Nations, Streets, and Places in-Between: Making the Case for a Focused Multi-Level Analysis of Contemporary Crime Trends

Eric P. Baumer

College of Criminology
Florida State University
Tallahassee, FL

Outline

I. Observed trends in contemporary crime rates.

II. What do we know about the correlates and causes of the observed trends?

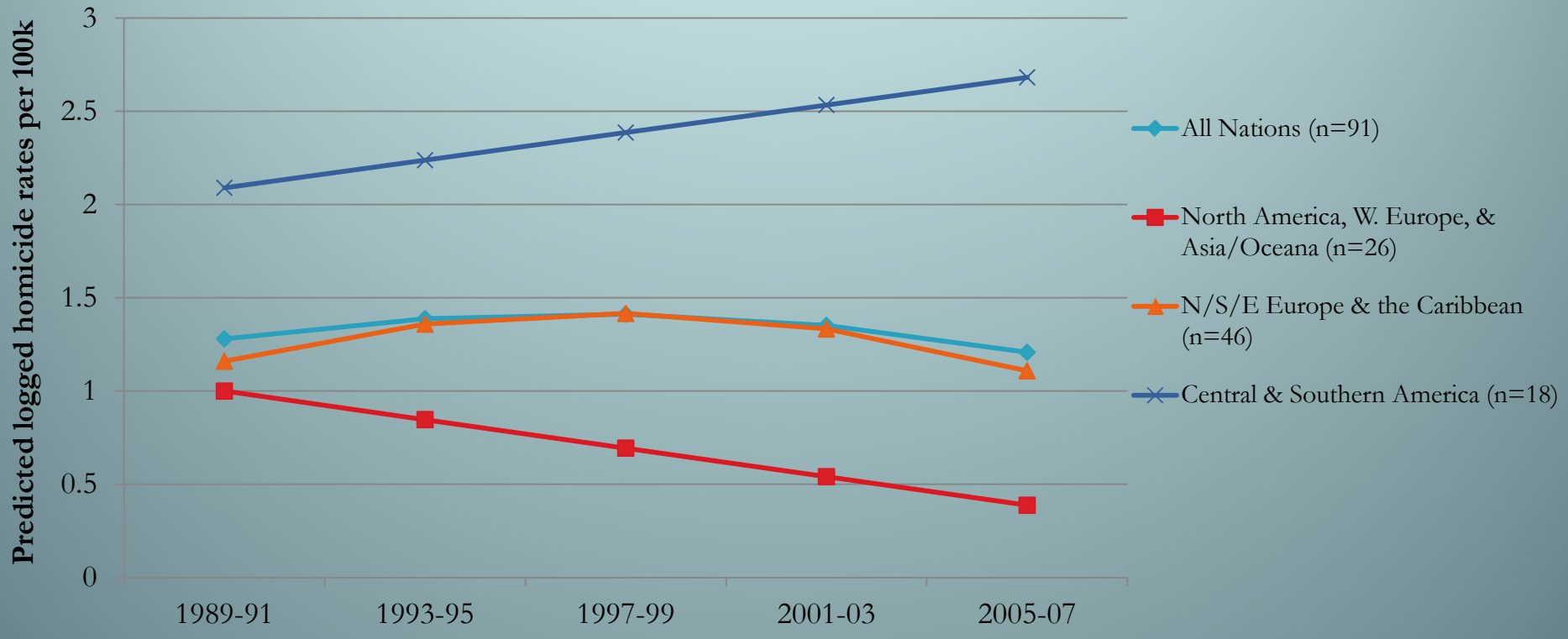
III. Where should our investments (time, focus, money) go for maximum return on knowledge about recent/current crime trends?

I. Observed crime trends.

I will focus primarily on *American* trends: national, regional, state, county, city, and neighborhood patterns.

However, before looking "within", it is important to put America into a broader context Others have experienced homicide decline, too (we are not unique). On the other hand, not all nations have.; could this be an important clue for us to explore?

Estimated trends in logged homicide rates from approximately 1990 through the mid 2000s for a sample of 91 nations, by region.

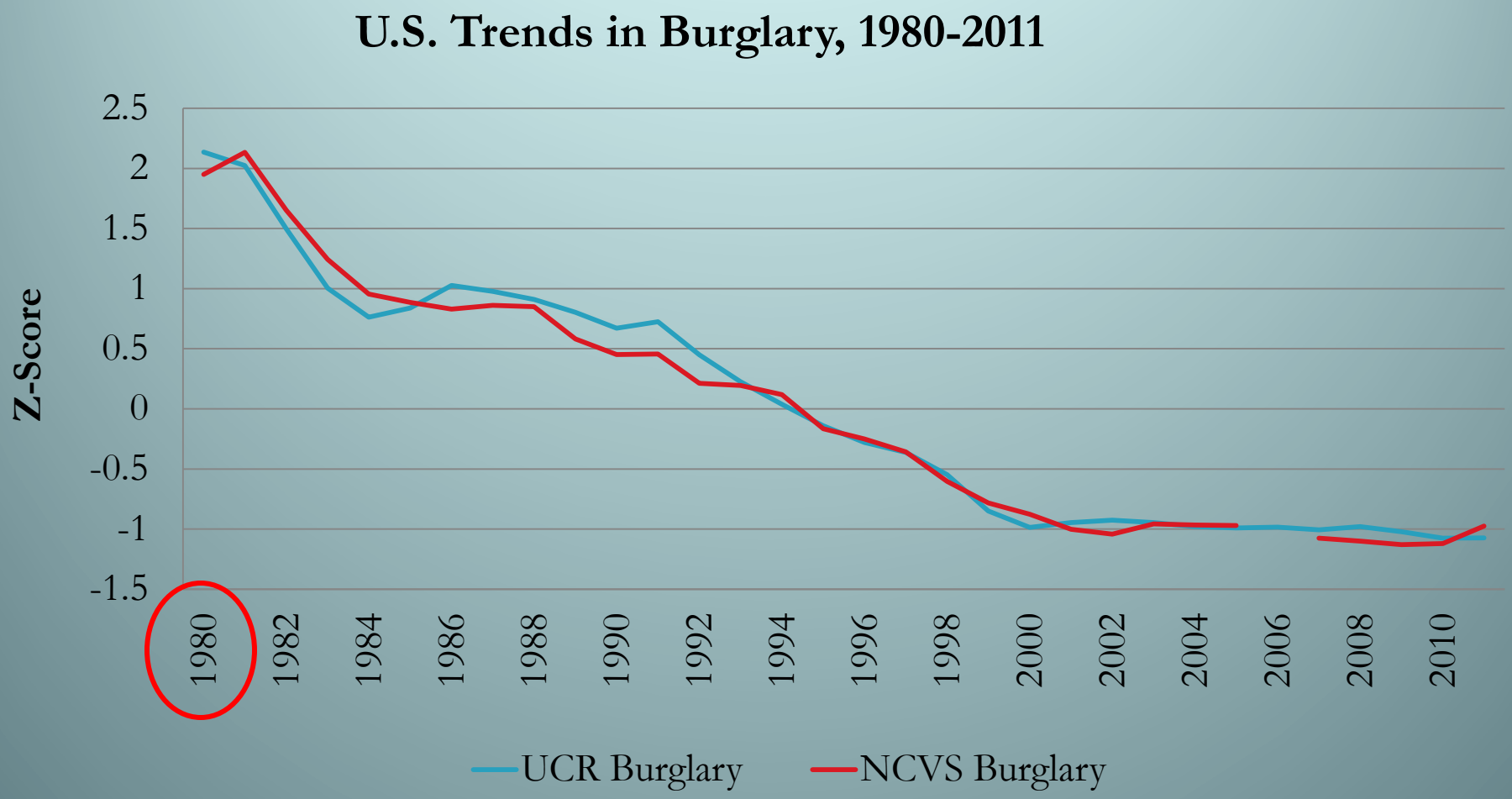


Source: Baumer & Wolff (2013); figure based on mixed-model estimated trends from public health mortality data.

