

# Financial Performance of English NHS Trusts and Clinical Outcomes: A Longitudinal Observational Study

## ONLINE SUPPLEMENTAL DATA

Myura Nagendran, MRCP, FRCA<sup>1</sup>

Grace Kiew, MB BChir<sup>2</sup>

Rosalind Raine, PhD<sup>3</sup>

Rifat Atun, FRCP<sup>4</sup>

Mahiben Maruthappu, BM BCh<sup>5</sup>

1. Academic Clinical Fellow, Division of Anaesthetics, Pain Medicine and Intensive Care, Imperial College London, UK
2. Foundation Doctor, North West Anglia NHS Foundation Trust, Peterborough, UK
3. Professor, Department of Applied Health Care, University College London, UK
4. Professor, Harvard T.H. Chan School of Public Health, Harvard University, Boston, MA, USA
5. Public Health Registrar, Department of Epidemiology and Public Health, University College London, UK

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## FINANCIAL DATA EXTRACTION

Where financial data was extracted from consolidated end of year accounts files via the gov.uk open data portal, the following fields were extracted:

### For foundation trusts:

Turnover --> Table ID 1, Subcode 100  
Surplus/Deficit --> Table ID 1, Subcode 160  
Consultancy --> 07A and 07I, subcode 280  
Agency spend --> 1415TRU06\_EXP\_P13, maincode 01, subcode 180

### For non-Foundation trusts:

Turnover --> Table ID CNE, Subcode 120 and 130  
Surplus/Deficit --> Table ID CNE, Subcode 390  
Consultancy --> 08C, subcode 125 (**only available for 2014-16**)  
Agency spend --> 1415TRU09\_EMP\_P13, maincode 04, subcode 100 (**only available for 2015-16**)

## DELAYED TRANSFERS OF CARE IN FINANCIAL YEAR ENDING 2011

Delayed transfer of care data were only available at Trust level for the latter eight months of the 2011 financial year. To ensure comparability with other years, a 1.5x multiplier was applied for each trust in this financial year with a sensitivity analysis to examine any impact of this change.

The total numbers of delayed transfers for all hospitals were available as an aggregate total (data obtained from King's Fund Quarterly Monitoring Report for 2010-11).

The ratio of aggregate delayed transfer of care days for the first 4 months (April 2010 to July 2010) to the last 8 months (August 2010 to March 2011) was 0.492; suggesting that a 1.5x multiplier appeared reasonable.

Year	Month	Number of DTOCs	4-monthly total
2010	Apr	113900	-
2010	May	112442	-
2010	Jun	115336	-
2010	Jul	109918	<b>451596</b>
-	-	-	-
2010	Aug	115855	-
2010	Sep	113246	-
2010	Oct	113091	-
2010	Nov	116466	<b>458658</b>
-	-	-	-
2010	Dec	114346	-
2011	Jan	112386	-
2011	Feb	123130	-
2011	Mar	109362	<b>459224</b>

## CHANGES TO TRUST COMPOSITION

The 168 Trusts listed below include specialist Trusts (e.g. Great Ormond Street Hospital for Children NHS Foundation Trust) that were excluded prior to analysis. Changes in composition to the Trusts (creation of a new Trust, dissolution of an existing Trust, acquisitions of a hospital or entire Trust to another Trust and mergers between Trusts) are detailed at the end of the table.

Trust	Trust identifier	Change in composition	Transitioned to Foundation status	Foundation Trust transition date
Aintree University Hospital NHS Foundation Trust	REM			
Airedale NHS Foundation Trust	RCF		Yes	01/06/2010
Alder Hey Children's NHS Foundation Trust	RBS			
Ashford and St Peter's Hospitals NHS Foundation Trust	RTK		Yes	01/12/2010
Barking, Havering and Redbridge University Hospitals NHS Trust	RF4			
Barnet and Chase Farm Hospitals NHS Trust	RVL	Yes (1)		
Barnsley Hospital NHS Foundation Trust	RFF			
Barts and the London NHS Trust	RNJ	Yes (2)		
Barts Health NHS Trust	R1H	Yes (3)		
Basildon and Thurrock University Hospitals NHS Foundation Trust	RDD			
Bedford Hospital NHS Trust	RC1			
Birmingham Children's Hospital NHS Foundation Trust	RQ3			
Birmingham Women's NHS Foundation Trust	RLU			
Blackpool Teaching Hospitals NHS Foundation Trust	RXL			
Bolton NHS Foundation Trust	RMC			
Bradford Teaching Hospitals NHS Foundation Trust	RAE			
Brighton and Sussex University Hospitals NHS Trust	RXH			
Buckinghamshire Healthcare NHS Trust	RXQ			

