Correlation between crime rates and imprisonment

Debora Moolenaar

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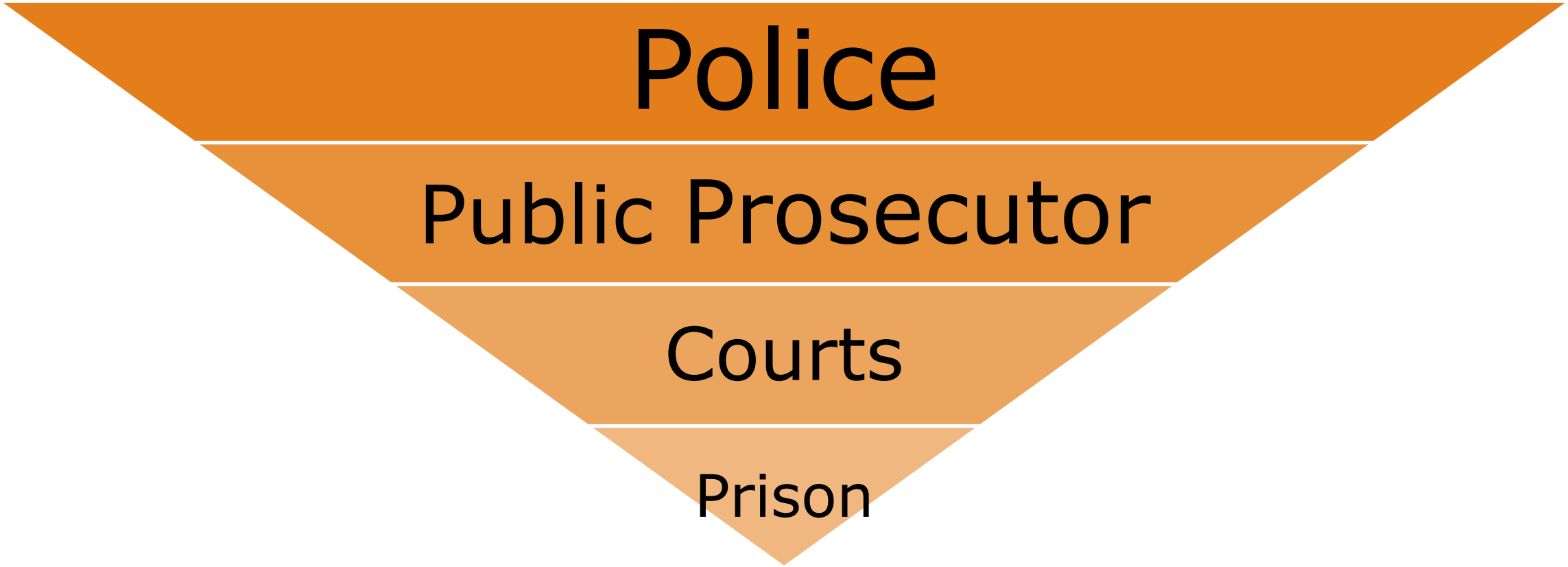
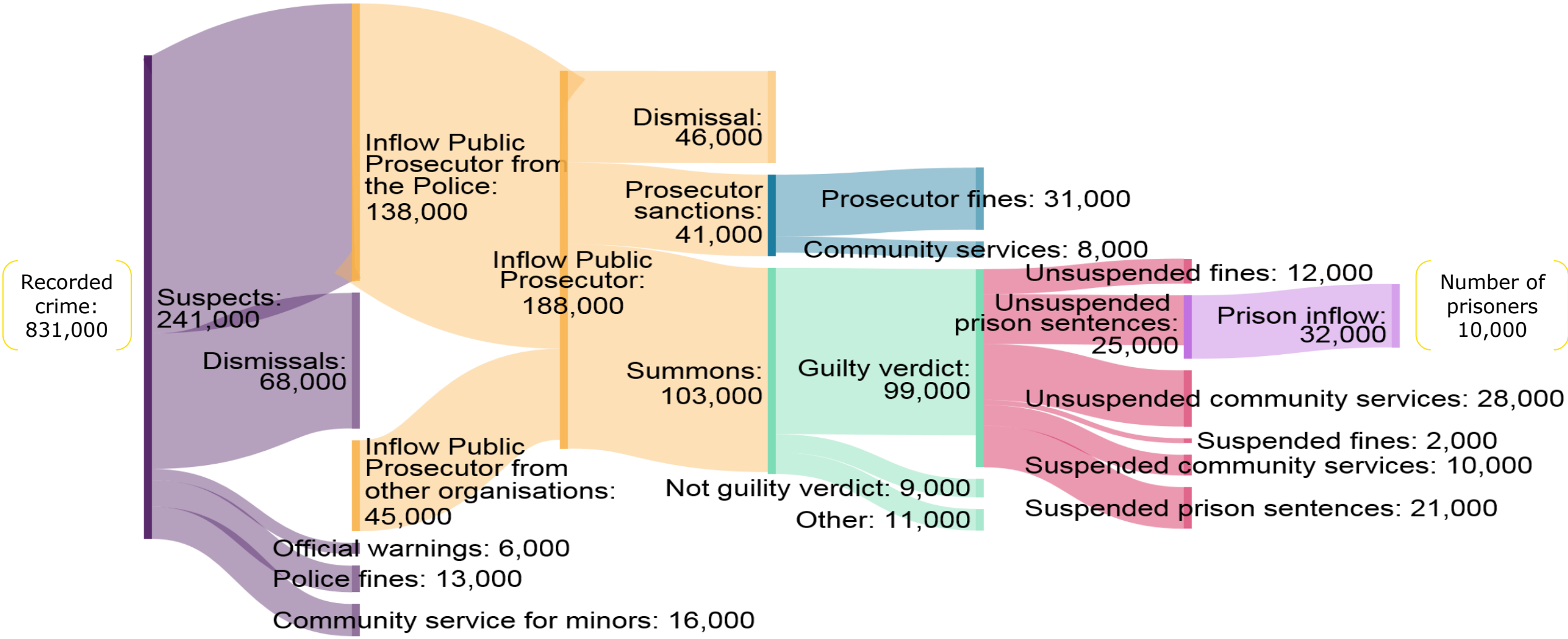
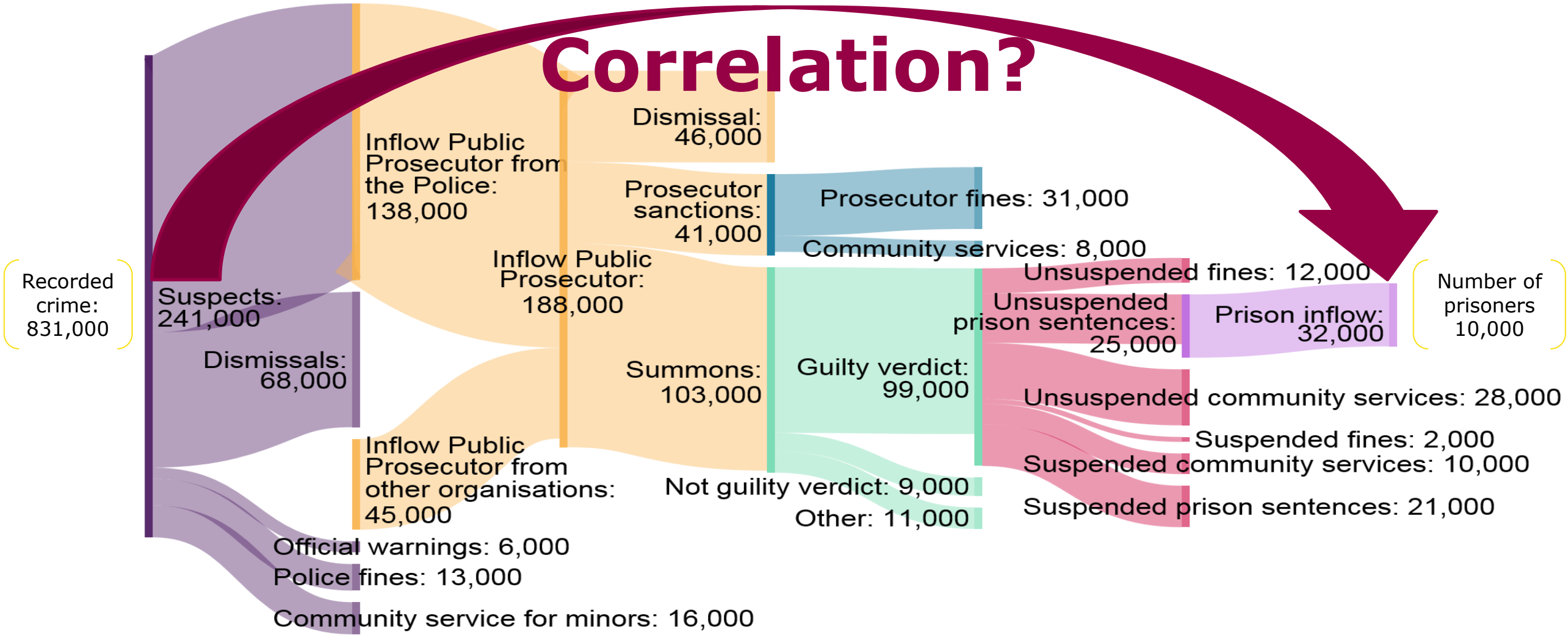
The criminal justice system



