



Ministry of  
**JUSTICE**

**Local Adult Reoffending  
1 January 2008 –  
31 December 2008  
England and Wales**

Ministry of Justice  
Statistics bulletin

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# Local Adult Reoffending

## Introduction

Local adult reoffending data has been developed to provide more timely performance data on trends in reoffending, and to provide insight into reoffending at the regional and local levels.

The key uses of this data will be to monitor the progress of Local Area Agreements in reducing reoffending under National Indicator 18 within the National Indicator Set<sup>1</sup>, and to provide key outcome data to assist in assessing Probation Area performance.

This bulletin contains reoffending data at the following geographic levels:

- England and Wales as a whole
- Government Office regions and Wales
- Probation Areas
- Local Authorities<sup>2</sup>.

It covers reoffending in the period January 1 2008 to December 31 2008.

These statistics will be published on a quarterly basis, and are available via the Ministry of Justice website:

[www.justice.gov.uk/publications/local-adult-reoffending.htm](http://www.justice.gov.uk/publications/local-adult-reoffending.htm)

The reoffending data in this bulletin are based on a different methodology and timescale to the annual National Statistics on adult reoffending:

[www.justice.gov.uk/publications/reoffendingofadults.htm](http://www.justice.gov.uk/publications/reoffendingofadults.htm)

Appendix B gives details and reasons for the main differences in the measures.

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<sup>1</sup> For more information on the National Indicator Set please see:

[www.communities.gov.uk/localgovernment/performanceframeworkpartnerships/nationalindicators/](http://www.communities.gov.uk/localgovernment/performanceframeworkpartnerships/nationalindicators/)

<sup>2</sup> "Local authorities" in this report, are unitary authorities in single-tier areas, or upper tier authorities (e.g. county councils) in two-tier areas.

## Local Adult Reoffending

### Key points

All statements on increases or decreases in reoffending rates in this section refer to rates that have been adjusted to control for changes in the characteristics of offenders on the probation caseload.<sup>3</sup>

- The three month reoffending rate of all offenders on the probation caseload in England and Wales who were at risk of reoffending during the period 1 January 2008 to 31 December 2008 was 9.95 per cent. This was an increase of 0.91 per cent compared to the 2007/2008 baseline (1 April 2007 to 31 March 2008), which was statistically significant.
- Four Government Office Regions had a statistically significant<sup>4</sup> increase in reoffending compared to the baseline (East of England; North West; South West and Wales) and two Government Office Regions had a statistically significant reduction in reoffending (North East and Yorkshire & Humberside).
- Eleven probation areas had a statistically significant increase in reoffending, whilst three probation areas showed a statistically significant reduction in reoffending.
- Nineteen local authorities had a statistically significant increase in reoffending, whilst sixteen local authorities showed a statistically significant reduction in reoffending.<sup>5</sup>
- Reoffending by offenders on licence from custodial sentences showed a statistically significant increase of 5.45 per cent compared to the baseline, although the actual rate of reoffending remained lower than for offenders on court orders under probation supervision.
- Reoffending in the period 1 January 2008 to 31 December 2008 was slightly higher than reoffending in the period 1 October 2007 to 30 September 2008.

Results for all regions, probation areas and local authorities are available in Appendix A, and are presented by Government Office Region.

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<sup>3</sup> See Appendix C for more information on the predicted rate, what variables we control for and why it is important to control for changes in offender characteristics.

<sup>4</sup> Changes in reoffending performance are only reported where the changes are statistically significant (i.e. we are 95 per cent confident that the change is a real one, and not due to random volatility in the datasets).

<sup>5</sup> Data on local authority level reoffending in this report should be treated as indicative only – see Appendix A for more information.

## **Comparing reoffending rates between areas**

Comparing changes in the actual rates of reoffending between areas does not ensure a like for like comparison as the mix of offenders being dealt with may vary across areas and over time.

In comparing reductions in reoffending between areas, it is important that comparisons are made on the basis of the reduction in reoffending after controlling for changes in the characteristics of offenders on the caseload<sup>6</sup> and taking into account the size of the caseload in each area.

## **Future reports**

This is the second of a series of quarterly reports which will monitor local adult reoffending. The first was published on 12 February 2009.

This measure is based on combining four quarters of data to give a rolling four quarter report. Each quarter, the latest quarter of data is added, and the oldest removed.

This report covers reoffending in the period 1 January 2008 to 31 December 2008. These results are compared to a baseline period which covered reoffending in the period 1 April 2007 to 31 March 2008.

As more quarters of data become available, future reports will focus on areas that have statistically significant changes for a number of quarters (areas of enduring performance), but will also continue to include areas that have just had a statistically significant change in the latest quarterly report (areas of emerging performance).

The next report, which covers reoffending in the period 1 April 2008 to 31 March 2009, and will be the first full year of data following the baseline period, will be published in August 2009.

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<sup>6</sup> Column titled '% difference from baseline' in data tables in Appendix A.

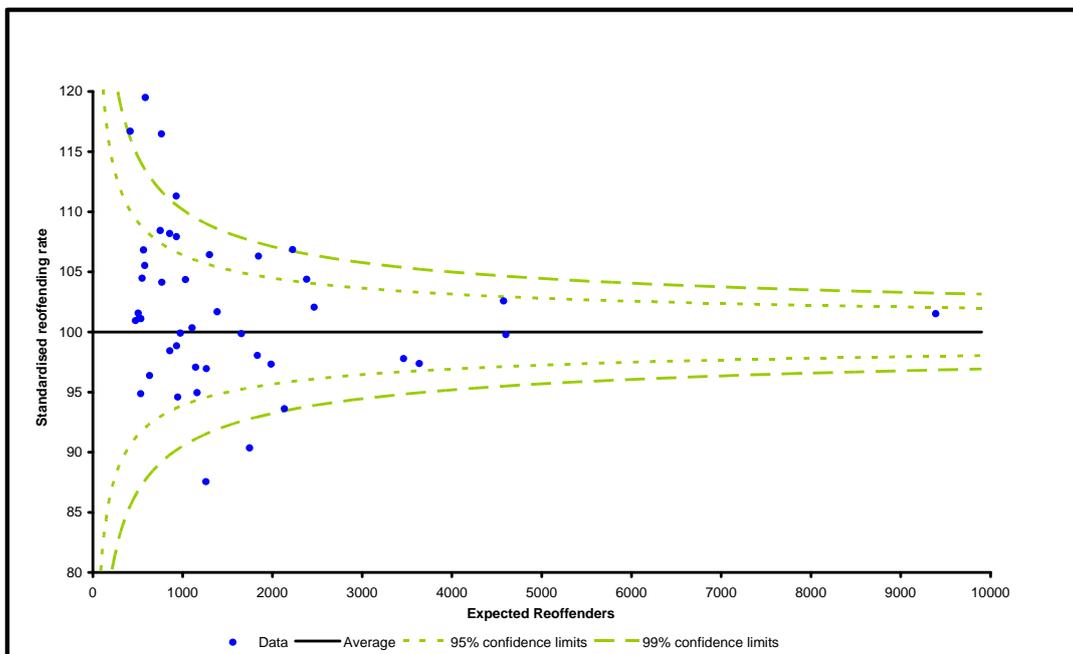
## Reoffending rates by Probation Area

Changes in reoffending from the baseline can be illustrated by use of a funnel plot<sup>7</sup>.

