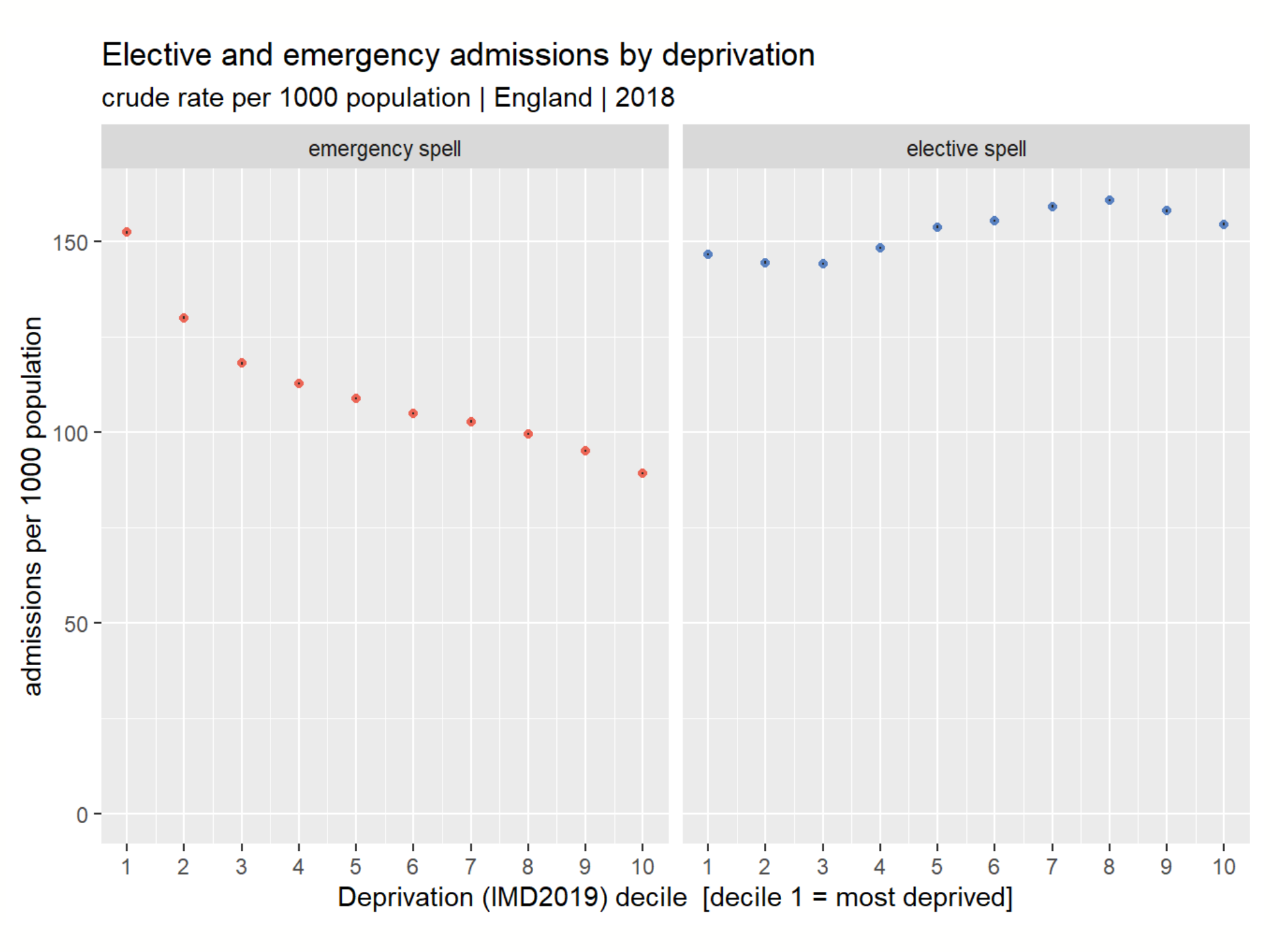
The Strategy Unit.

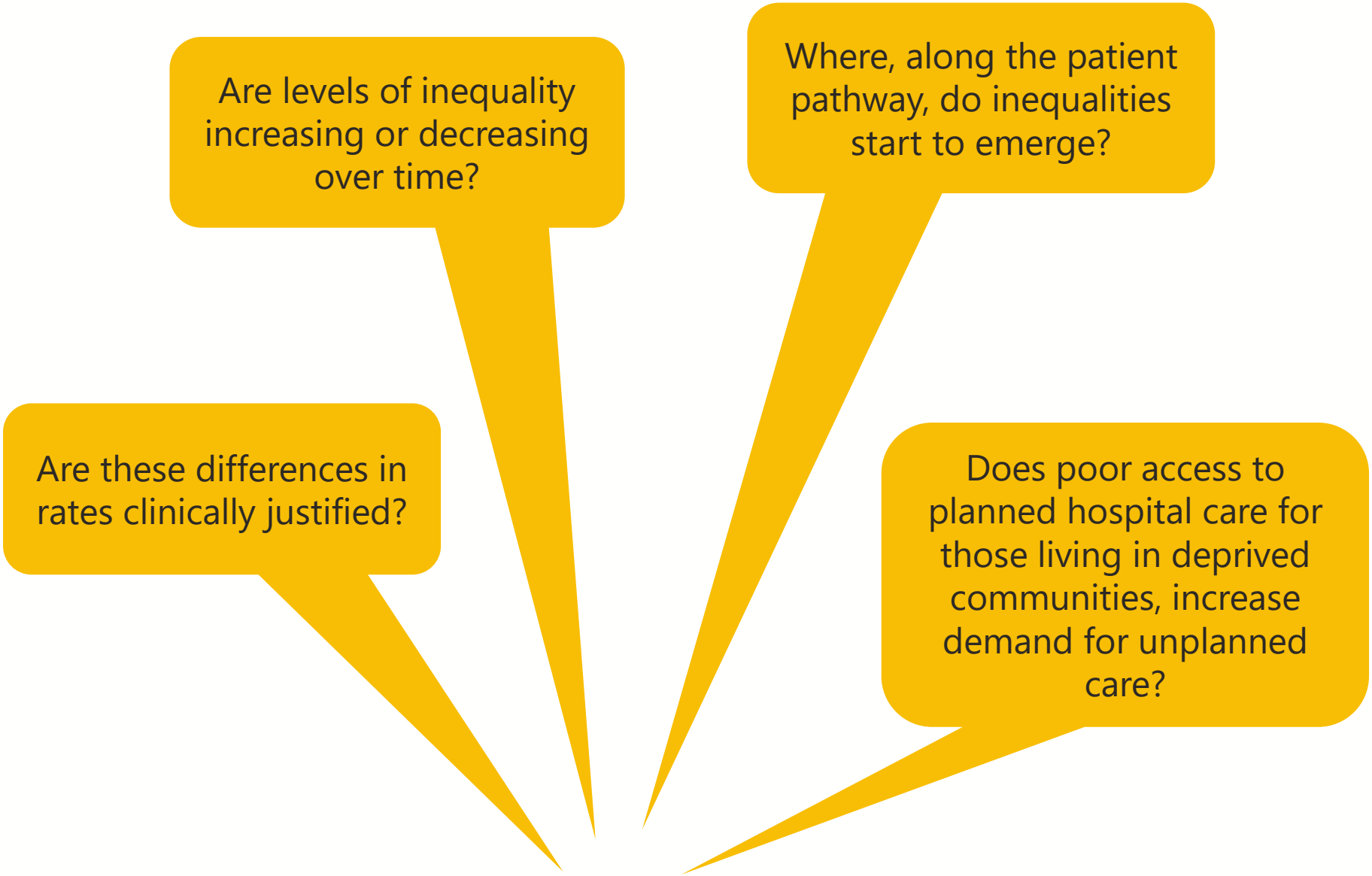
Socio-economic inequalities in access to planned hospital care

Peter Spilsbury, Director of Strategy

Presentation to NHS Confederation

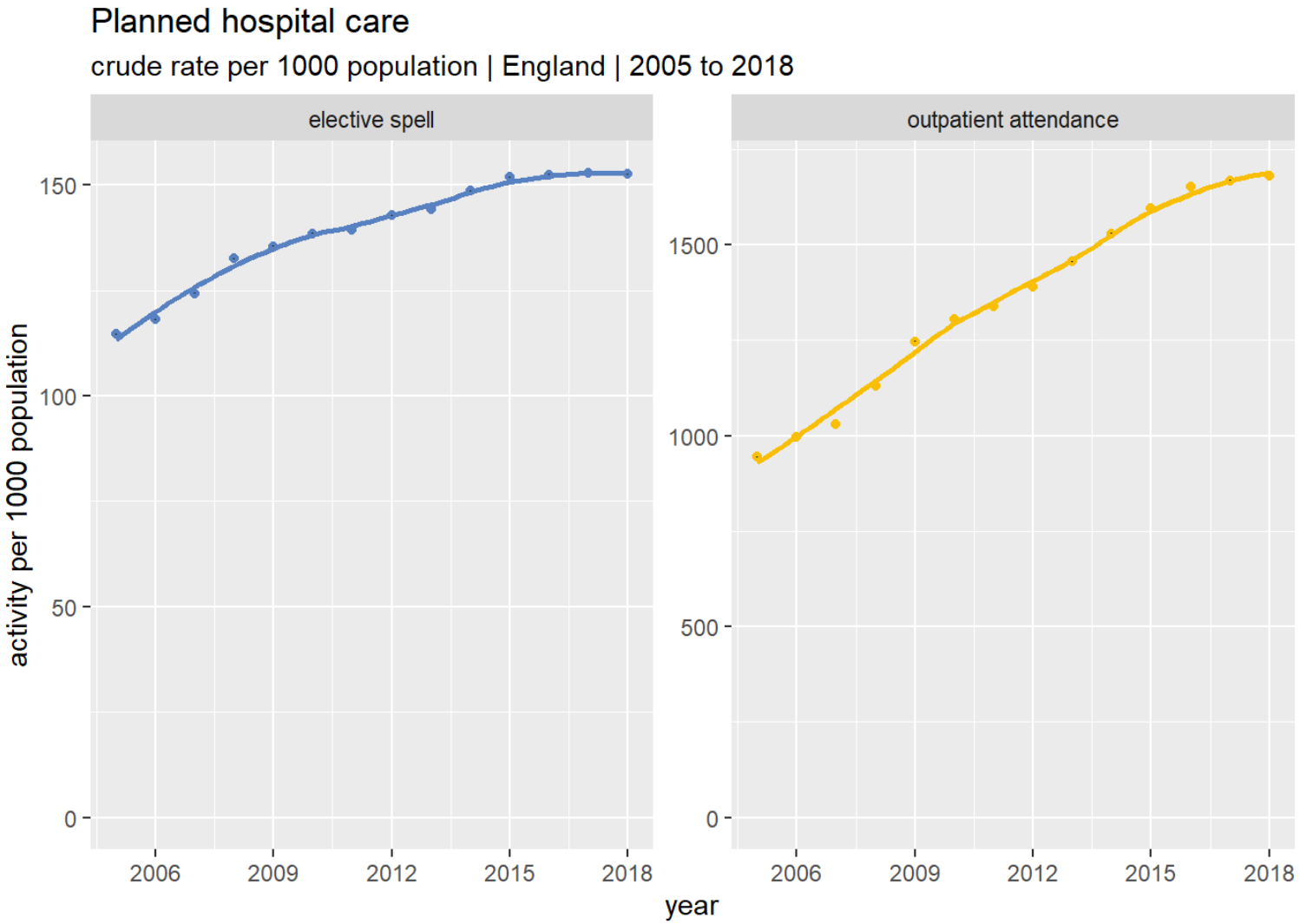
NHS
Midlands and Lancashire
Commissioning Support Unit


Elective and emergency admissions by deprivation
crude rate per 1000 population | England | 2018
emergency spell
elective spell
admissions per 1000 population
150
100
50
0
1
2
3
4
5
6
7
8
9
10
Deprivation (IMD2019) decile [decile 1 = most deprived]

