Counting Crime the Cambridge Way: A Global Progress Report

Lawrence W. Sherman & Peter W. Neyroud
Summary

1. Why does the world need a crime harm index?
2. Crime measurement vs. analysis
3. How does a CHI work
4. What makes Cambridge better than ONS
5. Why UK agencies should use ONS
6. What difference any CHI makes for crime theory or policy
7. What’s new around the globe—and review: Peter Neyroud
1. Counting Crime is Fundamental

Science Begins With Observation

- Differences
- Patterns
- Trends

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- Prediction
- Explanation
- Prevention

Adolphe Jacques Quetelet
1796-1874
Quetelet’s work

- Astronomer—observatory
- Criminology (social physics)
- 1831 *On the Development of Propensity to Crime*
- Age-crime curve
- Gender
- Mapping
- BUT........
Are all crimes created equal?
2. Analysis Ahead of Measurement

- Unreported Crime
- Social bias in reporting
- Differences in counting rules
- Proactive = reactive detection
- When crime occurred/reported
- Biggest problem:

**Differences in Seriousness**
Most Research in Criminology Uses...

- Prevalence (Percent of population with any offence)
- Frequency (How many offences per offender per time period)
- Rates (number of crimes per head of population)
- Time to failure (how long until the next offence)
- But not

  SEVERITY OF CRIME HARM

- Why not?
Are all crimes created equal?

• If not, then

• Why do governments around the world report them that way?

• Good news: the Cambridge Crime Harm Index is changing that---fast.
The Cambridge Crime Harm Index: Measuring Total Harm from Crime Based on Sentencing Guidelines

Lawrence Sherman*, Peter William Neyroud** and Eleanor Neyroud***
Research Impact

- VC Research Impact Award 2017

Origin:
*Lateral Thinking*

Common Currency:

From Francs, Marks, Kroner, Pounds, Drachmas
to

The Beloved EURO
Since 2007—mostly since 2016—Impact has spread

- UK
- Office of National Statistics
- Experimental version 2016
- First Results 2018
- Now tracking 43 police forces
- Police have new incentive rules
- Good to distinguish URGENT from IMPORTANT

As a research tool—some official
- Canada (O)
- Sweden
- Denmark
- California
- Western Australia (O)
- New Zealand (O)
- Japan
- USA
3. How Does a Crime Harm Index Work? (Sherman, 2007)

• Each crime category gets a different weight
• The weight is in a common currency
• Multiply N of crimes in a category by that currency
• Product is the total currency weight (value) for that category
• Sum the weights across all categories
• Result = Crime Harm Index Value for all crimes
  --by each offender
  --against each victim
  --in each area
  --in each year
  --by time of day
Where does the currency come from?

• Moral philosophy?
• Empirical data on cost of crime? Psychological damage? Hate?
• Public opinion surveys?

To be viable, a CHI needs to use a metric that is
1. Derived from a democratic rule of law
2. Reliable in its application
3. Free of charge
4. What Makes Cambridge Better Than ONS, or others based on actual sentences

- Sentencing Guidelines for England & Wales
- Starting point for sentence:
  -- No aggravating factors
  -- No mitigating factors
- Only crimes reported to police by victims or third parties
- Not crimes proactively discovered by police or quasi-police

Police are blamed when “crime” goes up, even when they discover it—but why give them disincentives to detect hidden crime?
- Only crimes that occurred in time frame, not when reported
Office of National Statistics, Canada, New Zealand

- Get actual sentencing data
- Disregard aggravating & mitigating factors
- Disregard when crimes occurred—just when reported
- Include proactive, police-detected crime
- WRONG! (or at least poor measurement)
- But legitimate—”official governmental statistics”
- So I recommend using the “wrong” way as more legitimate
<table>
<thead>
<tr>
<th>ONS Problems</th>
<th>Cambridge CHI Solutions</th>
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<tbody>
<tr>
<td><strong>Actual sentences</strong></td>
<td>Guidelines</td>
</tr>
<tr>
<td>75% are repeat offenders</td>
<td>Assume all are first offenders</td>
</tr>
<tr>
<td>Sentence weighted by prior crime</td>
<td>Prefer year of crime</td>
</tr>
<tr>
<td>Yet harm is the same for 1\text{st} crime</td>
<td>Exclude proactive offence types</td>
</tr>
<tr>
<td><em>Victim just as dead if killed by a first offender or prolific one</em></td>
<td>drug possession</td>
</tr>
<tr>
<td>Also: Proactive policing</td>
<td>shoplifting</td>
</tr>
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<td></td>
<td>weapon carrying</td>
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</tbody>
</table>
5. Why UK Research Should Use ONS

• Legitimacy—it's official

• Simplicity—built into police systems

• Politically more convincing
6. COUNTING CRIME the CAMBRIDGE WAY: SO WHAT?

