

Exploring UK Crime Networks

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1 Introduction and Motivation

2 Crime Analysis Techniques

3 UK Crime Networks

- Burglary
- Gun Gangs
- Retail Theft

4 Conclusions and Future Work

Abstract

This paper describes our experiences with three different crime networks in the UK: burglary, gun gangs and retail theft. We present an introduction into each of these problems, and highlight some of the issues related to over-simplification of the network analysis.

We also review the term third-generation analysis, and provide some insights into achieving this, but also conclude that it can be an extremely expensive (computational/analytical) undertaking.

Crime Analysis Techniques

- **First Generation**

- Anacpapa charts
- Maps with coloured pins

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- Pajek
- IBM i2 COPLINK2, IBM i2 Analysts Notebook3, ORA
- Detica NetReveal

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- **Third Generation?**

Crime Analysis Techniques

“Social network analysis of the sort we could call third-generation would focus much more intensely on the content of the contacts, on the social context, and on the interpretation of such information.” (Klerks, 2001)

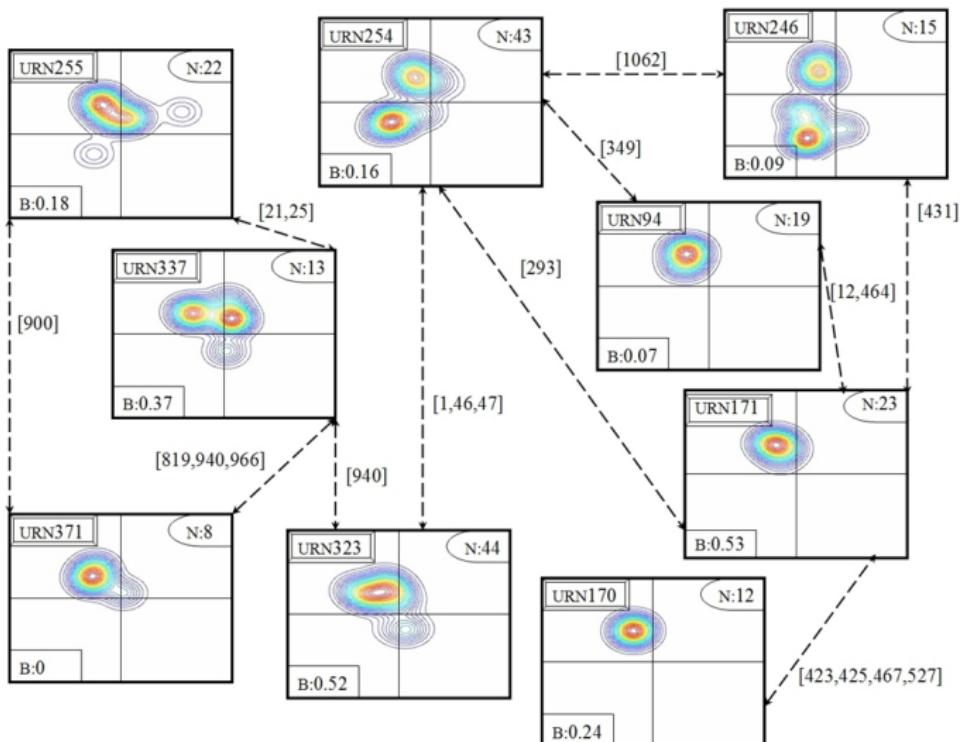
...understanding in a qualitative way the **behaviour, motivations and choices** of the individuals concerned and contributing to a better understanding of vital **social processes, power and affinity structures**.

UK Crime Networks

- ① Burglary
- ② Gun Gangs
- ③ Retail Theft

Burglary

- In conjunction with **West Midlands Police, UK**
- Large network of linked offenders ($n=17000$)
- The picture painted by the initial social network plot is somewhat misleading...
- While betweenness metric useful, need to consider spatial and other features (temporal/frequency) to start to understand the meaning of the links between offenders



Geographical networks of burglars. Each of the 2x2 squares represents an offender, with Unique Reference Number (URN), number of crimes (N) and betweenness value (B). The links between offenders are labelled with dates, as days from the start of the project.

