SmarterCities

Rio de Janeiro

Ankie van der Zanden
Forensic Data Miner, Knowledge and Expertise Centre
for Intelligent Data Analysis, *Netherlands Forensic Institute*

Adding Intelligence for a Safer City

SmarterCities

Introduction

Ankie van der Zanden

- Master in Mathematics & Informatics
- Internship at Police The Hague
- Data miner at Police Amsterdam
  - Analysis
  - Implement data mining
- Data miner at Netherlands Forensic Institute

NFI

Netherlands **F**orensic **I**nstitute

Part of Ministry of Security and Justice

Provides high-quality forensic services

Kecida

Knowledge and **E**xpertise **C**entre for **I**ntelligent **D**ata **A**nalysis

– Provides intelligent data analysis for public safety sector:

- Tax authorities
- Intelligence agencies
- Justice
- Police & Border police
- Immigration services
- Defence

How We Make Cities Safer

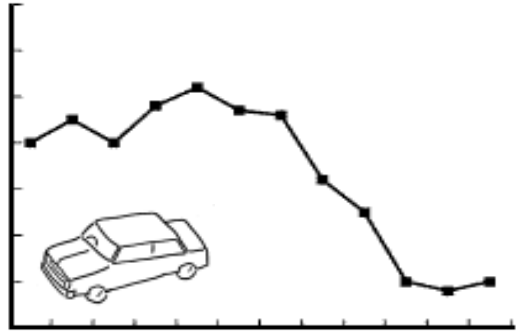
By adding intelligence in existing processes:

- Prevent high volume crime
- Support police investigation
- Detect human trafficking
- Risk assessment for illegal immigrants
- Trace child abuse
- Detect fraud

