

The Cambridge Crime Harm Index

A Global Review

Who We Are

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Three Sections

1. Why we need a crime harm index

2. How a crime harm index works

3. What difference it makes

1. Why we need a Crime Harm Index

- Counting all crime as equal is misleading
- Good analysis depends on good measurement
- A focus on current harm to victims gives precision to EBP

How Can Crime Counts Be Misleading?

- What do people MEAN when they say “crime is up”?
- They mean that they are less safe
- Because there is more risk of serious harm
- Which depends not on the volume of LOW harm crime—which could go down—but on
- The volume of a small number of HIGH Harm crimes

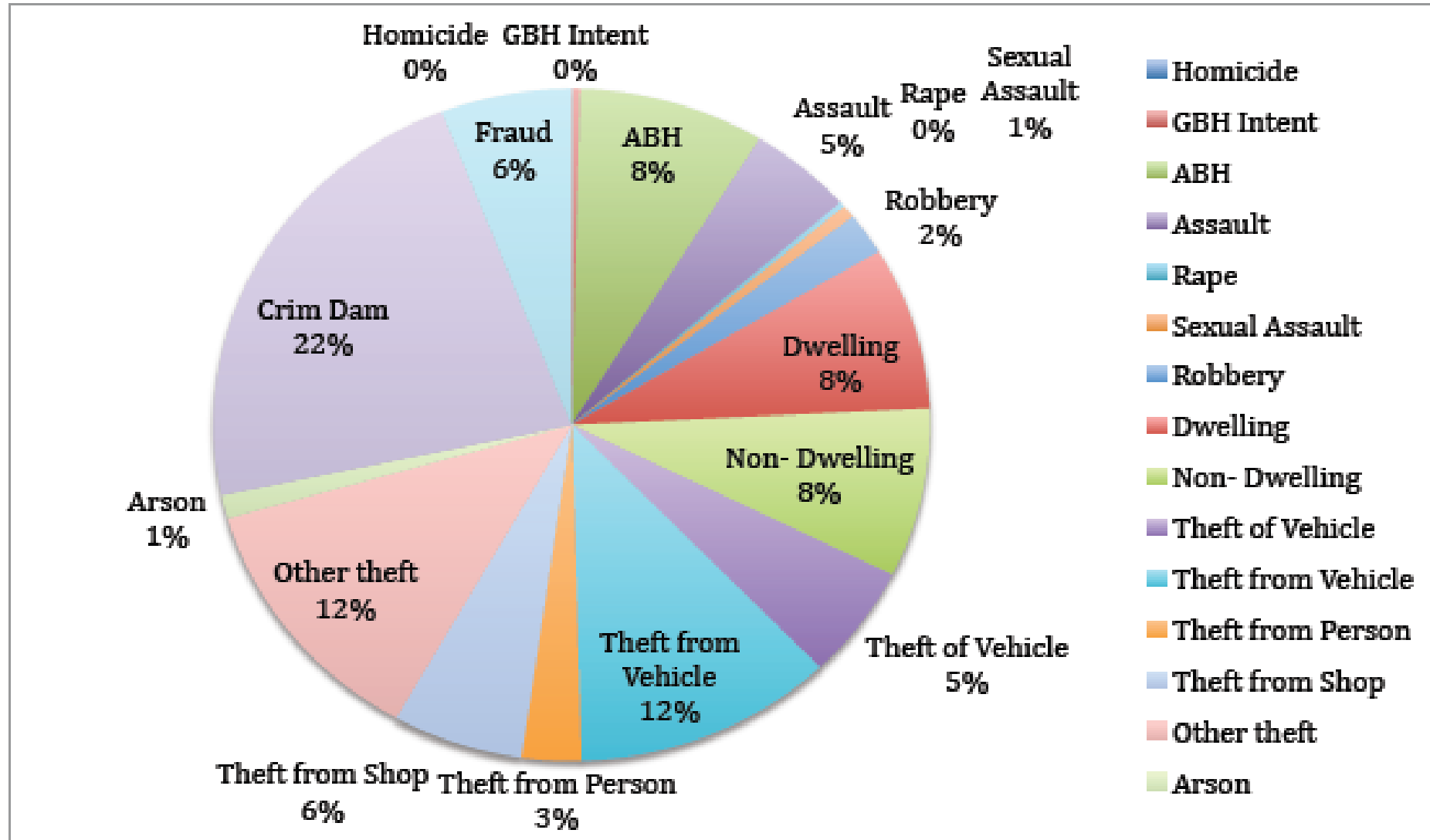
Different Seriousness of Crime Types

In a recent year in England & Wales:

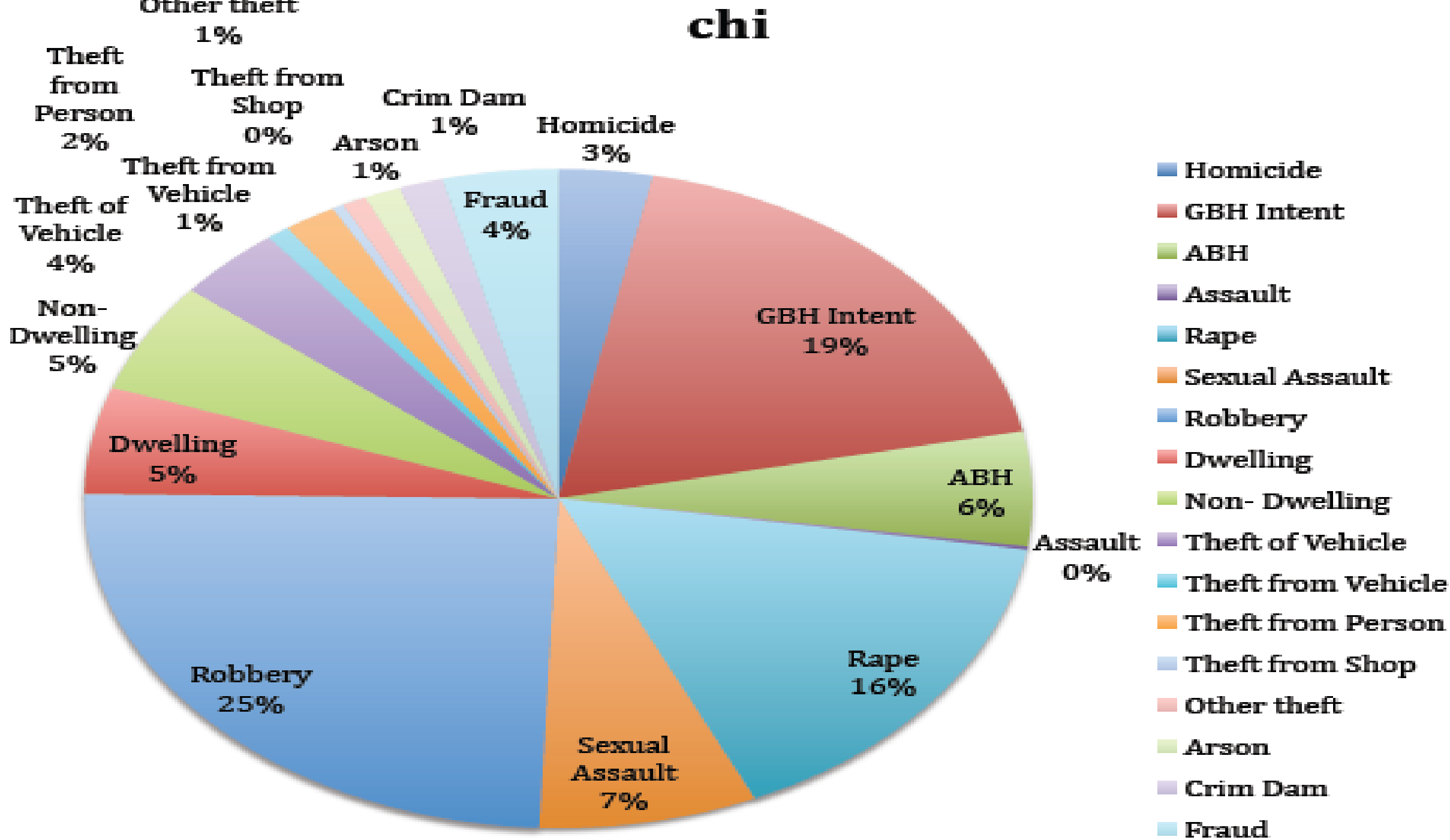
- 308,325 shoplifting crimes
- 551 murders
- Shoplifting divided by murder = 560
- Shoplifting is given 560 X more weight in total “crime” than murder

Crime Counts

pie chart showing % of crime number in each category



chi



Serious vs. Minor Crimes

(England & Wales)

Serious

Injury	338,456
Rape etc.	44,394
Robbery	74,689
Total	457,539

Not so Serious

Theft from car	300,378
Other theft	1,105,123
Criminal Damage	631,221
Fraud	141,246
Drugs	229,102
Total	2,407,070

Only 11% of recorded
crime is most serious

THEREFORE....