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Gun gang members 'die by age 24'

Young people in Greater Manchester who get involved with gun crime should not expect to live beyond 24, police claim.

The shock statistic has been revealed as part of a new crackdown on gun crime by Greater Manchester Police (GMP).

The operation - dubbed Xcalibre - aims to unite police intelligence across the region, and involve community action groups in the battle against gangs.

GMP says Xcalibre is the force's biggest ever campaign against gun and gang violence.

The life expectancy figures come from comparing the number of active gunmen thought to be in Greater Manchester with the death toll of gang members.

In the last three years, eight people under the age of 20 have been killed by guns on the streets of Manchester.

Seventeen people under the age of 30 have also been killed.



Xcalibre is the largest anti-gang operation GMP has ever launched

**BBC Manchester**

Sport, travel, weather, things to do, features and much more

SEE ALSO:

- * Judge condemns city's gun culture
15 Jul 04 | Manchester
- * Manchester's gang busters
18 Jun 04 | UK
- * Gun crime costs city £7m
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- * Greater Manchester Police
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TOP MANCHESTER STORIES

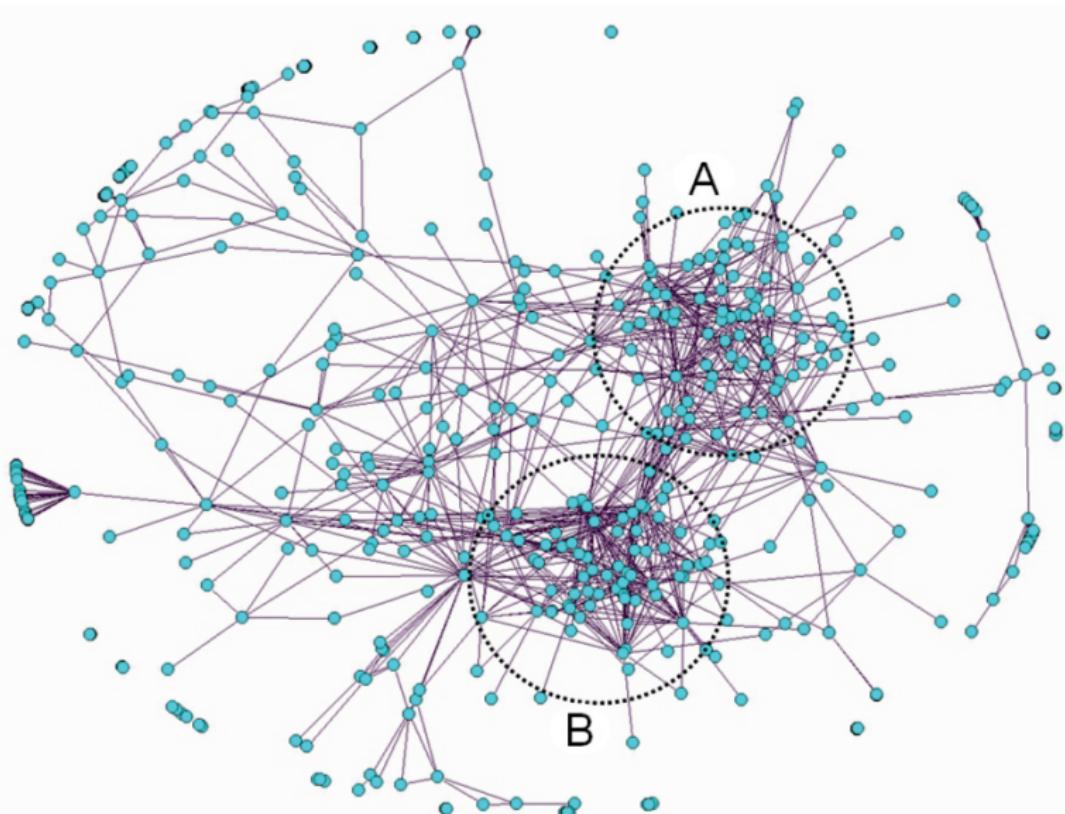
- * Crowds for Nat Lofthouse funeral
- * CCTV of man wanted in rape case
- * Scrapping Nimrod fleet 'perverse'

