Ministry of JUSTICE

Local Adult Reoffending 1 April 2009 – 31 March 2010 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 are to help local practitioners understand progress in reducing reoffending 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[1].

It covers reoffending in the period 1 April 2009 to 31 March 2010.

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

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

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

[1] "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[2]. The latest reoffending results are compared to the rate in 2007/08 which is hereafter referred to as the baseline. The 2007/08 results covered reoffending between 1 April 2007 to 31 March 2008 and are the earliest published data on this measure.

- 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 April 2009 to 31 March 2010 was 9.71 per cent. This was a statistically significant decrease of 2.88 per cent compared to the 2007/08 baseline.

- The East of England Government Office Region had a statistically significant increase in reoffending compared to the baseline. Five Government Office Regions had a statistically significant reduction in reoffending (East Midlands, London, North East, West Midlands and Yorkshire & Humberside)[3].

- Four Probation Areas had a statistically significant increase in reoffending, whilst ten Probation Areas showed a statistically significant reduction in reoffending.

- Eight local authorities had a statistically significant increase in reoffending, whilst thirty one[4] local authorities showed a statistically significant reduction in reoffending.

- Reoffending by offenders on licence following a custodial sentence showed a statistically significant increase of 4.07 per cent compared to the baseline, although this was an improvement on the previous quarter. The actual rate of reoffending remained lower than for offenders on court orders under probation supervision.

- Reoffending by offenders serving a court order showed a statistically significant reduction of 4.07 per cent compared to the baseline.

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[2] 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.

[3] 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).

[4] This includes the Isles of Scilly, whose reoffending rate is based on a very small cohort size.

- The unadjusted rate of reoffending in the period 1 April 2009 to 31 March 2010 was 0.11 percentage points lower than reoffending in the baseline period 1 April 2007 to 31 March 2008, and 0.10[5] percentage points lower than reoffending in the previous quarter (1 January 2009 to 31 December 2009).

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

[5] This may not match with the difference that can be calculated from Table 1 in Appendix A because the numbers in Table 1 are rounded to two decimal points.

Trends in reoffending by area

The reoffending of individual areas over time has been tracked to assess whether any areas have seen clear trends in reoffending rates since the start of the series in the 2007/08 baseline. This analysis focuses on areas where reoffending has been significantly higher or lower than predicted over four or more consecutive periods.

Reductions in reoffending

At the Government Office Region level, East Midlands and Yorkshire & Humberside have had reoffending rates which were consistently lower than predicted over the four most recent periods.

Within the East Midlands region, Nottinghamshire Probation Area and Nottingham and Nottinghamshire local authorities have had reoffending rates which were consistently lower than predicted.

For the Yorkshire and Humberside region, South Yorkshire and West Yorkshire probation areas and the Bradford and Sheffield local authorities have experienced reoffending rates which are also consistently lower than predicted.

Durham and Staffordshire Probation Areas have had four consecutive quarters of consistently lower than predicted reoffending rates, and within Staffordshire Probation Area Staffordshire local authority has also had consistently lower than predicted rates.

Southampton and Caerphilly and Isles of Scilly[6] local authority areas have also had reoffending rates which are consistently lower than predicted.

Increases in reoffending

The East of England Government Office Region has seen rates of reoffending which were significantly higher than predicted over the four most recent periods.

Within the East of England region, Hertfordshire Probation Area and Hertfordshire local authority area have seen rates of reoffending which were significantly higher than predicted over the four most recent periods.

Kent Probation Area and Kent local authority have experienced reoffending rates which are consistently higher than predicted.

Wirral and Wiltshire local authorities have also had reoffending rates that have been consistently higher than predicted.

[6] Isles of Scilly results are based on very small numbers and are included for completeness.

Trends since 2007/08

Chart 1 shows the proportion of Probation Areas that have seen increases/decreases/no significant change over each of the seven quarters since the baseline. For the most recent quarter about ten per cent of areas show an increase and twenty four per cent show a decrease.

Chart 1: Proportion of Probation Areas with increases/decreases/no change in reoffending, July 2007 – March 2010

