Minority Salience and Criminal Justice Decisions

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The role of salience in decision-making

- Decision-makers over-emphasize **salient** features under limited attention, which can affect decisions (Bordalo et al., 2015)
- **Cognitive shortcuts**:
  - Functional mechanism for managing information overload
  - Yet can lead decision-makers to overemphasize recent or widely publicized **salient** events, even if unrelated
- Significant consequences in domains requiring **impartiality**, such as the **Criminal Justice System** (CJS) (Philippe & Ouss, 2018; McConnell & Rasul, 2021; McConnell et al., 2024)
- Judges, prosecutors, and police officers make numerous decisions daily, often incomplete/imperfect information
- Features of **minority group** linked to societal stereotypes can exacerbate **biases** in treatment in times of **heightened salience**.

This paper

- Test for **vulnerability** of **CJS decisions** to **biases** by investigating the impact of **shock in minority 'salience'**

- Setting: CJS in **the Netherlands**:
  - **High-quality data** on decisions **throughout CJS**, from arrest to appeal
  - Linked to admin data with **suspects characteristics**, including longer term **labour market outcomes!**
  - **Clear** (negative) **salience shock** of Moroccan background
  - Evidence of **disparities** in outcomes raises question of existing biases among agents making CJS decisions

Contribution

- One of first contemporary studies of **disparities** in **CJS treatment of minorities** - here migrants not race - **outside the US**

  Police: Fryer, 2022; Goncalves & Mello, 2021; Grosjean, Masera & Yousaf, 2022; Hoekstra & Sloan, 2022. **Public prosecutor:** Sloan, 2022; Johnson et al., 2010, Bielen and Grajzl, 2021 **Court:** Abrams, Bertrand & Mullainathan, 2021; Anwar, Bayer & Hjalmarsson, 2012; Arnold, Dobbie & Hull, 2022; Arnold, Dobbie & Yang, 2018; Rehavi & Starr, 2014; Shayo & Zussman, 2011; Anwar et al., 2019 (Sweden); Bindler et al., 2023 (19th century London)

- We use **rich** nationwide **admin data** from NL to **document** those **disparities** over **all stages** of the CJS

- Exploit **shock in salience** of Moroc BkG in Dutch society (*'Mocro Maffia'* murders), to **reveal existence of biases in CJS decisions**

  McConnell & Rasul (2021) use similar strategy to study spill-over effects of 9/11 on Latinos in US: i.e. salience $\neq$ suspects; **McConnell et al. (2024)**

- Check **who reacts** to salience and examine the role of **appellate review** in mitigating bias

Salience shock: the "Mocro Mafia" murder

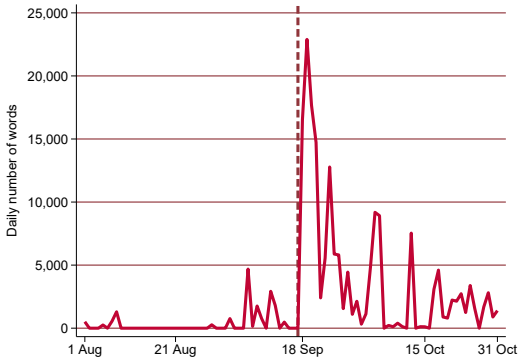
Shock in **salience** for suspects with **Moroccan background** following high profile **murder** carried out by **"Mocro Maffia"**:

- **Derk Wiersum** (18-9-2019) - lawyer of state witness in criminal case against heads of Mocro Maffia

Some background on the *"Mocro Maffia"*:

- Criminal organization **running drug traffic** in NL and BE
- Most prominent **leaders** are of **Moroccan descent**
  $\rightarrow$ framed as **"Mocro Maffia"** in the media.
- 2010s **violence** around drug crime, **spillovers to civil society**

Shock in salience: press coverage of Moroc BkG & crime



Shock especially important for CJS agents?

Salience of murder of lawyer Wiersum likely **large for CJS agents**.

