

**Local Adult Reoffending  
1 October 2007 –  
30 September 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 October 1 2007 to September 30 2008.

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

[www.justice.gov.uk/publications/statistics.htm](http://www.justice.gov.uk/publications/statistics.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 October 2007 to 30 September 2008 was 9.88 per cent. This was an increase of 0.56 per cent compared to the 2007/2008 baseline (1 April 2007 to 31 March 2008), which was not 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). No other Government Office Regions had a result that was statistically significant.
- Six probation areas had a statistically significant increase in reoffending, whilst two probation areas showed a statistically significant reduction in reoffending.
- 16 local authorities had a statistically significant increase in reoffending, whilst 12 local authorities showed a statistically significant reduction in reoffending.<sup>5</sup>
- Reoffending by offenders on licence from custodial sentences increased by 4.24 per cent compared to the baseline, although the actual rate of reoffending remained lower than for offenders on court orders under probation supervision.

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 offenders 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 first of a series of quarterly reports which will monitor local adult reoffending.

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 October 2007 to 30 September 2008. The baseline period which these reports will be compared to 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).

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

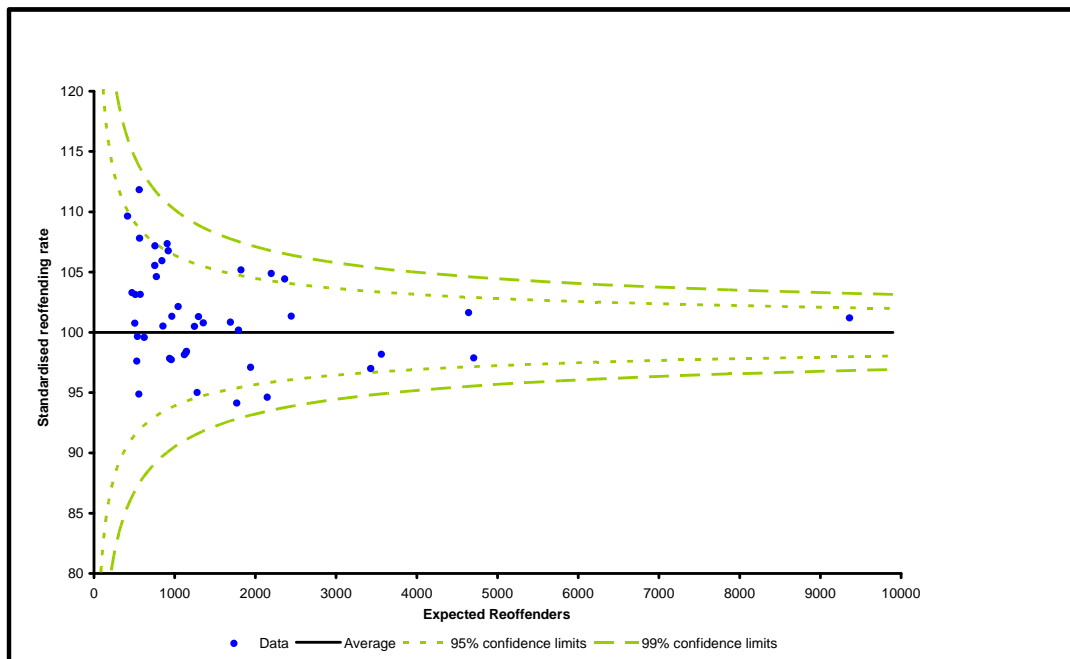
## Reoffending rates by Probation Area

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**



Whilst there are six areas showing a statistically significant increase in reoffending from the baseline, and two areas showing a statistically significant reduction, there is no overall change when the data is aggregated to the England and Wales level.

