

How Does Crime Correlate with Voting Behaviour in the Netherlands?

Scientific Data Analysis Project

Micah John · Roy Chen · Kaai Hoffmann
University of Amsterdam



Table of contents

01 Background Motivation, Dutch context	02 Dataset Sources, variables, assumptions	03 Framework Research questions, hypotheses	04 RQ1 Models, evaluation, results
04 RQ2 Models, evaluation, results	05 RQ3 Models, evaluation, results	06 Discussion Interpretation, limits, future work	



01

Background

Why this topic and what's the goal?



Why Study Crime and Voting Behaviour?

Crime highly salient societal issue.

In many democracies, perceived increases in crime are linked to:

- Support for law-and-order policies
- Shifts toward parties emphasizing security and control

Understanding whether **actual crime data** aligns with **voting behaviour** helps distinguish perception from measurable trends.

Why the Netherlands?

The Netherlands provides a strong case study because:

- For one; we live in the Netherlands!
- High-quality, open government data
- Proportional multi-party political system
- Clear regional variation in both crime and voting
- Multiple national elections between 2010–2023

This allows us to examine **temporal**, **regional**, and **political** patterns simultaneously.

What Are We Trying to Understand?

Strategic Applications

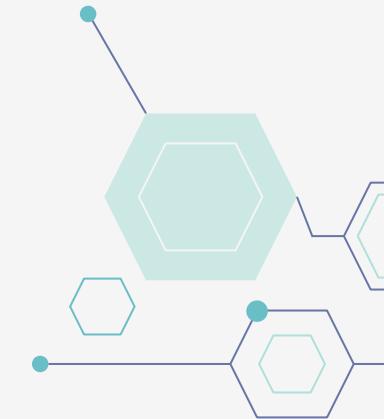
- **Political Forecasting:** Identifying "early warning" regions.
- **Safety Communication:** How provincial governments can communicate safety data.
- **Electoral Strategy:** Understand regional "neighbor effects".

This is an exploratory, data-driven investigation rather than a causal claim.

02

Dataset

What data we used, and where we got it.

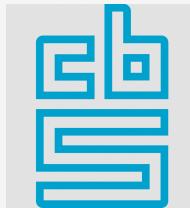


Overview of Datasets Used

We combine two national datasets:

Crime Data

- Source: **CBS Open Data**
- Scope: Reported crimes by region and year



Voting Data

- Source: **Kiesraad**
- Scope: Official election results by region and party of each election



Data processing

Standardised: column, formats, data types, year field

Cleaned: duplicates, labels, missing/“unknown”

Harmonised geography: aligned municipality across years

Aligned time: ensured observations match (2010–2023)

Model-ready key: municipality × year

Quality checks: row counts per year, missingness checks, join success rate

Limitations

1. category/municipality changes over time
2. suppressed/missing values
3. aggregated data (no individual causality)



03

Frame work

Research Questions & Hypotheses



Main Research Question

01 Question

"To what extent do changes in regional crime rates predict shifts in electoral support for political parties in the Netherlands?"

02 Question

"Do increases and decreases in crime affect voting behaviour symmetrically, or are voters more responsive to one direction of change?"

03 Question:

"Is there a measurable association between regional voting patterns and crime levels, caused by spillover effects from neighbouring regions?"