- Overall counts can be going DOWN
- While counts of a small percent of crimes is going UP
- And the types of crime going up are HIGH HARM
- Then the public is being MISLED
- As in something is ??? In Denmark?

Danish Crime Counts—Like UK, US: All Crimes Are Created Equal?

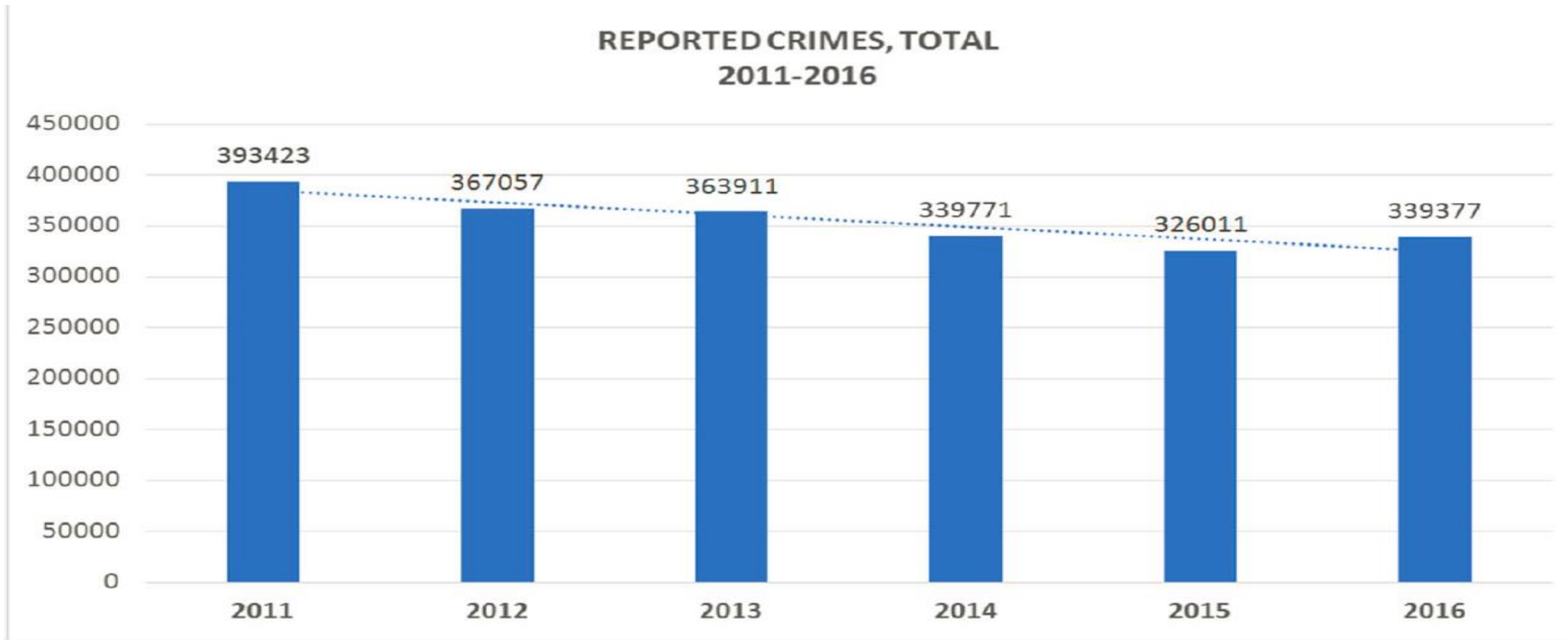
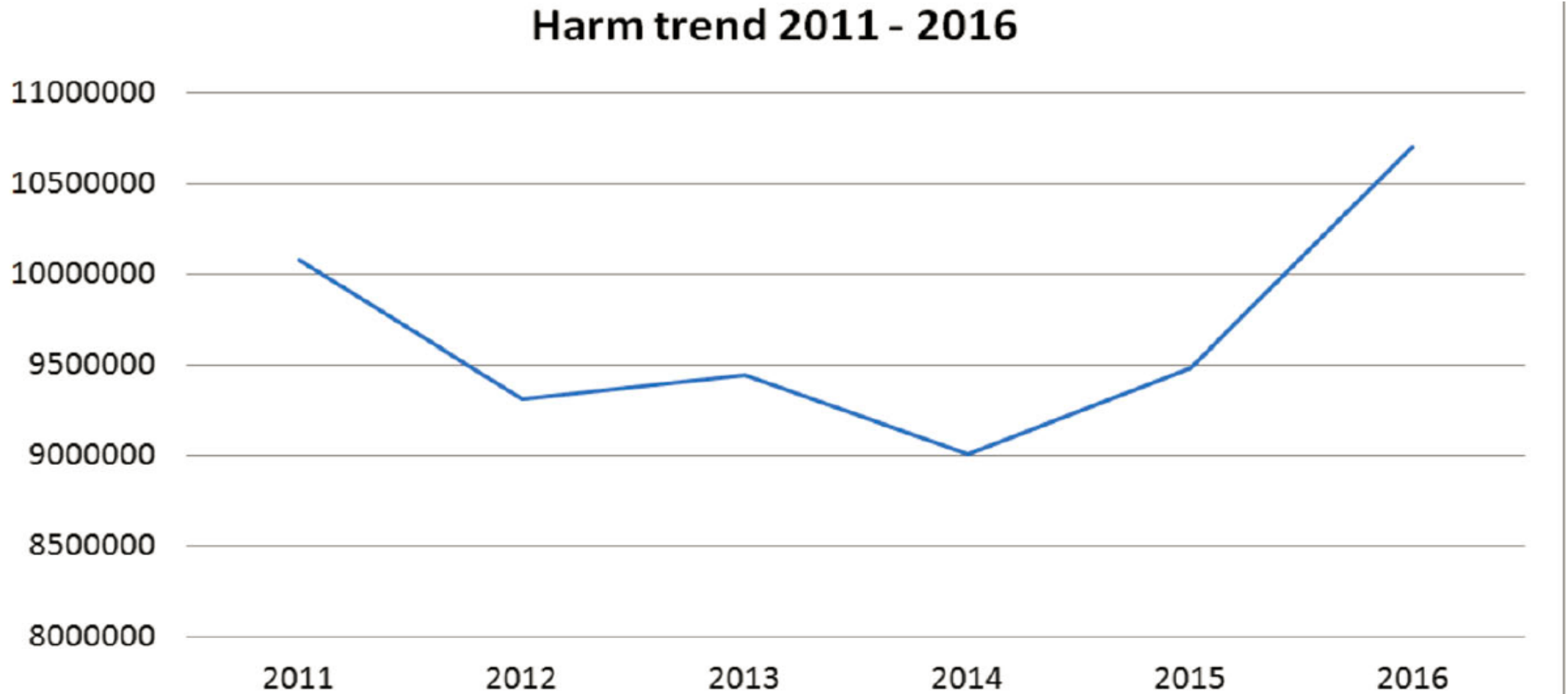


Fig. 1 Annual total of reported crimes, Criminal Code

Danish Crime Harm Index: Crime Weighted by Benchmark Prosecutor Penalty Request



POLICING (Oxford Press) 2016

Advance Access publication: 3 April 2016

Policing, Volume 10, Number 3, pp. 171–183

doi:10.1093/police/paw003

The Cambridge Crime Harm Index: Measuring Total Harm from Crime Based on Sentencing Guidelines

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

Confusing Crime and Punishment

- Many crime reports are created *only* by policing
- What THEY measure is police *activity* –police decisions to “sample”
- But if police arrests are counted as crimes,
- Then police get blamed for crime going up by making drug arrests
 - Or drunk driving arrests
 - Or arrests even for human trafficking
- Why should police be blamed for doing their job?
- Especially if the arrests reduce high-harm crimes?

Retail Security Vs. Crime Trend

- If stores sell more goods, make more money
- Then hire more guards to catch shoplifters
- More shoplifting crime reports are filed
- But if stores reduce security staff
- Fewer crime reports are filed
- Meanwhile, number of shoplifters may be constant
- What sense can anyone make of trends in “shoplifting” arrests as high-volume *crime counts*

Confusing Past and Present

- Is crime harm going up or down this year?
- Is reported crime harm from ten years ago going up this year?
- Separate questions deserve separate measures.
- Counting crimes when they are *reported* is misleading for harm
- Counting crimes when they *occurred* corrects the “weather report” for that year

Mislead Public on Detection Rates

- If **total detection** rate is 3% of all offences
- And 90% of **all offences** are of very low harm
- But murder detection rate is **90% of murders**
- And detection of all **high-harm crimes averages 50%**
- Is it not *misleading* to use “raw” detection rates?
- Should be **many more detectives for bike thefts?**
- And many *less for murders?*

Well then,

- Have I got news for you....

Consensus Statement on Counting Crime 2020

Cambridge Journal of Evidence-Based Policing
<https://doi.org/10.1007/s41887-020-00043-2>

SCIENTIFIC COMMUNICATION

How to Count Crime: the Cambridge Harm Index Consensus

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Good *analysis* depends on precise *measurement*

What is the temperature?

That depends...