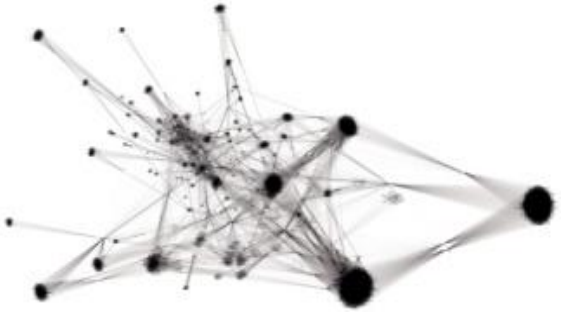
et cetera

Add Intelligence in Processes

Predict and Prevent Crime

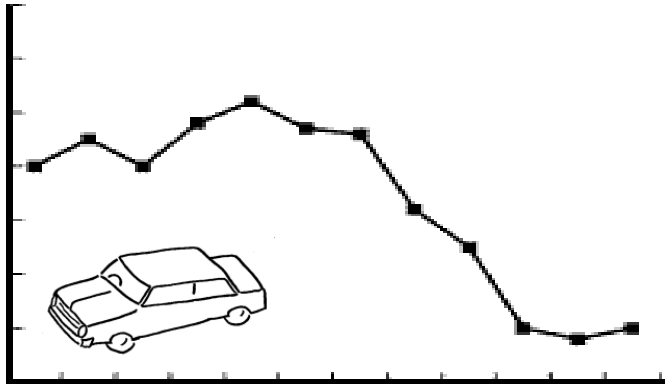


Solving Crime

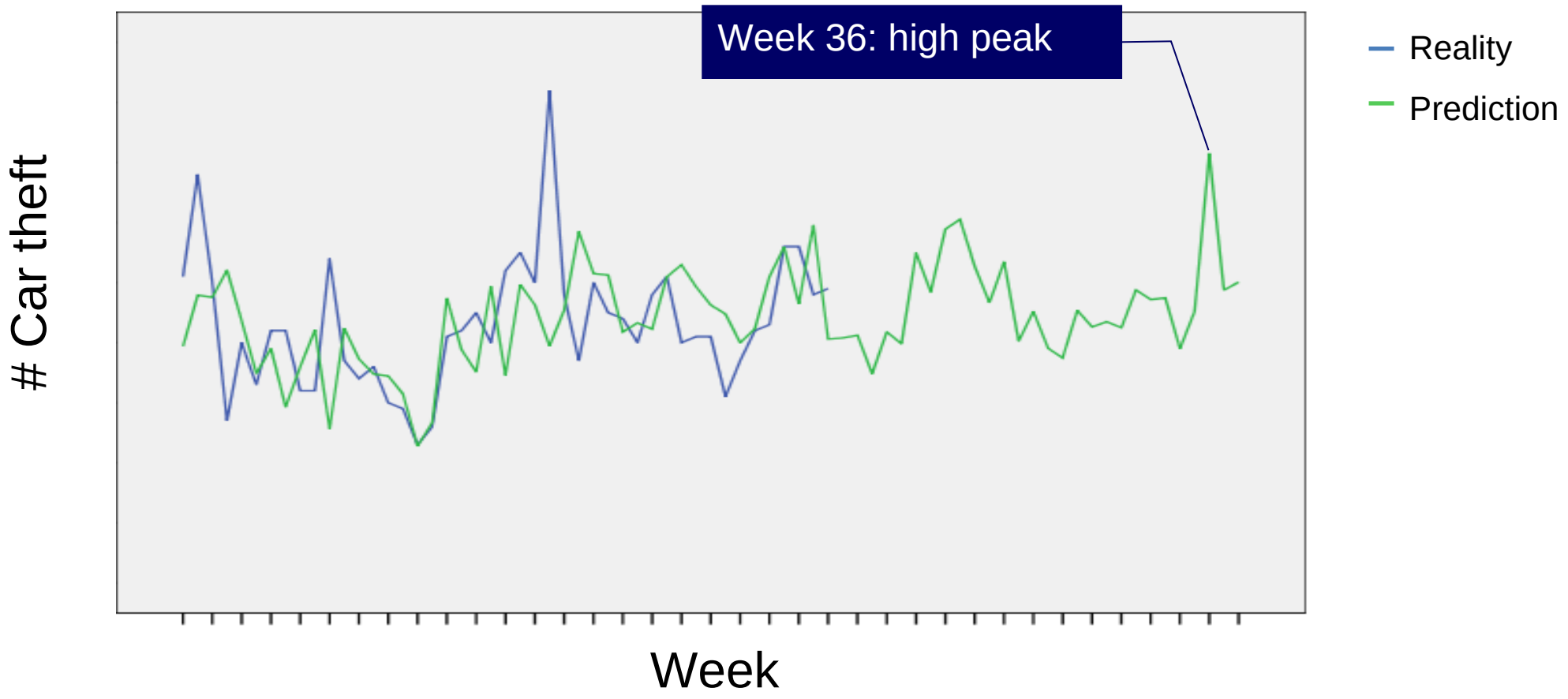


Predict & Prevent Crime

Car Theft in Amsterdam

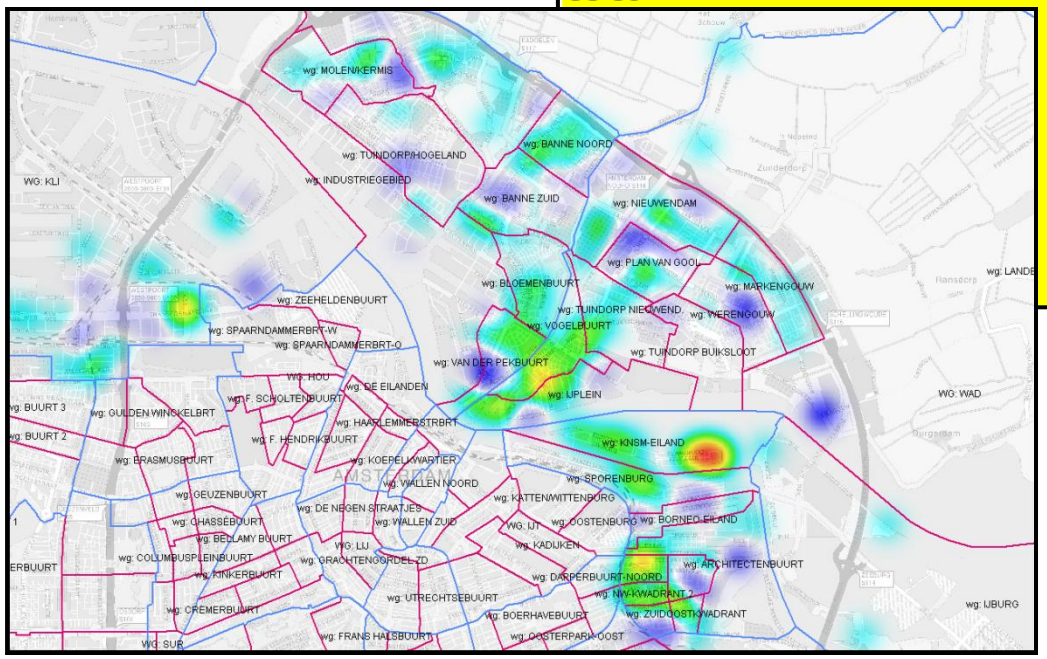


Predict Car Theft

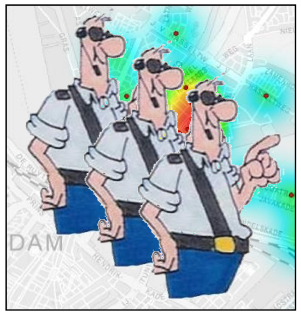


Study Predicted Peak