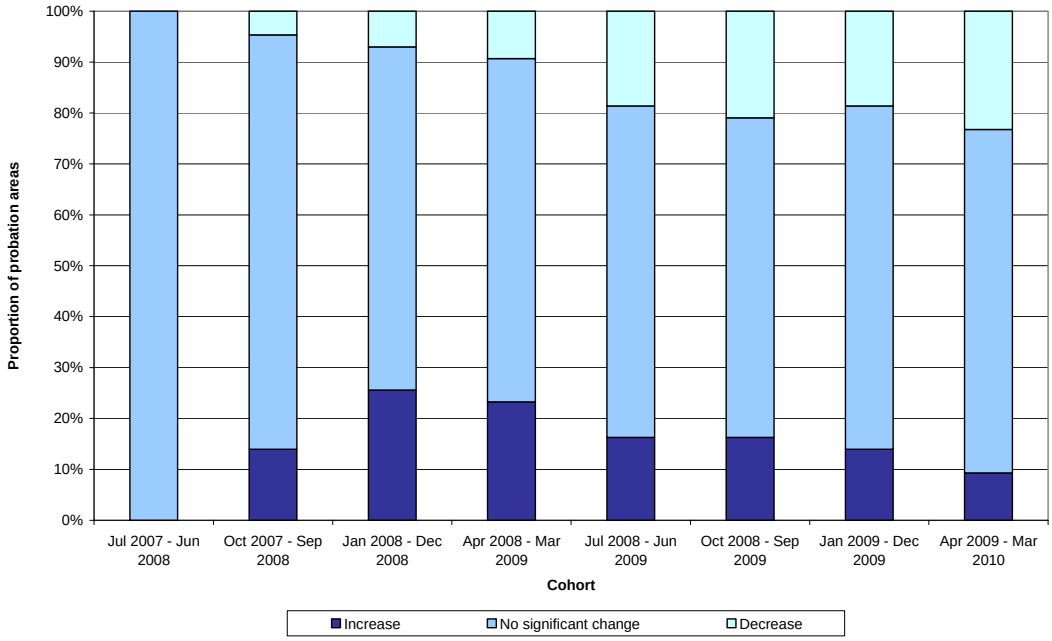
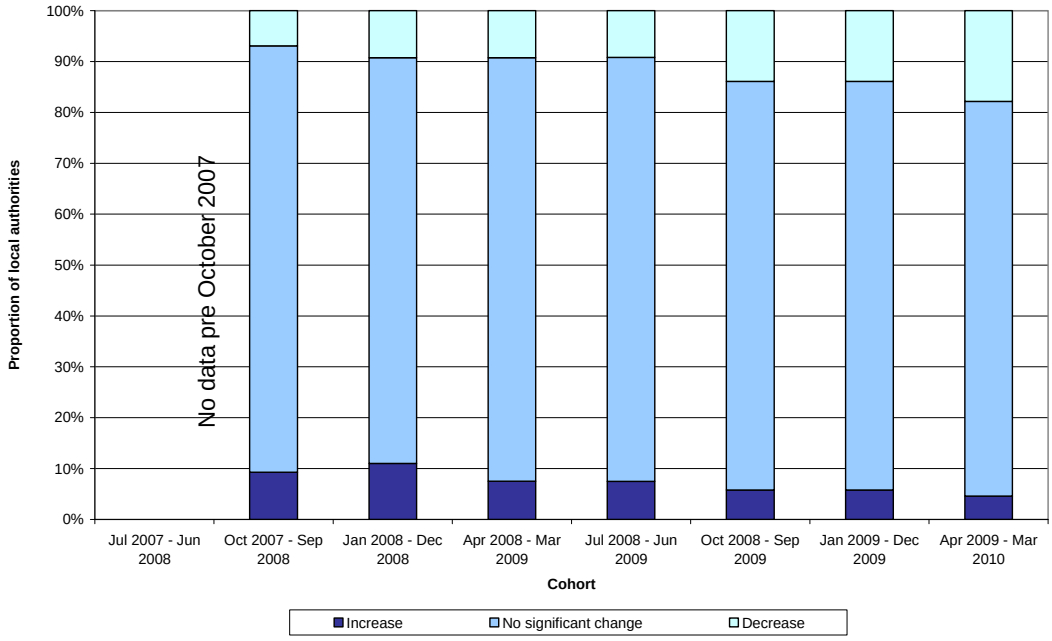


Chart 2 presents the same information for local authorities[7]. For the most recent quarter the proportion showing an increase was about five per cent and the proportion showing a decrease about eighteen per cent.

Chart 2: Proportion of local authorities with increases/decreases/no change in reoffending, October 2007 – March 2010



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 and taking into account the size of the caseload in each area[8].

[7] Data for periods prior to October 2007 cannot be broken down to the local authority level.

[8] Column titled '% difference from baseline' in data tables in Appendix A.

Future reports

This is the seventh of a series of quarterly reports which monitors local adult reoffending. The previous report was published on 18 May 2010.

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 April 2009 to 31 March 2010. These results are compared to the baseline which covered reoffending in the period 1 April 2007 to 31 March 2008.

The next report will be published on 16 November 2010 and will cover reoffending in the period 1 July 2009 to 30 June 2010.

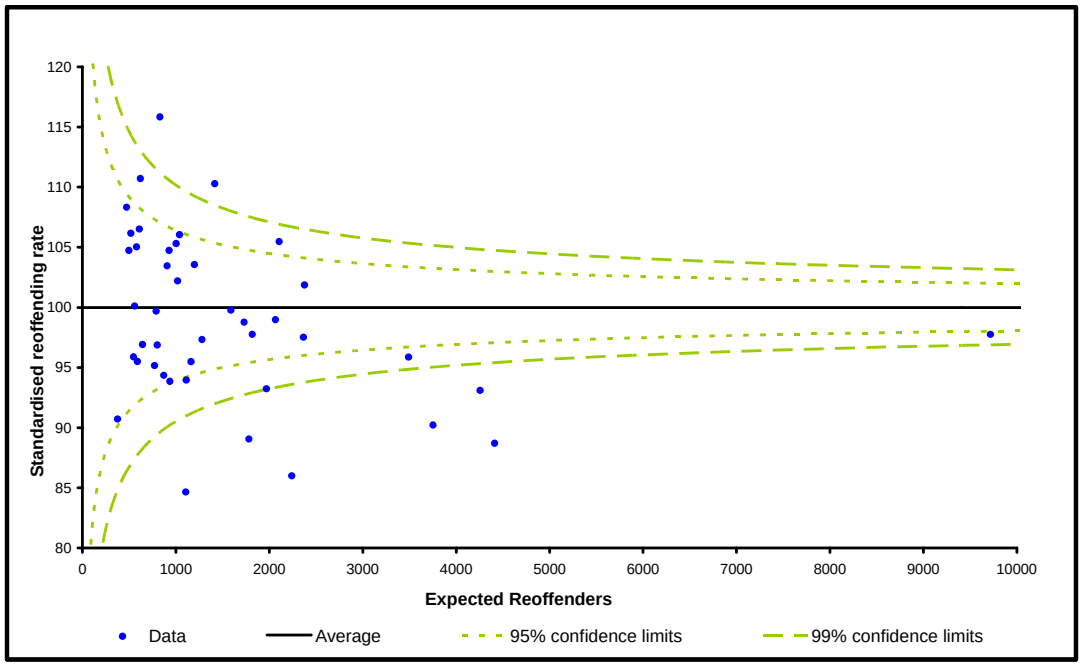
Reoffending rates by Probation Area

Changes in reoffending from the baseline can be illustrated by use of a funnel plot[9].