The funnel plot below shows, for all probation areas, how many areas had shown a statistically significant increase in the rate of reoffending (data points above the “funnels”) and how many had shown a statistically significant reduction in the rate of reoffending (data points below the “funnels”).

Statistical significance in this report has been assessed at the 95 per cent level.

**Figure A – Changes in reoffending at the Probation Area level**



There are eleven areas showing a statistically significant increase in reoffending from the baseline, and three areas showing a statistically significant reduction. There is a statistically significant increase when the data is aggregated to the England and Wales level.

This is the second rolling four quarter dataset where we have seen statistically significant changes for some probation areas. As we continue to move further away from the baseline dataset, we will expect to see clearer trends in reoffending performance emerge.

<sup>7</sup> See Appendix C for more detail on funnel plots, statistical significance and the predicted rate.

## Reoffending rates by Local Area Agreement

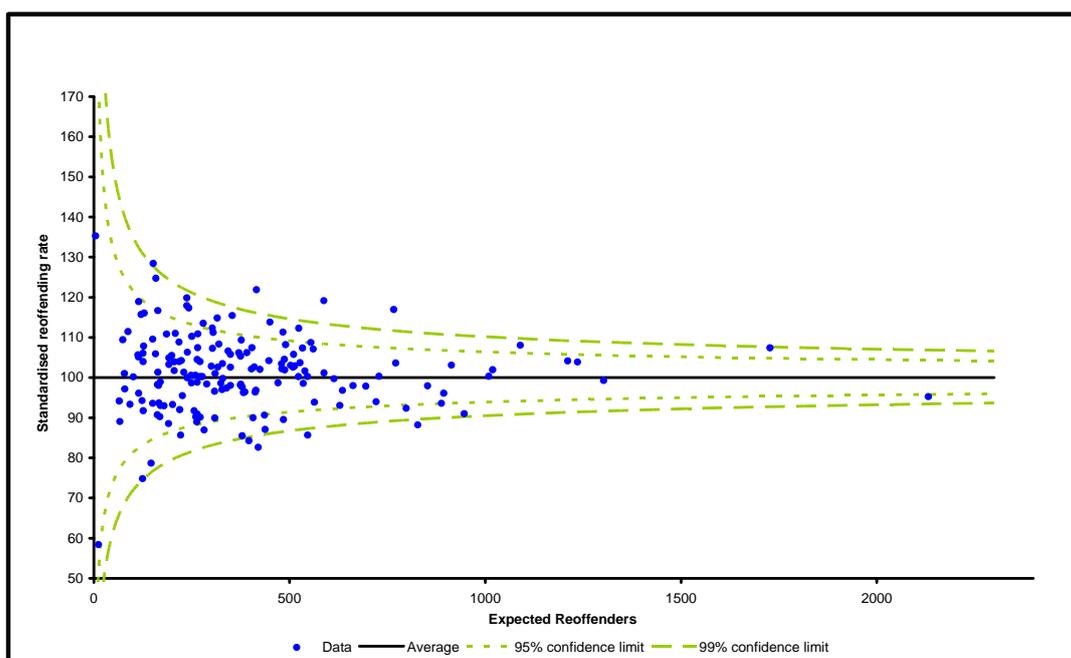
Changes in reoffending from the baseline can be illustrated by use of a funnel plot<sup>8</sup>.

The funnel plot below shows, for all local authority areas, how many areas had shown a statistically significant increase in the rate of reoffending (data points above the “funnels”) and how many had shown a statistically significant reduction in the rate of reoffending (data points below the “funnels”).

Statistical significance in this report has been assessed at the 95 per cent level.

Data on local authorities in this report should be treated as indicative only – see Appendix A for more details.

**Figure B – Changes in reoffending at the local authority level**



There are nineteen local authorities showing a statistically significant increase in reoffending from the baseline, and sixteen local authorities showing a statistically significant reduction.<sup>9</sup> There is a statistically significant increase when the data is aggregated to the England and Wales level.

<sup>8</sup> See appendix C for more detail on funnel plots, statistical significance and the predicted rate.

<sup>9</sup>The chart only has eighteen data points showing a statistically significant increase. This is because the standardised reoffending rate for the Isles of Scilly was beyond the scale of the graph.

This is the second rolling four quarter dataset where we have seen statistically significant changes in any area. As we move further away from the baseline dataset, we will expect to see clearer trends in reoffending performance emerge.

## Explanatory notes

### **Which offenders are included in the analysis?**

The local adult reoffending measure takes a snapshot of every offender, aged 18 or over, who is under probation supervision at the end of a quarter, and combines four such snapshots together.

This means that the measure includes offenders who have been under supervision in the community (either on licence after release from custody or on a court order) for a range of time from one day to a number of years. However, the measure does not include offenders aged 22 or over who have been released from a custodial sentence of less than one year (as they do not receive probation supervision on release).

This also means that some offenders will be included in the sample more than once by combining four snapshots, as offenders can remain under probation supervision for a number of quarters.

### **What is the baseline that reoffending is being compared to?**

The baseline is the data for the financial year 2007/08. It covers reoffending in the four quarters from 1 April 2007 to 31 March 2008. This dataset was used to build the predictive rate model. For more information on the predictive rate model please see Appendix C.

### **Methodology for measuring reoffending**

The local adult measure counts the proportion of offenders who reoffend in a three month period, and compares this to the proportion expected to reoffend given their characteristics. The results of four snapshots are then combined to form a rolling four quarter average. Each quarterly update will include the latest available quarter, and remove the oldest quarter.

### **What counts as a reoffence?**

The local measure allows three months from each snapshot for reoffending to occur (with a further three months for offences to be proved by court conviction or caution).

The measure includes recordable offences, as entered on the Police National Computer, which are proven by either court convictions or cautions.

### **The predicted rate**

The predicted rate is the proportion of offenders we would expect to reoffend given the known characteristics of the offenders in the snapshot. More detail on the predicted rate, and the statistical model used to calculate it, is provided in Appendix C.

