



NHS  **NOT FOR SALE**
Keep our NHS public

McKinsey & Co.

Shortly after the financial crisis of 2008, the UK asked US management consultancy firm McKinsey & Co. to suggest ways to improve NHS productivity.

McKinsey (2009) outlined potential efficiencies to save £13–20bn annually, over the next 5 years...

McKinsey efficiencies

£6.0-9.2bn from lower **provider costs**.

£4.7-6.6bn **allocative efficiency** savings due to no longer commissioning low value added healthcare interventions and ensuring compliance with standards.

£2.7-4.1bn from a shift in care away from hospitals towards more cost

Allocative Efficiency

"a state of the economy in which production represents consumer preferences"

"The NHS Five Year Forward View modelled the need for the health system to generate £22 bn of efficiencies by 2020/21. The NHS RightCare programme is a critical part of NHS England's approach to driving allocative efficiency in order to meet this need."

Rationing

One of the three West Midlands CCGs that plans to ration knee and hip operations to save £2m a year was advised by an NHS England official... Redditch and Bromsgrove CCG said the CCGs had “utilised” NHS Right Care data packs to identify hip and knee replacement surgery as an area where the three groups could reduce expenditure by “circa £2,123,420 per annum”.

Health Service Journal 8 Feb 2017

RightCare

“a proven approach that delivers better patient outcomes and frees up funds for further innovation”

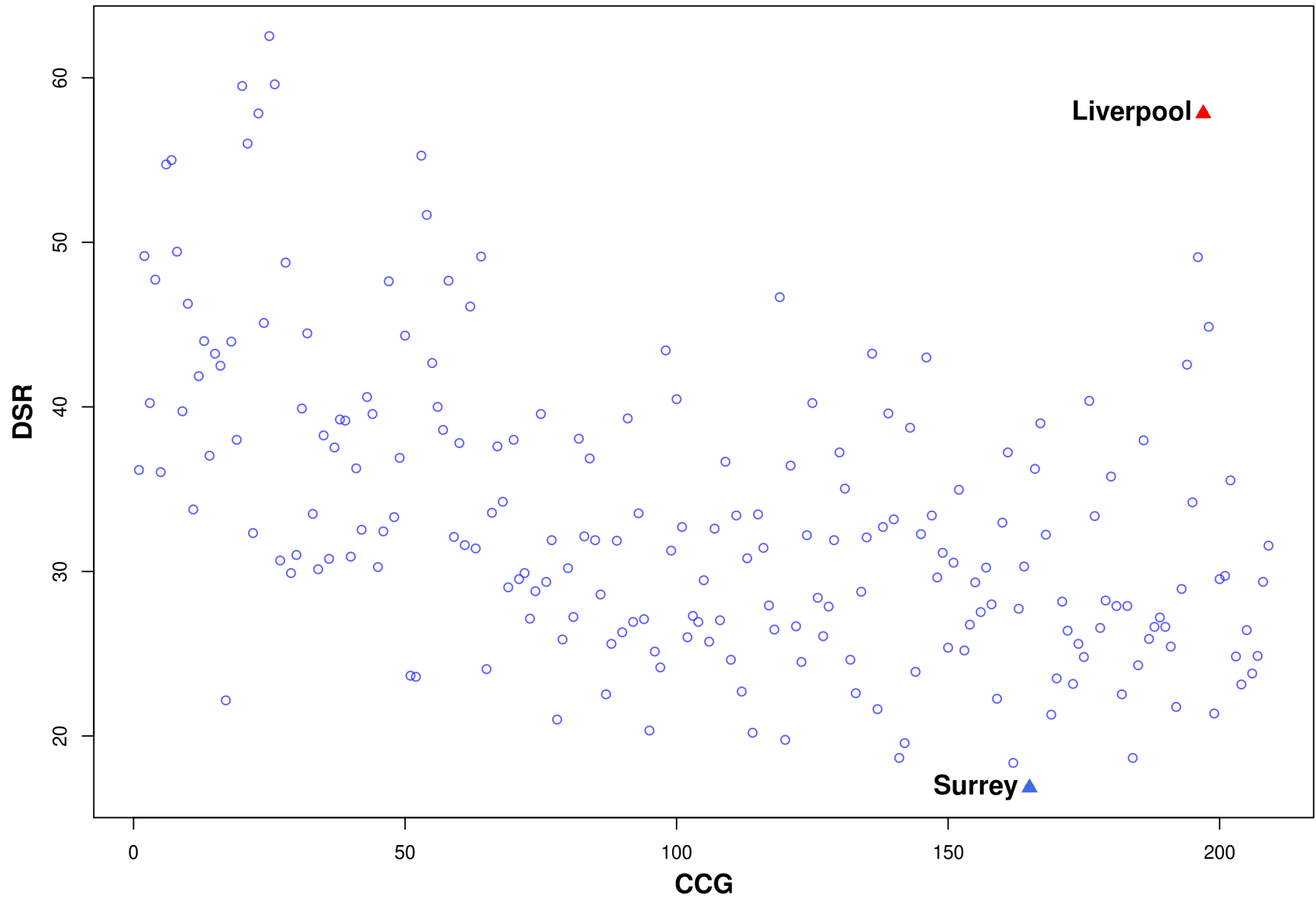
*Prof. Matthew Cripps
NHS RightCare national director*