- Where?
- Indoors
- In this room or that?
- In the sun?
- In the shade?

“Biased” measures= Imprecision

Seven Different “Crime Statistics”

1. CHI: Crime Harm Index against victims
2. COUNTS: by all crime categories for CHI.
3. HOCHI: Historic Offences Index, prior years.
4. PPI: Proactive Policing Index, sentence weights
5. CDCHI: Company-Detected Crime Harm Index
6. HDF: Harm Detection Fraction of CHI
7. Detection rates per 100 by all crime categories

Who Says We Need a Crime Harm Index?

- UK Office of National Statistics
 - Dorset—victims
 - Northampton-offenders
 - Leicestershire—victim/offenders
 - Met Police, London UK—
detection rates
- Canada
 - Denmark
 - W. Australia
 - New Zealand
 - Sweden
 - California

Summary: Why We Need A CHI

1. Stop Misleading Ourselves

- Crimes are not created equal
- We care more about harm
- We need clear priorities
- Stats should reflect needs

2. Counting Current Harm to Victims

- Not police activity
- Not retail security
- Not historical crimes
- Not unsolved bike thefts

Questions

- What do you think most people mean by crime going “down”?
- How would you explain why crime counts mislead?
- For what operations would you use CHI?

2. How Does a Crime Harm Index Work?

- 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

Bottom Line For Crime

- Not A Sum
- But an *Index*

Def.: an INDEX is a *weighted* sum of difference indicators (dimensions) of anything measureable.

It creates a single value (number) to summarize the contribution of different indicators of different weights to compute the result.

Consumer Price Index

A convenient way to understand the nature of these indices is to envisage a very large shopping basket comprising all the different goods and services typically bought by households. As the prices of individual items in this basket vary, the total cost of the basket will also vary.

So all the goods and services are added up and put in the market basket.

Transportation

Food and Beverages

Housing

Medical Care

Recreation

Apparel

Miscellaneous

Education and Communication



Crime Harm Index (CHI) Example

CHI Components

Murder	20%
Rape	10%
Injury	50%
Theft	20%

Effect of Component Increase on CHI

Murder up 10% = CHI up 2%

Rape up 100% = CHI up 10%

Injury down 10% = CHI down 5%

Theft down 10% CHI down??

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Theft down 10% =

CHI down 2%

Where can the currency come from?

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

Guidelines for England & Wales

- Formulated by Sentencing Council



- 12 Members—9 judges, 3 others
- Chaired by Lord Chief Justice
- Judges from 7 tiers of courts that sentence

Example: Robbery Guidelines

- <http://www.sentencing-guidelines.gov.uk/docs/robbery-guidelines.pdf>
- starting points and sentencing ranges
- Aggravating, mitigating factors

Sentencing
Council

Robbery Guideline, England & Wales (Max: Life)

Type/nature of activity	Starting point	Sentencing Range
The offence includes the threat or use of minimal force and removal of property.	12 months custody	Up to 3 years custody
A weapon is produced and used to threaten, and/or force is used which results in injury to the victim.	4 years custody	2-7 years custody
The victim is caused serious physical injury by the use of significant force and/or use of a weapon.	8 years custody	7-12 years custody

Best Possible Metric? **DAYS IN PRISON**

- E.g., murder = 3650, robbery = 800, shoplift = 1
- 100 shopthefts = 100 crimes.
- Now change just three crime types and ask
- What is 100 crimes in CHI by days in prison

$$1 \text{ murder} \times 3650 = 3650$$

$$2 \text{ robberies} \times 800 = 1600$$

$$97 \text{ shop thefts} \times 1 = \underline{97}$$

$$\text{TOTAL} = 5347$$

CHI = 53 times higher than "Crimes"

Problem—and Practicality

- No Public Data on weapon, injury, aggravating factors
- Starting point for lowest level only consistent metric
- Could Improve if CHI was official
- Until then not as precise—least worst solution
- But still much better than crime counts

Computing a CHI

1. Give each Crime Type a Harm Level
source: sentencing guidelines (e.g., days in prison)
2. Multiply harm level for each crime type by the N of such crimes = harm weight by type
3. Add all weights for all types
4. Index = sum of all (crime X harm level) = harm weight

What Units of Analysis Can Use a CHI Score?

CHI totals can be computed:

- for each offender (arrest, charges, or convictions)
- against each victim
- in each area
- at each address
- Outdoors or indoors
- in each year
- by time of day

What Makes Cambridge Better Than ONS, or others based on *actual sentences*?

- ***Actual sentences*** use offender prior record
- ***Prior record*** does not affect ***victim harm***
- Murder victims are just as dead if murderer
 - First offender
 - Career Criminal

UK/ ONS Crime Severity Score vs. Cambridge CHI

ONS Problems

Actual sentences

75% are repeat offenders

Sentence weighted by prior crime

Yet harm is the same for 1st crime

Victim just as dead if killed by a first offender or prolific one

Also: Proactive policing

Cambridge CHI Solutions

Guidelines

Assume all are first offenders

Excludes:

proactive offence types

corporate detections

historical offences

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 often recommend using the “wrong” way as more legitimate

Questions

- What are the different sources for CHI values to choose from?
- How do you calculate a CHI from a source?
- Does a CHI calculation need a pie chart?

3. CHI vs. Counts: *SO WHAT?*

What difference does CHI make?

- May show different trends from counts
- May show trends EARLIER—as a harbinger of a coming change
- Best reason: to make better decisions
Just like for NHS in funding medicines

England & Wales, 2002-2015: base of 2002 Approximate Cambridge CHI

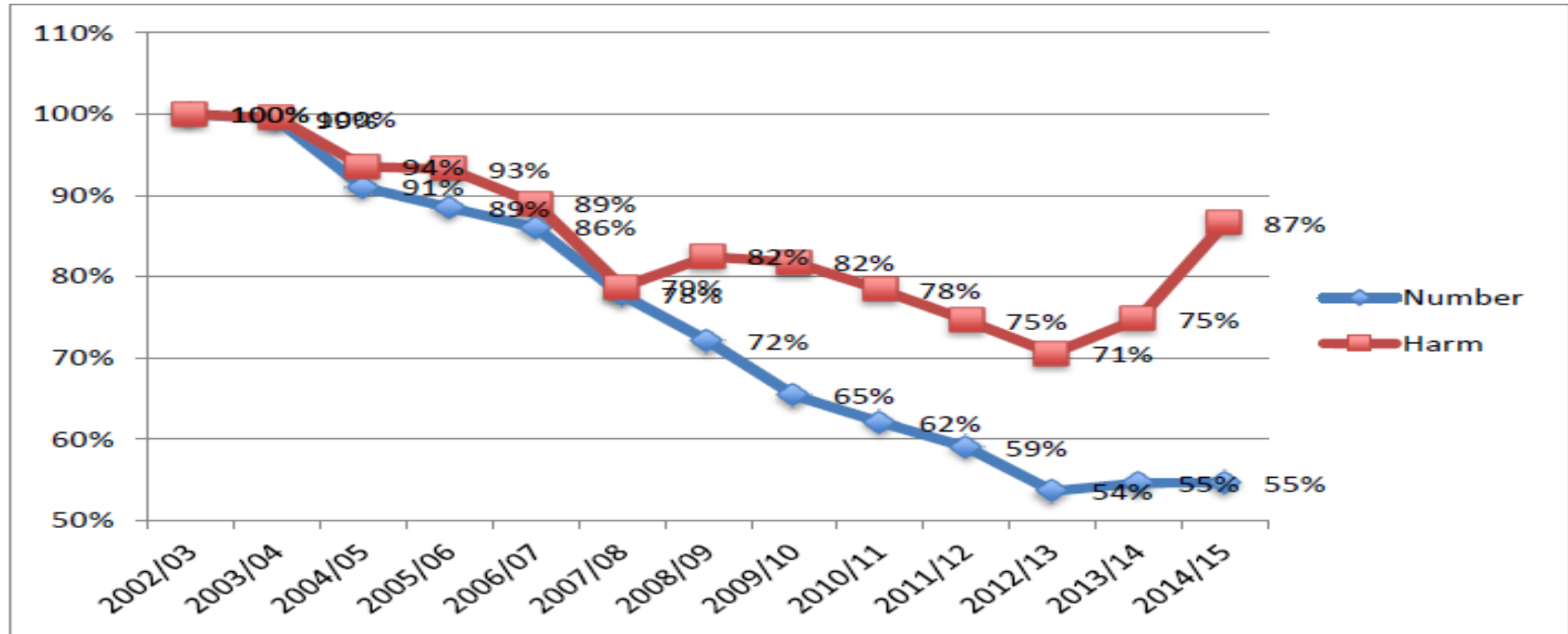
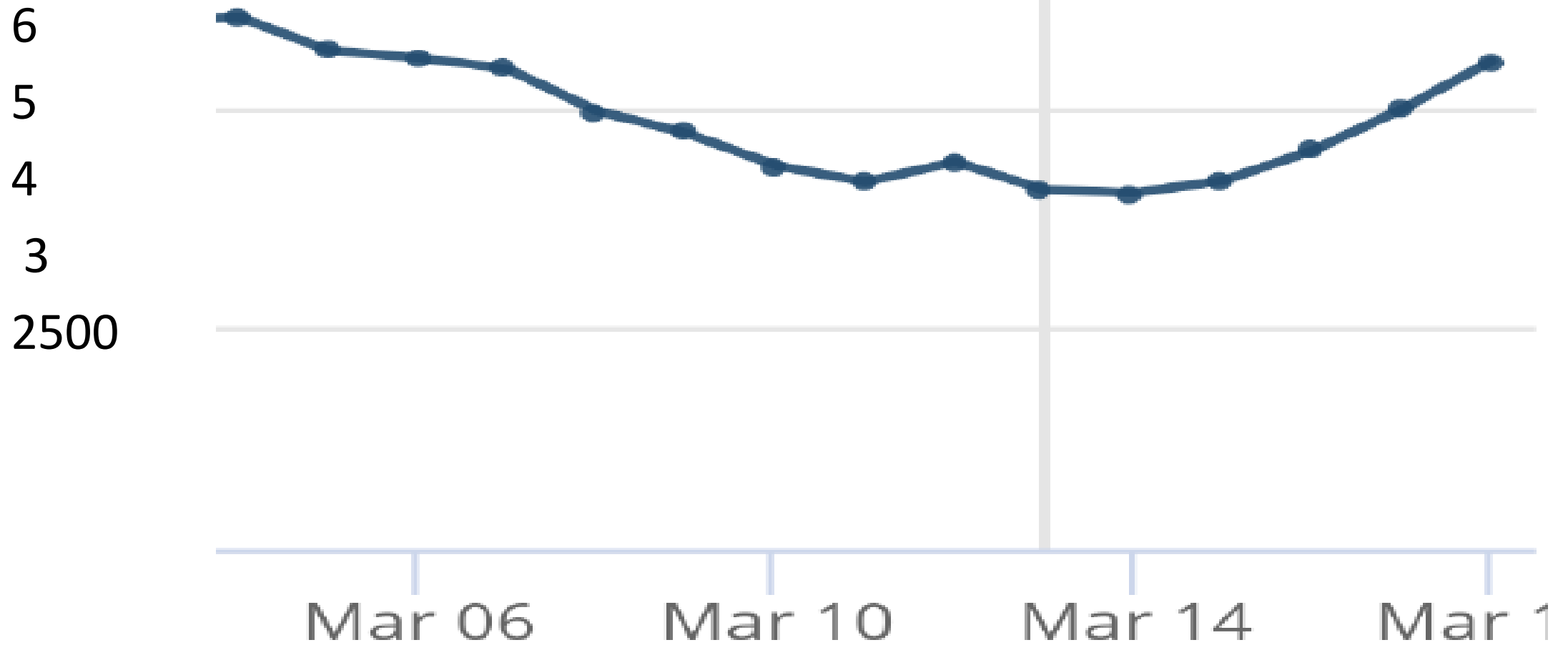


