

# **CHANGING CRIME-MIX PATTERNS OF OFFENDING OVER THE LIFE COURSE: A COMPARATIVE STUDY IN ENGLAND & WALES AND THE NETHERLANDS**

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# Topics to be covered in this presentation:

- Background
- Aims
- Datasets
- Challenges
- Method of Analysis
- Results
- Comparisons

# Background

- Crime Mix – Patterns of criminal behaviour in terms of the nature of their offending.
- Specialised and Versatile Offenders.
- Criminal lifestyle specialisation.
- LCA – Latent Class Analysis categorises offenders into offending groups.
- LTA – Latent Transition Analysis allows movement of offenders between groups.

# Background

- LTA of England and Wales and Netherlands conviction data.
- Preliminary results presented last year show that each dataset have versatile and specialist crime mix offending groups.
- Similarities and differences in the make up of crime mix offending groups and transitions for each country.

# Aims

- Identify any common patterns of offending behaviour between England and Wales and The Netherlands.
- Do the probabilities of transitions vary?
- Early work has used a binary variable to indicate if an offence has occurred.
- Further analysis has now used the *counts* of offences occurring at each time period.
- Contributing to cross national research in Europe

# Datasets

- *Netherlands Data*
  - Data from the Criminal Careers and Life-Course Study (CCLS)
  - 4 % random sample of all offenders convicted in 1977 starting at age 12 followed till 2002
- *England and Wales Data*
  - The Offenders Index (OI) database
  - Conviction histories of offenders in 8 birth cohorts starting at 1953 to 1988
  - Data collected from age 10 and followed to 2008
  - Standard list offences

# Challenges in cross national comparisons

- Different justice systems
- Different methods of coding offences
- Sampling strategies to align datasets
  - *Common start age of offending*
  - *Similar year of birth distribution*
  - *Conviction 1977*
  - *Alignment of offence categories*

# Offence Categories

Table 1: Number of offenders convicted for each age period in the Netherlands

Offence	12-16 years	17-21 years	22-26 years	Total	% of total offences
Murder/ Violence	99	539	510	1148	14.92
Firearms	5	108	161	274	3.56
Authority	10	145	127	282	3.67
Sexual Offences	102	191	140	433	5.63
Blackmail	7	46	33	86	1.12
Robbery	19	135	115	269	3.5
Burglary/ Theft	705	1260	866	2831	36.79
Fraud/ Forgery	82	297	278	657	8.54
Criminal Damage	87	394	275	756	9.83
Drugs	5	185	314	504	6.55
Pub Order	43	257	154	454	5.9
<b>Total</b>	1164	3557	2973	7694	100

Table 2: Number of offenders convicted for each age period in England and Wales

Offence	12-16 years	17-21 years	22-26 years	Total	% of total offences
Murder/ Violence	113	368	261	742	13.57
Firearms	16	81	44	141	2.58
Authority	11	83	44	138	2.52
Sexual Offences	18	48	25	91	1.66
Blackmail	3	3	1	7	0.13
Robbery	21	44	20	85	1.55
Burglary/ Theft	673	1017	593	2283	41.75
Fraud/ Forgery	136	418	271	825	15.09
Criminal Damage	197	414	249	860	15.73
Drugs	5	122	123	250	4.57
Pub Order	0	23	23	46	0.84
<b>Total</b>	1193	2621	1654	5468	100

The Burglary/Theft category combines more offences than any other category

Note: offenders can contribute to more than one offence category

N: 2222 Offenders



# Method of Analysis

- Latent Transition Analysis on the 11 binary crime types for the three 5 year age periods
- Five latent *states* chosen using BIC.
- Examine whether an offender is convicted or not for each of the offence categories

# Results of LTA using binary crime type variable

The Netherlands estimated probabilities  $p_{js}$  of an offender in each state having a conviction in the specified offence

Netherlands	State				
	1	2	3	4	5
Size	0.3694	0.2357	0.1949	0.1061	0.0939
Murder/Violence	0.0111	0.1713	0.0951	0.9983	0.0352
Firearms	0	0.0279	0.0444	0.1410	0.1162
Authority	0	0.0442	0.0623	0.1402	0.0518
Sexual Offences	0.0295	0.1233	0.0745	0.0924	0.0070
Blackmail	0.0019	0.0022	0.0190	0.0673	0.0088
Robbery	0	0	0	0.3804	0
Burglary/Theft	0.2236	0.0737	0.9054	0.8082	0.6658
Fraud/Forgery	0.0218	0.0332	0.1642	0.2538	0.2529
Criminal Damage	0.0097	0.1169	0.2135	0.329	0.0616
Drugs	0.0001	0.0252	0.0112	0.1601	0.5373
Public Order	0.0031	0.0560	0.1307	0.2318	0.0392

Figures in lighter shading are greater than or equal to 0.1 but less than 0.5; those in darker shading are greater or equal to 0.5.

