USING NCVS FOR SUBNATIONAL ESTIMATES OF VICTIMIZATION: A BJS UPDATE
Overview

• National Crime Victimization Survey (NCVS): Basics

• Subnational Program: Approaches
  – Direct
  – Model-Based
  – Local victimization surveys

• Next Steps
NCVS Basics

• Omnibus Crime Survey: focus on violence and property crime

• Annual victimization counts/rates

• Provides a national measure of change

• “Dark figure”- unreported crime

• Standardized data collection process and instrument

• Incident and attribute based collection
NCVS Basics

Design

• Non-institutionalized households in the U.S.

• Rotating panel design, interviews conducted every 6 months over 3 years

• Primary Sample Units (PSUs): counties, groups of counties, and large metro areas

• Households randomly selected in PSUs and all eligible persons 12 or older are interviewed

• Interviews: Currently 90,000 households and 160,000 persons per year

• First interview in-person, follow-up interviews by phone or in-person

• Census Bureau collection agency

• Response rates: 90% Household 88% individuals
NCVS Subnational Program

• Needs and purpose

• Current limitations/challenges

• BJS approaches
Subnational Efforts: Needs and Purpose

NCVS Redesign and Modernization Activities

1. Cost Containment and Response Rates
2. Increasing quality in field operations and processing
3. Expand Portfolio of Products
   • Access
   • Relevance
   • Timeliness
4. Sample Redesign- flexible and subnational focus
5. Modernize instrument
Subnational Efforts: Needs and Purpose

Value of Information:

- Victimization statistics (dark figure) coupled with police statistics at the local level- Number and rate of victimization. Who is at risk?
  - Resource allocation
  - Evaluate local crime policy
  - Evaluate planned interventions
  - Exploit cross state/city/county variation to better understand causes of crime and solutions
  - Link to other sources of information at the local level (victim service providers, corrections/reentry, police resources)
Subnational Efforts: Current Limitations/Challenges

• Representativeness- valid indicator of area
  – Sample design and response rate
  – Allocation of sample

• Precision- reliable indicator of area
  – Standard error
  – Relative standard error (RSE or CV)
  – Boost sample

• Disclosure risk avoidance (Census DRB)
  – Minimize likelihood that a respondent can be identified
Subnational Efforts: Current Limitations/Challenges

• Current NCVS sample is designed to be representative at the national-level, not necessarily for states, cities, or other smaller geographic areas

• Smaller geographic areas:
  – Lack reliability- small sample sizes lack precision
  – Representation- existing sample may not represent the area

• Subsequently, can’t say much about specific states, cities, etc.
Subnational Estimation Approaches

1. Direct estimation
   iii. 2015/16 sample redesign: 17-22 states

2. Indirect modeled-based estimation

3. Low cost companion study
Direct estimation - goals and assumptions

- Modeled after American Community Survey (ACS)
- 1-, 3- and 5-year rolling averages depending on geography and estimate
- Key target: 3-year rolling averages for violent crime 10% RSE
- Assumptions: violent crime rate, nonresponse rate, costs
Direct estimation: current sample

- Examined 7 largest states, 20 largest MSAs and cities
  - Currently, largest amount of NCVS sample
Direct estimation: current sample

- Examined 7 largest states, 20 largest MSAs and cities
- Examine precision and representativeness of 1-, 3- and 5-year estimates
- Reweight to known totals from ACS for each area, 2007-2012

Measures:
- Violent crime, serious violence (rape, sexual assault, robbery, aggravated assault)
- Property crime, burglary, motor vehicle theft
- Crimes committed with a weapon
- Stranger/non-stranger violence (domestic and acquaintance violence)
- Dark-figure of crime: Percent reported to police
Direct estimation: current sample

NCVS Property Crime, 2009-11

Rate per 1,000 Households

TX
CA
IL
OH
FL
PA
NY
U.S.
Direct estimation: current sample

NCVS Burglary, 2009-11

Rate per 1,000 Households

50.0

45.0

40.0

35.0

30.0

25.0

20.0

15.0

10.0

5.0

0.0

TX

IL

OH

FL

CA

PA

NY

U.S.
Direct estimation: current sample

NCVS Motor Vehicle Theft, 2009-11

Rate per 1,000 Households

TX  CA  IL  FL  OH  PA  NY  U.S.
Direct estimation: current sample

NCVS Violent Crime, 2009-11
Direct estimation: current sample

NCVS Weapon Crimes, 2009-11

Rate per 1,000 persons

TX
OH
PA
NY
IL
CA
FL
U.S.
Direct estimation: current sample

NCVS Property and Violent Crime Rate, 2009-11
Direct estimation: current sample

"Dark figure" of violent crime, % reported to police, NCVS 2009-11
Direct estimation: current sample