## Explanatory notes (continued)

### **Assigning offenders to probation areas and local authorities**

Offenders are assigned to a Probation Area based on where they are recorded on each Area's Caseload Management System. In a small number of cases (less than 1 per cent), offenders cannot be assigned to a probation area as they are recorded under more than one Probation Area at the end of a quarter (and are therefore classified as having an unknown Probation Area, and only counted towards the England and Wales level data).

Offenders postcode information is used to assign them to a local authority (98-99 per cent of offenders can be assigned to a local authority). Those offenders that do not have any relevant address information are not matched to a local authority.

A small proportion of offenders (roughly 1 per cent) have a postcode that is in a local authority area outside the Probation Area which supervises them.

Therefore it is not possible to exactly aggregate data from the local authority to the Probation Area level.

### **Data sources and quality**

The data presented in this bulletin are drawn from Probation Caseload Management systems, and the Ministry of Justice extract of the Police National Computer. Although care is taken when processing and analysing the returns, the detail collected is subject to the inaccuracies inherent in any large-scale recording system. While the figures shown have been checked as far as practicable, they should be regarded as approximate and therefore have been rounded to two decimal places.

### **Differences to the National Statistics on adult reoffending**

This measure of local adult reoffending has been developed primarily as a more timely source of performance data on reoffending, and to provide information at the regional and local level.

As such, this measure is substantially different to the National Statistics approach. This reflects changes needed for more rapid reporting and to enable statistically robust analysis at the lower levels of disaggregation.

These differences are covered in detail in Appendix B.

## Contact points for further information

Current and previous editions of this publication are available for download at [www.justice.gov.uk/publications/local-adult-reoffending.htm](http://www.justice.gov.uk/publications/local-adult-reoffending.htm)

Future reports will be published on a quarterly basis. The next report which will cover reoffending in the period 1 April 2008 to 31 March 2009 will be published in August 2009. Spreadsheet files of the tables contained in this document are also available for download from this address.

Press enquiries should be directed to the Ministry of Justice press office:

Tel: 020 3334 3519

Other enquiries about these statistics should be directed to:

Ministry of Justice  
Offender Management and Sentencing – Analytical Services  
Reoffending and Criminal Careers  
2<sup>nd</sup> Floor Fry building  
2 Marsham Street  
London  
SW1P 4DF

General enquiries about the statistical work of the Ministry of Justice can be emailed to: [statistics.enquiries@justice.gsi.gov.uk](mailto:statistics.enquiries@justice.gsi.gov.uk)

General information about the official statistics system of the UK is available from [www.statistics.gov.uk](http://www.statistics.gov.uk)

## Appendix A – Main results

**Table 1: Reoffending rates, all offenders on the probation caseload in England and Wales**

Reoffending period covered	Cohort size (combining four quarters of probation caseload data) <sup>10</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline <sup>11</sup>
April 1 2007 to March 31 2008 ( <i>baseline period</i> )	685873	9.82%	9.82%	0.0%
July 1 2007 to June 30 2008	690049	9.84%	9.81%	0.31%
October 1 2007 to September 30 2008	692330	9.88%	9.83%	0.56%
January 1 2008 to December 31 2008	691588	9.95%	9.86%	<b>0.91%</b>

<sup>10</sup> The number of offenders is the sum of the number of offenders from the four snapshots who could be matched to PNC. Therefore many offenders will be included more than once. For the purposes of measuring reoffending, however, they are considered separately for each snapshot in which they are included. This number is not the number of offenders on the probation caseload at a point in time, as it reflect the aggregation of four quarters of data

<sup>11</sup> Data in bold illustrates that the change in reoffending from the baseline is statistically significant.

**Table 2: Reoffending rates – offenders on licence under probation supervision**

Reoffending period covered	Cohort size (combining four quarters of probation caseload data) <sup>12</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline <sup>13</sup>
April 1 2007 to March 31 2008 ( <i>baseline period</i> )	102721	8.22%	8.22%	0%
July 1 2007 to June 30 2008	106840	8.37%	8.24%	1.51%
October 1 2007 to September 30 2008	111402	8.63%	8.28%	<b>4.24%</b>
January 1 2008 to December 31 2008	114614	8.69%	8.24%	<b>5.45%</b>

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<sup>12</sup> The number of offenders is the sum of the number of offenders from the four snapshots who could be matched to PNC. Therefore many offenders will be included more than once. For the purposes of measuring reoffending, however, they are considered separately for each snapshot in which they are included.

<sup>13</sup> Data in bold illustrates that the change in reoffending since the baseline period is statistically significant.

**Table 3: Reoffending rates – offenders on court orders under probation supervision**

Reoffending period covered	Cohort size (combining four quarters of probation caseload data) <sup>14</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline <sup>15</sup>
April 1 2007 to March 31 2008 ( <i>baseline period</i> )	583152	10.10%	10.10%	0%
July 1 2007 to June 30 2008	583209	10.11%	10.10%	0.14%
October 1 2007 to September 30 2008	580928	10.12%	10.12%	-0.02%
January 1 2008 to December 31 2008	576974	10.20%	10.18%	0.18%

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<sup>14</sup> The number of offenders is the sum of the number of offenders from the four snapshots who could be matched to PNC. Therefore many offenders will be included more than once. For the purposes of measuring reoffending, however, they are considered separately for each snapshot in which they are included.

<sup>15</sup> Data in bold illustrates that the change in reoffending since the baseline period is statistically significant.

## Detailed tables

### **Hypothetical examples to illustrate how reoffending rates relate to numbers of reoffenders**

For an area with a caseload of 10000 offenders:

A 10 per cent reoffending rate means that 1000 offenders (out of the 10000) reoffended.

An 11 per cent reoffending rate means that 1100 offenders (out of the 10000) reoffended.

An increase from the baseline of 10 per cent (assuming predicted rate of 10 per cent, and actual rate of 11 per cent) for a caseload of 10000 would mean that there were 100 reoffenders more than was predicted.

For an area with a caseload of 5000 offenders:

A 10 per cent reoffending rate means that 500 offenders (out of the 5000) reoffended.

A 9.5 per cent reoffending rate means that 475 offenders (out of the 5000) reoffended.

A decrease from the baseline of 5 per cent (assuming predicted rate of 10 per cent, and actual rate of 9.5 per cent) for a caseload of 5000 would mean that there were 25 reoffenders fewer than predicted.

### **DATA QUALITY ISSUE – Affecting local authority level data**

Local authority level data in this report should be treated as indicative only.

Data at the local authority level covering reoffending in the period 1 January 2008 to 31 March 2008 (the oldest of the quarters of this rolling four quarter dataset) was produced from a slightly later version of the Police National Computer data (the MoJ extract is updated on a weekly basis from the live system) than the probation area/regional datasets. This means that reoffending rates for local authority data in this report are slightly higher than they would have been if they had been produced from the same version of the PNC data as the probation level data.

