Economic research on disparities in eye health care

Newmedica

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FINAL REPORT

CONTENTS

EXECUTIVE SUMMARY

Purpose and scope of research

CEPA was commissioned by Newmedica to undertake economic research around disparities in eye health care services in England. **Our research in this report focuses on the 'gap' between the estimated prevalence of eye health conditions and the availability of treatment and health care services delivered** – and how this 'gap' differs across England. To model this regional variation, our analysis is undertaken at Integrated Care Board (ICB) level, based on the pre-April 2026 boundaries, and uses publicly-available information. To analyse these 'gaps' we model five metrics, covering cataracts, age-related macular degeneration (AMD), glaucoma, and two metrics for ophthalmology overall. In addition, we have investigated how this 'gap analysis' varies with deprivation.

Key findings

First, pressures on waiting lists for eye care – as measured by additional referrals relative to completed patient pathways – have risen for the vast majority of ICBs during 2025[1]. This implies that the demand for care is outstripping the availability of treatment.

Second, this report identifies ICBs which exhibit the greatest gap between prevalence estimates and treatment rates across the five eye health care metrics noted above. We combine (aggregate) these five metrics to identify the ICBs which – overall – appear to have the greatest treatment gaps. As there are different possible aggregation approaches, we test two different methodologies. While the results are not identical, there is an overall trend that many of the ICBs exhibiting the greatest gaps are around (just outside of) London. There are several possible interpretations as to why some ICBs have larger treatment gaps than others. This includes variations in commissioning (including funding) across ICBs, variations in care pathways, variations in diagnosis, out-of-area patient flows, and potential unobserved variation in prevalence. Further details of ICB-level results are presented across Sections 3-8 in this report.

Third, the relationship between deprivation and the 'gap analysis' is not definitive across the five metrics in our study. For two of the metrics – cataracts and AMD – there is a statistically significant relationship, but there is not a statistically significant relationship for the other three metrics. For cataracts and AMD, on average, less deprived areas exhibit larger gaps between estimated eye disease prevalence and observed treatment activity. There are several possible explanations which would merit further exploration. For example: deprived ICBs are disproportionately urban and may be able to sustain large, specialist eye care providers (e.g. Moorfields); existing prevalence estimates may underestimate the true level of demand for eye care in deprived areas; and/or deprivation may be associated with delayed patient presentation. These are potential avenues for further research.

Qualifications and potential next steps

There are several qualifications to our research. The majority of the 'gap analysis' metrics compare ICBs against one another, rather than assessing whether ICBs have an absolute treatment shortfall (or surplus) for a given condition. Our analysis considers the rates and volumes of treatments, without adjusting for variations in the quality of care and/or patient health outcomes. Publicly-available data does not have sufficient granularity to investigate treatment gaps across different demographic groups or to quantify patient flows across ICB boundaries.

Further work could be undertaken to deepen the explanatory analysis and/or to address existing limitations. Potential next steps could include: further analysis regarding the drivers of ICBs which exhibit the largest (and smallest) treatment gaps; analysis supported by clinical advice on whether there are absolute treatment shortfalls relative to prevalence; a review of prevalence estimates by ICB, including the extent to which they should be adjusted for deprivation and/or demographic characteristics; use of patient-level information to obtain more granular treatment data; a review of updated statistical releases (e.g. UK government statistics) as they become available[2]; and further interrogation of the link between deprivation and treatment gaps.

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[1] 'Headline' NHS waiting list statistics (incomplete pathways) include adjustments and data validation, e.g. 'unreported removals'.
[2] UK government statistics are due to be updated in May 2026: Vision Profile: Official statistics announcement - GOV.UK

1. INTRODUCTION

Purpose and scope of research

CEPA was commissioned by Newmedica to undertake economic research around disparities in eye health care services in England.

Our research in this report focuses on the 'gap' between the estimated prevalence of eye health conditions and the availability of treatment and health care services delivered – and how this 'gap' differs across England. To model this regional variation, our analysis is undertaken at Integrated Care Board (ICB) level, based on the pre-April 2026 boundaries, and uses publicly-available information. To analyse these 'gaps' we model five metrics, covering cataracts, age-related macular degeneration (AMD), glaucoma, and two metrics for ophthalmology overall. In addition, we have investigated how this 'gap analysis' varies with deprivation.

Conditions

Cataracts, age-related macular degeneration (AMD), and glaucoma are three leading causes of vision impairment in the UK. All three diseases are strongly age-related, growing in prevalence with the aging UK population, and tracking geographically with age.[3]

Cataracts, the progressive blurring of vision caused by the clouding of the eye's natural lens, includes sensitivity to glare, fading of colours, loss of visual acuity and refractive changes. When left untreated, cataracts can cause substantial visual impairment. In the UK, it is estimated that more than 50% of those aged over 50[4] have (or have been treated for) cataracts.

AMD is the leading cause of irreversible visual impairment in the developed world and the most common cause of certification for vision impairment in the UK.[5] The condition causes deterioration of the macula, the central retina responsible for detailed vision. This results in the loss of reading ability, facial recognition, and driving capacity while the peripheral vision remains intact. AMD has two forms: "dry", a gradual atrophy currently without treatment, and "wet", involving abnormal blood vessel growth.[6]

Glaucoma encompasses a group of conditions characterised by progressive, irreversible damage to the optic nerve, typically associated with elevated intraocular (inside the eye) pressure. Glaucoma is a leading cause of irreversible blindness in the UK, although with early diagnosis and treatment vison can often be saved. As early stages of glaucoma show no symptoms, screening is critical to prevent blindness.[7]

Treatments

Once **cataracts** approach the point where they interfere with daily life, patients are typically recommended for surgery. Cataract treatment involves the surgical removal of the clouded lens and replacement with an artificial lens. Phacoemulsification, using ultrasound to break up and remove the cataract, is the standard technique used in 99.7% of cases.[8] The procedure is typically undertaken as a day surgery with low complication rates and high success rates.[9]

Wet AMD is typically treated and managed with regular anti-vascular endothelial growth factor (VEGF) injections into the eye. These medicines stop abnormal blood vessels from growing, leaking and bleeding.

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[3] Royal National Institute of Blind People (RNIB) (2021), Key statistics about sight loss
[4] CEPA inference from UK eye data hub
[5] National Institute for Health and Care Excellence. https://www.nice.org.uk/guidance/ng82/chapter/Context
[6] NHS Cambridge University Hospitals. https://www.cuh.nhs.uk/patient-information/dry-age-related-macular-degeneration/
[7] NHS Guy's and St Thomas' NHS Foundation Trust. https://www.guysandstthomas.nhs.uk/health-information/glaucoma-being-glaucoma-suspect
[8] The Royal College of Ophthalmologists. (2018). Commissioning Guide: Adult Cataract Surgery.
[9] Day, A. C., Donachie, P. H. J., Sparrow, J. M., & Johnston, R. L. (2015). The Royal College of Ophthalmologists' National Ophthalmology Database study of cataract surgery: report 1, visual outcomes and complications. Eye, 29, 552-560.