This is the first rolling four quarter dataset where we have seen statistically significant changes in any area (as it is only the second set of rolling four quarter since the baseline period). As we 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

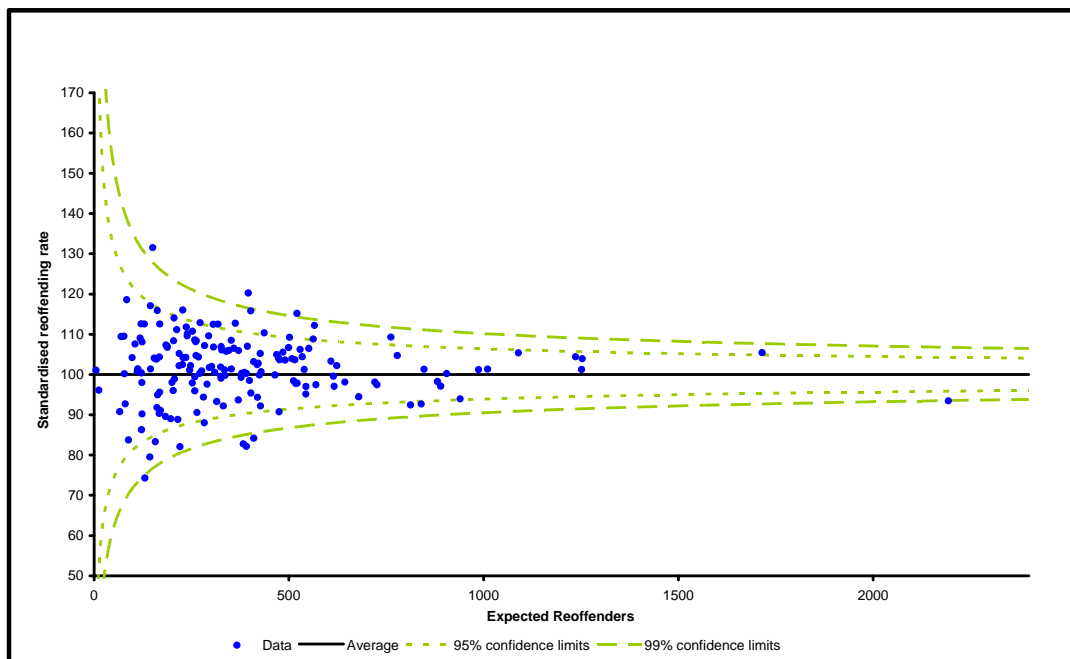
Changes in reoffending from the baseline can be illustrated by use of a funnel plot<sup>8</sup>.

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**



Whilst there are sixteen local authorities showing a statistically significant increase in reoffending from the baseline, and twelve local authorities showing a statistically significant reduction, there is no overall change when the data is aggregated to the England and Wales level.

This is the first rolling four quarter dataset where we have seen statistically significant changes in any area. As we move further away from the baseline

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

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 the Probation 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/statistics.htm](http://www.justice.gov.uk/publications/statistics.htm).

Future reports will be published on a quarterly basis. 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

Email: [press.office@justice.gsi.gov.uk](mailto:press.office@justice.gsi.gov.uk)

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 e-mailed 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**

<b>Reoffending period covered</b>	<b>Cohort size</b> (combining four quarters of probation caseload data) <sup>9</sup>	<b>Actual rate of reoffending</b>	<b>Predicted rate of reoffending</b>	<b>% difference from baseline</b> <sup>10</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%

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<sup>9</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>10</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>11</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline <sup>12</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>

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

Reoffending period covered	Cohort size (combining four quarters of probation caseload data)	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline <sup>12</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%

<sup>11</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>12</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.

A increase from the baseline of 10 per cent (assuming predicted rate of 10 per cent, and actual rate of either 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 decrease from the baseline of 5 per cent (assuming predicted rate of 10 per cent, and actual rate of either 9.5 per cent) for a caseload of 5000 would mean that there were 25 reoffenders less than was 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 October 2007 to 31 March 2008 (half 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 to 0.2 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 to 2 percentage points higher than it should be in this report.

Whilst this issue will also affect the next report in May, it will be to a lesser extent, as only one of the four quarters which make up that report will be affected.

Reports from August onwards 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 October 2007 to 30 September 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).