Burton Hospitals NHS Foundation Trust	RJF			
Calderdale and Huddersfield NHS Foundation Trust	RWY			
Cambridge University Hospitals NHS Foundation Trust	RGT			
Central Manchester University Hospitals NHS Foundation Trust	RW3	Yes (4)		
Chelsea and Westminster Hospital NHS Foundation Trust	RQM	Yes (5)		
Chesterfield Royal Hospital NHS Foundation Trust	RFS			
City Hospitals Sunderland NHS Foundation Trust	RLN			
Colchester Hospital University NHS Foundation Trust	RDE			
Countess Of Chester Hospital NHS Foundation Trust	RJR			
County Durham and Darlington NHS Foundation Trust	RXP			
Croydon Health Services NHS Trust	RJ6			
Dartford and Gravesham NHS Trust	RN7			
Derby Teaching Hospitals NHS Foundation Trust	RTG			
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	RP5			
Dorset County Hospital NHS Foundation Trust	RBD			
Ealing Hospital NHS Trust	RC3	Yes (6)		
East and North Hertfordshire NHS Trust	RWH			
East Cheshire NHS Trust	RJN			
East Kent Hospitals University NHS Foundation Trust	RVV			
East Lancashire Hospitals NHS Trust	RXR			
East Sussex Healthcare NHS Trust	RXC			
Epsom and St Helier University Hospitals NHS Trust	RVR			
Frimley Health NHS Foundation Trust	RDU	Yes (7)		
Gateshead Health NHS Foundation Trust	RR7			
George Eliot Hospital NHS Trust	RLT			
Gloucestershire Hospitals NHS Foundation Trust	RTE			
Great Ormond Street Hospital for Children NHS Foundation Trust	RP4		Yes	01/03/2012
Great Western Hospitals NHS Foundation Trust	RN3			
Guy's and St Thomas' NHS Foundation Trust	RJ1			
Hampshire Hospitals NHS Foundation Trust	RN5	Yes (8)		

Harrogate and District NHS Foundation Trust	RCD			
Heart Of England NHS Foundation Trust	RR1			
Heatherwood and Wexham Park Hospitals NHS Foundation Trust	RD7	Yes (9)		
Hinchingbrooke Health Care NHS Trust	RQQ			
Homerton University Hospital NHS Foundation Trust	RQX			
Hull and East Yorkshire Hospitals NHS Trust	RWA			
Imperial College Healthcare NHS Trust	RYJ			
Ipswich Hospital NHS Trust	RGQ			
Isle Of Wight NHS Trust	R1F	Yes (10)		
James Paget University Hospitals NHS Foundation Trust	RGP			
Kettering General Hospital NHS Foundation Trust	RNQ			
King's College Hospital NHS Foundation Trust	RJZ	Yes (11)		
Kingston Hospital NHS Foundation Trust	RAX		Yes	01/05/2013
Lancashire Teaching Hospitals NHS Foundation Trust	RXN			
Leeds Teaching Hospitals NHS Trust	RR8			
Lewisham and Greenwich NHS Trust	RJ2	Yes (12)		
Liverpool Heart and Chest NHS Foundation Trust	RBQ			
Liverpool Women's NHS Foundation Trust	REP			
London North West Healthcare NHS Trust	R1K	Yes (13)		
Luton and Dunstable University Hospital NHS Foundation Trust	RC9			
Maidstone and Tunbridge Wells NHS Trust	RWF			
Medway NHS Foundation Trust	RPA			
Mid Cheshire Hospitals NHS Foundation Trust	RBT			
Mid Essex Hospital Services NHS Trust	RQ8			
Mid Staffordshire NHS Foundation Trust	RJD	Yes (14)		
Mid Yorkshire Hospitals NHS Trust	RXF			
Milton Keynes University Hospital NHS Foundation Trust	RD8			
Moorfields Eye Hospital NHS Foundation Trust	RP6			
Newham University Hospital NHS Trust	RNH	Yes (15)		
Norfolk and Norwich University Hospitals NHS Foundation Trust	RM1			