The issue does not affect local authority data from 1 April 2008 onwards, as the data is now produced from the same extract of the PNC data.

The effect of this data quality issue is that on average, local authority actual reoffending rates are 0.1 percentage points higher than they should be. The difference between the local authorities' actual and predicted rates (progress from baseline) is therefore an average of 1 percentage points higher than it should be in this report.

The next report, to be published in August, will not be affected by this issue, and the indicative marking of this data will be removed.

**Table 4: Local adult reoffending rates for 1 January 2008 to 31 December 2008, at the government office, probation area and local authority level of disaggregation**

Where data in the ‘% difference from baseline’ column is in bold, this indicates that the change is statistically significant at the 95 per cent level.

Data in this table has been formatted so that regional data is left aligned, Probation Area data centre aligned, and local authority data right aligned in each cell to assist users in viewing the data (this data is also available in excel format).

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
East Midlands			50406	9.15%	9.41%	-2.82%
	Derbyshire		11434	8.10%	7.49%	<b>8.19%</b>
		Derby	3939	8.25%	7.69%	7.29%
		Derbyshire	7453	8.09%	7.44%	<b>8.72%</b>
	Leicestershire		11256	7.94%	8.40%	-5.42%

<sup>16</sup> Note that data will not exactly aggregate from the local authority level to the Probation Area level, as there are a small (roughly 1 per cent) number of offenders who could not be assigned to a local authority as they has no postcode data. There are also a small (again roughly 1 per cent) number of offenders whose postcode is in a local authority which is not in the probation area where they are on the caseload.

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Leicester	6359	8.32%	8.86%	-6.15%
		Rutland	155	4.52%	7.73%	-41.59% <sup>17</sup>
		Leicestershire	4853	7.64%	7.93%	-3.62%
	Lincolnshire		5818	10.36%	9.70%	6.82%
		Lincolnshire	5816	10.32%	9.63%	7.10%
	Northamptonshire		7415	8.23%	8.54%	-3.62%
		Northamptonshire	7361	8.35%	8.63%	-3.18%
	Nottinghamshire		14483	10.89%	12.05%	<b>-9.65%</b>
		Nottingham	6855	10.65%	12.07%	<b>-11.79%</b>
		Nottinghamshire	7476	11.12%	11.88%	-6.40%
East of England			58969	9.21%	8.72%	<b>5.63%</b>
	Bedfordshire		5606	8.56%	8.48%	0.95%
		Luton	2525	8.99%	8.65%	3.97%
		Bedfordshire	3180	8.21%	8.30%	-1.17%

<sup>17</sup> Data for Rutland is based on only 155 offenders. Any changes between actual and predicted rates should be treated with caution.

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
	Cambridgeshire		9389	11.01%	9.90%	<b>11.30%</b>
		Peterborough	3412	11.96%	10.36%	<b>15.44%</b>
		Cambridgeshire	5724	9.99%	9.31%	7.34%
	Essex		20217	8.17%	8.18%	-0.14%
		Southend-on-Sea	2842	9.78%	9.76%	0.21%
		Thurrock	2212	7.64%	8.63%	-11.47%
		Essex	15264	8.26%	7.93%	4.14%
	Hertfordshire		10239	8.71%	7.48%	<b>16.48%</b>
		Hertfordshire	10154	8.82%	7.55%	<b>16.95%</b>
	Norfolk		7328	10.92%	10.48%	4.13%
		Norfolk	7361	10.85%	10.47%	3.63%
	Suffolk		6190	9.26%	8.86%	4.47%
		Suffolk	5966	9.15%	8.82%	3.70%
London			109589	8.70%	8.57%	1.52%
		Barking and Dagenham	2991	8.02%	8.82%	-9.07%
		Barnet	2951	6.85%	7.44%	-7.99%
		Bexley	2229	7.45%	7.35%	1.34%

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Brent	3706	8.34%	8.11%	2.82%
		Bromley	3175	7.87%	7.83%	0.59%
		Camden	2389	9.75%	9.36%	4.25%
		City of London	39	15.38%	11.37%	35.28% <sup>18</sup>
		Croydon	4970	9.38%	9.00%	4.21%
		Ealing	3948	7.55%	7.82%	-3.44%
		Enfield	3938	7.95%	7.87%	1.01%
		Greenwich	4390	9.04%	9.39%	-3.65%
		Hackney	4416	9.83%	9.15%	7.43%
		Hammersmith and Fulham	2444	11.66%	9.73%	<b>19.83%</b>
		Haringey	4077	8.39%	8.56%	-1.96%
		Harrow	2070	5.56%	7.06%	<b>-21.30%</b>
		Havering	2109	7.59%	7.72%	-1.75%
		Hillingdon	2887	6.58%	7.68%	<b>-14.35%</b>

<sup>18</sup> Data for the City of London is based on only 39 offenders and has only been included for completeness in covering all Local Area Agreements. Any changes between actual and predicted rates should therefore be treated with caution.

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Hounslow	2948	7.97%	8.69%	-8.24%
		Islington	3208	10.57%	9.50%	11.23%
		Kensington and Chelsea	1410	9.29%	8.94%	3.96%
		Kingston upon Thames	1110	9.10%	9.08%	0.21%
		Lambeth	5912	8.86%	8.84%	0.24%
		Lewisham	5574	8.32%	8.43%	-1.31%
		Merton	1889	8.84%	8.35%	5.89%
		Newham	5536	8.87%	8.68%	2.19%
		Redbridge	2942	7.92%	7.81%	1.35%
		Richmond on Thames	1011	7.81%	7.73%	1.03%
		Southwark	5423	9.16%	8.99%	1.90%
		Sutton	2090	9.47%	9.17%	3.27%
		Tower Hamlets	3882	10.61%	9.71%	9.35%
		Waltham Forest	3652	9.31%	8.29%	<b>12.32%</b>
		Wandsworth	2925	8.41%	8.52%	-1.31%
		Westminster	1813	10.37%	11.11%	-6.69%
North East			43233	14.54%	14.93%	<b>-2.64%</b>

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
	Durham		9364	11.77%	12.39%	-5.04%
		Darlington	1964	11.97%	13.26%	-9.74%
		Durham	7351	11.69%	12.16%	-3.89%
	Northumbria		22149	15.29%	15.63%	-2.21%
		Gateshead	3335	13.01%	14.53%	<b>-10.45%</b>
		Newcastle-upon-Tyne	5333	17.66%	17.13%	3.11%
		North Tyneside	2986	16.61%	16.06%	3.46%
		South Tyneside	2591	12.50%	14.62%	<b>-14.48%</b>
		Sunderland	4444	15.30%	15.63%	-2.12%
		Northumberland	3458	14.98%	14.54%	3.04%
	Teesside		11720	15.33%	15.64%	-1.94%
		Hartlepool	2008	19.67%	18.67%	5.34%
		Middlesbrough	3931	14.88%	15.99%	-6.94%
		Redcar and Cleveland	2622	14.99%	14.12%	6.16%
		Stockton-on-Tees	3067	12.88%	14.21%	<b>-9.34%</b>
North West			113637	10.13%	9.91%	<b>2.30%</b>
	Cheshire		11248	8.66%	8.67%	-0.10%