Commissioning for Value

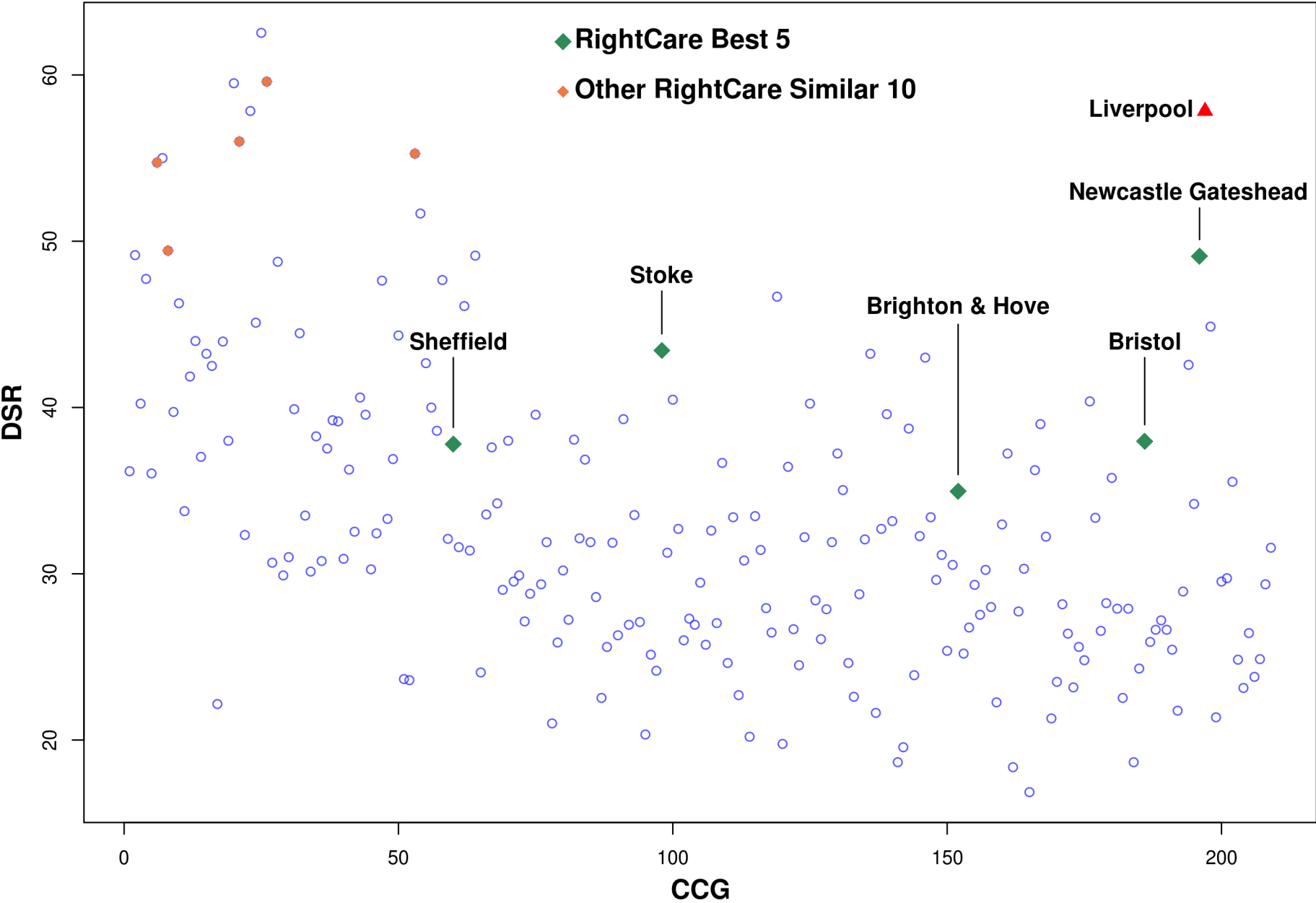
Together with Public Health England, RightCare produced “Commissioning for Value” packs tailored to each CCG.

Cancer and Tumours packs (2016), using 2011-13 pooled data, highlighted significant annual opportunities to avert lung cancer mortality <75 years, including **80 lives per year** for Liverpool CCG.