Figure 1. Percentage change in numbers of crimes and CHI for total crime, by year. Data (2016) obtained from Eleanor Neyroud by personal email, July 3, 2018.

England & Wales: Count of Crime not up until 2014

Millions

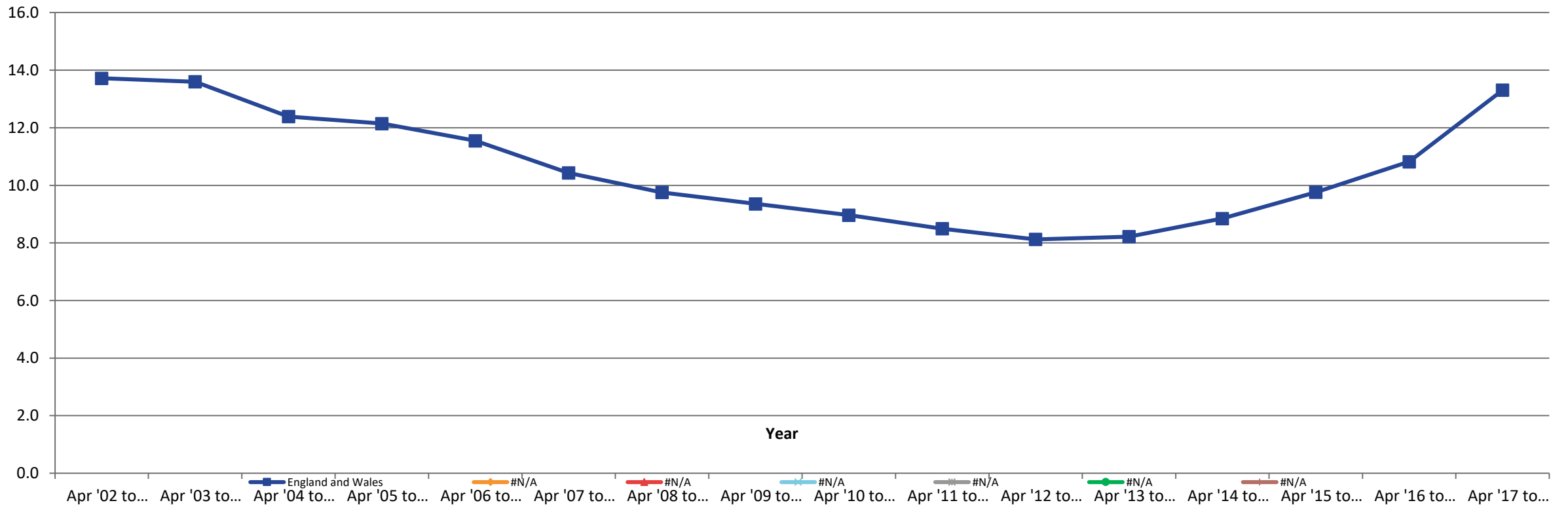


ONS Crime Severity Index:
2 years EARLY WARNING from
Crime severity started rising in 2012

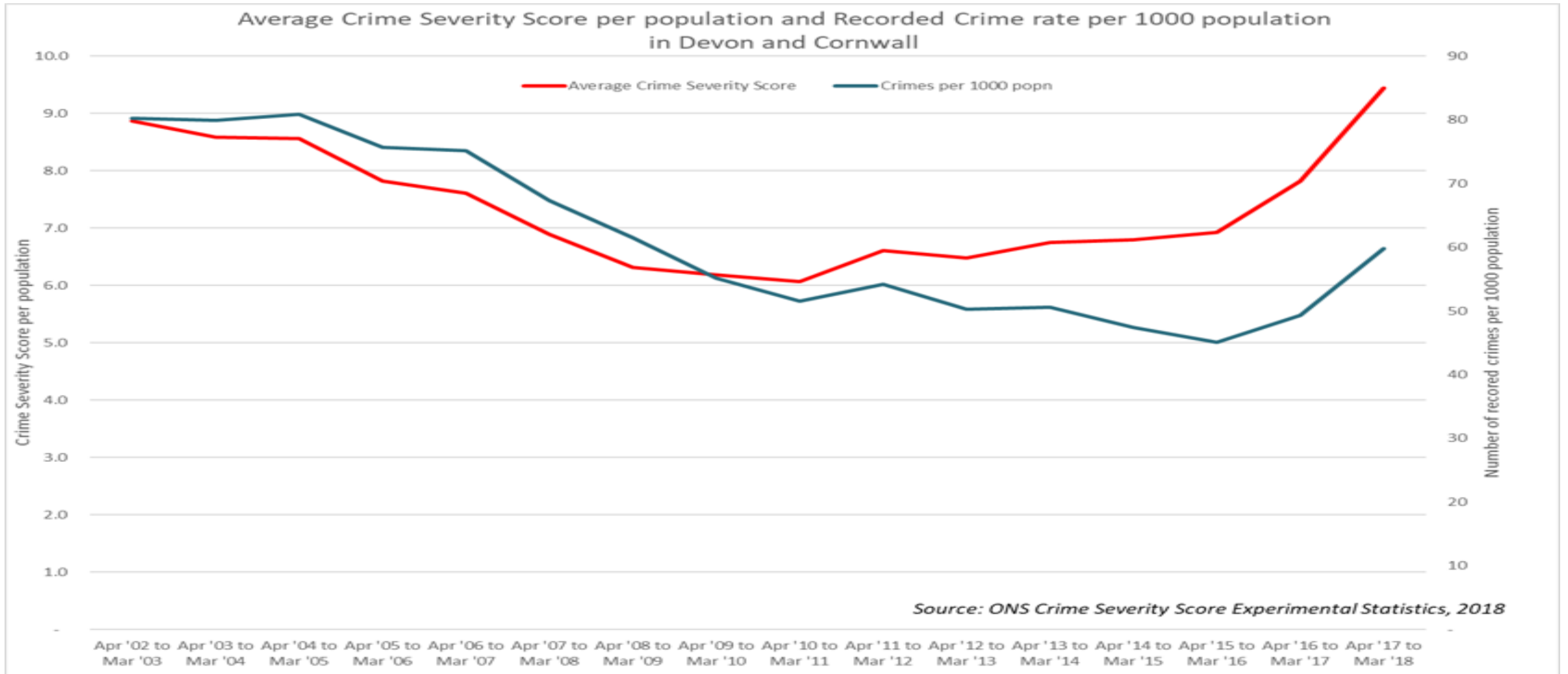
Counts vs. Harm

Crime Severity Score Total /Pop. England & Wales 2002-2017

Crime Severity Score



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



Danish Crime Counts—Like US: All Crimes Are Created Equal?