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Halton	1864	7.56%	8.08%	-6.40%
		Warrington	2454	9.66%	8.87%	8.88%
		Cheshire West and Chester	3858	8.55%	8.79%	-2.64%
		Cheshire East	3283	8.65%	8.79%	-1.60%
	Cumbria		6655	12.70%	12.90%	-1.56%
		Cumbria	6611	12.63%	12.89%	-2.05%
	Greater Manchester		46970	10.00%	9.74%	2.58%
		Bolton	4766	11.29%	10.14%	<b>11.33%</b>
		Bury	3102	7.90%	8.77%	-9.90%
		Manchester	12236	10.49%	10.10%	3.90%
		Oldham	3781	9.73%	9.92%	-1.90%
		Rochdale	3973	10.60%	10.32%	2.67%
		Salford	5107	9.97%	9.53%	4.54%
		Stockport	3495	9.41%	9.43%	-0.21%
		Tameside	3406	10.83%	10.24%	5.77%
		Trafford	2905	9.36%	9.34%	0.22%
		Wigan	4323	8.54%	8.68%	-1.68%
	Lancashire		22724	11.07%	10.85%	2.06%

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Blackburn with Darwen	3224	9.93%	10.07%	-1.39%
		Blackpool	3989	9.55%	10.97%	<b>-12.93%</b>
		Lancashire	15635	11.86%	11.05%	<b>7.38%</b>
	Merseyside		26040	9.55%	9.15%	<b>4.39%</b>
		Knowsley	3022	8.64%	8.58%	0.61%
		Liverpool	11006	9.44%	9.26%	1.97%
		St Helens	2679	10.64%	9.90%	7.47%
		Sefton	3499	9.89%	9.13%	8.35%
		Wirral	5637	10.43%	9.29%	<b>12.29%</b>
South East			77472	8.91%	8.92%	-0.06%
	Hampshire		19665	9.83%	10.10%	-2.68%
		Portsmouth	2994	12.42%	12.88%	-3.54%
		Southampton	4082	8.50%	10.28%	<b>-17.34%</b>
		Isle of Wight	1510	13.11%	10.51%	<b>24.73%</b>
		Hampshire	10881	9.30%	9.27%	0.32%
	Kent		16767	8.25%	7.75%	<b>6.43%</b>
		Medway	2944	8.08%	8.09%	-0.02%

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Kent	13999	8.41%	7.78%	<b>8.07%</b>
	Surrey		6132	8.55%	8.45%	1.14%
		Surrey	6310	8.68%	8.54%	1.66%
	Sussex		14870	7.42%	8.48%	<b>-12.45%</b>
		Brighton and Hove	3595	7.73%	8.60%	-10.05%
		East Sussex	4778	7.66%	8.51%	<b>-10.03%</b>
		West Sussex	6419	7.29%	8.51%	<b>-14.33%</b>
	Thames Valley		20038	9.79%	9.21%	<b>6.31%</b>
		Bracknell Forest	959	8.03%	8.27%	-2.86%
		West Berkshire	1165	10.30%	9.80%	5.10%
		Reading	2417	10.51%	9.88%	6.32%
		Slough	2478	9.32%	8.40%	11.03%
		Windsor and Maidenhead	1108	7.76%	8.32%	-6.66%
		Wokingham	843	7.00%	7.86%	-10.96%
		Milton Keynes	2842	9.71%	9.29%	4.51%
		Buckinghamshire	3665	9.28%	8.97%	3.47%
		Oxfordshire	4496	11.39%	10.01%	<b>13.81%</b>

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
South West			42091	10.17%	9.49%	<b>7.10%</b>
	Avon and Somerset		13935	10.10%	9.94%	1.68%
		Bath and N.E. Somerset	1200	11.33%	9.53%	18.93%
		Bristol, City of	6028	10.77%	10.99%	-2.01%
		North Somerset	1751	8.68%	9.62%	-9.73%
		South Gloucestershire	1419	8.39%	7.94%	5.67%
		Somerset	3443	10.51%	9.16%	<b>14.84%</b>
	Devon and Cornwall		11450	9.41%	9.02%	4.36%
		Plymouth	2455	11.24%	10.20%	10.25%
		Torbay	1304	8.90%	9.44%	-5.76%
		Cornwall	3724	7.57%	7.28%	3.99%
		Isles of Scilly	10	20.00%	6.21%	<b>222.24%</b> <sup>19</sup>
		Devon	3960	10.48%	9.87%	6.21%
	Dorset		5787	10.54%	9.99%	5.53%

<sup>19</sup> Data for the Isles of Scilly is based on only 10 offenders and has only been included for completeness in covering all Local Area Agreements. Any changes between actual and predicted rates should therefore be treated with caution.

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Bournemouth	2444	12.07%	10.88%	10.90%
		Poole	1263	9.18%	10.01%	-8.26%
		Dorset	2153	9.75%	9.24%	5.51%
	Gloucestershire		5752	12.15%	10.17%	<b>19.50%</b>
		Gloucestershire	5766	12.14%	10.19%	<b>19.16%</b>
	Wiltshire		5167	9.39%	8.04%	<b>16.70%</b>
		Swindon	1808	10.56%	9.05%	16.67%
		Wiltshire	3241	8.79%	7.49%	<b>17.33%</b>
Wales			42336	11.39%	10.86%	<b>4.86%</b>
	Dyfed-Powys		4666	11.02%	10.85%	1.56%
		Powys	1106	9.95%	10.35%	-3.91%
		Ceredigion	612	9.97%	10.59%	-5.85%
		Pembrokeshire	1179	11.28%	10.64%	6.03%
		Carmarthenshire	1809	11.55%	11.36%	1.72%
	Gwent		8524	10.83%	10.95%	-1.15%
		Caerphilly	2658	8.80%	9.89%	-11.03%
		Blaenau Gwent	1214	7.66%	10.24%	<b>-25.20%</b>