lung cancer mortality: <75 yrs directly age-standardised rate (2011-2013)



lung: RightCare comparators

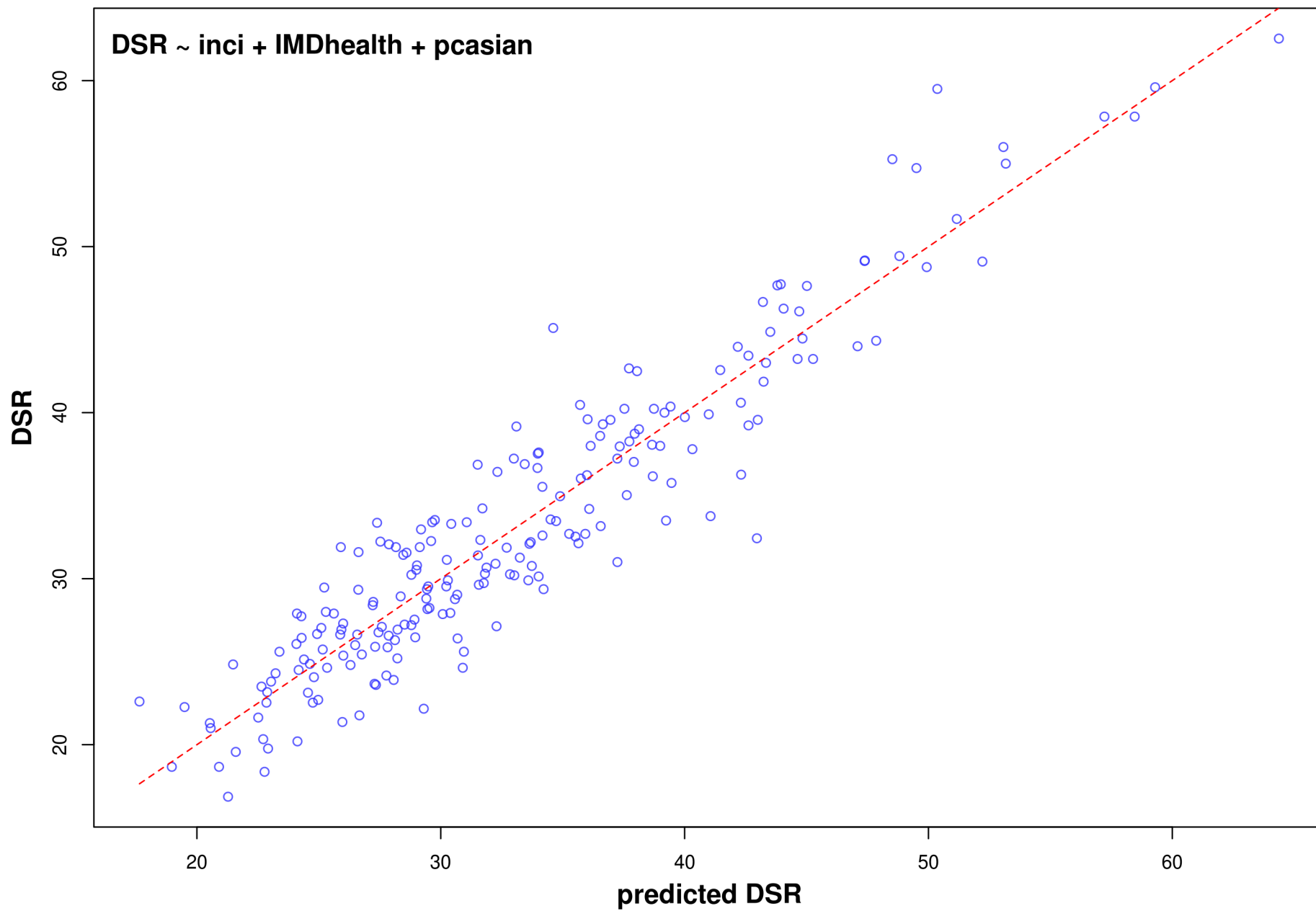


Magic

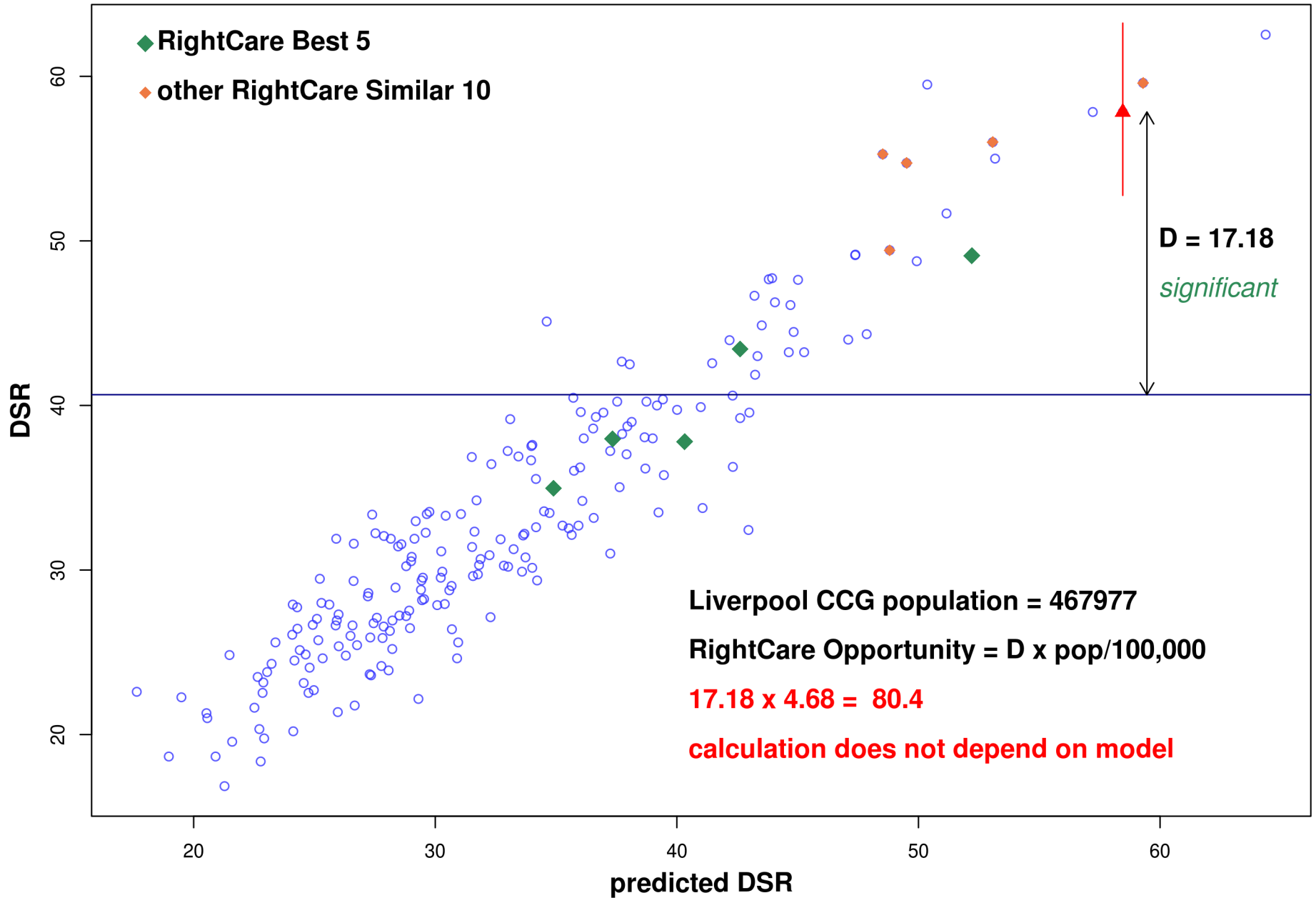
RightCare claims to identify opportunities to improve healthcare without reference to any new diagnostic, therapeutic, or preventative techniques.

RightCare does not model the data, but estimates an opportunity for improving performance by comparing the CCG value with the average of the Best 5 values

lung model



Lung: RightCare Opportunity



Questions

How are the Similar 10 and Best 5 chosen?

How does RightCare decide on significance?

start with the RightCare approach as it was in 2017, and update this at the end.

Demography

IMD

population

population 5-14

population >75

population density

% Black

IMD health

population < 5

population 15-24

ADSONS

population density slope

% Asian

RightCare Similar 10

X_i = i^{th} demographic variable

$X_{i\sim} = (X_i - \text{median}(X_i)) / (\text{interdecile range})$

For CCGs **a** and **b**

metric $D(\mathbf{a}, \mathbf{b}) = \sum_i (X_{i\sim} [\mathbf{a}] - X_{i\sim} [\mathbf{b}])^2$

For CCG **a**, the Similar 10 are the 10 nearest neighbours of **a**, using this metric.

Similar 10 issues

The Similar 10 are fixed, independent of the health outcome