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 four areas showing a statistically significant increase in reoffending since the baseline, and ten areas showing a statistically significant reduction.

[9] See Appendix C for more detail on funnel plots, statistical significance and the predicted rate.

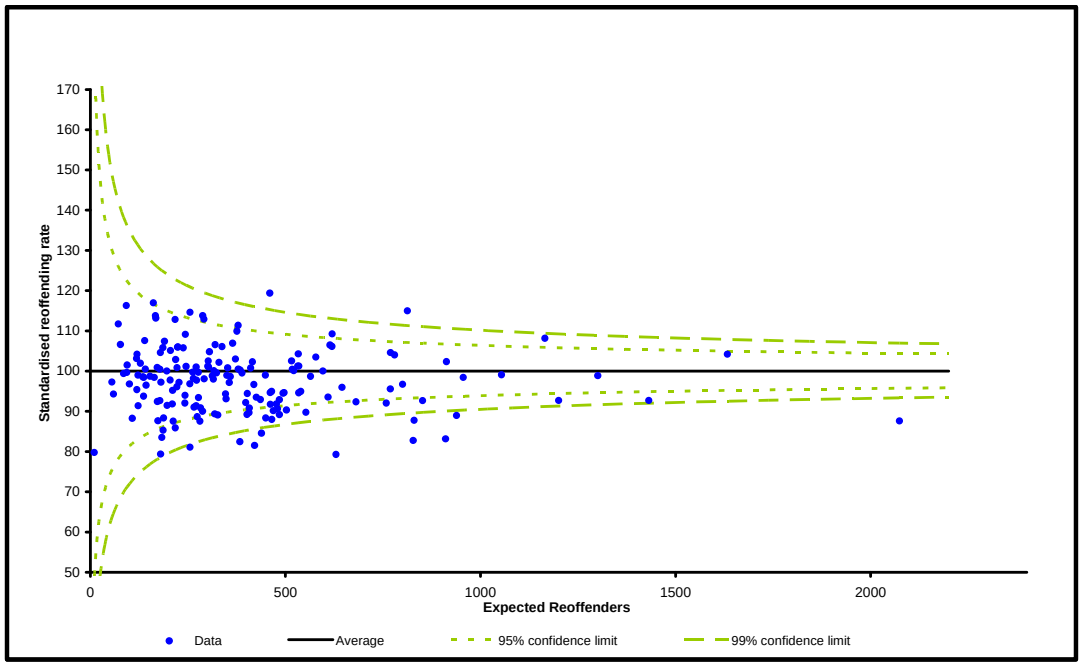
Reoffending by Local Authority Area

Changes in reoffending from the baseline can be illustrated by use of a funnel plot[10].

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.

Figure B – Changes in reoffending at the local authority level



There are eight local authorities showing a statistically significant increase in reoffending since the baseline, and thirty one local authorities showing a statistically significant reduction[11].

[10] See appendix C for more detail on funnel plots, statistical significance and the predicted rate.

[11] The thirty one local authorities showing a significant decrease since the baseline includes the Isles of Scilly, whose reoffending rate is based on a very small cohort size. The chart only has thirty data points showing a statistically significant decrease. This is because the standardised reoffending rate for the Isles of Scilly was below the scale of the graph.

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.

Why are the results being compared to 2007/08 results (the baseline)?

The 2007/08 results were used to build the predictive rate model, which allow comparisons to be made across time, controlling for changes in the mix of offenders in the caseload. The 2007/08 results are also the first available for this measure. 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 (PNC), 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 and reoffending rates in the baseline period. More detail on the predicted rate, and the statistical model used to calculate it, is provided in Appendix C.

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. They 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 and are included under the heading of unknown local authority (shown at the end of table 4).

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.

Probation Trusts

On 1 April 2010, 29 new Probation Trusts were established following a rigorous formal application process, resulting in all 42 former Probation Boards having been replaced by 35 Probation Trusts[12].

As part of these changes, a number of former Probation Boards were involved in mergers to become Probation Trusts. This publication presents data on the Probation Board boundaries as it covers a reporting period (1 April 2009 to 31 March 2010) which was prior to these mergers.

This publication includes an additional table of historical data for these new combined areas so that all future results can be compared over the full time series (dating back to 2007/08). This table (table 4b) can be found on page 36 of this report.

From the November report onwards, the report will change to present data by Probation Trust area, as the report will cover some of the period after the transition from Board to Trusts[13].

For more information on the move from Probation Boards to Probation Trusts please see www.opsi.gov.uk/si/si2010/uksi_20100195_en_1

[12] The first six Probation Trusts were established from 1 April 2008 and a further two were established from 1 April 2009 under powers of the Offender Management Act 2007.

[13] Data will then not be available for the Boards that have merged, as the source data will be reported on the Probation Trust basis.