<b>Government office region</b>	<b>Probation area</b>	<b>Local Authority</b>	<b>Cohort size (combining four quarters of probation caseload data)<sup>13</sup></b>	<b>Actual rate of reoffending</b>	<b>Predicted rate of reoffending</b>	<b>% difference from baseline</b>
East Midlands			50556	9.34%	9.41%	-0.72%
	Derbyshire		11305	7.88%	7.44%	5.94%
		Derby	3884	8.29%	7.57%	9.58%
		Derbyshire	7397	7.94%	7.45%	6.47%
	Leicestershire		11469	8.17%	8.36%	-2.26%
		Leicester	6494	8.55%	8.77%	-2.55%
		Rutland	161	7.45%	7.76%	-3.91%

<sup>13</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 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Leicestershire	4919	7.97%	7.95%	0.29%
	Lincolnshire		5892	10.35%	9.60%	7.80%
		Lincolnshire	5894	10.38%	9.54%	<b>8.80%</b>
	Northamptonshire		7327	8.46%	8.50%	-0.42%
		Northamptonshire	7226	8.82%	8.62%	2.21%
	Nottinghamshire		14563	11.44%	12.15%	<b>-5.87%</b>
		Nottingham	6874	11.32%	12.22%	<b>-7.35%</b>
		Nottinghamshire	7504	11.51%	11.86%	-2.91%
East of England			59529	8.97%	8.66%	<b>3.50%</b>
	Bedfordshire		5559	8.78%	8.50%	3.30%
		Luton	2498	8.93%	8.74%	2.17%
		Bedfordshire	3167	8.65%	8.26%	4.72%
	Cambridgeshire		9392	10.48%	9.81%	<b>6.77%</b>
		Peterborough	3429	11.14%	10.27%	8.50%
		Cambridgeshire	5718	9.83%	9.25%	6.20%
	Essex		20820	8.19%	8.13%	0.84%
		Southend-on-Sea	2935	10.36%	9.66%	7.19%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Thurrock	2249	7.78%	8.74%	-10.97%
		Essex	15737	8.20%	7.86%	4.43%
	Hertfordshire		10229	7.93%	7.40%	7.18%
		Hertfordshire	10182	8.18%	7.48%	<b>9.31%</b>
	Norfolk		7381	10.97%	10.49%	4.63%
		Norfolk	7449	10.94%	10.45%	4.72%
	Suffolk		6148	8.75%	8.78%	-0.35%
		Suffolk	5913	8.56%	8.75%	-2.22%
London			108869	8.70%	8.60%	1.19%
		Barking and Dagenham	2962	8.37%	8.73%	-4.07%
		Barnet	2865	6.67%	7.50%	-11.15%
		Bexley	2159	7.69%	7.41%	3.81%
		Brent	3669	8.20%	8.07%	1.71%
		Bromley	3140	7.90%	7.81%	1.13%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Camden	2338	9.84%	9.35%	5.20%
		City of London	43	11.63%	11.51%	1.07% <sup>14</sup>
		Croydon	4868	8.87%	8.82%	0.67%
		Ealing	3883	8.01%	7.96%	0.56%
		Enfield	3838	8.03%	7.87%	2.00%
		Greenwich	4322	8.88%	9.31%	-4.60%
		Hackney	4375	10.65%	9.20%	<b>15.80%</b>
		Hammersmith and Fulham	2385	11.07%	9.54%	<b>16.04%</b>
		Haringey	3948	8.59%	8.49%	1.15%
		Harrow	2016	5.65%	7.11%	<b>-20.47%</b>
		Havering	2107	7.02%	7.65%	-8.20%
		Hillingdon	2832	6.39%	7.79%	<b>-17.95%</b>
		Hounslow	2913	8.48%	8.66%	-2.09%
		Islington	3149	10.92%	9.71%	<b>12.47%</b>