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Torfaen	1214	12.27%	10.58%	16.06%
		Monmouthshire	698	11.60%	10.60%	9.44%
		Newport	2719	13.46%	12.63%	6.61%
	North Wales		9268	10.85%	10.06%	<b>7.93%</b>
		Isle of Anglesey	869	11.16%	10.02%	11.44%
		Gwynedd	1401	11.78%	10.75%	9.56%
		Conwy	1309	10.47%	9.71%	7.83%
		Denbighshire	1197	11.70%	10.11%	15.72%
		Flintshire	1866	7.88%	8.68%	-9.28%
		Wrexham	2526	12.55%	11.06%	<b>13.50%</b>
	South Wales		19878	11.96%	11.19%	<b>6.85%</b>
		Swansea	3598	14.06%	11.54%	<b>21.87%</b>
		Neath Port Talbot	1790	9.39%	9.49%	-1.07%
		Bridgend	1895	10.61%	10.11%	4.90%
		The Vale of Glamorgan	1584	13.01%	11.74%	10.81%
		Rhondda, Cynon, Taff	3824	9.68%	9.91%	-2.38%
		Merthyr Tydfil	1327	14.69%	11.44%	<b>28.43%</b>
		Cardiff	5811	12.58%	12.54%	0.32%

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
West Midlands			80308	9.16%	9.20%	-0.45%
	Staffordshire		12635	8.80%	9.07%	-2.92%
		Stoke-on-Trent	4115	10.52%	10.31%	2.05%
		Staffordshire	8644	7.84%	8.34%	-6.00%
	Warwickshire		5147	10.51%	10.40%	1.11%
		Warwickshire	5326	10.27%	10.24%	0.26%
	West Mercia		11204	9.91%	9.87%	0.35%
		Herefordshire	1589	10.20%	10.40%	-1.99%
		Telford and Wrekin	1950	8.56%	9.21%	-7.04%
		Shropshire	2039	10.50%	10.10%	3.93%
		Worcestershire	6010	9.90%	9.79%	1.15%
	West Midlands		51322	8.95%	8.97%	-0.21%
		Birmingham	24017	8.46%	8.88%	<b>-4.74%</b>
		Coventry	5691	9.49%	8.97%	5.77%
		Dudley	3572	9.10%	8.87%	2.59%
		Sandwell	4860	8.46%	8.28%	2.12%
		Solihull	1986	7.85%	8.39%	-6.34%

Local Adult Reoffending – 1 January 2008 – 31 December 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>16</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Walsall	3796	9.69%	10.07%	-3.71%
		Wolverhampton	3763	9.51%	9.28%	2.56%
Yorkshire and Humberside			68811	11.01%	11.31%	<b>-2.65%</b>
	Humberside		11967	10.24%	10.56%	-3.05%
		Kingston upon Hull, City of	4919	10.71%	10.87%	-1.45%
		East Riding of Yorkshire	1875	8.43%	9.06%	-7.00%
		North East Lincolnshire	2807	11.33%	11.67%	-2.96%
		North Lincolnshire	2335	9.25%	9.69%	-4.51%
	North Yorkshire		6617	12.32%	11.36%	<b>8.43%</b>
		York	1977	14.16%	12.01%	<b>17.90%</b>
		North Yorkshire	4635	11.39%	11.07%	2.92%
	South Yorkshire		17715	11.28%	12.05%	<b>-6.38%</b>
		Barnsley	3389	11.83%	12.22%	-3.13%
		Doncaster	4128	12.65%	12.33%	2.55%
		Rotherham	3424	9.75%	11.58%	<b>-15.74%</b>
		Sheffield	6648	11.09%	12.00%	<b>-7.62%</b>

Local Adult Reoffending – 1 January 2008 – 31 December 2008

<b>Government office region</b>	<b>Probation area</b>	<b>Local Authority</b>	<b>Cohort size</b> (combining four quarters of probation caseload data) <sup>16</sup>	<b>Actual rate of reoffending</b>	<b>Predicted rate of reoffending</b>	<b>% difference from baseline</b>
	West Yorkshire		32512	10.89%	11.18%	-2.62%
		Bradford	8446	10.19%	11.20%	<b>-8.99%</b>
		Calderdale	2704	9.06%	10.42%	<b>-13.04%</b>
		Kirklees	5714	10.71%	10.74%	-0.28%
		Leeds	11310	11.43%	11.51%	-0.71%
		Wakefield	4242	12.49%	11.55%	8.22%

## Appendix B – Differences between the Local Adult reoffending rate and the annual National Statistics

There are a number of differences between the local adult reoffending measure and the annual National Statistics:

- the sample of offenders
- the measure of reoffending
- the time allowed for reoffending
- the types of sentences which mean an offence is counted.

These differences reflect the different purposes of the outputs. The National Statistics on reoffending are the headline measure of reoffending in England and Wales, and are used to measure progress against government targets to reduce reoffending. The local adult measure has been developed as a more timely source of information on trends in reoffending, and to improve understanding of how progress in reducing reoffending is being made at the local level.

### **Which offenders are included in the analysis?**

The local measure takes a snapshot of every offender under probation supervision at the end of each quarter, and combines four such snapshots together. Each quarter, the dataset moves on, with one new quarter added, and the oldest removed.

This means that the local measure considers offenders who may have been under supervision in the community (either on licence from custody or on a court order) for a range of time from one day to a number of years. However, the local measure will not include offenders aged 22 and over who have been released from a short custodial sentence (as they do not receive probation supervision).

The national measure includes every offender discharged from prison or commencing a court order under probation supervision in January to March of a year.

The national measure considers offenders from the first day of their at risk period in the community, and does include offenders released from short custodial sentences.

Main reason for difference – using the national approach would not provide large enough numbers of offenders to enable measurement at the local level.

## **Methodology for measuring reoffending**

The local measure counts the proportion of offenders from each snapshot that is proven to reoffend in a three month period, and compares this to the proportion expected to reoffend given their characteristics.

The headline national measure (frequency of reoffending) counts the number of offences (per 100 offenders) committed in a one year period, with no comparison to expected rates. It also presents the proportion of offenders that reoffend and produces expected rates – however, these are not the headline measure.

Main reason for difference – using the national approach would not allow for fair comparisons between areas or across time (given the small numbers of offenders being measured in an area, and the lack of a predicted rate for the frequency of reoffending).

## **Time allowed for reoffending**

The local measure allows three months (with a further three months for offences to be proved by court conviction or caution)

The national measure allows twelve months (with a further six months for offences to be proved by court conviction)

Analysis has shown that reoffending over three months is representative of reoffending over twelve months for most offences, but is not representative for more serious offences which take longer to work through the criminal justice system.

Main reason for difference – using the local measure allows for more timely data than is possible using the national method.

## **What counts as a reoffence?**

The local measure considers offences proved by both court convictions and cautions when counting whether an offender reoffended.

The national measure considers only court convictions.

Main reason for difference – adding in cautions to the local measure allows for slightly more offences to be included. Having a higher number of reoffenders allows for more robust expected rates of reoffending – smaller numbers make this prediction more difficult.

