



CIPFA

# CIPFAstats+ & Predictive Analytics

Harnessing Data Value in Public Finance

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The Chartered Institute of  
Public Finance & Accountancy



# Old CIPFA stats

- Excel Spreadsheets
- Not interactive in anyway
- No graphical comparisons with other authorities
- Did not show historical trends

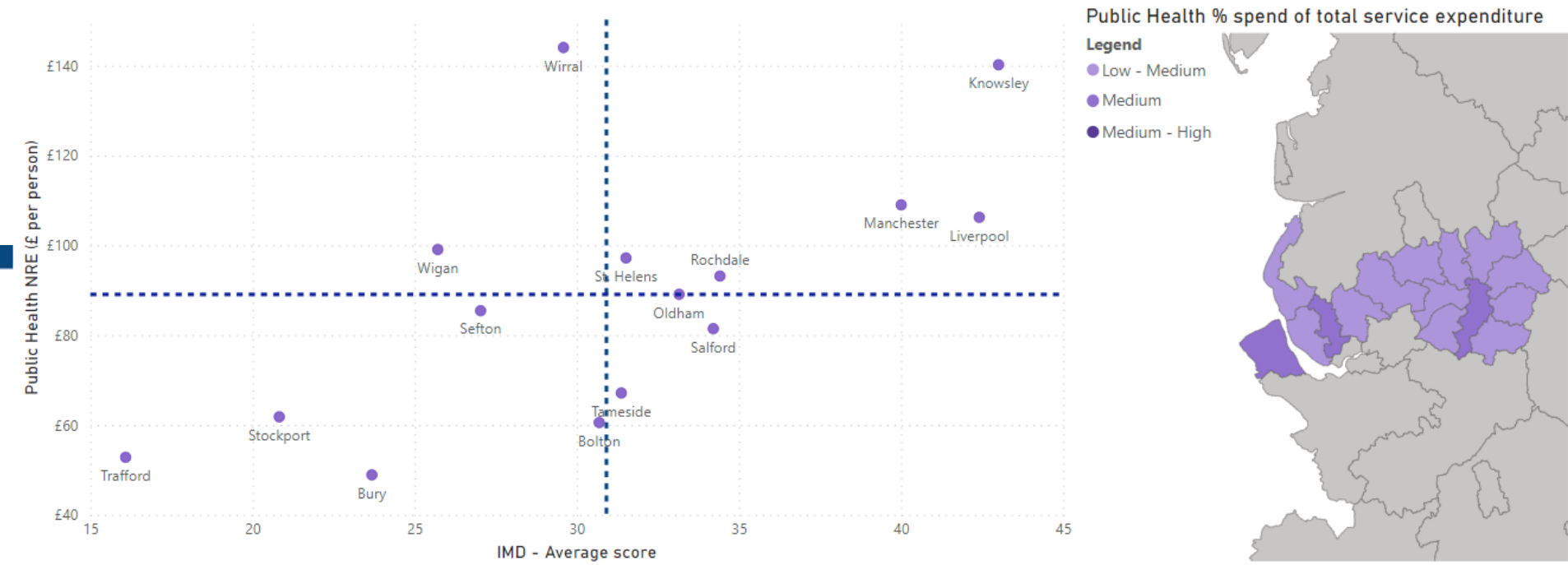
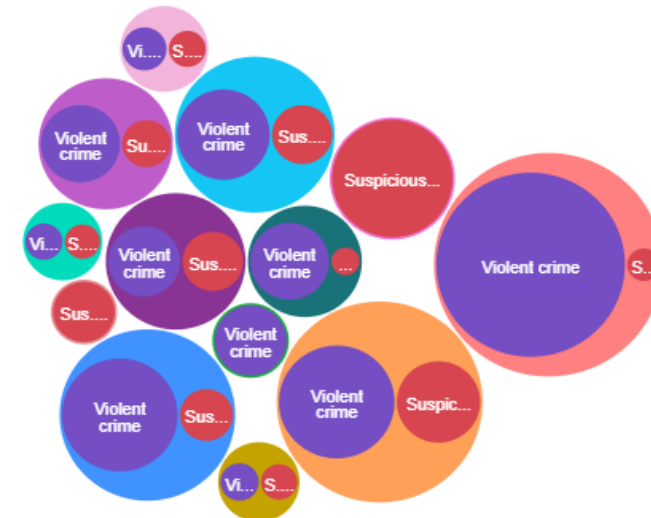
CIPFA FINANCE & GENERAL STATISTICS 2019-20 ESTI					Z	AA	AB	AC	AD	AE	AF
					eduerl	eduprm	eduscn	eduspc	edupst	eduoth	edutot
					PART 2   ESTIMATED EXPENDITURE AND INCOME 2019-20						
					Service Expenditure (Outturn prices), Excluding Capital Charges						
					Education						
					Early Years (21)	Primary Schools (22)	Secondary Schools (23)	Special Schools and Alternative Provision (24)	Post-16 Provision (25)	Other Education and Community Budget (26)	Total Education Services (27)
Area of Designation	Region	County Area	FLAS	Local Authority	£'000	£'000	£'000	£'000	£'000	£'000	£'000
GLA	2		E5100	Greater London Authority	-	-	-	-	-	214,232	214,232
CL	2		E5010	City of London	646	2,120	-	-	-	2,895	5,661
IL	2		E5011	Camden	24,239	68,855	72,343	33,102	2,600	7,540	208,679
IL	2		E5012	Greenwich	16,152	128,698	74,371	29,295	1,355	13,270	263,141
IL	2		E5013	Hackney	37,200	127,453	64,533	12,325	3,937	10,709	256,157
IL	2		E5014	Hammersmith & Fulham	16,566	48,437	-	6,267	5,245	15,258	91,773
IL	2		E5015	Islington	16,328	85,677	43,090	13,953	5,642	9,531	174,221
IL	2		E5016	Kensington & Chelsea	12,490	37,218	7,914	10,073	1,258	12,511	81,464
IL	2		E5017	Lambeth	37,221	108,155	33,444	24,083	-	30,604	233,507
IL	2		E5018	Lewisham	21,528	155,986	118,213	45,196	8,560	7,517	357,000
IL	2		E5019	Southwark	28,888	133,330	26,348	22,162	1,690	18,197	230,615
IL	2		E5020	Tower Hamlets	35,290	153,711	122,211	46,871	12,035	28,872	398,990
IL	2		E5021	Wandsworth	21,582	100,679	15,197	33,236	1,963	16,674	189,331
IL	2		E5022	Westminster	15,582	44,198	6,384	19,475	9,824	13,437	108,900
OL	2		E5030	Barking & Dagenham	21,316	117,663	75,293	27,745	1,447	18,021	261,485
OL	2		E5031	Barnet	30,921	136,011	42,528	23,594	2,849	7,313	243,216
OL	2		E5032	Bexley	15,976	41,758	3,847	21,996	605	10,810	94,992
OL	2		E5033	Brent	24,758	130,492	37,725	16,725	6,253	19,987	235,940
OL	2		E5034	Bromley	22,282	17,387	9,418	30,038	5,989	10,042	95,156
OL	2		E5035	Croydon	28,399	71,680	21,139	46,106	992	36,823	205,139
OL	2		E5036	Ealing	117	190,262	115,752	52,655	6,447	11,120	376,353
OL	2		E5037	Enfield	26,849	113,387	70,251	34,578	2,053	18,170	265,288
OL	2		E5038	Haringey	23,906	106,416	51,279	24,577	8,840	6,882	221,900
OL	2		E5039	Harrow	12,844	79,459	12,340	27,796	2,371	10,709	145,519
OL	2		E5040	Havering	16,679	82,296	6,116	7,112	2,156	11,805	126,164
OL	2		E5041	Hillingdon	27,907	96,317	8,461	25,632	3,860	15,503	177,680
OL	2		E5042	Hounslow	24,570	99,800	16,797	35,544	165	17,372	194,248
OL	2		E5043	Kingston-upon-Thames	13,040	56,732	4,605	0,686	2,181	0,411	05,555