<sup>14</sup> Data for the City of London is based on only 43 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 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Kensington and Chelsea	1364	8.94%	8.91%	0.39%
		Kingston upon Thames	1092	9.34%	8.96%	4.21%
		Lambeth	6019	9.07%	8.96%	1.23%
		Lewisham	5537	8.38%	8.39%	-0.12%
		Merton	1845	8.73%	8.38%	4.07%
		Newham	5403	9.14%	8.82%	3.68%
		Redbridge	2868	8.12%	7.93%	2.48%
		Richmond on Thames	1004	7.77%	7.76%	0.17%
		Southwark	5453	9.32%	9.00%	3.56%
		Sutton	2048	9.81%	9.19%	6.76%
		Tower Hamlets	3719	11.00%	9.75%	<b>12.74%</b>
		Waltham Forest	3644	9.00%	8.42%	6.85%
		Wandsworth	2885	8.77%	8.58%	2.21%
		Westminster	1768	11.09%	11.31%	-1.98%
North East			42700	14.63	14.91	-1.85
	Durham		9280	12.16%	12.35%	-1.59%
		Darlington	1944	13.22%	13.29%	-0.56%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Durham	7296	11.87%	12.08%	-1.75%
	Northumbria		21793	15.26%	15.74%	-3.01%
		Gateshead	3257	13.23%	14.59%	<b>-9.27%</b>
		Newcastle-upon-Tyne	5287	17.16%	17.12%	0.21%
		North Tyneside	2913	16.92%	16.27%	4.00%
		South Tyneside	2560	12.38%	14.96%	<b>-17.22%</b>
		Sunderland	4314	14.88%	15.75%	-5.53%
		Northumberland	3448	15.89%	14.55%	<b>9.26%</b>
	Teesside		11627	15.44%	15.41%	0.19%
		Hartlepool	1997	19.68%	18.57%	5.95%
		Middleborough	3897	15.35%	15.81%	-2.95%
		Redcar and Cleveland	2619	14.59%	13.69%	6.54%
		Stockton-on-Tees	2989	13.25%	14.04%	-5.64%
North West			114596	10.04%	9.83%	<b>2.05%</b>
	Cheshire		11269	8.68%	8.57%	1.33%
		Halton	1808	8.13%	8.02%	1.37%
		Warrington	2435	9.69%	8.72%	11.15%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

<b>Government office region</b>	<b>Probation area</b>	<b>Local Authority</b>	<b>Cohort size (combining four quarters of probation caseload data)<sup>13</sup></b>	<b>Actual rate of reoffending</b>	<b>Predicted rate of reoffending</b>	<b>% difference from baseline</b>
		Cheshire West and Chester	3863	8.67%	8.69%	-0.24%
		Cheshire East	3318	8.53%	8.74%	-2.38%
	Cumbria		6608	13.00%	12.93%	0.52%
		Cumbria	6555	13.09%	12.92%	1.31%
	Greater Manchester		48016	9.83%	9.67%	1.64%
		Bolton	5005	10.65%	9.98%	6.69%
		Bury	3229	8.21%	8.69%	-5.61%
		Manchester	12492	10.43%	10.04%	3.94%
		Oldham	3822	9.94%	9.91%	0.28%
		Rochdale	4135	10.86%	10.32%	5.22%
		Salford	5210	9.83%	9.31%	5.56%
		Stockport	3555	8.61%	9.34%	-7.80%
		Tameside	3430	10.41%	10.27%	1.36%
		Trafford	2898	9.39%	9.36%	0.27%
		Wigan	4435	8.75%	8.70%	0.54%
	Lancashire		22633	10.94%	10.80%	1.34%
		Blackburn with Darwen	3212	10.09%	10.13%	-0.46%
		Blackpool	3904	10.09%	10.95%	-7.81%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Lancashire	15624	11.57%	<b>10.98%</b>	<b>5.42%</b>
	Merseyside		26070	9.47%	9.07%	<b>4.42%</b>
		Knowsley	3058	9.16%	8.77%	4.38%
		Liverpool	11051	9.27%	9.14%	1.35%
		St Helens	2600	10.77%	9.72%	10.77%
		Sefton	3637	9.57%	9.02%	6.06%
		Wirral	5696	10.53%	9.15%	<b>15.18%</b>
South East			77308	8.87%	8.87%	0.10%
	Hampshire		19460	9.69%	9.98%	-2.90%
		Portsmouth	2939	11.81%	12.60%	-6.33%
		Southampton	4015	8.59%	10.21%	<b>-15.81%</b>
		Isle of Wight	1558	12.07%	10.41%	15.88%
		Hampshire	10756	9.29%	9.18%	1.21%
	Kent		16761	7.84%	7.74%	1.30%
		Medway	2926	8.41%	8.06%	4.25%
		Kent	14023	8.19%	7.77%	5.37%
	Surrey		6114	8.67%	8.40%	3.14%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Surrey	6303	8.85%	8.48%	4.43%
	Sussex		14982	8.11%	8.54%	-4.99%
		Brighton and Hove	3683	7.98%	8.56%	-6.71%
		East Sussex	4835	8.96%	8.71%	2.77%
		West Sussex	6385	8.10%	8.51%	-4.86%
	Thames Valley		19991	9.59%	9.12%	<b>5.17%</b>
		Bracknell Forest	973	7.61%	8.20%	-7.28%
		West Berkshire	1160	9.83%	9.69%	1.44%
		Reading	2427	10.92%	9.76%	11.82%
		Slough	2454	9.54%	8.36%	14.03%
		Windsor and Maidenhead	1098	6.74%	8.05%	-16.26%
		Wokingham	834	7.19%	7.93%	-9.22%
		Milton Keynes	2783	10.13%	9.37%	8.14%
		Buckinghamshire	3641	9.59%	8.97%	6.91%
		Oxfordshire	4472	10.78%	9.77%	<b>10.36%</b>
South West			41907	9.81%	9.43%	<b>3.99%</b>
	Avon and Somerset		13670	9.99%	9.91%	0.79%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Bath and N.E. Somerset	1177	10.96%	10.05%	9.02%
		Bristol, City of	5872	10.76%	10.97%	-1.86%
		North Somerset	1698	8.89%	9.84%	-9.65%
		South Gloucestershire	1379	8.19%	7.62%	7.56%
		Somerset	3507	10.21%	9.07%	<b>12.53%</b>
	Devon and Cornwall		11507	9.27%	9.08%	2.14%
		Plymouth	2548	11.03%	10.16%	8.58%
		Torbay	1298	8.09%	9.38%	-13.72%
		Cornwall	3759	7.42%	7.36%	0.90%
		Isles of Scilly	10	20.00%	6.28%	<b>218.64%</b> <sup>15</sup>
		Devon	3933	10.70%	10.00%	7.02%
	Dorset		5806	10.20%	9.89%	3.15%
		Bournemouth	2458	11.55%	10.66%	8.36%
		Poole	1245	8.92%	9.89%	-9.81%