| News feeds

“ Although many of these incidents have been due to

Gun Gangs

- In conjunction with **Greater Manchester Police, UK**
- Area with a significant gun crime problem, related to gang activity
- Dynamics of four gangs and their associates
- Value of SNA for gang research:
 - Identifying structural holes
 - Betweenness
 - Social capital
- Value of third generation analysis



Links between two rival gangs A and B. In 2000, Gangs A and B were rivals. These later divided in 2001 into Gang C (from A) and into Gang D (from B) in 2004.

Year 2000

Year 2001

Year 2002

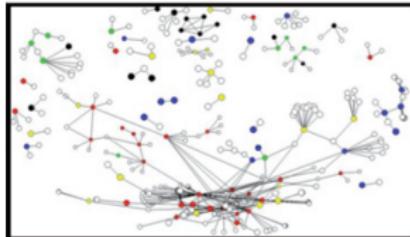
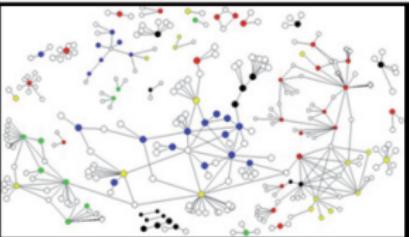
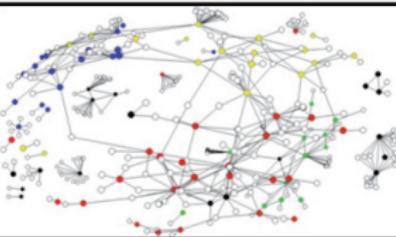
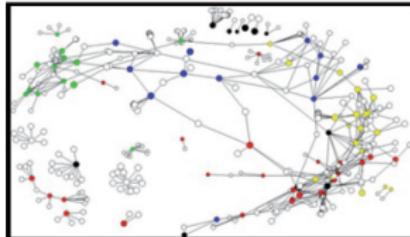
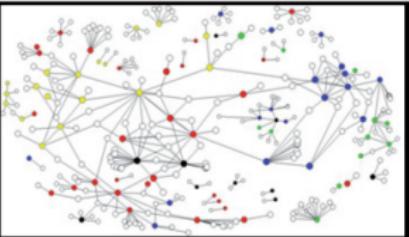
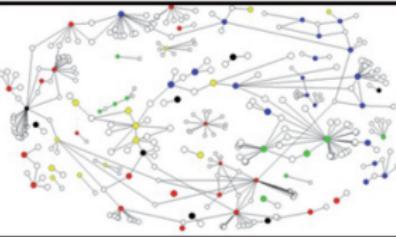
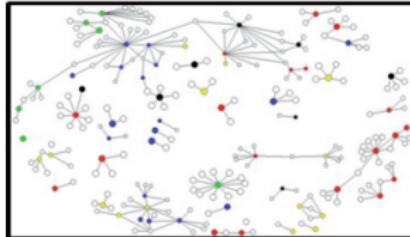
Year 2003