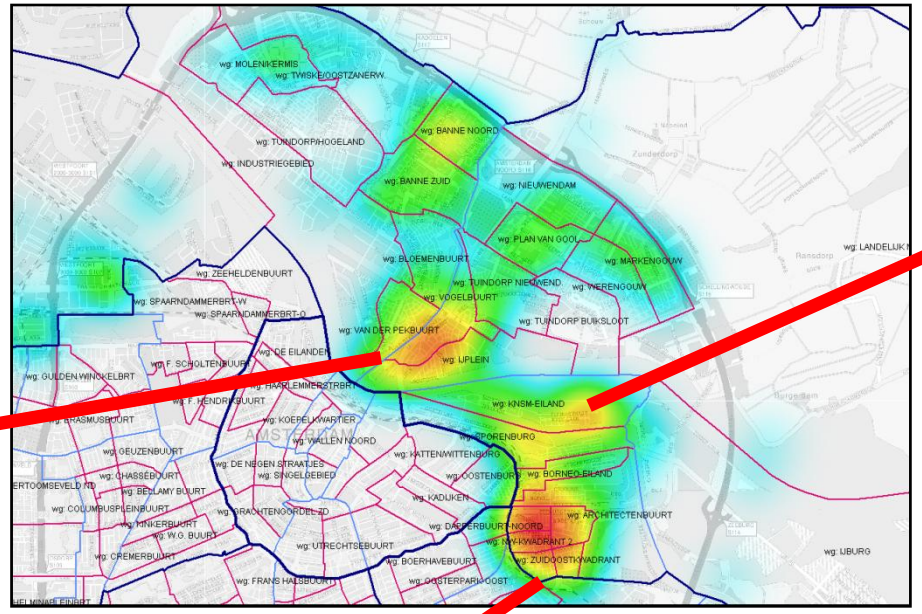
Property	Score	# week 36	% week 36	# basis other weeks	% basis other weeks
		384		8828	
Not a holiday	14.6	345	89.8	6640	75.2
Vehicle type: Hatchback	10.9	44	24.9	581	13.9
00-06	7.3	111	39.4	2067	32.1
	7.3	99	35.1	1793	27.8
	7.1	67	23.8	1072	16.6
	6.7	37	9.6	261	3
	6.3	25	14.1	324	7.8
	5.9	37	13.5	449	7.6
	5.3	78	20.3	1329	15.1
	3.9	46	12	714	8.1
	2.8	18	4.7	170	1.9