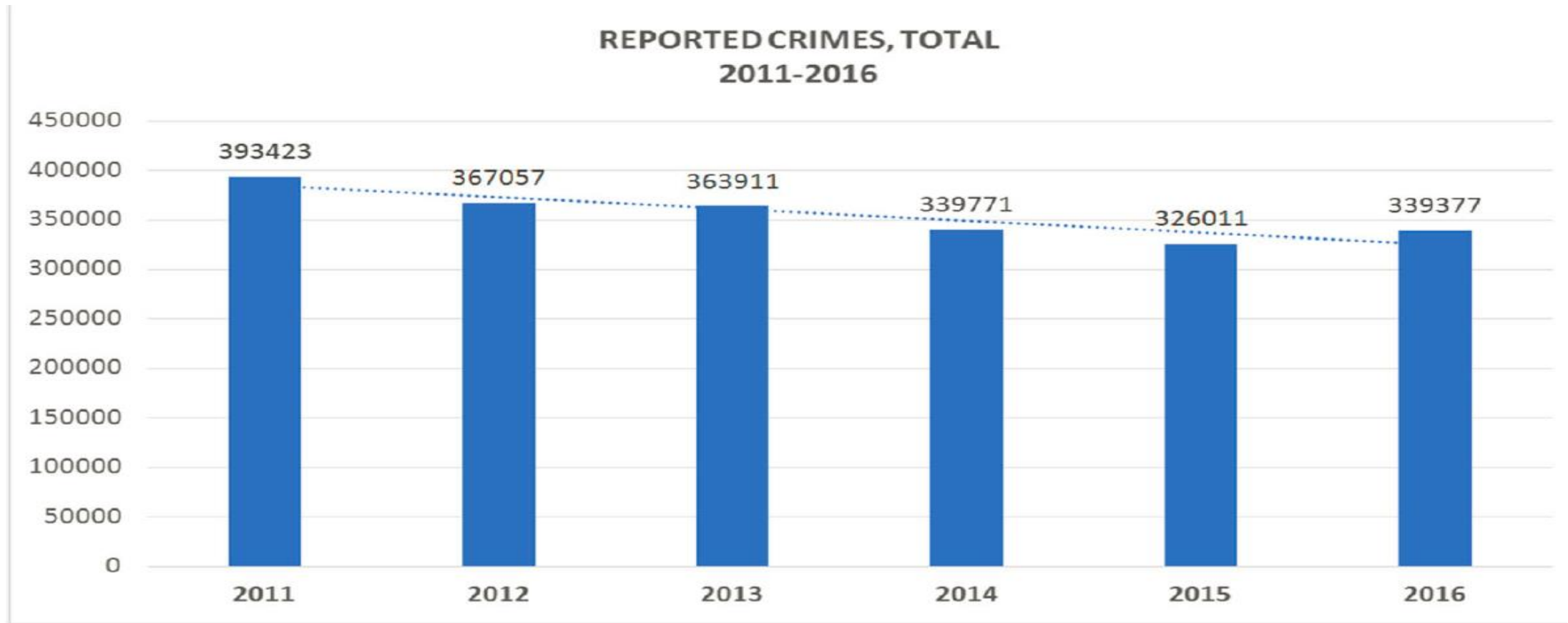
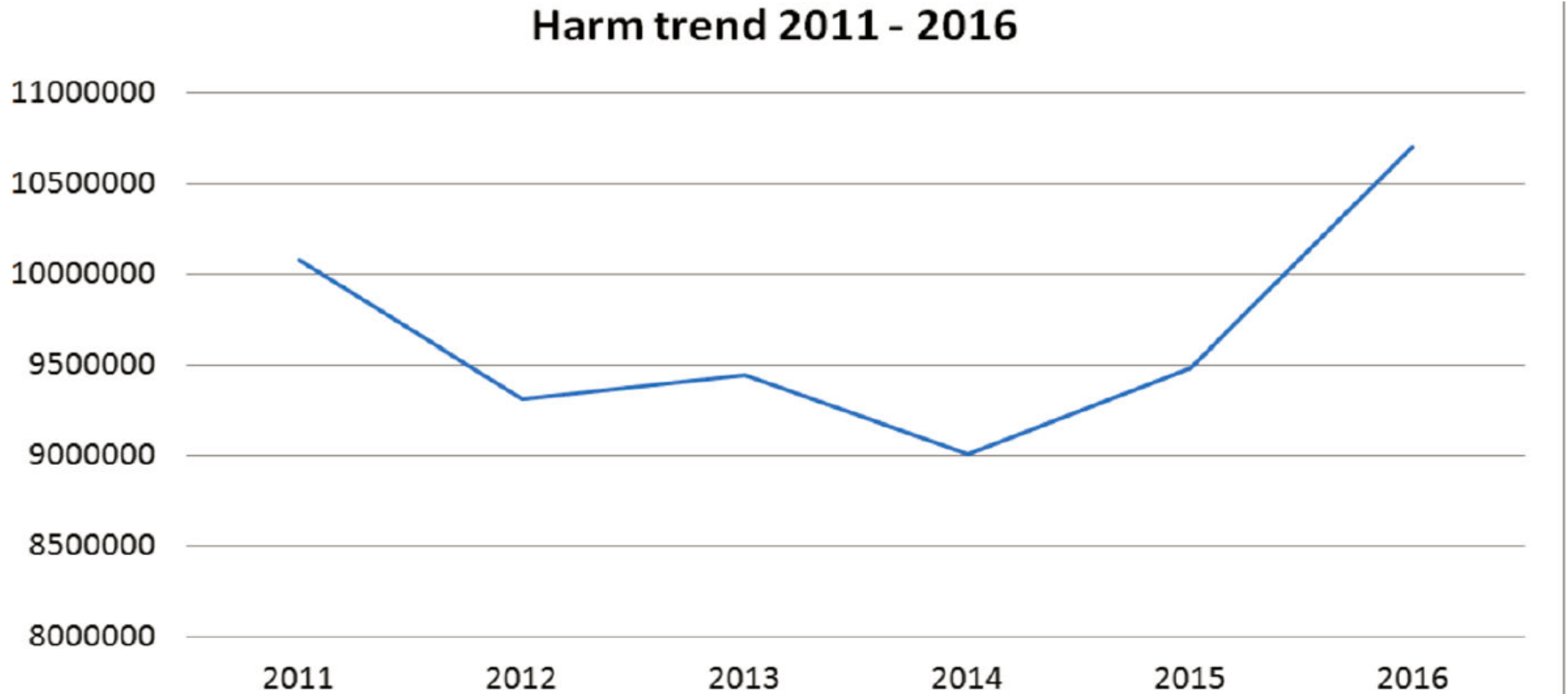


Fig. 1 Annual total of reported crimes, Criminal Code

Danish Crime Harm Index: Crime Weighted by Benchmark Prosecutor Penalty Request



Offenders?

- Chronic offenders have low harm scores per crime
- Domestic abusers harm goes down with repeat offending
- Property criminals often have no violent offences

Victims

- Repeat victimization is rare
- Single high-harm offences are rare
- Highest-harm victims suffer repeat HIGH-HARM crimes
- Only the CHI identifies & targets such victims

Places: Counts vs. Harm

- Distinguish indoor vs. Street-visible crimes
- Harm & Count produce different top lists
- Reassurance for High-Count Places
- Deterrence for High-Harm Places

Incentivizing Police Strategy

- Biggest difference the CONSENSUS CHI Statement can make
- Police forces want to win. Why not?
- Win on the right things to do—not numbers games.

Seven Different “Crime Statistics”

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PPI: Proactive Policing Index

- Greatest potential value
- Re-balancing policing towards high harm
- Use PPI as a measure to justify priorities
 - Not what percentage of cases “closed”
 - Instead, seriousness of case detected & sanctioned
 - Modern slavery, human trafficking

Example: Sanctioned Detections 2002

- A Prime Minister wanted more punishment
- Decided to count sanctioned detections
- Also rates of sanctions per offence
- Result?
 - Marijuana possession arrests up
 - 100% clearance rates for minor drug possession
 - Police diverted from high harm
- CHI could have prevented that

Managing National Health Service

- Problem: Limited Budget, Unlimited Demand, Expensive Treatment
- Solution:
 - QALYS: Quality-Adjusted Life Years
 - 1 Year price cap at £30,000
 - Re-balanced spending to early in life
 - Away from people in last year of life
 - Moral & Philosophical Choices
 - Metrics are a method to make them, implement them

WHAT GETS COUNTED GETS DONE

Use a Crime Harm Index

Questions

- What effect would a CHI have on the work you do in policing?
- How would victims benefit from a CHI?
- How could CHI help reduce wasted effort?