The demographic variables are equally weighted in the metric

Other variables may be relevant to a particular health outcome

Best 5 and Opportunity

For an outcome H for which higher values are worse, say, RightCare defines the “Best 5” as the five CCGs within the fixed Similar 10 whose values of H are lowest.

In this case, RightCare says the CCG has a significant opportunity to improve H, if a 95% CI for $H[\text{CCG}] > \text{mean}(H[\text{B5}])$.

This acknowledges that $H[\text{CCG}]$ is a random variable, but pretends that $\text{mean}(H[\text{B5}])$ is fixed.

Bogus Opportunity

Suppose the CCG and all of its Similar 10 have H with identical Poisson distributions, so there is no real opportunity. For Poisson rates $\lambda = 10, 50, \text{ or } 200$, RightCare finds a significant opportunity 12% of the time.

For binomial data ($N=100, p=0.05$), the corresponding error rate is 21%.

(skip) **DSR and mean(B5)**

DSR = $\sum_j w_j * O_j$ where $O_j \sim$ independent Poisson

$O = \sum_j O_j$ O Poisson **"Exact" CI:**

$O_{lo} = \text{qgamma}(0.025, O)$; $O_{hi} =$
 $\text{qgamma}(0.975, O+1)$

Dobson: $s^2 = \text{var}(\text{DSR}) / \text{var}(O) = (\sum_j w_j^2 * O_j) / O$

$\text{DSR}_{lo} = \text{DSR} + s * (O_{lo} - O)$; $\text{DSR}_{hi} = \text{DSR} + s * (O_{hi} - O)$