Differences to the National Statistics on adult reoffending, and other local measures of offending

This measure of local adult reoffending has been developed primarily as a more timely source of 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, and differences to other local measures of offending are covered in detail in Appendix B.

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 PNC. 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.

This bulletin covers all offenders who are on the probation caseload and are at risk of reoffending. Offenders who are recorded as being in custody at the end of each quarter are excluded from the analysis. However, offenders who have entered custody during this three month follow up period cannot be identified in the dataset, and are therefore included in these figures.

Revisions policy

The local adult reoffending results are not subject to routine revisions.

Whilst the Police National Computer is a live system and the Ministry of Justice extract is updated on a weekly basis, the local adult reoffending results are produced using snapshots of this database at the end of each quarter. We do not, therefore, update the results to reflect later updates to the database.

Revisions will only be made in the case of methodological change (on which we would consult in advance) or errors in the dataset (which will be corrected at the first available opportunity). In both cases, any revisions would be clearly explained in the report and accompanying tables showing the old and revised data would be included.

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. Spreadsheet files of the tables contained in this document are also available for download from this address.

Reports are published on a quarterly basis. The next report will cover reoffending in the period 1 July 2009 to 30 June 2010 and will be published on 16 November 2010.

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

Tel: 020 3334 3523
Email: pressofficenewsdesk@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
Floor 7/B
102 Petty France
London
SW1H 9AJ

General enquiries about the statistical work of the Ministry of Justice can be e-mailed to: statistics.enquiries@justice.gsi.gov.uk.

General information about the official statistics system of the UK is available from www.statistics.gov.uk.

Appendix A – Main results

Table 1: Reoffending rates, all offenders on the probation caseload in England and Wales[14,15]

Reoffending period covered	Cohort size (combining four quarters of probation caseload data)	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
April 1 2007 to March 31 2008 *(baseline period)*	685873	9.82%	9.82%	0.00%
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%	**0.91%**
April 1 2008 to March 31 2009	691638	9.98%	9.92%	0.57%
July 1 2008 to June 30 2009	691517	9.93%	9.98%	-0.52%
October 1 2008 to September 30 2009	690994	9.87%	10.02%	**-1.46%**
January 1 2009 to December 31 2009	691261	9.82%	10.02%	**-2.03%**
April 1 2009 to March 31 2010	688616	9.71%	10.00%	**-2.88%**

[14] 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 reflects the aggregation of four quarters of data.

[15] Data in bold illustrates that the change in reoffending from the baseline is statistically significant.

Table 2: Reoffending rates – all offenders on licence under probation supervision, England and Wales[16,17]

Reoffending period covered	Cohort size (combining four quarters of probation caseload data)	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
April 1 2007 to March 31 2008 *(baseline period)*	102721	8.22%	8.22%	0.00%
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%	**4.24%**
January 1 2008 to December 31 2008	114614	8.69%	8.24%	**5.45%**
April 1 2008 to March 31 2009	118112	8.78%	8.24%	**6.50%**
July 1 2008 to June 30 2009	120290	8.67%	8.16%	**6.18%**
October 1 2008 to September 30 2009	122255	8.44%	8.06%	**4.71%**
January 1 2009 to December 31 2009	125000	8.31%	7.95%	**4.60%**
April 1 2009 to March 31 2010	127724	8.15%	7.84%	**4.07%**

[16] 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 reflects the aggregation of four quarters of data.

[17] Data in bold illustrates that the change in reoffending from the baseline is statistically significant.

Table 3: Reoffending rates – all offenders on court orders under probation supervision, England and Wales[18,19]

Reoffending period covered	Cohort size (combining four quarters of probation caseload data)	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
April 1 2007 to March 31 2008 *(baseline period)*	583152	10.10%	10.10%	0.00%
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%
April 1 2008 to March 31 2009	573526	10.23%	10.27%	-0.41%
July 1 2008 to June 30 2009	571227	10.19%	10.36%	**-1.64%**
October 1 2008 to September 30 2009	568739	10.18%	10.44%	**-2.49%**
January 1 2009 to December 31 2009	566261	10.15%	10.48%	**-3.14%**
April 1 2009 to March 31 2010	560892	10.07%	10.50%	**-4.07%**

[18] 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 reflects the aggregation of four quarters of data.

[19] Data in bold illustrates that the change in reoffending from the baseline is statistically significant.

Detailed tables

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

For an area with a caseload of 10,000 offenders:

A 10 per cent reoffending rate means that 1,000 offenders (out of the 10,000) reoffended.
An 11 per cent reoffending rate means that 1,100 offenders (out of the 10,000) 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 10,000 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 5,000) reoffended.
A 9.5 per cent reoffending rate means that 475 offenders (out of the 5,000) 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.

Table 4: Local adult reoffending rates for 1 April 2009 to 31 March 2010, 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 and is available from www.justice.gov.uk/publications/local-adult-reoffending.htm).