The Dutch criminal justice system in numbers: 2017



The Dutch criminal justice system in numbers: 2017



Correlation between crime rates and imprisonment?

- Intuitively: YES
  - Prisoners do not fall out of the sky

- Empirically: ???
  - Counting units
    - Large difference between number of crimes and number of people in prison
    - We imprison people not crimes, so why look at crimes, crime rate/clear up rate at all?
    - Number of prisoners (at any given date): In the Netherlands prison sentences are relatively short, so on average 1 prison bed is occupied by 3 to 4 people within one year.
    - In recorded crime figures no distinction can be made between adult and juvenile criminals, until the case is solved.
    - Recorded crime may include crimes committed by organisations.
  - Looking at suspects instead of crimes, there is still a large difference between the number of suspects and the number of people going to prison.
  - A lot happens between police and prison: alternative sanctions, dismissals, not guilty verdicts, etc.
  - Unless you know and understand what happens between the police-stage and the prison-stage, finding correlations will be difficult.
  - Time period matters
  - There may be time lags (postponed execution) or time leads (remand custody)
  - Average sentence length is an important factor

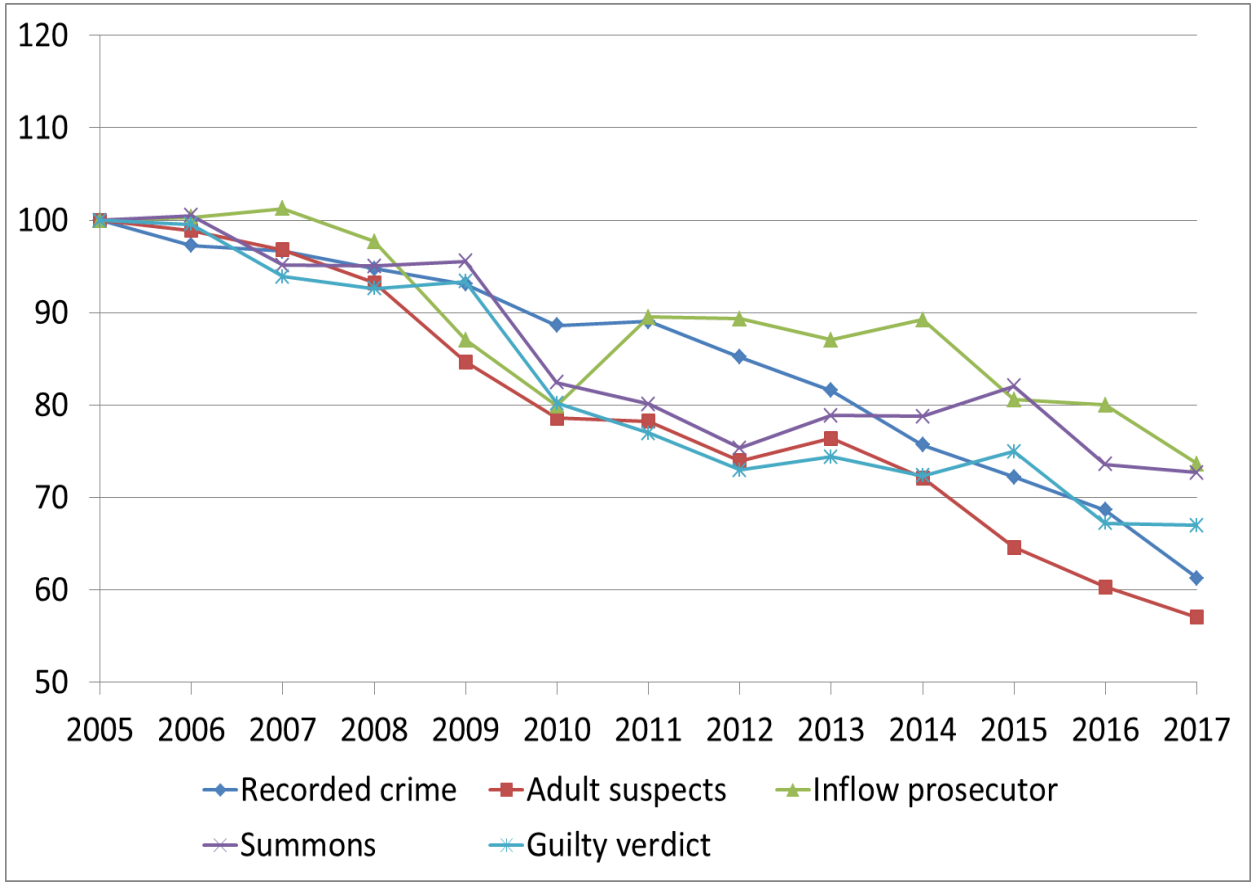
The problem of remand custody

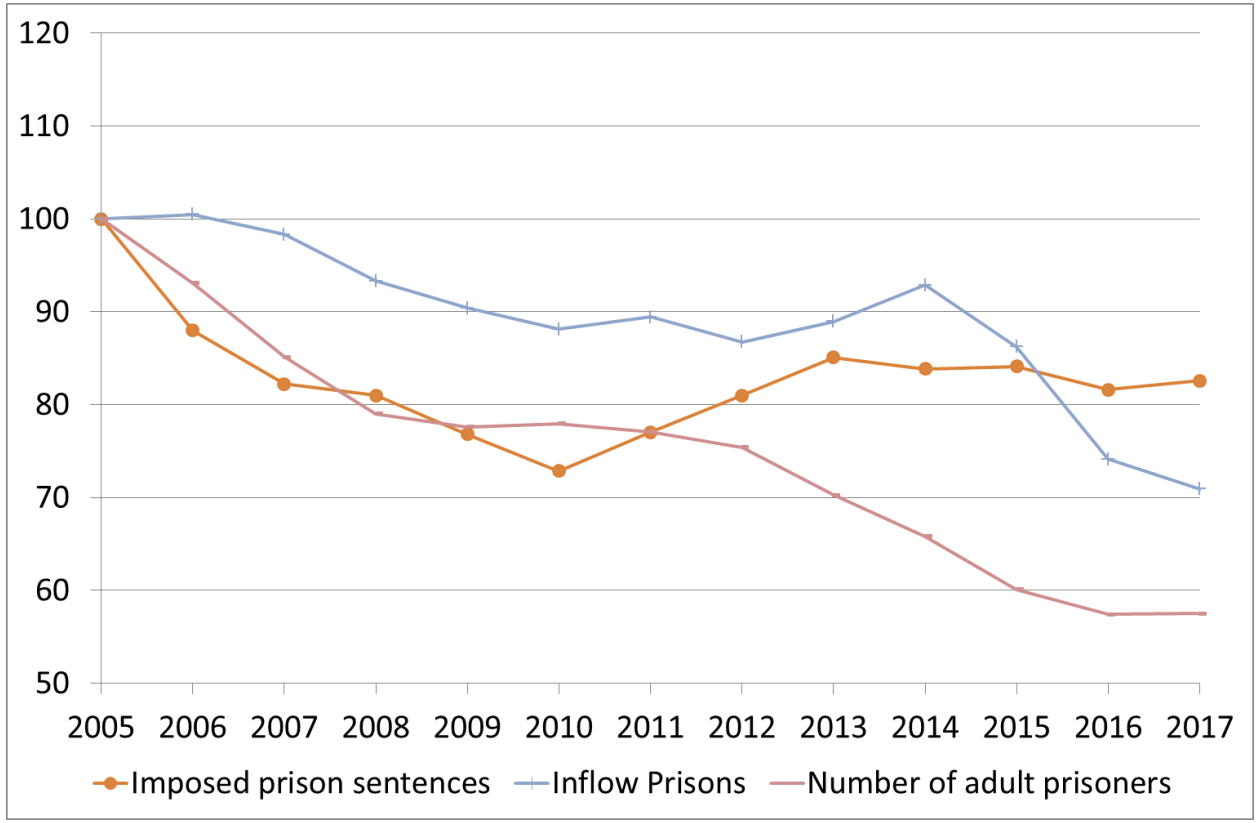
- Simple example:
  - 4 people (A, B, C and D) convicted to a 2-year prison sentence
    - B, C and D in pre-trial detention
      - B: remand custody < sentence
      - C: remand custody = sentence
      - D: remand custody > sentence

