

# Exploring UK Crime Networks

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# Crime Analysis Techniques

## • First Generation

- Anacpapa charts
- Maps with coloured pins



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# Crime Analysis Techniques

- **First Generation**

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- Maps with coloured pins

- **Second Generation**

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



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# Crime Analysis Techniques

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- **Third Generation?**



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# 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, 2011)*

*...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.*



# Crime Networks

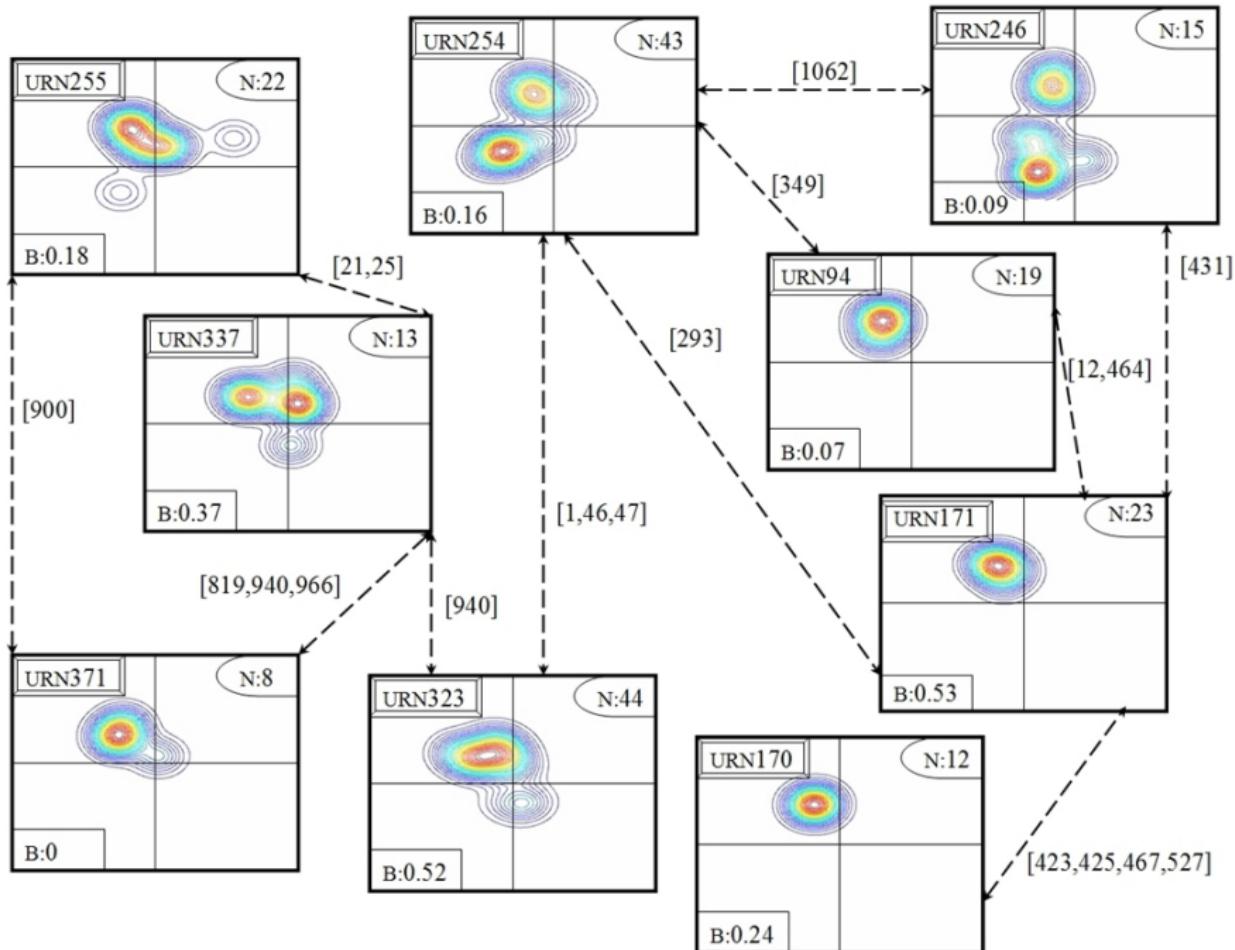
- *Disambiguating networks – the meaning of links:*