DSR_{lo} , DSR , and O determine $\text{var}(\text{DSR})$

$\text{mean}(\text{B5}) =$ weighted sum of independent Poisson

$\text{var}(\text{m}(\text{B5})) = 1/25 * \sum_k \text{var}(\text{DSR}_k)$

$s^2 = \text{var}(\text{m}(\text{B5})) / \text{var}(\sum O) = \text{var}(\text{m}(\text{B5})) / \sum O$

Modelling DSR

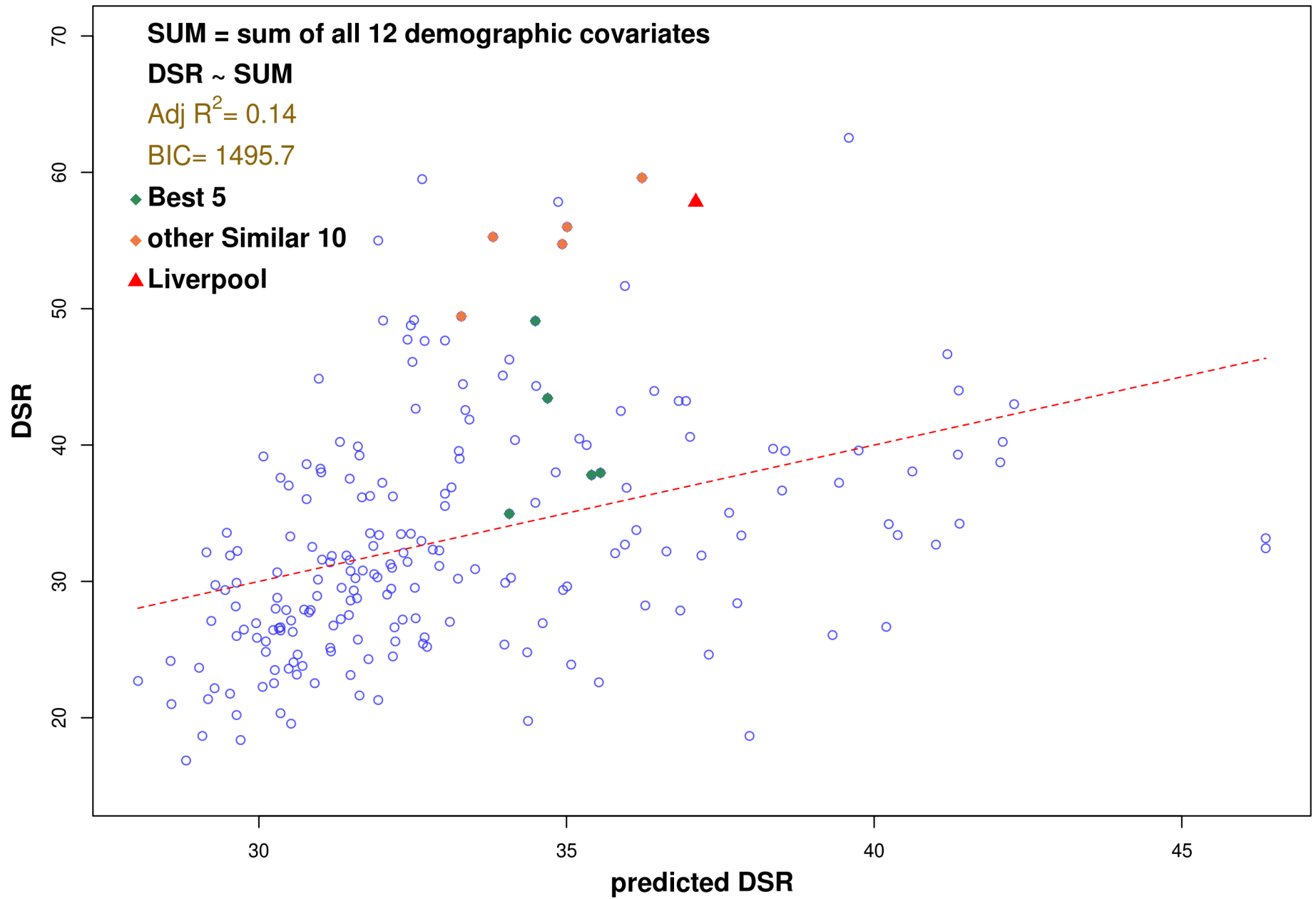
M1: DSR \sim demographic variables with all coefficients equal