	Year 1	Year 2	Year 3	Year 4	Year 5	Total time in prison
A				Convicted	Convicted	2 years
B			Remand	Convicted		2 years
C		Remand	Remand			2 years
D	Remand	Remand	Remand			3 years
Total cells	1	2	3	2	1	

  - Problems
    - Timeshift
    - The remand overtime will usually not show up in any offical statistic
    - Difficult to predict because there are few leading indicators

Developments in the Dutch criminal justice system

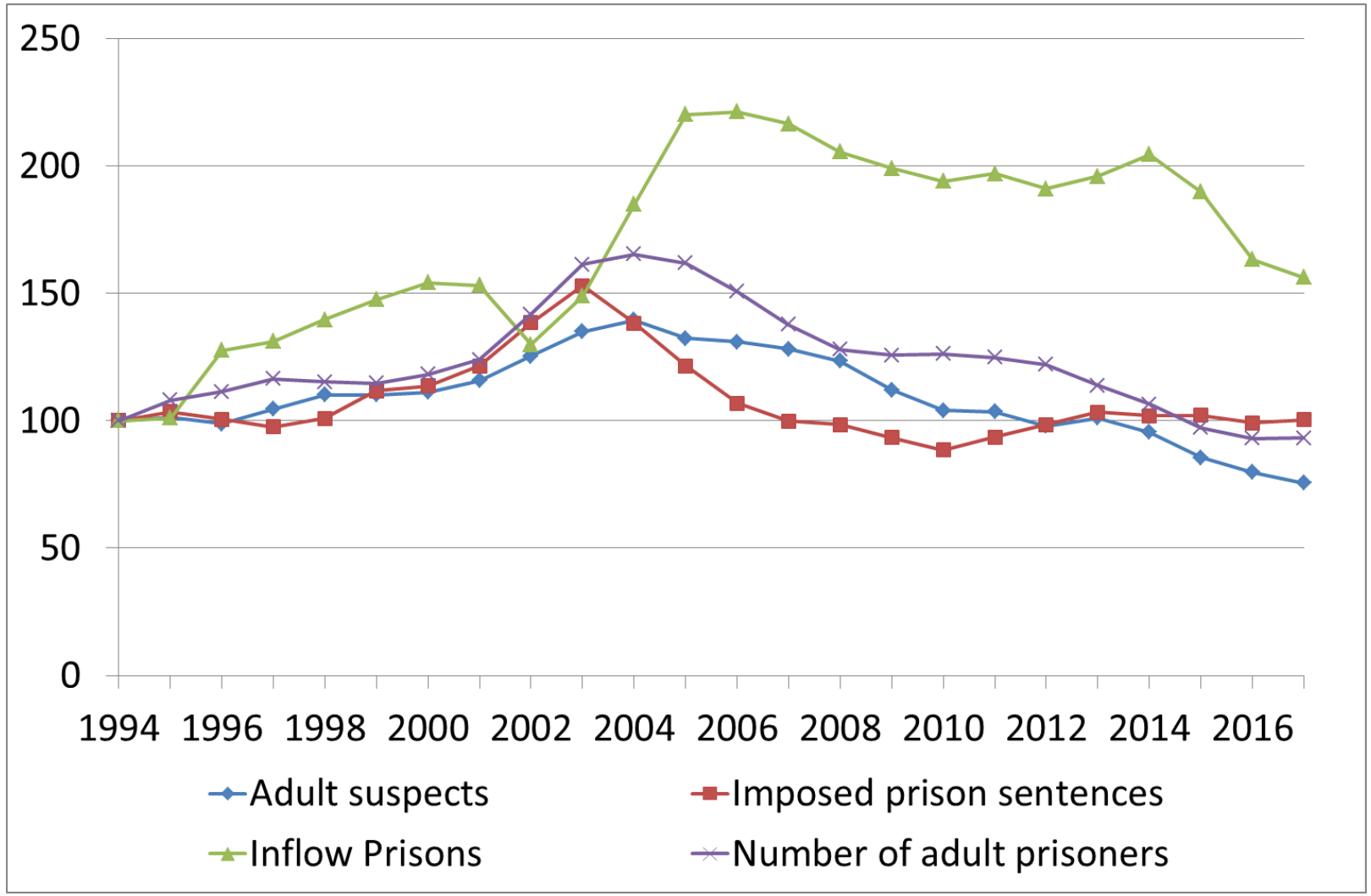




Correlation between adult suspects and…

	1994-2017	2005-2017
Imposed prison sentences, adults	0.62	0.36
Inflow prisons, adults	0.25	0.91
Number of adult prisoners	0.93	0.95

