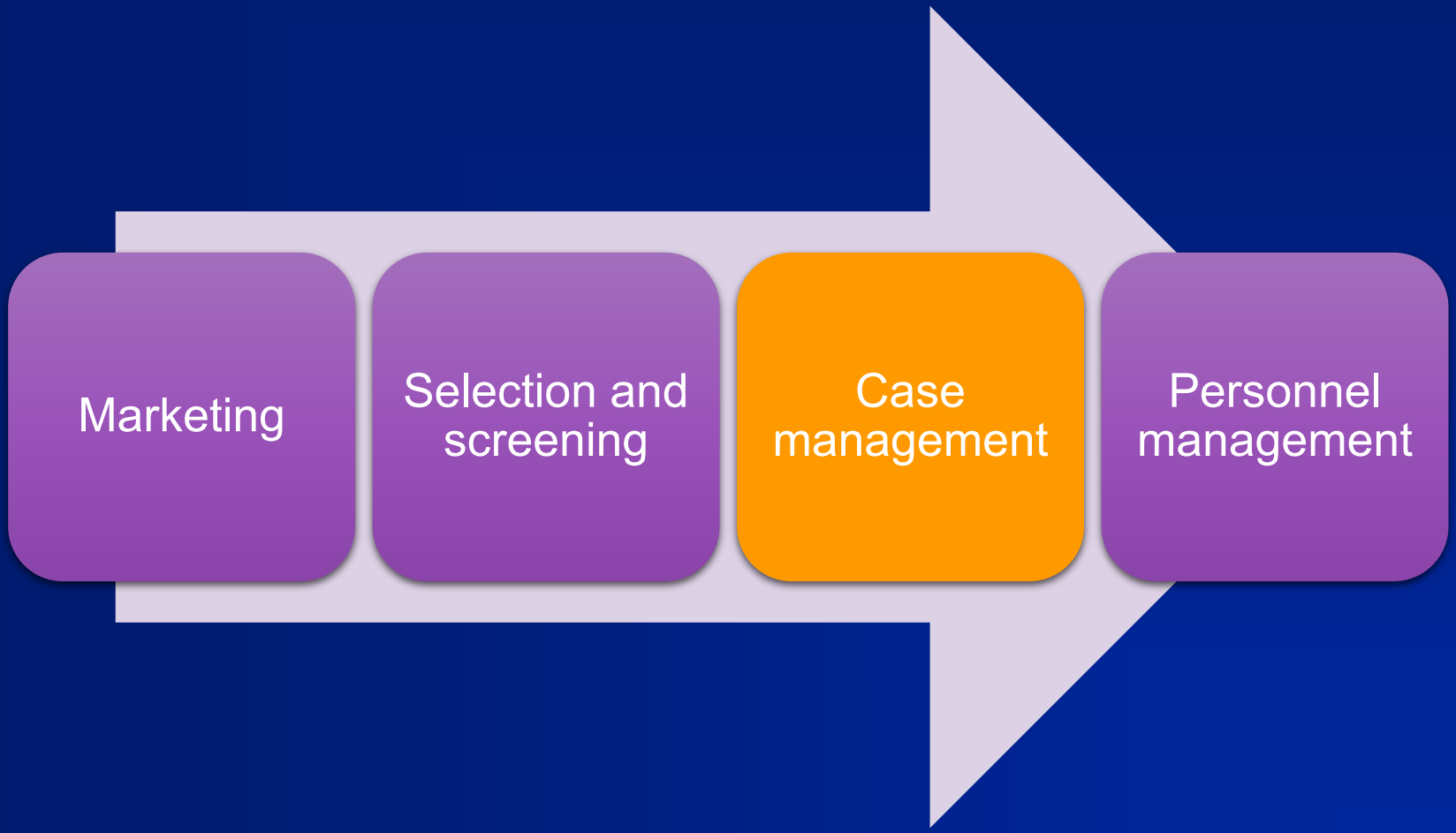
At cqp.rand.org

Recruits Fear Death and Injury

Recruits Fear Death and Injury… And Their Peers Do Too

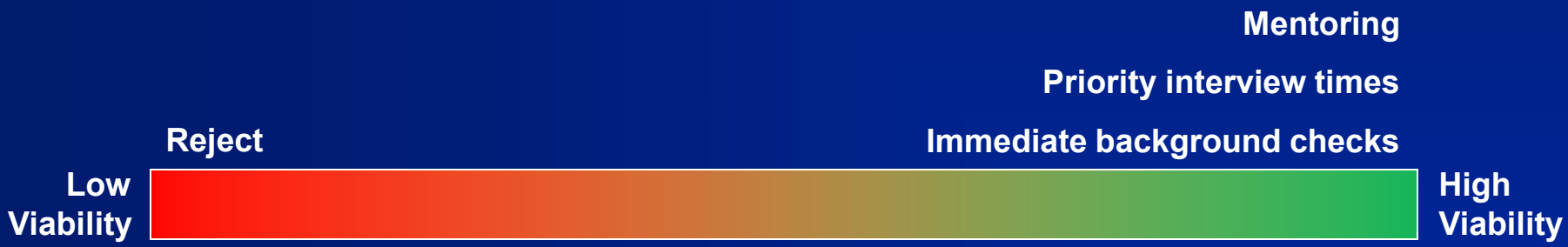


We Examine Key Aspects of Recruiting Process and Resource Management



"Prioritization" Is a Key Tool for Achieving Recruiting Goals

- **Los Angeles PD was expending equal energy to all candidates**
- **Prioritization allocates more resources to those candidates most likely to succeed**



- **Prioritization is completely within the department's control and budget neutral**

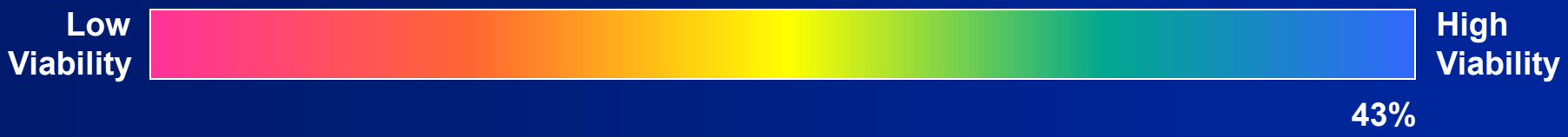
We Isolated Key Characteristics of Successful Applicants to Compute Priority Score

	Does Not Qualify	Issues	OK
Preliminary Background	+0	+13	+22
	GED	High School Diploma	Any College
Education	+0	+4	+8
	Other Areas	Southern California	LA County
Residence	+0	+2	+5

We Isolated Key Characteristics of Successful Applicants to Compute Priority Score