There are several treatment options for **glaucoma,** which aim to decrease the amount of fluid in the eye.[10] NICE guidelines recommend offering 360° selective laser trabeculoplasty (SLT) as first-line treatment for people with newly diagnosed ocular hypertension (OHT) or newly diagnosed chronic open angle glaucoma (COAG), and offering generic prostaglandin analogue (PGA) eye drops to people who prefer not to have 360° SLT or for whom it is not suitable.[11] [12] [13] There are other surgical procedures which can be used to increase the rate of drainage of fluid, including through the use of implants.[14]

Approach in this study

To develop the **'gap analysis' for each ICB, by condition**, we compared prevalence (a proxy for 'demand' for care) against the level of health care delivered (a measure of 'supply'). We used a range of publicly-available datasets and cross-checked data sources where possible. For example, we developed our ICB-level prevalence estimates using data from the UK Eye Care Data Hub, and cross-checked these prevalence estimates with the geographical distribution in the Royal National Institute of Blind People (RNIB) Sight Loss Data Tool.

We developed five metrics for the gap analysis at ICB level. Three covered each of the main conditions in this study (cataracts, glaucoma, AMD). The other two related to eye health care overall: First, we considered the growth in ophthalmology waiting list pressures during 2025; And second, we looked at age-standardised rates of vision-related outpatient appointments, adjusted for the age profile of ICBs. Once the gap analysis was undertaken at ICB level for the five metrics, the rankings of ICBs were reviewed to consider which ICBs exhibited the largest (and smallest) gaps between prevalence estimates and treatment rates.

Finally, we also considered the relationship between the ICB-level gap analysis and demographic characteristics. Based on publicly available data, we were able to analyse the relationship with deprivation. Further demographic-based analysis – such as in relation to gender, ethnicity and/or disability – would require more granular datasets, e.g. patient level data.

Our analysis was guided and informed by discussions with the teams at Newmedica, Specsavers and Tigerbond, which included consideration of data sources available for the research. Discussions were also held with colleagues at the Independent Healthcare Provider Network (IHPN) and the College of Optometrists. A full explanation of our methodology is provided in Appendix A.

Structure of this report

This report is structured as follows:

- Section 2 provides the context for eye health care service in England.
- Sections 3-7 present the 'gap analysis' for each of our five key metrics.
- Section 8 provides an overall assessment of the gap analysis, by considering the five metrics 'in the round'.
- Section 9 considers the relationship between the ICB-level treatment gaps and deprivation.
- Section 10 provides a discussion of our study's findings, including qualifications and potential next steps.
- Appendix A sets out the details of our methodology.
- Appendix B contains ICB boundary maps, both before and after the April 2026 boundary changes.
- Appendix C provides a full table of ICB rankings across all metrics.

[10] NHS, Glaucoma
[11] NICE, Recommendations | Glaucoma: diagnosis and management
[12] NICE, Management options for people with ocular hypertension
[13] The 2017 NICE guideline recommended PGA eye drops for OHT or COAG. In 2022 NICE updated its guideline to recommend using 360° SLT, noting that first-line treatment with 360° SLT had at least a 90% probability of being the more cost-effective option. (Source: NICE, Glaucoma: diagnosis and management)
[14] Glaucoma UK, Glaucoma Treatments & Surgery Options

2. CONTEXT

England hosts some of the highest-quality ophthalmology facilities internationally and every year millions of patients receive treatments, funded both publicly (via the NHS) and privately. Simultaneously, over several decades, healthcare services in England have struggled to meet the demand.

For waiting lists, the picture in England is mixed. Internationally, OECD analysis shows that the UK overall has relatively low average waiting times for cataracts.[15] However, ophthalmology services contribute to around 10% of the entire NHS waiting list and median waiting times remain above pre-Covid levels.[16] [17] Across ICBs, the majority have experienced increases in the pressures on waiting lists in 2025 – in terms of the number of new referrals relative to the number of completed pathways (see our analysis in Section 6 of this report).

A survey by the Royal College of Ophthalmologists (RCOphth) in 2024 asked NHS ophthalmology clinical leads to consider the extent of the shortfall of services. When asked if their department can deliver services that meet patient needs, only one quarter agreed, 59% said 'partially', and the other 16% disagreed.[18] Previously, a 2019 RCOphth survey indicated that some cataract surgery restrictions were in place in England and Northern Ireland.[19]

Demand pressures are somewhat global in nature. A multi-country study (across the UK, Australia, Germany, Singapore and India) identified common limitations around surgical workforce, infrastructure and resource allocation.[20] Nonetheless, there is some evidence that England's supply-side capabilities could be strengthened. For example, England's cataract surgical rate[21] is not amongst the highest in Europe, and is below some typical European comparators (e.g. France, Germany, the Netherlands) – see Figure 2.1 below.[22] This finding broadly aligns with a 2016 global study on cataract surgical rates.[23]

It is unclear whether all NHS providers are meeting NICE treatment guidelines for wet AMD: While national audit data implies there could be some gaps, there is a lack of clear evidence from Freedom of Information responses.[24]

There are also significant challenges ahead. First, there is rising demand, with a significant rise projected in the number of people living with vision loss. This is due to increasing life expectancy and population ageing, longer waiting times for diagnosis and treatment, and increasing prevalence of diabetes.[25] Second, workforce pressures are projected to grow. RCOphth's workforce census (2023) found that a quarter (25%) of consultants "*plan to leave the ophthalmology workforce over the next five years, the vast majority through retirement*".[26] Third, the NHS is in the process of a "financial reset".[27] [28]

Within England, there is a challenge of regional disparity in access to care. In 2019, the NHS Get It Right First Time (GIRFT) Ophthalmology report[29] identified considerable variation in healthcare practices at local level. For example:

- Cataracts: "*There is wide variation between different areas in the 'conversion rate' for cataract surgery – that is, the proportion of those referred to hospital services with cataract, having met referral criteria for surgery, who receive surgery.*"
- Glaucoma: "*[Few areas] actively stratify patients according to risk and then tailor provision accordingly.*"

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[15] Health at a Glance 2025 (EN) p.111
[16] NHS England » New NHS measures to improve eye care and cut waiting times
[17] committees.parliament.uk/writtenevidence/142907/html/
[18] Summary-of-RCOphth-2024-clinical-leads-survey.pdf
[19] RCOphth survey – cataract rationing
[20] Surgical capacity in ophthalmology: the unmet need for sustainable solutions | Eye
[21] Inferred from the Royal College of Ophthalmologist's national cataract audit (2025) and ONS population estimates
[22] Ophthalmology care in England: looking to the future
[23] Wang, W. et al. (2017). Cataract Surgical Rate and Socioeconomics: A Global Study. Invest. Ophthalmol. Vis. Sci. 2017;57(14):5872-5881. https://doi.org/10.1167/iovs.16-19894
[24] RCOphth National Ophthalmology Database Audit (2025), Responses to Freedom of Information requests.
[25] Ophthalmology care in England: looking to the future
[26] 2022-Ophthalmology-census-Facing-workforce-shortages-and-backlogs-in-the-aftermath-of-COVID-19.pdf
[27] Fit for the future: 10 Year Health Plan for England
[28] NHS England » NHS Oversight Framework 2025/26
[29] NHS GIRFT ophthalmology report 2019