"Dark figure" of violent crime, % reported to police, NCVS 2009-11

- % reported total violence
- % reported serious violence

<table>
<thead>
<tr>
<th>State</th>
<th>% Reported Total Violence</th>
<th>% Reported Serious Violence</th>
</tr>
</thead>
<tbody>
<tr>
<td>NY</td>
<td>65</td>
<td>50</td>
</tr>
<tr>
<td>IL</td>
<td>60</td>
<td>55</td>
</tr>
<tr>
<td>FL</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>U.S.</td>
<td>50</td>
<td>35</td>
</tr>
<tr>
<td>CA</td>
<td>55</td>
<td>40</td>
</tr>
<tr>
<td>PA</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>TX</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>OH</td>
<td>40</td>
<td>30</td>
</tr>
</tbody>
</table>
## Violence: NCVS and Uniform Crime Reports

Source produces different rankings*

<table>
<thead>
<tr>
<th></th>
<th>UCR Violent Crime rate, per 100,000</th>
<th>NCVS Violent crime, per 1,000</th>
<th>NCVS Serious Violent Crime Rate, per 1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL</td>
<td>515</td>
<td>PA 26.6</td>
<td>OH 11.2</td>
</tr>
<tr>
<td>IL</td>
<td>424</td>
<td>TX 24.4</td>
<td>TX 10.5</td>
</tr>
<tr>
<td>CA</td>
<td>411</td>
<td>IL 21.6</td>
<td>PA 8.3</td>
</tr>
<tr>
<td>TX</td>
<td>409</td>
<td>U.S. 21.4</td>
<td>U.S. 7.2</td>
</tr>
<tr>
<td>NY</td>
<td>397</td>
<td>OH 21.4</td>
<td>NY 7.0</td>
</tr>
<tr>
<td>U.S.</td>
<td>387</td>
<td>CA 20.3</td>
<td>CA 6.2</td>
</tr>
<tr>
<td>PA</td>
<td>362</td>
<td>NY 17.7</td>
<td>IL 5.6</td>
</tr>
<tr>
<td>OH</td>
<td>305</td>
<td>FL 13.0</td>
<td>FL 4.6</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>3-year 2009-11</td>
<td>3-year 2009-11</td>
</tr>
</tbody>
</table>

*Caveats: absolute and relative differences; does not address substantive differences or underlying differences in population heterogeneity*
Direct estimation: current sample

**MSA Area Property Crime Rate, NCVS 2009-11**

Rate per 1,000 Households

- Dallas-Fort Worth-Arlington, TX
- Houston-Sugar Land-Baytown, TX
- Los Angeles-Long Beach-Santa Ana, CA
- Detroit-Warren-Livonia, MI
- San Francisco-Oakland-Fremont, CA
- Atlanta-Sandy Springs-Marietta, GA
- Chicago-Joliet-Naperville, IL-IN-WI
- Boston-Cambridge-Quincy, MA-NH
- Washington-Arlington-Alexandria, DC-VA-MD-WV
- Miami-Fort Lauderdale-Pompano Beach, FL
- Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
- New York-Northern New Jersey-Long Island, NY-NJ-PA

U.S.
Direct estimation: current sample

**MSA Area Violent Crime Rate, NCVS 2009-11**

Rate per 1,000 persons

- **Dallas-Fort Worth-Arlington, TX**
- **Boston-Cambridge-Quincy, MA-NH**
- **San Francisco-Oakland-Fremont, CA**
- **Detroit-Warren-Livonia, MI**
- **Chicago-Joliet-Naperville, IL-NWI**
- **Atlanta-Sandy Springs-Marietta, GA**
- **Houston-Sugar Land-Baytown, TX**
- **Los Angeles-Long Beach-Santa Ana, CA**
- **Washington-Arlington-Alexandria, DC-VA-MD-WV**
- **Philadelphia-Camden-Wilmington, PA-NJ-DE-MD**
- **New York-Northern New Jersey-Long Island, NY-NJ-PA**
- **Miami-Fort Lauderdale-Pompano Beach, FL**

**U.S.**
Direct estimation: current sample

NCVS Property and Violent Crime Rate, 2009-11

- Dallas FW
- Houston
- LA
- Detroit
- Atlanta
- SanFranOak
- WashDC
- Chicago
- Boston
- Miami
- Philadelphia
- NY
Victimization Estimates and Police-based Statistics

• **Victimization survey statistics (NCVS)**
  – Reflects crime against the **residential population** in a specific area, NOT necessarily where the crime occurred
  – A high violent victimization rate for a specific area may not reflect crime in that area
  – Limited scope of crime
  – Persons 12 or older
  – Household population (will miss homeless, shelters, highly mobile persons, nonrespondents)

• **Police statistics**
  – Reflects crime occurring in a specific area: **place based**
  – Includes commercial, residential, tourists, labor force, mobile populations
  – Does not necessarily reflect crime committed against the residential population (exception burglary)
  – All persons (homeless; all ages groups)
Direct Estimation- Pilot study and Redesign