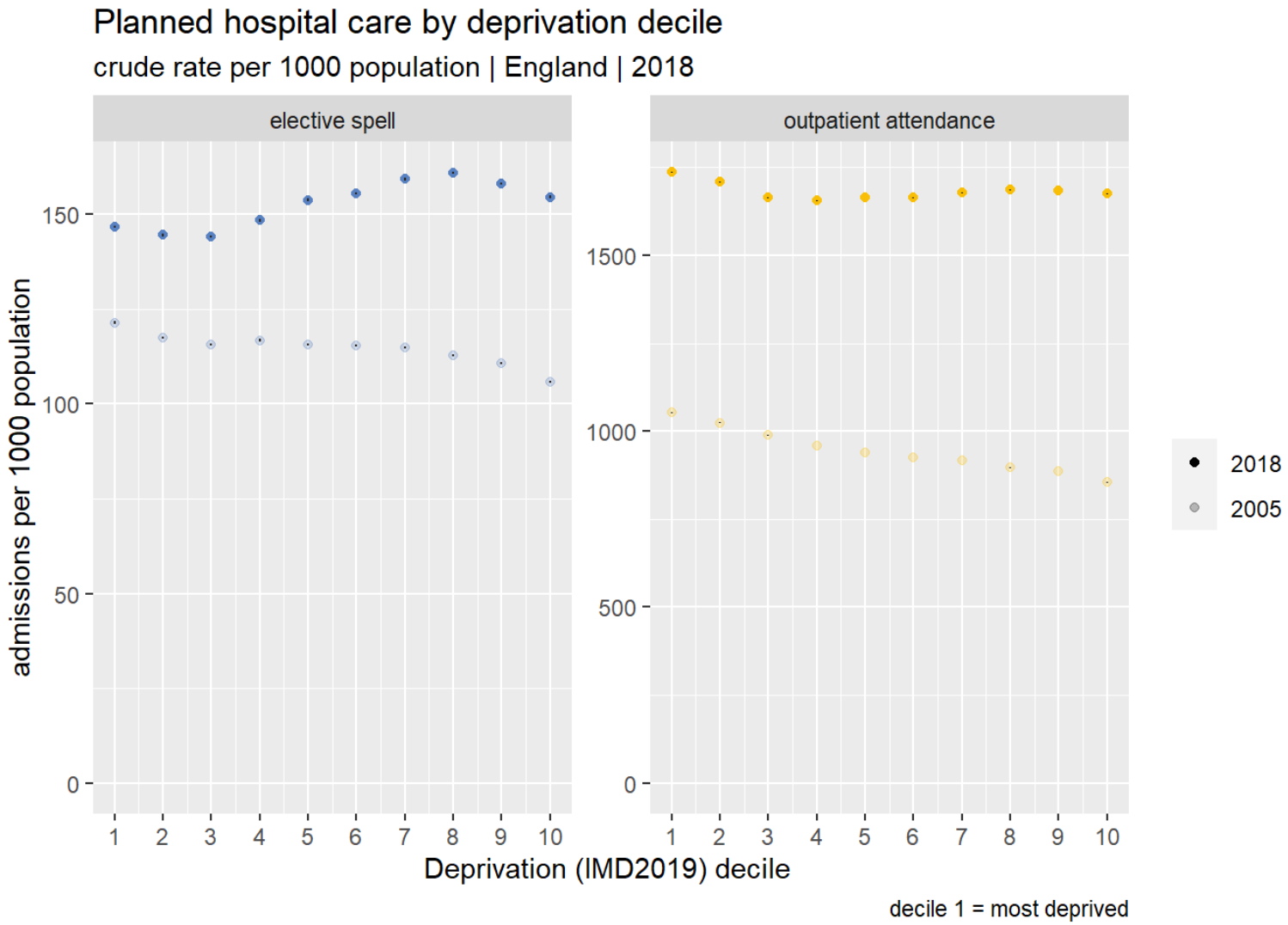

Are levels of inequality increasing or decreasing over time?
Where, along the patient pathway, do inequalities start to emerge?
Are these differences in rates clinically justified?
Does poor access to planned hospital care for those living in deprived communities, increase demand for unplanned care?

Describing socio-economic inequalities in access to planned hospital care

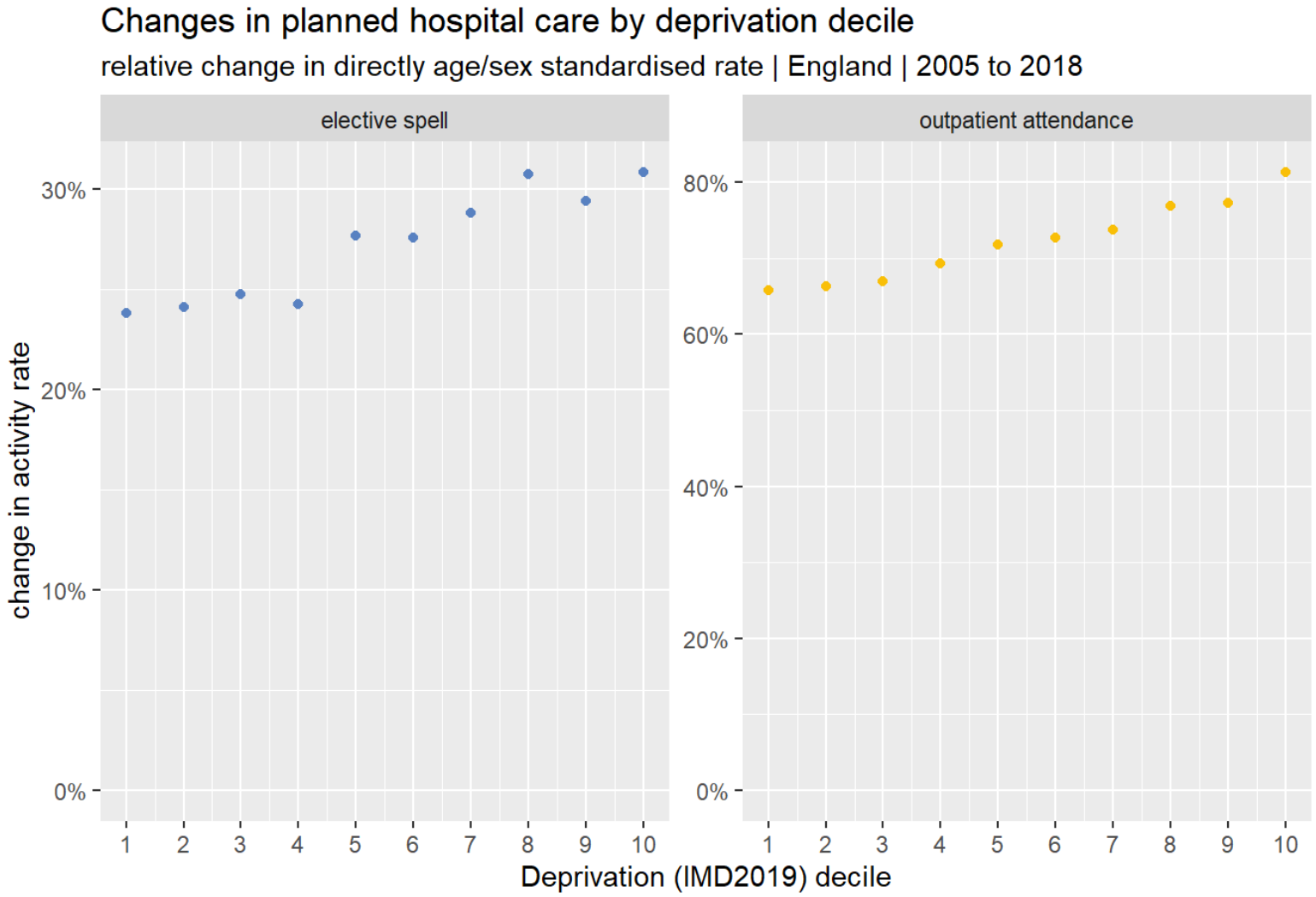
The NHS delivers 150 elective spells and 1700 outpatient appointments per 1000 population each year. Rates have increased considerably since 2005.



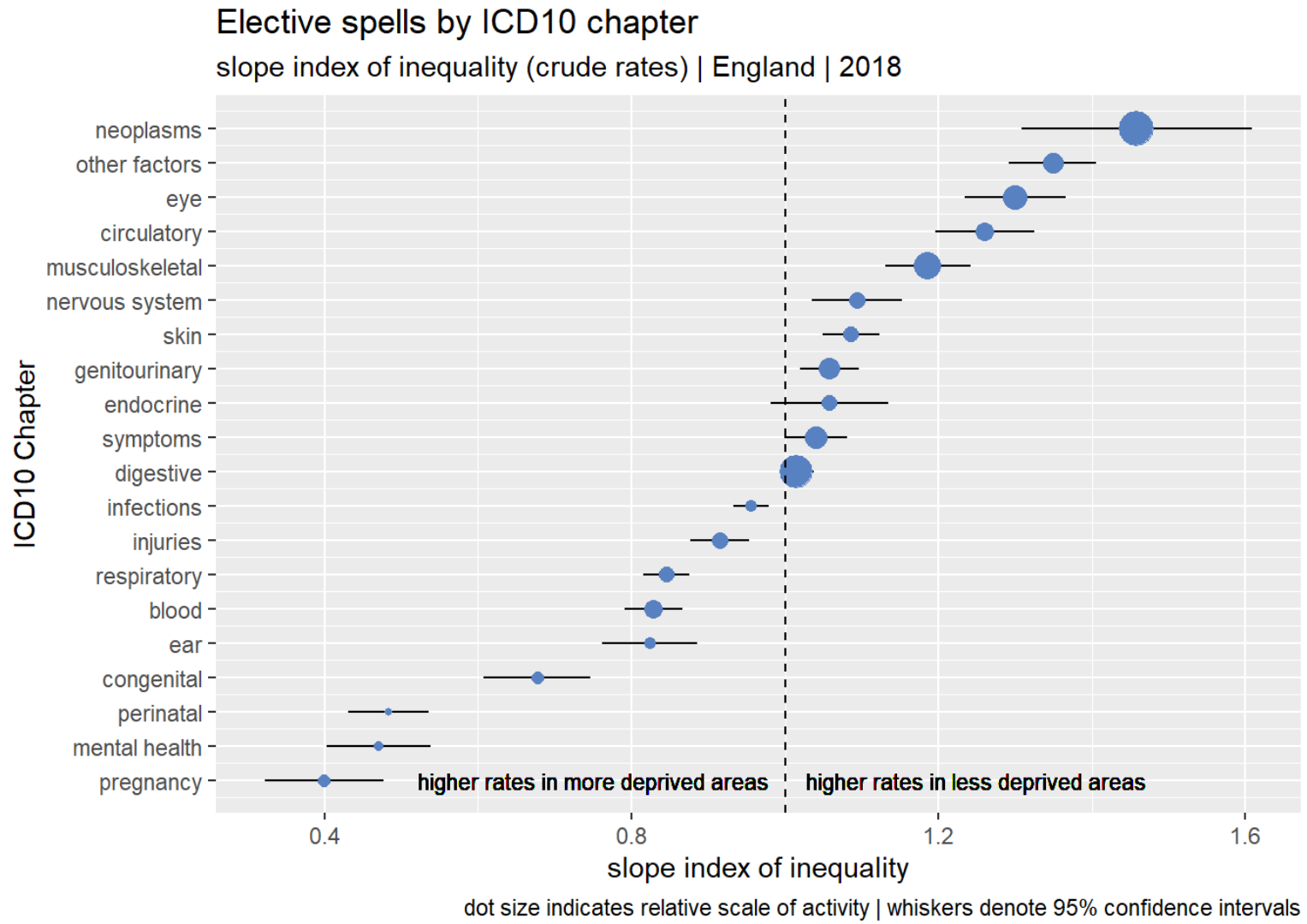
In 2005, crude rates of elective spells favoured those living in the most deprived areas. By 2018, the gradient for elective spells had reversed such that crude rates were highest amongst the least deprived populations. There is now no observable gradient in rates of outpatient attendances, although a gradient in favour of the most deprived areas was present in 2005.



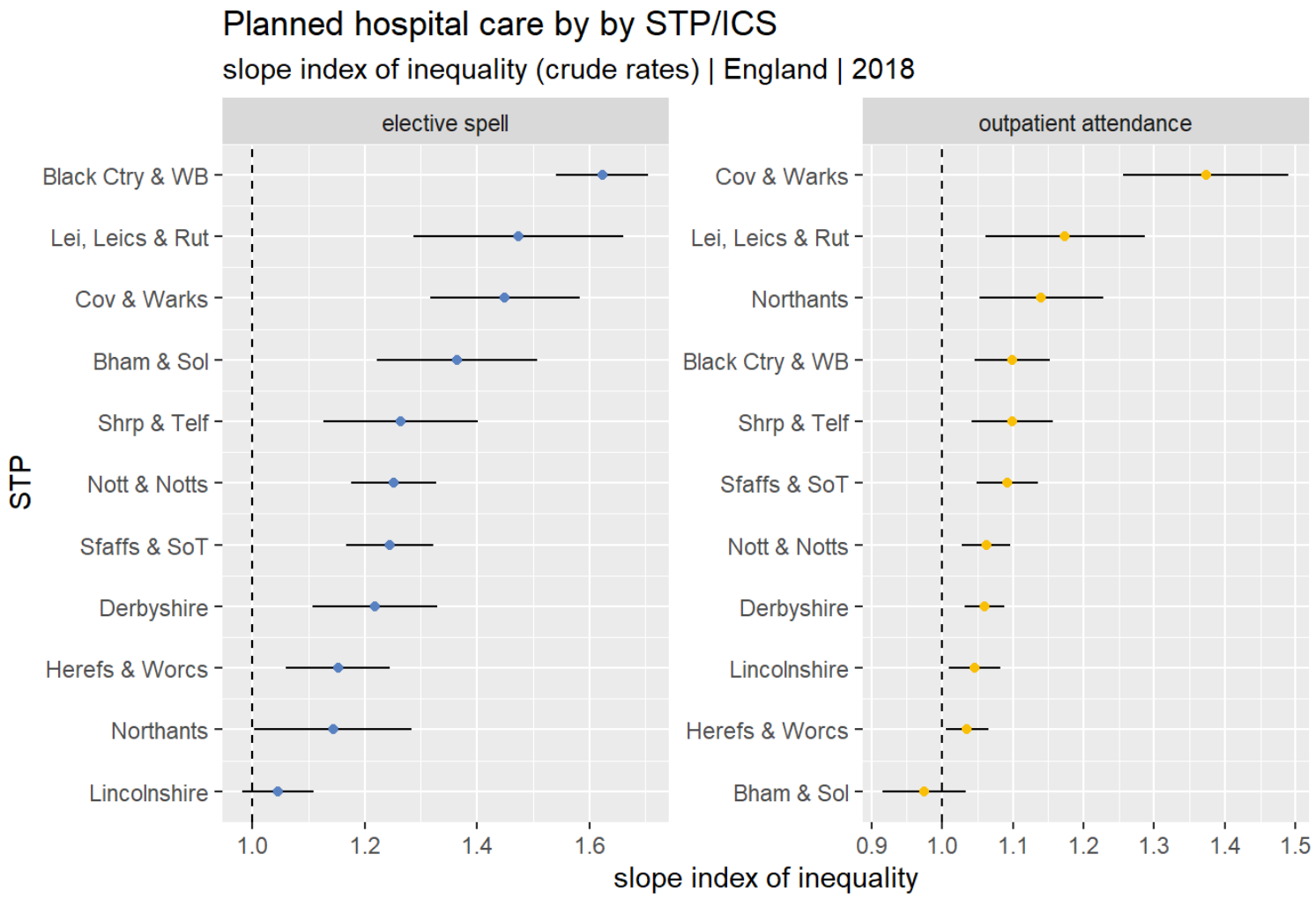
After taking account of differential changes in the age/sex structure, rates of elective spells and outpatient attendances for those living in the most deprived areas have grown at a slower rate.