Building the Cambridge CHI

Peter Neyroud

Institute of Criminology

From Sentencing Guidelines to CCHI

Theft in a dwelling

Theft Act 1968 (section 1)

Maximum penalty: 7 years Imprisonment

Type/nature of activity	Starting point	Range
Where the effect on the victim is particularly severe, the stolen property is of high value (as defined in para. 4 opposite), or substantial consequential loss results, a sentence higher than the range into which the offence otherwise would fall may be appropriate		
Theft from a vulnerable victim (as defined in para. 3 opposite) involving intimidation or the use or threat of force (falling short of robbery) or the use of deception	18 months custody	12 months-3 years custody
Theft from a vulnerable victim (as defined in para. 3 opposite)	18 weeks custody	Community order (HIGH)-12 months custody
Theft in a dwelling not involving vulnerable victim	Community order (MEDIUM)	Fine-18 weeks custody

Guidelines to CHI Score for Offence Category

Number of Days in Prison

STARTING POINT:

No aggravating factors

(no priors)

No mitigation

(pure harm of offence)



Unit of Harm: Days of Imprisonment

- Take the Starting Point:
 - Imprisonment – convert into days of sentenced imprisonment
 - Community Sentence: hours of community sentence converted to “days of imprisonment”
 - Fine: amount of the fine converted into days of imprisonment by calculating the number of hours/days work at the minimum wage required to repay it.

Actual Sentences? Sometimes Best Available

First Offenders Only

Western Australia

Average All Sentences

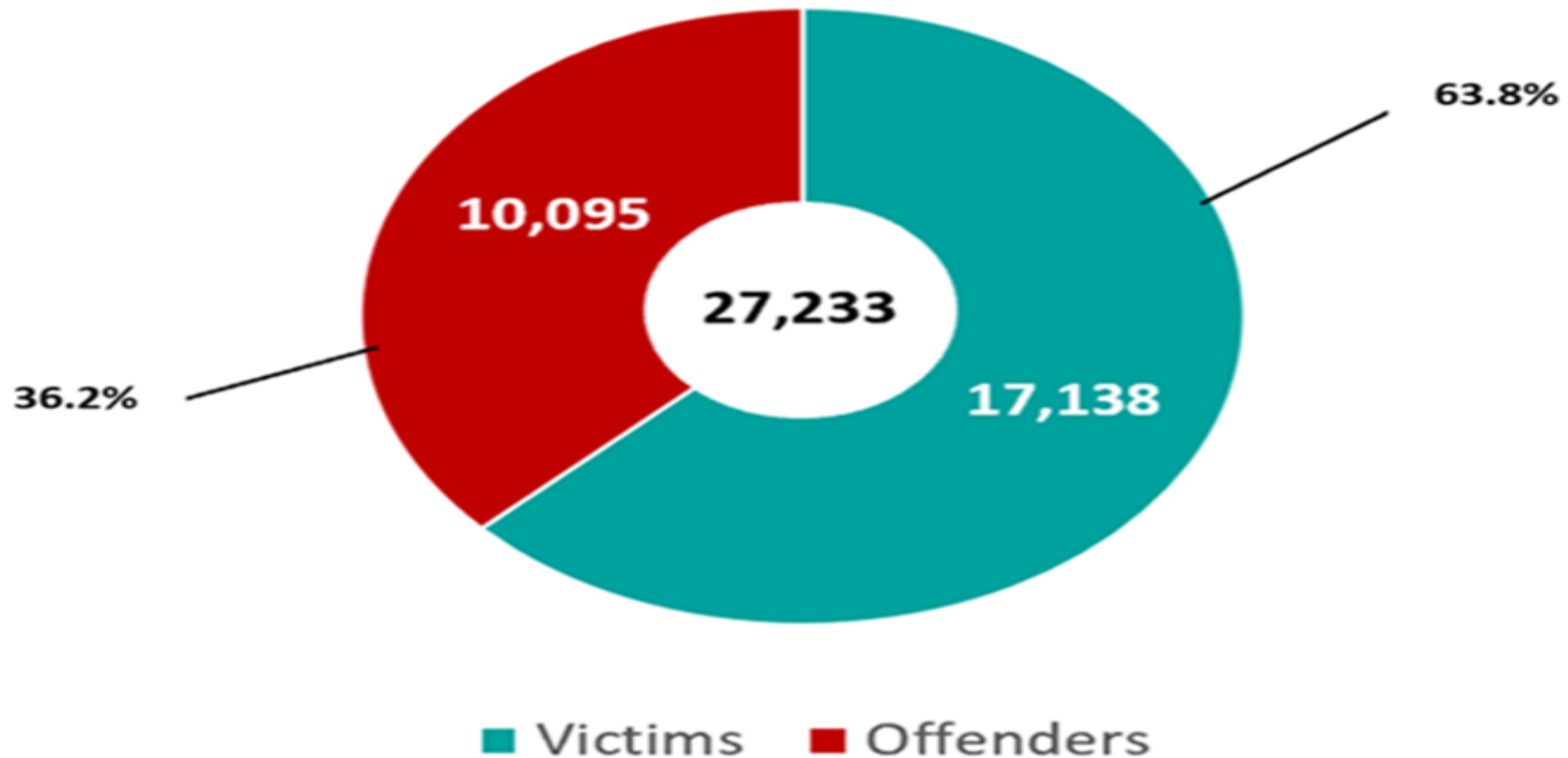
(bias of prior record)

