

Use of quantitative criminal data in the Ministry of Justice, the Netherlands

Paul Smit April 16, 2018



- 1. Data sources available
- 2. PMJ: forecasting
- 3. (Discussion on the decrease in crime)



1. 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



1. 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



Data Sources: Police data

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



1. Data Sources: Prosecution and Courts

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



2. 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, ...?



2. 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



2. PMJ: forecasting

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

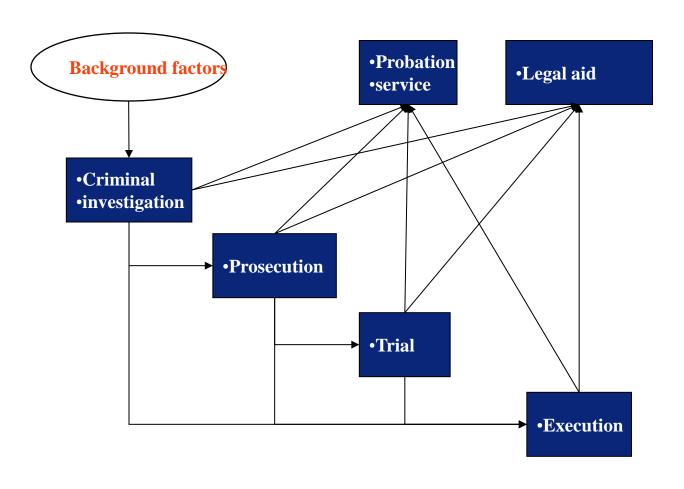


2a. PMJ: forecasting description of the system

 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 appea •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 Verdict by single judge 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 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 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 Prosecutor's Prosecution 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





2a. 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



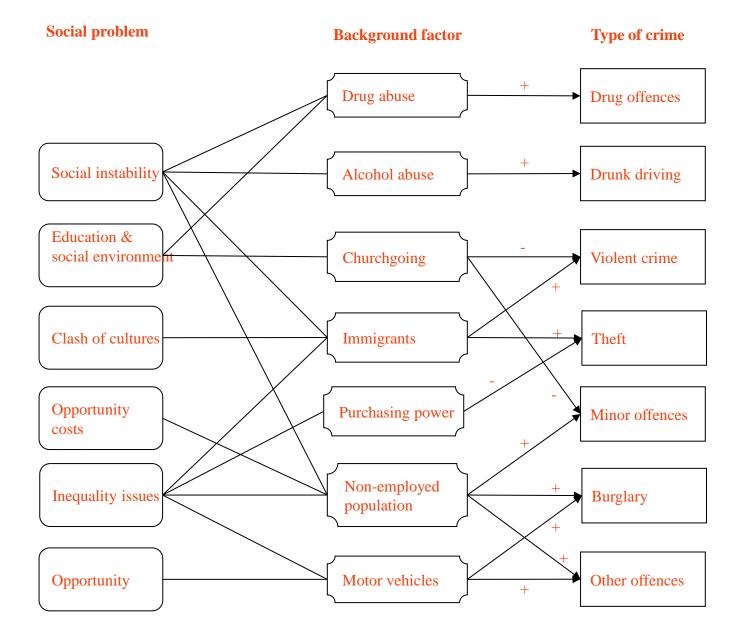
The exogenous factors describe circumstances under which crimes or conflicts are more likely to occur.

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





2a. 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:



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\Delta \ln (reported \ violent \ crime) = 0.95 \ \Delta \ln (population)
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- + $0.694 \Delta \ln (percentage of religious people)$
- + 0.148 Δln (children involved in divorce proceedings)
- + regression error term

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Δ In (interrogated suspects violent crime) =
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- $0.265 \Delta \ln (reported \ violent \ crime)$
- + $0.884 \Delta \ln (police capacity)$
- regression error term



2b. 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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- •A few months later the forecasts are finetuned using preliminary data for year t. This results in so-called 'policy-free' forecasts



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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

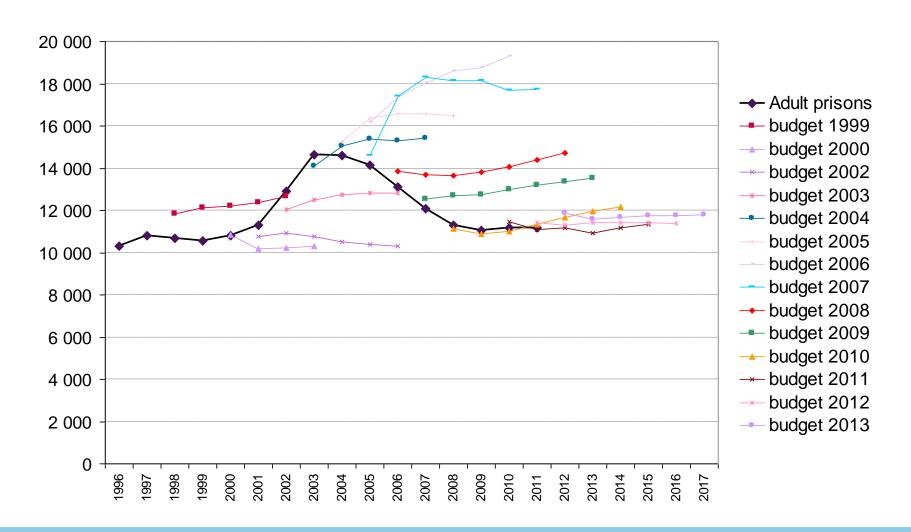


2c. PMJ: forecasting

Are our forecasts accurate?

The simple answer is "NO" !!

Need for adult prison capacity





2c. 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



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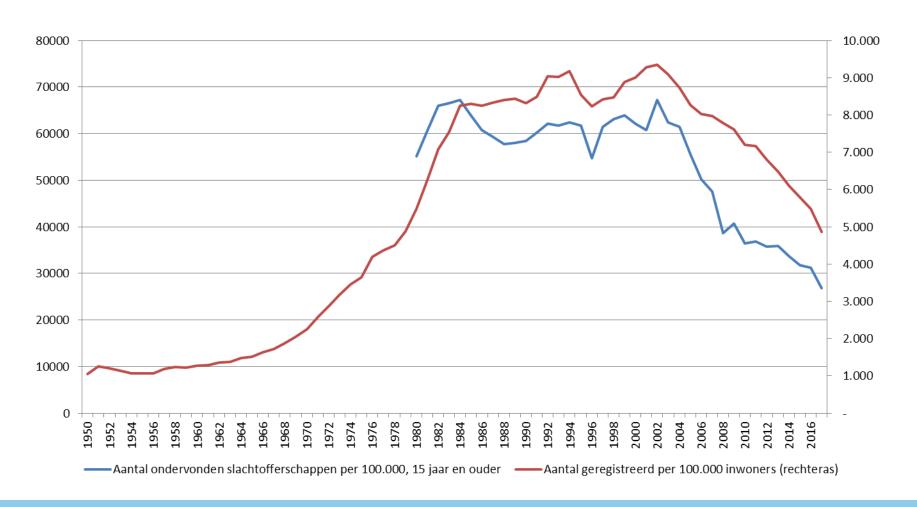
A few years ago external review. Conclusions:

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







Total recorded crimes per 100k 1950 – 2014