- AMD: "*There is considerable variation in the number of intravitreal injections conducted in an average four-hour session."*

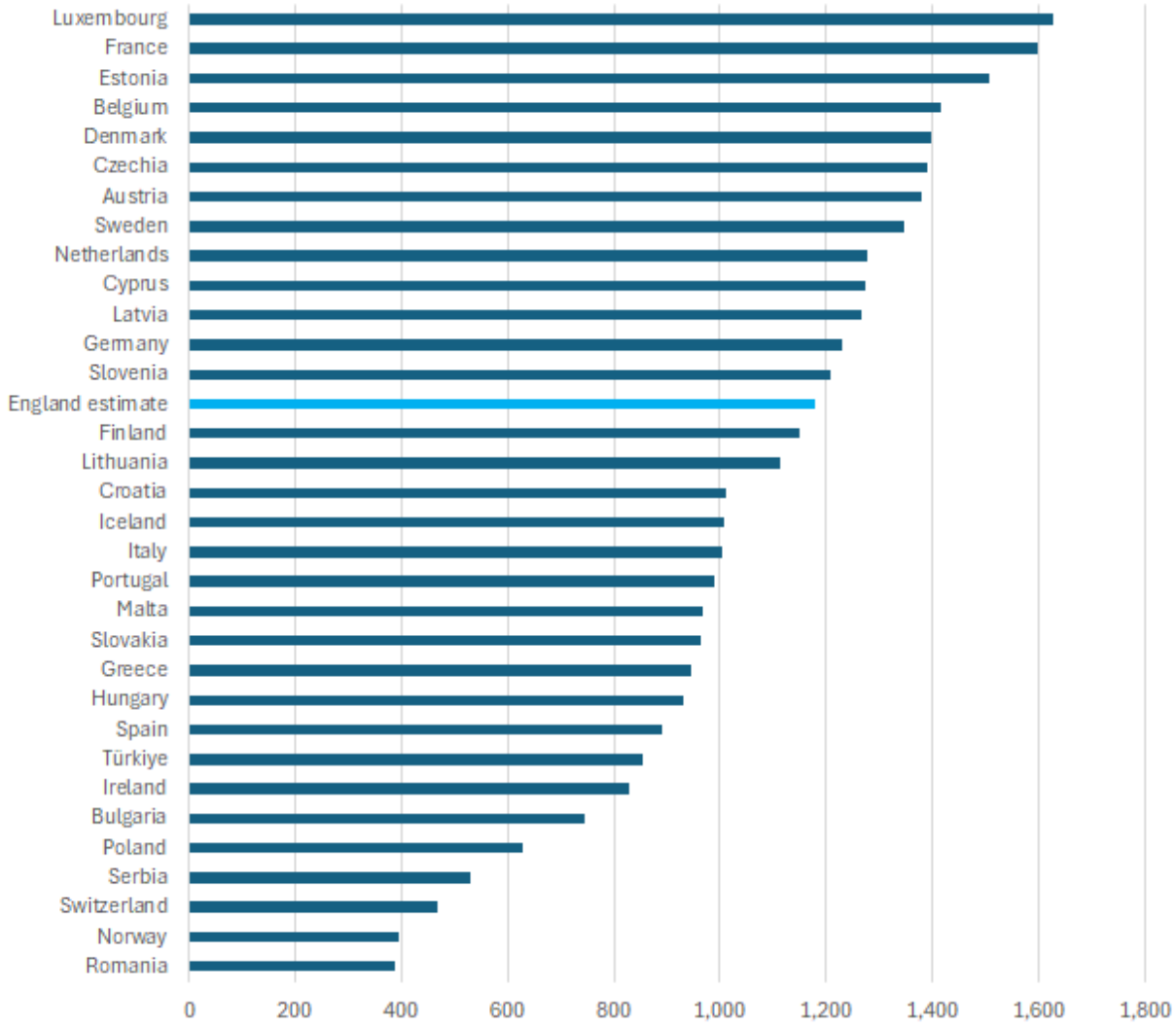
Despite various initiatives, local disparities do not appear to have been mitigated since the 2019 GIRFT report, with a 2025 report on ophthalmology in England finding significant variation.[30] For example, across ICBs:

- The percentage of hospital cancellations after optician referral ranges from 2.7% to 23%.
- The rate of injectors for AMD per 100,000 population aged ≥50 years ranges from 2.6% to 14%.

A multi-country study (see above) – which included the UK – found evidence of "*geographic disparities, where rural and underserved populations experience significantly reduced access to timely ophthalmic care*".

Despite evidence of service pressures, a challenge to accurately estimating the gap in services (between patient demand and access to treatment) is in quantifying the true level of patient need. Healthcare data identifies patients who present for diagnosis and/or treatment, but cannot easily identify individuals who do not present for care. Further research into any such 'hidden groups' would support the robustness of prevalence estimates.

Figure 2.1: Cataract treatment rates per 100,000 population



Source: Eurostat data[31], NOD cataract audit[32], ONS population estimates (England, mid-year 2023)[33]

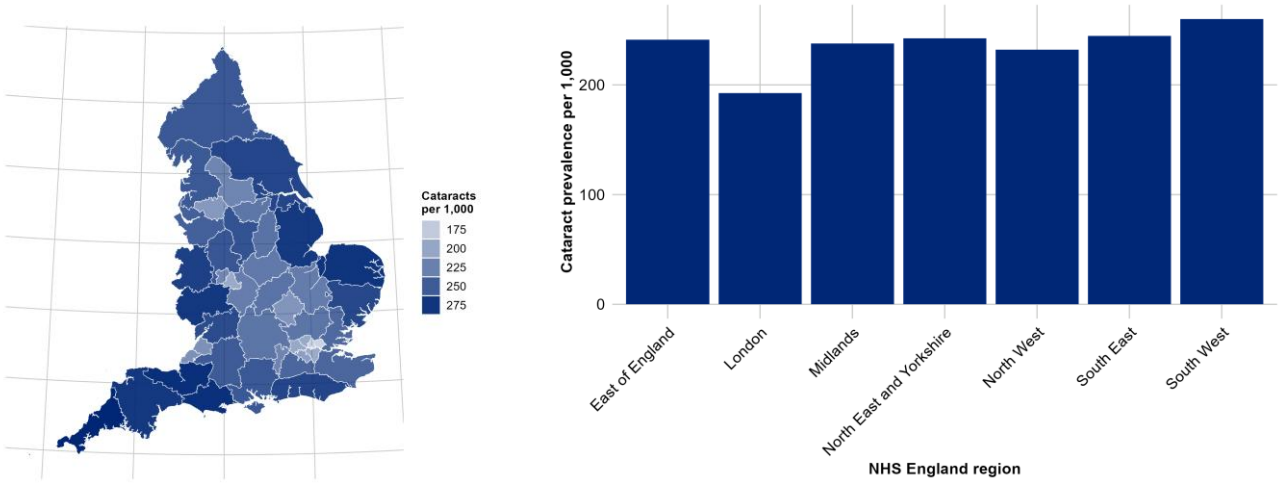
[30] Ophthalmology care in England: looking to the future
[31] Eurostat, 2023, Surgical procedures
[32] NOD Cataract Audit 7th Annual Report 2024
[33] Population estimates for the UK, England, Wales, Scotland and Northern Ireland ONS