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
East Midlands			51049	9.04%	9.42%	**-3.97%**
	Derbyshire		11915	8.17%	7.80%	4.74%
		Derby	3859	7.93%	7.85%	1.01%
		Derbyshire	8000	8.21%	7.74%	6.12%
	Leicestershire		10589	7.76%	8.23%	-5.64%
		Leicester	5620	7.74%	8.54%	**-9.36%**
		Leicestershire	4797	8.03%	8.01%	0.21%
		Rutland	186	4.30%	5.39%	-20.25%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
	Lincolnshire		6067	10.04%	9.56%	5.03%
		Lincolnshire	6053	9.88%	9.55%	3.47%
	Northamptonshire		7611	8.21%	8.47%	-3.09%
		Northamptonshire	7614	8.13%	8.47%	-4.04%
	Nottinghamshire		14867	10.67%	11.99%	**-10.95%**
		Nottingham	6733	10.81%	12.32%	**-12.25%**
		Nottinghamshire	8021	10.41%	11.70%	**-11.03%**
East of England			60961	9.29%	8.98%	**3.41%**
	Bedfordshire		6170	8.46%	8.08%	4.73%
		Bedford[20]	1926	9.81%	8.39%	16.97%
		Central Bedfordshire	1565	7.80%	7.56%	3.13%
		Luton	2766	7.99%	8.22%	-2.79%

[20] Bedfordshire Local Authority has been split into two separate authorities, Bedford and Central Bedfordshire. For the sake of comparison with previous quarters we will continue to report on the old Bedfordshire local authority until we have four quarters of data for the new local authorities.

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
	Cambridgeshire		8976	10.46%	10.11%	3.45%
		Cambridgeshire	5553	10.01%	9.60%	4.26%
		Peterborough	3279	10.55%	10.66%	-1.03%
	Essex		21047	8.44%	8.64%	-2.25%
		Essex	15437	8.33%	8.42%	-1.12%
		Southend-on-Sea	2930	8.46%	9.26%	-8.62%
		Thurrock	2418	9.26%	9.18%	0.86%
	Hertfordshire		10512	9.14%	7.89%	**15.84%**
		Hertfordshire	10202	9.16%	7.96%	**14.96%**
	Norfolk		7611	10.21%	10.54%	-3.13%
		Norfolk	7602	10.18%	10.53%	-3.31%
	Suffolk		6645	10.35%	9.35%	**10.70%**
		Suffolk	6565	10.31%	9.44%	**9.27%**
London			111708	8.50%	8.70%	**-2.25%**

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Barking and Dagenham	3071	8.37%	9.21%	-9.14%
		Barnet	3006	7.88%	7.44%	5.96%
		Bexley	2440	8.07%	7.63%	5.80%
		Brent	4030	8.36%	8.19%	2.14%
		Bromley	3193	7.58%	8.32%	-8.95%
		Camden	2601	10.23%	10.46%	-2.26%
		City of London[21]	*44*	*4.55%*	*11.38%*	*-60.05%*
		Croydon	5769	9.01%	8.97%	0.46%
		Ealing	4096	7.57%	7.38%	2.52%
		Enfield	3993	7.74%	7.83%	-1.18%
		Greenwich	4484	8.88%	9.49%	-6.51%

[21] Data for the City of London is based on only 44 offenders and has only been included for completeness in covering all Local Area Agreements. Any changes between actual and predicted should be treated with caution.

