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Maintaining Basic Command Unit and Crime and Disorder Partnership families for comparative purposes: 1 April 2003 results

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The views expressed in this note are those of the authors, not necessarily those of the Home Office (nor do they reflect Government policy).

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Background

In January 2000, the Home Office first published local-level crime statistics for the 318 Basic Command Units (BCUs) covering England and Wales. In July 2000, work was carried out to list the 376 Crime and Disorder Reduction Partnership (CDRP) areas in England and Wales in groupings, or families (Leigh *et al.*, 2000). These families were based on socio-economic and demographic factors that were shown to correlate geographically with the level of crime and disorder within a locality. These families were intended to be used:

- to provide a basis for the national publication of crime statistics at a local level;
- to help CDRPs identify which partnerships in their family have the lowest crime rates and, over time, are most successful at reducing crime, so that they can learn lessons from them;
- to help forces and police authorities undertake best value reviews by enabling them to compare local-level performance across a range of functions or processes; and
- to assist HMIC inspections at BCU level.

In July 2000, the Home Office published crime statistics organised by CDRP family (Povey *et al.*, 2000). A need for a similar grouping was identified for BCUs, so that publications of crime statistics at this level could also be organised by family. However, BCU boundaries are chosen according to operational policing needs, and do not necessarily coincide with the CDRP boundaries. Thus, in July 2001, Home Office Briefing Note 4/01, *Family Ties: Developing Basic Command Unit Families For Comparative Purposes* (Harper *et al.*, 2001) was published, listing the families of the 318 Basic Command Units. A more detailed report is available on the Home Office RDS website www.homeoffice.gov.uk/rds (Harper *et al.*, 2002). A subsequent maintenance of family membership is documented at the Home Office RDS website <http://www.homeoffice.gov.uk/rds/pdfs2/basiccommand.pdf> (Sheldon *et al.*, 2002).

Whilst CDRP boundaries remain unchanged, the BCU boundaries have been changed a number of times since the initial publication of BCU-level crime data organised by family. Some BCU areas were entirely reorganised, usually resulting in a reduction in the number of BCUs, with several smaller areas being rearranged into a smaller number of larger BCUs.

Such changes have occurred a number of times – the most recent taking effect from 1 April 2003, those prior to that taking place on 1 April 2002.

The overall objective of this work, then, is to update boundaries, socio-economic data and family membership of the BCUs in the light of changed boundaries.

How the families were maintained

The original families (Briefing Notes 3/00 and 4/01) were created using *Cluster Analysis* (Hartigan and Wong, 1979 and Kohonen, 1989) – a statistical method which groups entities into a number of different families on the basis of a number of variables. Individual entities (here BCUs) are assigned to a family into which they best 'fit' in terms of these variables. The assignment process may require several iterations, since when a family gains a new member, the overall characteristics of that family change slightly. The aim of the analysis is to find a stable set of families, with distinct characteristics, allowing meaningful comparisons to take place between family members.

(i) Variables used

The variables used in the updating process (Box 1) were the same as those used in the original BCU and CDRP analyses. Variable definitions are contained in Harper *et al.*, (2002), *Family Origins: Developing groups of Crime and Disorder Reduction Partnerships and Police Basic Command Units for comparative purposes*.

Box 1: Variables used for the cluster analyses

1. Percentage of young males (16-24)
2. Percentage of minority ethnic population
3. Percentage of single adult households
4. Percentage of single parent households
5. Percentage of student households
6. Percentage of residents living at a different address one year before the 1991 Census
7. Percentage of local authority housing, plus new town renters and housing associations
8. Percentage of terraced housing
9. Percentage of overcrowding
10. Population sparsity
11. Population density
12. Length of A, B and minor roads per head of population
13. Percentage of daytime population (leisure and retail employment)
14. Percentage of young male claimants (of unemployment-related benefits)
15. Percentage of long-term claimants (of unemployment-related benefits)
16. Index of homogeneity
17. Motorway junctions per 1000 population
18. Population per square kilometre

(ii) Maintaining the variables

The values of the variables used remained the same as those used originally (Briefing Notes 3/00 and 4/01), unless the police reported changes to BCUs. Where boundaries changed, existing variables were re-aggregated to the new spatial units.

