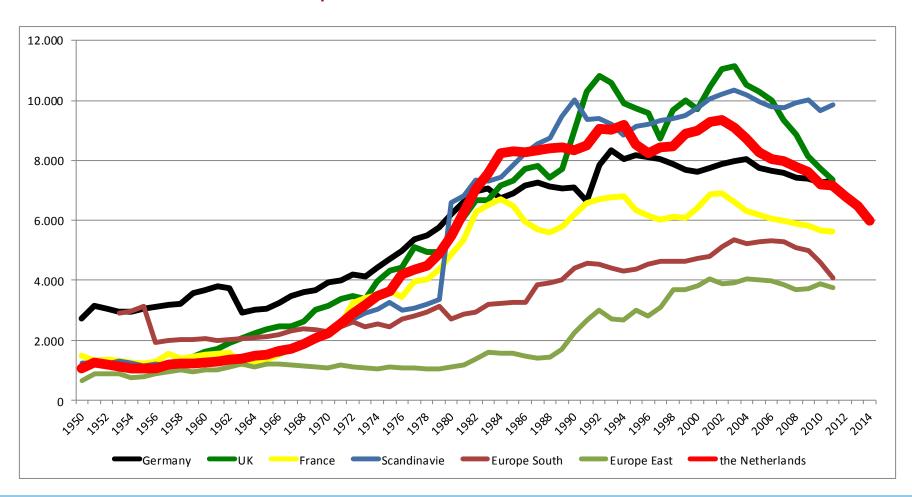


# Use of quantitative criminal data in the Ministry of Security and Justice

Paul Smit September 25, 2017



### Total recorded crimes per 100k 1950 – 2014





- 1. The section SIBa within WODC
- 2. Data sources
- 3. PMJ: forecasting
- 4. Two other projects
- 5. Cooperation with Statistics Netherlands



#### 1. The section SIBa within WODC

SIBa (Statistical Information and Policy Analysis) is one of the research sections within the WODC.

#### Main areas are:

- •Collecting statistical data, maintaining monitors (mainly criminal data)
- Develop new areas and methods
- •Using data, aiding policy making and informing general public



#### 2. Data Sources

- Survey data: victim surveys, also offender surveys
- Data from CJS organizations, such as Police, Prosecution, Courts
  - Microlevel
  - Privacy issues
- Data from outside CJS: demographic, economic, education, income
  - Macrolevel
  - Microlevel through Statistics Netherlands
- New areas: Internet, Social media, sensor data



### Data Sources: Safety Monitor

- Large annual survey, >60k respondents
- Crimes, Safety, but also opinion on Police
- Both national and local level
- Sample taken from kind of SN, so linking with other datasets possible



### 2. Data Sources: Police data

- Recorded crime
- Suspected offenders
- Again: linking with other datasets possible



### 2. Data Sources: Prosecution and Courts

- Combined system for Prosecution and Courts
- Both cases and persons
- Again: linking with other datasets possible



### 3. PMJ: forecasting

On the interaction between forecasts and policy decisions

#### The challenge:

- •How many resources do we need in the field of justice in the coming years?
- •Police, judges, prosecutors, prison cells, probation officers, legal aid, ...?



### 3. PMJ: forecasting

On the interaction between forecasts and policy decisions

#### The challenge:

- •How many resources do we need in the field of justice in the coming years?
- •Police, judges, prosecutors, prison cells, probation officers, legal aid, ...?
- •In the Netherlands we developed a forecasting model to be used for budgetting the justice field



### 3. PMJ: forecasting

- a) Description of the system
- b) How is it actually used in the budgetting process?
- c) Are our forecasts accurate?

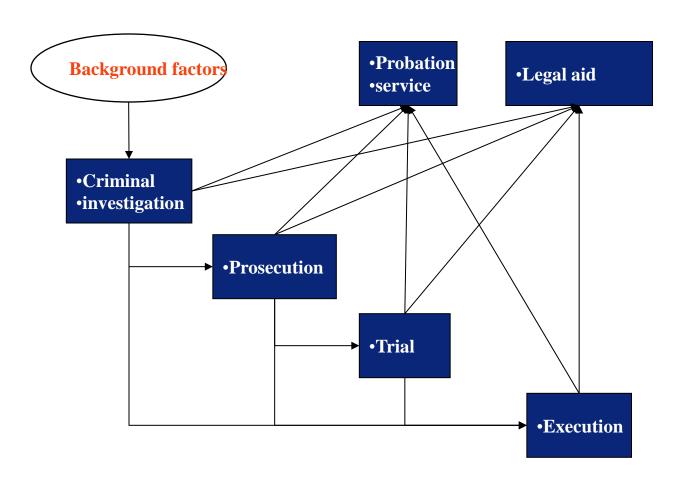


# 3a. PMJ: forecasting description of the system

•Information flows between organizations that are part of the field of Justice can be modeled as a network