Suspects versus imprisonment 1994-2017

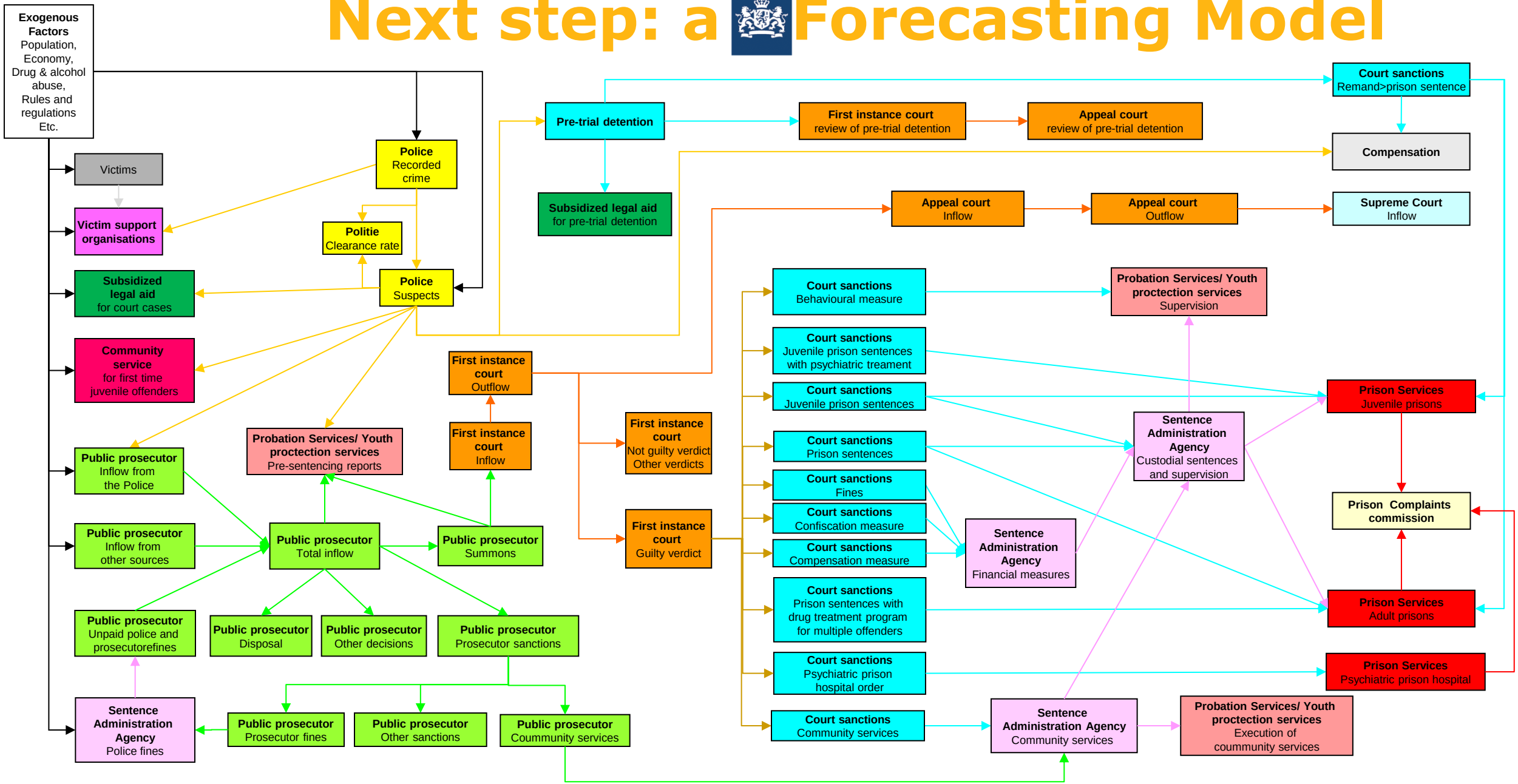


Alternative approach

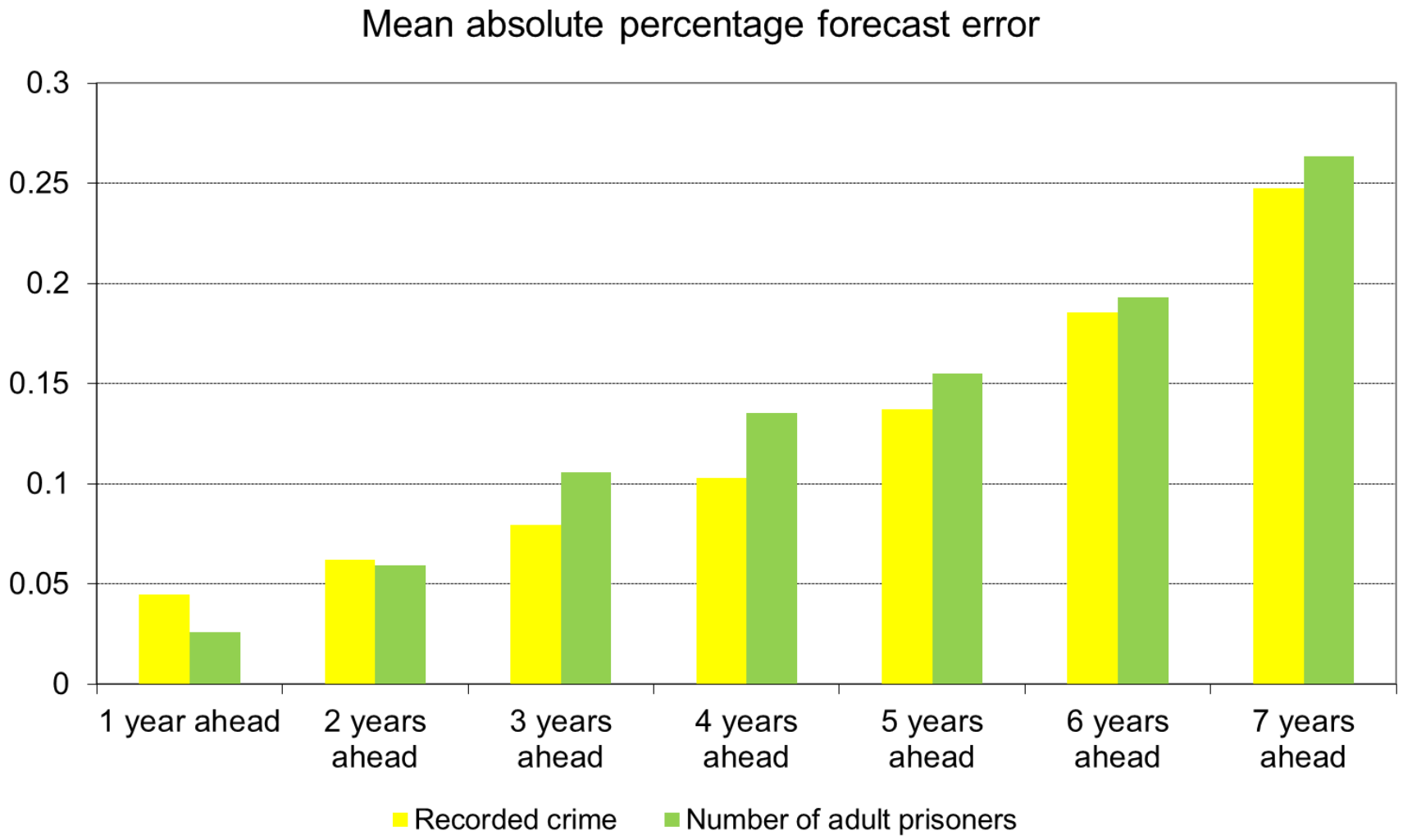
- Divide the criminal justice system into smaller adjoining segments:
  - Correlation between Police and Public Prosecutor
  - Correlation between Public prosecutor and Court verdicts
  - Correlation between Court verdicts and Prison sentences
  - Correlation between Prison sentences and Number of Prisoners
  - Correlation between Prison sentences and Community services
  - Etc.
- Make a distintiction between types of crime