Boost and Allocate sample in select areas

- Improves precision/reliability
- Allocate sample to better represent area

Feasibility pilot study- Census July 2013-2015

- Boost 11 largest states
- Accounts for 57% of U.S. population, 60% of UCR violent crime
- Test assumptions about design effects, cost assessment, quality
- Will also assess smaller areas (big cities, large counties)
NCVS Direct estimation pilot study, 2013-2015

NCVS State Sample Boost

11 states
Expected precision 11 state boost, 2013-15

Figure 1: Expected CV of Person Level Violent Crime Rate
Direct Estimation- 2015/16 Sample Redesign
Target- 22 states; determined by pilot study findings
Model-Based Estimates

What is small area estimation (SAE)?

- Use of statistical models and auxiliary data to produce estimates for areas where direct estimates from a survey are of low reliability
- SAE methods are widely used by Federal statistical agencies

Advantages/Limitations

- Offers a statistical interpretation based on national NCVS data of how crime is distributed across the states
- Uses existing NCVS data as well as data from auxiliary sources (e.g., UCR)
- Estimates can be generated for areas with no or limited sample
- Less sample = larger sampling error around estimates
- Current models use 3-year rolling averages (similar to the ACS approach)
- Estimates can be generated for all states and all crime types
- Can be used to examine state crime trends
Model-Based Estimates

Westat’s NCVS (SAE) Approach

- Multivariate Dynamic time-series model
- Model developed using NCVS data from 1997-2011
- NCVS sample and more recent years weighted more heavily in the model
- UCR state crime rates incorporated into the model to predict whether state NCVS SAE crime rates will be high or low relative to each other
- Models reflect relative stability in crime patterns over time

General findings

- The NCVS (SAE) state estimates follow the general trends for the national NCVS
- NCVS SAE approach reduces the spread of the state-by-state estimates and brings them closer to the national average
  - UCR state-by-state estimates are more varied compared to the national average
Model-Based Estimates

NCVS and UCR state violent crime rates compared to the national average
(darker red = above average; lighter red = below average)

NCVS (SAE) violent crime rate, 2009-2011

UCR violent crime rate, 2009-2011
Model-Based Estimates

NCVS and UCR state property crime rates compared to the national average
(darker red = above average; lighter red = below average)

NCVS (SAE) property crime rate, 2009-2011

UCR property crime rate, 2009-2011
Model-Based Estimates

NCVS rates for intimate partner and stranger violence compared to the national average
(darker red = above average; lighter red = below average)

NCVS (SAE) rates for intimate partner violence, 2009-2011

NCVS (SAE) rates for stranger violence, 2009-2011
Model-Based Estimates

State profile example – Massachusetts

- 2010 population = 6.5 million
- 1997-2011 MA average NCVS violent crime rate = 31.6 per 1,000 persons
Model-Based Estimates

State profile example – Massachusetts

- 2010 population = 6.5 million
- 1997-2011 MA average NCVS property crime rate = 147 per 1,000 households
Model-Based Estimates

State profile example – Massachusetts

- 2010 population = 6.5 million
- 1997-2011 MA average NCVS violent crime rate = 31.6 per 1,000 persons

NCVS(SAE) violent crimes in Massachusetts compared to national rates by victim-offender relationship, 1997-2011
References: Model-based estimation


Low-cost local area surveys

Current project:

- Examine low-cost alternatives to in-person interviews
- Address-based sample design with mailed out self-administered survey (challenges)
  - Instrument design and feasibility test- measuring prevalence vs incidents
  - Definitional
  - Two-stage approach: cueing/screening for events and then classification
  - Disentangling incidents versus attributes
  - Concept of “presence”

- Ability to cluster sample in specific areas

- Use alternative measures to victimization counts (fear, safety, police performance)

- Focus on local crime problems
NCVS Instrument Redesign

Alternative measures of community safety and well-being

- Perceptions of community disorder and well-being
- Perceptions of safety
- Fear
- Perceptions of police performance

Annual estimates- Victims and non-victims

Much better precision/distributions (not necessarily rare events)
NCVS redesign and subnational schedule

Timeline

Indirect model-based estimates
• Report, state tables 2014

Direct subnational estimation work
• 11 state feasibility study boost July 2013-2015
• Testing non-crime items (2014-2016, companion study/instrument redesign project)

• Assessment of historical data- RTI January-June 2014

Sample redesigned: implemented and expanded to 17-22 states in 2015/16

Instrument redesign
 (development & testing 2014-2016, implementation 2017)
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- Census Bureau
- RTI, International
- Westat

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Questions?
Upcoming Webinar

Uses of Administrative Data from Jails: Virginia's Local Inmate Data System (LIDS)

May 1st 2-3:30 PM EDT

Featuring:

Baron Blakley
Research Specialist
Virginia Department of Criminal Justice Services