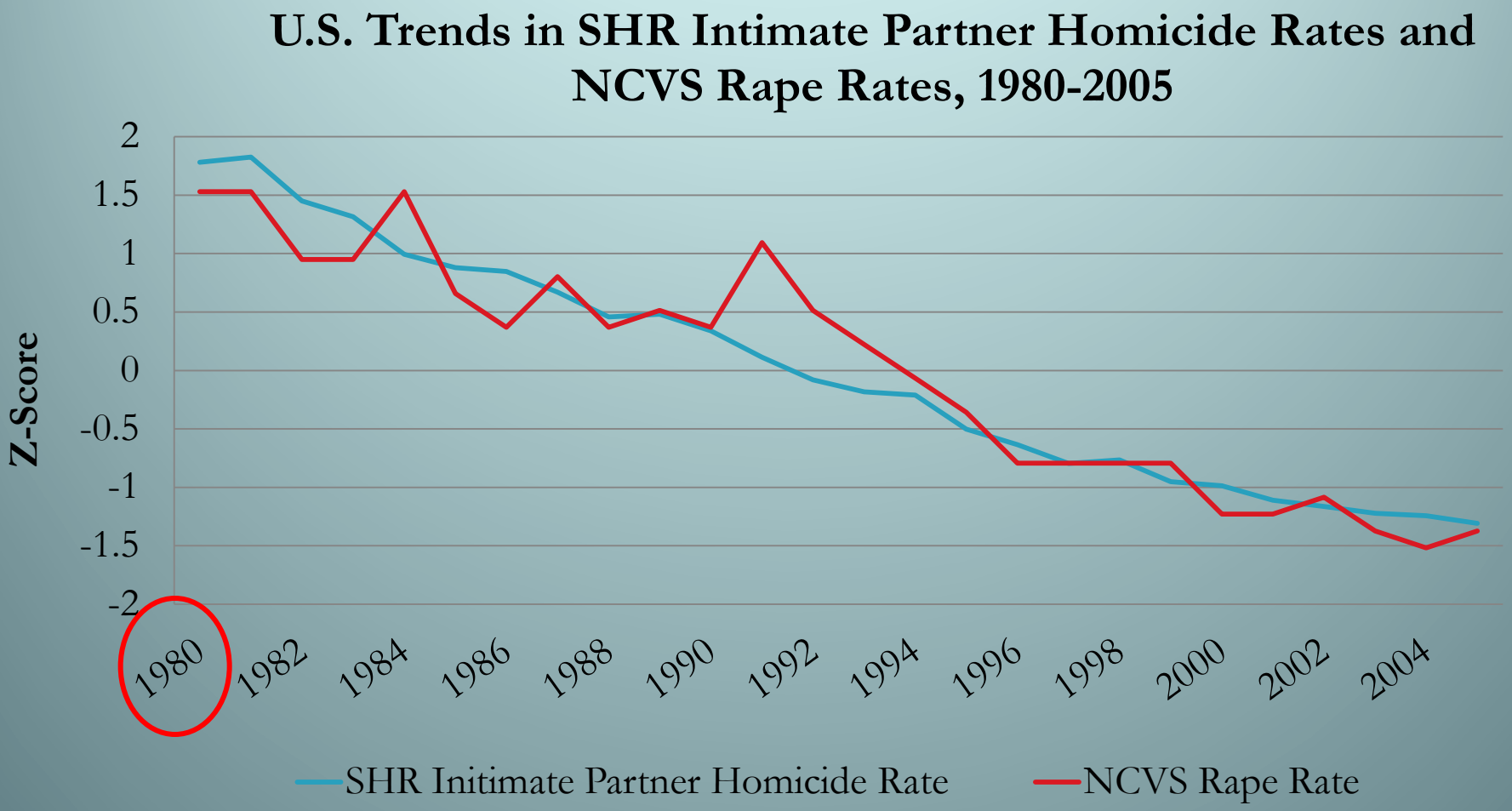
I. Observed crime trends.

As per the roundtable proposal, I focus mainly on the *1990s and 2000s.*

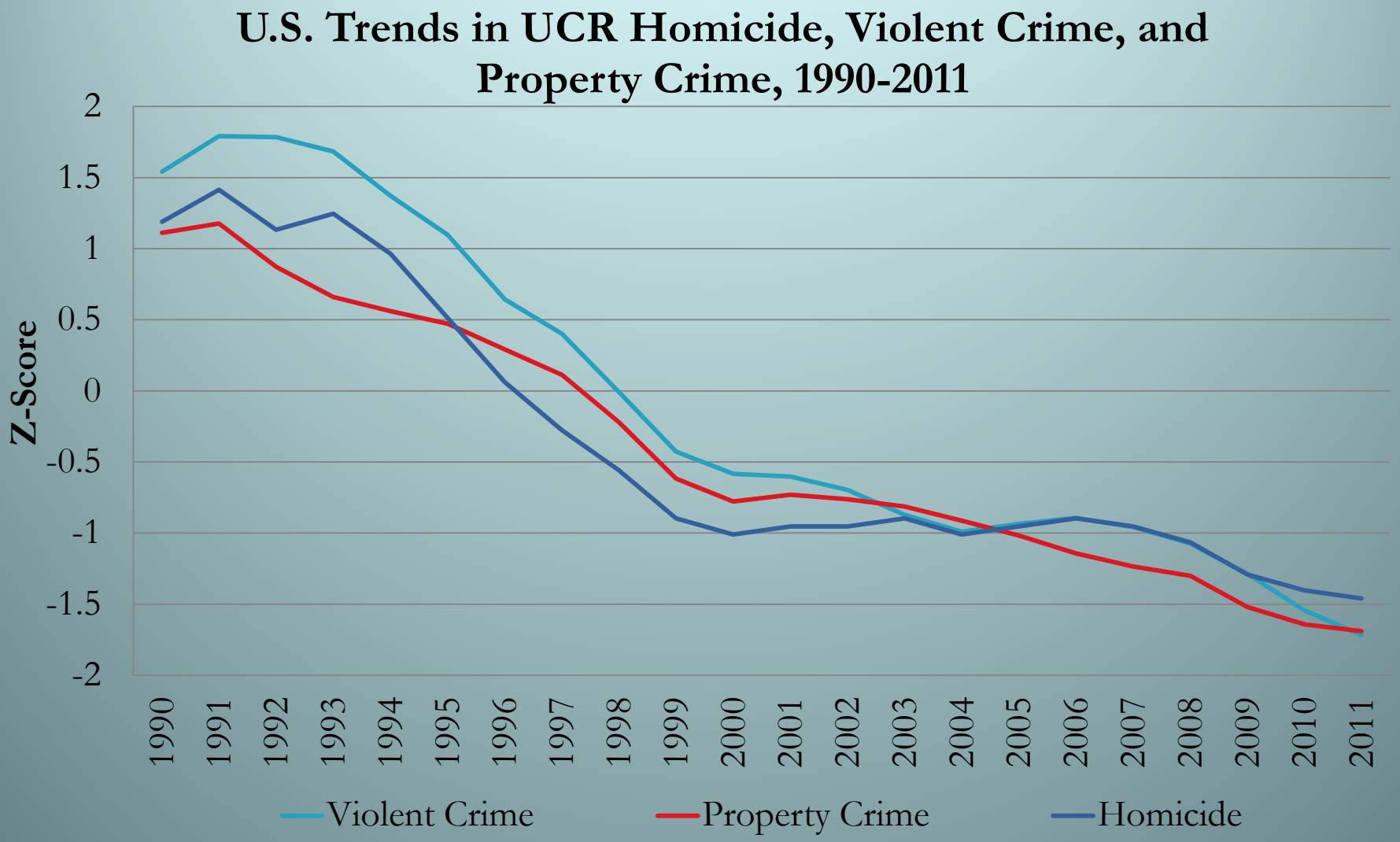
Others will highlight longer periods, in addition to earlier historical eras. It is important to do so because, among other reasons, though the 1990s were special, *there are signs that the contemporary crime drop in America started in the early 1980s.*