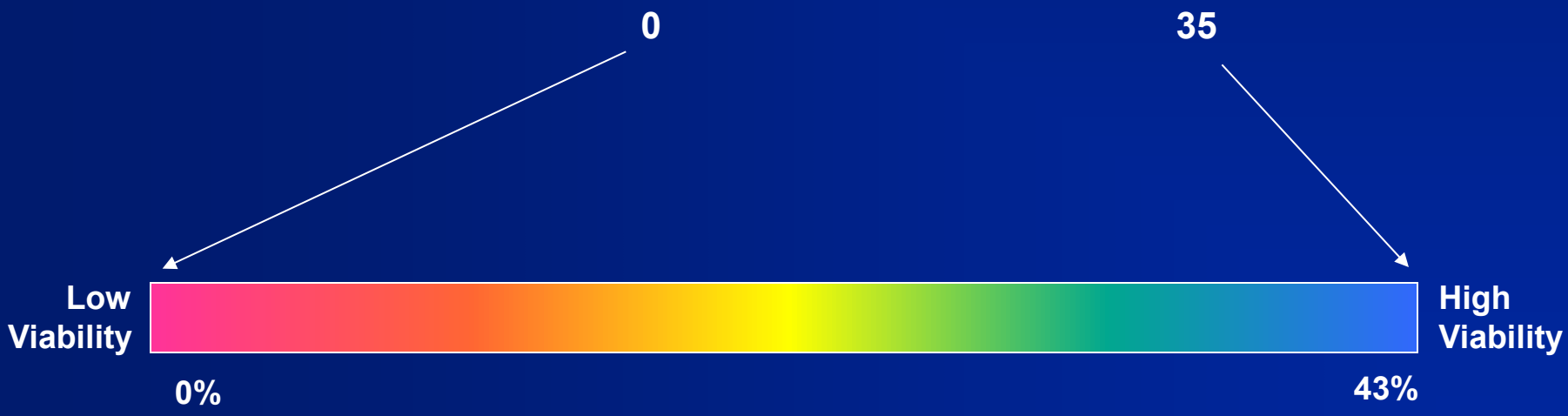
	Does Not Qualify	Issues	OK
Preliminary Background	+0	+13	+22
	GED	High School Diploma	Any College
Education	+0	+4	+8
	Other Areas	Southern California	LA County
Residence	+0	+2	+5

35



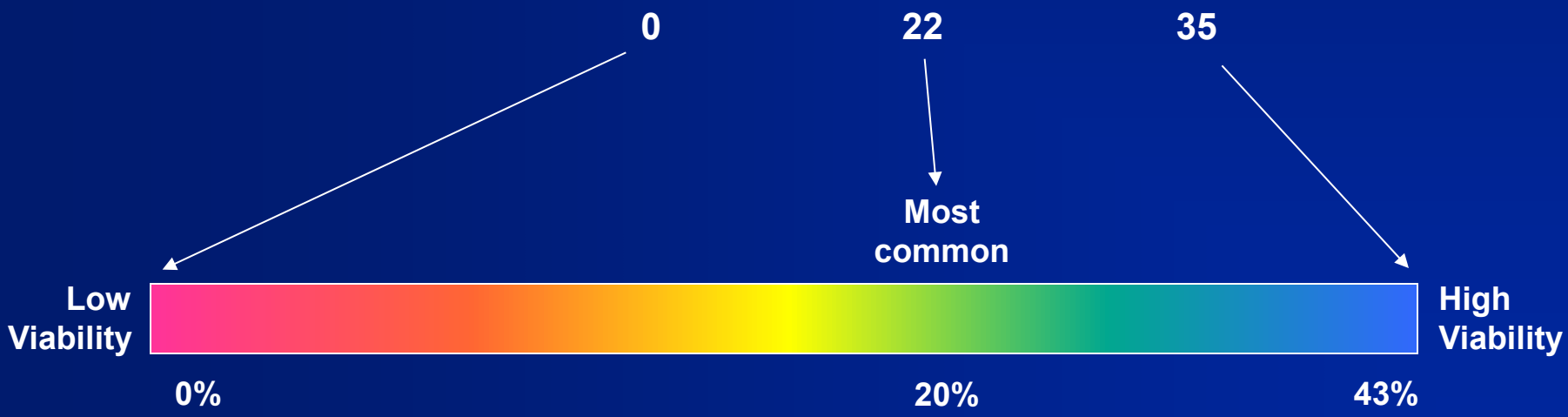
We Isolated Key Characteristics of Successful Applicants to Compute Priority Score

	Does Not Qualify	Issues	OK
Preliminary Background	+0	+13	+22
	GED	High School Diploma	Any College
Education	+0	+4	+8
	Other Areas	Southern California	LA County
Residence	+0	+2	+5



We Isolated Key Characteristics of Successful Applicants to Compute Priority Score

	Does Not Qualify	Issues	OK
Preliminary Background	+0	+13	+22
	GED	High School Diploma	Any College
Education	+0	+4	+8
	Other Areas	Southern California	LA County
Residence	+0	+2	+5



RAND Developed a Way to Adjust Priority Scores to Meet Short-term Recruiting Targets

Characteristic	LAPD Recruits (%)	Short Term Targets (%)
Female	17	25
Hispanic	53	35
Asian/Pacific Islander	11	12
Black	9	10
White	27	43

Females receive 7 points; Asians 3.

Questions to Consider

- **Is your department ready for recruiting in the next decade?**
- **Do you know why your most recent recruits were attracted to your department? Why their peers did not?**
- **What resources are under your control that can be utilized to get the best recruits?**

Break

Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT CENTER

Police Performance Analysis and Racial Profiling

Key Questions

- Are there racial disparities in the decision to stop?
- Are there unusual patterns for specific officers?
- Are there inexplicable racial differences in stop outcomes?
- Can we identify neighborhoods with low police performance?