North Bristol NHS Trust	RVJ			
North Cumbria University Hospitals NHS Trust	RNL			
North Middlesex University Hospital NHS Trust	RAP			
North Tees and Hartlepool NHS Foundation Trust	RVW			
North West London Hospitals NHS Trust	RV8	Yes (16)		
Northampton General Hospital NHS Trust	RNS			
Northern Devon Healthcare NHS Trust	RBZ			
Northern Lincolnshire and Goole NHS Foundation Trust	RJL			
Northumbria Healthcare NHS Foundation Trust	RTF			
Nottingham University Hospitals NHS Trust	RX1			
Oxford University Hospitals NHS Foundation Trust	RTH	Yes (17)	Yes	01/10/2015
Papworth Hospital NHS Foundation Trust	RGM			
Pennine Acute Hospitals NHS Trust	RW6			
Peterborough and Stamford Hospitals NHS Foundation Trust	RGN			
Plymouth Hospitals NHS Trust	RK9			
Poole Hospital NHS Foundation Trust	RD3			
Portsmouth Hospitals NHS Trust	RHU			
Queen Victoria Hospital NHS Foundation Trust	RPC			
Robert Jones and Agnes Hunt Orthopaedic and District Hospital NHS Foundation Trust	RL1		Yes	01/08/2011
Royal Berkshire NHS Foundation Trust	RHW			
Royal Brompton and Harefield NHS Foundation Trust	RT3			
Royal Cornwall Hospitals NHS Trust	REF			
Royal Devon and Exeter NHS Foundation Trust	RH8			
Royal Free London NHS Foundation Trust	RAL	Yes (18)	Yes	01/04/2012
Royal Liverpool and Broadgreen University Hospitals NHS Trust	RQ6			
Royal National Hospital For Rheumatic Diseases NHS Foundation Trust	RBB	Yes (19)		
Royal National Orthopaedic Hospital NHS Trust	RAN			
Royal Surrey County NHS Foundation Trust	RA2			
Royal United Hospitals Bath NHS Foundation Trust	RD1	Yes (20)	Yes	01/11/2014
Salford Royal NHS Foundation Trust	RM3			

Salisbury NHS Foundation Trust	RNZ			
Sandwell and West Birmingham Hospitals NHS Trust	RXK			
Scarborough and North East Yorkshire Healthcare NHS Trust	RCC	Yes (21)		
Sheffield Children's NHS Foundation Trust	RCU			
Sheffield Teaching Hospitals NHS Foundation Trust	RHQ			
Sherwood Forest Hospitals NHS Foundation Trust	RK5			
Shrewsbury and Telford Hospital NHS Trust	RXW			
South London NHS Healthcare Trust	RYQ	Yes (22)		
South Tees Hospitals NHS Foundation Trust	RTR			
South Tyneside NHS Foundation Trust	RE9			
South Warwickshire NHS Foundation Trust	RJC			
Southend University Hospital NHS Foundation Trust	RAJ			
Southport and Ormskirk Hospital NHS Trust	RVY			
St George's University Hospitals NHS Foundation Trust	RJ7		Yes	01/02/2015
St Helens and Knowsley Hospitals NHS Trust	RBN			
Stockport NHS Foundation Trust	RWJ			
Surrey and Sussex Healthcare NHS Trust	RTP			
Tameside Hospital NHS Foundation Trust	RMP			
Taunton and Somerset NHS Foundation Trust	RBA			
The Christie NHS Foundation Trust	RBV			
The Clatterbridge Cancer Centre NHS Foundation Trust	REN			
The Dudley Group NHS Foundation Trust	RNA			
The Hillingdon Hospitals NHS Foundation Trust	RAS		Yes	01/04/2011
The Newcastle Upon Tyne Hospitals NHS Foundation Trust	RTD			
The Princess Alexandra Hospital NHS Trust	RQW			
The Queen Elizabeth Hospital, King's Lynn. NHS Foundation Trust	RCX		Yes	01/02/2011
The Rotherham NHS Foundation Trust	RFR			
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	RDZ			
The Royal Marsden NHS Foundation Trust	RPY			
The Royal Orthopaedic Hospital NHS Foundation Trust	RRJ			