- Advantages
  - Allow for time lags
  - More detail, more accuracy

Next step: a Forecasting Model



Forecast errors for adult prisons, by years ahead



Correlation between adult suspects and imposed prison sentences

	1994-2017	2005-2017
Total	0.62	0.36
Threats and assaults	0.81	0.59
Sexual offences	0.65	0.54
Robbery	0.88	0.87
Other violent crimes (homicide, human trafficking, taking hostages, etc.)	-0.20	0.16
Simple theft	0.15	0.11
Aggrevated theft	0.85	0.17
Other property crime	0.82	0.79
Criminal damages and crimes against the public order/authorities	0.71	0.60
Driving under the influence	-0.01	0.17
Other motoring offences	-0.50	-0.42
Hard drugs	0.75	0.98
Soft drugs	0.77	0.04
Crimes against economic/environmental regulations	0.19	0.53
Other crime	-0.50	-0.60

Distinction by crime type: conclusion

- Distinguishing by crime type improves the correlations
  - Correlations for simple theft, drunk driving, other traffic offences and economic crimes are low because prison sentences are rarely imposed for these type of crimes
  - Correlations for other violent crime is also suprisingly low.
    Two possible causes:
    - Time shift: severe crimes may take a longer to investigate, prosecute, convict.
      (In fact, for 2005-2017 the correlation between imposed prison sentences and the number of suspects in the previous year is 0.39 instead of 0.20)
    - Shift between crime categories.
      For example, if attempted homicide is difficult to prove the suspect may eventually only be convicted for assault.

Overcrowding versus Undercrowding (1)

- SPACE Indicator of prison density (section 18 White Paper):

$$\frac{Number\ of\ prisoners}{Number\ of\ available\ spaces}$$

  - Imminent prison overcrowding if this indicator is above 90% (section 20)

- Shortcomings:
  - In case of waiting lists or temporary releases, this indicator is always 100% or less
    - The problem of overcrowding remains invisible to politicians/policy makers
  - For policy makers/politicians the optimal value is 100% (and not 90%), because…
    - No overcrowding, so no human rights issues
    - No undercrowding, so no money is wasted on empty cells

      (For example: in the Netherlands the average cost of an occupied cell is €265 and of an empty cell is €87 per day)

Overcrowding versus Undercrowding (2)

- Solutions
  - Include waiting lists/temporary releases in indicator

$$\frac{Number\ of\ prisoners + waiting\ list + temporary\ releases}{Number\ of\ available\ spaces}$$

  - In 2002 research by Prof. Bomhoff suggested a margin of 13.8% for Dutch Prisons
    - So an average prison density of 86.2%.
      - ➔ difficult to justify to politiciansand financial people