# CIPFAstats+

Clear,  
Insightful &  
Informative

Different Incident Types involving Mental Health across Police Forces

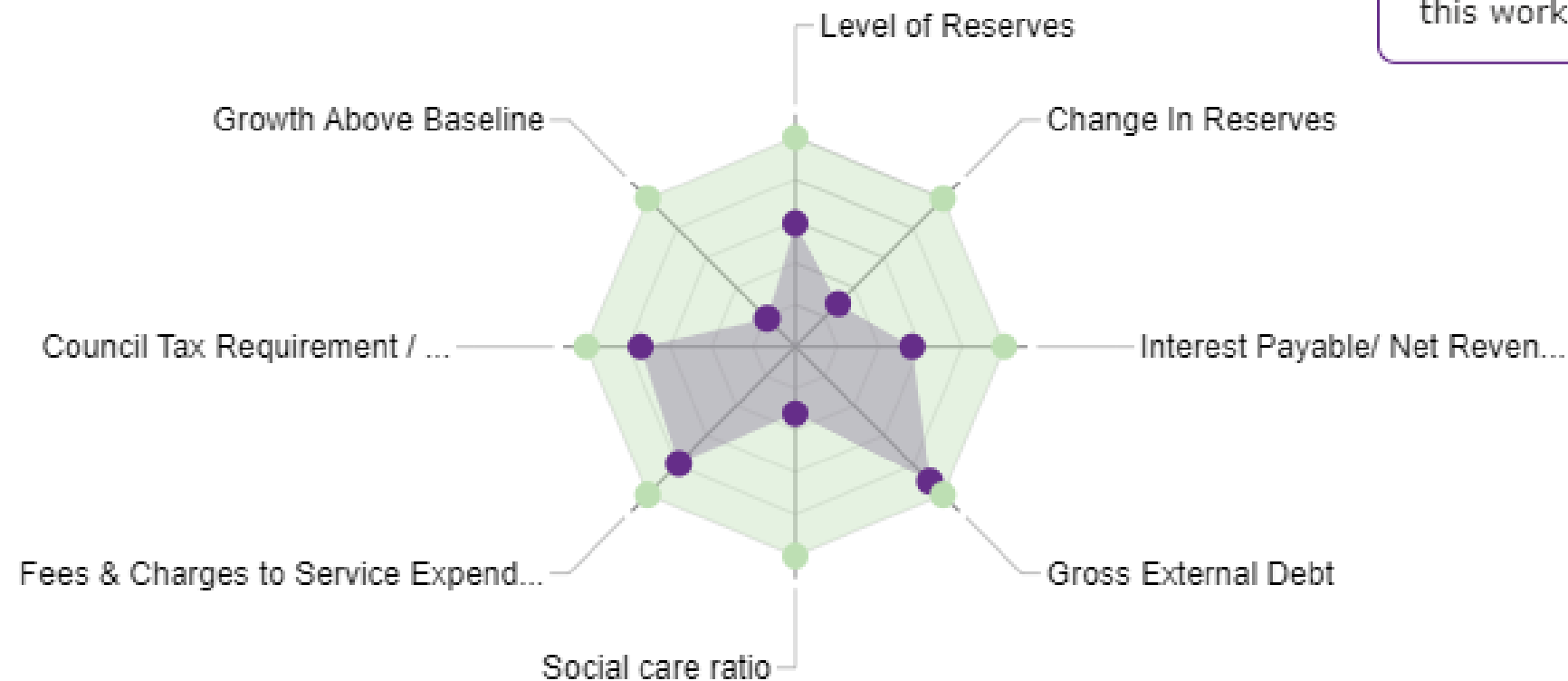
- Police Force
- Avon & Somerset
  - Cheshire
  - City of London
  - Dyfed-Powys
  - Hertfordshire
  - Humberside
  - Kent
  - Lancashire
  - Nottinghamshire
  - Staffordshire
  - West Mercia
  - West Midlands
  - West Yorkshire