<sup>15</sup> Data for the Isles of Scilly is based on only ten offenders, and therefore the difference between actual and predicted rates of 218.64 per cent reflects a difference of one offender (we predicted one offender to reoffend [rounding up], and two offenders did reoffend). The data has only been included for completeness in covering all Local Area Agreements.

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Dorset	2200	10.05%	9.27%	8.38%
	Gloucestershire <sup>16</sup>		5672	11.09%	9.92%	<b>11.83%</b>
		Gloucestershire <sup>17</sup>	5692	11.16%	9.94%	<b>12.19%</b>
	Wiltshire		5252	8.70%	7.94%	9.65%
		Swindon	1850	10.27%	9.13%	12.55%
		Wiltshire	3285	8.04%	7.30%	10.14%
Wales			42120	11.18%	10.80%	<b>3.46%</b>
	Dyfed-Powys		4645	10.98%	10.90%	0.76%
		Powys	1090	10.28%	10.19%	0.81%
		Ceredigion	638	11.91%	10.89%	9.42%
		Pembrokeshire	1137	10.55%	10.77%	-2.02%
		Carmarthenshire	1806	10.80%	11.24%	-3.97%

<sup>16</sup> Data for Gloucestershire should be treated with caution, as more work is needed to assess whether flooding in Gloucestershire in the baseline period (which resulted in disruption to courts) has led to a lower than normal rate of reoffending in the baseline period, which would therefore make comparisons with future results unfair.

<sup>17</sup> See above.