Rates of elective spells for most of the major causes of morbidity including cancer, circulatory, ophthalmic, muscuolo-skeletal, nervous system and skin conditions, are skewed towards the people living in the least deprived areas.



In most STPs/ICSs, rates of elective spells and outpatient attendances are skewed towards people living in the least deprived areas.



Are these differences in planned activity clinically justified?

Where, along the patient pathway, do inequalities start to emerge?

Our approach

Four pathways

- COPD
- Heart failure
- Arthritis (hip)
- Cataracts

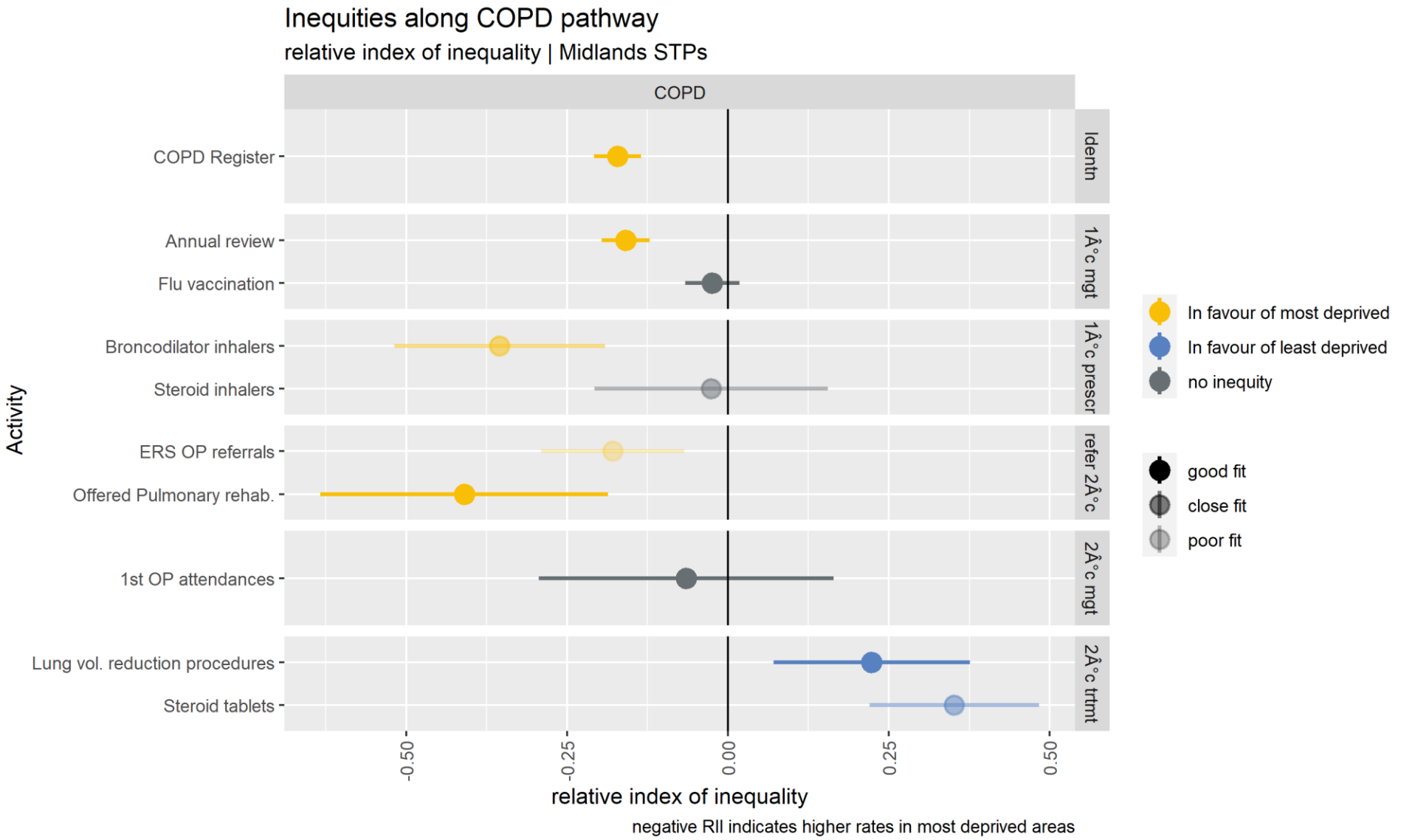
Measure levels of activity at various points along the care pathway.

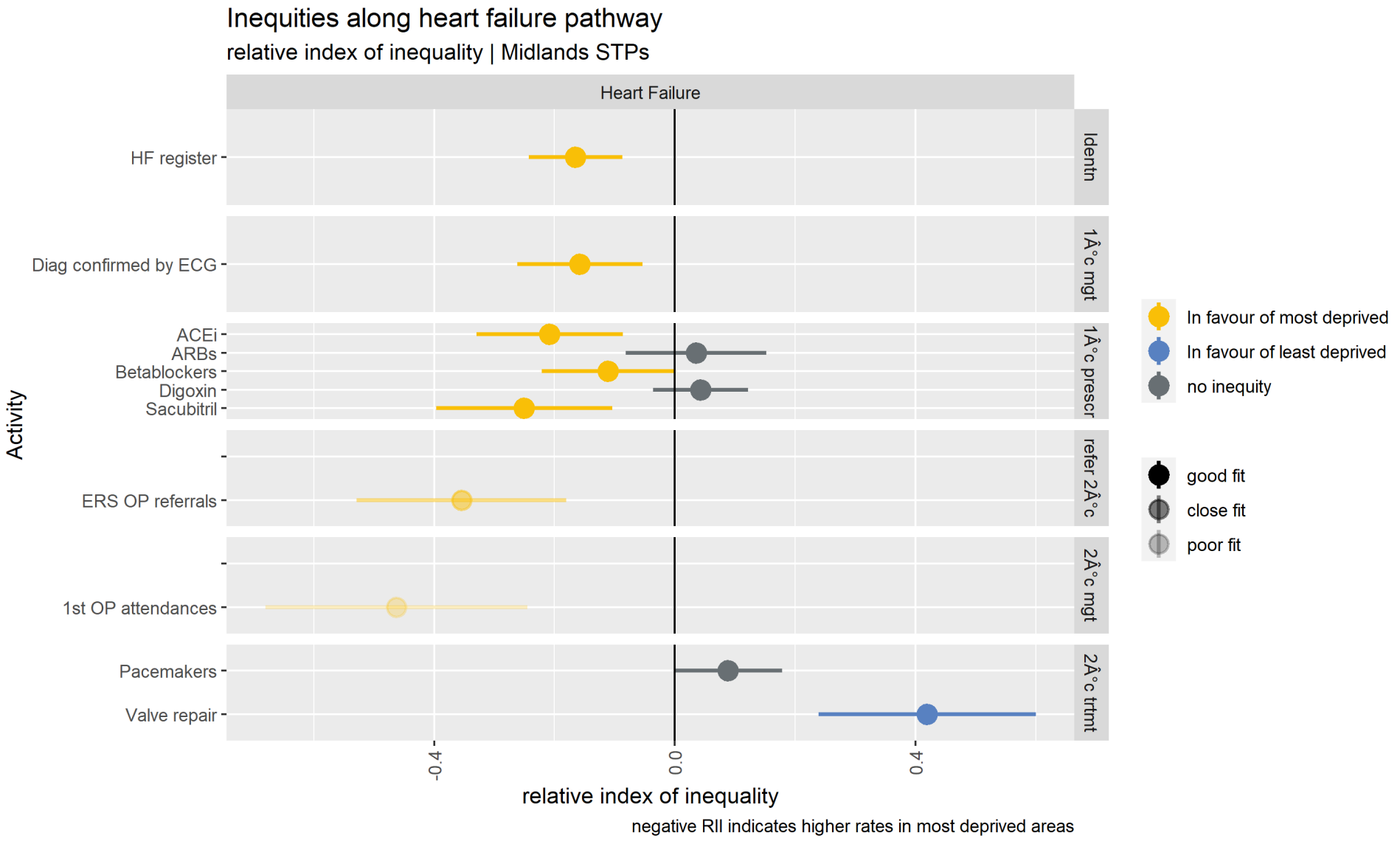
Adjust for levels of need within in deprivation decile

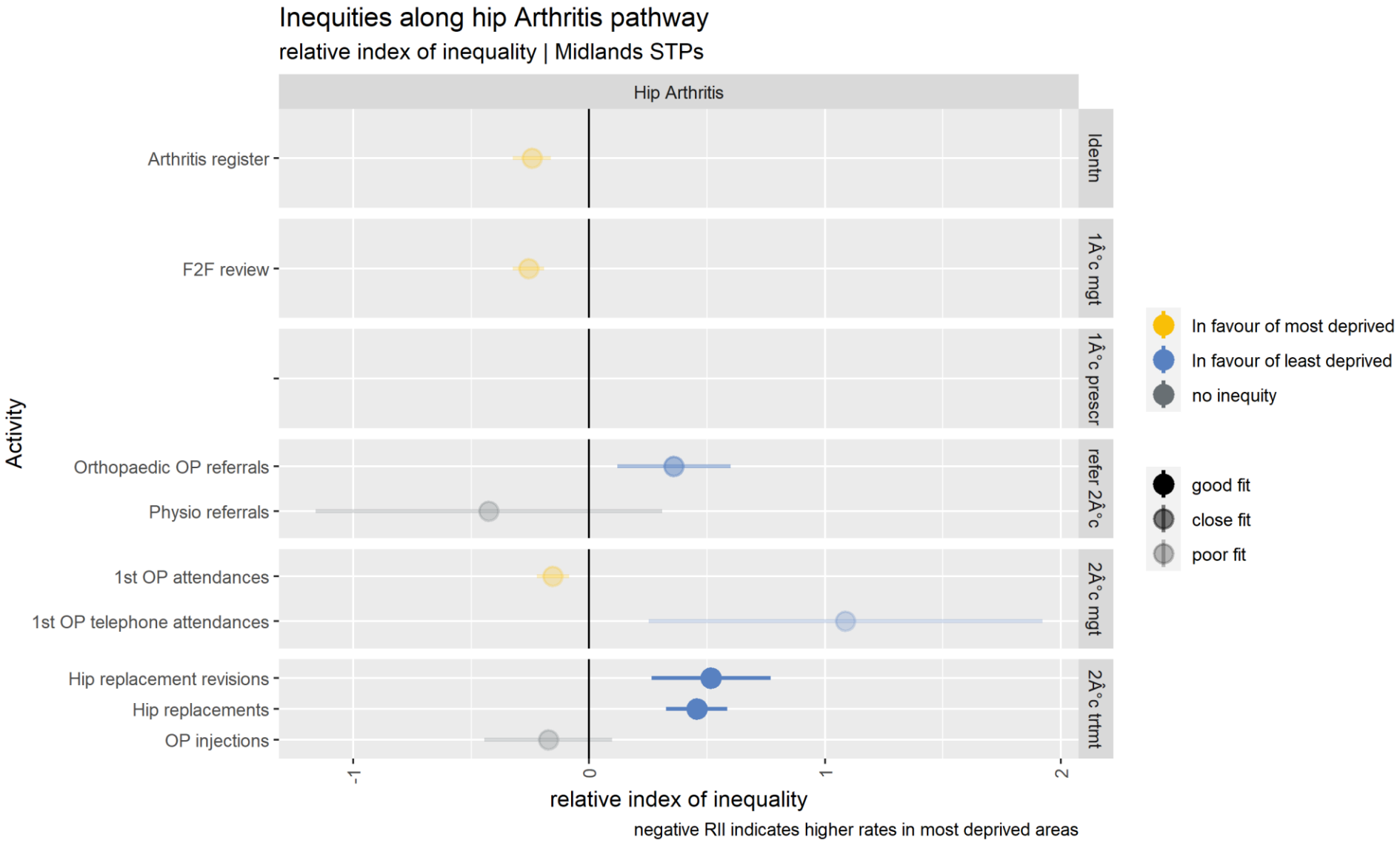
All analysis conducted at GP practice level. A weighted deprivation score is calculated for each GP practice based on the deprivation scores of their registrants' LSOAs. GPs practices assigned to decile based on weighted deprivation score.