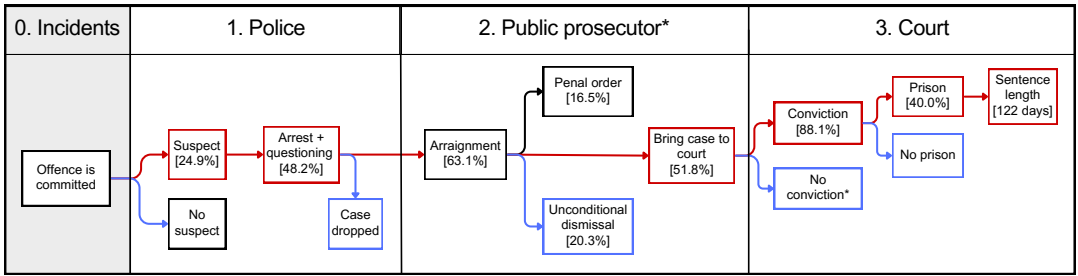
> *"It wasn't until* **Wiersum's death** *[...] that authorities realised that "Taghi was retaliating not only in the criminal world, but also in civil society". Those in* **elite circles particularly shocked** *[...] because "Wiersum was a white lawyer". He was seen as "***one of them***"."*

(Source: The Guardian)

Dutch criminal justice system

- Three main stages for key decisions
  1. **Police:** Record crime, arrest (clear guidelines, caught redhanded or severe crime), send to PP
  2. **Public Prosecutor:** Dismiss case, penal order, bring case to court (subject to formal guidelines)
  3. **Court:** Conviction (presumption of innocence), length of sentence (no offense-specific mandatory minimum sentences)
- All decision makers are **public servants**, but operate with a strong degree of independence from political influence
- No **juries** or **lay judges** in courts in the Netherlands
- Incarceration rate: 54 inmates per 100,000 population (European average is 117, 355 for the US)
- 22.9% of inmates are **foreign nationals** (11.7% of the general population)

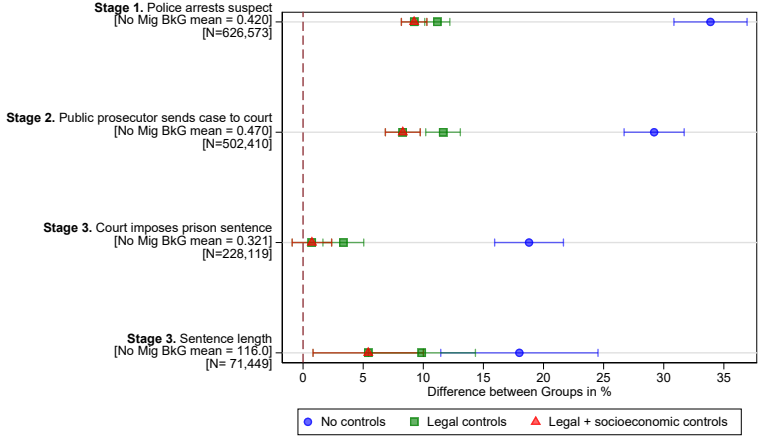
Detour 1: Dutch criminal justice system



Choices:

- Which **decisions** within **stages** to focus on?
- Use **linked data** or consider each stage separately?
- Stage 0: Individuals of Moroccan descent eight times more likely to be arrested, mirroring White-Black **arrest disparities**

Disparities not fully explained by (case) characteristics



Data

Statistics Netherlands Data with **universe of events/individuals**

- Criminal Justice System **(CJS) info** on:
  - Incidents and victims (2005-2020)
  - Arrests by the police (2005-2021)
  - Public prosecutor cases and outcomes (2001-2021)
  - Court cases and outcomes (2001-2021)
- Have **dates**, offense type (> 1500), and **unique ID** of case + suspect (+ victim) that we **link throughout CJS**.
- Also link to **register data** with all charact. of suspect, including **Mig BkG** (= country of birth of suspect and (grand)parents)

Econometric specification

Keep cases judged in 4-weeks around shock and use a DiD design:

$$Y_{i,c,t} = \alpha_1 Moroccan_i + \alpha_2 Post_t + \alpha_3 Moroccan_i \times Post_t$$
$$+\mathbf{ShockYear}_t[\beta_1 Moroccan_i + \beta_2 Post_t + \beta_3 \mathbf{Moroccan}_i \times \mathbf{Post}_t]$$
$$+X'_{i,c,t}\gamma + \delta_t + \delta_r + \delta_p + \epsilon_p$$