3. CATARACTS

Age-adjusted prevalence estimates, by ICB

Cataracts become markedly more common with age, reflecting cumulative slow tissue damage and age-related changes in ocular 'plumbing' and cell maintenance. For example, lens proteins and fibres undergo long-term oxidative/UV and metabolic stress over time. There are also risk modifiers such as diabetes, and sunlight exposure, which are cumulative with age. The charts below show age-adjusted prevalence estimates by ICB (left panel) and by NHS England region (right panel), based on data from the UK Eye Data Hub and ONS population statistics.

Figure 3.1: Cataract prevalence estimates by ICB, 2024

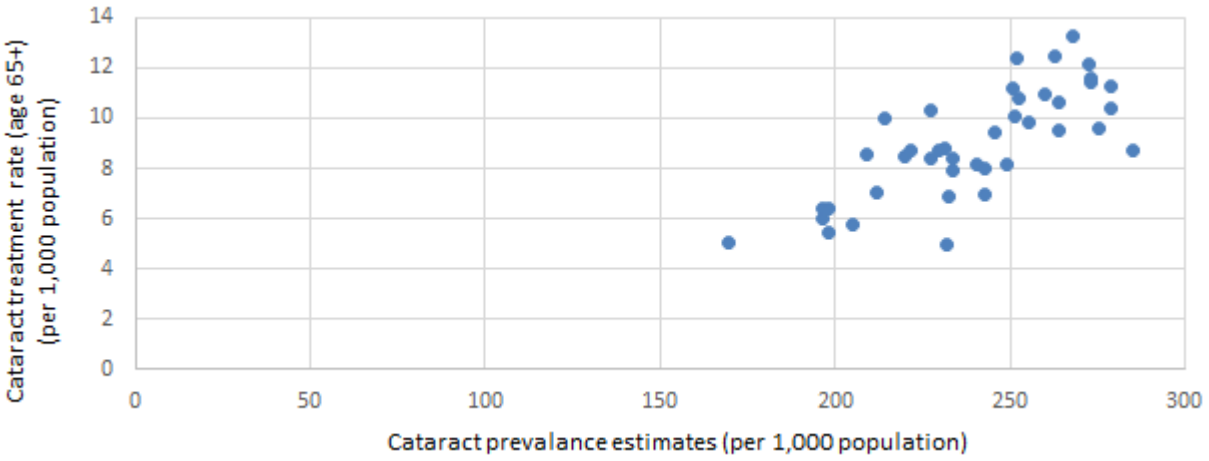


Source: CEPA analysis of UK Eye data hub and ONS population statistics.

Treatment versus prevalence

Across ICBs, the overall trend is for treatment rates to rise as prevalence rises, as shown in the chart below. This is to be expected within a well-functioning healthcare system, as it demonstrates that the 'supply' of healthcare is correlated with demand from individuals. The chart also shows some dispersion, e.g. individual ICBs with a similar level of prevalence may have different treatment rates. This is explored below in the 'gap analysis'.

Figure 3.2: Cataracts: Treatments (age 65+) versus estimated prevalence, by ICB, per 1,000 population



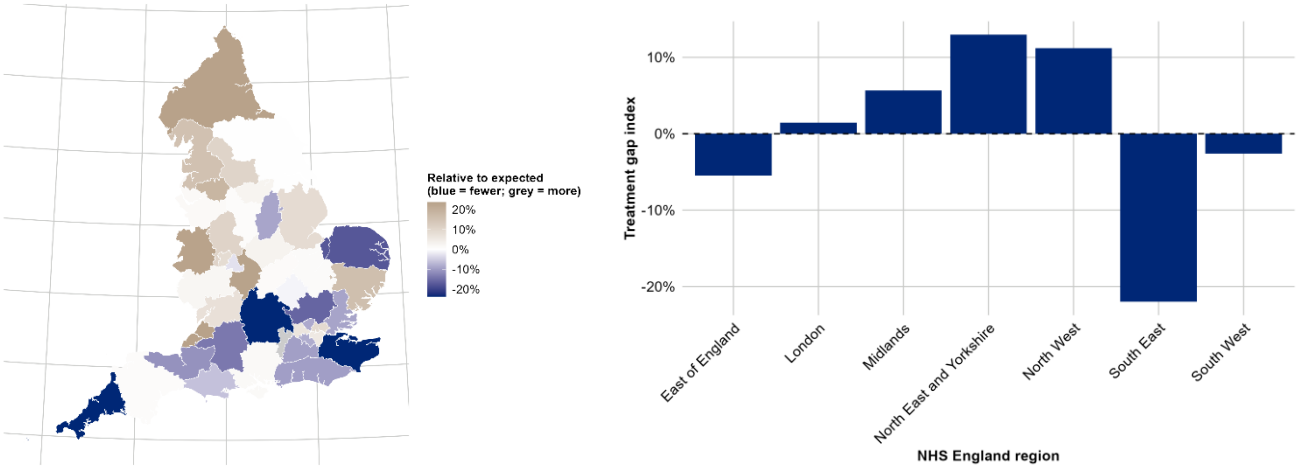
Source: CEPA analysis, developed from prevalence estimates (above) and treatment data from Health Vision Atlas.

Gap analysis, by ICB

For each ICB, we calculated the expected treatment rate if it aligned with the national average. Then, we calculated the treatment gap in absolute terms (actual treatment volumes minus expected volumes). Finally, we expressed the

gap as a percentage of expected treatment volumes, which derives a 'treatment gap index' that is comparable across ICBs. A **negative number** for the 'gap index' indicates that an ICB delivers **fewer treatments than expected** based on the ICB's estimated level of prevalence. A negative index is represented by blue on the map below (left hand panel), whereas grey areas have a positive index.

Figure 3.3: Estimates of the gap between cataract prevalence and treatment, age 65+, by ICB



Source: CEPA analysis, developed from prevalence estimates (above) and treatment data from Health Vision Atlas.