Four pathways – need measures

	COPD	Heart Failure	Arthritis (Hip)	Cataracts
Source of need estimates	PHE and Imperial college estimates produced for Fingertips 2015	PHE and Imperial college estimates produced for Fingertips 2015	Versus arthritis produced by Imperial college 2018	National eye health epidemiological model
Methods used to derive need estimates	Synthetic estimates at GP level (2015). Final model variables included sex, age, smoking status & deprivation	Synthetic estimates at GP level. Final model variables included: age, sex, ethnicity, BMI , smoking status, CHD , hypertension, diabetes, atrial fibrillation & alcohol consumption	Synthetic estimates at MSOA level. Final model variables included: age, sex, BMI, smoking status, SES & activity levels	Age specific prevalence estimates based on a population based clinical survey (conducted in 1999) identifying those with cataracts and dissatisfaction with vision. Age specific rates applied to GP patient lists. No adjustment made to account for potential differences in need due to deprivation.


Inequities along COPD pathway
relative index of inequality | Midlands STPs
COPD
Identn
1Â°c mgt
1Â°c prescr
refer 2Â°c
2Â°c mgt
2Â°c trtmt
COPD Register
Annual review
Flu vaccination
Broncodilator inhalers
Steroid inhalers
ERS OP referrals
Offered Pulmonary rehab.
1st OP attendances
Lung vol. reduction procedures
Steroid tablets
Activity
-0.50
-0.25
0.00
0.25
0.50
relative index of inequality
negative RII indicates higher rates in most deprived areas
In favour of most deprived
In favour of least deprived
no inequity
good fit
close fit
poor fit


Inequities along heart failure pathway
relative index of inequality | Midlands STPs
Heart Failure
Identn
1Â°c mgt
1Â°c prescr
refer 2Â°c
2Â°c mgt
2Â°c trtmt
HF register
Diag confirmed by ECG
ACEi
ARBs
Betablockers
Digoxin
Sacubitril
ERS OP referrals
1st OP attendances
Pacemakers
Valve repair
Activity
-0.4
0.0
0.4
relative index of inequality
negative RII indicates higher rates in most deprived areas
In favour of most deprived
In favour of least deprived
no inequity
good fit
close fit
poor fit


Inequities along hip Arthritis pathway
relative index of inequality | Midlands STPs
Hip Arthritis
Identn
1Â°c mgt
1Â°c prescr
refer 2Â°c
2Â°c mgt
2Â°c trtmt
Arthritis register
F2F review
Orthopaedic OP referrals
Physio referrals
1st OP attendances
1st OP telephone attendances
Hip replacement revisions
Hip replacements
OP injections
Activity
-1
0
1
2
relative index of inequality
negative RII indicates higher rates in most deprived areas
In favour of most deprived
In favour of least deprived
no inequity
good fit
close fit
poor fit

Why might we be seeing these patterns of inequality?

Our emerging theory

Consider whether the various policy initiatives to improve access to planned hospital treatments

- Waiting times targets
- Choice
- NHS-funded access to private sector
- New treatments and screening programmes

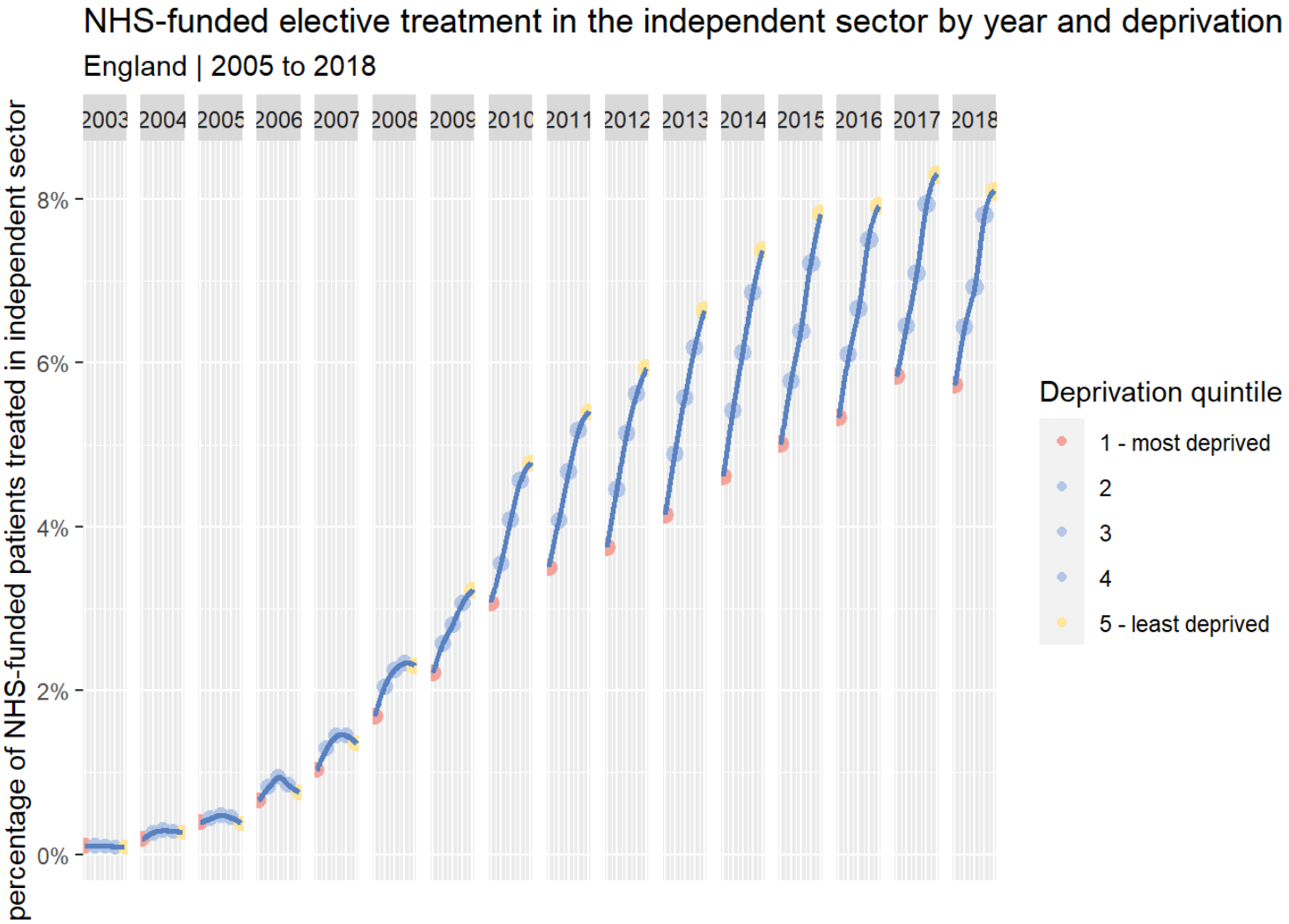
…or to control access

- Procedures of limited clinical value
- Lifestyle-based eligibility criteria for surgery
- Referral management services

Although these programmes may be successful in their own right, might they have impacted differentially on those living in more or less deprived areas?

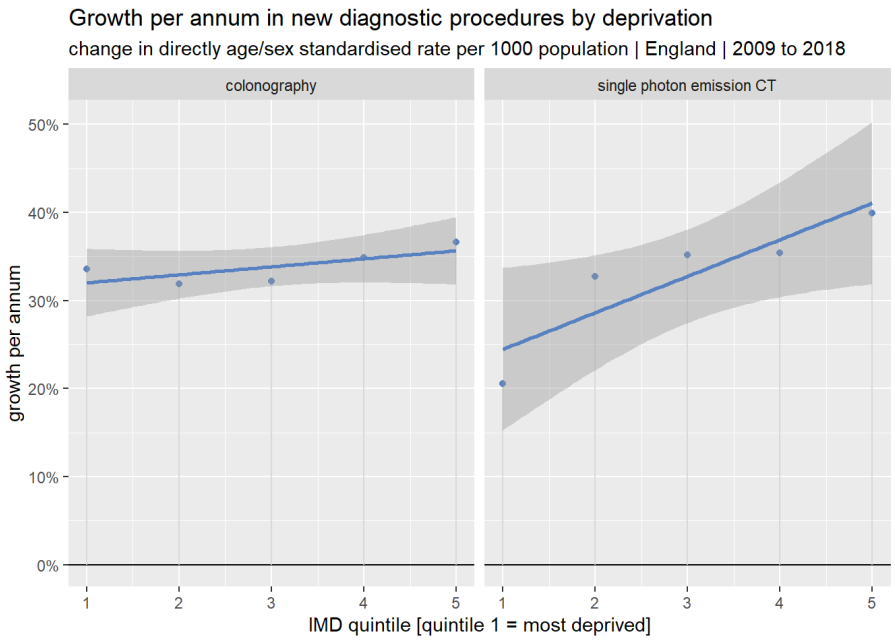
In the early and mid-2000s, people in more deprived areas were, on average getting faster access to elective inpatient activity. waiting times improved dramatically for all groups in the late 2000s. By 2014 the gradient in waiting times across deprivation quintiles had reversed and those in less deprived areas were receiving faster access to care. Since 2014, waiting times have declined the gradient across deprivation quintiles has become less clear.

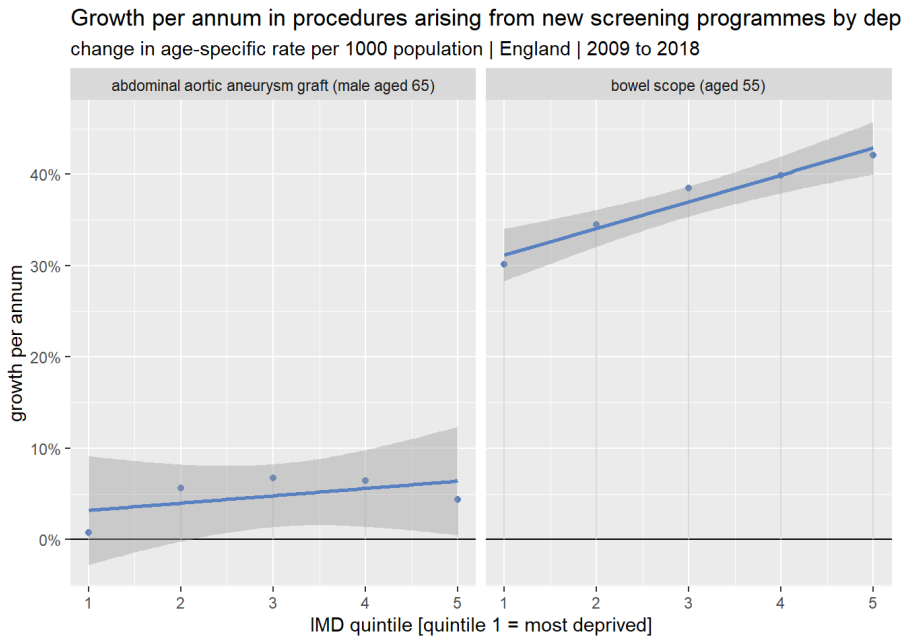
In the early 2000s, NHS-funded access to independent sector was negligible. The development of Independent Sector Treatment Centres (ISTCs) in the mid-2000s and the extended choice policy initiative in 2007 resulted in a steady increase in NHS-funded independent sector activity. Access to independent sector providers is substantially higher amongst the least deprived populations and disparity is increasing.