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Hackney	4635	8.20%	8.68%	-5.60%
		Hammersmith and Fulham	2711	9.66%	9.69%	-0.27%
		Haringey	4681	8.84%	8.78%	0.74%
		Harrow	1985	7.61%	7.70%	-1.25%
		Havering	2264	7.02%	8.23%	**-14.71%**
		Hillingdon	3061	7.45%	7.92%	-6.01%
		Hounslow	3401	9.41%	8.98%	4.82%
		Islington	3508	10.21%	9.62%	6.06%
		Kensington and Chelsea	1409	9.08%	9.69%	-6.26%
		Kingston upon Thames	1099	8.83%	9.12%	-3.21%
		Lambeth	5747	7.90%	8.75%	**-9.67%**
		Lewisham	5744	8.18%	8.65%	-5.38%
		Merton	2025	7.85%	8.50%	-7.59%
		Newham	5932	8.92%	8.70%	2.53%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Redbridge	2954	8.53%	8.06%	5.78%
		Richmond upon Thames	1125	9.51%	8.18%	16.28%
		Southwark	5380	7.86%	8.72%	**-9.86%**
		Sutton	2052	7.46%	8.93%	**-16.51%**
		Tower Hamlets	4258	9.98%	9.76%	2.29%
		Waltham Forest	3738	8.27%	8.44%	-2.03%
		Wandsworth	3110	7.81%	8.82%	-11.37%
		Westminster	1972	9.94%	9.94%	0.02%
North East			43730	14.24%	15.03%	**-5.24%**
	Durham		8781	11.90%	12.67%	**-6.04%**
		Darlington	1896	13.03%	13.45%	-3.14%
		Durham	6829	11.55%	12.47%	**-7.36%**
	Northumbria		22826	14.67%	15.30%	**-4.12%**
		Gateshead	3456	13.02%	14.02%	-7.12%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Newcastle-upon-Tyne	5580	16.86%	17.13%	-1.56%
		North Tyneside	2929	14.44%	15.75%	-8.28%
		Northumberland	3486	11.39%	12.89%	**-11.68%**
		South Tyneside	2378	13.62%	14.64%	-6.91%
		Sunderland	4950	16.38%	15.75%	4.02%
	Teesside		12123	15.14%	16.24%	**-6.77%**
		Hartlepool	2032	18.75%	18.66%	0.50%
		Middlesbrough	4032	15.60%	16.89%	**-7.63%**
		Redcar and Cleveland	2781	13.30%	14.65%	-9.18%
		Stockton-on-Tees	3241	13.33%	14.95%	**-10.84%**
North West			105109	9.88%	10.02%	-1.41%
	Cheshire		11320	9.20%	9.00%	2.20%
		Cheshire East	3165	8.18%	8.76%	-6.58%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Cheshire West and Chester	3883	9.12%	9.24%	-1.38%
		Halton	1986	9.57%	8.45%	13.17%
		Warrington	2371	10.04%	9.47%	6.00%
	Cumbria		6190	11.89%	12.49%	-4.83%
		Cumbria	6153	11.95%	12.50%	-4.45%
	Greater Manchester		42676	9.28%	9.97%	**-6.90%**
		Bolton	3998	10.13%	10.48%	-3.35%
		Bury	2738	8.14%	8.85%	-7.95%
		Manchester	11393	9.77%	10.54%	**-7.30%**
		Oldham	3428	8.49%	9.53%	**-10.90%**
		Rochdale	3717	8.50%	10.31%	**-17.55%**
		Salford	4628	9.42%	9.96%	-5.38%
		Stockport	3105	9.82%	9.71%	1.20%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Tameside	3141	10.25%	10.29%	-0.42%
		Trafford	2363	7.91%	9.22%	**-14.13%**
		Wigan	4005	8.64%	8.89%	-2.86%
	Lancashire		21625	11.20%	11.00%	1.86%
		Blackburn with Darwen	3037	10.44%	10.43%	0.12%
		Blackpool	4059	9.98%	10.74%	-7.09%
		Lancashire	14604	11.65%	11.18%	4.18%
	Merseyside		23298	9.54%	9.04%	**5.47%**
		Knowsley	2679	8.40%	8.16%	2.86%
		Liverpool	10033	9.31%	9.10%	2.33%
		St Helens	2611	9.50%	9.39%	1.13%
		Sefton	3076	8.91%	8.82%	1.04%
		Wirral	4818	11.39%	9.55%	**19.38%**
South East			75123	9.48%	9.28%	2.10%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
	Hampshire		19640	10.41%	10.52%	-1.02%
		Hampshire	10698	9.76%	9.85%	-0.92%
		Isle of Wight	1623	11.71%	10.29%	13.79%
		Portsmouth	2809	13.88%	12.99%	6.91%
		Southampton	4328	9.45%	10.74%	**-12.01%**
	Kent		16411	9.52%	8.63%	**10.29%**
		Kent	13501	9.33%	8.63%	**8.16%**
		Medway	2878	10.18%	8.88%	**14.63%**
	Surrey		6405	8.74%	8.73%	0.10%
		Surrey	6447	8.64%	8.76%	-1.32%
	Sussex		13979	8.88%	8.57%	3.55%
		Brighton and Hove	3315	8.63%	8.80%	-1.91%
		East Sussex	4468	9.44%	8.48%	**11.37%**
		West Sussex	6250	8.61%	8.50%	1.22%
	Thames Valley		18688	9.16%	9.27%	-1.22%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Bracknell Forest	837	9.80%	9.19%	6.60%
		Buckinghamshire	3373	7.68%	8.53%	-10.00%
		Milton Keynes	2608	10.20%	9.35%	9.12%
		Oxfordshire	4397	10.10%	10.20%	-1.02%
		Reading	2179	9.22%	9.69%	-4.77%
		Slough	2427	7.95%	8.66%	-8.20%
		West Berkshire	983	9.77%	9.62%	1.52%
		Windsor and Maidenhead	1090	8.53%	8.56%	-0.35%
		Wokingham	718	7.52%	7.73%	-2.73%
South West			43893	10.06%	9.80%	2.61%
	Avon and Somerset		15910	9.97%	9.99%	-0.22%
		Bath and N.E. Somerset	1303	9.29%	9.38%	-1.00%
		City of Bristol	6887	11.69%	11.17%	4.60%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		North Somerset	1952	8.50%	9.62%	-11.64%
		Somerset	3736	9.50%	9.43%	0.82%
		South Gloucestershire	1852	7.45%	7.72%	-3.51%
	Devon and Cornwall		11347	9.72%	9.17%	6.04%
		Cornwall	2255	7.94%	7.90%	0.44%
		Devon	3481	9.80%	9.19%	6.55%
		Isles of Scilly[22]	*3*	*	*	*
		Plymouth	3923	10.53%	9.58%	9.91%
		Torbay	1364	9.75%	9.90%	-1.46%
	Dorset		5823	9.65%	10.11%	-4.49%
		Bournemouth	2544	10.85%	10.88%	-0.28%

[22] Data for the Isles of Scilly is based on only 3 offenders and has only been included for completeness in covering all Local Area Agreements. The actual and predicted rates have been removed as they are unreliable for interpretation due to the small number of offenders.