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
	Gwent		8551	10.75%	10.99%	-2.16%
		Caerphilly	2664	8.97%	9.91%	-9.43%
		Blaenau Gwent	1242	7.81%	10.51%	<b>-25.72%</b>
		Torfaen	1219	11.89%	10.57%	12.54%
		Monmouthshire	720	11.67%	10.65%	9.54%
		Newport	2702	13.29%	12.56%	5.79%
	North Wales		9232	10.55%	9.83%	<b>7.35%</b>
		Isle of Anglesey	883	11.21%	9.45%	18.59%
		Gwynedd	1375	12.29%	10.50%	17.08%
		Conwy	1305	10.19%	9.43%	8.10%
		Denbighshire	1204	11.30%	10.03%	12.60%
		Flintshire	1864	7.03%	8.44%	<b>-16.72%</b>
		Wrexham	2499	12.28%	10.89%	<b>12.85%</b>
	South Wales		19692	11.70%	11.16%	<b>4.88%</b>
		Swansea	3478	13.69%	11.38%	<b>20.25%</b>
		Neath Port Talbot	1736	9.27%	9.70%	-4.38%
		Bridgend	1880	10.69%	9.99%	7.07%
		The Vale of Glamorgan	1567	12.64%	11.78%	7.30%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Rhondda, Cynon, Taff	3824	9.81%	9.88%	-0.72%
		Merthyr Tydfil	1363	14.53%	11.04%	<b>31.53%</b>
		Cardiff	5777	12.26%	12.57%	-2.52%
West Midlands			81337	9.03%	9.22%	-2.04%
	Staffordshire		12578	8.90%	9.06%	-1.70%
		Stoke-on-Trent	4138	10.25%	10.26%	-0.13%
		Staffordshire	8609	8.21%	8.37%	-1.89%
	Warwickshire		5096	10.15%	10.39%	-2.39%
		Warwickshire	5328	9.91%	10.21%	-2.96%
	West Mercia		11421	9.63%	9.81%	-1.86%
		Herefordshire	1583	9.79%	10.31%	-5.03%
		Telford and Wrekin	2001	8.20%	9.15%	-10.40%
		Shropshire	2047	9.97%	10.08%	-1.09%
		Worcestershire	6230	10.08%	9.76%	3.31%
	West Midlands		52242	8.82%	9.01%	-2.12%
		Birmingham	24497	8.37%	8.95%	<b>-6.54%</b>
		Coventry	5711	8.83%	8.97%	-1.59%

Local Adult Reoffending – 1 October 2007 – 30 September 2008

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data) <sup>13</sup>	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
		Dudley	3677	8.78%	8.86%	-0.90%
		Sandwell	4975	8.50%	8.24%	3.20%
		Solihull	2027	7.65%	8.40%	-8.93%
		Walsall	3901	10.07%	10.23%	-1.50%
		Wolverhampton	3739	9.82%	9.26%	5.99%
Yorkshire and Humberside			68411	11.07%	11.27%	-1.72%
	Humberside		11908	10.51%	10.46%	0.50%
		Kingston upon Hull, City of	4788	10.65%	10.88%	-2.13%
		East Riding of Yorkshire	1856	9.43%	9.04%	4.36%
		North East Lincolnshire	2848	11.62%	11.41%	1.87%
		North Lincolnshire	2387	9.97%	9.57%	4.20%
	North Yorkshire		6678	11.92%	11.29%	5.55%
		York	2013	13.02%	11.87%	9.62%
		North Yorkshire	4657	11.47%	11.06%	3.65%
	South Yorkshire		17744	11.45%	12.10%	<b>-5.38%</b>
		Barnsley	3471	12.36%	12.06%	2.47%

Local Adult Reoffending – 1 October 2007 – 30 September 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>13</sup>	<b>Actual rate of reoffending</b>	<b>Predicted rate of reoffending</b>	<b>% difference from baseline</b>
		Doncaster	4098	12.88%	12.40%	3.91%
		Rotherham	3334	9.63%	11.72%	<b>-17.85%</b>
		Sheffield	6721	11.17%	12.09%	<b>-7.56%</b>
	West Yorkshire		32081	10.90%	11.10%	-1.82%
		Bradford	8485	10.41%	11.08%	-6.05%
		Calderdale	2684	9.28%	10.54%	<b>-12.01%</b>
		Kirklees	5698	10.74%	10.79%	-0.43%
		Leeds	11021	11.50%	11.36%	1.23%
		Wakefield	4081	12.06%	11.49%	4.93%

## 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 disposal type) 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 68.7 per cent overall discrimination level on the latest dataset (Table 5). 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	426,868	197,050	68.4%
	Yes	19,953	48,459	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**

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

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

<b>Variables</b>	<b>Logistic coefficient</b>	<b>Exponent of coefficient</b>	<b>Significance</b>
<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

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>18</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>18</sup> For further details on the construction of funnel plots and how they may be used, see Spiegelhalter, 2005.

## References

**Hosmer, D. and Lemeshow S. (2000)** Applied Logistic Regression (2<sup>nd</sup> Ed). John Wiley & Sons: New York

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