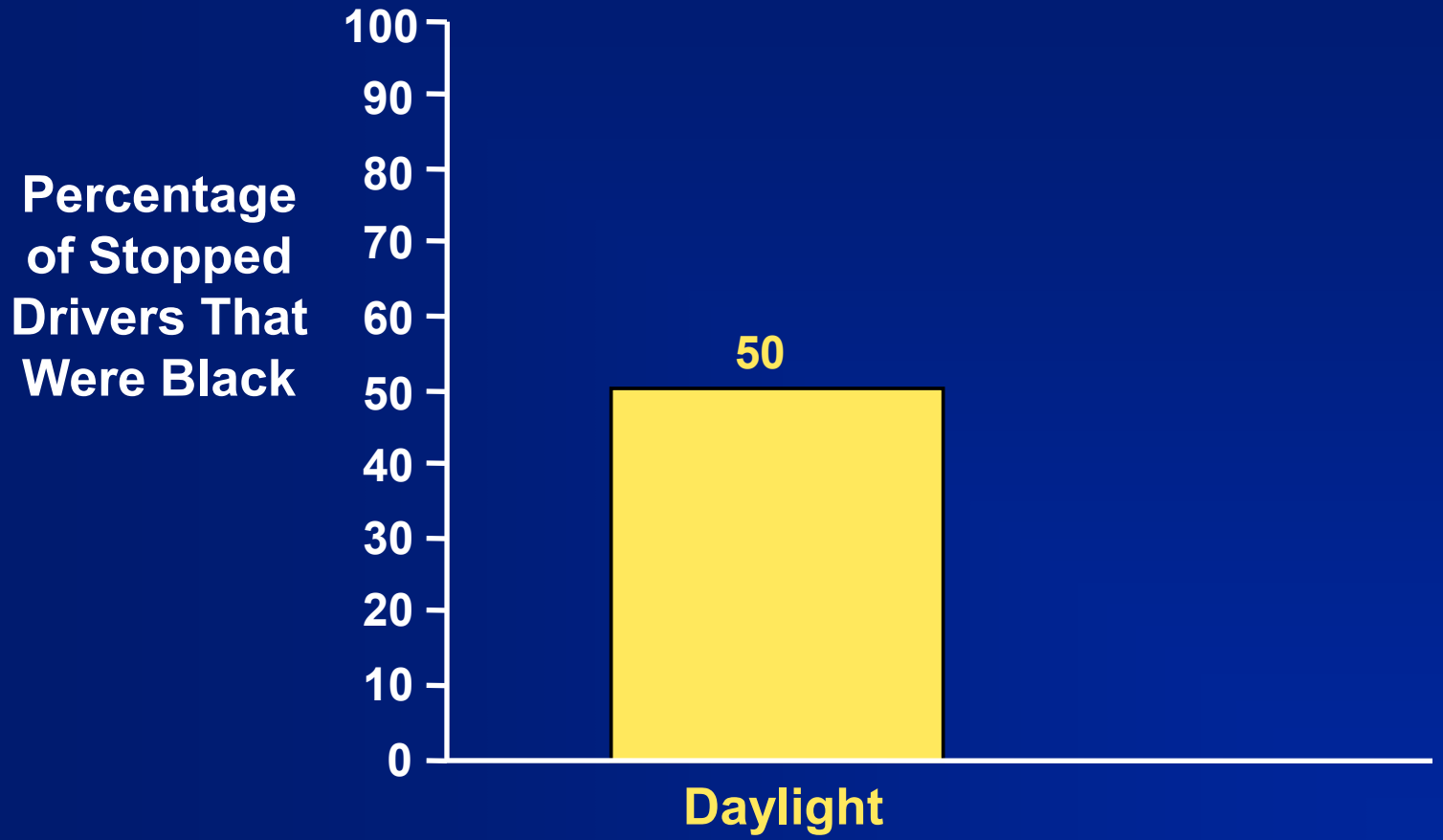
Key Questions

- **Are there racial disparities in the decision to stop?**
- **Are there unusual patterns for specific officers?**
- **Are there inexplicable racial differences in stop outcomes?**
- **Can we identify neighborhoods with low police performance?**

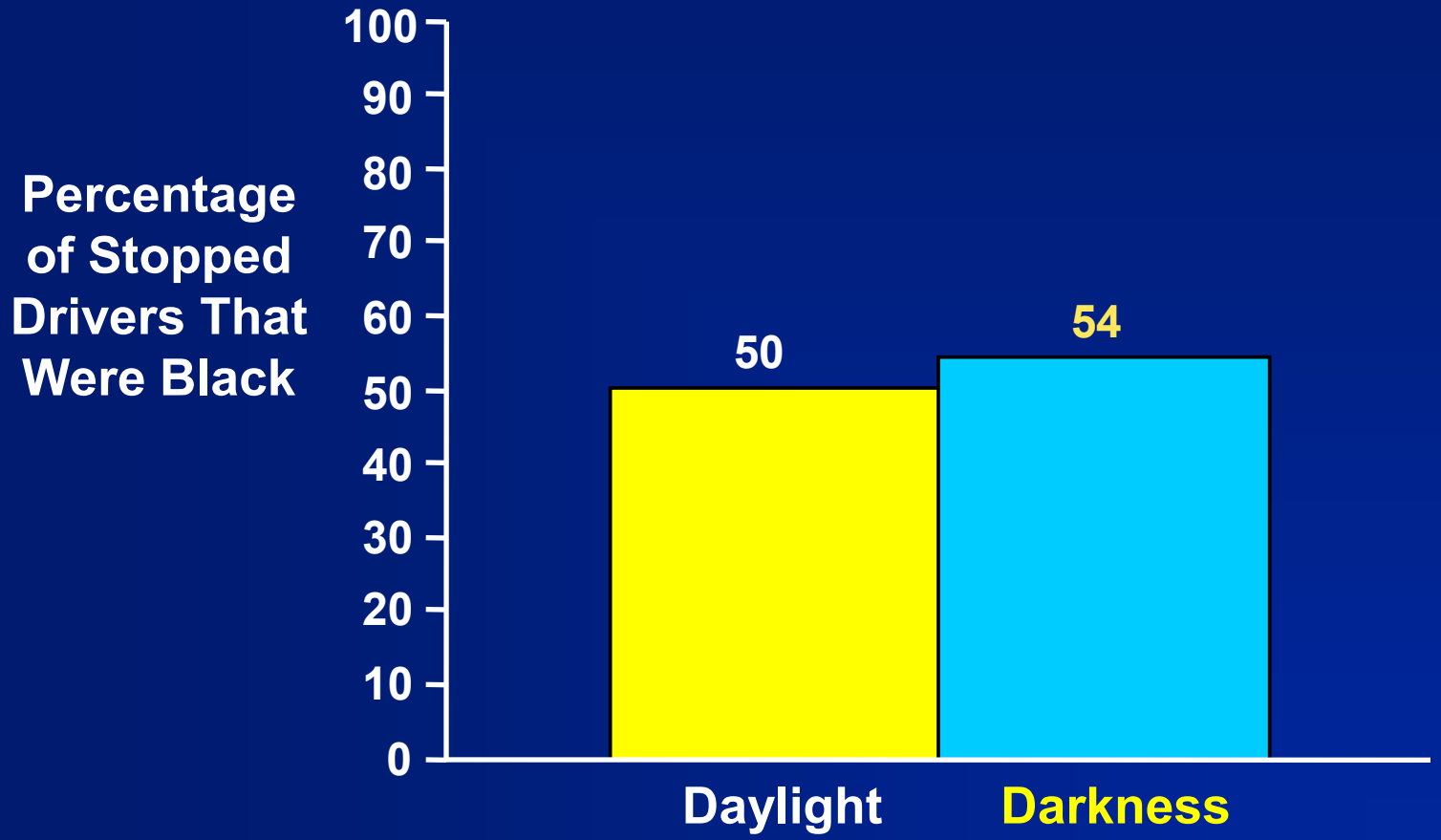
Racial profiling continues to be a concern

- I-95 "turnpike" studies in the mid-1990s raised public concern about racial profiling
- Hundreds of reports have produced "evidence" for and against the existence of racial profiling
  - Texas: "75% of agencies stop more black and Latino drivers than white drivers"
  - Sacramento: the percentage of black drivers stopped matched the percentage of blacks among crime suspect descriptions
  - Illinois: in some cities racial composition of stops matches the census… in others it doesn't
- Arrest of Henry Louis Gates in July 2009 and the resulting "beer summit" renewed interest