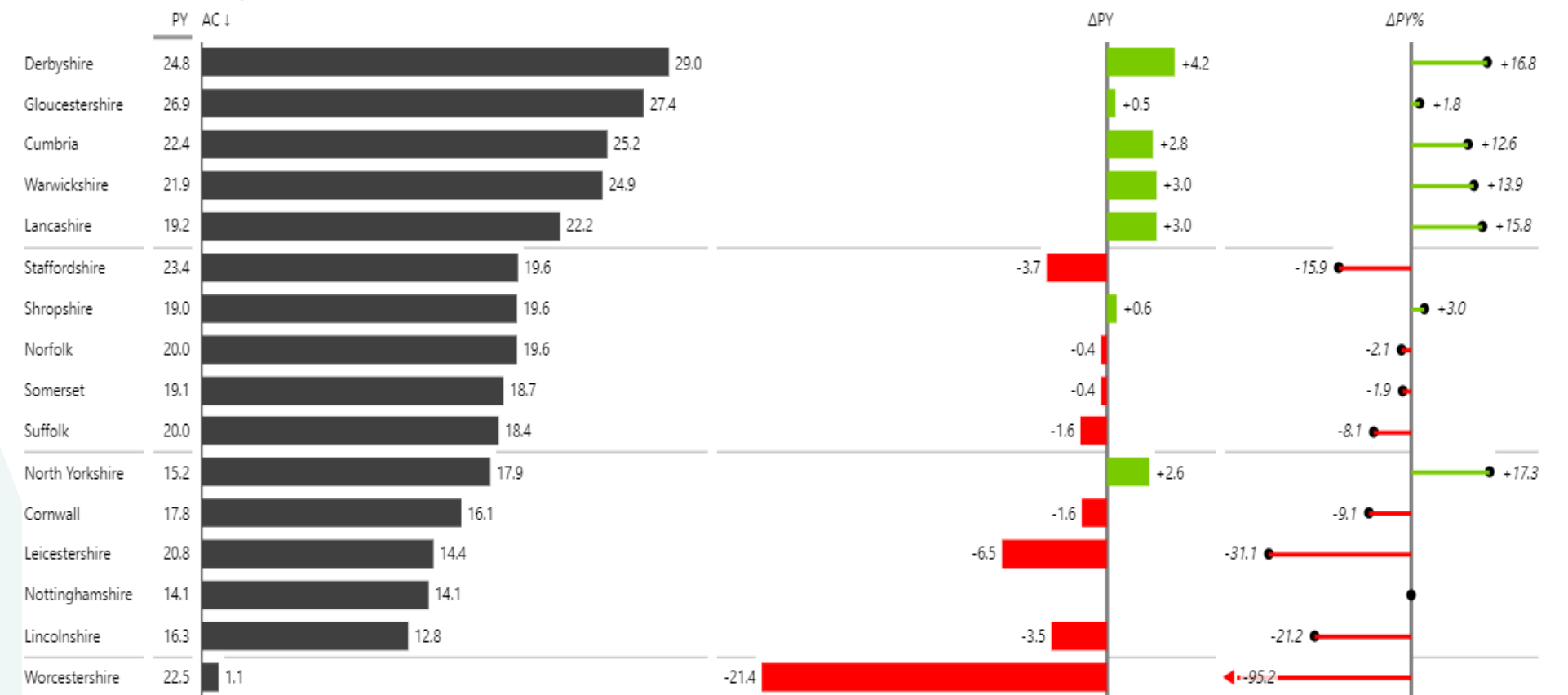
Comparison to Best Performer in Group

Selected Authority (purple dot) Best Performer (green dot)

How does this work?