- $Y_{i,c,t}$ is **decision in CJS** (all 0/1 except sentence length)
- X individual/case **controls** (crim. history, age, lead time)
- **FEs** for δ_t time, δ_r crime type, and δ_p judicial district
- Standard errors clustered at judicial district-year level
- β_3 **measures dif in decision for Moroc suspects right after shock**

Identification strategy

Simple **intuition** for our **RD-DiD approach**:

- Look at **change** in decisions **before/after** killing **salience shock**
- ... compare change **between** suspects **w/wo Moroc Mig BkG**
- ... also **control** for changes around shock date in **years before**
- ... majority of crimes reach **next CJS stage** long **before shock**

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We then **check** that our **results** are **robust** to

- Any sign of **manipulation** of timing cases?
- Change in **cases composition** pre/post shock?
- Any **spillovers** to **other minorities**? McConnell & Rasul (2021)
- Also carry out **placebo** in **time** in pre-years

Balance table

Table 1: Balance table supect and case characteristics around time of shock

	Police			Public Prosecutor			Court		
	non-imm.	Moroc.	diff-in-diff	non-imm.	Moroc.	diff-in-diff	non-imm.	Moroc.	diff-in-diff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Suspect:									
Age at crime	35.88	27.86	1.058*	36.27	27.14	-1.261	36.26	28.11	0.229
	(15.51)	(10.43)	(0.587)	(15.51)	(10.40)	(0.979)	(13.90)	(9.834)	(0.976)
Criminal hist.	4.390	7.679	0.690	2.131	3.736	-0.502*	1.673	2.589	- 0.034
	(7.746)	(10.420)	(0.550)	(3.990)	(4.952)	(0.290)	(2.583)	(3.019)	(0.191)
Male	0.822	0.901	0.003	0.829	0.903	-0.016	0.866	0.928	- 0.001
	(0.383)	(0.299)	(0.015)	(0.376)	(0.295)	(0.021)	(0.340)	(0.259)	(0.024)
Partner	0.159	0.075	0.027**	0.184	0.081	0.001	0.150	0.071	0.017
	(0.366)	(0.264)	(0.013)	(0.388)	(0.273)	(0.018)	(0.357)	(0.256)	(0.018)
Children	0.398	0.217	0.023	0.439	0.231	-0.045	0.430	0.230	0.004
	(0.489)	(0.412)	(0.025)	(0.496)	(0.422)	(0.045)	(0.495)	(0.421)	(0.035)
Basic educ.	0.321	0.264	-0.017	0.342	0.300	0.048	0.341	0.291	- 0.036
	(0.467)	(0.441)	(0.020)	(0.474)	(0.458)	(0.037)	(0.474)	(0.454)	(0.026)
[Earnings>0]	0.290	0.203	-0.008	0.310	0.221	0.008	0.273	0.180	- 0.011
	(0.454)	(0.402)	(0.009)	(0.463)	(0.415)	(0.010)	(0.445)	(0.384)	(0.008)
[Benefits>0]	0.431	0.433	-0.004	0.411	0.403	-0.026	0.501	0.486	0.025
	(0.495)	(0.496)	(0.025)	(0.492)	(0.491)	(0.028)	(0.500)	(0.500)	(0.053)
Crime type:									
Property	0.321	0.389	0.024	0.270	0.386	0.020	0.294	0.369	0.015
	(0.467)	(0.488)	(0.033)	(0.444)	(0.487)	(0.031)	(0.456)	(0.483)	(0.036)
Violent	0.266	0.264	-0.015	0.257	0.203	-0.029	0.238	0.200	0.026
	(0.442)	(0.441)	(0.020)	(0.437)	(0.402)	(0.030)	(0.426)	(0.400)	(0.026)
Drugs	0.061	0.083	-0.002	0.062	0.084	-0.017	0.054	0.089	4.1e-4
	(0.239)	(0.275)	(0.015)	(0.241)	(0.277)	(0.015)	(0.226)	(0.285)	(0.016)
Traffic	0.193	0.111	0.010	0.158	0.141	0.015	0.214	0.152	- 0.013
	(0.394)	(0.315)	(0.017)	(0.365)	(0.348)	(0.031)	(0.410)	(0.359)	(0.034)
Other	0.159	0.153	-0.017	0.253	0.187	0.012	0.200	0.189	- 0.028
	(0.366)	(0.360)	(0.023)	(0.435)	(0.390)	(0.041)	(0.400)	(0.392)	(0.032)
Lead time	4.048	2.122	1.101	49.29	48.23	1.847	30.17	30.55	- 4.936
	(35.15)	(22.68)	(0.833)	(72.10)	(64.29)	(4.093)	(31.80)	(33.81)	(3.854)
Time F.E.			Yes			Yes			Yes
Share treated			14.8%			16.5%			19.1%
Observations	107,287	21,819	129,106	41,667	9,521	51,188	30,555	6,942	37,497