- ① Burglary
- ② Gun Gangs
- ③ Retail Theft



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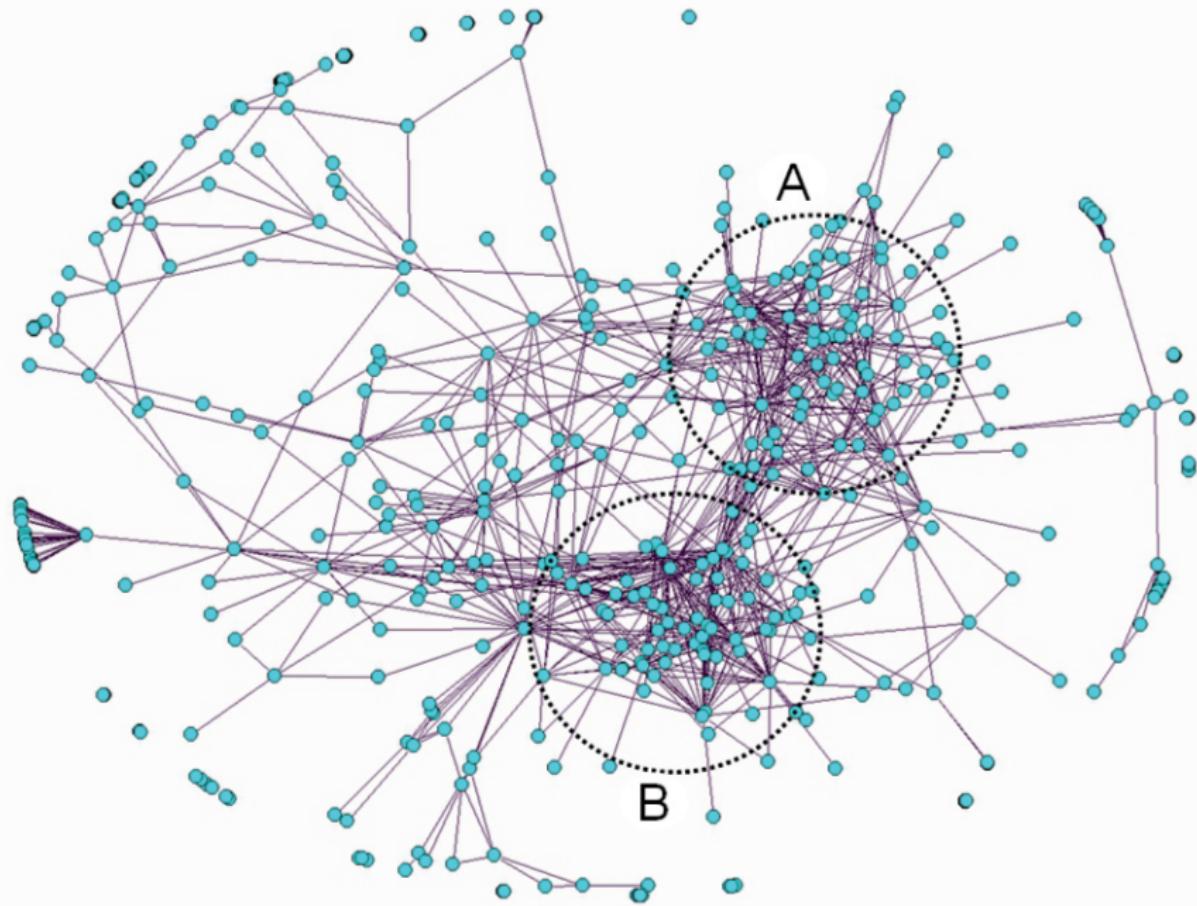
# Burglary

- 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...
- The burglary data required spatial data and other features (temporal/frequency) to start to understand the meaning of the links between offenders



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# 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



# 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



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Year 2000

Year 2001

Year 2002

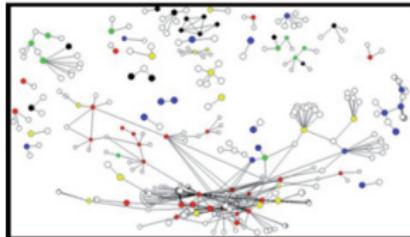
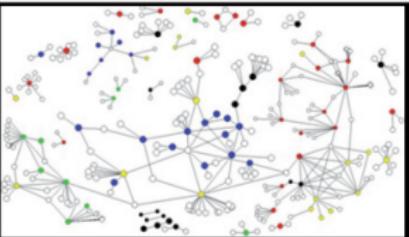
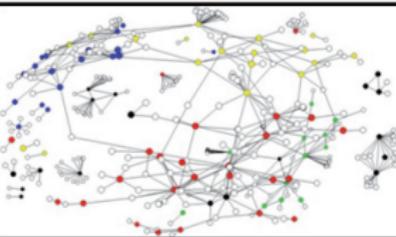
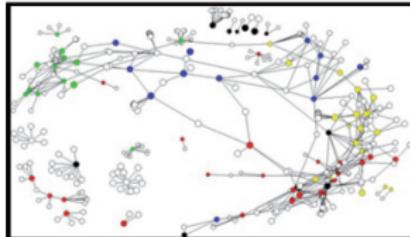
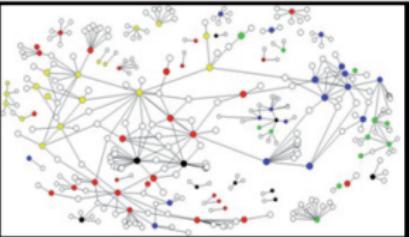
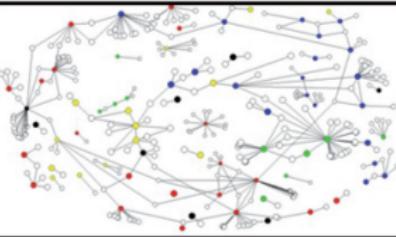
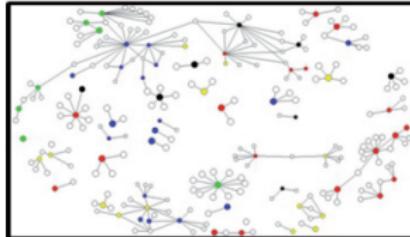
Year 2003