M2: DSR \sim demographic variables

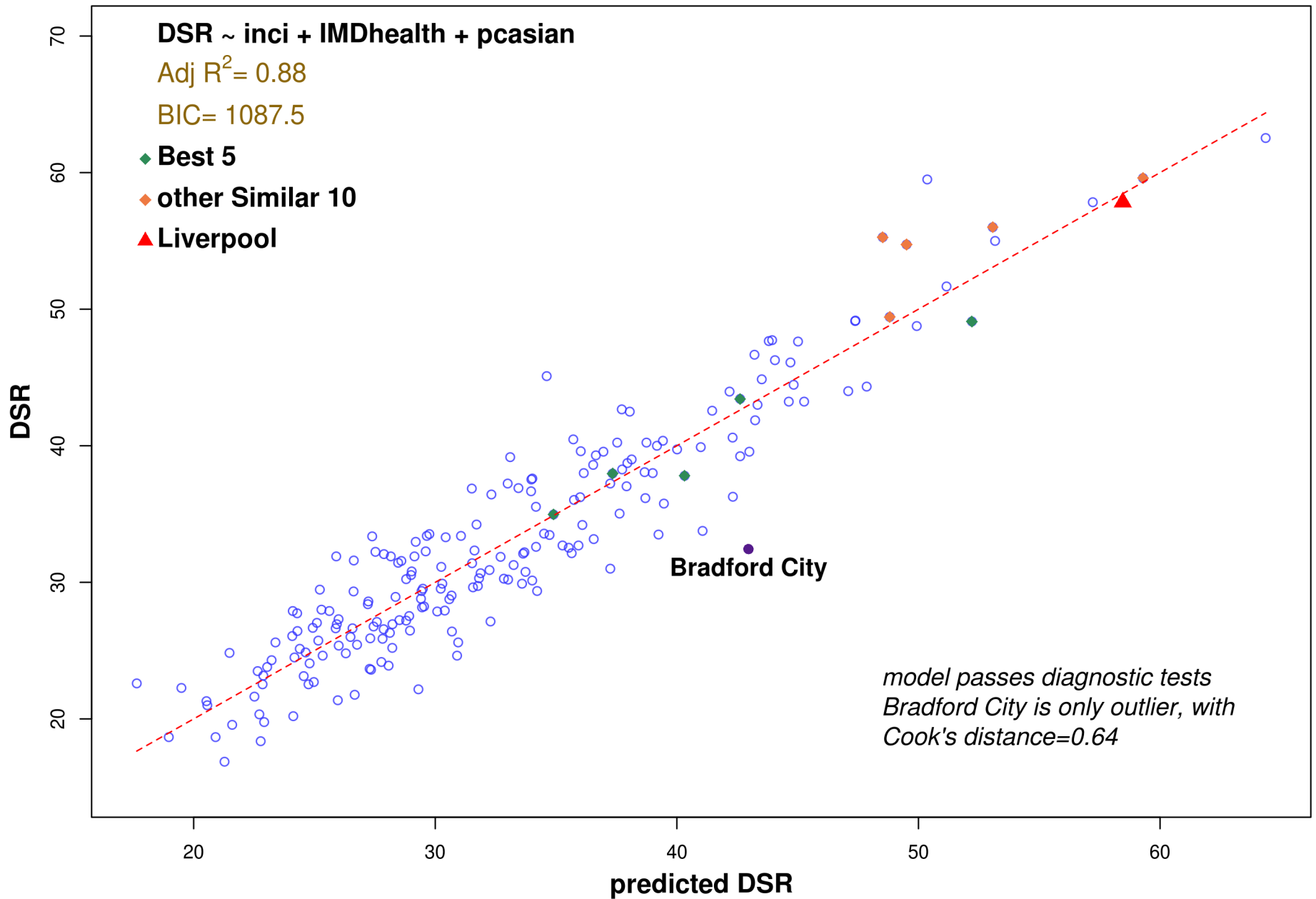
M3: DSR \sim incidence + demographic variables