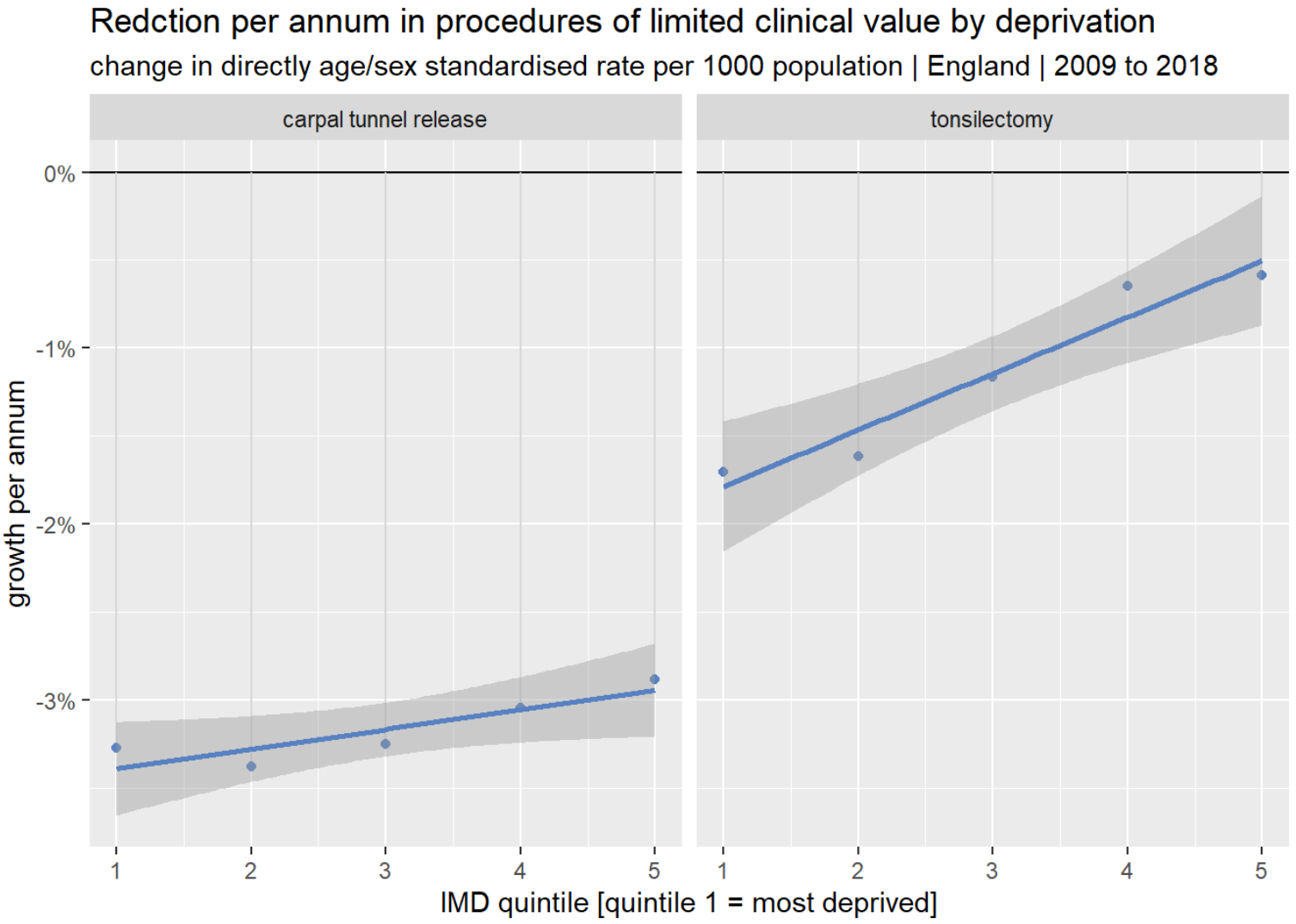
Growth in rates of access to new imaging technologies and screening programmes tends to be slower in the most deprived areas.

When the NHS introduces new screening programmes, interventions resulting from those programmes tend to increase more slowly in the most deprived areas.





When the NHS seeks to limit access to certain forms of surgery, rates tend to falls more rapidly in the most deprived areas.



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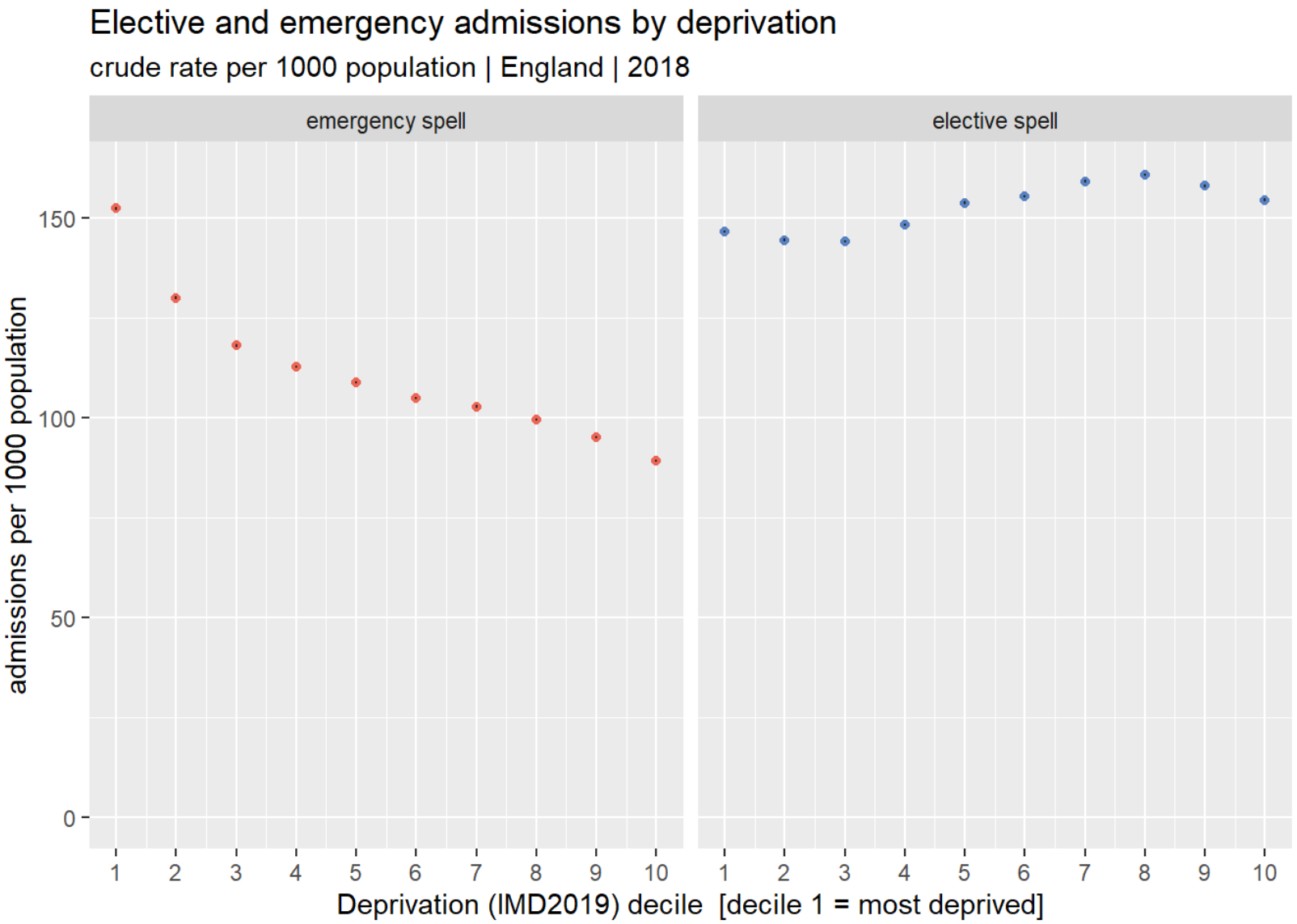
Do inequalities in access to planned care lead to increased demand for unplanned care?

Whilst rates of elective care are higher in the least deprived areas, the opposite is true for emergency hospital spells.



Is the relationship between inequalities in access to planned and unplanned care **causal?**

Strong anecdotal evidence of a causal relationship;

- Inverse relationship between levels of planned and emergency spells across levels of deprivation.
- Larger increases in elective care in least deprived areas, and slower increases in emergency spells.
- Rates of emergency spells increase prior to elective admission and then decline
- Higher rates of prior emergency admissions and readmissions in the most deprived areas.

To formally test whether this is a causal relationship we use panel regression analysis.

Panel regression analysis is an econometric technique which uses both time series and cross-sectional components of data to control for unobserved time-invariant factors and thereby tease out potential, causal relationships.

Model results

The model suggests that increases in elective spells lead to reductions in emergency spells.

The effect accumulates over 2 years.

For every 10 additional elective spells, c. 1 emergency spell is avoided.

The effect of outpatient attendances is negligible.

Panel regression specification

Outcome variable: emergency spells

Panel variables: time (quarters), and CCG of residence

Independent variables: elective spells (plus 8 lags), outpatient attendances (plus 4 lags), deaths, age/sex population profile, year and quarter.

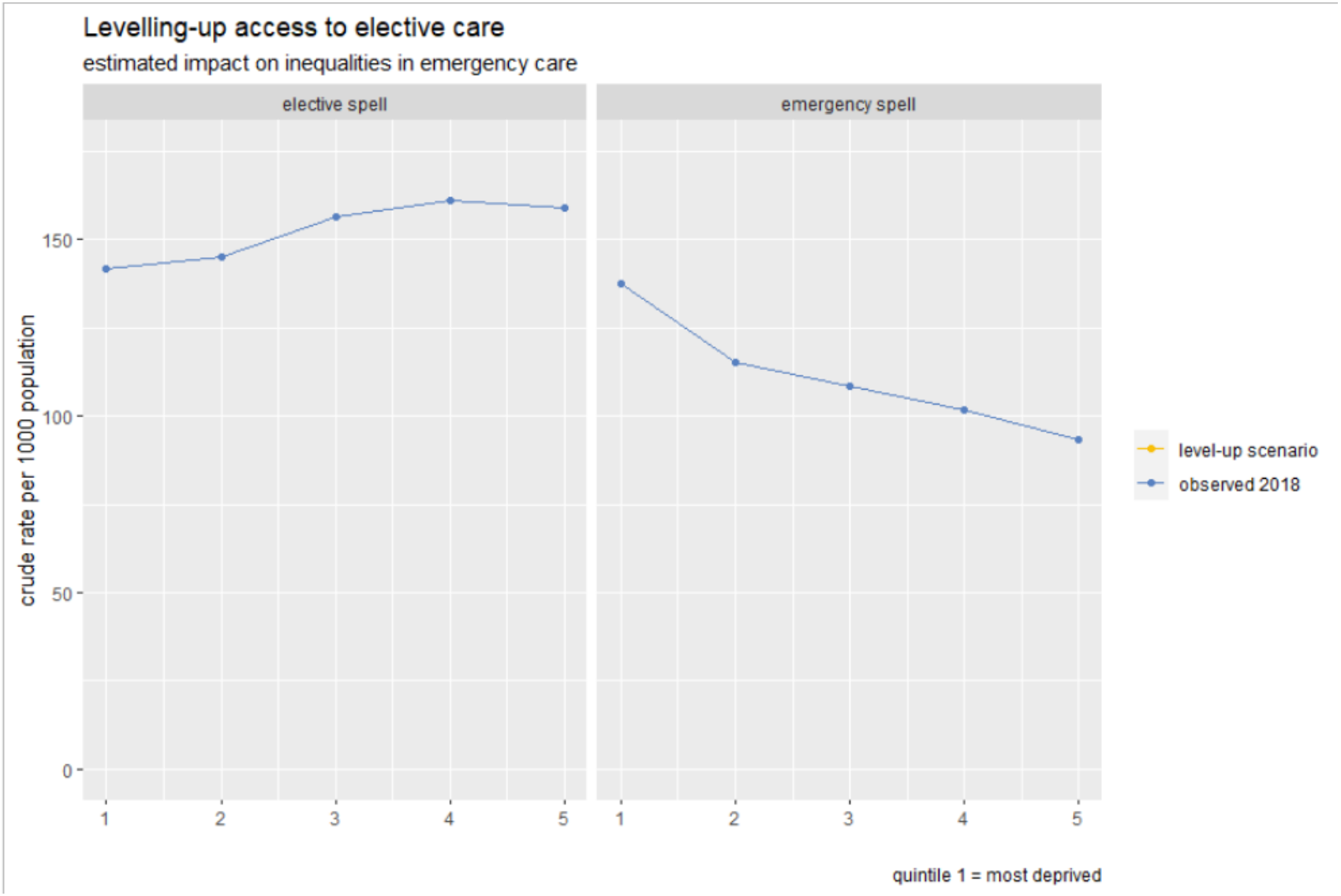
Exposure variable: population

Model type: fixed effects

The Lagrange Multiplier test, F test and Hausman test used to select between model types.

Software: r, plm package.

Levelling-up access to elective care would have a modest but material impact on emergency care rate.