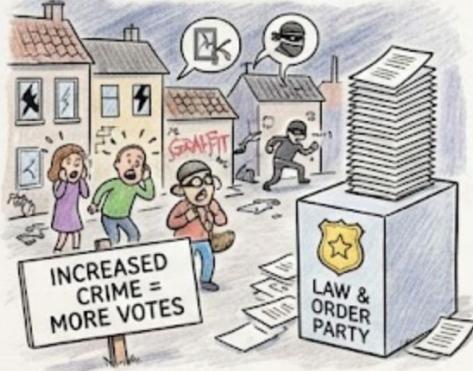
04

RQ1

Models, Evaluations & Results

Q1: CRIME RATES & LAW-AND-ORDER VOTING

HIGH CRIME REGION



LOW CRIME REGION



04.1 Models & Evaluation



**Fixed-effects
model**



**First-Difference
model**



**Lagged-effects
model**



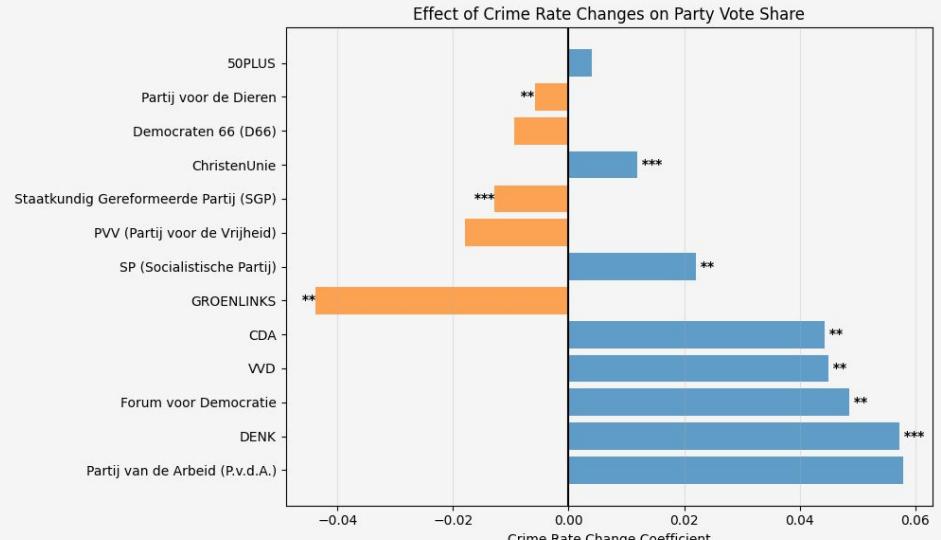
04.2 Results

- Crime-rate seeming to have significant effect across the spectrum, but with surprisingly strong variation. DENK stands out as a party being highly influenced while still seeming statistically significant.

* : a p-value < 0.1

** : a p-value < 0.05

*** : a p-value < 0.01



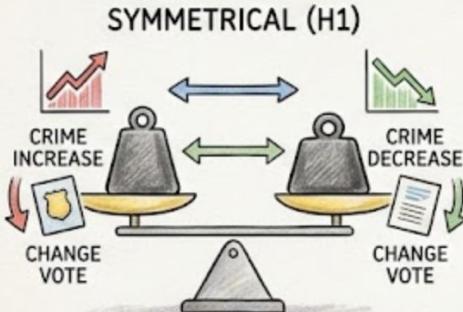
The * are used to indicate different ranges of the p-value.

05

RQ2

Models, Evaluations & Results

Q2: SYMMETRICAL OR ASYMMETRICAL EFFECT?



ASYMMETRICAL (H2)



05.1 Method: Fixed-Effects Interaction Model

Approach

- Fixed-effects panel regression
- Municipality fixed effects
- Year fixed effects

Key idea

- Separate crime changes into
 - Crime decrease
 - Crime increases

Use an interaction term to test asymmetry

Interpretation

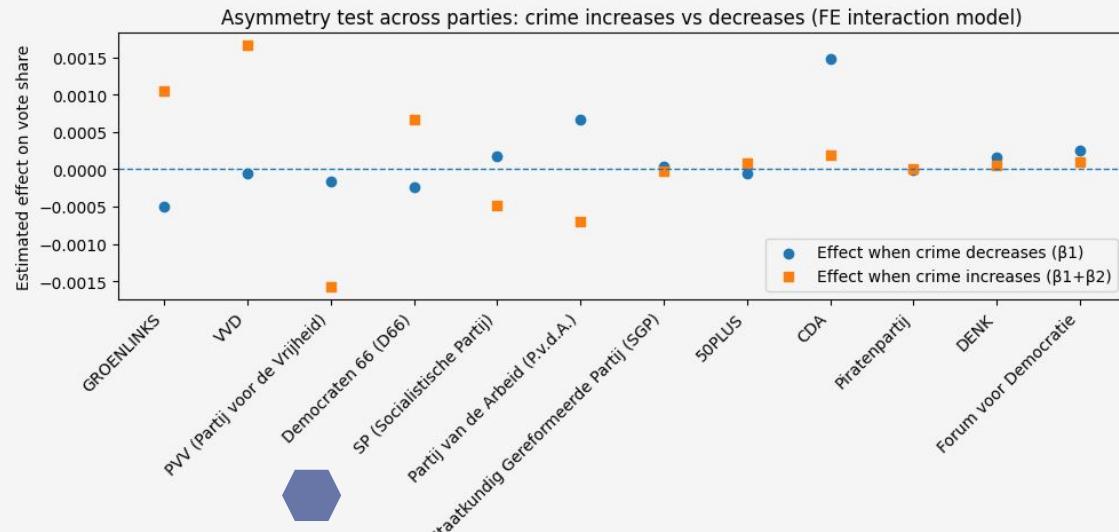
- Baseline effect: impact of crime changes
- Interaction effect: additional impact when crime increases