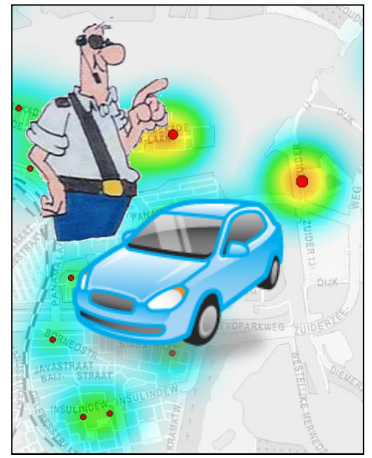


Prevent



Thursday
18.00 - 00.00



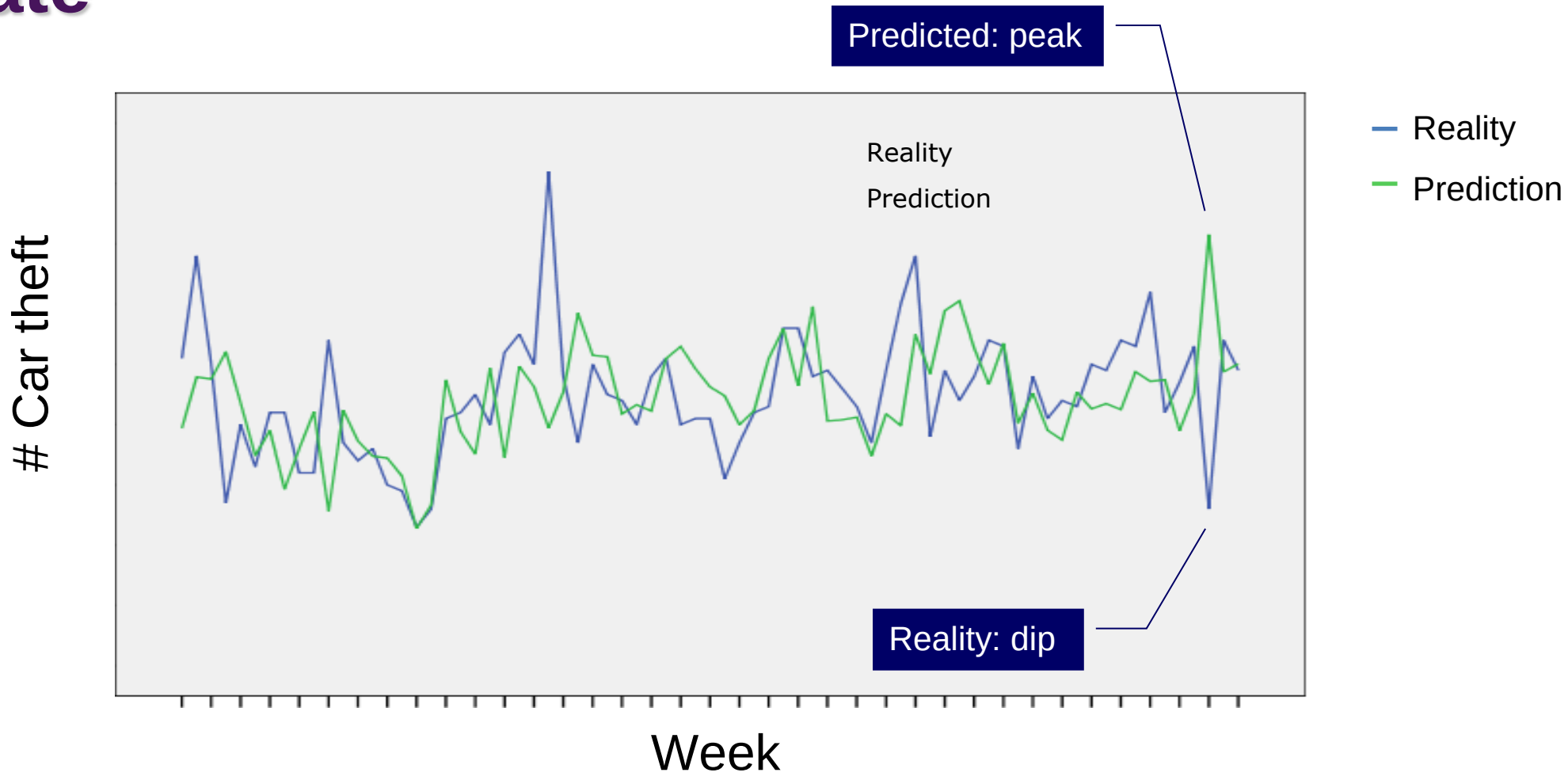


Thursday
00.00 - 06.00 uur

Time/space clustering

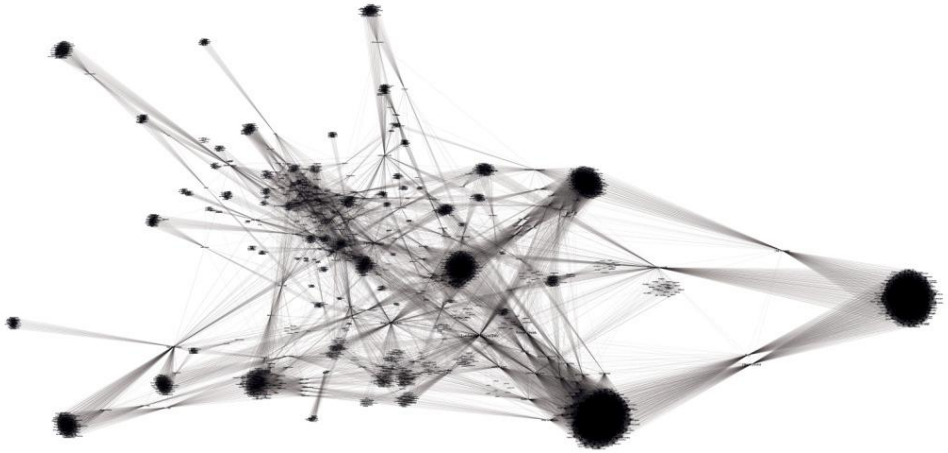
Tuesday & Saturday
12 - 18 uur en
00 - 04 uur