Year 2004

Year 2005

Year 2006

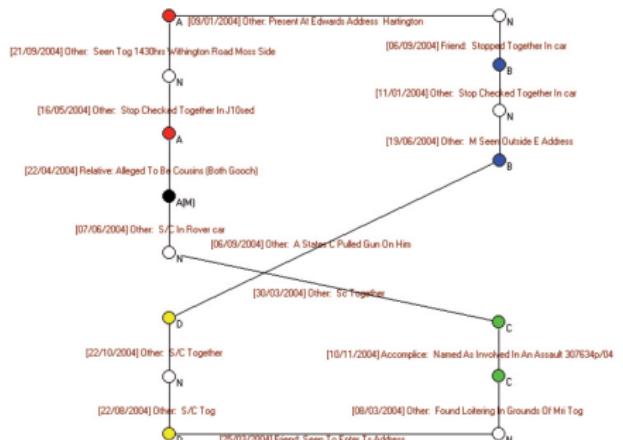
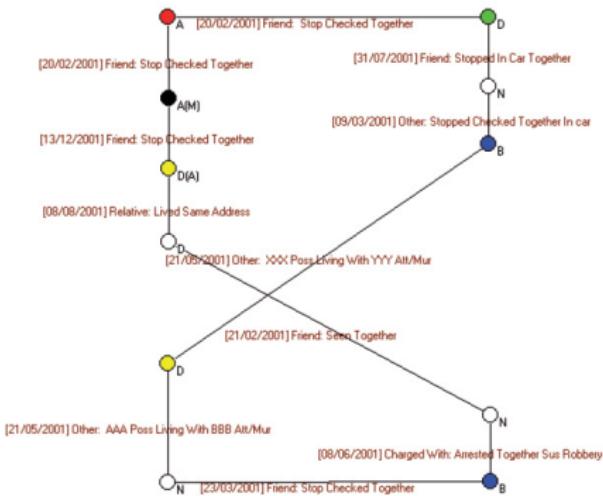
Node	Colour
Gang A	●
Gang B	●
Gang C	●
Gang D	●
Murder	●
Non-gang	○



Specific Gang Roles

- **Leader:**
 - responsible for recruiting new members
- **Provider:**
 - an individual either internal or external to the gang able to supply firearms and/or ammunition
- **Enforcers/Riders:**
 - nominated individuals who are active gunmen for the gang
- **Runners/Dealers:**
 - members of the gang who distribute/supply drugs, usually on the leader's behalf; younger members of the group

Link Analysis



Cycle (2001). The tension is between Gangs A (red), B (blue), C (green) and D (yellow). A(M) is a member of the Gooch gang (Gang A), however they are coloured black to represent the crime of murder.

Gooch 1

ROBBERY - PERSONAL
S.5 PUBLIC ORDER ACT
THEFT/TAKE PEDAL CYCLE
THEFT OF MOTOR VEHICLE
GOING EQUIPPED
ROBBERY - BUSINESS
THEFT OF MOTOR VEHICLE
MAKE OFF W/O PAYMENT
ROBBERY - BUSINESS
ROBBERY - PERSONAL
BREACH: ANTI-SOC. ORDER
THEFT FROM MV
VIOLENT DISORDER
ROBBERY - PERSONAL
BURGLARY OTD OTHER
ROBBERY - BUSINESS
BURGLARY DWELL OTHER

Gooch 2

ROBBERY
ROBBERY
ASSAULT S. 47
THEFT FROM THE PERSON
ASSAULT S. 47
ASSAULT S.18
RACIAL COMMON ASSAULT
DAMAGE OTHER
POSSESS HEROIN
THEFT IN DWELLING
ASSAULT S. 47
POSSESS UNSPEC. DRUG
COMMON ASSAULT
ASSAULT S. 47
WITNESS INTIMIDATION
ASSAULT S. 47
ASSAULT S. 47
RECEIVING STOLEN GOODS
S.5 PUBLIC ORDER ACT
DAMAGE (MOTOR VEHICLE)
ASSAULT S. 47
BREACH: ANTI-SOC. ORDER
MURDER (OVER 1 YEAR)
POSSESS CANNABIS