05.2 Results Across Parties

What this figure shows

- Blue dots: effect when crime decreases
- Orange dots: effect when crime increases
- Dashed line: no effect on vote share



Main pattern

- For most parties, crime decreases have effects close to zero
- Crime increases show larger and more varied effects across parties

06

RQ3

Models, Evaluations & Results



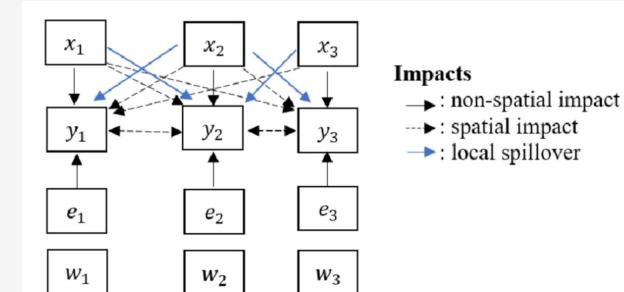
06.1 Method: Spatial Durbin Model (SDM)

Approach

- **Dual Spatial Lags:** Uses both Wy and WX terms.
 - Dependent Lag (Wy), Independent Lag (WX)
- **Local X**
 - **Direct Effects, Indirect Effects:** effects of crime on voting behaviour
- **Weights Matrix (W):** geographic "neighbor" connections.
- **Theory Alignment:** Results match political theories.

Why SDM?

- **Captures Spillovers:** Measures crime crossing provincial borders.
- **Reduces Bias:** Prevents overestimating local crime importance.
- **Spatial Connectivity:** Models the Netherlands as a network.
- **Robustness:** Handles complex regional data relationships.



06.2 Results

General pattern

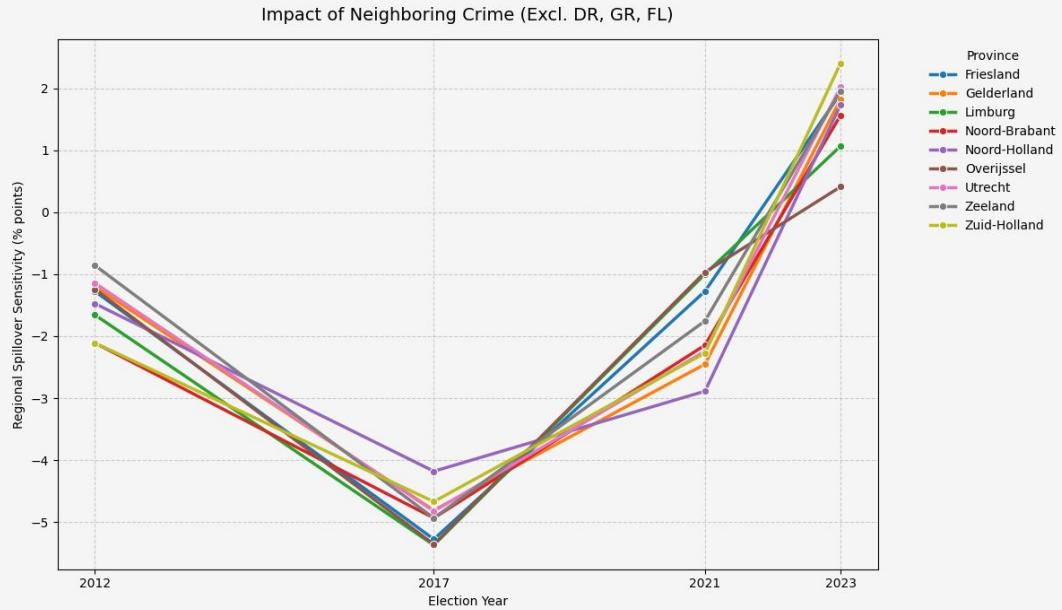
- Spillover effects mostly negative in early years
- Gradual shift towards neutral or positive effects after 2021