Evaluate

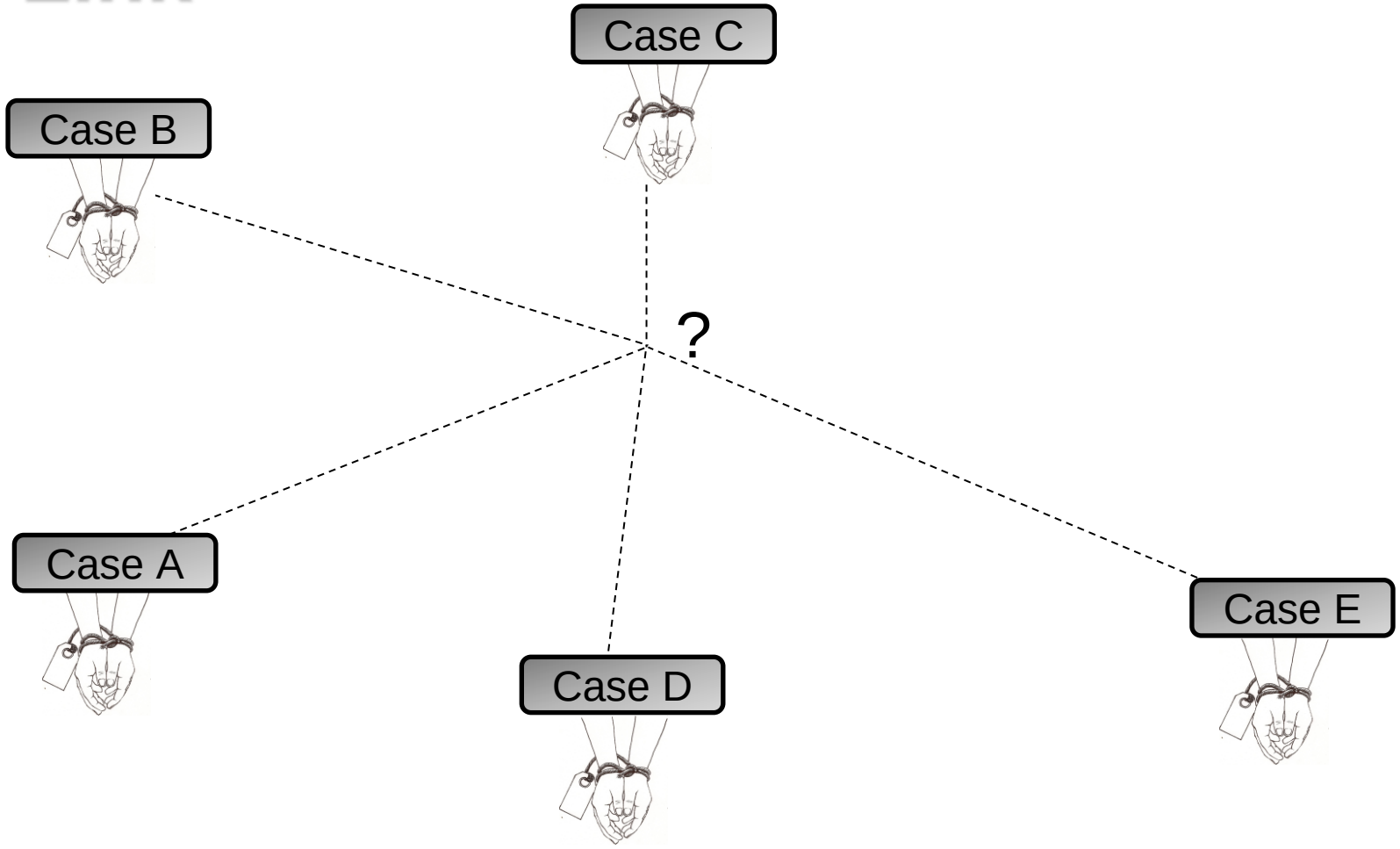

Predicted: peak
Reality
Prediction
Reality: dip
Car theft
Week
Reality
Prediction