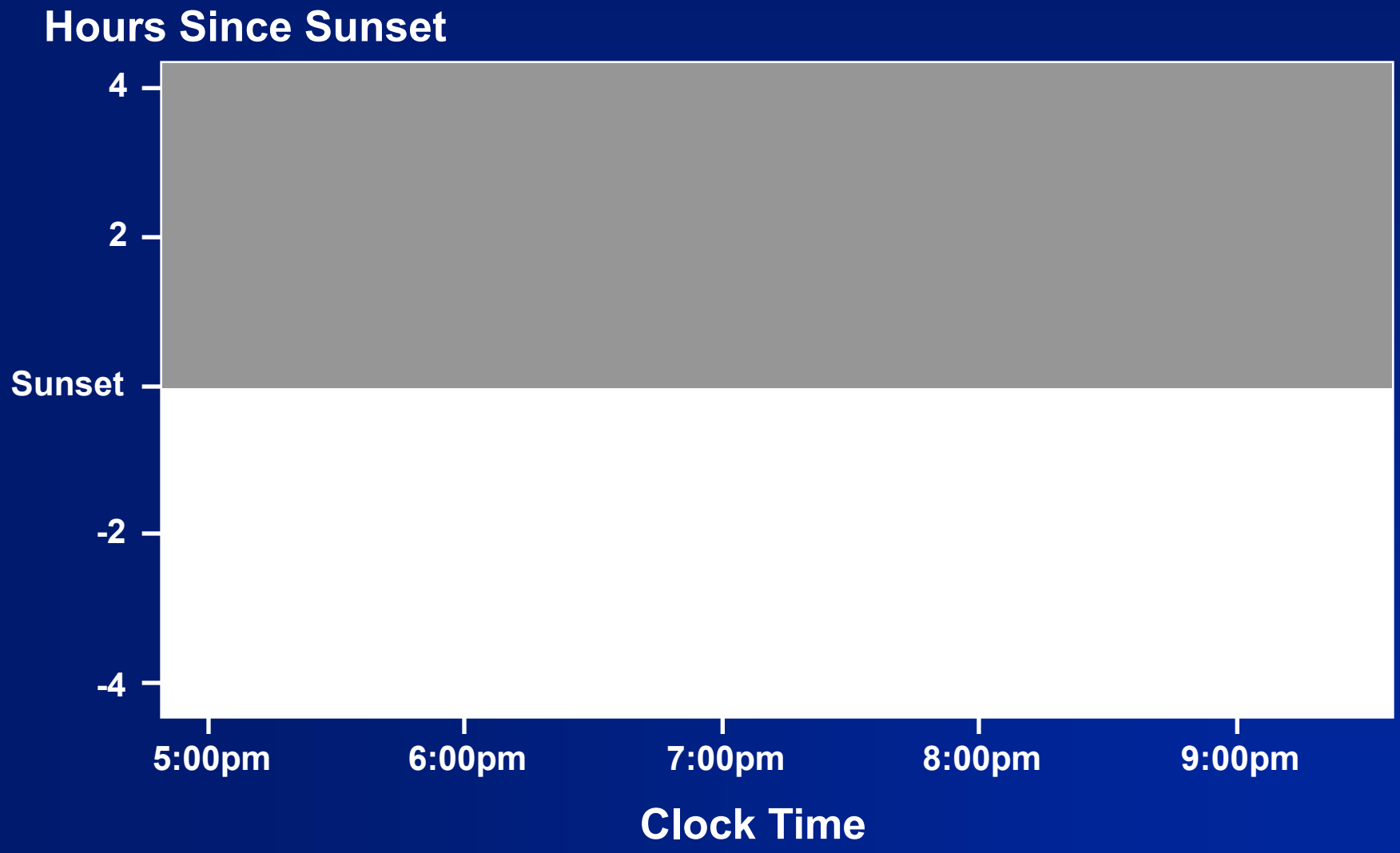
Racially Biased Policing Should Be Most Evident During Daylight



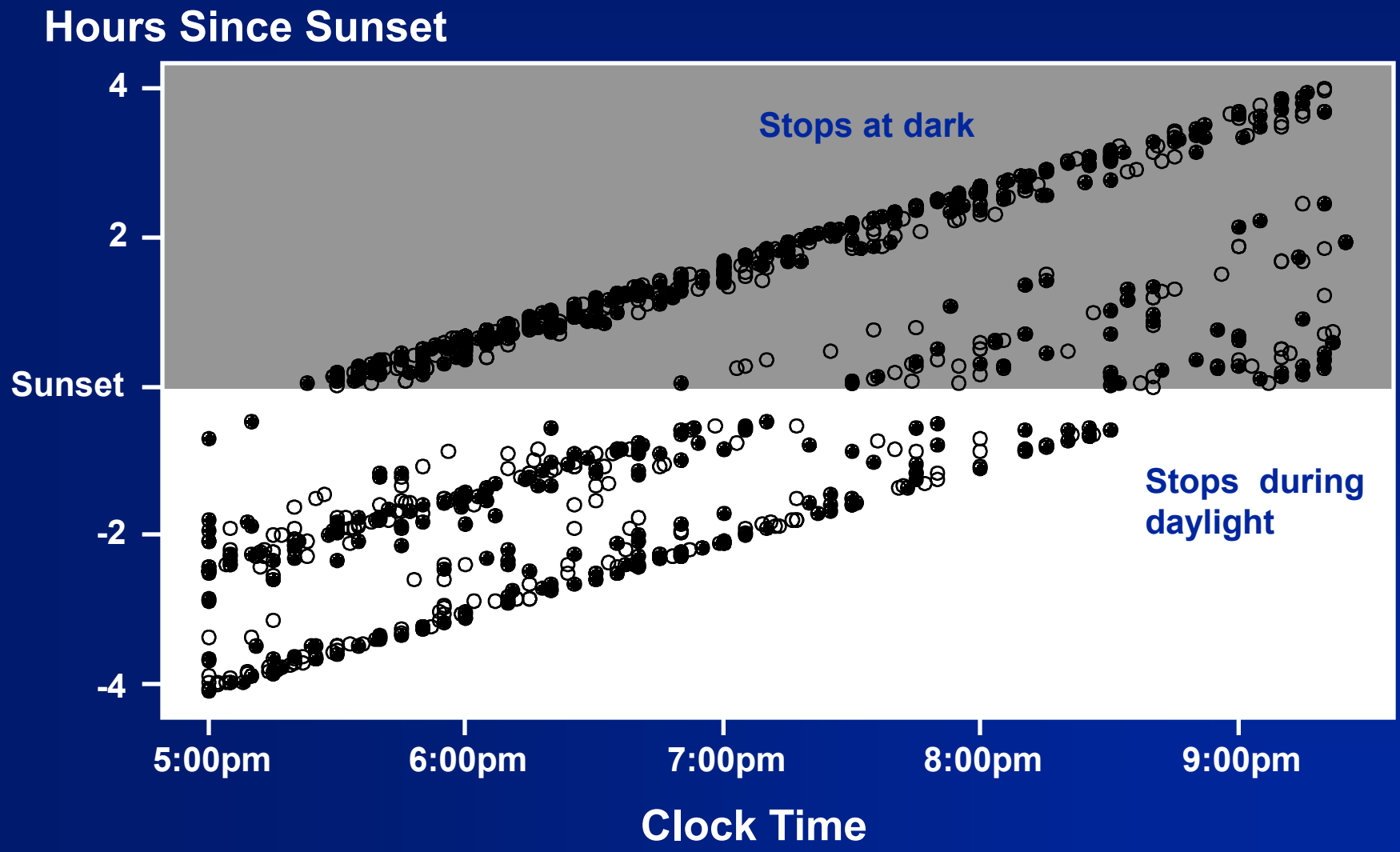
Simple Test Shows No Evidence of Racial Bias in the Decision to Stop