Selected Year and Previous Year by Pension Fund



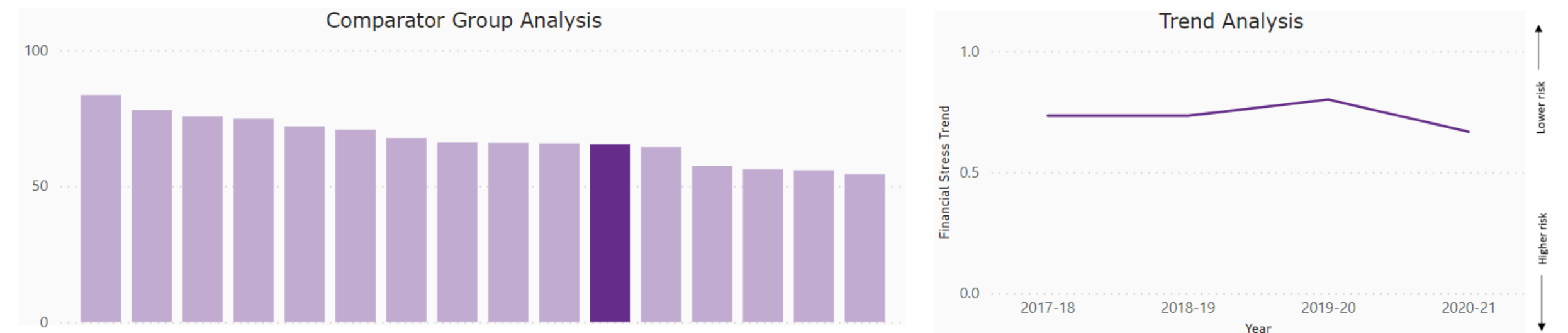
# Financial Resilience Index

Results Breakdown



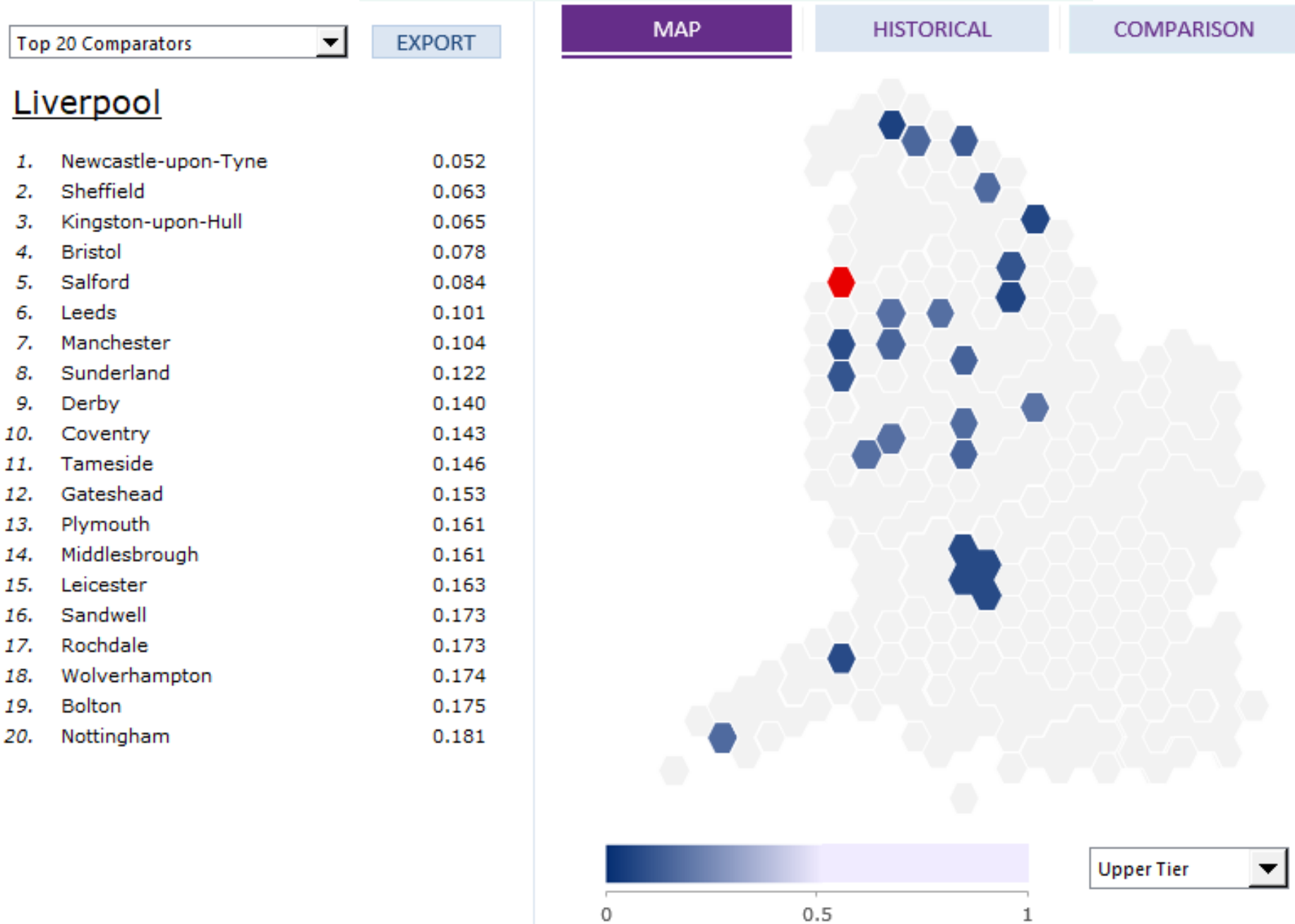
Auditors VfM Assessment: Refer to local authority website  
 Children's Social Care Judgement: Requires Improvement