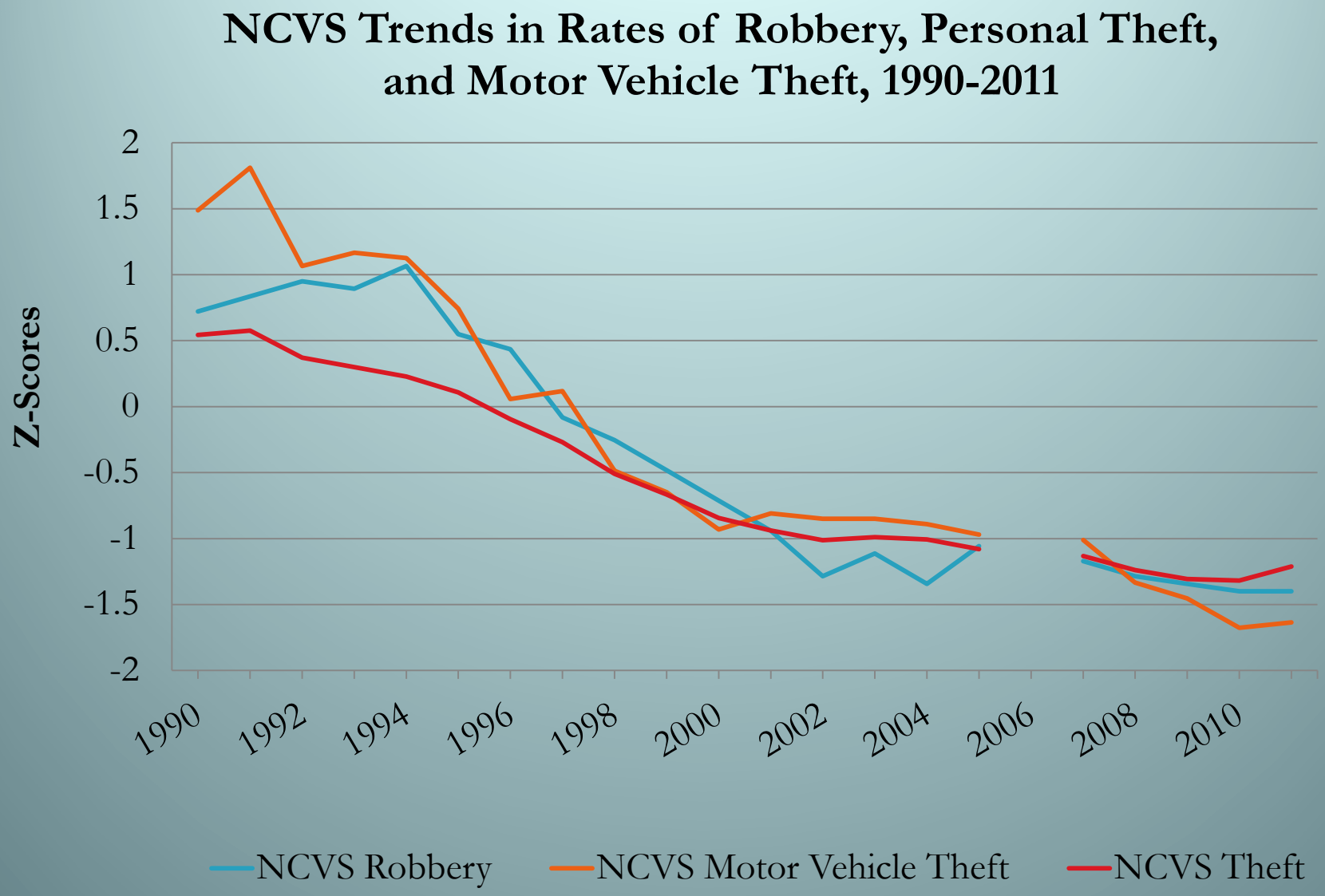
The 1980s signaled a shift not only in burglary rates, but also intimate partner homicide and rape. Should we really focus only on the 1990s and 2000s? Maybe the crack epidemic was an aberrant bump in otherwise declining crime rates.



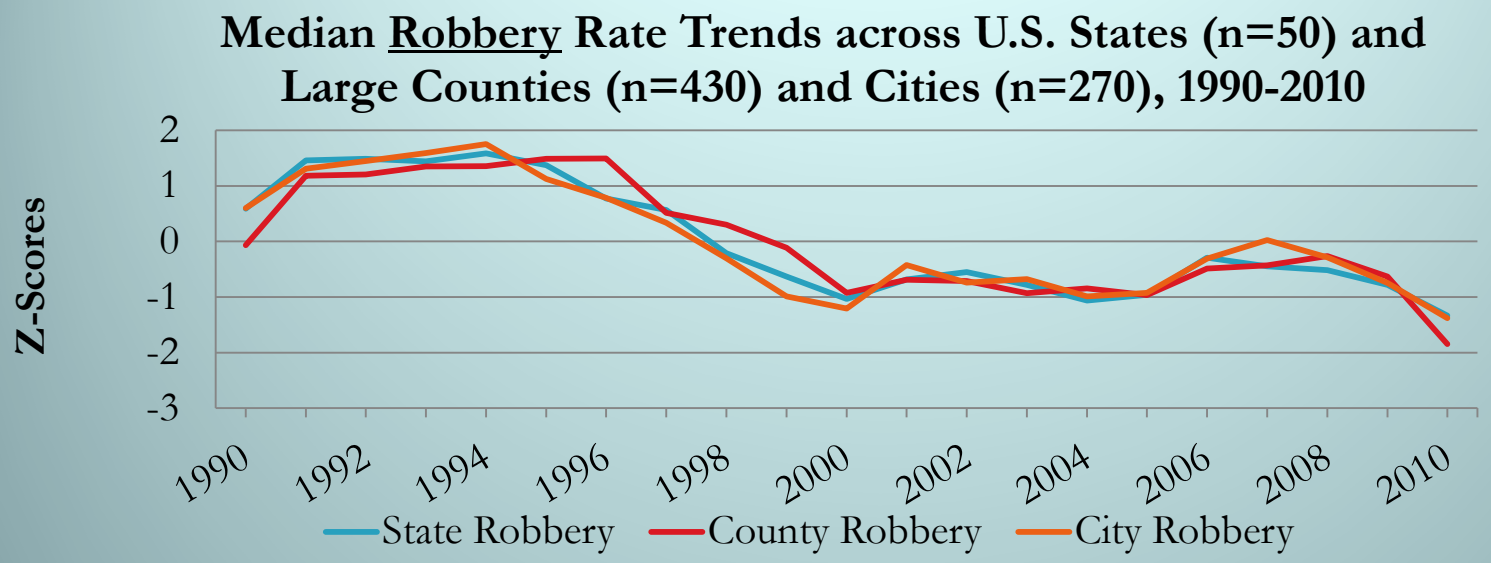
The 1990s do look like a remarkable decade, however. UCR data reveal that most forms of crime dropped considerably. There are sings of a leveling during the 2000s, with a slight overall decline.