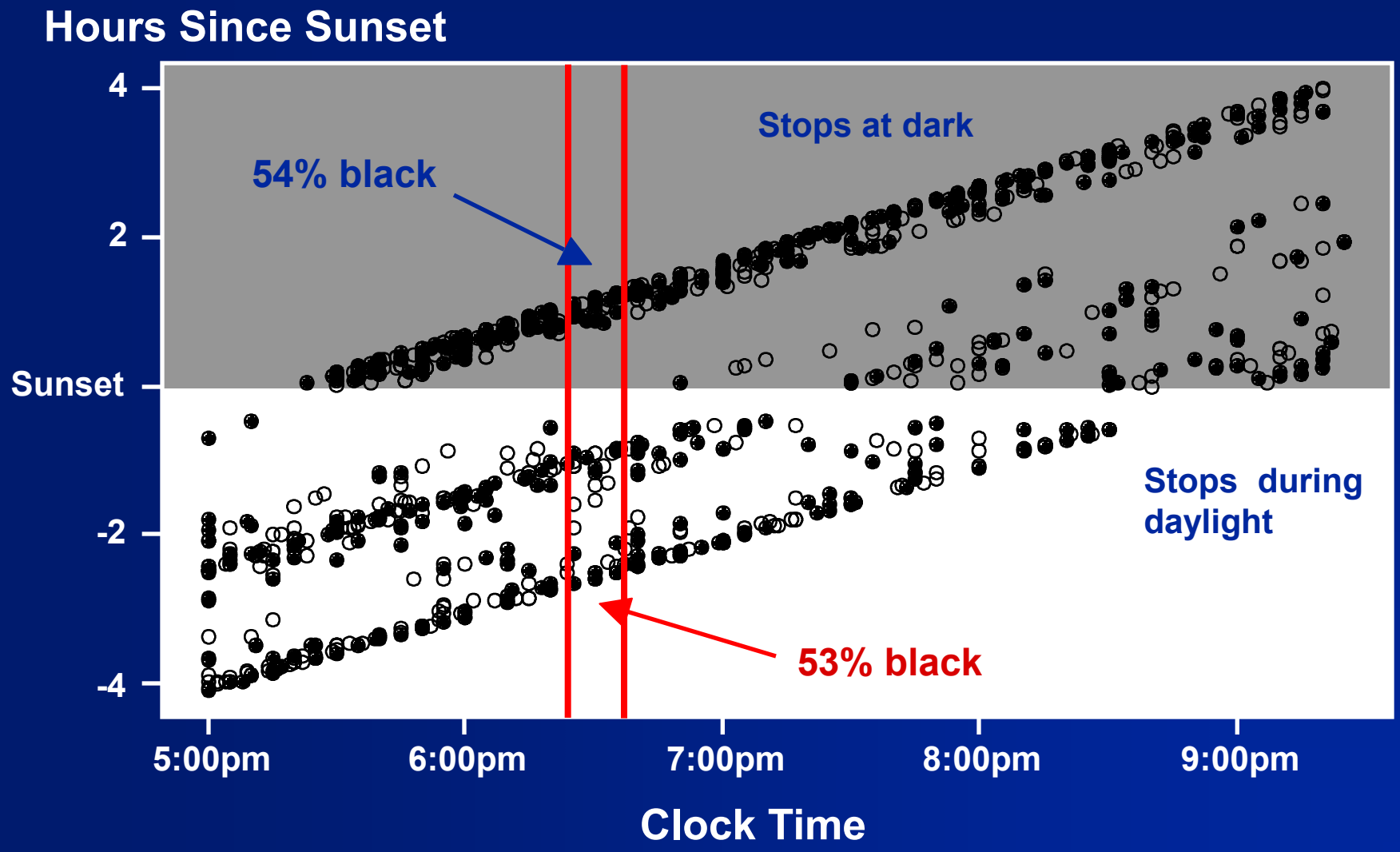
An Approach That Involved Adjusting for "Clock Time"



Compare Stops During Daylight with Stops in Darkness



There Is No Difference in the Rate that Black Drivers Are Stopped



Key Questions

- Are there racial disparities in the decision to stop?
- **Are there unusual patterns for specific officers?**
- Are there inexplicable racial differences in stop outcomes?
- Can we identify neighborhoods with low police performance?

Examine Individual NYPD Officers for Evidence of Bias

Stop Characteristic	Example Officer (%) *n* = 392
Percent black	86%

Other outcomes are easily substituted

- Searches
- Use of force
- Complaints
- Commendations

NYPD Has Substantial Information on the Stop Features

Stop Characteristic		Example Officer (%) *n* = 392
Percent black		**86%**
Month	January	3
	February	4
	March	8
Day of the week	Monday	13
	Tuesday	11
	Wednesday	14
Time of day	(4-6 p.m.]	9
	(6-8 p.m.]	8
	(8-10 p.m.]	23
	(10 p.m. -12 a.m.]	17
Patrol borough	Brooklyn North	100
Precinct	B	98
	C	1
Outside		96
In uniform	Yes	99
Radio run	Yes	1

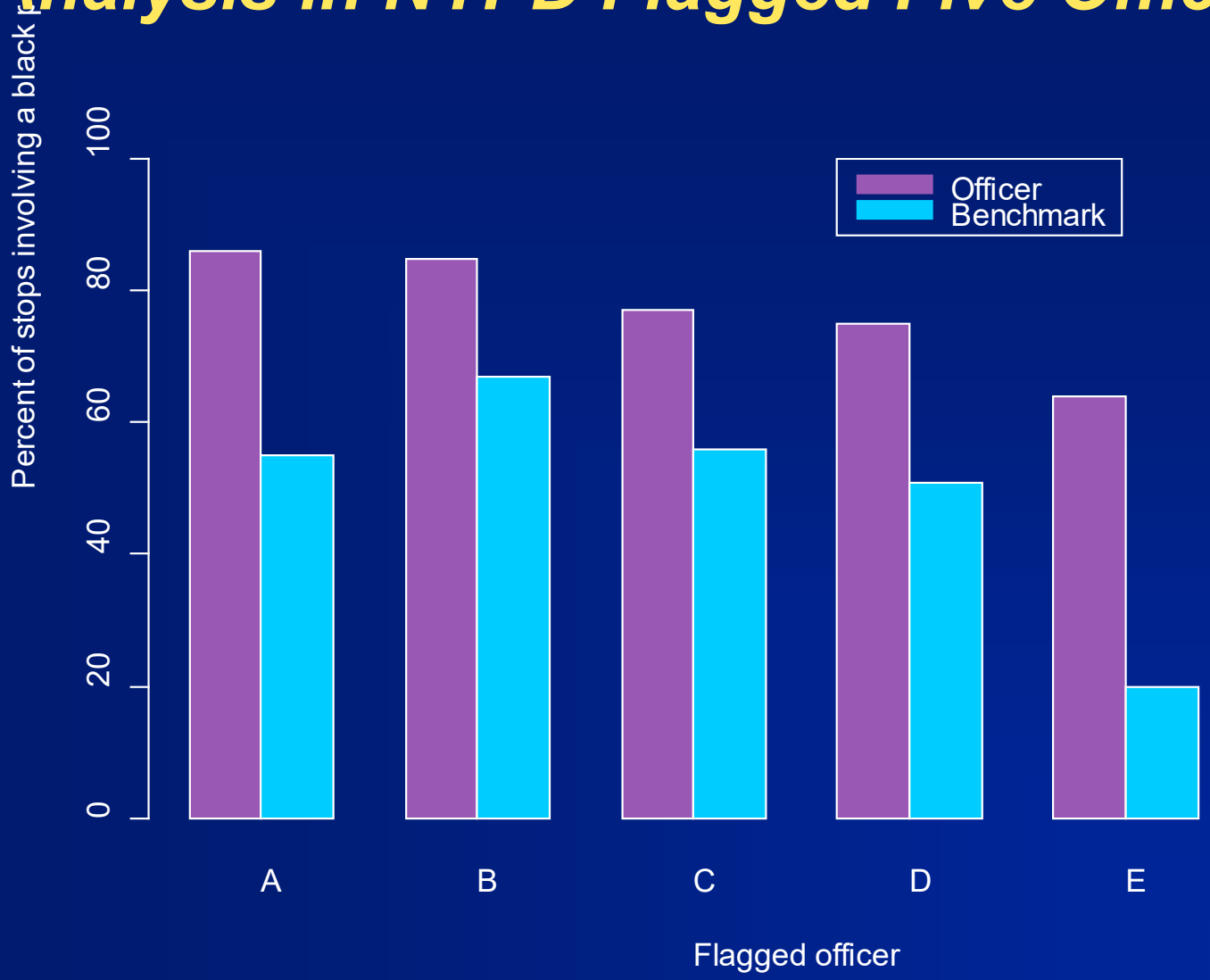
Benchmark with Similar Stops Made by Other Officers