England and Wales estimated probabilities  $p_{js}$  of an offender in each state having a conviction in the specified offence

E&W	State				
	1	2	3	4	5
Size	0.3129	0.1914	0.1880	0.1828	0.1250
Murder/Violence	0.0082	0.2478	0.044	0.0397	0.3664
Firearms	0	0.0395	0.0025	0.0036	0.0998
Authority	0.0025	0.0514	0.006	0.0028	0.082
Sexual Offences	0	0.0354	0.0028	0.0107	0.0351
Blackmail	0	0.0013	0.0007	0.0017	0.0028
Robbery	0	0.0111	0.0047	0.0098	0.0637
Burglary/Theft	0.0019	0.093	0.9992	0.1046	0.9374
Fraud/Forgery	0.0192	0.1494	0.1557	0.0376	0.4243
Criminal Damage	0.0155	0.2459	0.0818	0.071	0.39
Drugs	0.0026	0.1094	0.005	0.0015	0.1164
Public Order	0	0.0255	0	0	0.0162

Figures in lighter shading are greater than or equal to 0.1 but less than 0.5; those in darker shading are greater or equal to 0.5.

# Crime Mix Groups (binary crime types)

Netherlands	Crime Mix Groups
1 –	Non-offending/low offending
2 –	Low violence, sexual offences and criminal damage offending
3 –	Burglary and theft offending
4 –	Versatile and serious offending
5 –	Drugs and burglary/theft offending

E+W	Crime Mix Groups
1 –	Non offending/low offending
2 –	Low violence, drugs, fraud/forgery, criminal damage offending
3 –	Burglary theft offending
4 –	Low burglary theft offending / non-offending
5 –	Versatile and higher offending

# Transition Probabilities

Netherlands estimated transition probabilities from one age period to the next

		17-21 years				
	State	1	2	3	4	5
	1	0.1006	0.2901	0.3694	0.1207	0.1192
	2	0.003	0.9764	0.0044	0.0146	0.0015
12-16 years	3	0.0002	0.172	0.3541	0.435	0.0387
	4	0.0017	0.2258	0.3826	0.3875	0.0024
	5	0.0141	0.035	0.0127	0.0107	0.9276

England and Wales estimated transition probabilities from one age period to the next

		17-21 years				
	State	1	2	3	4	5
	1	0.3406	0.0024	0.6044	0.0001	0.0526
	2	0.0038	0.0071	0.0017	0.8336	0.1538
12-16 years	3	0.0006	0.0012	0.0691	0.5246	0.4045
	4	0.0286	0.8112	0.0008	0.0001	0.1594
	5	0.0231	0.1309	0.0004	0.0144	0.8311

		22-26 years				
	State	1	2	3	4	5
	1	0.0022	0.0105	0.1442	0.1741	0.6691
	2	0.1742	0.8246	0.0002	0.0004	0.0005
17-21 years	3	0.3826	0.2188	0.1999	0.1608	0.038
	4	0.0006	0.184	0.1785	0.4245	0.2124
	5	0.2143	0.0084	0.0004	0.0574	0.7195

		22-26 years				
	State	1	2	3	4	5
	1	0.0001	0.4746	0.5241	0.0002	0.0011
	2	0.5676	0.3513	0.0104	0.0474	0.0233
17-21 years	3	0.8703	0.0019	0.0956	0.0066	0.0257
	4	0.7956	0.0121	0.1094	0.0742	0.0086
	5	0.0057	0.3163	0.1207	0.0647	0.4926

# Summary of LTA using binary crime type variable

- Both datasets show desistance from all four latent states in the second transition
- High probability of movement into the burglary/theft group from the non offending group at age 17-21 years.
- Small number of offenders who show escalation with early onset.
- Offenders who start in the most versatile offending group appear to persist with offending
- Evidence of late onset offenders
- Big differences in initial state sizes particularly for non offending group

# Results of LTA using counts of offences in five year periods

The Netherlands estimated mean number of offences for each offence category in a 5 year period