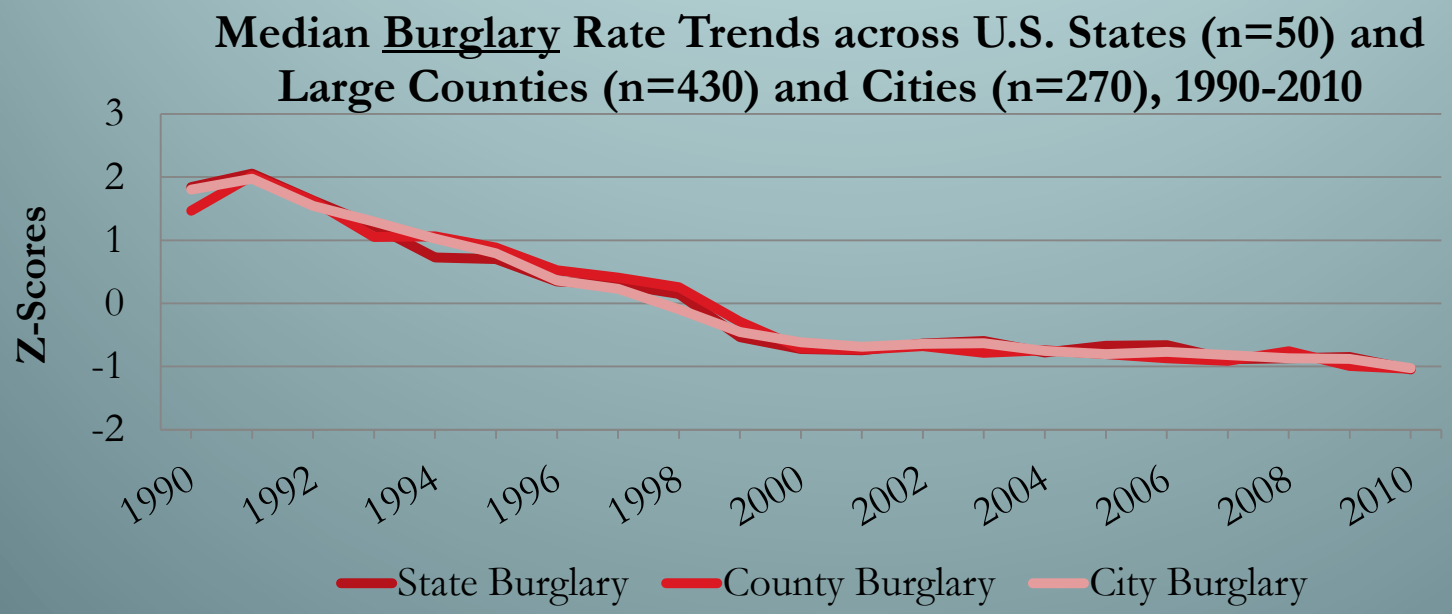


The NCVS yields a similar story at the national level for the 1990s and 2000s.



State, County, and City Trends in Robbery & Burglary Rates (1990-2010)





I. Observed crime trends: Do All States, Counties, and Cities Exhibit the Same (or very similar) Trends in Robbery and Burglary Rates, 1990-2010?

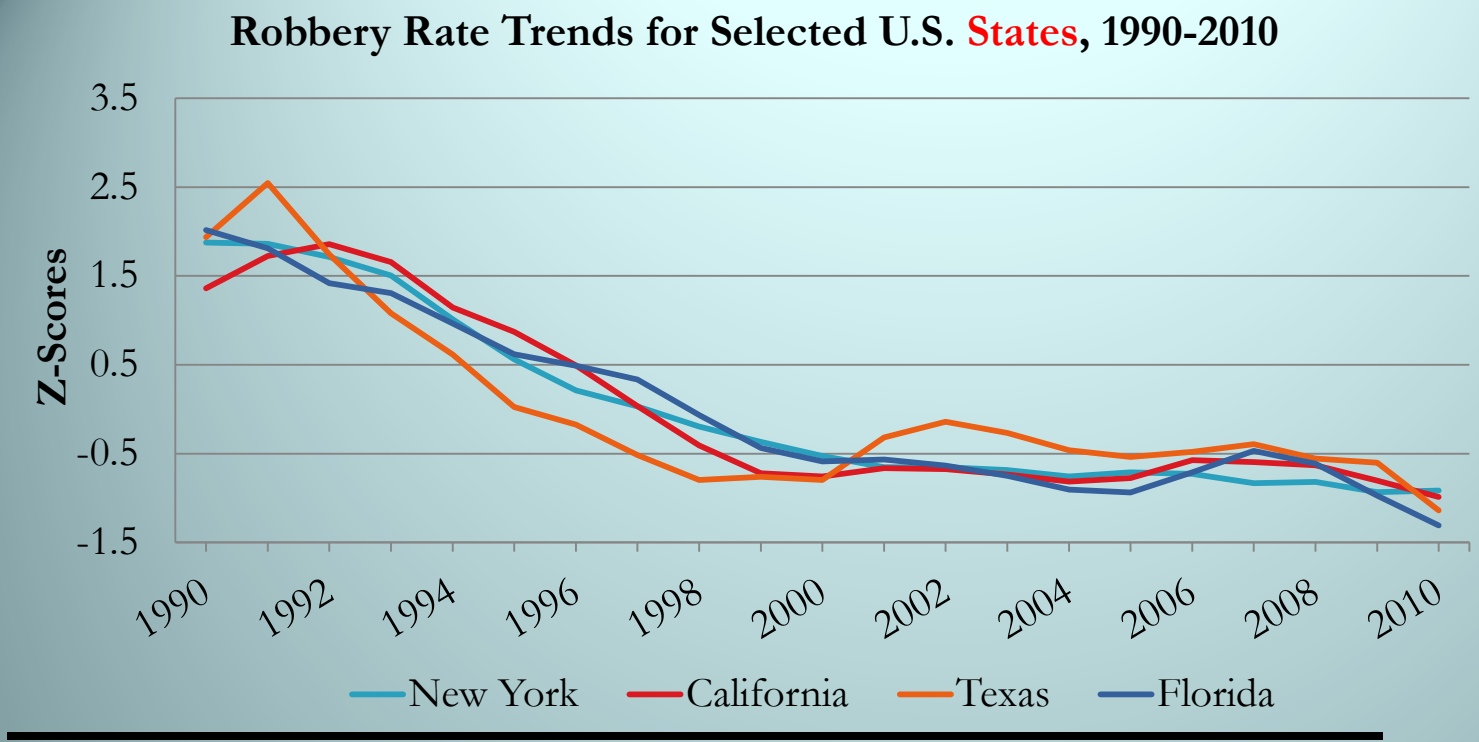
1. Evaluated trends for 50 states, 430 counties (100,000 persons or more) and 270 cities (100,000 persons or more). Considered cross-period correlations, shared temporal variance (MacDowall and Loftin, 2009), two-level growth curve models, and non-parametric trajectory models.