M4: DSR \sim incidence + demographic variables, model selection by BIC

lung model M1



lung model M4



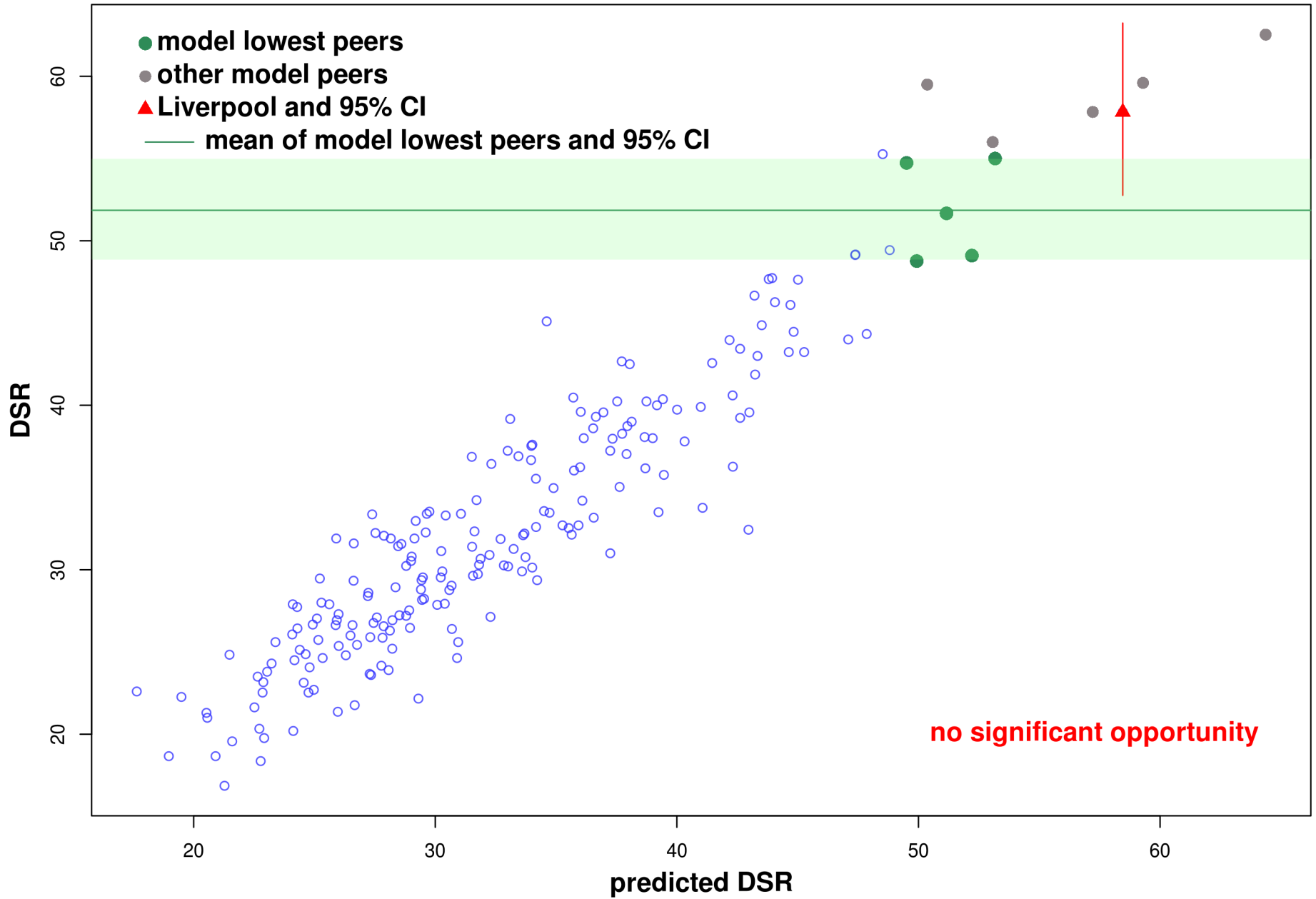
Appropriate peers

If a model fits the national data for a particular health outcome, we could compare the value at a CCG₀, to the values at other CCGs whose predicted values were close to the prediction for CCG₀, and then notice any observed differences.

If the predicted values are very different, an observed difference isn't an opportunity – it confirms the model. Liverpool isn't Brighton!

If the model doesn't fit the national data,

lung model opportunity



Bogus Opportunity (2)

Whilst RightCare shows 1842 annual avoidable lung cancer deaths in 80 CCGs, only 168 deaths in 8 CCGs appear exceptional using appropriate peers and CIs.

But even if an unexpected observed difference is significant, the CCG can't affect population factors e.g. pcasian, or current incidence or IMDhealth; or unmodelled factors (air pollution, stress), previous exposures... In future?

Wrong Peers

lung model

Halton

Knowsley

Leeds South and East

Newcastle Gateshead

North Manchester

Salford

South Manchester

South Sefton

South Tees

South Tyneside

RightCare

Brighton and Hove

Bristol

Hull

Newcastle Gateshead

Salford

Sheffield

South Manchester

South Tees

Stoke on Trent

Sunderland

(Best5 from 2011-13 lung data)