The table and chart below show the ICBs with the largest shortfall in treatments relative to prevalence estimates, i.e. the largest 'gaps' in treatment.

Table 3.1: ICBs with the largest treatment gaps for cataracts, 2024

Integrated Care Board (ICB)	NHS Region	Gap Index
NHS Buckinghamshire, Oxfordshire and Berkshire West	South East	-0.403
NHS Cornwall and the Isles of Scilly	South West	-0.273
NHS Kent and Medway	South East	-0.237
NHS Norfolk and Waveney	East of England	-0.176
NHS Hertfordshire and West Essex	East of England	-0.16
NHS Bath and North East Somerset, Swindon and Wiltshire	South West	-0.138
NHS Somerset	South West	-0.111
NHS Sussex	South East	-0.097
NHS Surrey Heartlands	South East	-0.097
NHS Mid and South Essex	East of England	-0.092

Figure 3.4: The 10 ICBs with the largest treatment gaps for cataracts, 2024

Source: CEPA analysis (see above)

For cataracts, the ICBs with the largest estimated 'gaps' are found largely in the South of England, including the West, Centre and East, although excluding London itself. For some ICBs, these 'gaps' are driven by high prevalence, whereas for other ICBs the gaps are driven by lower-than-expected treatment volumes. This is illustrated in the table below: High numbers (low rankings) and red shading are used to indicate a larger gap and associated drivers. For example, red shading indicates a high rate of prevalence or a lower-than-expected rate of treatment. Further discussion of the results is provided in Section 10.

Table 3.2: Drivers of 'gap analysis' rankings

Integrated Care Board (ICB)	**Ranking across all ICBs**		
	Overall gap	Prevalence	Treatments
NHS Buckinghamshire, Oxfordshire and Berkshire West Integrated Care Board	41	16	41
NHS Cornwall and the Isles of Scilly Integrated Care Board	40	41	22
NHS Kent and Medway Integrated Care Board	39	21	33
NHS Norfolk and Waveney Integrated Care Board	38	38	17
NHS Hertfordshire and West Essex Integrated Care Board	37	17	34
NHS Bath and North East Somerset, Swindon and Wiltshire Integrated Care Board	36	24	28
NHS Somerset Integrated Care Board	35	40	12
NHS Sussex Integrated Care Board	34	32	18
NHS Surrey Heartlands Integrated Care Board	33	22	30
NHS Mid and South Essex Integrated Care Board	32	20	29

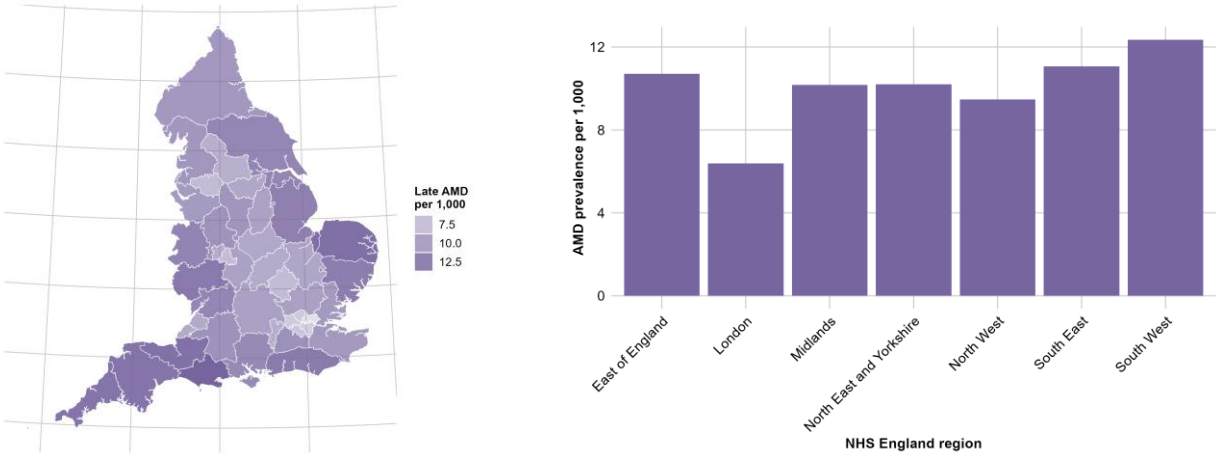
Source: CEPA analysis (see above)

4. AGE-RELATED MACULAR DEGENERATION (AMD)

Age-adjusted prevalence estimates, by ICB

As with cataracts, prevalence of AMD becomes markedly more common with age. The charts below show age-adjusted prevalence estimates by ICB (left panel) and by NHS England region (right panel), based on data from the UK Eye Data Hub and ONS population statistics.

Figure 4.1: AMD prevalence estimates by ICB, 2024

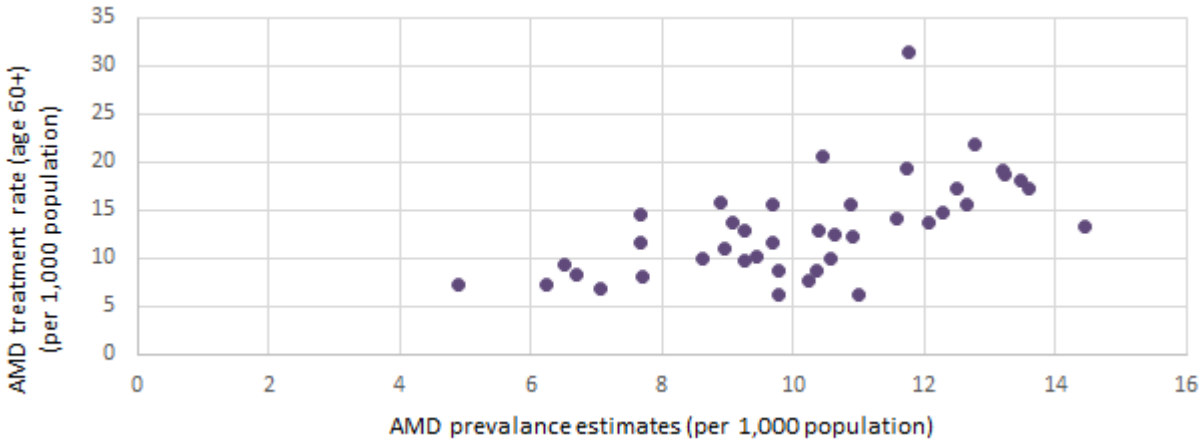


Source: CEPA analysis of UK Eye data hub and ONS population statistics.

Treatment versus prevalence

Across ICBs, the overall trend is for AMD treatment rates to increase with prevalence, as shown in the chart below. As with cataracts (Section 3), this demonstrates that the 'supply' of healthcare is correlated with patient 'demand'. The chart also shows some dispersion, e.g. individual ICBs with a similar level of prevalence may have different treatment rates. This is explored below in the 'gap analysis'.