Netherlands	State				
	1	2	3	4	5
Size	0.3513	0.2236	0.2098	0.1274	0.0879
Murder/Violence	0.0105	0.2557	0.0636	0.9614	0.2676
Firearms	0.0002	0.043	0.0021	0.1581	0.182
Authority	0.0003	0.0613	0.0173	0.1779	0.0703
Sexual Offences	0.0286	0.1827	0.0534	0.1161	0.0076
Blackmail	0.002	0.0051	0.004	0.0728	0.0185
Robbery	0.0001	0.0155	0.0005	0.2578	0.0928
Burglary/Theft	0.1749	0.1991	1.0875	2.209	1.8243
Fraud/Forgery	0.0182	0.034	0.1106	0.2976	0.4207
Criminal Damage	0.0097	0.1382	0.1214	0.5308	0.0555
Drugs	0.0031	0.0763	0.0023	0.0786	0.8347
Public Order	0.0005	0.0775	0.0585	0.3716	0.0285
Sum of offences	0.2481	1.0884	1.5212	5.2317	3.8025

England and Wales mean number of offences for each offence category in a 5 year period

E&W	State				
	1	2	3	4	5
Size	0.6311	0.1862	0.0905	0.0486	0.0436
Murder/Violence	0.0449	0.1865	1.1948	1.1152	0.223
Firearms	0.0021	0.0135	0.0964	0.19	0.0789
Authority	0.013	0.0059	0.1252	0.1638	0.0491
Sexual Offences	0.0109	0.041	0.1054	0.0648	0.014
Blackmail	0.0003	0.005	0.0012	0.0043	0.0057
Robbery	0.0043	0.0783	0.05	0.1038	0.0241
Burglary/Theft	0.3414	3.6452	0.9477	8.1592	1.4893
Fraud/Forgery	0.0657	0.3812	0.195	1.6518	1.4575
Criminal Damage	0.0738	0.3106	0.8147	1.2089	0.2113
Drugs	0.0133	0.0042	0.0325	0.1839	1.2951
Public Order	0.0011	0.0009	0.0735	0.0231	0.0037
Sum of offences	0.5708	4.6723	3.6364	12.8688	4.8517

# Crime Mix Groups (Counts of crime types)

Netherlands	Crime Mix Groups
1 –	Non-offending
2 –	Low rate offending (violence, sexual offences and criminal damage)
3 –	Low rate Burglary and theft offending
4 –	High rate versatile and serious offending
5 –	Mid rate drugs and burglary/theft offending

E&W	Crime Mix Groups
1 –	Non-offending
2 –	Low rate burglary and theft offending
3 –	Low rate versatile
4 –	High rate versatile and serious offending
5 –	Mid rate drugs and burglary/theft offending

# Transition Probabilities

Netherlands estimated transition probabilities from one age period to the next

		17-21 years				
State		1	2	3	4	5
	1	0.1169	0.343	0.3386	0.0914	0.1101
	2	0.003	0.9884	0.006	0.0018	0.0008
12-16 years	3	0.0002	0.0631	0.2767	0.5955	0.0646
	4	0.0018	0.0117	0.298	0.6875	0.001
	5	0.1003	0.1244	0.1596	0.1528	0.4629

England and Wales estimated transition probabilities from one age period to the next

		17-21 years				
State		1	2	3	4	5
	1	0.6688	0.1336	0.14	0.012	0.0456
	2	0.2421	0.3486	0.1908	0.1819	0.0365
12-16 years	3	0.0035	0.0128	0.5168	0.3613	0.1057
	4	0.1095	0.0875	0.1081	0.6938	0.001
	5	0.0654	0.6976	0.0703	0.1009	0.0657

		22-26 years				
State		1	2	3	4	5
	1	0.0006	0.5944	0.0015	0.001	0.4025
	2	0.2987	0.7007	0.0003	0.0001	0.0002
17-21 years	3	0.5725	0.1279	0.186	0.0538	0.0598
	4	0.0309	0.2123	0.0332	0.5603	0.1633
	5	0.1018	0.0015	0.0012	0.0016	0.8939

		22-26 years				
State		1	2	3	4	5
	1	0.8909	0.0215	0.037	0.0021	0.0485
	2	0.4211	0.3265	0.0816	0.0795	0.0913
17-21 years	3	0.5956	0.0102	0.3208	0.0278	0.0456
	4	0.0395	0.2628	0.1464	0.3526	0.1988
	5	0.3564	0.0006	0.0662	0.0706	0.5062



# Binary vs Count

- Similarities
  - Biggest group always non-offending
  - Common crime mix groups in all models
  - Majority of offending occurs at 17-21 years
  - De-escalation and desistance mainly occurs in second transition
  - Small number of offenders who start in the corresponding higher rate and versatile offending group show persistence and continue to offend.

# Binary vs Count

- Differences
  - Model output statistics BIC value varies
  - More information gained from using the counts of offences.
  - England and Wales has fewer offenders convicted over the three age periods in the binary model than the Netherlands
  - Possible to identify that England and Wales has higher frequency of offences using the count model

# End of Presentation

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