## Appendix C – Explanation of the Predicted Rate, Statistical Significance, and Funnel Plots

### Introduction to the predicted rate

The characteristics of offenders are likely to be systematically different over time, and the Criminal Justice System aims to target particular sentences to offenders most likely to benefit most from that type. It is therefore, important to note that one can neither reach firm conclusions about changes in rates over time, nor about the relative effectiveness of different sentence types, from actual reoffending rates.

The Ministry of Justice has used as a basis for this local reoffending predicted model the work done for the National Statistics on reoffending (see Appendix E in the latest adult reoffending report – [www.justice.gov.uk/publications/reoffendingofadults.htm](http://www.justice.gov.uk/publications/reoffendingofadults.htm)).

Predicted or expected (yes/no) rates (see Lloyd et al., 1994, for a discussion) are used to take account of some of the differences in characteristics of offenders. Accordingly they can give a more meaningful measure of the change that has occurred in the rate of reoffending than can be obtained using the actual (yes/no) rates. If the composition of the groups of offenders being compared differs significantly over a time period, so that the type of offenders in one rolling four quarter dataset is inherently more (or less) likely to reoffend, this may result in a spurious rise or fall in the actual (yes/no) rates even when there may be no 'real' difference for similar offenders over that time. Hence the actual (yes/no) rates should be compared with the expected rates using a model based on data from an earlier period (baseline). Changes in reoffending rates should be measured by comparing the actual rate with the rate that would be expected given this group of offenders.

### Statistical model

The local adult reoffending statistical model is an adaption of the 2005 logistic regression model as outlined above and includes a range of offender characteristics available in the Police National Computer (PNC), such as age, gender, offence group and criminal history. However, research has shown that other factors, for which data on these samples are not available, such as drug and alcohol use, employment, accommodation and marital background are likely to be significantly related to reoffending (see, for example, May, 1999).

The logistic regression model behind the local adult reoffending predicted rate provides a probability of reoffending for each offender and identifies the statistically significant set of variables that are related to reoffending. Aggregated predicted (yes/no) rates are also only valid for terms included in the final model. Any predicted rates for groups of offenders that have a common characteristic that is not in the final model (e.g., employment status or substance misuse) can suffer from statistical biases and are, therefore, unreliable.

For the local adult reoffending model additional developments were included to ensure that the predicted rate model was more robust against changes in the number of offenders, and that interaction terms and non-linear terms were included where appropriate. The final decision for inclusion or exclusion of particular variables was heavily influenced by their statistical significance (typically  $p < 0.01$ ). The model coefficients, their exponents and significance values can be found in table 7.

The Ministry of Justice believes that the method used for the construction of the statistical model for producing predicted rates is robust and fit for purpose. The model has been peer reviewed by an academic statistician.

### Model assessment

The model is assessed by calculating the level of discrimination between the offenders that reoffended and offenders that did not. The adult logistic regression model achieved a 68.9 per cent overall discrimination level on the latest dataset (Table 6). A level of discrimination of around 70 per cent was deemed to be acceptable and the model should predict results accurately enough for the predicted rate to be used. The discrimination can also be evaluated by calculating the Area Under Curve (AUC) for the Receiver Operating Characteristic curve. Again, the value for the model was 0.77, which means a good to excellent level of discrimination (Hosmer and Lemeshow, 2000, p.162).

**Table 5: Classification table for the logistic regression model comparing latest dataset prediction with observed values**

		Predicted to reoffend within one year?		%
		No	Yes	
Reoffended within one year?	No	427,781	194,986	68.7
	Yes	20,100	48,721	70.8

Table 6 shows the assessment for the logistic regression model for the available datasets. All cohorts show a discriminative power of 68-69 per cent and an AUC for the Receiver Operating Characteristic curve of around 0.77. This means that we can be confident of the predictive power of the logistic regression model over the time period measured.

**Table 6: Classification table for the logistic regression model comparing prediction with observed values, all cohorts to date**

	<b>Number of Offenders</b>	<b>Area Under the Curve for the ROC</b>	<b>Classification Table</b>
<b>April 1 2007 to March 31 2008</b>	685,873	0.76	68.1%
<b>July 1 2007 to June 30 2008</b>	690,049	0.77	68.4%
<b>October 1 2007 to September 30 2008</b>	692,330	0.77	68.7%
<b>January 1 2008 to December 31 2008</b>	691,588	0.77	68.9%

**Table 7: List of variables in the logistic regression model applied to the 2007/08 data and their respective coefficients**

Variables	Logistic coefficient	Exponent of coefficient	Significance
<b>Constant</b>	-1.340	0.085	<0.001
<b>Age band</b>			
18 - 20		<i>Reference category</i>	
21 - 24	-0.555	0.574	<0.001
25 - 29	-0.883	0.414	<0.001
30 - 34	-1.065	0.345	<0.001
35 - 39	-1.079	0.340	<0.001
40 - 49	-1.267	0.282	<0.001
50+	-1.429	0.239	<0.001
<b>Gender</b>			
Male		<i>Reference category</i>	
Female	-0.068	0.935	<0.001
<b>General criminal career variables</b>			
Time on caseload (days)	0.000	1.000	0.380
Time on caseload (inverse)	0.143	1.154	<0.001
Copas rate	0.854	2.349	<0.001
Copas rate (exponential)	-0.543	0.581	<0.001
Previous offences (linear)	-0.004	0.996	<0.001
Previous offences (log)	0.147	1.159	<0.001
Previous custodial sentences (linear)	0.019	1.019	<0.001
Previous custodial sentences (log)	0.198	1.219	<0.001
One or more previous serious offences	-0.082	0.922	<0.001
<b>Length of criminal career</b>			
Less than 1 year		<i>Reference category</i>	
1 year	0.109	1.115	0.001
2 years	0.105	1.111	0.011
3 years	0.082	1.086	0.013
4 years	0.080	1.084	0.314
5 years	0.033	1.033	0.283
6-10 years	0.032	1.033	0.998
11-15 years	0.000	1.000	0.156
16-20 years	-0.053	0.948	0.002
21-25 years	-0.128	0.880	0.001
26-30 years	-0.147	0.863	<0.001
30+ years	-0.298	0.742	<0.001
<b>Index offence</b>			
Violence (non serious)		<i>Reference category</i>	
Violence (serious)	-0.464	0.629	0.004
Robbery	-0.113	0.893	<0.001
Public Order	0.131	1.140	<0.001
Sexual	-0.206	0.814	<0.001
Sexual Child	-0.608	0.545	<0.001
Domestic Burglary	0.185	1.204	<0.001
Other Burglary	0.278	1.320	<0.001
Theft	0.508	1.661	<0.001
Handling	0.193	1.213	<0.001
Fraud/Forgery	-0.116	0.890	<0.001
Absconding Bail Offence	0.258	1.294	<0.001
Taking and Driving Away	0.187	1.206	<0.001
Theft from Vehicles	0.369	1.446	0.042
Motoring Offence	0.040	1.041	<0.001
Drink Driving	-0.141	0.868	<0.001
Criminal Malicious Damage	0.172	1.188	<0.001
Drugs Import/Export/Supply	-0.237	0.789	0.305
Drugs possession/Small Scale Supply	0.022	1.022	<0.001
Other	0.166	1.181	<0.001
Breach	0.244	1.277	<0.001
<b>Ethnicity</b>			
White		<i>Reference category</i>	
Not Recorded	-0.329	0.720	<0.001
Black	0.060	1.061	0.874
Asian	0.004	1.004	0.531
Other	0.038	1.038	<0.001
<b>Appearances in previous cohorts</b>			
No previous appearances		<i>Reference category</i>	
One previous appearance	-0.026	0.974	<0.001
Two previous appearances	-0.154	0.858	<0.001
Three previous appearances	-0.224	0.799	<0.001
<b>Reoffences in previous cohorts</b>			
No reoffences		<i>Reference category</i>	
One reoffence	0.448	1.566	<0.001
Two reoffences	0.736	2.088	<0.001
Three reoffences	0.973	2.647	<0.001
<b>Reoffended in most recent cohort</b>	0.225	1.253	0.001