Police - public prosecutor decisions: RD-DiD results around 2019 shock

Panel A: Police and prosecutor decisions	Police		Public Prosecutor		
	Arrest	Custody	Send to court	Unc. dismissal	Penal order
Moroccan descent x Post	- 0.017	- 0.002	5.7e-5	0.042	-1.8e-5
	(0.021)	(0.017)	(0.030)	(0.029)	(0.018)
Mean before	0.561	0.281	0.514	0.297	0.081
Observations	103,044	103,044	51,188	51,188	51,188

- For arrest, custody and sent to court confidence intervals rule out **effect sizes** larger than 12% of the mean
- These decisions are governed by numerous **formal guidelines**, limited discretion may explain null effects

Court decisions: RD-DiD results around 2019 shock

Panel B: Court decisions

	Unconditional			Conditional on prison	
	Conviction	Prison	Sentence length	Sentence length	Sentence length incl. appeal
Moroccan descent x Post	- 0.006	- 0.001	24.404**	87.794***	91.315***
	(0.021)	(0.037)	(12.710)	(30.234)	(29.916)
Mean before	0.856	0.357	43.74	122.6	113.9
Observations	37,497	37,497	37,497	11,352	11,352

- Sentence length **increases by 56%** (72% conditional on conviction), as conviction and incarceration probabilities remain unaffected focus on conditional sentence length
- Effect fades out approximately four weeks after the shock

Case characteristics around 2019 shock

Panel C: Other case outcomes	Publ. Pr. max length	Court max. length	Multiple judges	Suspect appeared	Class. severity
Moroccan descent x Post	187.843 (169.669)	271.693 (183.169)	0.038 (0.027)	- 0.010 (0.038)	0.033 (0.037)
Mean before	2756	3565	0.167	0.770	0.297
Observations	37,497	37,497	37,497	37,497	37,497

- No change in public prosecutor's/judge's **classification of crime**
- Suggests that judges increased sentence length with a higher punishment *within* a given crime type (see spread)
- None of the other **case characteristics** changed significantly

Detour 2: Did defendants change behavior?

- Concern: Did **behavior** of defendants/lawyers change in response to the heightened salience?
- No change in the decision **not to appear in court**
- Additionally analyzed **transcribed text** of publicly available court cases (593 of 11,551 cases)
- Non-random sample (mostly very serious crimes), pseudonymized so not possible to identify the offender and their **immigration background** (before-after analysis)

	Court judgment contains									
	Morocco	Acquittal	Acquittal general	Cooperation	Confess	Denial	Non-appearance	Recusal	Evidence word count	Punishment word count
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post	0.003	0.119***	0.040	-0.068	-0.002	0.0423	-0.011	-0.007	-18.140	-7.022
	(0.017)	(.035)	(.052)	(0.043)	(.071)	(.035)	(.024)	(0.007)	(11.19)	(7.870)
Time F.E.	No	No	No	No	No	No	No	No	No	No
District F.E.	No	No	No	No	No	No	No	No	No	No
Mean before	0.017	0.229	0.804	0.338	0.783	0.133	0.088	0.013	161.8	71.47
Observations	593	593	593	593	593	593	593	593	486	360