Strong regional variation

- Some provinces remain consistently more sensitive than others

Temporal structure

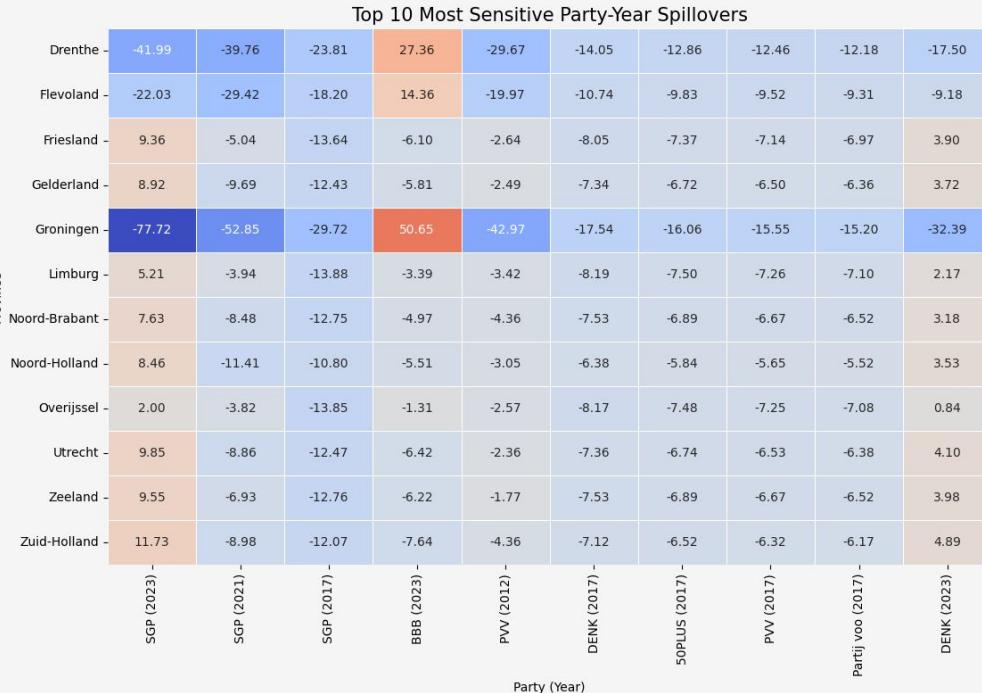
- Effects are *not static* → clear change over election cycles



An upward trend shows increasing voter sensitivity to neighboring crime, while downward trend indicates voter insensitivity.

06.3 Quick look at the top parties

- Security Gains:** "Law-and-order" parties (PVV) saw vote decreases
- Electoral Shifting:** Inverse patterns suggest crime spillovers trigger direct voter switching between parties.
- Urban Sensitivity:** Interconnected regions show much higher reactivity than rural areas.



Red indicates a vote share increase triggered by rising neighboring crime; Blue indicates a vote share decrease.

