Forensic Evidence and Sexual Assault Update

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Project Overview

Goals:

1. To provide a detailed description of forensic evidence in sexual assault cases, including its timing relative to criminal justice outcomes;

2. To examine the relationship of forensic evidence to arrest; and

3. To analyze the impact of forensic evidence in key segments of the sample.
Sexual Assault Case Outcomes: Types of Evidence

- Sexual assault victims have a unique place in the criminal justice system: witnesses and crime scenes

- Evidence in sexual assault cases
  - Physical evidence – Photographs of injuries, property, clothing.
  - Forensic evidence – Fingerprints, hair, bodily fluids, fibers.

- Improvements in evidence collection
  - Examination techniques to improve injury identification
  - Analytical techniques to improve DNA extraction
  - Sexual Assault Nurse Examiners (SANE) programs to improve data collection
Sampling

Sampling Procedures

- Random sample of cases in which a Provider Sexual Crime Report (PSCR) was collected between 2008 and 2010.
  - Original sample pool = 2,731
  - Final N = 528

Data sources

- PSCR database
  - Massachusetts Executive Office of Public Safety and Security
- Crime laboratory reports
  - Massachusetts State Police Crime Lab
  - Boston Police Crime Lab
- Police reports
Data Challenges

- Data linkage
- Data quality
  - Completeness
  - Accuracy
  - Timeliness
- NIBRS challenges
- Additional outreach to PDs followed
Types of Data Collected

PSCR DATABASE
- KIT Number
- Victim age, sex, race/ethnicity
- Location of assault (city and surroundings)
- Location/date/time of exam
- Exam provider (SANE/non SANE)
- Number of assailants
- Assailant-victim relationship
- Weapon type
- Description of assault
- Reported to police
- Completion of evidence kit/toxicology

CRIME LABORATORY DATA
- KIT Number, ORI, Incident Number
- Injury type, frequency, location
- Type of examinations completed
- Type of evidence collected (physical, forensic)
- Date/time of evidence kit collected
- Date/time kit arrival to lab
- Date/time of report of lab results
- Laboratory results

Police Outcome Data
- ORI, Incident Number
- Unfounded
- Arrest made/arrest date
- Charged/charge date
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>%/Median</th>
</tr>
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<tbody>
<tr>
<td>Victim Sex</td>
<td>95.9% Female</td>
</tr>
<tr>
<td>Victim Age</td>
<td>23</td>
</tr>
<tr>
<td>Victim Under 18</td>
<td>4.9%</td>
</tr>
<tr>
<td>Victim Race-Ethnicity</td>
<td>White 68.6%</td>
</tr>
<tr>
<td></td>
<td>Hispanic 17.1%</td>
</tr>
<tr>
<td></td>
<td>Black 9.1%</td>
</tr>
<tr>
<td>Victim-Assailant Relationship</td>
<td>Known assailant 68.2%</td>
</tr>
</tbody>
</table>
## Examination, Laboratory and Police Outcomes

<table>
<thead>
<tr>
<th>Result</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Non-genital injuries</td>
<td>53.0%</td>
</tr>
<tr>
<td>Genital injuries</td>
<td>35.6%</td>
</tr>
<tr>
<td>Kits tested</td>
<td>77.6%</td>
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<tr>
<td>Biological evidence</td>
<td>84.2% of kits tested</td>
</tr>
<tr>
<td>DNA profile</td>
<td>28.3% of kits tested</td>
</tr>
<tr>
<td>DNA match to suspect</td>
<td>8.6% of kits tested</td>
</tr>
<tr>
<td>DNA match to CODIS-another case</td>
<td>2.0% of kits tested</td>
</tr>
<tr>
<td>DNA match to CODIS-convicted offender</td>
<td>4.7% of kits tested</td>
</tr>
<tr>
<td>Founding</td>
<td>64.6%</td>
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<tr>
<td>Arrest</td>
<td>42.2%</td>
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</table>
Timing of Evidence: Assault to Exam

- 35% had exam within 6 hours
- 50% had exam within 12 hours
- 76% had exam within 24 hours
- 94% had exam within 72 hours
Timing of Evidence: Exam to Lab

- 45% had kits arrive within 7 days
- 69% had kits arrive within 14 days
- 85% had kits arrive within 30 days

Number of Victims

Days from Exam to Arrival at Crime Lab
Timing of Evidence: Lab to Reporting Results to Police