The Royal Wolverhampton NHS Trust	RL4	Yes (23)		
The Walton Centre NHS Foundation Trust	RET			
The Whittington Hospital NHS Trust	RKE			
Torbay and South Devon NHS Foundation Trust	RA9	Yes (24)		
Trafford Healthcare NHS Trust	RM4	Yes (25)		
United Lincolnshire Hospitals NHS Trust	RWD			
University College London Hospitals NHS Foundation Trust	RRV			
University Hospital Of South Manchester NHS Foundation Trust	RM2			
University Hospital Southampton NHS Foundation Trust	RHM		Yes	01/10/2011
University Hospitals Birmingham NHS Foundation Trust	RRK			
University Hospitals Bristol NHS Foundation Trust	RA7			
University Hospitals Coventry and Warwickshire NHS Trust	RKB			
University Hospitals Of Leicester NHS Trust	RWE			
University Hospitals Of Morecambe Bay NHS Foundation Trust	RTX		Yes	01/10/2010
University Hospitals of North Midlands NHS Trust	RJE	Yes (26)		
Walsall Healthcare NHS Trust	RBK			
Warrington and Halton Hospitals NHS Foundation Trust	RWW			
West Hertfordshire Hospitals NHS Trust	RWG			
West Middlesex University Hospital NHS Trust	RFW	Yes (27)		
West Suffolk NHS Foundation Trust	RGR		Yes	01/12/2011
Western Sussex Hospitals NHS Foundation Trust	RYR		Yes	01/07/2013
Weston Area Health NHS Trust	RA3			
Whipps Cross University Hospital NHS Trust	RGC	Yes (28)		
Winchester and Eastleigh Healthcare Trust	RN1	Yes (29)		
Wirral University Teaching Hospital NHS Foundation Trust	RBL			
Worcestershire Acute Hospitals NHS Trust	RWP			
Wrightington, Wigan and Leigh NHS Foundation Trust	RRF			
Wye Valley NHS Trust	RLQ	Yes (30)		
Yeovil District Hospital NHS Foundation Trust	RA4			
York Teaching Hospital NHS Foundation Trust	RCB	Yes (31)		

1. Acquired by Royal Free London NHS FT in 2014
2. Merged with Newham University Hospital NHS Trust and Whipps Cross University Hospital NHS Trust to form Barts Health NHS Trust in 2012
3. Formed from the merger of Barts and the London NHS Trust, Whipps Cross University Hospital NHS Trust and Newham University Hospital NHS Trust in 2012
4. Acquired Trafford Healthcare NHS Trust in Apr 2012
5. Acquired West Middlesex University Hospital NHS Trust in Sep 2015
6. Merged with North West London Hospitals NHS Trust to form London North West Healthcare NHS Trust in 2014
7. Formed by merger of Heatherwood and Wexham Park Hospitals NHS FT and Frimley Park Hospital NHS FT on 1 October 2014
8. Formed by acquisition of Winchester and Eastleigh Healthcare Trust by Basingstoke and North Hampshire NHS FT in Jan 2012
9. Merged with Frimley Park Hospital NHS FT to form Frimley Health NHS FT on 1 October 2014
10. Created in Apr 2012 by a provider split from Isle of Wight NHS PCT (5QT)
11. Acquired Princess Royal University Hospital from South London NHS Healthcare Trust's dissolution in Oct 2013
12. Formed on 1 Oct 2013 by merger of merger of Lewisham Healthcare NHS Trust and Queen Elizabeth Hospital (previously part of South London NHS Healthcare Trust)
13. Formed by merger of Ealing Hospital NHS Trust and North West London Hospitals NHS Trust in 2014
14. Mid Staffordshire NHS FT which ran Stafford hospital dissolved In Nov 2014. Stafford hospital renamed to County Hospital and acquired by newly named University Hospitals of North Midlands NHS Trust
15. Merged with Barts and the London NHS Trust and Whipps Cross University Hospital NHS Trust to form Barts Health NHS Trust in 2012
16. Merged with Ealing Hospital NHS Trust to form London North West Healthcare NHS Trust in 2014
17. Formed from Oxford Radcliffe Hospitals NHS Trust by acquisition of Nuffield Orthopaedic Acute Centre NHS Trust in 2011
18. Acquired Barnet and Chase Farm Hospitals NHS Trust in 2014
19. Acquired by Royal United Hospital Bath NHS FT on 1 Feb 2015
20. Acquired Royal National Hospital For Rheumatic Diseases NHS FT on 1 Feb 2015
21. Acquired by York Teaching Hospital NHS Foundation Trust in Jul 2013
22. Dissolved in Oct 2013