(iii) Running the cluster analysis

For the updating procedure, cluster analysis was applied to BCUs. However, there were two main constraints:

- the family membership of the BCU remained unchanged (compared with its membership as of 1 April 2002), if there were no changes to its boundaries; and
- the family membership of a BCU was fixed to its corresponding coterminous CDRP – only applicable if there exists a coterminous CDRP.

Allowing for reorganisations, there are currently 269 BCUs in England and Wales (compared with 318 in Briefing Note 4/01, and 275 as of 1 April 2002). There were 15 newly created BCUs, over five police forces. Of these, only Telford and the Wrekin was coterminous with an existing CDRP, and so the 14 others were free to be assigned to new families.

Results

Family membership

The following table shows the average, minimum and maximum family sizes for the current BCUs and CDRPs (excluding airports). For BCUs, the corresponding statistics for 1 April 2002 are shown in brackets for comparison purposes.

	Families	
	BCU	CDRP
Average family size	21 (21)	29
Smallest family	5 (6)	3
Largest family	34 (34)	62

The family membership for each of the 14 BCU families (including the three airports) is shown below. A newly created BCU (of which there are 14) is indicated with a bold **N** following the name. In some cases, the name of the BCU is unchanged, although its boundaries have been altered.

Complete listing of family membership

<p>BCU Family 1 (5) City Bishopsgate Snowhill Metropolitan Camden Westminster Northumbria Newcastle Central</p>	<p>BCU Family 4 (27) Cleveland Middlesbrough GMP North Manchester South Manchester Humberside Kingston upon Hull Merseyside Liverpool North Liverpool South Northumbria Gateshead East Newcastle East Newcastle West Sunderland City Sunderland West Wallsend Nottinghamshire Nottingham South Yorkshire Sheffield Central West Midlands D3 E1 E2 F2 G1 G2 H2 K1 K2 M3 West Yorkshire Bradford North Bradford South Keighley</p>	<p>Leicestershire Leicestershire (West Area) Merseyside Sefton North Wales North Wales – Eastern N Northamptonshire Northamptonshire – Eastern Northern Nottinghamshire Mansfield/Sutton in Ashfield South Notts South Wales Bridgend Vale of Glamorgan West Mercia North Worcestershire N Telford and the Wrekin N West Yorkshire Wakefield Wiltshire Swindon</p>	<p>West Yorkshire Killingbeck N</p>
<p>BCU Family 2 (15) Metropolitan Brent Ealing Greenwich Hackney Haringey Islington Lambeth Lewisham Newham Southwark Tower Hamlets West Midlands D1 E3 F1 F3</p>	<p>BCU Family 5 (28) Cambridgeshire Northern Cheshire Warrington Derbyshire Alfreton (A Division) Chesterfield (C Division) Derby (D Division) Durham Darlington Durham Essex Thurrock GMP Bury Stockport Trafford Wigan Hampshire Havant Kent Swale Lancashire Lancashire Southern</p>	<p>BCU Family 6 (22) Cleveland Hartlepool Langbaugh Stockton Durham Derwentside Easington Sedgefield Wear-Tees Essex Basildon Gwent Caerphilly & Blaenau Gwent N Merseyside St Helens Wirral Metropolitan Barking and Dagenham Northumbria South Tyneside South-East Northumberland Washington South Wales Merthyr Tydfil Neath & Port Talbot Rhondda Cynon Taff South Yorkshire Barnsley Doncaster Rotherham</p>	<p>BCU Family 7 (17) Cheshire Crewe Cumbria Barrow and Kendal Workington and Whitehaven Essex Tendring Gwent Pontypool Hampshire Isle of Wight Humberside East Riding of Yorkshire North Lincolnshire Leicestershire Leicestershire (East Area) Lincolnshire West Lincolnshire Norfolk Norfolk Central / Southern Area North Wales North Wales – Central N Nottinghamshire Bassetlaw/Newark & Sherwood Suffolk Suffolk Eastern Sussex Senlac Warwickshire Warwickshire Southern West Mercia South Worcestershire N</p>
<p>BCU Family 3 (18) Avon and Somerset Central Bristol Bedfordshire Luton Leicestershire Leicestershire Central Metropolitan Barnet Croydon Enfield Hammersmith and Fulham Harrow Hillingdon Hounslow Kensington and Chelsea Kingston-upon-Thames Merton Redbridge Richmond-upon-Thames Waltham Forest Wandsworth Thames Valley Slough and District</p>	<p>BCU Family 8 (34) Avon and Somerset Bath and North-East Somerset North Somerset Cheshire Congleton and Vale Royal Macclesfield Dorset Bournemouth Poole Essex Chelmsford Colchester Rayleigh Southend</p>	<p>BCU Family 8 (34) Avon and Somerset Bath and North-East Somerset North Somerset Cheshire Congleton and Vale Royal Macclesfield Dorset Bournemouth Poole Essex Chelmsford Colchester Rayleigh Southend</p>	