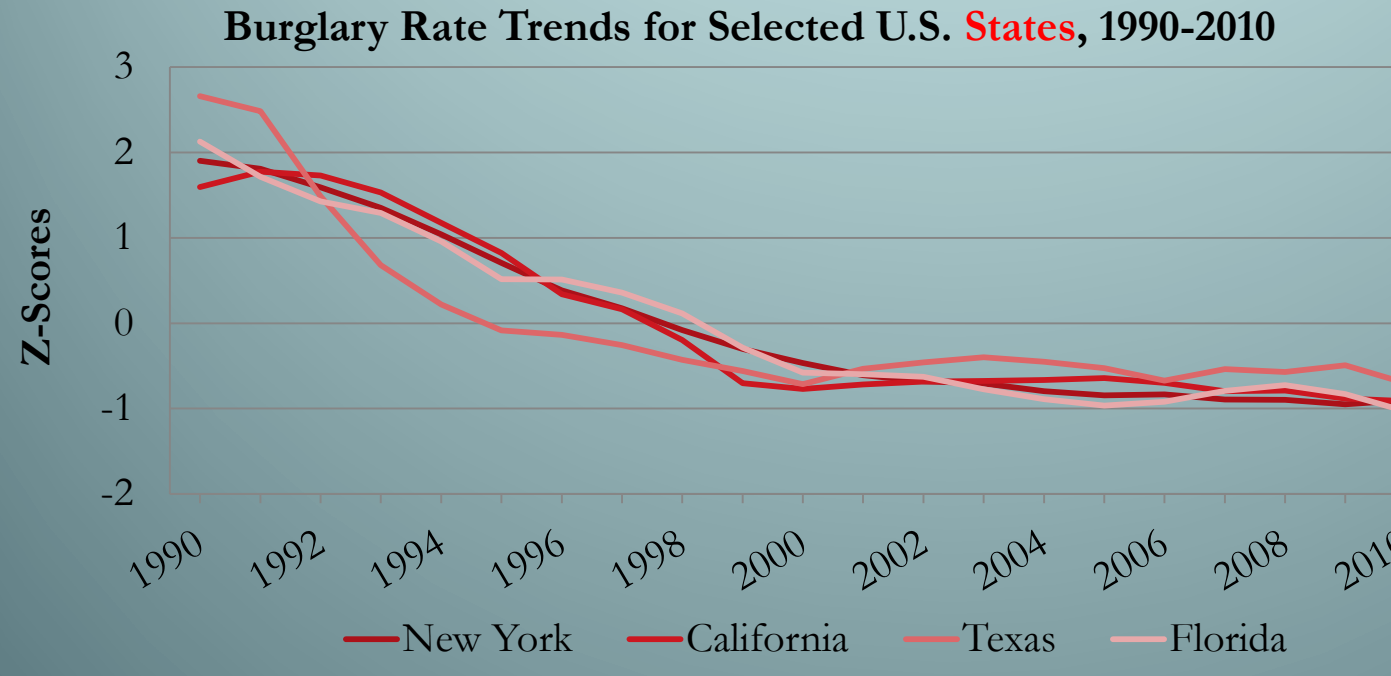
    a. There is evidence of a significant degree of shared temporal change across these units (especially states). A period of remarkable change, but for each unit of analysis the correlations between 1990 crime rates and 2010 crime rates are relatively high (r~.70 - .80).

    b. About 2/3 of temporal variance in state crime rates is common across states; for cities and counties, the common temporal variance ranges from about 1/3 to 1/2 (the method is sensitive to the inclusion of places in which crime is relatively rare (e.g., rural counties), for which crime rates can fluctuate wildly over time even if there is only a small change).

    c. Trajectory models point to differences in magnitude of levels and changes rather than significant differences in the nature of trends. In other words, though they started at different levels of crime, most states, counties, and cities tend to follow similar basic trajectories during the 1990s and 2000s. Evidence for significant quadratic and cubic trends over this period.

    d. Mixed models yield evidence of significant, albeit modest, geographic variability in robbery and burglary trends during the 1990s and 2000s. There is greater geographic variability during the 2000s



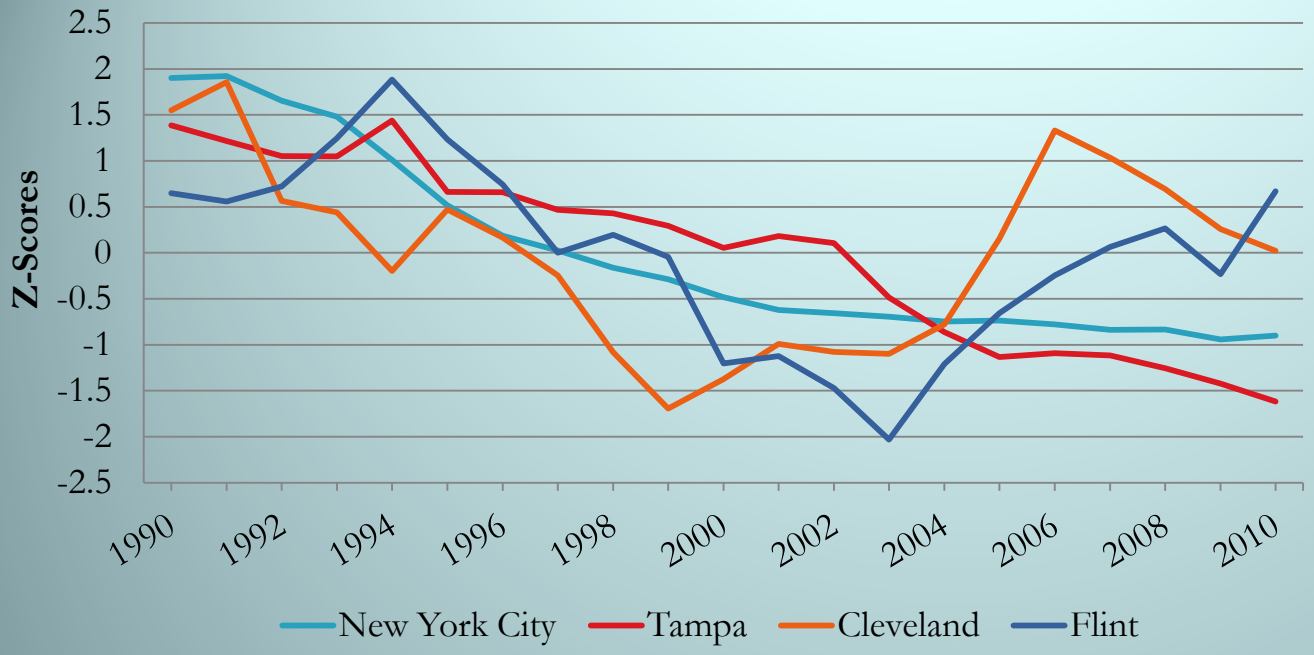


(1) Texas: an especially steep decline in 1990s.

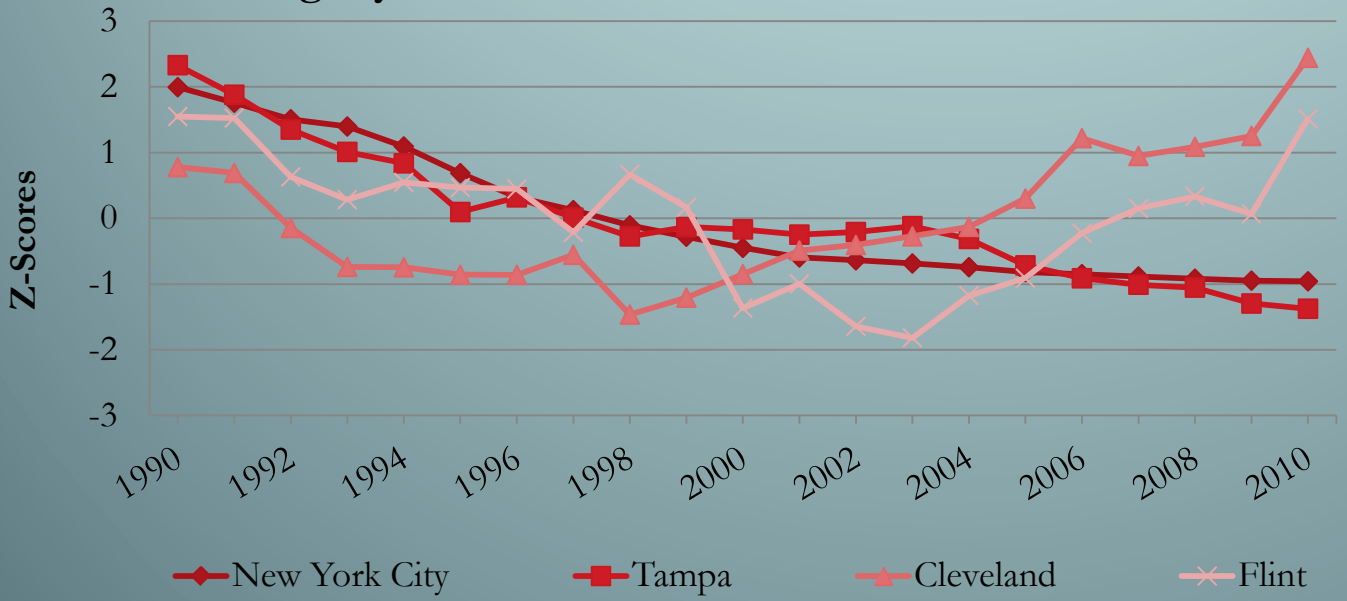
(2) Overall: not much variability in trends across states.