 Criminal Justice Chain model, adults, version 2004 Background Police •Injuries compensation fund •factors ·for victims of violent crime District court Court of appeal requests Hearing in chamber Hearing in chambers Backgroun •factors ·Illegal foreigners Prison service District court Court of appeal •Minor offences Decistions ex art. 12 S Interpreters Illegal foreigners in custody Police ·Court of appeal Probation Office Probation office ·Court of appeal •Early assistence Remand custody Visits remand custod Police Police Court of appeal budget Probation office District court ·Legal aid Information repots District court egal aid remand custo Elaboration verdict by multiple judges Background •factors District court ·(sub)district court ·(sub)district court ·Legal aid Dispossession verdict by multiple judges Other verdicts District court Judicial debt collection agency District court ssion verdict by single judge Dispossession measures Cases before single judge Probation office ·Legal aid District court Preparing for car Income dependent legas aid for suspec Probation office Advisory reports Court of appeal Probation office Resettlement programs ·Legal aid Backgroun •factors Probation office Forensic investigation Supervision ·cases Repeat offenders ·Legal aid Probation office Income dependent legal aid to non-suspects Measures reports •Background Prosecution ·(sub)district court Court of appeal Prosecution Interpreters factors •cases Supreme court Judicial mental hos ases without verdic •Court Prison service Prison service budget Court of appeal ·(sub)district cou ·(sub)district cou Prison sentences Interpreters Guilty verdict Repeat offenders Prison service •Interpreters Prosecution Judicial debt collection agency dispossession Subdistrict court Outstanding verdicts Verdicts Prosecution Prison service Penitentiary programs Judicial debt collection agency Prosecution Appeal Court Prison service ·Prison service Community service Community service Prosecution Prosecution Judicial debt collection agency Percentage failed community services ·Judicial debt collection agency Prison service Prosecutor's transactions Judicial debt collection agency Prosecution Prosecutor's Prosecution •dismissal budget Technical dismissal Prosecution ·Judicial debt collection agency Prosecution Percentage failed fines Prosecution Prosecution Judicial debt collection agency Conditional policy dismissa Police transactions Judicial debt collection agency Compensation measures ·Judicial debt collection agency Judicial debt collection agency Subdistrict court Appeal prosecutor Appeal subdistrict court verdict ·Judicial debt collection agency Percentage failed compensation measures Judicial debt collection agency Percentage failed dispossessions Judicial debt collection agend Judicial debt collection agency Backgroun Subdistrict court Judicial debt collection agency Judicial debt collection agend Judicial debt collection agency •factors Traffic offences bailiff Means of coercion Protest Commital to prison Percentage committed to prison

## **Criminal justice network**





# 3a. PMJ: forecasting description of the system

- •Information flows between organizations that are part of the field of Justice can be modeled as a network
- •Developments outside the Justice field influence the information flows as well

### **Exogenous factors**



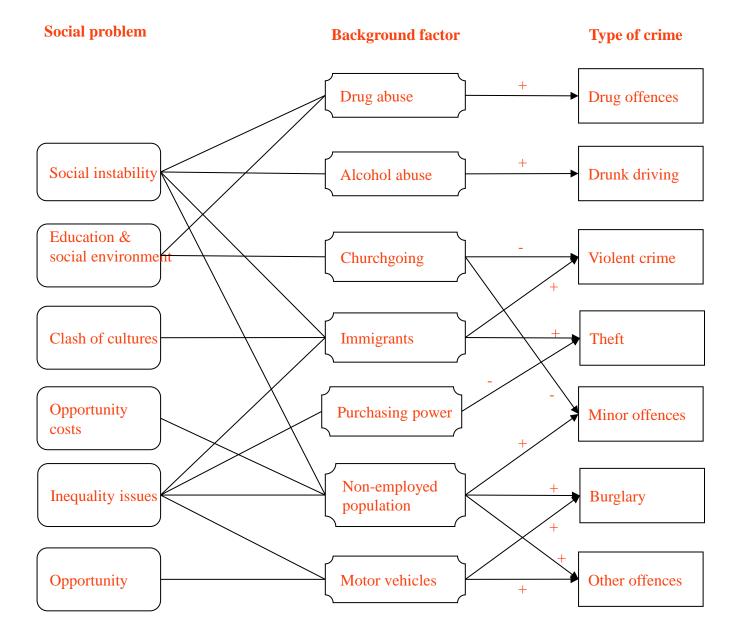
The exogenous factors describe circumstances under which crimes or conflicts are more likely to occur.

These circumstances are described in criminological theories or theories about conflicts.

These theories are too abstract and are translated into quantifiable factors.