Stop Characteristic		Example Officer (%) *n* = 392	Internal Benchmark (%) ESS = 3,676
Percent black		**86%**	
Month	January	3	3
	February	4	4
	March	8	9
Day of the week	Monday	13	13
	Tuesday	11	10
	Wednesday	14	15
Time of day	(4-6 p.m.]	9	10
	(6-8 p.m.]	8	8
	(8-10 p.m.]	23	23
	(10 p.m. -12 a.m.]	17	17
Patrol borough	Brooklyn North	100	100
Precinct	B	98	98
	C	1	1
Outside		96	94
In uniform	Yes	99	97
Radio run	Yes	1	3

Examine Individual Officers for Evidence of Bias

Stop Characteristic		Example Officer (%) *n* = 392	Internal Benchmark (%) ESS = 3,676
Percent black		**86%**	**55%**
Month	January	3	3
	February	4	4
	March	8	9
Day of the week	Monday	13	13
	Tuesday	11	10
	Wednesday	14	15
Time of day	(4-6 p.m.]	9	10
	(6-8 p.m.]	8	8
	(8-10 p.m.]	23	23
	(10 p.m. -12 a.m.]	17	17
Patrol borough	Brooklyn North	100	100
Precinct	B	98	98
	C	1	1
Outside		96	94
In uniform	Yes	99	97
Radio run	Yes	1	3

Analysis in NYPD Flagged Five Officers



Key Questions

- Are there racial disparities in the decision to stop?
- Are there unusual patterns for specific officers?
- **Are there inexplicable racial differences in stop outcomes?**
- Can we identify neighborhoods with low police performance?

Cincinnati Reported Large Disparities in Stop Duration

Stop feature	% Black drivers N=26,941	% Nonblack drivers (unadjusted) N=25,149
Stop < 10 minutes	55	65

Black and Nonblack Drivers Differ in Numerous Ways

Stop feature	% Black drivers N=26,941	% Nonblack drivers (unadjusted) N=25,149
Stop < 10 minutes	55	65
Invalid license	22	7
Male	65	66
Neighborhood		
Over-the-Rhine	9	5
Avondale	5	1
I-75	4	11
Residence		
Cincinnati	93	61
Date\Time		
12am-4am	16	8
Monday	15	14
August	9	11
Age		
18-25	33	29
Reason		
Equipment violation	27	16
Moving violation	51	76

There Are Similarly Situated Nonblack Drivers

Stop feature	% Black drivers N=26,941	% Nonblack drivers (weighted) ESS=4,952	% Nonblack drivers (unadjusted) N=25,149
Stop < 10 minutes	55		65
Invalid license	22	20	7
Male	65	65	66
Neighborhood			
Over-the-Rhine	9	10	5
Avondale	5	5	1
I-75	4	5	11
Residence			
Cincinnati	93	92	61
Date\Time			
12am-4am	16	16	8
Monday	15	15	14
August	9	9	11
Age			
18-25	33	32	29
Reason			
Equipment violation	27	28	16
Moving violation	51	52	76

No Significant Difference in Stop Duration

Stop feature	% Black drivers N=26,941	% Nonblack drivers (weighted) ESS=4,952	% Nonblack drivers (unadjusted) N=25,149
Stop < 10 minutes	55	57	65
Invalid license	22	20	7
Male	65	65	66
Neighborhood			
Over-the-Rhine	9	10	5
Avondale	5	5	1
I-75	4	5	11
Residence			
Cincinnati	93	92	61
Date\Time			
12am-4am	16	16	8
Monday	15	15	14
August	9	9	11
Age			
18-25	33	32	29
Reason			
Equipment violation	27	28	16
Moving violation	51	52	76

Key Questions

- Are there racial disparities in the decision to stop?
- Are there unusual patterns for specific officers?
- Are there inexplicable racial differences in stop outcomes?
- **Can we identify neighborhoods with low police performance?**

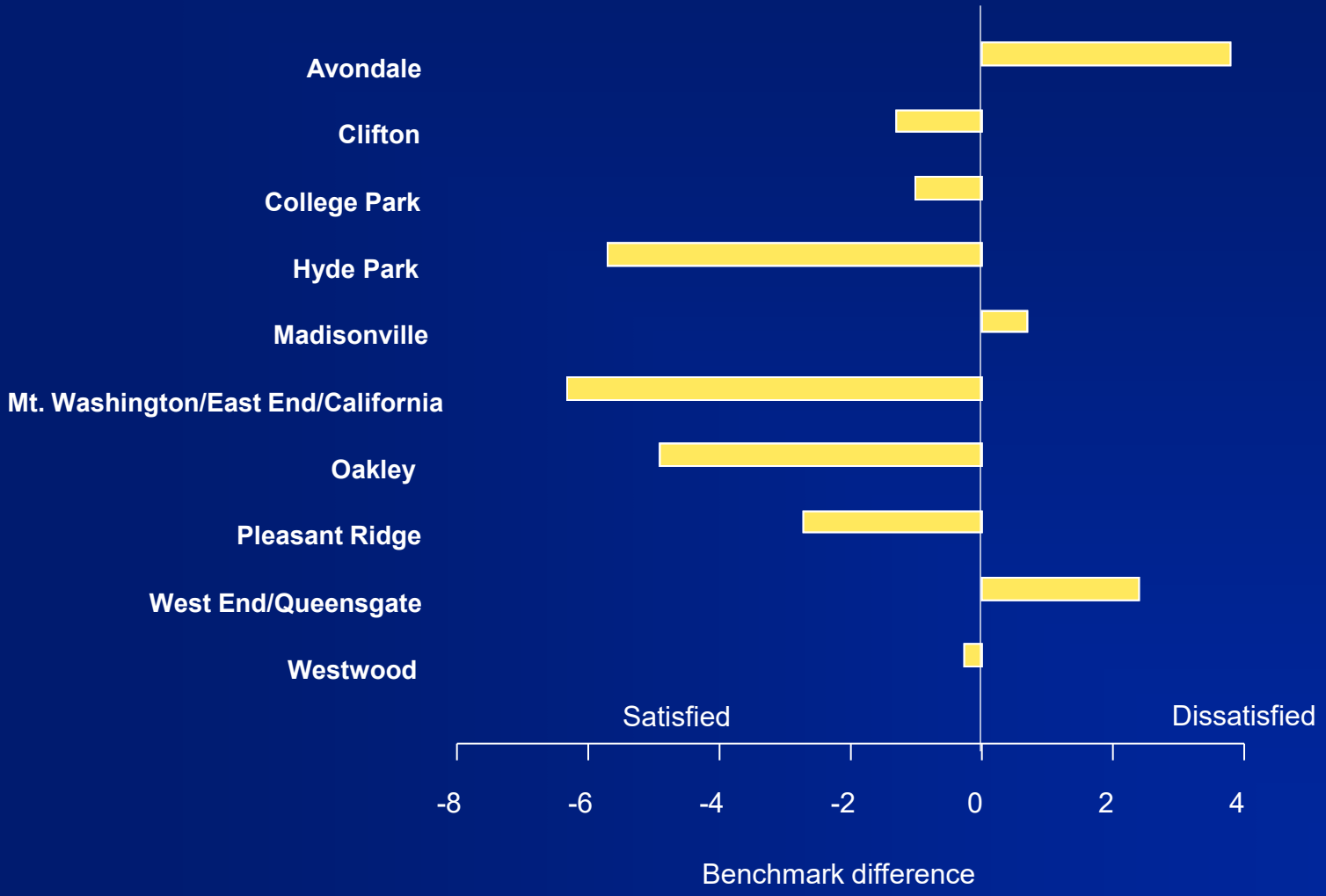
Neighborhood Benchmarks Can Be Constructed Similarly