Detour 3: Checks and balances in the criminal justice system

- Found increase in sentence length in first instance, are these increases **overturned in appeal**?
  - Occurs in approx. one-third of cases—this probability did not vary around the shock
- Did **special data request** at the judiciary to get information on appeals (and pretrial detention, public prosecutor's recommended sentence and judge id's)
  - Public prosecutors **do not register** recommended sentence... (Also: each actor in the CJS "owns" their own data)
  - Judge id's not released because of privacy and/or lack of linkages
- Can link our "treated" cases in appeal, but can not repeat analysis at appeal stage (date of the appeal is missing)

Court decisions: RD-DiD results around 2019 shock

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	(0.021)	(0.037)	(12.710)	(30.234)	(29.916)
Mean before	0.856	0.357	43.74	122.6	113.9
Observations	37,497	37,497	37,497	11,352	11,352

- Sentence length including post-appeal adjustments did not significantly change
- Suggests that appellate courts **did not effectively reduce** potentially biased sentences for suspects of Moroccan descent

Spillovers to suspects with other migration background

- McConnell and Rasul (2021) and Grosjean, Masera and Yousaf (2023) document **spillover effects** on non-salient minorities in the U.S. following salience shocks
- Observe a marginally significant increase in sentence length for suspects with **another North-African** immigration background (est. based on 36 individuals)

Panel A: Suspects with other immigration background				
	Turkish	Eastern-Europe	Non-Western	North-Afr.
Other descent x Post	- 7.695	- 11.350	- 1.807	250.514*
	(29.207)	(22.550)	(20.846)	(122.052)
Mean before	117.8	82.01	115.9	85.84
Share treated	12.9%	21.7%	46.9%	1.85%
Observations	10,171	10,634	16,400	9,199

Robustness checks

- Findings remain robust when excluding:
  - **specific case types**, such as murder, drug offenses, and organized crime
  - cases adjudicated in **Amsterdam** —where "Moroccan mafia" cases are concentrated
  - defendants from neighborhoods with historical ties to this **criminal organization** (in and around Utrecht)
- Argues against **judicial retribution** towards individuals potentially associated with the "Moroccan mafia" as a driving mechanism
- Estimated effects remain statistically equivalent when:
  - Excluding any specific crime category
  - Using different bandwidths from 8 to 56 days before and after the shock
  - Using a range of different specifications
- Placebo tests with fictitious shock dates show no significant effects in previous years

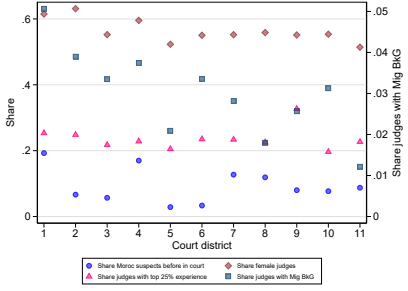
Effect driven by most severe crimes

Panel B: Max possible sentence length, terciles			
	T1	T2	T3
Moroccan descent x Post	14.142	12.115	248.992***
	(8.932)	(43.244)	(71.540)
Mean before	32.11	98.25	254.1
Max. sentence	1620	3650	10950
Observations	3,069	5,403	2,880

- Effect is entirely driven by the **most severe crimes**
- Even better visualised in figure
- Why not report figure? Tables in paper very dense in information...

Detour 5: Variation in court characteristics

- No **individual** characteristics/id's of judges available (For Moroccan-maffia cases, judges even kept anonymous)
- Used web scraping to compute **monthly means for 11 court districts** of NL
- Not ideal, yet still substantial variation across courts



Heterogeneity in salience response?

Panel C: Court characteristics	Minority judges	Female judges	Top 25% experience	Mor. suspects before
Above median:				
Moroccan descent x Post	102.494**	71.523**	69.179	43.682*
	(44.281)	(30.059)	(47.293)	(23.897)
Below median:				
Moroccan descent x Post	78.204**	100.466**	91.677**	99.276*
	(37.418)	(41.555)	(36.749)	(53.212)
Chow Test (p-value)	0.651	0.359	0.348	0.033
Mean share > median	0.040	0.599	0.255	0.140
Mean share < median	0.021	0.541	0.214	0.059
Observations > median	5,392	4,822	5,863	4,698
Observations < median	5,964	6,534	5,493	6,658