#### 4 categories:

- Demografic developments
  - E.g. population, number immigrants
- Economic developments
  - E.g. Working labour force, average income
- Social problems
  - E.g. alcohol and drug abuse
- Institutional factors
  - E.g. cost of lawyers, number of police officers





# 3a. PMJ: forecasting description of the system

- •Information flows between organizations that are part of the field of Justice can be modeled as a network
- •Developments outside the Justice field influence the information flows as well
- •The system consists of a large number (3500) of regression equations of the following form:



```
\Delta \ln (reported \ violent \ crime) = 0.95 \ \Delta \ln (population)
```

- +  $0.694 \Delta ln$  (percentage of religious people)
- + 0.148 Δln (children involved in divorce proceedings)
- + regression error term

```
\Delta In (interrogated suspects violent crime) =
```

- $0.265 \Delta \ln (reported violent crime)$
- +  $0.884 \Delta \ln (police capacity)$
- regression error term



# 3a. PMJ: forecasting description of the system

- •Information flows between organizations that are part of the field of Justice can be modeled as a network
- •Developments outside the Justice field influence the information flows as well
- •The system consists of a large number (3500) of regression equations of the following form:
- •A 'model generator' proposes some 'best' models



# 3b. PMJ: forecasting how is it actually used in the budgetting proces?

•In summer year t forecasts are made for t+1 to t+6, based on actual data until t-1 (and forecasts for exogeneous variables from t onwards)



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# 3b. PMJ: forecasting how is it actually used in the budgetting proces?

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- •A few months later the forecasts are finetuned using preliminary data for year t. This results in so-called 'policy-free' forecasts
- •Next, the Justice organizations add changes to the outcome of the model when changes in policy so requires. This gives 'policy-rich' forecasts and is the basis for budget negotiations with Ministry of Finance

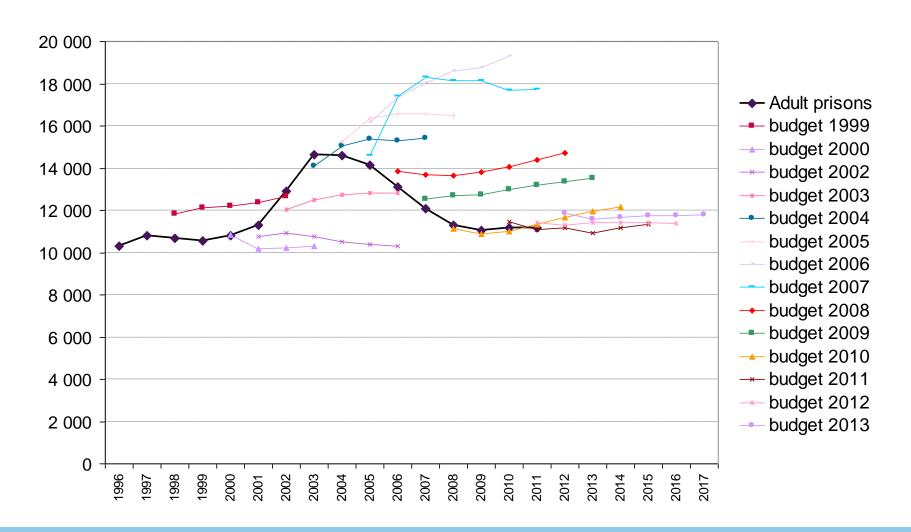


3c. PMJ: forecasting

Are our forecasts accurate?

The simple answer is "NO"!!

### Need for adult prison capacity





# 3c. PMJ: forecasting Are our forecasts accurate?

The simple answer is "NO" !!

#### Main reasons:

- Dependent on the quality of forecasts for external variables
- Self-fulfilling and self-denying
- Slow in reacting on break in trends



# 3c. PMJ: forecasting Are our forecasts accurate?

The simple answer is "NO" !! Main reasons:

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#### A few years ago external review. Conclusions:

### **Outside review**

#### **Conclusions:**

- In the short term (up to three years ahead) the forecasting model is better than simple alternatives such as keeping everything constant, trend extrapolation and simple time series methods.
- In the long term no differences between forecasting model, trend extrapolation and simple time series methods.
- Keeping constant is always worse than the forecasting model.
- Adding the estimated effects of new policy/legislation does not improve the forecasts



### 4. Two other projects

SKM (Criminal Justice Monitor)

- All organizations in the Criminal Justice System contribute (aggragate, quarterly) data to this monitor
- Very complete and timely data
- Helps policy makers to detect unexpected or huge changes in the flow of criminal cases through the CJS



### 4. Two other projects

#### Recidivism Monitor

- Uses primarily a special source of microdata: not case oriented, but person oriented (essentially a criminal record database).
- Includes all active offenders during 20 years (4 million people, over 12 million criminal cases), including their older justice records
- Basis for recidivism (or rather reconviction) research, e.g. what works? (Review of various sanctions by measuring recidivism)



### 5. Cooperation with Statistics Netherlands

- WODC/SIBa and Statistics Netherlands have for a large part a common 'mission': providing statistical data on crime.
- Since about 20 years close cooperation in publishing results: a yearly comprehensive publication Criminaliteit en Rechtshandhaving (Crime and Law Enforcement)
- Since 1 year development of a common website: www.criminaliteitinbeeld.nl