Figure 4.2: AMD: Treatments (age 60+) versus estimated prevalence, by ICB, per 1,000 population

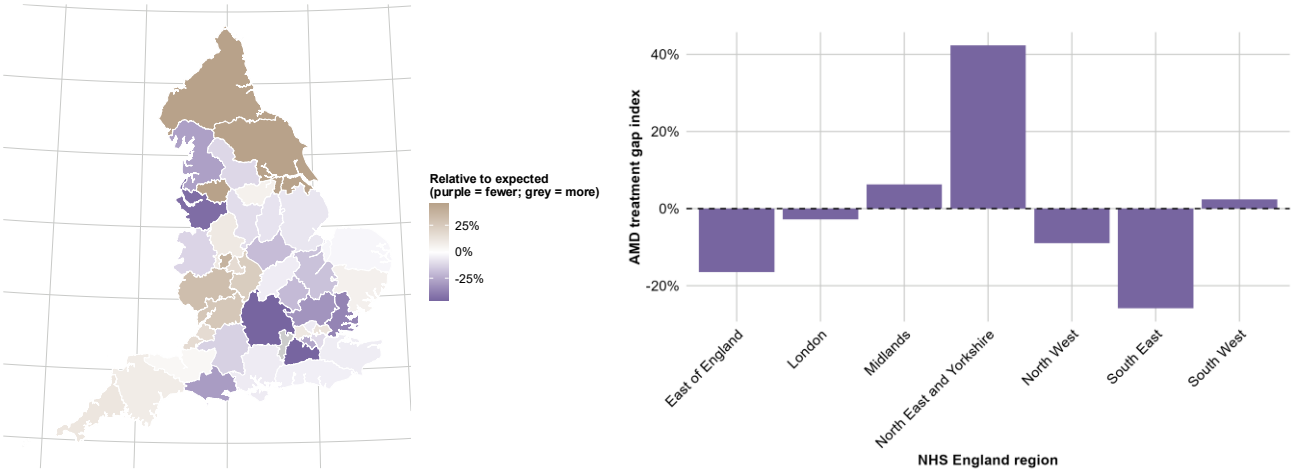


Source: CEPA analysis, developed from prevalence estimates (above) and treatment data from Health Vision Atlas.

Gap analysis, by ICB

As with cataracts, for AMD we calculated the 'treatment gap index' by ICB. A **negative number** for the 'gap index' indicates that an ICB delivers **fewer treatments than expected** based on the ICB's estimated level of prevalence. A negative index is represented by purple on the map below (left hand panel), whereas grey areas have a positive index. The right-hand panel aggregates the treatment gap index by NHS England region.

Figure 4.3: Estimates of the gap between AMD prevalence and treatment, age 60+, by ICB



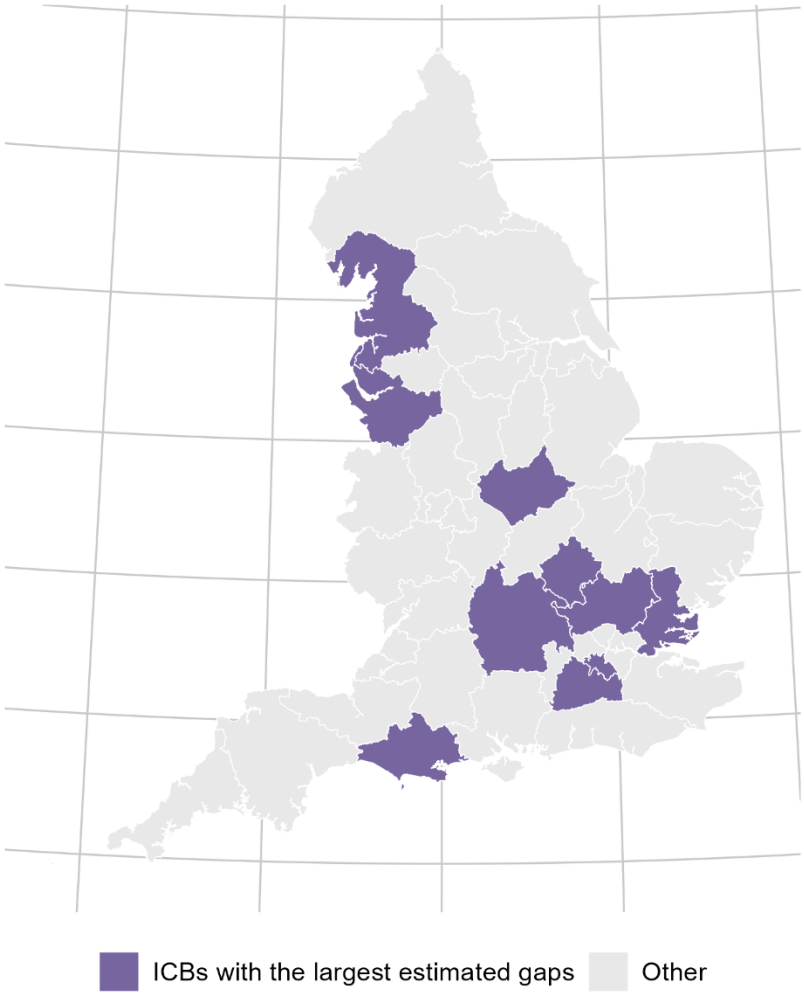
Source: CEPA analysis, developed from prevalence estimates (above) and treatment data from Health Vision Atlas.

The table and map below show the ICBs with the largest shortfall in treatments relative to prevalence estimates, i.e. the largest 'gaps' in treatment. For AMD, the ICBs with the largest estimated 'gaps' are distributed across England, although there is a cluster of ICBs around London.

Table 4.1: ICBs with the largest treatment gaps for AMD, 2024

Integrated Care Board (ICB)	NHS Region	Gap Index
NHS Surrey Heartlands	South East	-0.567
NHS Buckinghamshire, Oxfordshire and Berkshire West	South East	-0.503
NHS Cheshire and Merseyside	North West	-0.43
NHS Mid and South Essex	East of England	-0.357
NHS Hertfordshire and West Essex	East of England	-0.309
NHS Dorset	South West	-0.285
NHS Lancashire and South Cumbria	North West	-0.273
NHS South West London	London	-0.253
NHS Bedfordshire, Luton and Milton Keynes	East of England	-0.196
NHS Leicester, Leicestershire and Rutland	Midlands	-0.189

Figure 4.4: The 10 ICBs with the largest treatment gaps for AMD, 2024



Source: CEPA analysis (see above).

For AMD, the largest treatment gaps across ICBs are almost exclusively driven by lower-than-expected treatment rates, whereas for cataracts (Section 3) the gaps are due to a mix of treatment rates and prevalence. This finding is illustrated in the table below: Of the ten ICBs with the biggest overall gaps, the majority of these have a low ranking (red shading) for treatment rates. However, prevalence for many of these ICBs is not high relative to other ICBs (as indicated by lighter shading in the 'prevalence' ranking column). Further discussion of the results is provided in Section 10.