- No heterogeneity by **court diversity** (proportion female or minority judges)
- Sentences longer in courts with **fewer experienced** judges, significantly so when judges had **limited prior exposure to Moroccan-descent defendants** before shock

Conclusion

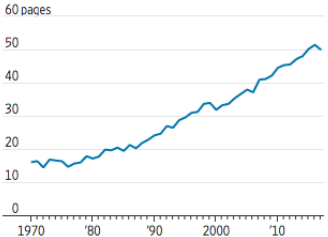
- After **shock in salience** of Moroc BkG, **CJS outcomes** for this group **significantly worsen**: average **72%** $\Uparrow$ in **sentence length** for suspects with **Moroccan migration background**.
- Impact **driven** by areas where **salience** effect is **larger** but reduced by greater experience of decision maker!
- Shows that **CJS is vulnerable to shocks in salience** with **large costs** to those affected.
- **Salience** appears at CJS moment with most **human decision** involved

Thank you!

Length of papers in economics

Longer and Longer

The average length of papers published in top economics journals has tripled since 1970

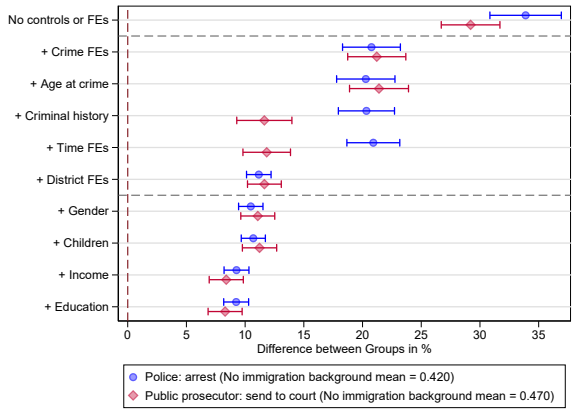


Note: Standardized mean length of articles in American Economic Review, Econometrica, Journal of Political Economy, Quarterly Journal of Economics, Review of Economic Studies

Source: David Card and Stefano DellaVigna

Go back

Police/Public Prosecutor: unexplained difference in arresting suspect in detail



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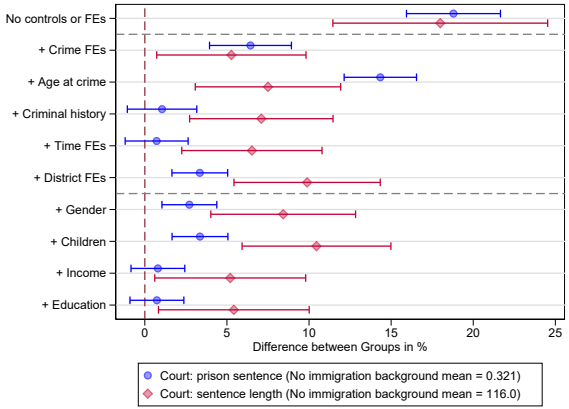
Court: unexplained difference in imposing prison in detail



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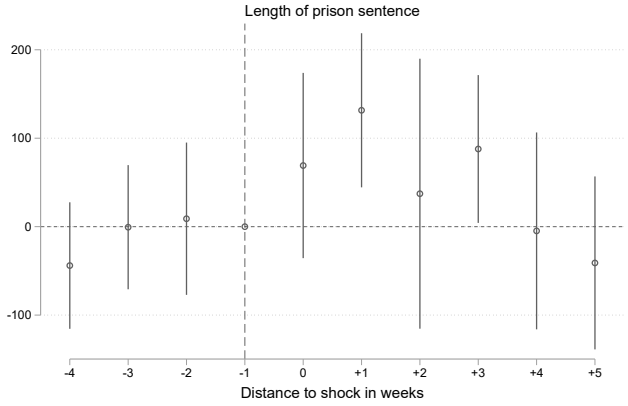
Effect fades out four weeks after the shock