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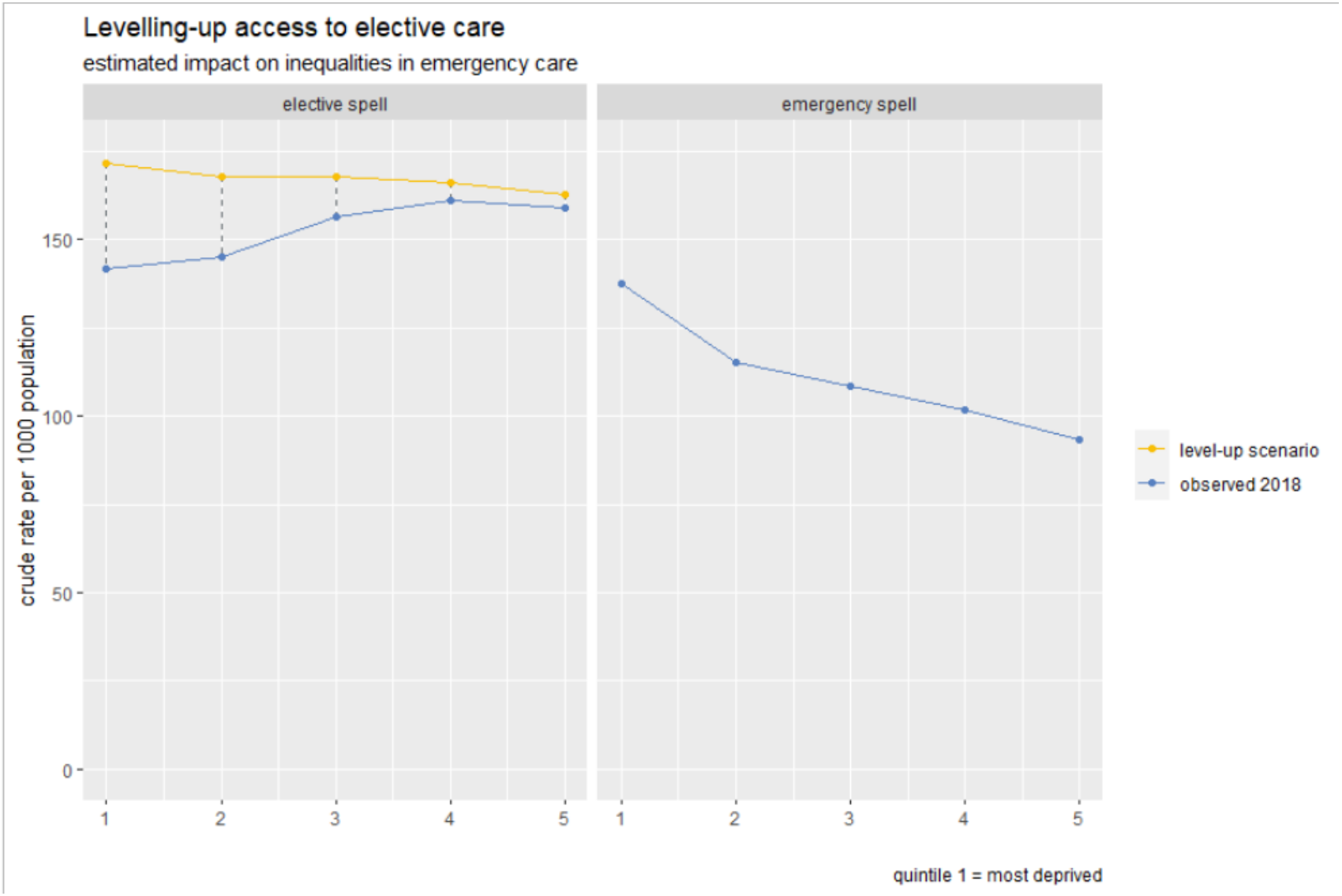

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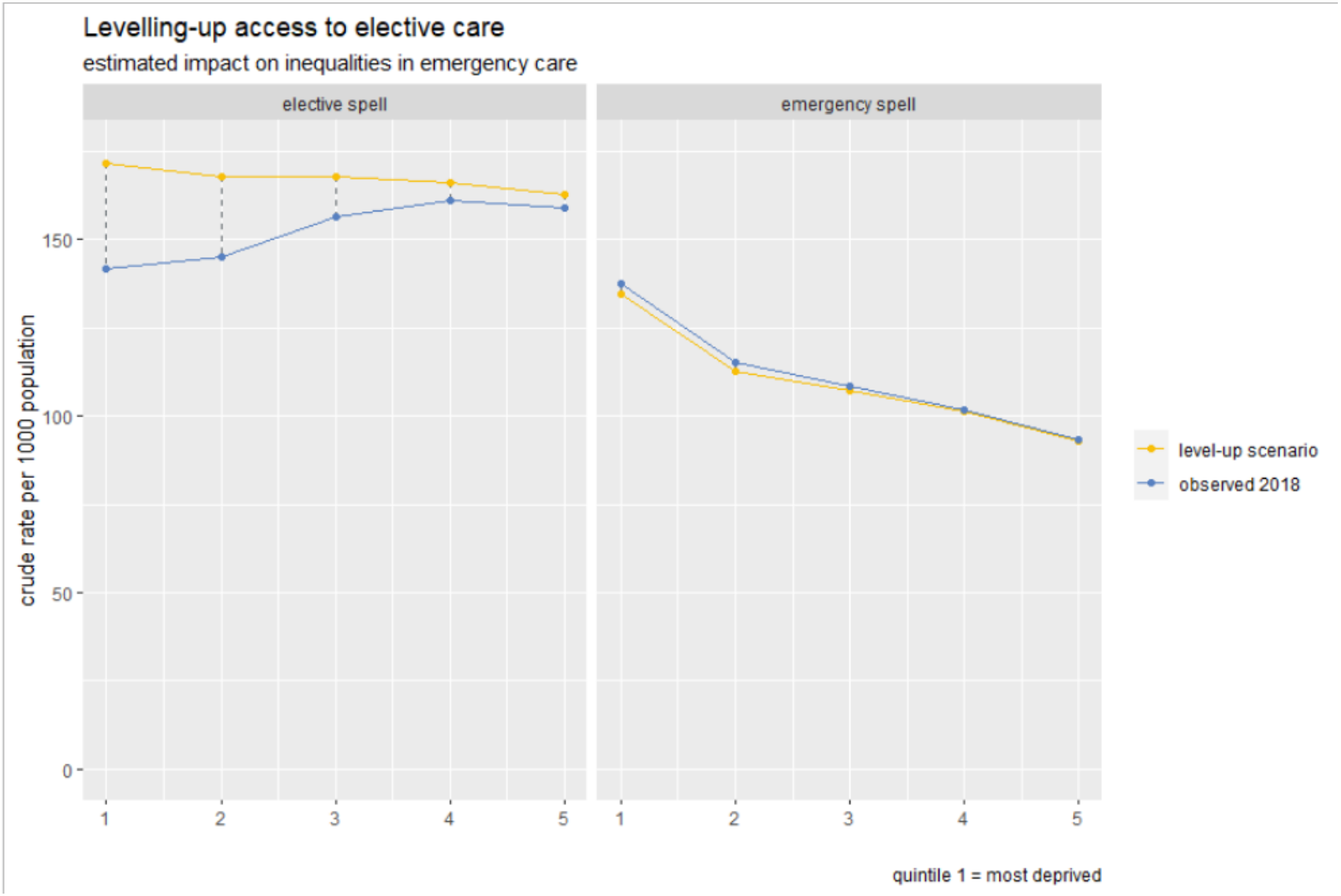

Project outputs

Regional report &

STP/ICS level pathway analysis

https://www.strategyunitwm.nhs.uk/publications/socio-economic-inequalities-access-planned-hospital-care-causes-and-consequences

R-markdown files containing code and data, and sample outputs.

Several planning sessions for Midlands STP/ICS Boards & their subgroups.

Future work

An assessment of strategies to reduce inequalities in access to planned hospital care.

How confident are you that ….

….your local planned care policies and procedures (choice, PLCV, referral management, waiting list prioritisation, access to aftercare) do not unintentionally disadvantage people living in more deprived areas?

…there is no unconscious bias in the patient-clinician decision making process about the benefits and risks of treatment in secondary care?

Thank you

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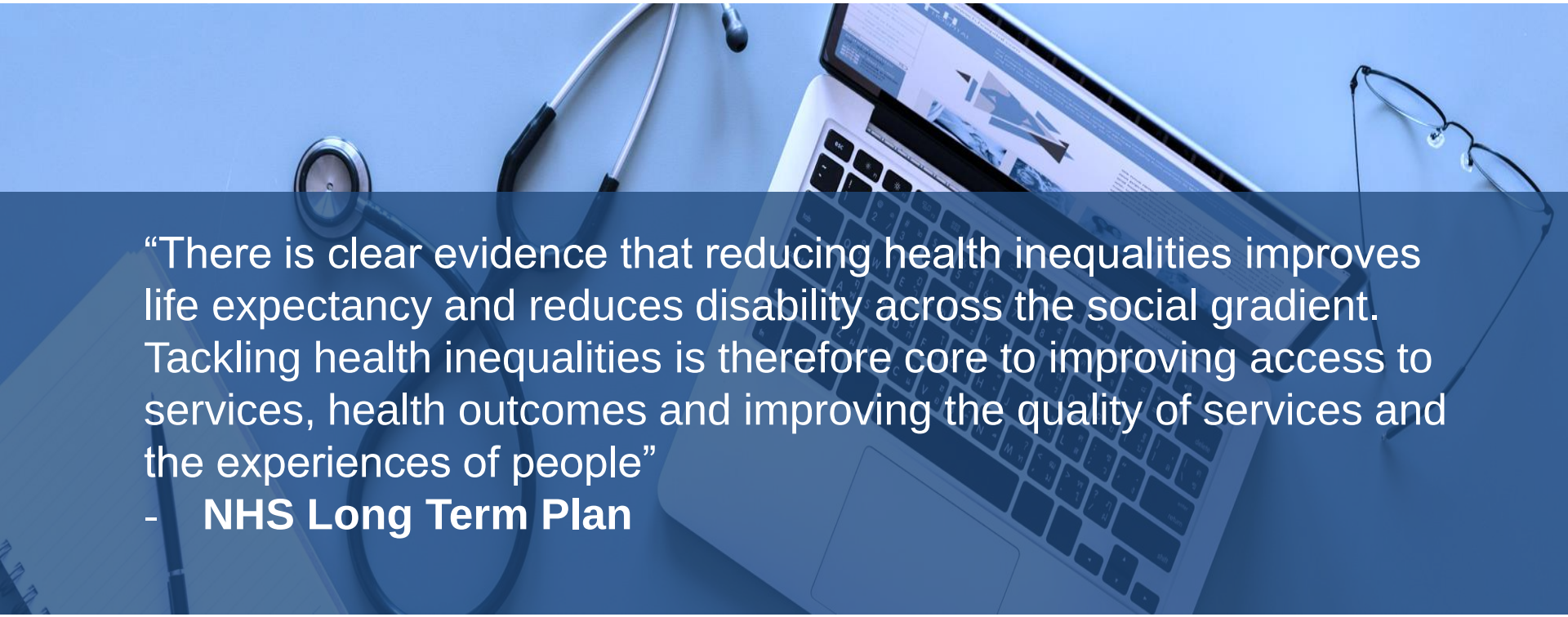
University Hospitals Coventry and Warwickshire NHS Trust

Restoring Elective Care : Health Inequalities & Clinical Prioritisation

Prof. Kiran Patel – Chief Medical Officer
Daniel Hayes – Director of Performance & Informatics
Dr Rachel Chapman – Consultant in Public Health