Solving Crime

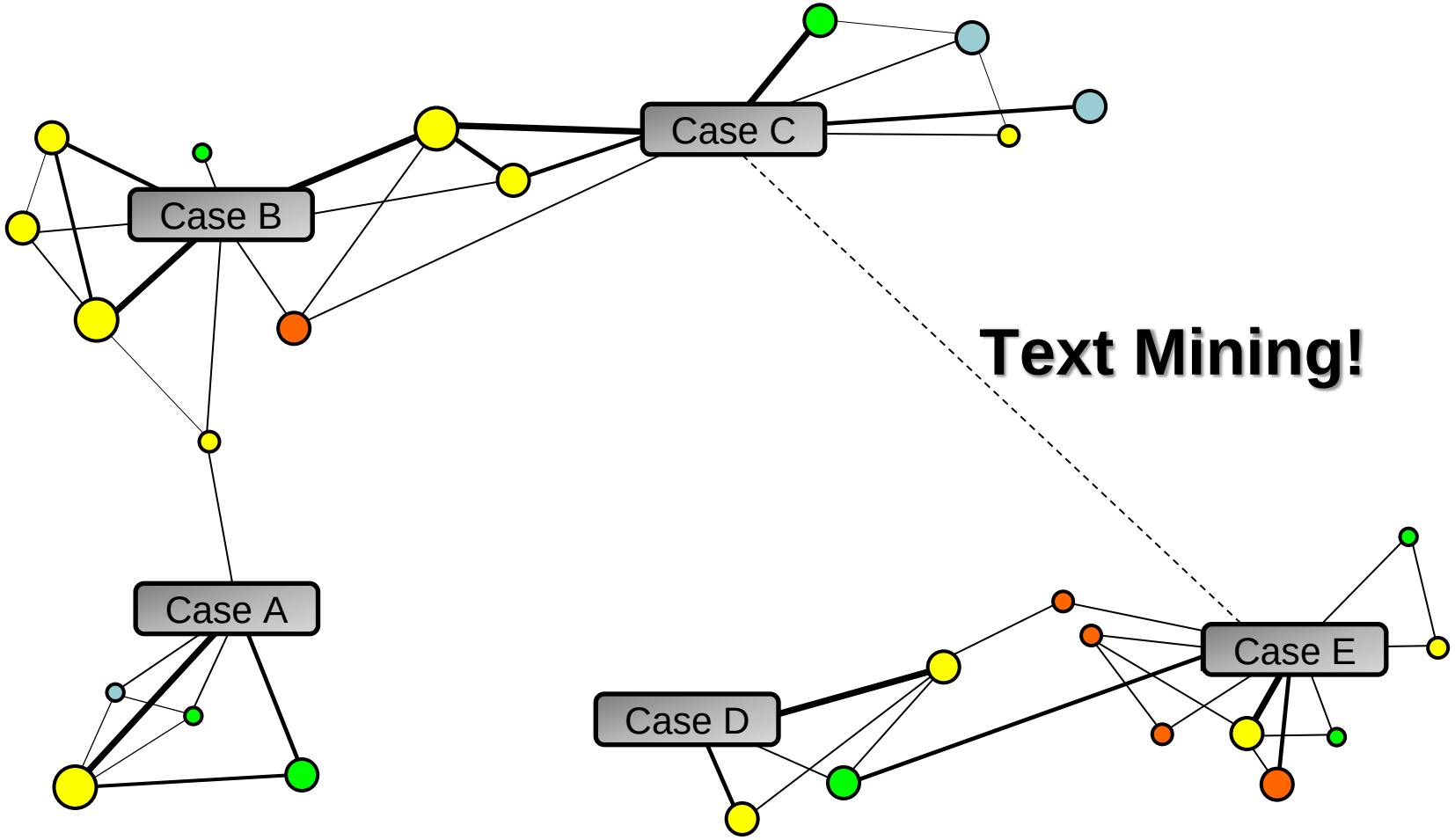
Network Analysis to Link Crimes



Finding a Link



Structured Data



Text Mining

I was on Powell Street at the entrance of the Sunshine hotel, when I spotted a man in the hotel lobby that was acting very suspicious. When a bus, license plate RQC9037, arrived he boarded the bus and left in the direction of Newcastle. The driver was recognized by my colleague as John Doe, the same man who stabbed the woman in the Burger King last week.

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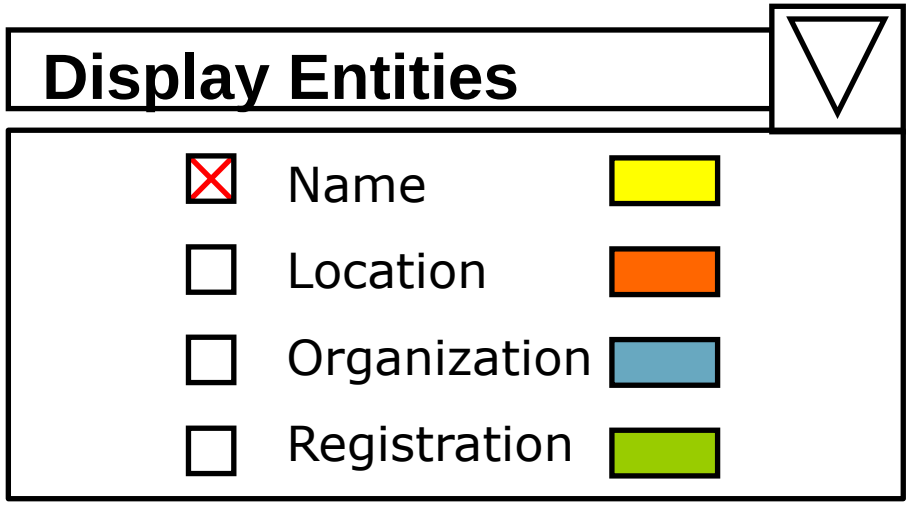