Individual Analysis

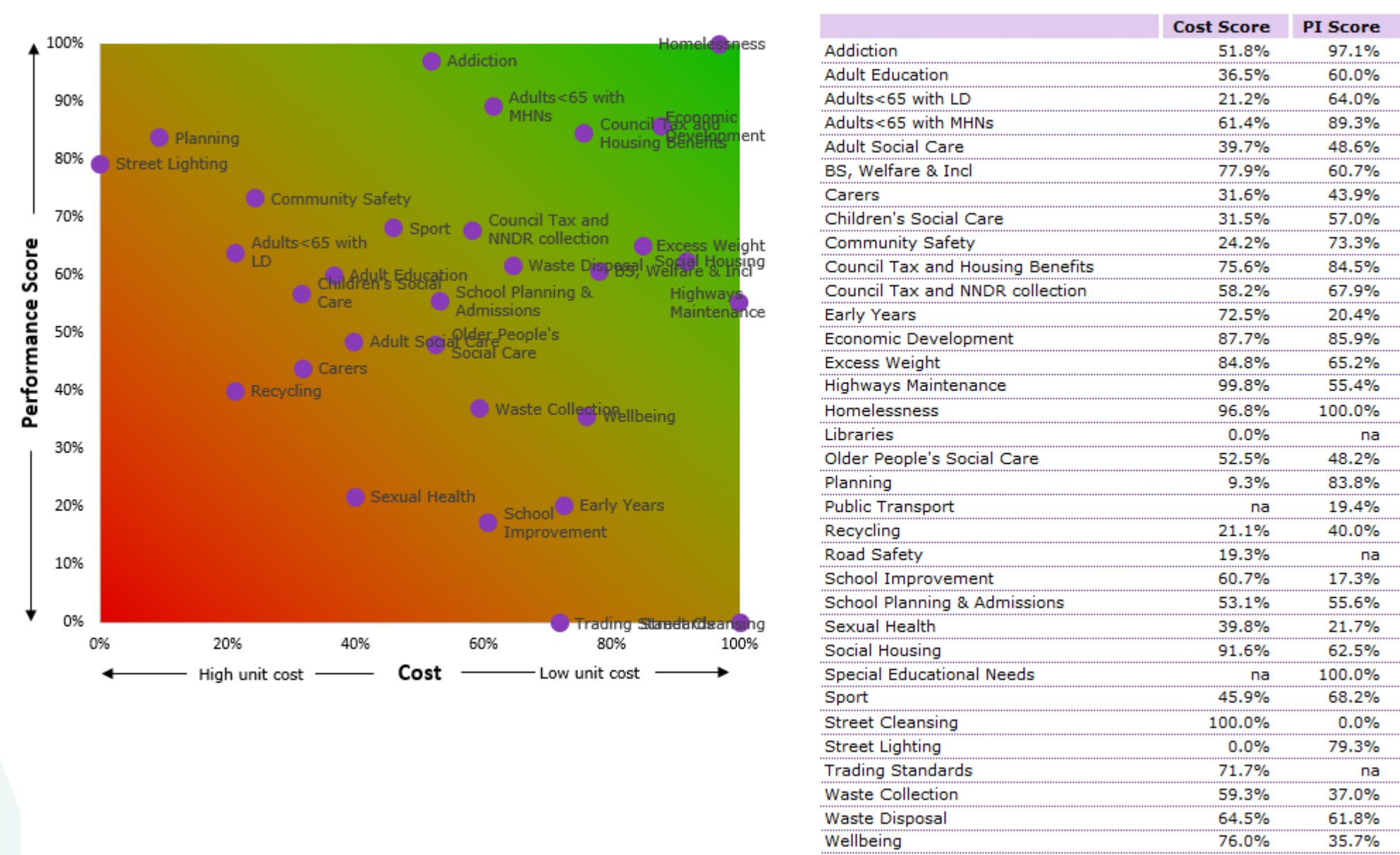


- Index compares similar authorities according to a set of indicators to provide an illustration of a council's financial position
- Rather than an overall assessment of financial risk, the index instead highlights areas where additional scrutiny should take place in order to provide additional assurance