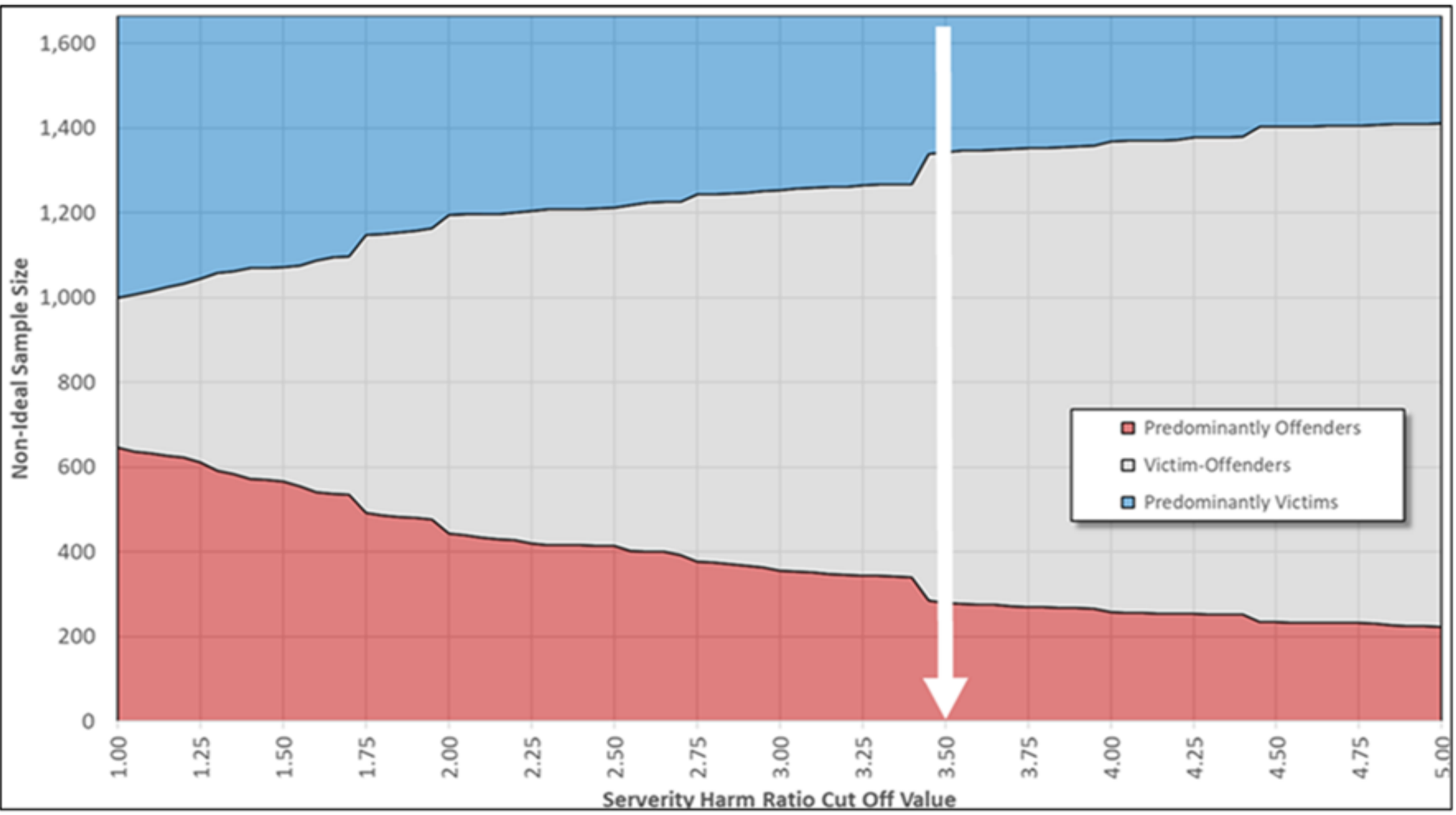
Sweden

Canada

England ONS

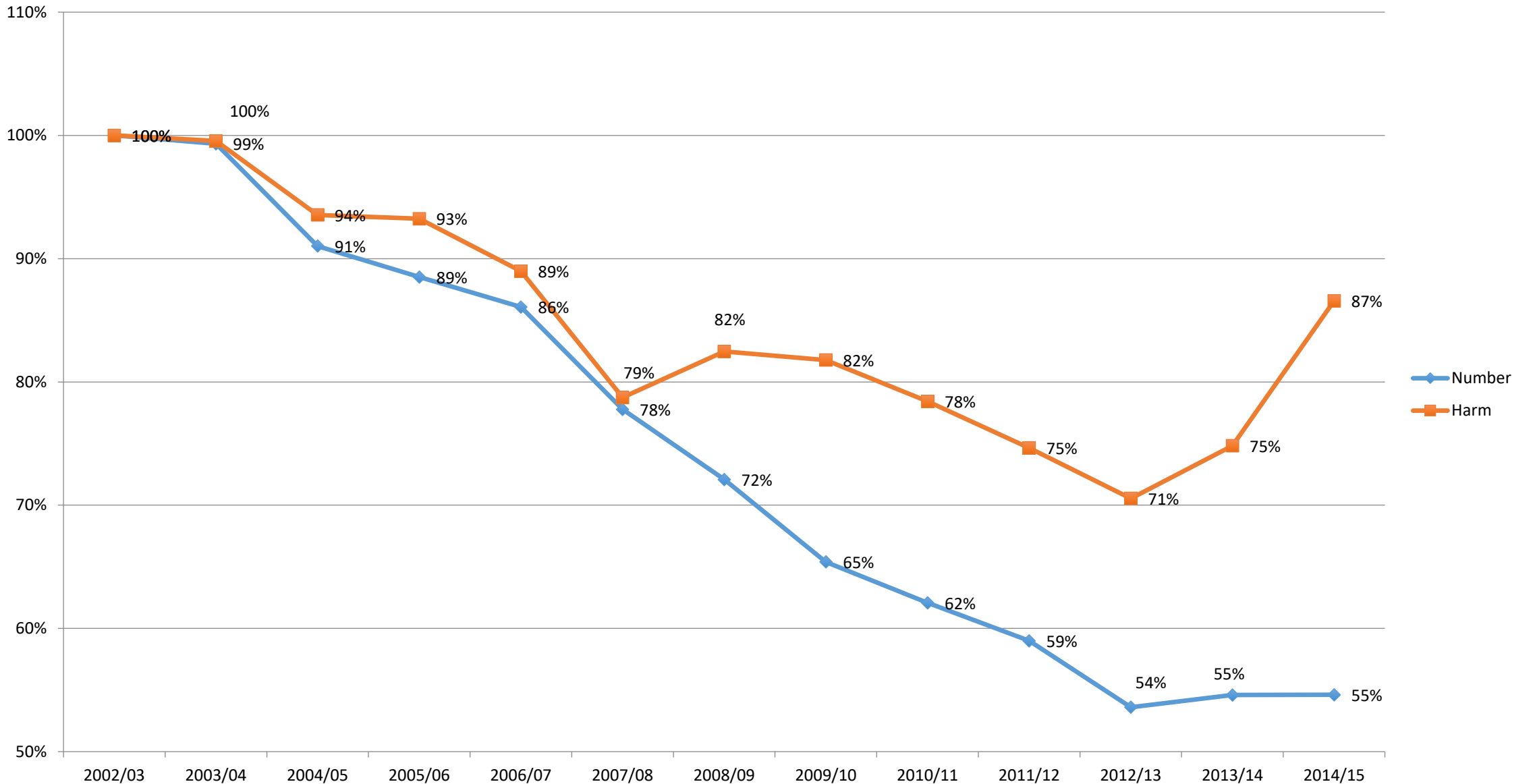
One Year in Peel, Canada: Victims & Offenders

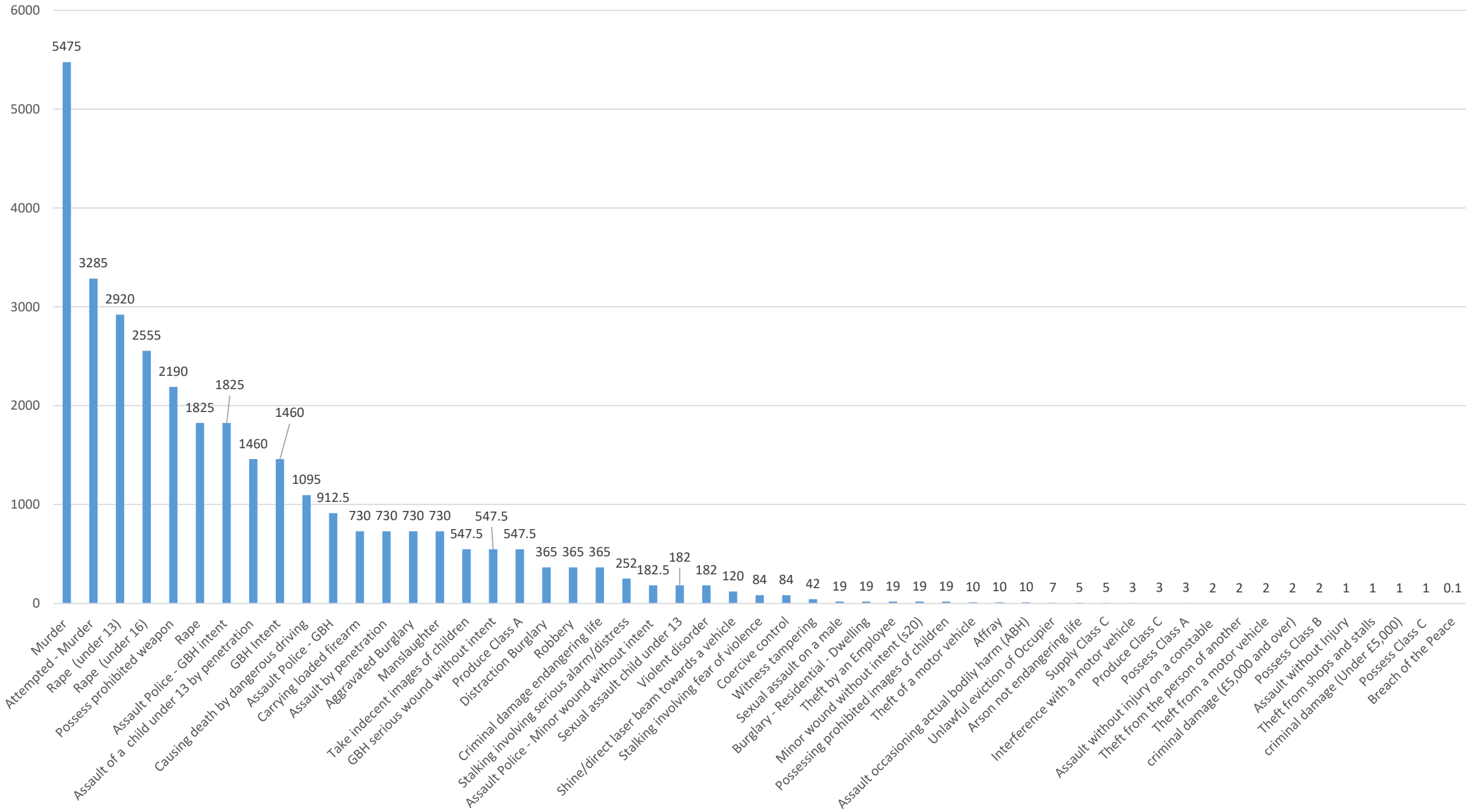




Harm Ratios - Suffered and inflicted

% change in numbers of crimes and CHI for total crime for each year





Harm	Culpability		
	A	B	C
Category 1 Adjustment should be made for any significant additional harm factors where very high value goods are stolen.	Starting point 3 years 6 months' custody	Starting point 2 years' custody	Starting point 1 year's custody
	Category range 2 years 6 months' – 6 years' custody	Category range 1 – 3 years 6 months' custody	Category range 26 weeks' – 2 years' custody
Category 2	Starting point 2 years' custody	Starting point 1 year's custody	Starting point High level community order
	Category range 1 – 3 years 6 months' custody	Category range 26 weeks' – 2 years' custody	Category range Low level community order – 36 weeks' custody
Category 3	Starting point 1 year's custody	Starting point High level community order	Starting point Band C fine
	Category range 26 weeks' – 2 years' custody	Category range Low level community order – 36 weeks' custody	Category range Band B fine – Low level community order
Category 4	Starting point High level community order	Starting point Low level community order	Starting point Band B fine
	Category range Medium level community order – 36 weeks' custody	Category range Band C fine – Medium level community order	Category range Discharge – Band C fine

Penalty	Minimum	Suggested CCHI score	Calculation
Band A fine	£60	1	Number of hours needed to work at the minimum wage for over 25s (£8.72) to earn the money to pay the fine, rounded up to the nearest whole day – based on working an 8 hour day.
Band B fine	£120	2	Number of hours needed to work at the minimum wage for over 25s (£8.72) to earn the money to pay the fine, rounded up to the nearest whole day – based on working an 8 hour day.