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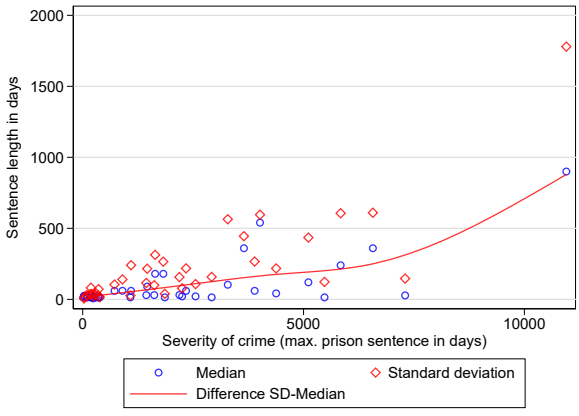
Median and standard deviation of actual sentence lengths, by severity of crime



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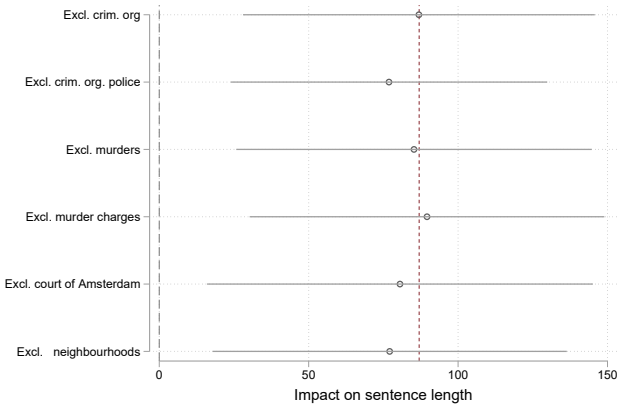
Impact of shock using different specifications



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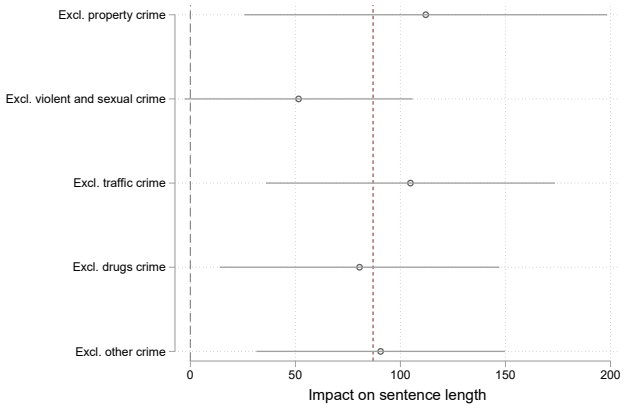
Excluding crime categories



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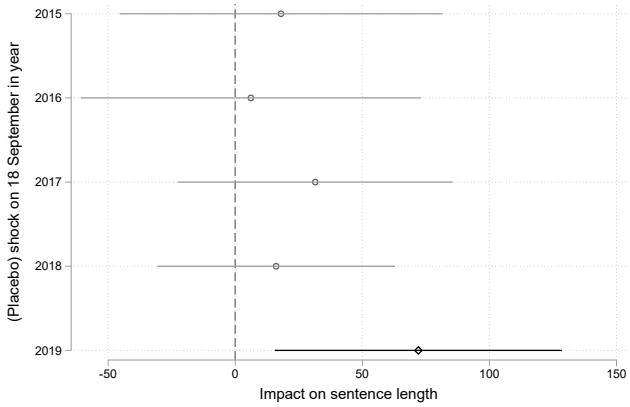
Placebo impact of shock in salience around September 18 in previous years



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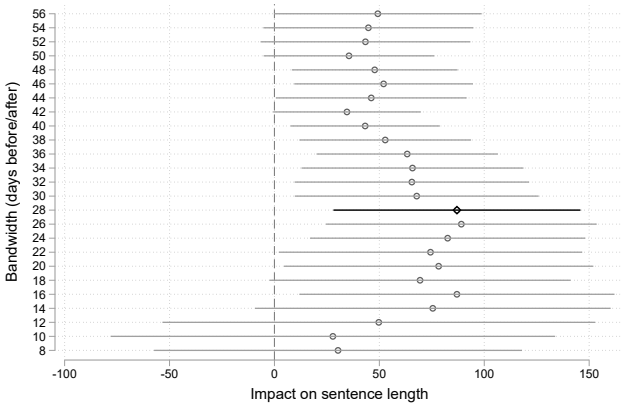
Using different bandwidths around shock