(3) States probably mask notable internal variation.

Robbery Rate Trends for Selected U.S. Cities, 1990-2010



Burglary Rate Trends for Selected U.S. Cities, 1990-2010



(1) Slight differences in timing of crime rates changes.

(2) Trends in 1990s look pretty uniform; greater variability in 2000s.

(3) Some declines and some increases during 2000s. Tampa has exhibited larger declines than NYC.

(4) Relatively little evidence that trends during this period were highly unique to (or especially great in) a particular place.

II. What do we know about the correlates and causes of the observed trends?

A. Almost exclusive r*etrospective* focus, which is understandable but not ideal. Our efforts tend to be a "day late and a dollar short." It would be worthwhile to invest in a serious data infrastructure, particularly one that is forward-thinking.

B. Many thoughtful efforts, some persuasive evidence, but we are miles away from an accumulated body of scholarship from which strong conclusions can be drawn.

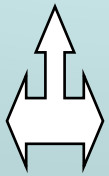
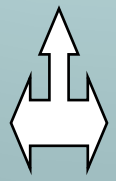
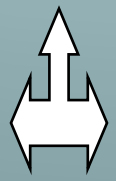
C. Great diversity of approaches (e.g., different temporal periods, units, outcomes, predictors, and methods), which is understandable and perhaps even desirable from some vantage points, but it is not ideal for the accumulation of knowledge.

1. Research on crime trends often focuses on somewhat different time periods, and outcome measures, but it is particularly inconsistent in three ways: (a) the variables included as covariates; (b) the units of analysis used; and (c) the application of different statistical methods to estimate key parameters.

2. Perhaps not surprisingly, many studies conclude that *the factor* that forms the focus of the inquiry is important, net of other factors. Rarely do the other factors include other time-varying indicators (e.g., city and county and neighborhood studies rarely include more than one or two time-varying measures aside from the focal variable), and even in the most comprehensive studies, many theoretically relevant time-varying indicators are excluded (some include fixed effects, but this is not an ideal theoretical solution).

Assessments of Factors Linked to the 1990s American Crime Decline

Relatively little consistency (red highlight) across assessments/studies.

Factors that probably mattered a lot		Factors that probably did not matter much
	Baumer (2008)	
Increases in incarceration rates Improving economic conditions Decline in "lagged" teen births Larger adult cohorts		Decline in crack Increases in police per capita Changes in policing focus Smaller youth cohorts
	Zimring (2006)	
Increases in incarceration rates Improving economic conditions Smaller youth cohorts Regional cyclical factors		1970s abortion legalization Decline in crack (except youth violence) Increases in police per capita (except NYC) Changes in policing focus (except NYC)
	Levitt (2004)	
Increases in incarceration rates Increases in police per capita Decline in crack 1970s abortion legalization		Improving economic conditions Changes in policing focus Smaller youth cohorts

III. Where should our investments (time, focus, money) go for maximum return on knowledge about recent/current crime trends?

A. It depends on the objectives (e.g., Merely description of observed trends? Explanation of observed trends?) we wish to accomplish, of course, but I think it would be highly beneficial to think about *locating a core focus that can move us beyond the current state of affairs* (which is fine, but not efficient, sufficient, or highly economical).

B. As noted earlier, the key areas of inconsistency in crime trends empirical research seem to be: (a) significant variability in the variables included as covariates (and a tilt towards significant under-specification); (b) significant variability in the units of analysis used; and (c) the application of different statistical methods to estimate key parameters.

1. Different studies yield different conclusions – could be meaningful, but maybe it's merely because they differ on one or more of these dimensions.

2. The role of item C (different analytic approaches is not a big deal, in my judgment). It can be dealt with fairly easily, but it hard to isolate in a context in which A & B are so divergent across studies.

3. Theory and observation of the data might point us to a more focused approach to items A (a preferred basic specification?) & B (is there a "best" unit?).

III. Where should our investments (time, focus, money) go for maximum return on knowledge about recent/current crime trends?

C. Empirical Specification?

1. It seems like there is a strong desire to determine, with some confidence, the causes of recent crime trends. This is not likely to be accomplished with relatively minimalists specifications that focus on one or two very interesting factors, relegating other things to fixed effects (this research has value generally, but probably is not the best way to satisfy the desire for answering the general causal questions that linger about recent crime trends.

2. In many areas of study, there is a basic (often theoretically derived) empirical specification that would be expected in a sound analysis. What is that specification in the area of recent crime trends? Do we have the desired measures? If not, are we pursuing efforts to get them? The current data collection infrastructure is wide but not deep— "we" gather a lot of useful information but for different units, different samples, different periods, and so on.

3. Some things are probably out of reach—they are not measured now on a regular basis and would be cost-prohibitive to gather moving forward—but surely we can improve current practice. Reminder: the vast majority of studies, especially across counties, cities, and neighborhoods, include few (if any) time-varying covariates.

III. Where should our investments (time, focus, money) go for maximum return on knowledge about recent/current crime trends?

D. A Preferred Unit of Analysis?

1. Crime trends can be (and are) meaningfully studied across a variety of different units of analysis. This should continue, but can we identify a core data collection strategy and unit of analysis that will enable us to better harness existing data resources (maybe also adding to them), improving our capacity to answer the most critical questions about crime trends?

2. The various units of analysis that have been employed in crime trends research have different strengths and weaknesses. Often, there are major trade-offs.

a. Some units of analysis provide superior temporal coverage and disaggregation capacities (e.g., nations, regions, states), but they mask potentially important heterogeneity in basic trends and/or for various reasons are not ideal for addressing explanatory questions (e.g., limited variance and degrees of freedom).

b. Other units provide very precise monitoring capacity (e.g., street segments), but are difficult to integrate into a comparative analytic strategy and do not match up will with other data resources.

3. There appear to be both important highly localized (e.g., streets and neighborhoods) and more general influences on recent crime trends (e.g., MacDowall and Loftin, 2009; Weisburd et al. 2012; Zimring 2006). In light of this, a multi-level approach might be most useful. Assessing neighborhood crime trends within multiple cities, counties, and states would, in my judgment, yield a great return on the needed investment.