35% had lab results reported within 30 days

61% reported within 60 days

89% reported within 120 days

Number of Victims

Days from Arrival at Crime Lab to Reporting to Police
Time between Assault and Arrest

- 37% of arrests the same day as the assault
- 81% of arrests within 7 days of the assault
- 89% of arrests within 19 days

<table>
<thead>
<tr>
<th>Number of Victims</th>
<th>Days from Assault to Arrest</th>
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<tbody>
<tr>
<td>0</td>
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</tr>
<tr>
<td>2</td>
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</tr>
<tr>
<td>5</td>
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<td>250</td>
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<td>1096</td>
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</table>
Sexual Assault

12 hours
Forensic examination

1 day
Suspect arrested

8 days
Kit arrival at crime lab

43 days
Crime lab reports results to police

Based on median times.
Cases where Arrest Followed Forensic Results Reporting

- 8 cases had arrests following forensic result reporting to the police by the crime lab
  - 3 had arrests within 15 days of the report

- 3 cases had arrests within a day or two of the report

- These 11 cases accounted for 2.1% of the final sample (N=528) and 8.5% of arrests (n=130)
10 cases had biological evidence found
   - Body swabs typically were the source of biological evidence (7 of 11 cases)
   - 2 cases clothes contained biological evidence
   - 3 cases other evidence contained biological evidence (hair combings, condoms, fingernail scrapings)

9 cases had specimens that tested positive for semen

8 cases had a DNA profile generated—significantly more than other arrests
   - 5 cases the DNA profile was confirmed to match the suspect. 1 case the match results were pending.
   - 3 cases the DNA profile matched another case in CODIS
     - These involved 2 stranger cases and one acquaintance case
   - 2 cases the DNA profile matched a convicted offender in CODIS
DNA Profile Generated by Arrest Groups

- No arrest (n=175)
- Arrest before lab findings (n=105)
- Arrest after lab findings (n=10)
% DNA Profile Generated by Arrest Groups

DNA Matches Suspect

- No arrest (n=163)
- Arrest before lab findings (n=95)
- Arrest after lab findings (n=9)
% DNA Matches Another Case in CODIS

DNA Matches Another Case

- No arrest (n=170) 5%
- Arrest before lab findings (n=103) 20%
- Arrest after lab findings (n=10) 30%
Evaluation of Factors Correlating with Unfounding and Arrest

- Multiple factors could help explain unfounding and arrest in sexual assault cases
- Statistical modeling (logistic regression) can identify which factors correlate with an outcome and to what degree
- We calculated logistic regression models for unfounding and arrest
- Caveat: correlation does not necessarily equal causation
Results of statistical modeling

- **Case Unfounding**
  - Police officers were more likely to indicate a crime occurred if . . .
    - Penetration occurred ($p = .027, OR = 1.77$)
    - Physical force was used ($p = .040, OR = 1.61$)

- **Arrest**
  - Suspects were more likely to be arrested when . . .
    - The suspect was an acquaintance, date or relative as compared to a stranger ($p = .065, OR = 2.00$)
    - The suspect was an intimate/ex-intimate partner as compared to a stranger ($p = .002, OR = 4.86$)
    - Genital injuries were noted ($p = .045, OR = 1.95$)

  - Suspects were less likely to be arrested when . . .
    - The forensic medical exam occurred after 24 hours of the assault ($p = .011, OR = .32$)
Summary of Findings

- Confirmation that forensic results rarely precede arrests (e.g., Johnson et al., 2012).
  - When forensic results do precede arrest, it does appear to be impactful
  - DNA profiles and matches are more prominent in these cases
- Probative forensic evidence may be a low frequency, high impact event
- NIBRS a potential resource for learning more
Summary of Findings

- Factors related to unfounding
  - Absence of penetration
  - Absence of physical force
- Factors related to arrest
  - Known suspect
  - Genital injuries
  - Forensic medical exam within 24 hours of assault
Value of research/police partnerships

- Analysis of crime laboratory and police data can help
  - Describe the nature of police work to a variety of audiences
  - Provide hard data showing cj professionals’ contributions
  - Identify factors that could help improve training and education

- Resource to meet federal and state program evaluation requirements
New study we are conducting on forensic evidence and prosecution

- How often and in what circumstances is forensic evidence *probative*?
- What impact does it have on prosecution?
- Abstracting data from Suffolk County DA files
- Interviews with assistant district attorneys about impact of forensic evidence in their cases