Gooch 3

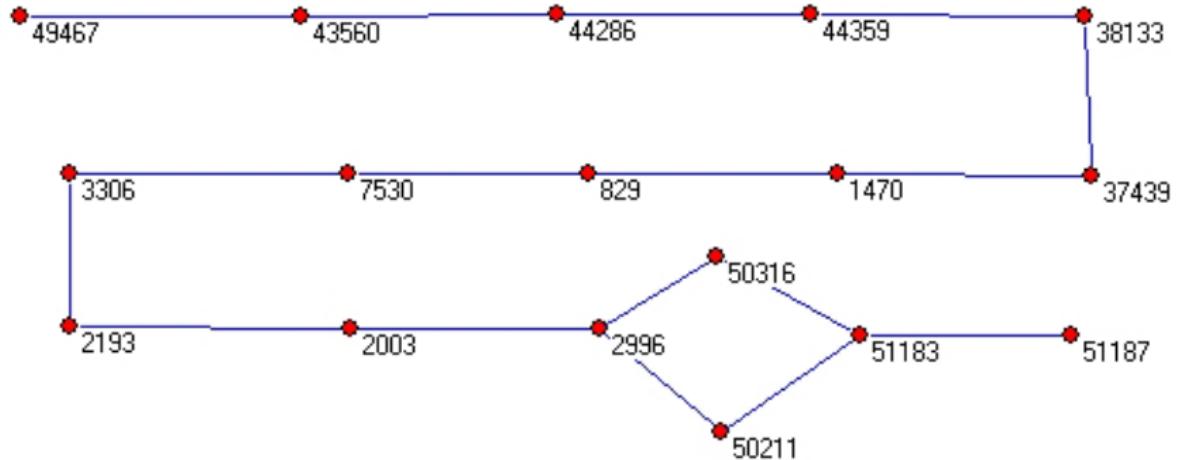
DAMAGE OTHER
OFFENSIVE WEAPON
ROBBERY - BUSINESS
POSSESS CANNABIS
TAKING A MOTOR VEHICLE
ARSON
BURGLARY DWELL OTHER
ATTEMPTED MURDER
ATTEMPTED MURDER
ATTEMPTED MURDER
ROBBERY - PERSONAL
ROBBERY - PERSONAL
ATTEMPTED MURDER
POSSESS FIREARM ETC.
FIREARMS ACT OFFENCES
ATTEMPTED MURDER
ATTEMPTED MURDER
POSSESS FIREARM ETC.
FIREARMS ACT OFFENCES
POSSESS CANNABIS
POSSESS FIREARM ETC.
FIREARMS ACT OFFENCES
FIREARMS ACT OFFENCES
RAPE OF FEMALE UNDER 16

Gun Gangs

- The picture painted by the initial social network plot is somewhat misleading...
- In the gun gangs, the police-held hypothesis of two rival sets of gangs is potentially a misrepresentation of the much more complex sets of smaller cliques and fluid changes within the larger gang structures.
- **Extremely rich dataset;** more processing and analysis to follow

Retail Theft

- Unique database from the **UK's North East Retail Crime Partnership (NERCP)**
- Partnership between:
 - 29 retail chains
 - 11 shopping centres
 - 6 town/city centre partnerships
 - 4 police forces in the NE of England (+ 11 further forces)
- Information on over 30,000 offenders and 102,000 incidents in any 12 month period
- Complex data of retail crime, with a fraction of known gangs, presents its own particular challenges – how to make use of detailed intelligence on individuals (in textual format) and combine with mining of the social networks.



Shortest path between Offender 51196 (Gang SEA) and Offender 49467 (Gang CM).

Conclusions and Future Work

- The picture painted by the initial social network plot is somewhat misleading in all three cases we have presented:
 - **Burglary:** requires spatial data
 - **Gun Gangs:** pre-existing police understanding of the gangs, not complex enough
 - **Retail Theft:** complex, fraction of known gangs, individual intelligence

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- Potential for shaping and influence policy in this area in the UK
- Also see: *Measuring UK Crime Gangs* (ASONAM 2014, S9)

Acknowledgements

- Acknowledge contributions from:
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 - Greater Manchester Police, UK
 - North East Retail Crime Partnership (NERCP)
- Papers and presentations:
<https://github.com/tomcrick/FOSINT-SI2014>
<https://github.com/tomcrick/ASONAM2014>
- Contact: <http://drtomcrick.com>