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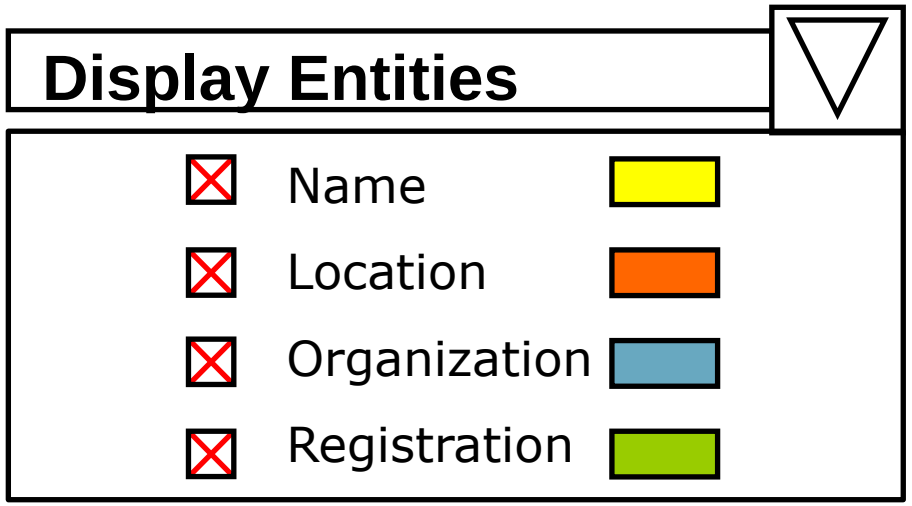

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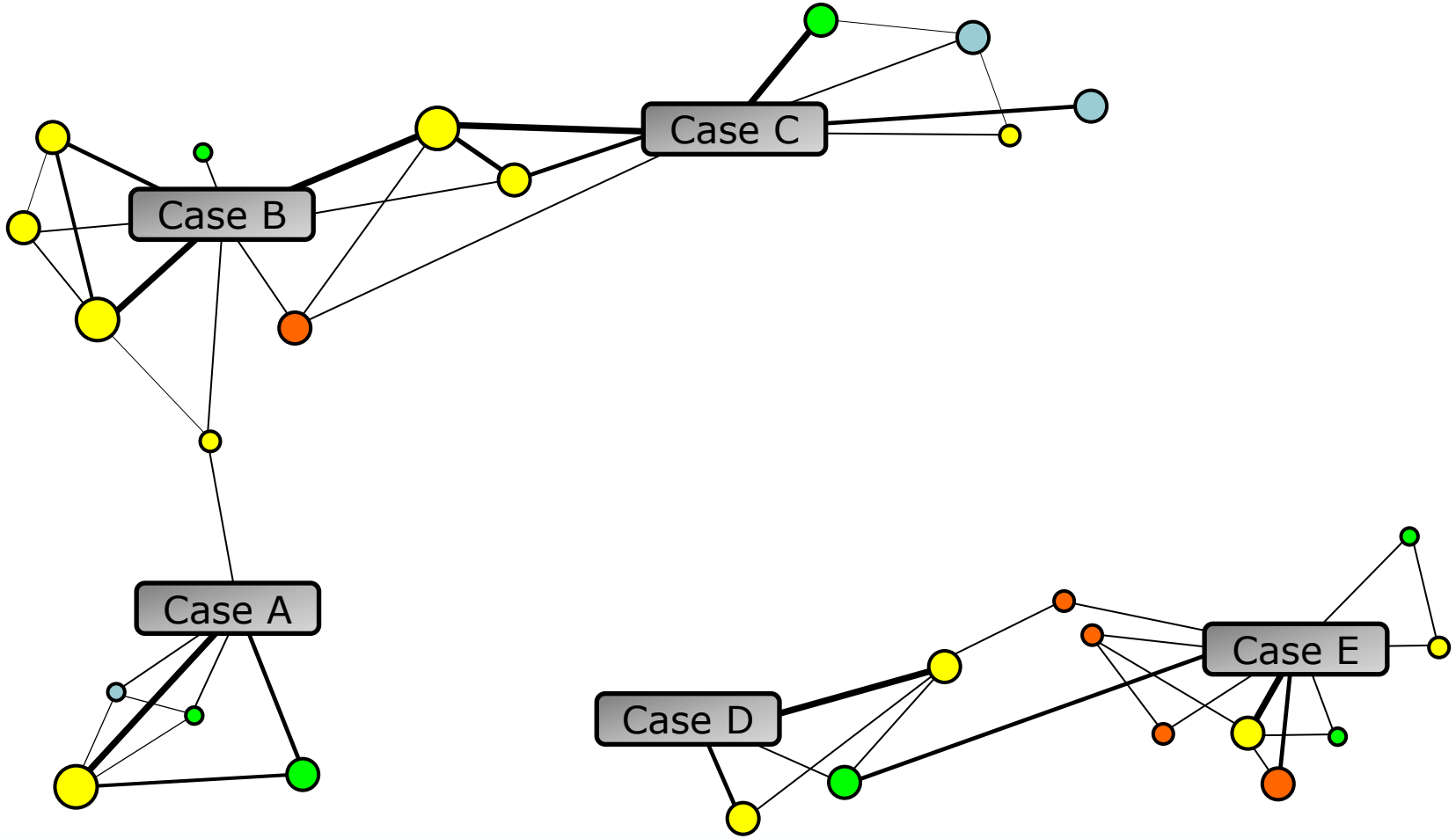