new RightCare peers

lung model

Halton

Knowsley

Leeds South and East

Newcastle Gateshead

North Manchester

Salford

South Manchester

South Sefton

South Tees

South Tyneside

RightCare 2019

Bradford Districts

Hull

Leicester City

Manchester

Newcastle Gateshead

Nottingham City

Salford

Sandwell and West Bham

Sheffield

Stoke on Trent

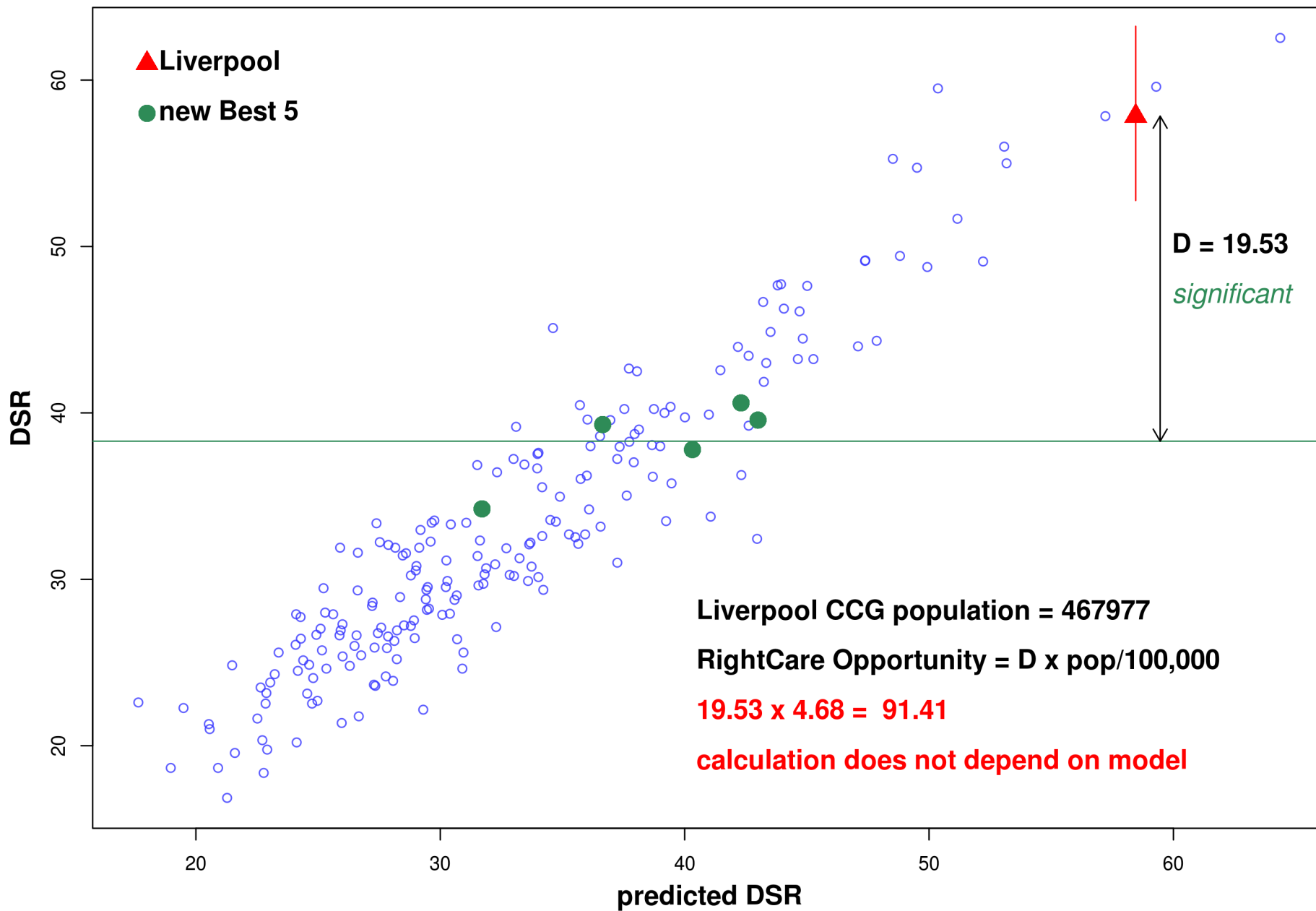
(Best5 from 2011-13 lung data)

Opportunity still wrong

New RightCare peers chosen using different covariates, with increased weight for IMD, no IMDHealth, decreased weight for Asian.

Using 2011-13 data, new peers give RightCare opportunity = 91.4

lung model



(skip) **Significance still wrong**

RightCare still finds a “significant” opportunity when the 95%CI for the CCG is above the Best 5 mean (if higher is worse).

Use the 2017/18 data for the 2019 packs, mortality from lung cancer (2016) DSR. Take CCG = Durham Dales

value 56.24; Lower Limit 48.15;

Best 5 mean 45.94; Statistically Significant
Yes

But the 97.5% UL for Best 5 mean is 49.79, exceeding the Lower Limit for value, so value is **not significantly higher** than Best 5

Ploughing on

*NHS Operational Planning and Contracting Guidance
2020/21*

In 2020/21 this means the NHS is planning to...

- live within agreed financial trajectories. Deliver productivity and efficiency improvements by continuing to maximise opportunities identified through programmes such as RightCare, Model Hospital and Getting it Right First Time (GIRFT) to reduce unwarranted variation.




One Liverpool Operational Plan 2019/20

Our plan has been informed by a diverse range...

- RightCare commissioning for value packs

some current rationing in Cheshire & Merseyside

CCG	Cataract	Knee Replacement
Eastern Cheshire	X	X
Halton	X	X
<u>Knowsley</u>	X	
Liverpool	X	X
South Cheshire	X	X
<u>Southport & Formby</u>	X	X
<u>South Sefton</u>	X	X
St Helens	X	X
Vale Royal	X	X
Warrington	X	X
West Cheshire	X	X
Wirral	X	X

-  mentions Atlas of Variation
 -  mentions Atlas and RightCare (broken link)
 -  mentions NICE but differs (imposes BMI < 40)
- NICE: Patient-specific factors (including age, sex, smoking, obesity and comorbidities) should not be barriers to referral for joint surgery. [2008, amended 2014]

Proven Approach

What does “a proven approach” mean? It might mean a convincing majority view from peer-reviewed articles in mainstream journals, analysing and endorsing the methodology which NHS England instructs CCGs to follow, and responding to criticism.

There were no such articles on PubMed in 2017, and seem to be none now.

Evidence-Based

The NHS is supposed to deliver evidence-based medicine. If RightCare is to be a “proven approach”, its proponents should address questions of methodology openly in the public health literature.

Isn't that how science works?