23. Acquired Cannock Chase Hospital when Mid Staffordshire NHS FT dissolved In Nov 2014
24. Created on 1 Oct 2015 from South Devon Healthcare NHS Foundation Trust merging with Torbay and Southern Devon Health and Care NHS Trust (community and social care services)
25. Acquired by Central Manchester University Hospitals NHS FT in Apr 2012
26. Formed from University Hospital Of North Staffordshire NHS Trust taking over Stafford Hospital (now named County Hospital) on 1 Nov 2014. Mid Staffordshire NHS FT which ran Stafford hospital dissolved In Nov 2014
27. Acquired by Chelsea and Westminster Hospital NHS FT in Sep 2015
28. Merged with Newham University Hospital NHS Trust and Barts and the London NHS Trust to form Barts Health NHS Trust in 2012
29. Acquired by Basingstoke and North Hampshire NHS FT to form Hampshire Hospitals NHS FT in Jan 2012
30. Formed from Hereford Hospitals NHS Trust on 1 April 2011 following Herefordshire's health and adult social care providers joining to form an integrated provider of acute, community and social care in England
31. Acquired Scarborough and North East Yorkshire Healthcare NHS Trust in Jul 2013

## SENSITIVITY ANALYSES, ADDITIONAL TABLES AND FIGURES

**Table A. Association of operating margin with outcomes and process measures (summary model for 2011-13).** Operating margin and outcomes were averaged over the 3 years from 2011-13 to form the inputs to the summary model. Readmission rate is not included as data was not available for 2011-13. Abbreviations: A&E, Accident & Emergency; CI, confidence interval.

<b>Agency spend as a proportion of turnover (%)</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Worst 10%</b>	3.9	3.9	4.6	6.0	8.5	9.1
<b>Middle 80%</b>	2.4	2.3	2.6	3.0	4.6	5.1
<b>Best 10%</b>	2.7	2.9	3.4	3.8	4.0	4.5
<b>Ratio of worst to best</b>	1.4	1.3	1.4	1.6	2.1	2.0
<b>Difference (best and worst)</b>	1.2	1.0	1.2	2.2	4.5	4.6

**Table B. Outcomes and process measures in Foundation trusts versus non-foundation trusts.** Excludes trusts that changed in composition or transitioned to Foundation status during the study period. Values are median (IQR). P-value refers to a Kruskal-Wallis equality-of-populations rank test.

	<b>Foundation trust</b>	<b>Non-foundation trust</b>	<b>p-value</b>
<b>Readmission rate (%)</b>	3.5 (3.0 to 3.9)	3.7 (3.3 to 4.0)	<0.001
<b>Inpatient satisfaction score (out of 10)</b>	8.0 (7.8 to 8.2)	7.8 (7.7 to 8.0)	<0.001
<b>A&amp;E 4 hour target breach rate (%)</b>	5.4 (4.2 to 7.8)	6.9 (4.9 to 10.5)	<0.001
<b>Delayed transfer of care days per hospital bed</b>	6.8 (3.5 to 11.0)	7.0 (4.5 to 11.2)	0.241
<b>Cancer two week wait target adherence (%)</b>	95.5 (94.6 to 96.7)	94.9 (94.0 to 96.3)	<0.001
<b>Cancer 62 days to first treatment target adherence (%)</b>	87.7 (85.4 to 89.7)	86.2 (82.5 to 88.2)	<0.001