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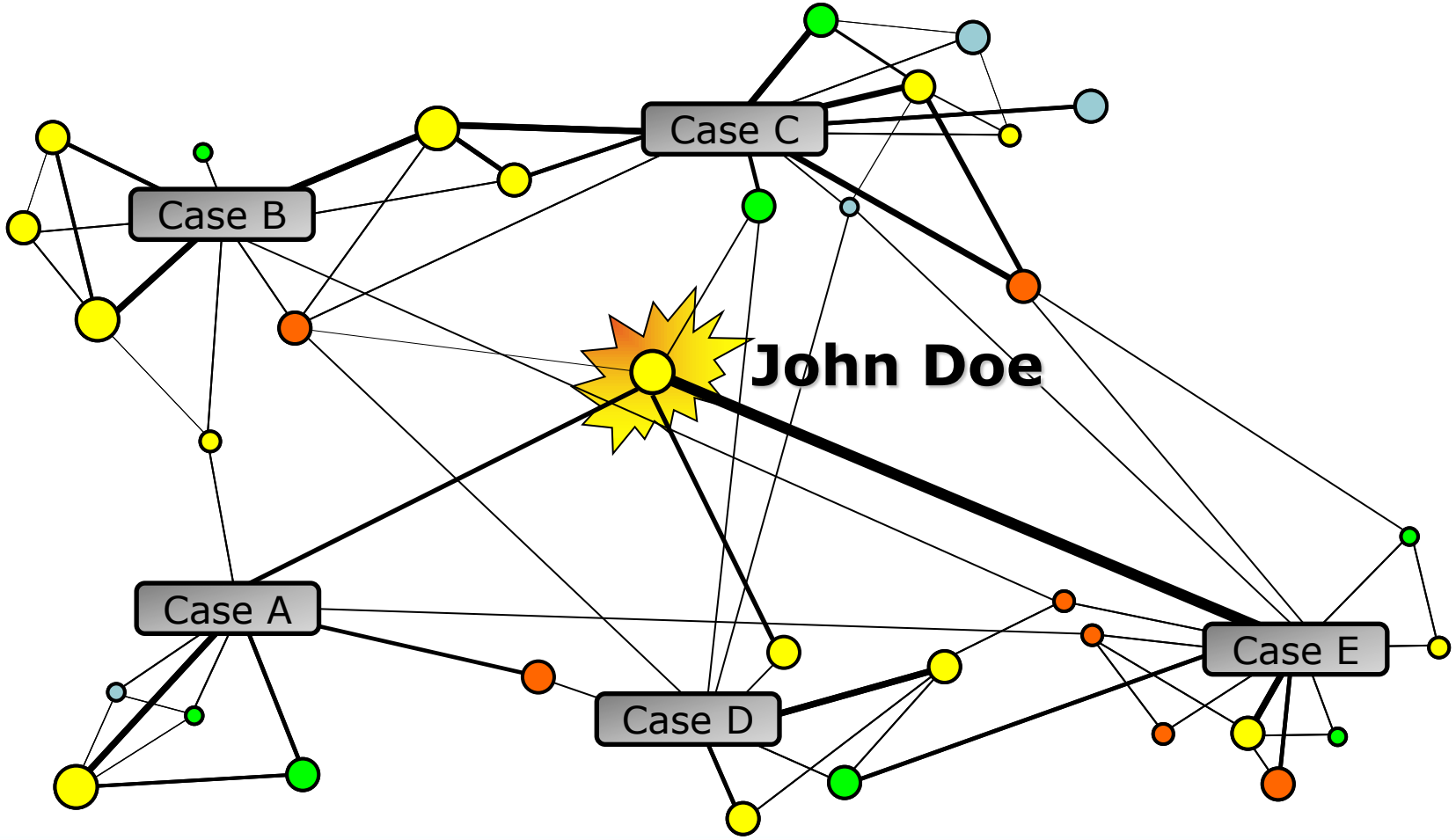

Summarize

- We can prevent high volume crime by prediction and schedule resources
- We can help solving crime by giving useful insight in large data collections
- Intelligent data analysis can add value when used in existing processes
- More text mining needed because text…
  - … is more available
  - … is growing fast
  - … often contains more information
  - … is independent of database restrictions

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