# Nearest Neighbours Model



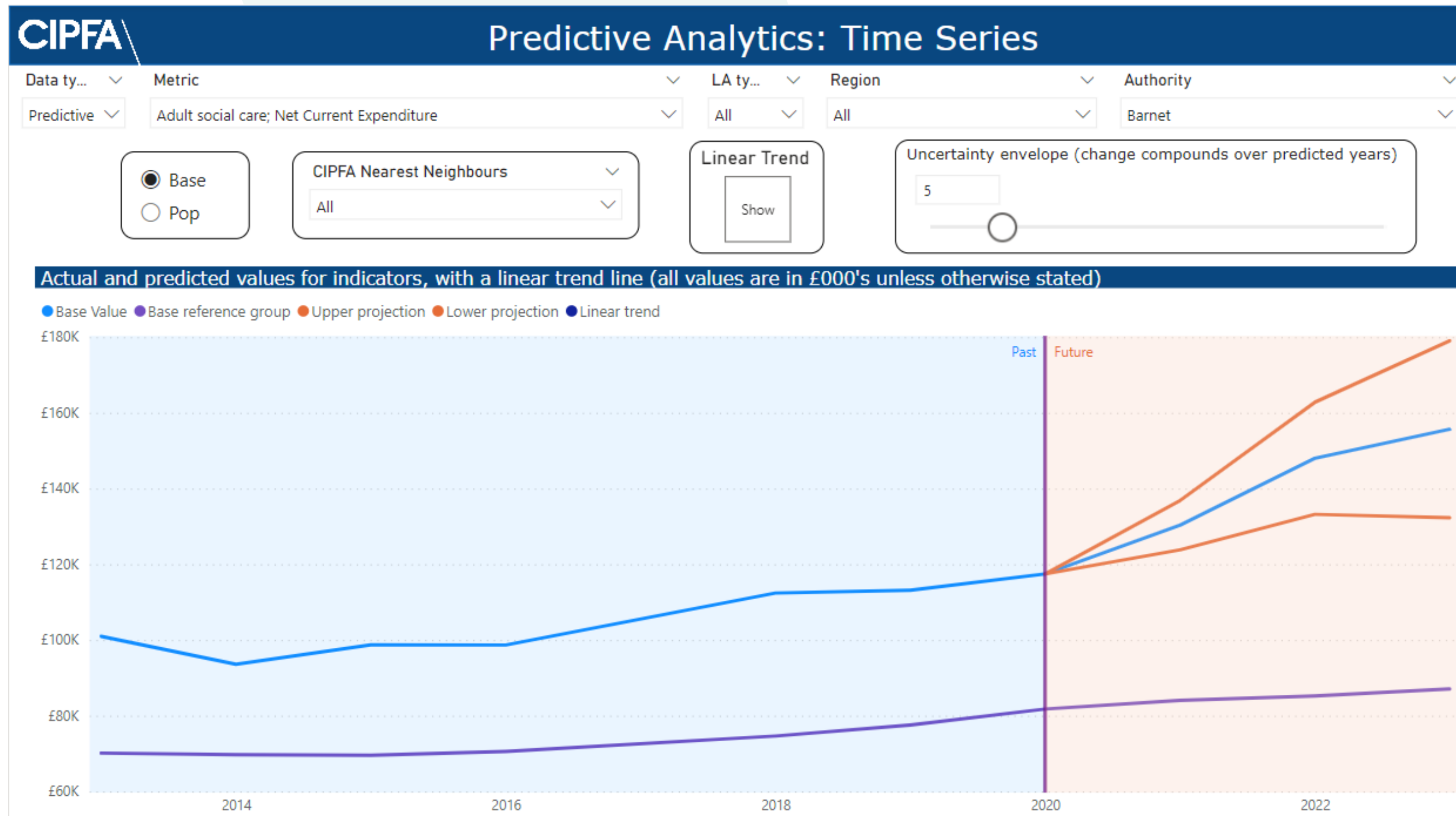
# VfM Toolkit





\*Dummy data is shown in this presentation\*

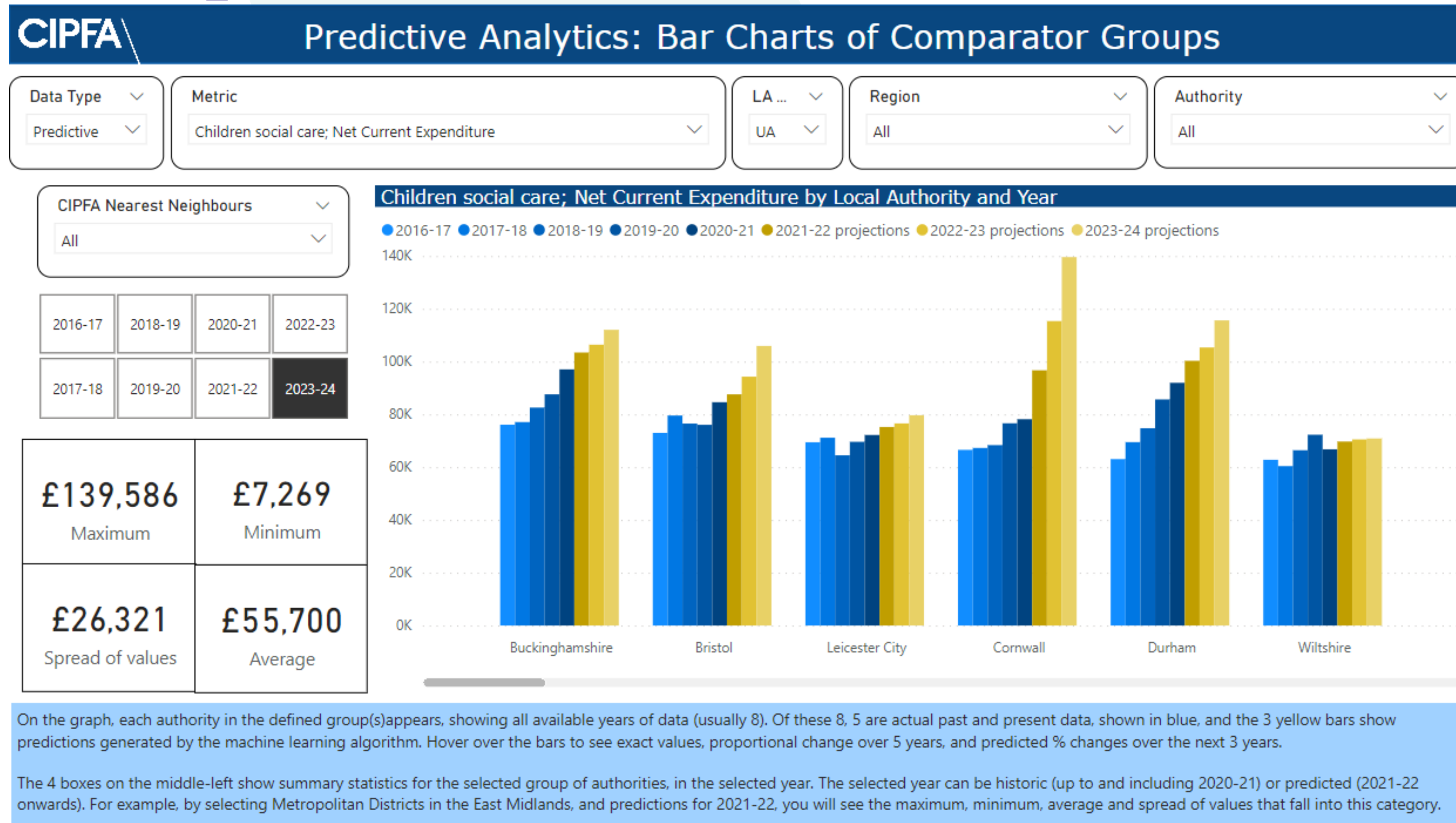
# Example Predictive dashboard 1



- Predictions are generated from a large mixed data set including statistics on finances, police, social care and public health
- The blue shaded area represents the historical data, and the orange the predictions
- The light blue line is the selected authority, and the purple line is the comparator group average