Rating of Typical Units of Analysis for Purposes of Describing Contemporary Crime Trends

Unit of Analysis	Generalizability/ Breadth of Knowledge	Sensitivity to Internal Heterogeneity
Multiple-nations	Very High	Very Low
Single-nation	Very High	Very Low
Sub-National (America)		
Region	Very High	Very Low
States	Very High	Low
Counties	High	Medium
Cities/Towns	High	Medium
Neighborhoods/census tracts	Low (but medium/high if multiple cities & states included)	High
Police districts/precincts	Low	High
Blocks/Street Segments	Very Low	Very High

Rating of Typical Units of Analysis for Purposes of Describing Contemporary Crime Trends

Unit of Analysis	Multiple Crime Types?	Govt. and Survey Crime Data?	Disaggregated Crime Data?
Multiple-nations	Very Low	Medium	Low
Single-nation	High	Very High	Very High
Sub-National (America)			
Region	High	High	High
States	High	Low	Medium
Counties	High	Low	Medium
Cities/Towns	High	Low	Medium
Neighborhoods/census tracts	High	Very Low (a trade-off, but one that is true of most other units, too)	Very Low
Police districts/precincts	High	Very Low	Very Low
Blocks/Street Segments	High	Very Low	Very Low

Rating of Typical Units of Analysis for Purposes of Describing Contemporary Crime Trends

		Temporal Coverage			Ease of
Unit of Analysis	**1980s**	**1990s**	**2000s**		**Access**
Multiple-nations	High	Very High	Very High		Medium
Single-nation	Very High	Very High	Very High		Very High
Sub-National (America)					
Region	Very High	Very High	Very High		Very High
States	Very High	Very High	Very High		Very High
Counties	High	High	High		High
Cities/Towns	High	High	High		High
Neighborhoods/census tracts	Very Low	Very Low (could be enhanced significantly)	Medium		Medium
Police districts/precincts	Very Low	Very Low	Medium		Low

Rating of Typical Units of Analysis for Purposes of Explaining Contemporary Crime Trends

Unit of Analysis	Linkages to Basic Time-Varying Correlates	Suitability for Evaluating Widely Shared Factors
Multiple-nations	Medium	Very High
Single-nation	Very High	High
Sub-National (America)		
Region	High	High
States	Medium	High
Counties	Medium	Medium
Cities/Towns	Low	Medium
Neighborhoods/census tracts	Low (but comparable to cities); enhanced through linkage to county and state TV data	Low (enhanced with data from multiple jurisdictions)
Police districts/precincts	Very Low	Low
Blocks/Street Segments	Very Low	Very Low

Rating of Typical Units of Analysis for Purposes of Explaining Contemporary Crime Trends

Unit of Analysis	Suitability for Evaluating More Localized Factors	Suitability for Evaluating Geographically Targeted Interventions
Multiple-nations	Very Low	Very Low
Single-nation	Low	Very Low
Sub-National (America)		
Region	Low	Very Low
States	Medium	Low
Counties	High	Medium
Cities/Towns	High	Medium
Neighborhoods/census tracts	Very High (appealing to potential funders)	High (appealing to potential funders)
Police districts/precincts	Very High	High
Blocks/Street Segments	Very High	Very High

Conclusions

- ✓ How about investing in a longitudinal neighborhood (census tract) level database, with neighborhoods nested within cities, counties, and states?

- ✓ We have a relatively good start for the 2000s.
  The National Neighborhood Crime Study (NNCS) – Krivo, Peterson, & Colleagues.
  The National Foreclosure and Crime Database (NFCD) – Baumer & Colleagues.

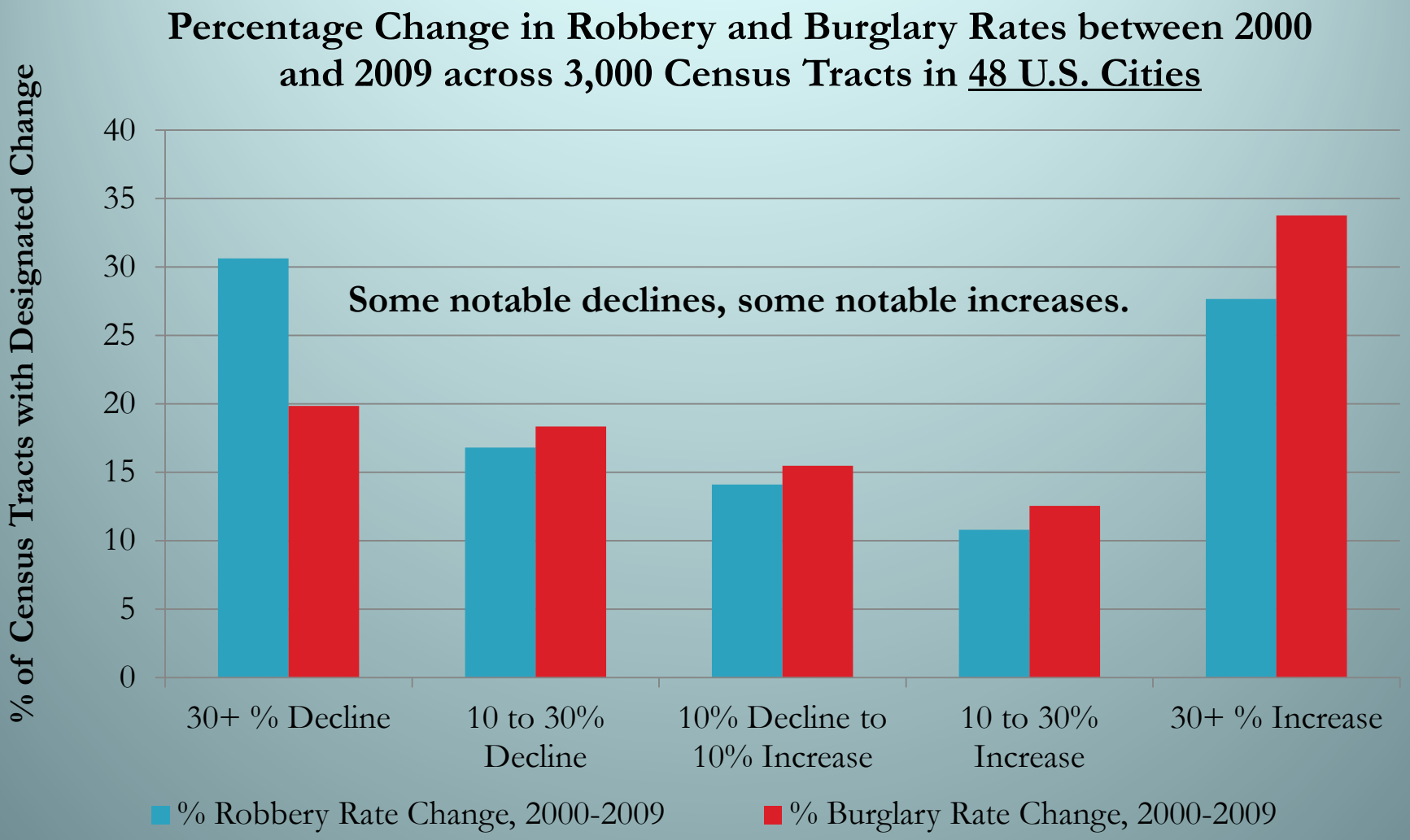
- ✓ The integrated NNCS and NFCD yield trend data on robbery and burglary rates for more than 6,000 census tracts across 50 large U.S. cities and 25 states for 2000, 2003, 2006, and 2009.

  - ❖ Collecting 1990s tract-level data for these cities may be feasible and a good value for the investment.