Gloucestershire
Cheltenham and
Tewkesbury
Forest and
Gloucester

Hampshire
Fareham
New Forest
North East
Hampshire

Hertfordshire
Hertfordshire –
Western

Kent
Canterbury
West Kent

Lancashire
Lancashire Northern
Lancashire Western

Metropolitan
Bexley
Bromley and
Orpington
Havering
Sutton

Staffordshire
Chase
North Staffordshire

Surrey
East Surrey
West Surrey

Sussex
East Downs N
West Downs N

Thames Valley
Chiltern Vale
Thames Forest

West Midlands
J2
L1

BCU Family 9 (31)
Avon and Somerset
Somerset East
Somerset West

Cambridgeshire
Cambridgeshire
Central
Southern

Derbyshire
Buxton (B Division)

Devon and Cornwall
Devon and Cornwall
Area 1
Devon and Cornwall
Area 3
Devon and Cornwall
Area 4

Dorset
Dorset - Eastern
Dorset - Western

Essex
Braintree

Gloucestershire
Cotswold and Stroud

Hampshire
Andover
Central Hampshire

Kent
Weald

Lincolnshire
East Lincolnshire
South Lincolnshire

Norfolk
Norfolk Eastern Area

Norfolk Western
Area

North Yorkshire
North Yorks –
Eastern
North Yorks –
Western

Northamptonshire
Northamptonshire –
Western

Suffolk
Suffolk Western

Thames Valley
Aylesbury Vale
Northern Oxfordshire
Southern Oxfordshire
West Berkshire

West Mercia
Hereford N
Shropshire N

Wiltshire
Chippenham
Salisbury

BCU Family 10 (27)
Avon and Somerset
North Bristol
South Bristol

Devon and Cornwall
Devon and Cornwall
Area 2

Hampshire
Gosport
Portsmouth
Southampton Central

Kent
Thanet

Lancashire
Lancashire Central

Merseyside
Knowsley

Northamptonshire
Northampton

Northumbria
Gateshead West
Newcastle North
Tynemouth

South Wales
Cardiff
Swansea

South Yorkshire
Sheffield North
Sheffield South

Staffordshire
Stoke on Trent

Sussex
Brighton & Hove

Thames Valley
Milton Keynes
Oxford

West Midlands
D2
H1
J1

West Yorkshire
Chapelton N
City and Holbeck N
Pudsey and
Weetwood N

BCU Family 11 (21)
Avon and Somerset
South Gloucester

Bedfordshire
Bedford
Dunstable

Cheshire
Chester and
Ellesmere port

Essex
Harlow

Hampshire
Basingstoke
Eastleigh

Hertfordshire
Hertfordshire –
Eastern
Hertfordshire Central

Kent
Maidstone
North Kent
South-East Kent

Leicestershire
Leicestershire (North
Area)

North Yorkshire
North Yorks - Central

Staffordshire
Trent Valley

Suffolk
Suffolk Southern

Surrey
North Surrey
North West Surrey

Sussex
North Downs N

Thames Valley
Reading and
Wokingham

Warwickshire
Warwickshire
Northern

BCU Family 12 (8)
Cumbria
Carlisle and Penrith

Dyfed-Powys
Carmarthenshire
Ceredigion
Pembrokeshire
Powys

North Wales
North Wales –
Western

Northumbria
North
Northumberland
South-West
Northumberland

BCU Family 13 (16)
Cheshire
Halton

GMP
Bolton
Oldham
Rochdale
Salford
Tameside

Gwent
Newport

Humberside
North-East
Lincolnshire

Kent
Medway

Lancashire
Lancashire Eastern
Lancashire Pennine

West Midlands
M1
M2

West Yorkshire
Calderdale
Dewsbury
Huddersfield

BCU Family 14 (3)
(Airports)

Essex
Stansted Airport

Metropolitan Police
Heathrow Airport

Sussex
Gatwick Airport

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