- **Surveyed 2,000+ members of Cincinnati households in 53 community defined neighborhoods**
- **The survey asked questions about perceptions of the police and community conditions**
- **Survey also documented basic household information**

Satisfaction With the Police Was Assessed by Combining Five Questions

- How would you rate Cincinnati PD on working with residents to address local crime problems?
- How would you rate the quality of police protection?
- Does your neighborhood get its fair share of police services?
- Would you say the Cincinnati police officers are generally polite?
- How much do you trust police officers working for the Cincinnati Police Department?

With No Adjustment, Two Neighborhoods Appear to Have Low Police Satisfaction



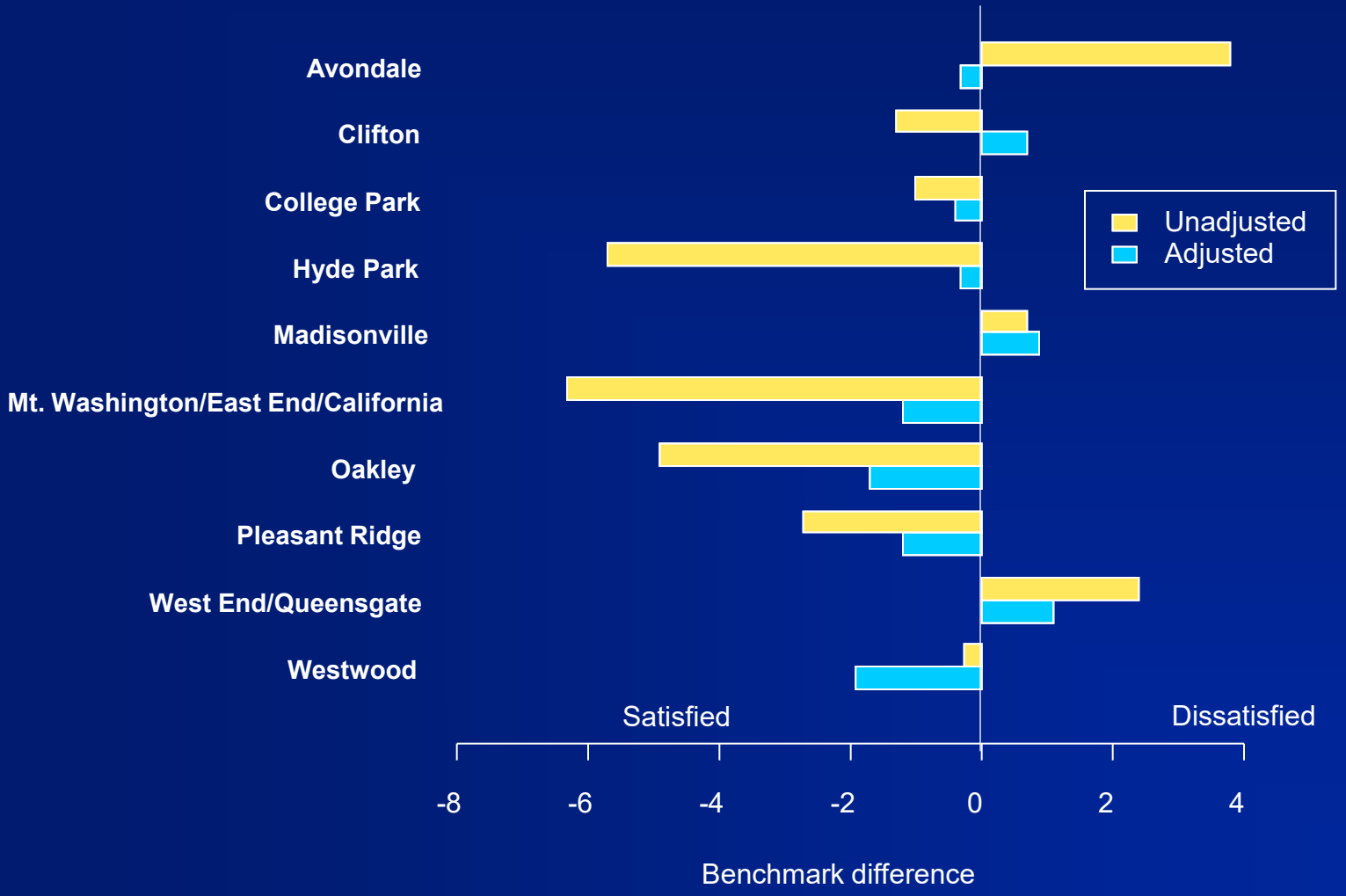
Neighborhoods Are Not Directly Comparable

	Target Neighborhood (N=56)	All Other Neighborhoods (N=2,111)	Comparable Respondents (N=247)
Black	80%	43%	79%
Employed	65%	69%	63%
Education (level)	2.5	3.1	2.5
Income (level)	1.6	2.9	1.7
Disorder in neigh.	15.6	10.0	15.5
Neighborhood crime	2.2	1.6	2.2
Fear of crime	2.8	2.4	2.7
Neighborhood participation	0.3	0.2	0.3
Neigh. socialization	2.6	2.4	2.6
Trust of neighbors	1.9	2.7	1.9
Know police	47%	33%	47%
Married	9%	35%	9%
Home ownership	13%	53%	13%
Number of children	1.0	0.7	1.0
Male	44%	38%	44%
Age (years)	40.6	46.5	41.0

…But We Can Construct a Suitable Comparison

	Target Neighborhood (N=56)	All Other Neighborhoods (N=2,111)	Comparable Respondents (N=247)
Black	80%	43%	79%
Employed	65%	69%	63%
Education (level)	2.5	3.1	2.5
Income (level)	1.6	2.9	1.7
Disorder in neigh.	15.6	10.0	15.5
Neighborhood crime	2.2	1.6	2.2
Fear of crime	2.8	2.4	2.7
Neighborhood participation	0.3	0.2	0.3
Neigh. socialization	2.6	2.4	2.6
Trust of neighbors	1.9	2.7	1.9
Know police	47%	33%	47%
Married	9%	35%	9%
Home ownership	13%	53%	13%
Number of children	1.0	0.7	1.0
Male	44%	38%	45%
Age (years)	40.6	46.5	40.5

Much Of The Dissatisfaction Is Not Due To The Neighborhood



Summary of Police Performance

- Key principle: Construct fair comparisons
- Facilitates transparent calculations
- Translates into other performance measures
  - Use of force
  - Injuries
  - Complaints
  - Commendations

Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT CENTER

Intervening in the Illegal Gun Market

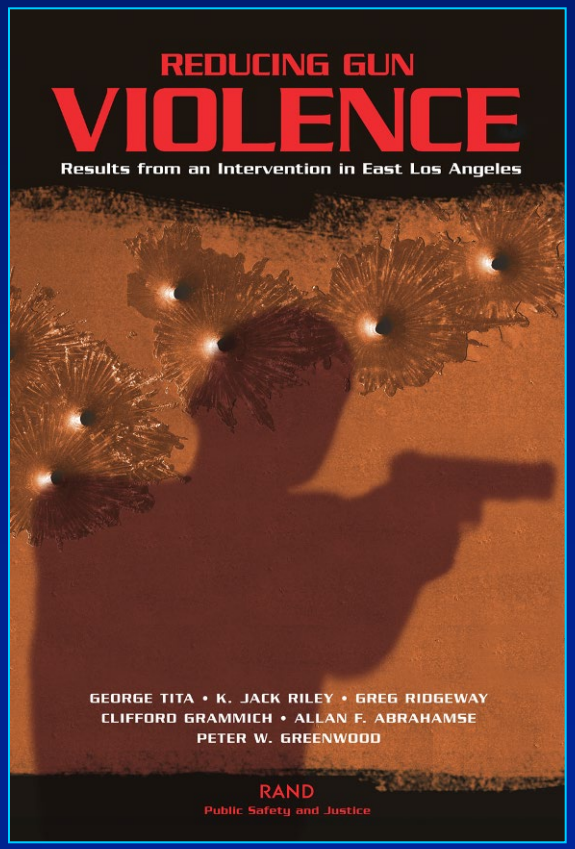
Analysis of Gangs and Guns Result in New Strategies

Replicated the "Boston Gun Project" in East Los Angeles

- **Data countered conventional wisdom**

Developed strategies for intervening in the illegal firearm market in Los Angeles

- **Identified underutilized information**

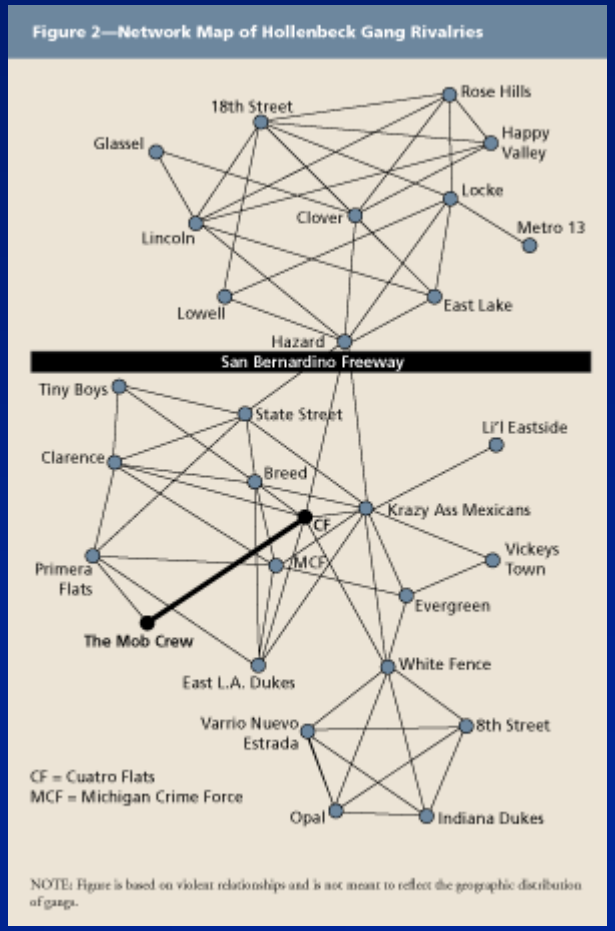


Data on Gangs Countered the Conventional Wisdom

- Not all gang problems are equal
- Drugs were not the primary cause of violence
- Gang leaders and suspected shooters were difficult to target

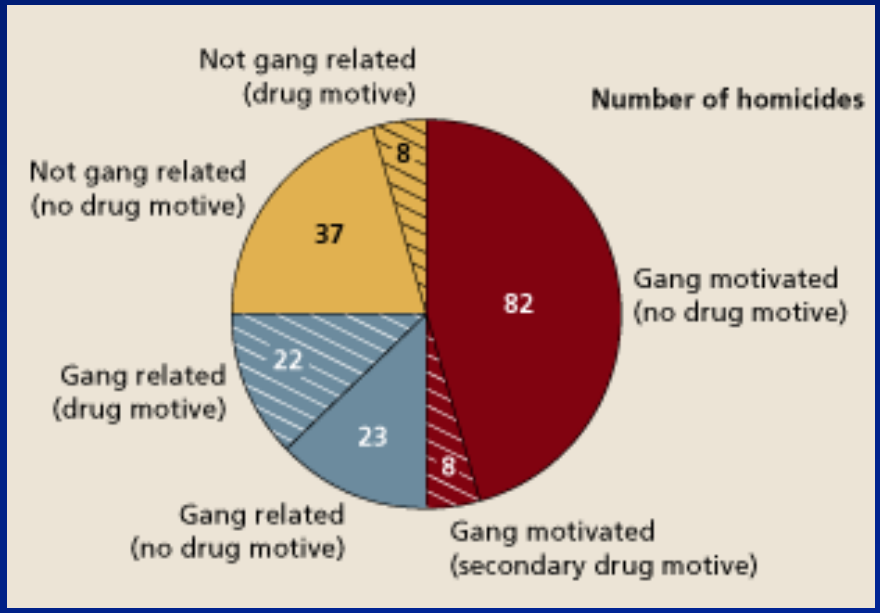
Not All Gang Problems Are Equal

- All knew that gangs were central to violence in East Los Angeles
  - We mapped out which were most problematic
- Violence was typically *premeditated* attacks against rival gangs in rivals' territory
- The rivalry between The Mob Crew and Cuatro Flats was growing particularly violent



Drugs Were Not the Primary Cause of Violence

- Analysis of homicides indicated that "respect" was driving the violence
- Few drug-involved homicides concerned drug territory disputes
- Required substantial effort to convince local police



Gang Leaders and Suspected Shooters Were Difficult to Target

- Only 25% of the leaders had outstanding warrants
- Shooters were young
  - No extensive criminal records
  - less vulnerable to strict enforcement
- Every gang had other members with leverage points
- Police needed a way of generating good leads

Ammunition Laws in Los Angeles Offered a Unique Strategy to Identify Illegal Guns

- Since 1998 ammunition purchasers show ID and leave a thumbprint
- Based on two months of ammunition transactions we found
  - 2.6% of transactions involved prohibited buyers
  - 5,000 rounds per month were illegally purchased
- LAPD began a program of generating leads based on the logs
- In October 2009 Gov. Schwarzenegger signed a bill making ammunition logs statewide

Conclusion

- **Primary goal was to demonstrate that policing research can be effective**
  - **What cost-of-crime research can tell us about investing in police**
  - **Predictive policing**
  - **Officer-involved shootings**
  - **Police recruiting**
  - **Police performance measurement**
  - **Illegal gun markets**
- **All of our reports are available for free at cqp.rand.org**

Center on Quality Policing

A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT PROGRAM