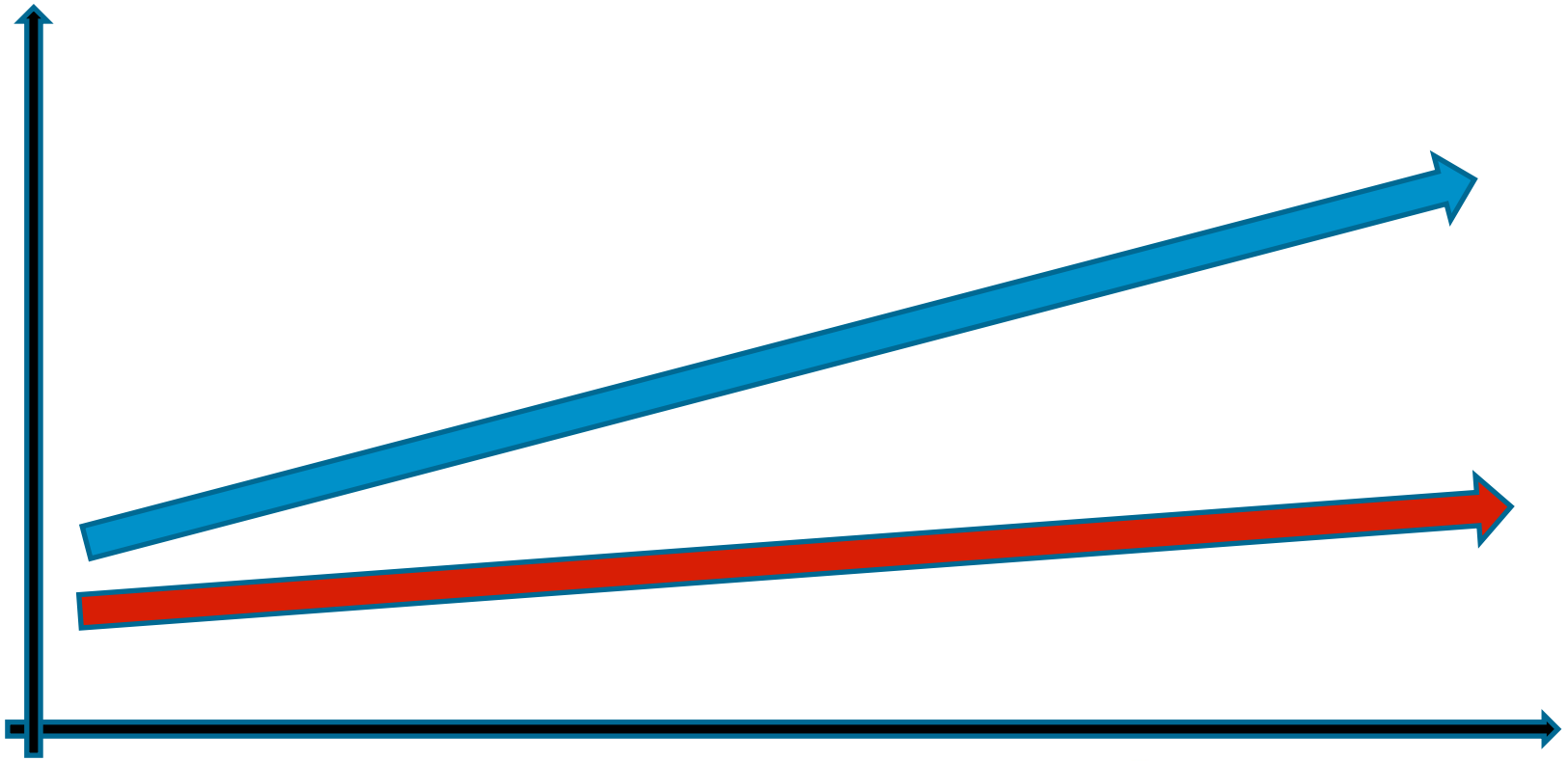
Introduction



"There is clear evidence that reducing health inequalities improves life expectancy and reduces disability across the social gradient. Tackling health inequalities is therefore core to improving access to services, health outcomes and improving the quality of services and the experiences of people"

- **NHS Long Term Plan**

Inequalities in health



Life expectancy across C&W 2017-19

	Male LE	Female LE	Male gap	Female gap
Coventry	78.7	82.2	10.1	7.8
N. Warwick-shire	79.1	82.7	4.6	5.3
Nuneaton & Bedworth	77.6	82.3	10.1	5.5
Rugby	80.5	83.5	7.2	2.6
Stratford-upon-Avon	81.5	85.2	3.3	4.0
Warwick	81.2	84.8	8.0	6.4

Source: Public Health Outcomes Framework

Life expectancy at birth in Coventry 2011-2015

Coventry's bus route 10 crosses the city's more affluent and more deprived neighbourhoods. This makes it useful to help illustrate the stark differences in life expectancy across the city – a gap of 10 years for males and 8 years for females.

20 December 2017

Coventry City Council

www.coventry.gov.uk/infoandstats/

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Disparities in and predictors of COVID-19 risk

KEY:

- Evidence known
- Limited evidence
- Indirect Evidence
- Not known/no evidence

GENDER
Men are nearly twice as likely to die from COVID-19 than women.

LIFESTYLE
Smoking, alcohol intake, diet, and physical activity contribute to comorbidities.

HOUSING
Living in overcrowded and multigenerational housing may increase risk of virus transmission.

DEPRIVATION
People who live in deprived areas have higher diagnosis rates and death rates than those living in less deprived areas. Mortality rates in the most deprived areas are around double the least deprived areas.

OCCUPATION
Keyworkers and health and social care staff may be at increased risk of infection due to occupational exposure to the virus.

AGE
Diagnosis and mortality increases with age. People aged 70-79 are around 2.5 times more likely to die from COVID-19 than 60-69 year olds.

COVID-19

ETHNICITY
BAME populations are more likely to die from COVID-19 than white ethnic groups. South Asian and Black groups are at 1.2 to 2 times increased risk compared to white.

OBESITY
People with a BMI over 40 are at more than double the risk of death from COVID-19 than those who are not obese (BMI less than 30).

COMORBIDITIES
People with comorbidities are at increased risk.

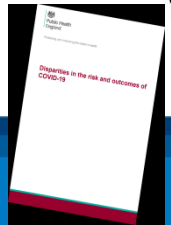
STRUCTURAL DISCRIMINATION
Structural discrimination may impact on health seeking behaviours and ability to challenge work conditions.

GENETICS
Some genetic variations may be associated with infection susceptibility and diverse clinical presentation of COVID-19.

BEHAVIOUR
Social distancing, shielding, wearing of facemasks etc. can reduce transmission risk.

VITAMIN D

ENVIRONMENTAL POLLUTION



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Healthcare

- Prevention: Strategic use of screening and immunisation programmes
  - Targeted vaccination – flu and COVID
  - Screening for DM and other NCDs
  - NHS Health checks coupled to COVID-19
  - Brief interventions linked to vaccination

- Treatment
  - Waiting lists: targeted restoration or fuelling inequality?
  - Proactive demand generation from JSNA informed areas
  - - working with GPs and communities to generate demand
  - Outcome and equity based service design – not just access monitoring
  - Maternity outcomes
  - LD

- Rehabilitation
  - New services e.g. Long COVID, unemployment related healthcare needs

How do we ensure that restoration doesn't inadvertently increase inequalities?

How can restoration help to reduce inequalities?

NHS priorities to tackle Health Inequalities

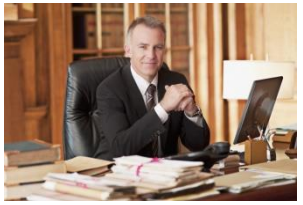
1. Restore NHS services inclusively
2. Mitigate against digital exclusion
3. Ensure datasets are complete and timely
4. Accelerate preventative programmes that proactively engage those at greatest risk of poor health outcomes
5. Strengthen leadership and accountability

What can we do?

Facts

- Conventional waiting lists fuel inequality
- 4 touch points
    - Referral
    - Listing
    - On WL
    - Delivery

Why Waiting lists and RTT fuel inequality



William from Warwick

18 weeks

Keeps fit and well in youth → Mild hip pain at 55yo → Sees GP Day 2 of knee pain → Referred for physio 3/12 → Sees GP after persistent pain despite physio → Referred to Orthopaedics → Prehab → Surgery at early disease stage → Recovery → Back to WFH then work

No impact on family

Norman from Nuneaton

18 weeks

Suboptimal early years → DM, HT, Smoker → Heavy manual worker → Hip pain at 35yo → Cant stop work → Sees GP after persistent pain → Referred to orthopaedics → Prehab – cant attend → Surgery – at late disease stage → Poor recovery with perioperative MI → Loses job – impacts family

Loses job as unable to work
Impacts family income
Impacts QoL of children

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Current Elective Prioritisation Process

The current process for prioritising and booking patients has remained largely the same for many years. Clinical Priority (P1-P6) has recently been added, but the process is currently :

Patients are referred by the GP who gives them an initial priority (Routine, Urgent or Two Week Wait)

They are seen as an outpatient by the Service the GP referred them for, in the order of the GP priority and referral date

If treatment is needed, they are given a Clinical Priority by the Service (P1-P6)

They are booked for treatment within the Service - once they move to the top of the Waiting List (either due to Clinical Priority, or due to Wait Time)

Additional Factors Impacting Healthcare

Within the existing categories are numerous patients, with many conflicting underlying health issues, and a range of social and demographic indicators including socio economic status, occupation, geographical location and protected characteristics

Current Factors for Booking Order			
Clinical Priority		Time on the Waiting List	
Additional Factors Impacting Healthcare			
Patients Age	Underlying Health Issues	Readmission Rates	Deprivation Score
Emergency Admissions	Cancer Diagnosis or Referral	Breaches to the Clinical Priority	Shielded Patient
Mental Health Issues	Previous Cancellations	Previous DNAs impacting Wait	Many more…

Waiting List Booking Process

Currently the teams on the ground book large numbers of patients with short time scales, and are unaware of many of these underlying factors.

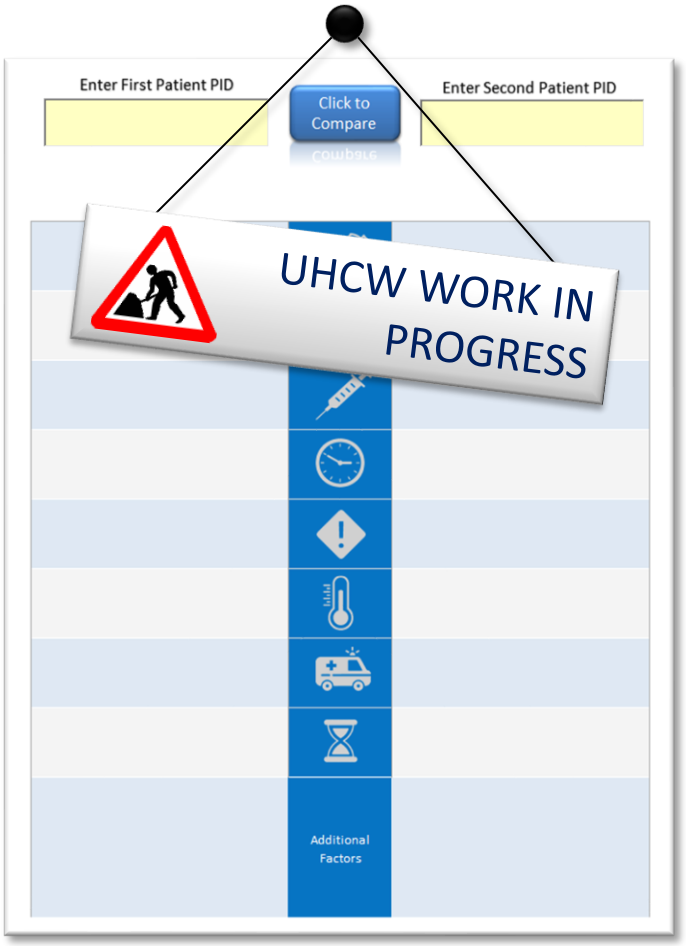
They will normally book based on only the two key principals of Clinical Priority and Wait time – with everything else coming down to who responds first

UHCW Clinical Priority Tool

The Clinical Priority Tool developed by UHCW and Performance & Informatics team takes all of these factors into account, allowing a detailed comparison of patient need and making recommendations on booking when comparing patients on the same priority and procedure

This is not considered a clinical review, and is only used to help guide the booking teams when comparing similar patients

Everybody gets the NHS Constitutional Standards



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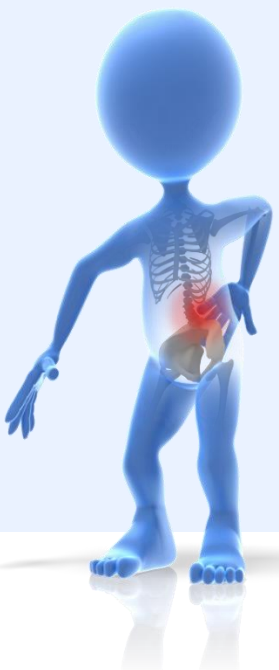
What information do we have now?

Example 1 – Pain Management

Patient A

- Waiting for a Therapeutic Lumbar Injection
- Priority 4
- Waited 36 Weeks

Patient B



- Waiting for a Therapeutic Lumbar Injection
- Priority 4
- Waited 27 Weeks

In this example, we would book Patient A, as they have waited longer

What additional information can the tool give us?