Table 4.2: Drivers of 'gap analysis' rankings

Integrated Care Board (ICB)	**Ranking across all ICBs**		
	Overall gap	Prevalence	Treatments
NHS Surrey Heartlands Integrated Care Board	41	28	41
NHS Buckinghamshire, Oxfordshire and Berkshire West Integrated Care Board	40	18	40
NHS Cheshire and Merseyside Integrated Care Board	39	20	36
NHS Mid and South Essex Integrated Care Board	38	21	33
NHS Hertfordshire and West Essex Integrated Care Board	37	19	32
NHS Dorset Integrated Care Board	36	41	19
NHS Lancashire and South Cumbria Integrated Care Board	35	24	28
NHS South West London Integrated Care Board	34	5	39
NHS Bedfordshire, Luton and Milton Keynes Integrated Care Board	33	8	35
NHS Leicester, Leicestershire and Rutland Integrated Care Board	32	13	30

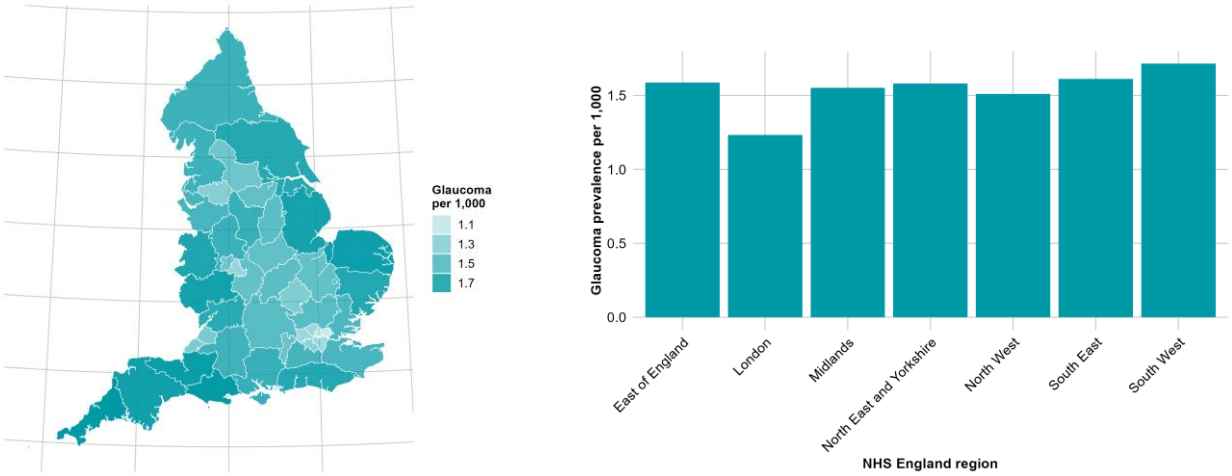
Source: CEPA analysis (see above)

5. GLAUCOMA

Age-adjusted prevalence estimates, by ICB

As with cataracts and AMD, prevalence of glaucoma increases with age. The charts below show age-adjusted prevalence estimates by ICB (left panel) and by NHS England region (right panel), based on data from the UK Eye Data Hub and ONS population statistics.

Figure 5.1: Glaucoma prevalence estimates by ICB, 2024



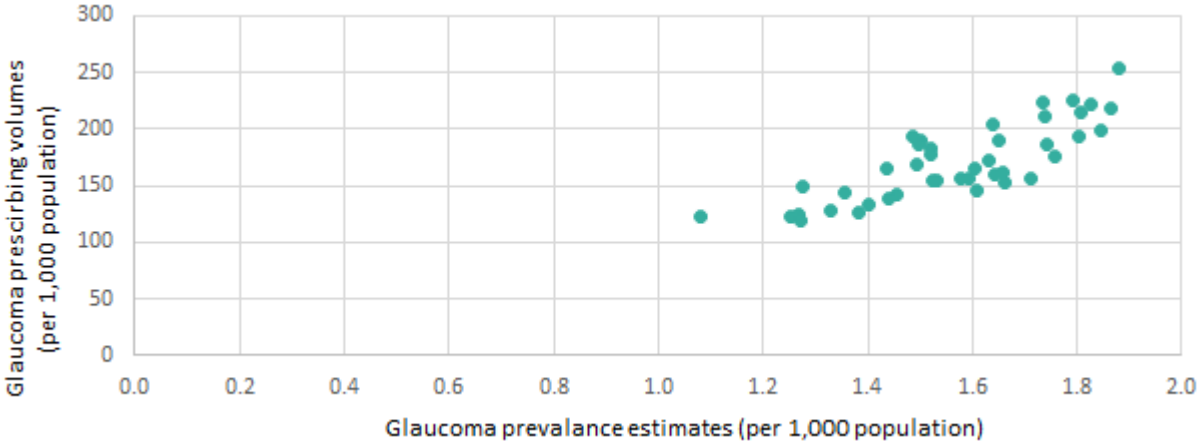
Source: CEPA analysis of UK Eye data hub and ONS population statistics.

Treatment versus prevalence

For glaucoma, treatment data in this study is based on eye drop prescribing volumes. NICE guidelines recommend offering 360° SLT to people with OHT or COAG, and offering eye drops to people who prefer not to have 360° SLT or for whom it is not suitable. However, data specifically on 360° SLT treatment for glaucoma at ICB level is not publicly available. Further data analysis could be undertaken to develop proxy indicators. Prescribing volumes are adopted in this study as the primary observable metric.

Across ICBs, the overall trend is for glaucoma treatment rates (based on prescribing) to increase with prevalence, as shown in the chart below. As with cataracts (Section 3) and AMD (Section 4), this demonstrates that the 'supply' of healthcare is correlated with patient 'demand'. The chart also shows some dispersion, e.g. individual ICBs with a similar level of prevalence have different treatment rates. This is explored below in the 'gap analysis'.