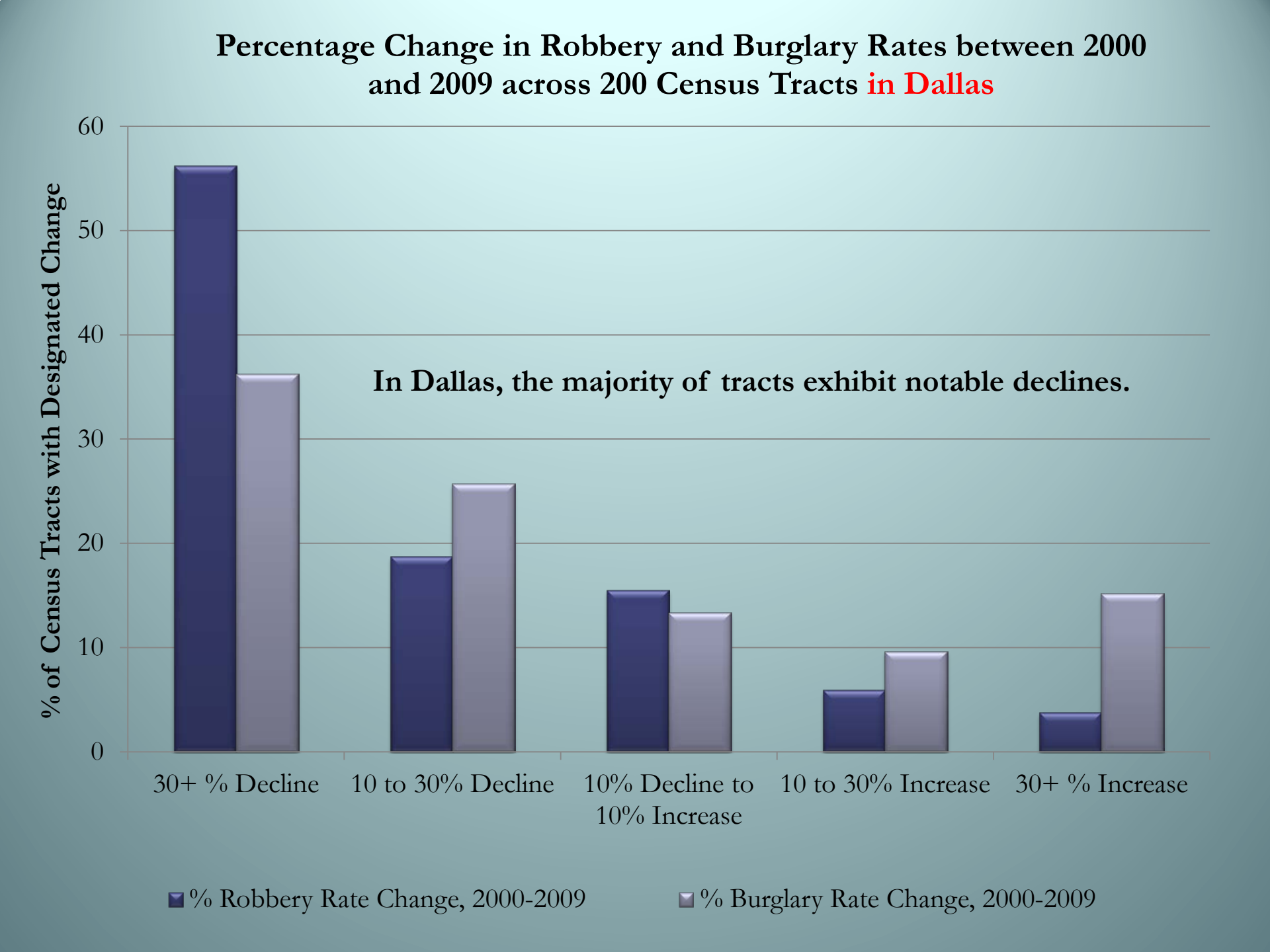
  - ❖ Linking the tract crime data to covariates drawn from cities, counties, regions, and states would yield a rich multilevel database on contemporary crime trends suitable for the consideration of both local and broader influences.

  - ❖ Pursuing additional census tract data collection for these (or other) cities moving forward (2010→) would enable us to be in a better position to address questions about **current** crime trends.

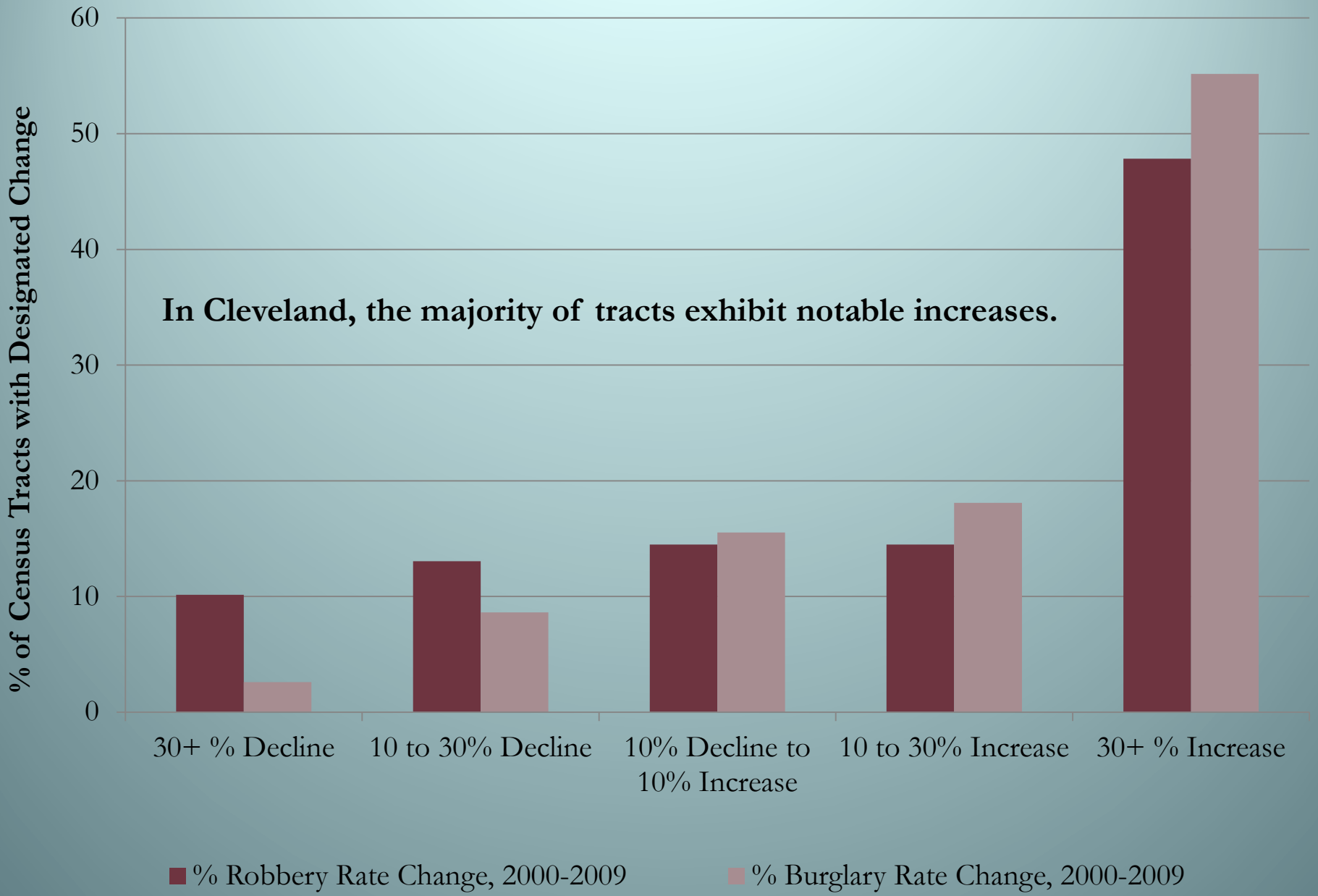
Tracking Recent Crime Trends across Neighborhoods from a Relatively Large Sample of U.S. Cities



Note: To minimize volatility from very small rates, the estimated percentage changes are based only on tracts in which there were an average of 10 robberies and 35 burglaries (the 25th percentile) per year (2000, 2003, 2006, & 2009).


Percentage Change in Robbery and Burglary Rates between 2000 and 2009 across 200 Census Tracts in Dallas
% of Census Tracts with Designated Change
60
50
40
30
20
10
0
In Dallas, the majority of tracts exhibit notable declines.
30+ % Decline
10 to 30% Decline
10% Decline to 10% Increase
10 to 30% Increase
30+ % Increase
% Robbery Rate Change, 2000-2009
% Burglary Rate Change, 2000-2009

Percentage Change in Robbery and Burglary Rates between 2000 and 2009 across 120 Census Tracts in Cleveland



END