Penalty	Minimum	Suggested CCHI score	Calculation
Medium level community order	80 hours unpaid work	10	Number of hours needed to work to complete the UPWR at 8 hours per day, rounded to the nearest whole day.
High level community order	150 hours unpaid work	19	Number of hours needed to work to complete the UPWR at 8 hours per day, rounded to the nearest whole day.

To access the latest version of the CCHI:

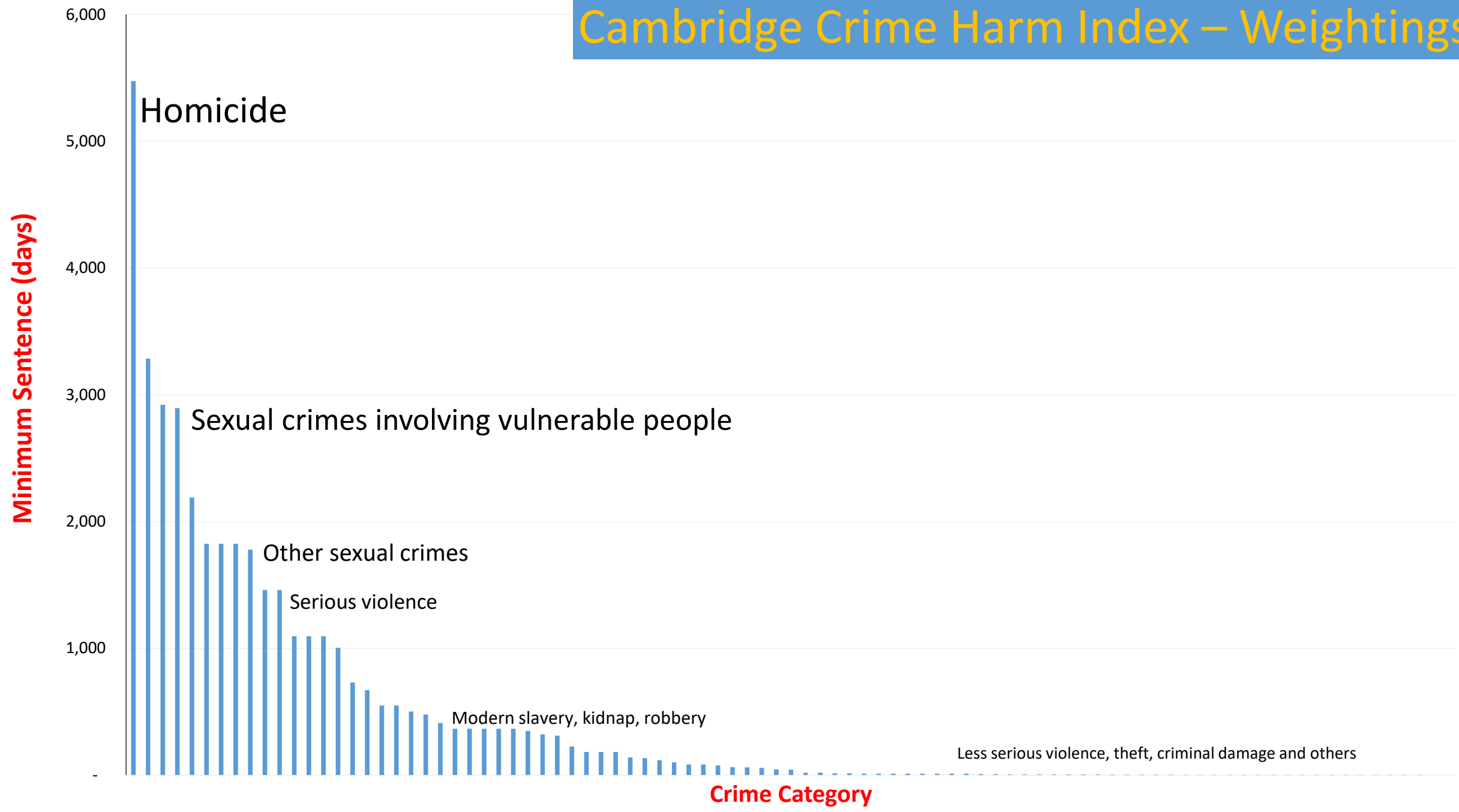
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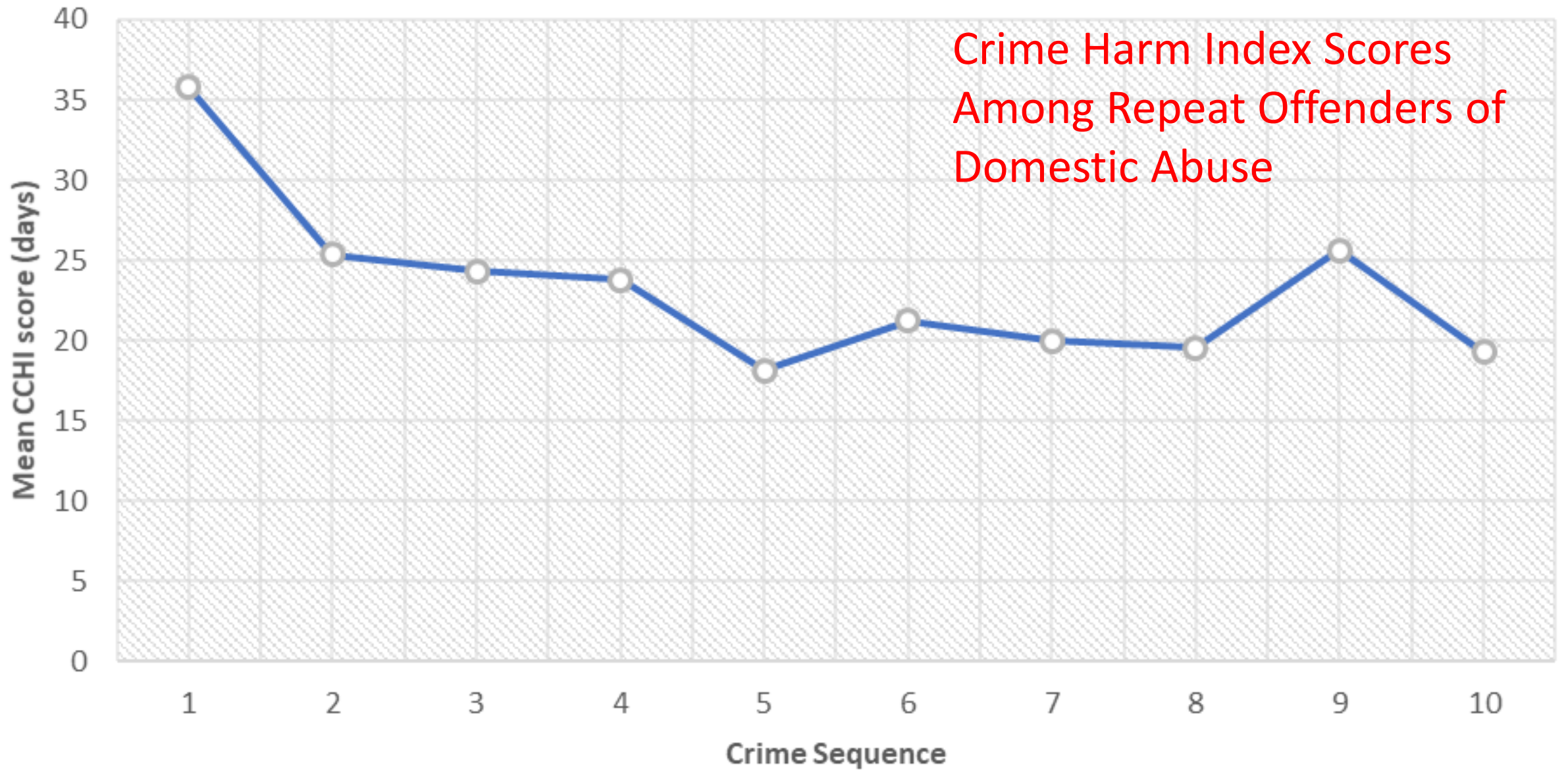
<https://www.cambridge-ebp.co.uk/crime-harm-index>

Dr. Matthew Bland

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Cambridge Crime Harm Index – Weightings





Source: Bland, M.P. and Ariel, B., 2020. Repeat Domestic Abuse, Escalation and Concentration of Harm. In *Targeting Domestic Abuse with Police Data* (pp. 83-102). Springer, Cham.