Example 1 – Pain Management

Patient A

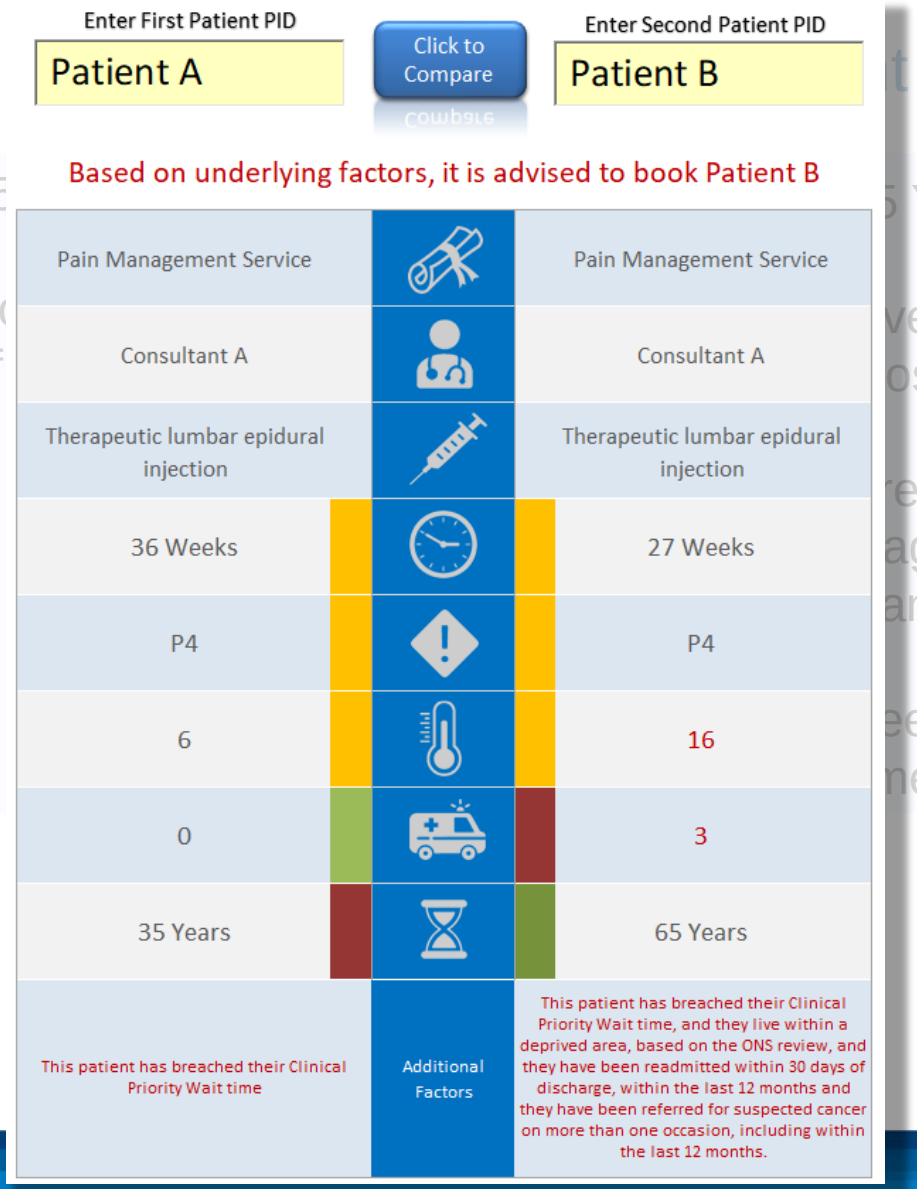
- 35 Years Old
- No previous history of illness

Patient B

- 65 Years Old
- Lives in the most deprived area
- Has previously been diagnosed with Cancer
- Has been into A&E 3 times in the last year
- All 3 visits to ED linked to pain management

What should we do?

In this example, the Tool recommends we book Patient B



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What information do we have now?

Example 2 – Trauma & Orthopaedics

Patient A

- Waiting for Total Prosthetic Replacement of Knee Joint
- Priority 3
- Waited 15 Weeks

Patient B

- Waiting for Total Prosthetic Replacement of Knee Joint
- Priority 3
- Waited 47 Weeks

In this example, we would book Patient B, as they have waited longer

What additional information can the tool give us?

Example 2 – Trauma & Orthopaedics

Patient A

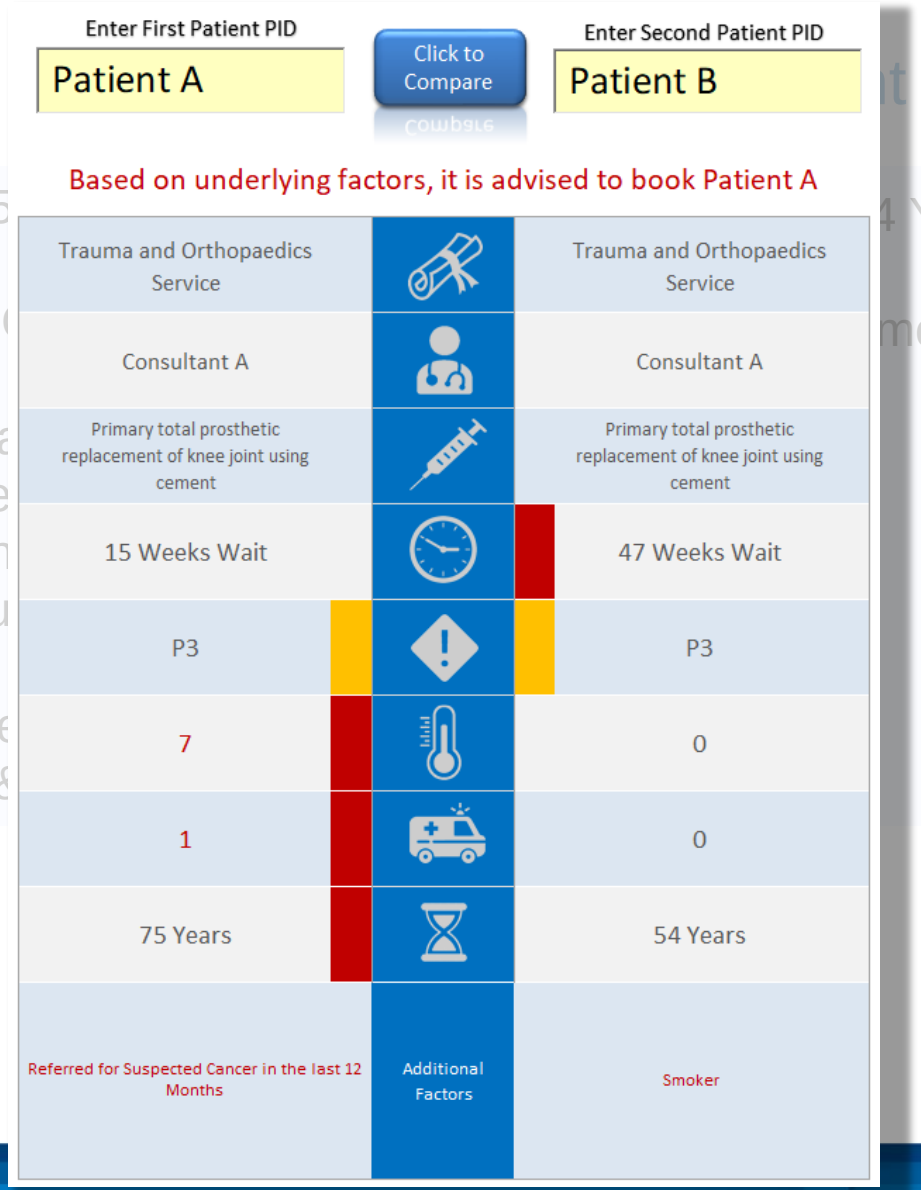
- 75 Years Old
- 7 Comorbidities
- Has been referred separately to another service for suspected Cancer
- Recently came into A&E after a fall
- Has breached their clinical priority
- Lives in a deprived area

Patient B

- 54 Years Old
- Smoker

What should we do?

In this example, the Tool recommends we book Patient A



What information do we have now?

Example 3 – Cardiology

Patient A

- Direct Current Cardioversion
- Priority 3
- Waited 19 Weeks

Patient B

- Direct Current Cardioversion
- Priority 4
- Waited 42 Weeks

In this example, we would book Patient A, as they are a higher priority

What additional information can the tool give us?

Example 3 – Cardiology

Patient A

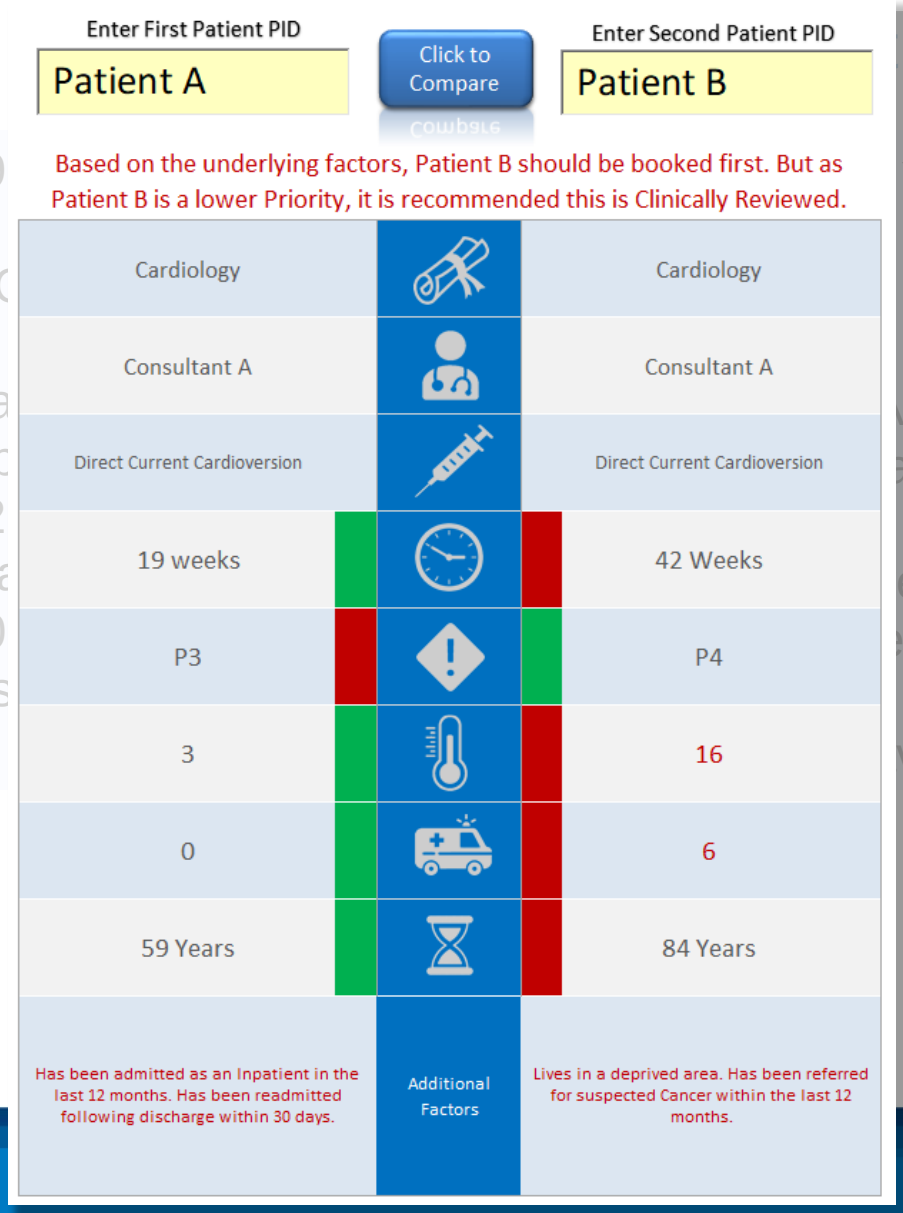
- 59 Years Old
- 3 Comorbidities
- Has been an inpatient in the last 12 months, and readmitted within 30 days of discharge

Patient B

- 84 Years Old
- 16 Comorbidities
- 6 A&E visits in the last year
- Lives in a deprived area
- Have been referred for suspected cancer

What should we do?

In this example, as the underlying conditions suggest Patient B, but they are a lower priority, the tool recommends a Clinical Decision is made



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Waiting List Generator

Using the weighting system within the Priority Tool we can apply the same process for comparing two patients to the entire Waiting List.

This is done on a Specialty, or even Procedure basis, to ensure a like for like comparison

New Order	Original Order	Patient Number	Wait Time	OPCS Code	PrimaryProcedureDesc
1	200	Patient0200	56.7	W401	Primary total prosthetic replacement of kn
2	342	Patient0342	36.3	W371	Primary total prosthetic replacement of hip
3	66	Patient066	23.7	W401	Primary total prosthetic replacement of kn
4	13	Patient013	70.9	W403	Revision of total prosthetic replacement of
5	38	Patient038	36.4	W401	Primary total prosthetic replacement of kn
6	54	Patient054	28.6	W371	Primary total prosthetic replacement of hip
7					y total prosthetic replacement of hip
8					y total prosthetic replacement of kn
9					y total prosthetic replacement of kn
10					y total prosthetic replacement of kn

Here, this patient was original number 200 on the list. Based on their underlying conditions, they are now next to be booked

Additional Features of the Priority Tool

The Tool can generate a complete timeline of the most recent waiting list history, which can be viewed in one click – pulling data from numerous internal systems – saving staff large amounts of time in searching through internal data.

Machine Learning allows the system to remember other scenarios entered and look for corresponding factors, and adjust the weighting in future versions to make them more useful (all under the watch of Clinicians)

Additional supporting Apps in development by UHCW Performance & Informatics will allow the collection and comparison of further data from the GP or direct from the Patient, allowing for a constantly improving system

Next steps 1

1. Evaluation of perceptions:

- Establishing the extent to which there is perceived to be a problem
- Support/opposition for the new policy
- Confidence in the policy to solve the problem

2. Involving the public in the development of a scoring system (M&L CSU and IPSOS-MORI)

- Deliberative research, in which a group of participants reflective of the wider population are convened and spend a significant amount of time learning about the issues and debating them with each other.

- Conjoint analysis - survey-based technique in which each participant is shown a range of different scenarios following which statistical analysis can develop a scoring system.

3. Impact on waiting lists and outcomes at population level

4. Seeking early adopter partners

Next steps 2

Social value judgments

- Carer status
- Educational impact
- Occupational impact

Clinical status reviews

- Change in status enables re-prioritisation by provider, GP or patient

Outcome evaluation

- Linkage to outcome datasets, ONS etc

Questions?