\*Dummy data has been used in visualisations for this presentation\*

# Example Predictive dashboard 2



- 5 blue bars show past and present data while the 3 yellow bars show predictions generated by the machine learning algorithm
- We can see how the model does not simply predict a linear trajectory and that predicted patterns vary for each authority

\*Dummy data has been used in visualisations for this presentation\*

# Example Predictive dashboard 3

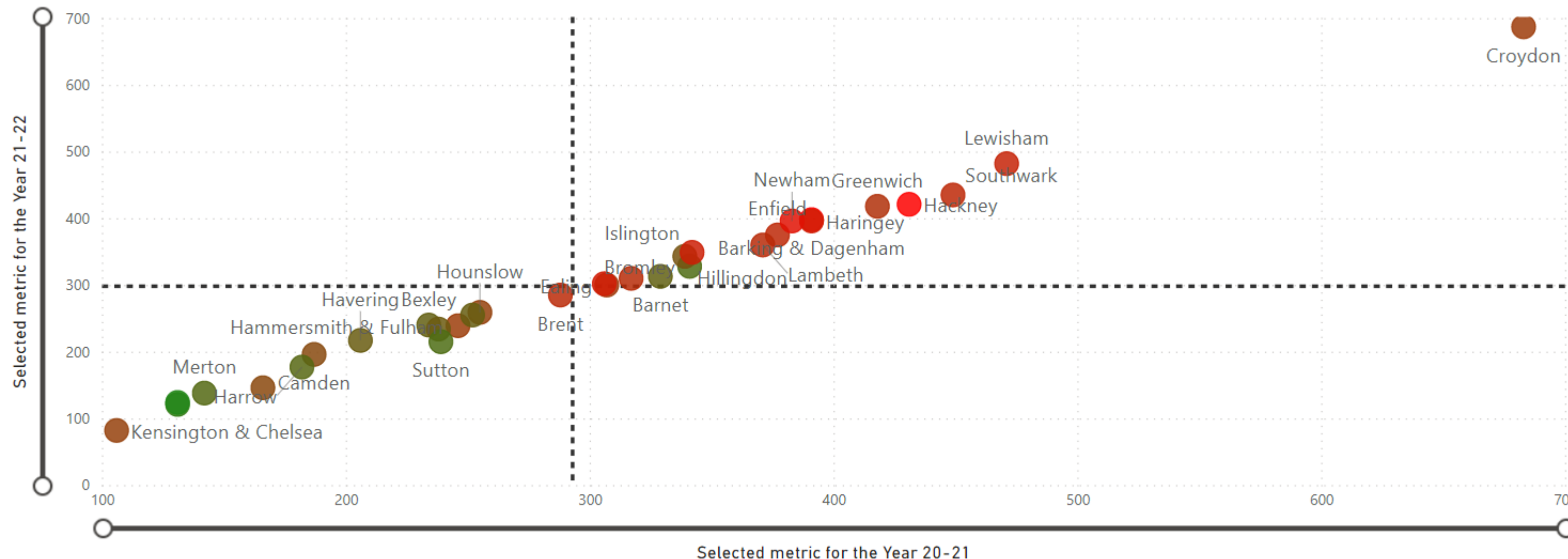
## CIPFA Predictive Analytics: Current vs. Predicted Value

Metric:  LA type:  Region:

Here, we show the change in the selected metric between the most recent (2020-21) and first predicted year (2021-22). In addition, markers are colour coded according to the index of multiple deprivation score, with red being the most and green the least deprived respectively. Black lines split the graph into quadrants, and each indicate the average values of for the chosen authorities for either axes.

### Children looked after in 2020-21 and 2021-22

Sum of IMD - Average score 9.43 32.77



- This scatter plot shows change in the selected metric between the most recent (x-axis) and first predicted year (y-axis)
- Black lines demarcating the group average split the graph into quadrants
- So we can see how each authorities' relation to this average is predicted to change



**Demonstration: 3:00-4:00pm at the CIPFA stand**

**We are running a demo of CIPFAstats+ and Predictive Analytics, please come by take a look**

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**<https://analytics.cipfa.org/home>**

# Methodology