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Dorset	2111	8.53%	9.32%	-8.54%
		Poole	1220	9.34%	9.79%	-4.60%
	Gloucestershire		5761	11.27%	10.58%	6.52%
		Gloucestershire	5794	11.29%	10.60%	6.46%
	Wiltshire		5052	10.17%	9.39%	8.33%
		Swindon	1752	9.87%	9.79%	0.89%
		Wiltshire	3179	10.32%	9.07%	**13.80%**
Wales			43661	10.98%	11.05%	-0.64%
	Dyfed-Powys		4943	11.17%	10.52%	6.16%
		Carmarthenshire	2061	11.89%	10.54%	12.83%
		Ceredigion	664	8.43%	8.94%	-5.70%
		Pembrokeshire	1135	11.54%	11.32%	1.94%
		Powys	1108	11.28%	10.83%	4.19%
	Gwent		8348	10.52%	11.21%	-6.14%
		Blaenau Gwent	1057	8.99%	10.19%	-11.76%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Caerphilly	2545	8.13%	10.03%	**-18.92%**
		Monmouthshire	641	12.48%	11.17%	11.73%
		Newport	2884	13.28%	12.89%	2.99%
		Torfaen	1152	9.72%	10.64%	-8.60%
	North Wales		9397	11.25%	10.68%	5.31%
		Conwy	1331	11.27%	10.48%	7.56%
		Denbighshire	1303	10.36%	10.53%	-1.59%
		Flintshire	1833	8.78%	8.92%	-1.56%
		Gwynedd	1588	11.84%	11.32%	4.59%
		Isle of Anglesey	792	10.73%	10.80%	-0.60%
		Wrexham	2461	13.37%	11.84%	**12.91%**
	South Wales		20973	11.00%	11.28%	-2.48%
		Bridgend	1974	10.94%	10.41%	5.11%
		Cardiff	6097	11.45%	12.44%	**-7.97%**
		Merthyr Tydfil	1231	11.54%	11.48%	0.51%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Neath Port Talbot	1974	10.33%	9.62%	7.41%
		Rhondda, Cynon, Taff	3961	9.77%	9.82%	-0.47%
		Swansea	3903	11.30%	11.90%	-5.06%
		The Vale of Glamorgan	1753	11.41%	11.67%	-2.26%
West Midlands			78291	8.28%	9.23%	**-10.29%**
	Staffordshire		12335	7.59%	8.96%	**-15.35%**
		Staffordshire	7757	6.43%	8.12%	**-20.75%**
		Stoke-on-Trent	4585	9.55%	10.40%	-8.18%
	Warwickshire		5242	10.02%	10.45%	-4.12%
		Warwickshire	5207	9.83%	10.36%	-5.07%
	West Mercia		11686	9.51%	9.96%	-4.51%
		Herefordshire	1676	10.50%	10.80%	-2.76%
		Shropshire	2185	8.51%	9.72%	-12.46%
		Telford and Wrekin	1902	7.99%	9.12%	-12.37%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Worcestershire	5984	9.96%	9.96%	0.00%
	West Midlands		49028	7.98%	9.00%	**-11.31%**
		Birmingham	23486	7.74%	8.83%	**-12.38%**
		Coventry	5682	8.89%	9.40%	-5.43%
		Dudley	3517	8.10%	9.07%	-10.64%
		Sandwell	5144	7.21%	8.53%	**-15.46%**
		Solihull	2253	6.35%	8.00%	**-20.65%**
		Walsall	3934	9.10%	10.20%	**-10.79%**
		Wolverhampton	4265	8.60%	9.33%	-7.82%
Yorkshire and Humberside			71820	10.23%	11.23%	**-8.91%**
	Humberside		12052	10.35%	10.63%	-2.68%
		East Riding of Yorkshire	2042	8.08%	8.72%	-7.36%
		City of Kingston upon Hull	4990	10.84%	10.71%	1.25%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		North East Lincolnshire	2778	11.77%	12.48%	-5.68%
		North Lincolnshire	2259	9.43%	9.81%	-3.92%
	North Yorkshire		7029	11.20%	11.23%	-0.31%
		North Yorkshire	4834	10.80%	10.79%	0.10%
		York	2112	12.26%	12.49%	-1.85%
	South Yorkshire		18888	10.20%	11.86%	**-14.01%**
		Barnsley	3472	9.88%	12.12%	**-18.50%**
		Doncaster	4545	10.91%	12.16%	**-10.26%**
		Rotherham	3531	10.34%	11.53%	**-10.35%**
		Sheffield	7117	9.62%	11.63%	**-17.23%**
	West Yorkshire		33851	10.00%	11.08%	**-9.79%**
		Bradford	8460	8.95%	10.76%	**-16.87%**
		Calderdale	2684	9.17%	10.47%	**-12.47%**
		Kirklees	5587	10.20%	10.91%	-6.45%

Government office region	Probation area	Local Authority	Cohort size (combining four quarters of probation caseload data)[25]	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline (2007/08 results)[26]
		Leeds	12421	10.68%	11.52%	**-7.28%**
		Wakefield	4497	10.38%	10.99%	-5.51%
	Unknown Probation Area		3271	10.46%	11.52%	-9.28%
		Unknown local authority	8752	11.12%	10.41%	**6.81%**

[25] 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 have 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.

[26] Data in bold illustrates that the change in reoffending from the baseline is statistically significant.

Table 4b: Local adult reoffending rates, at the Probation Trust level of disaggregation.[23]