Year 2004

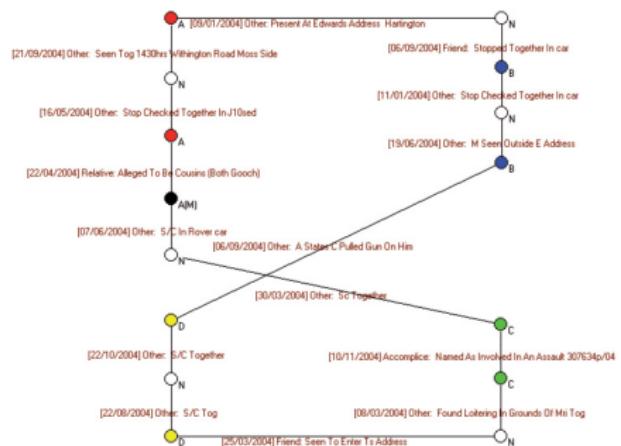
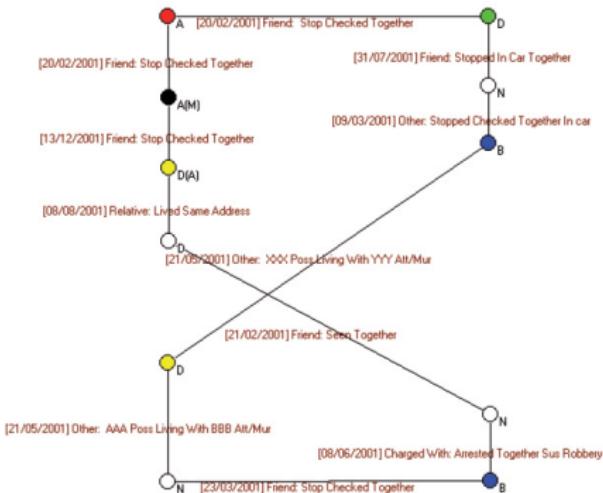
Year 2005

Year 2006

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



# Link Analysis



**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



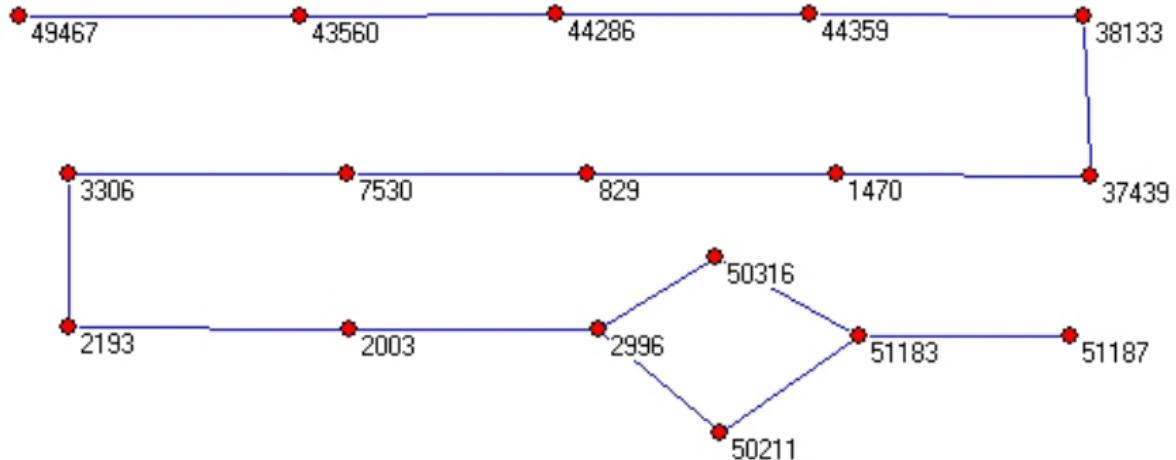
# Retail Theft

- 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.



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# Conclusions and Future Work

- The picture painted by the initial social network plot is quite 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
- How to represent the changing nature of an individual is something we have looked at elsewhere, and will continue to do so
- Also see: *Measuring UK Crime Gangs* (ASONAM 2014, S9)



# Acknowledgements

- Acknowledge contributions from:
  - West Midlands Police, UK
  - 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>



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