06

Discussion



Discussion

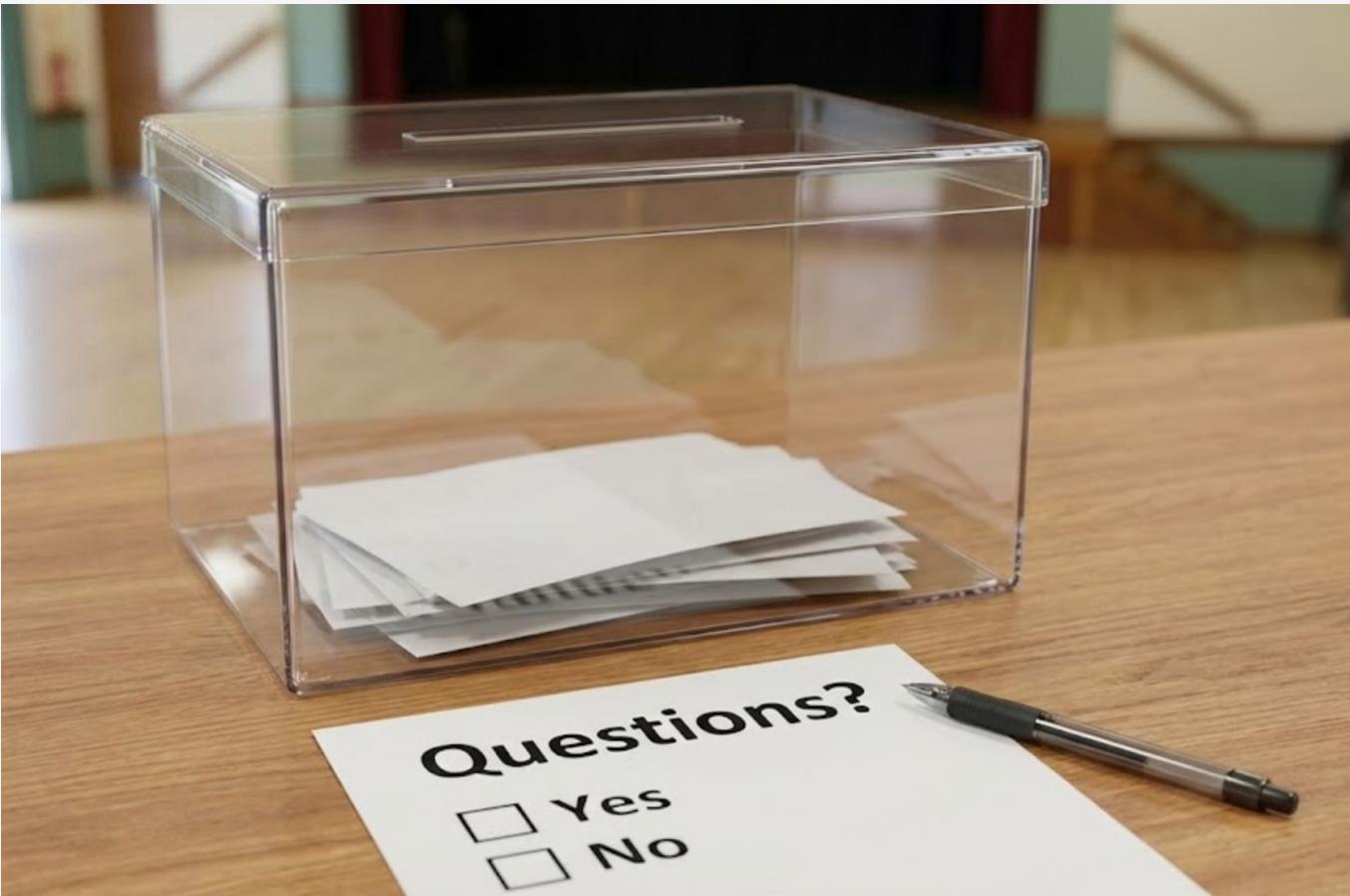
- Although voting and crime are very complex, we found clear statistical significant relationships between the 2.
- Some results regarding the political orientation of parties were as expected (VVD, CDA), but some also very surprising, go against the standard rhetoric (PvdA, PVV).
- COVID-19 in 2021 having a big effect on crime and voting behaviour.

01 Limits of the research

Both voting and criminal behaviour are complex phenomena that are affected by way more than just each other.

02 Further research

- Future research could include more election types.
- Look at spillover at a municipality level.



Questions?

- Yes
- No

Literature review

Crime:

- <https://opendata.cbs.nl/#/CBS/nl/dataset/83648NED/table?fromstatweb>

Voting:

- <https://www.verkiezingsuitslagen.nl/>