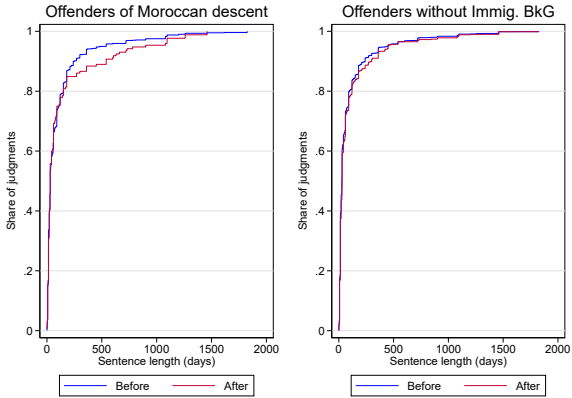
Go back

Impact of shock using different specifications

	Court Decisions			
	Sentence Length			
	(1)	(2)	(3)	(4)
Moroccan descent x Post	100.016**	95.289**	86.307***	87.794***
	(42.586)	(39.108)	(30.089)	(30.234)
Time F.E.	No	Yes	Yes	Yes
District F.E.	No	Yes	Yes	Yes
Crime F.E.	No	No	Yes	Yes
All Indiv. Controls	No	No	No	Yes
Mean before	122.6	122.6	122.6	122.6
Share treated	20%	20%	20%	20%
Observations	11,762	11,353	11,352	11,352

Go back

Effect driven by most severe crimes



Go back

Table 3

Table 3: Spillovers and heterogeneity in salience response of court decisions

Panel A: Suspects with other immigration background				
	Turkish	Eastern-Europe	Non-Western	North-Afr.
Other descent	- 7.695	- 11.350	- 1.807	250.514*
x Post	(29.207)	(22.550)	(20.846)	(122.052)
Mean before	117.8	82.01	115.9	85.84
Share treated	12.9%	21.7%	46.9%	1.85%
Observations	10,171	10,634	16,400	9,199
Panel B: Max possible sentence length, terciles				
	T1	T2	T3	
Moroccan descent	14.142	12.115	248.992***	
x Post	(8.932)	(43.244)	(71.540)	
Mean before	32.11	98.25	254.1	
Max. sentence	1620	3650	10950	
Observations	3,069	5,403	2,880	
Panel C: Court characteristics				
	Minority judges	Female judges	Top 25% experience	Mor. suspects before
Above median:				
Moroccan descent	102.494**	71.523**	69.179	43.682*
x Post	(44.281)	(30.059)	(47.293)	(23.897)
Below median:				
Moroccan descent	78.204**	100.466**	91.677**	99.276*
x Post	(37.418)	(41.555)	(36.749)	(53.212)
Chow Test (p-value)	0.651	0.359	0.348	0.033
Mean share > median	0.040	0.599	0.255	0.140
Mean share < median	0.021	0.541	0.214	0.059
Observations > median	5,392	4,822	5,863	4,698
Observations < median	5,964	6,534	5,493	6,658

Notes: The table shows the estimates of coefficient β_3 in Equation (1), where the outcome is sentence length conditional on imposing a prison sentence (at first instance). In Panel A, instead of using *Moroc* as the treatment group we use suspects with an immigration background that is Turkish, Eastern-European, non-Western (all countries except for Europe, Northern-America and Oceania) and the UN-subregion North-Africa (Algeria, Egypt, Libya, Sudan, Tunisia and Western Sahara) as treated group. In these analyses, suspects with a Moroccan immigration background are excluded. Panel B splits the sample into terciles by crime severity (measured by maximum sentence length possible) from the least (T1) to most severe crimes (T3). Panel C splits the sample at the median for different court characteristics: the share of defendants of Moroccan descent seen in a judicial district before, the share of judges with a (non-western) immigration background, the share of female judges, and the share of judges with experience top 25% of the national distribution. We report p-values from a Chow test assessing whether the treatment effect differs significantly above and below the median for each court characteristic. All regressions include time, district and crime fixed effects and individual controls. Robust standard errors clustered at the judicial district-year level are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Source: Results based on calculations by the authors using micro-level data from Statistics Netherlands.

Go back