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Variables	Logistic coefficient	Exponent of coefficient	Significance
<b>Previous offences</b>			
Total number of previous violence offences	-0.006	0.994	<0.001
Total number of previous public order offences	0.033	1.033	<0.001
Total number of previous theft offences	0.011	1.011	<0.001
Total number of previous handling offences	-0.012	0.988	<0.001
Total number of previous absconding offences	0.016	1.016	0.015
Total number of previous theft from vehicle offences	0.007	1.007	0.039
Total number of previous drink driving offences	0.026	1.026	<0.001
Total number of previous criminal damage offences	0.009	1.009	<0.001
Total number of previous drugs (possession/small-scale supply) offences	0.010	1.010	<0.001
One or more previous sexual offences	0.121	1.129	<0.001
<b>Area</b>			
London		<i>Reference category</i>	
Avon and Somerset	-0.092	0.912	0.006
Bedfordshire	-0.144	0.866	0.439
Cambridgeshire	-0.030	0.970	0.010
Cheshire	-0.097	0.908	<0.001
Teesside	0.191	1.211	0.098
Cumbria	0.070	1.072	<0.001
Derbyshire	-0.233	0.792	<0.001
Devon and Cornwall	-0.153	0.858	0.006
Dorset	-0.132	0.877	0.135
Durham	0.055	1.057	0.007
Essex	-0.080	0.923	0.104
Gloucestershire	-0.080	0.923	0.166
Hampshire	-0.040	0.961	0.005
West Mercia	-0.100	0.904	<0.001
Hertfordshire	-0.163	0.849	0.079
Humberside	-0.061	0.941	<0.001
Kent	-0.151	0.860	0.378
Lancashire	-0.023	0.977	<0.001
Leicestershire	-0.242	0.785	0.019
Lincolnshire	-0.111	0.895	<0.001
Greater Manchester	-0.175	0.840	<0.001
Merseyside	-0.163	0.849	0.618
Norfolk	-0.021	0.979	0.007
Northamptonshire	-0.125	0.882	<0.001
Northumbria	0.120	1.128	0.021
Nottinghamshire	0.069	1.071	0.007
Thames Valley	-0.077	0.926	0.001
Staffordshire	-0.112	0.894	0.019
Suffolk	-0.116	0.891	0.004
Surrey	-0.146	0.864	<0.001
Sussex	-0.165	0.848	0.469
Warwickshire	-0.037	0.964	<0.001
West Midlands	-0.095	0.909	<0.001
Wiltshire	-0.217	0.805	0.162
North Yorkshire	-0.060	0.942	0.165
South Yorkshire	0.038	1.039	0.016
West Yorkshire	-0.056	0.946	0.154
Dyfed-Powys	-0.074	0.929	0.323
Gwent	-0.038	0.962	0.359
North Wales	0.036	1.037	0.590
South Wales	-0.015	0.985	0.439
Unknown area	0.037	1.037	<0.001
<b>Type of sentence</b>			
Licence		<i>Reference category</i>	
Community order	0.273	1.314	<0.001
<b>Interactions between sentence type and age</b>			
Community order and aged 18-20		<i>Reference category</i>	
Community order and aged 21 - 24	0.279	1.322	<0.001
Community order and aged 25 - 29	0.488	1.630	<0.001
Community order and aged 30 - 34	0.649	1.913	<0.001
Community order and aged 35 - 39	0.621	1.861	<0.001
Community order and aged 40 - 49	0.795	2.214	<0.001
Community order and aged 50+	0.835	2.306	0.002
<b>Interactions between sentence type and criminal career variables</b>			
Community order * Time on caseload (inverse)	0.603	1.827	<0.001
Community order * previous drink driving offences	-0.053	0.949	<0.001
Community order * previous custodial sentences (log)	-0.159	0.853	<0.001
<b>Interactions between sentence type and appearances in previous cohorts</b>			
Community order and one previous appearance	-0.213	0.809	<0.001
Community order and two previous appearances	-0.281	0.755	<0.001
Community order and three previous appearances	-0.327	0.721	<0.001
Community order and reoffended in most recent cohort	0.188	1.207	<0.001

## Statistical significance

Testing for statistical significance allows us to determine whether a change between two datasets is likely to be due to a real change in performance, or is just due to random volatility in the data.

For the local reoffending measure we test for statistical significance such that we are 95 per cent confident that any change we observe that meets our test for statistical significance is 'real'. Lines which show where the 99 per cent level of confidence would lie are also included on the funnel plots.

## Funnel plots<sup>20</sup>

The funnel plot shows how many areas have results which are statistically significantly better or worse than the baseline.

The standardised reoffending ratio is calculated as:

$$(A/P)*100$$

where A is the proportion of offenders reoffending (Actual rate)  
and P is the proportion of offenders we predict will reoffend (Predicted rate).

When the actual rate is higher than the predicted rate (more offenders reoffending than predicted), the ratio will be greater than 100. The ratio will be lower than 100 when the actual rate is lower than the predicted rate (fewer offenders reoffending than predicted).

The x-axis shows the predicted number of reoffenders (and is therefore an indication of the size of the caseload in each area).

The 'funnel' has two dotted lines which show the boundaries of statistical significance (based on 95 per cent and 99 per cent confidence that the result represents a real change in performance).

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<sup>20</sup> For further details on the construction of funnel plots and how they may be used, see Spiegelhalter, 2005.

## References

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