Reoffending period covered	Probation Trust	Cohort size (combining four quarters of probation caseload data)	Actual rate of reoffending	Predicted rate of reoffending	% difference from baseline
April 1 2007 to March 31 2008 *(baseline period)*	Durham Tees Valley Probation Trust	20224	13.95	13.95	0.00%
	Norfolk and Suffolk Probation Trust	13682	9.81	9.81	0.00%
	Staffordshire and West Midlands Probation Trust	65704	8.99	8.99	0.00%
	Surrey and Sussex Probation Trust	20471	8.59	8.59	0.00%
July 1 2007 to June 30 2008	Durham Tees Valley Probation Trust	20612	13.89	13.98	-0.67%
	Norfolk and Suffolk Probation Trust	13650	9.89	9.77	1.23%
	Staffordshire and West Midlands Probation Trust	65388	8.94	9.03	-0.99%
	Surrey and Sussex Probation Trust	20915	8.44	8.53	-1.02%
October 1 2007 to September 30 2008	Durham Tees Valley Probation Trust	20907	13.98	14.05	-0.50%
	Norfolk and Suffolk Probation Trust	13529	9.96	9.71	2.58%
	Staffordshire and West Midlands Probation Trust	64820	8.83	9.02	-2.04%
	Surrey and Sussex Probation Trust	21096	8.27	8.50	-2.66%
January 1 2008 to December 31 2008	Durham Tees Valley Probation Trust	21084	13.75	14.20	-3.14%
	Norfolk and Suffolk Probation Trust	13518	10.16	9.74	4.27%
	Staffordshire and West Midlands Probation Trust	63957	8.92	8.99	-0.75%
	Surrey and Sussex Probation Trust	21002	7.75	8.47	**-8.49%**
April 1 2008 to March 31 2009	Durham Tees Valley Probation Trust	21123	13.79	14.28	-3.48%
	Norfolk and Suffolk Probation Trust	13568	9.95	9.78	1.74%
	Staffordshire and West Midlands Probation Trust	63466	9.03	9.04	-0.12%
	Surrey and Sussex Probation Trust	20640	7.44	8.44	**-11.78%**
July 1 2008 to June 30 2009	Durham Tees Valley Probation Trust	21164	13.68	14.37	**-4.76%**
	Norfolk and Suffolk Probation Trust	13696	9.85	9.78	0.72%
	Staffordshire and West Midlands Probation Trust	63053	8.85	9.08	-2.51%
	Surrey and Sussex Probation Trust	20536	7.46	8.42	**-11.36%**
October 1 2008 to September 30 2009	Durham Tees Valley Probation Trust	21128	13.57	14.51	**-6.48%**
	Norfolk and Suffolk Probation Trust	13849	10.05	9.86	1.94%
	Staffordshire and West Midlands Probation Trust	62548	8.62	9.12	**-5.50%**
	Surrey and Sussex Probation Trust	20451	7.75	8.47	**-8.50%**
January 1 2009 to December 31 2009	Durham Tees Valley Probation Trust	21035	13.91	14.61	**-4.77%**
	Norfolk and Suffolk Probation Trust	14102	10.19	9.91	2.79%
	Staffordshire and West Midlands Probation Trust	62235	8.29	9.09	**-8.80%**
	Surrey and Sussex Probation Trust	20444	8.40	8.52	-1.36%
April 1 2009 to March 31 2010	Durham Tees Valley Probation Trust	20904	13.78%	14.74%	**-6.51%**
	Norfolk and Suffolk Probation Trust	14256	10.28%	9.99%	2.91%
	Staffordshire and West Midlands Probation Trust	61363	7.90%	8.99%	**-12.12%**
	Surrey and Sussex Probation Trust	20384	8.84%	8.62%	2.45%

[23] Only Trusts that have amalgamated are shown. Wales Probation Trust is not shown in this table as it appears in table 4, at the Government Office level.

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.

Other local measures of offending

Drug offending – The local measure of the offending of drug-misusing offenders includes the offending of individuals identified through their contact with the criminal justice system as Class A drug misusers between 1 January and 31 March each year. These data are reported at Drug Action Team level (or Community Safety Partnership level in Wales). This indicator provides the volume of offending for the offenders in a 12 month offending period; this is compared to the predicted volume of offending.

For more information see: www.homeoffice.gov.uk/rds/pdfs10/misc0210.pdf

Prolific and Priority Offenders – The local measure on the offending of Prolific and Priority Offenders (PPO's) measures the offending of all offenders identified as PPO's at the start of a financial year. These data are reported at national, regional, police force and local authority level. This indicator provides the change in the level of offending for the specified cohort in a 12 month period.

For more information see: www.homeoffice.gov.uk/rds/pdfs10/misc0110.pdf

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).

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 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 67.8 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	418,654	203,071	67.3%
	Yes	18,583	48,308	72.2%

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%
January 1 2008 to December 31 2008	691,588	0.77	68.9%
April 1 2008 to March 31 2009	691,638	0.77	68.9%
July 1 2008 to June 30 2009	691,517	0.77	68.6%
October 1 2008 to September 30 2009	690,994	0.77	68.3%
January 1 2009 to December 31 2009	691,261	0.77	68.1%
April 1 2009 to March 31 2010	688,616	0.77	67.8%

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
Constant	-1.340	0.085	<0.001
Age band			
18 - 20		*Reference category*	
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
Gender			
Male		*Reference category*	
Female	-0.068	0.935	<0.001
General criminal career variables			
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
Length of criminal career			
Less than 1 year		*Reference category*	
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
Index offence			
Violence (non serious)		*Reference category*	
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
Ethnicity			
White		*Reference category*	
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
Appearances in previous cohorts			
No previous appearances		*Reference category*	
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
Reoffences in previous cohorts			
No reoffences		*Reference category*	
One reoffence	0.448	1.566	<0.001
Two reoffences	0.736	2.088	<0.001
Three reoffences	0.973	2.647	<0.001
Reoffended in most recent cohort	0.225	1.253	0.001

Variables	Logistic coefficient	Exponent of coefficient	Significance
Previous offences			
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 (possesion/small-scale supply) offences	0.010	1.010	<0.001
One or more previous sexual offences	0.121	1.129	<0.001
Area			
London		*Reference category*	
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
Type of sentence			
Licence		*Reference category*	
Community order	0.273	1.314	<0.001
Interactions between sentence type and age			
Community order and aged 18-20		*Reference category*	
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
Interactions between sentence type and criminal career variables			
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
Interactions between sentence type and appearances in previous cohorts			
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[24]

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).

[24] For further details on the construction of funnel plots and how they may be used, see Spiegelhalter, 2005.

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