**Tables C1 & C2. Association of operating margin on outcomes and process measures. Association of operating margin with outcomes and process measures.** These estimates are derived from a linear regression with outcome/process measure as the dependent variable and the following independent variables: operating margin, number of beds available and year. Each Trust in each year was treated as a separate observation with standard errors clustered by Trust to account for the non-independence of Trust-level data. Abbreviations: A&E, Accident & Emergency; CI, confidence interval. E1 includes Foundation trusts only. E2 includes non-Foundation trusts only. Trusts that transitioned to Foundation status are excluded in both tables.

**Table C1. Association of operating margin on outcomes and process measures in Foundation trusts.**

<b>Outcome</b>	<b>n</b>	<b>Trust clusters</b>	<b>Coefficient</b>	<b>95% CI</b>	<b>p-value</b>
<b>Readmission rate (%)</b>	206	71	-0.015	-0.039 to 0.008	0.202
<b>Inpatient satisfaction score (out of 10)</b>	429	73	0.52	-0.46 to 1.49	0.293
<b>A&amp;E 4 hour breach rate (%)</b>	430	73	-0.25	-0.37 to -0.13	<0.001
<b>Delayed transfers of care days per hospital bed</b>	431	73	-21.8	-40.7 to -2.9	0.024
<b>2 week wait cancer target adherence (%)</b>	431	73	0.05	-0.01 to 0.10	0.083
<b>62 day cancer treatment target adherence (%)</b>	431	73	0.08	-0.02 to 0.17	0.110

**Table C2. Association of operating margin on outcomes and process measures in non-foundation trusts.**

<b>Outcome</b>	<b>n</b>	<b>Trust clusters</b>	<b>Coefficient</b>	<b>95% CI</b>	<b>p-value</b>
<b>Readmission rate (%)</b>	142	51	0.004	-0.023 to 0.032	0.751
<b>Inpatient satisfaction score (out of 10)</b>	318	62	1.59	0.43 to 2.76	0.008
<b>A&amp;E 4 hour breach rate (%)</b>	327	62	-0.23	-0.39 to -0.07	0.005
<b>Delayed transfers of care days per hospital bed</b>	328	62	-39.2	-63.3 to -15.1	0.002
<b>2 week wait cancer target adherence (%)</b>	324	62	0.26	-0.06 to 0.11	0.527
<b>62 day cancer treatment target adherence (%)</b>	324	62	0.22	0.05 to 0.38	0.010

**Table D. Assessment of the impact of not adjusting for missing 2011 delayed transfer of care data.** Abbreviations: CI, confidence interval.

<b>Delayed transfers of care days per hospital bed</b>	<b>n</b>	<b>Trust clusters</b>	<b>Coefficient</b>	<b>95% CI</b>	<b>p-value</b>
Without adjustment for missing 2011 data	837	148	-21.9	-35.5 to -8.4	0.002
With adjustment for missing 2011 data	837	148	-25.1	-39.1 to -11.0	0.001

**Table E. Association of operating margin with outcomes and process measures.** Adjusted regression analyses as per table 3 in the manuscript excluding Trusts that had changed in composition between 2011 and 2016. Abbreviations: A&E, Accident & Emergency; SHMI, Summary Hospital-level Mortality Indicator.

<b>Outcome</b>	<b>n</b>	<b>Trust clusters</b>	<b>Coefficient</b>	<b>95% CI</b>	<b>p-value</b>
Readmission rate (%)	344	119	-0.01	-0.03 to 0.01	0.403
Inpatient satisfaction score (out of 10)	706	119	0.66	-0.23 to 1.55	0.142
A&E 4 hour breach rate (%)	710	119	-0.20	-0.30 to -0.11	<0.001
Delayed transfers of care days per hospital bed	711	119	-29.5	-44.1 to -14.8	<0.001
2 week wait cancer target adherence (%)	710	119	0.05	0.00 to 0.10	0.042
62 day cancer treatment target adherence (%)	710	119	0.12	0.02 to 0.23	0.018

Figure A. Putative interplay of factors affecting Trust finance and performance.