A. May show different trends from counts

B. May show trends EARLIER—as a harbinger of a coming change

C. Best reason: to make better decisions
   Just like for NHS in funding medicines
A. Differing Trends

Counts vs. Harm
England & Wales, 2002-2015: base of 2002
Approximate Cambridge CHI

Figure 1. Percentage change in numbers of crimes and CHI for total crime, by year. Data (2016) obtained from Eleanor Neyroud by personal email, July 3, 2018.
England & Wales: Count of Crime not up until 2014

Millions

Mar 06  Mar 10  Mar 14  Mar
ONS Crime Severity Index: 2 years EARLY WARNING from Crime severity started rising in 2012

Counts vs. Harm
Devon & Cornwall: Count vs. Severity (2010-2011 split)

Source: ONS Crime Severity Score Experimental Statistics, 2018
Danish Crime Counts—Like US: All Crimes Are Created Equal?

Fig. 1 Annual total of reported crimes, Criminal Code
Danish Crime Harm Index: Crime Weighted by Benchmark Prosecutor Penalty Request

Harm trend 2011 - 2016

Not Always Different—e.g., US (M.Phil. Thesis, LeFurge-McLeod 2018)
What else is different about US?

• Federated, voluntary crime reporting
• Completely unaudited
• FBI does not include most misdemeanors—highest portion of crimes
• Part I “Index” Crimes only count
  --Murder
  --Rape
  --Robbery
  --Aggravated Assault
  --Burglary
  --Car theft
  --Larceny
  --Arson
Hypothesis About Any CHI

• The better the crime counting

• The bigger the difference between count trends and CHI trends
Decisions with PRECISE TARGETING: A 21st Century Revolution
PLACES: Violent Crime Counts in Tokyo 2005
Hot Spots by counts vs. Harm Spots
In Birmingham UK
Uniformed Police Patrol: Foot, Car, Bicycle, CSO

Putting Police Where the Crime Is: “Hot Spots”

- Most crime occurs in a tiny proportion of all places in a city
- 3% of street addresses
- 50% or more of all crime
- Yet no police agency directs 50% of patrol to 3% of those addresses
- Deterrent theory of patrol says more Targeted Patrol, Less Crime
- Experimental evidence shows it works (unlike “predictive policing”)
- Displacement hypothesis disproven
ANNOUNCING ADVANCE PREVIEW:

*The Barnes-Williams Decay Spike*

- Evidence from a rigorous experiment (Randomized Trial)
- Followup for 1-10 days
- Measured with Western Australia Crime Harm Index (WACHI)
- Shows Frequency of Patrol Matters in DAYS—not minutes
The Barnes-Williams Decay Spike

Based On

• 3,730 Location Days Randomly Assigned to More or Less Patrol
• 21,722 Visits by Individual Officers to
• 15 Selected Hotspots
• In which 86.7% lasted less than 5 minutes
• And 74.4% lasted less than 1 minute,

1. Spike 1 = Daily Crime Harm **Doubles** Without Extra Patrols for 4 days
2. Spike 2 = Daily Crime Harm **Rises 5 times after 5 Days** without patrol
**Recorded Offending and Crime Harm – Treatment, 1-4 Days of Control, 5+ Days of Control**

### Prevalence

<table>
<thead>
<tr>
<th></th>
<th>Treatment (n=1,325)</th>
<th>Ctl. Brief (n=1,978)</th>
<th>Ctl. Long (n=417)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevalence of Recorded Offending per Location-Day</strong></td>
<td>10.5%</td>
<td>11.4%</td>
<td>13.9%</td>
</tr>
</tbody>
</table>

\[ F = 1.84, \text{df} = 2, p = .1582 \]

### Annualised Frequency

#### 568 Fewer Offences per Year

- **Treatment (n=1,325)**: 798.0
- **Ctl. Brief (n=1,978)**: 950.1
- **Ctl. Long (n=417)**: 1,366.4

\[ F = 3.94, \text{df} = 2, p = .0195^* \]

**42% Reduction**

#### 86.0 Fewer Years of Crime-Harm per Year

- **Treatment (n=1,325)**: 7,939
- **Ctl. Brief (n=1,977)**: 16,943
- **Ctl. Long (n=417)**: 39,363

\[ F = 3.44, \text{df} = 2, p = .0320^* \]

**79.8% Reduction**
Accuracy vs. Precision: Why Not Both?
Summary So Far

• Measurement matters

• It can change an entire science

• Criminology was hopelessly imprecise, if fairly accurate

• May be far more helpful