Figure 5.2: Glaucoma: Average prescribing volumes versus estimated prevalence, by ICB, per 1,000 population

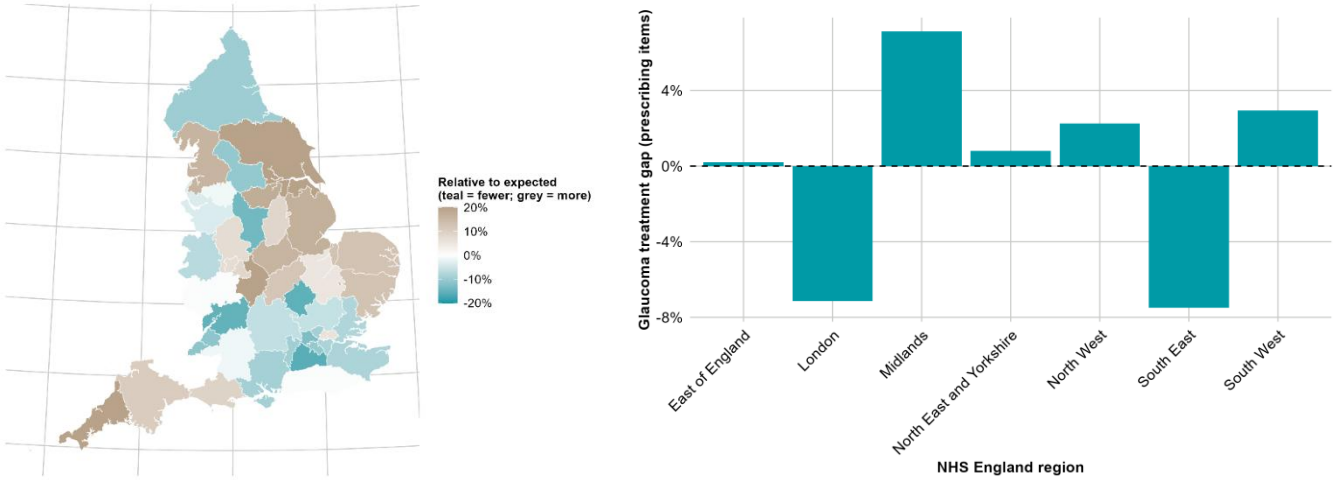


Source: CEPA analysis, developed from prevalence estimates (above) and NHSBSA OpenPrescribing data.

Gap analysis, by ICB

As with cataracts and AMD, for glaucoma we calculated the 'treatment gap index' by ICB. A **negative number** for the 'gap index' indicates that an ICB delivers **fewer treatments than expected** based on the ICB's estimated level of prevalence. A negative index is represented by teal on the map below (left hand panel), whereas grey areas have a positive index. The right-hand panel aggregates the treatment gap index by NHS England region.

Figure 5.3: Estimates of the gap between glaucoma prevalence and treatment (prescribing), by ICB



Source: CEPA analysis, developed from prevalence estimates (above) and NHSBSA OpenPrescribing data.

The table and map below show the ICBs with the largest shortfall in treatments relative to prevalence estimates, i.e. the largest 'gaps' in treatment. For glaucoma, the ICBs with the largest estimated 'gaps' are distributed across England. Some ICBs with high treatment gaps are located around London – as per Cataracts (Section 3) and AMD (Section 4) – but there is relatively wide dispersion across England.

Table 5.1: ICBs with the largest treatment gaps for glaucoma (based on prescribing volumes), 2024

Integrated Care Board (ICB)	NHS Region	Gap Index
NHS Surrey Heartlands	South East	-0.161
NHS Bedfordshire, Luton and Milton Keynes	East of England	-0.155
NHS Gloucestershire	South West	-0.152
NHS Derby and Derbyshire	Midlands	-0.14
NHS North West London	London	-0.128
NHS Bristol, North Somerset and South Gloucestershire	South West	-0.113
NHS West Yorkshire	North East & Yorkshire	-0.108
NHS South West London	London	-0.106
NHS North East and North Cumbria	North East & Yorkshire	-0.098
NHS Frimley	South East	-0.096

Figure 5.4: ICBs with the largest treatment gaps for glaucoma (based on prescribing volumes), 2024

Source: CEPA analysis (see above)

Similar to AMD (Section 4), the gaps for glaucoma are largely driven by lower-than-expected treatment rates. This is illustrated in the table below: Of the ten ICBs with the biggest overall gaps, many of these have a low ranking (red shading) for treatment rates, while prevalence for many of these ICBs is not high relative to other ICBs (as indicated by lighter shading in the 'prevalence' ranking column). Further discussion of the results is provided in Section 10.

Table 5.2: Drivers of 'gap analysis' rankings

Integrated Care Board (ICB)	**Ranking across all ICBs**		
	Overall gap	Prevalence	Treatments
NHS Surrey Heartlands Integrated Care Board	42	23	32
NHS Bedfordshire, Luton and Milton Keynes Integrated Care Board	41	7	38
NHS Gloucestershire Integrated Care Board	40	30	26
NHS Derby and Derbyshire Integrated Care Board	39	29	30
NHS North West London Integrated Care Board	38	3	42
NHS Bristol, North Somerset and South Gloucestershire Integrated Care Board	37	8	36
NHS West Yorkshire Integrated Care Board	36	10	35
NHS South West London Integrated Care Board	35	5	37
NHS North East and North Cumbria Integrated Care Board	34	26	24
NHS Frimley Integrated Care Board	33	11	34

Source: CEPA analysis (see above)

6. OPHTHALMOLOGY WAITING LISTS

'Stepping back' from the individual conditions examined in the previous three chapters, this chapter reviews the pressures on waiting lists for ophthalmology overall. Changes in waiting lists provide a measure of the gap between demand that has been referred into the system and the capacity to treat it: if waiting lists are growing over a given time period, it implies that the flow of new referrals exceeds the rate at which pathways are being completed, that is, demand for ophthalmology exceeds supply.

In this report, we have modelled **the pressures on waiting lists** using a measure of utilisation (ρ, also defined as traffic intensity in academic literature[34]): This is defined as the number of people joining the waiting list (via new ophthalmology referral) as a proportion of people leaving it (via a completed pathway).[35] When ρ > 1, more people are joining the list than are being seen, so the queue grows and waits tend to lengthen. When ρ < 1, more people are being seen than are joining, so the queue shrinks. When ρ = 1, inflows and outflows are in balance and the waiting list is stable, though this does not necessarily imply that all underlying demand for care is being met; an ICB may have a large but constant backlog.

'Waiting list pressures' versus 'headline' waiting list statistics (*incomplete pathways*)

The metric ρ compares new referrals to completed pathways, and therefore is indicative of demand for care relative to supply (treatments undertaken). 'Headline' NHS waiting list statistics (*incomplete pathways*) also include other adjustments, such as patients removed during validation exercises, non-clinical closures, or e-Referral slot expiries. Given recent government initiatives to clean waitlists through validation exercises, this can lead to a discrepancy between 'wait list pressures' (estimated by ρ) and changes to the number of *incomplete pathways* over time. In March 2026 the Office for Statistics Regulation's compliance review of NHS England's RTT statistics recommended that NHS England "*publish more information to support users' understanding of unreported removals*".[36]

The utilisation map below highlights which ICBs have growing pressures on waiting lists (red, ρ is more than 1) and which have falling pressures on waiting lists (blue, ρ is less than 1). This map also shows the size of the change based on the strength of the colour. For example, dark red indicates that waiting list pressures are growing steeply, and a utilisation rate of 1.2 indicates that approximately 20% more patients joined the waiting list over the year compared to the number of patients who left the waiting list due to completed pathways.

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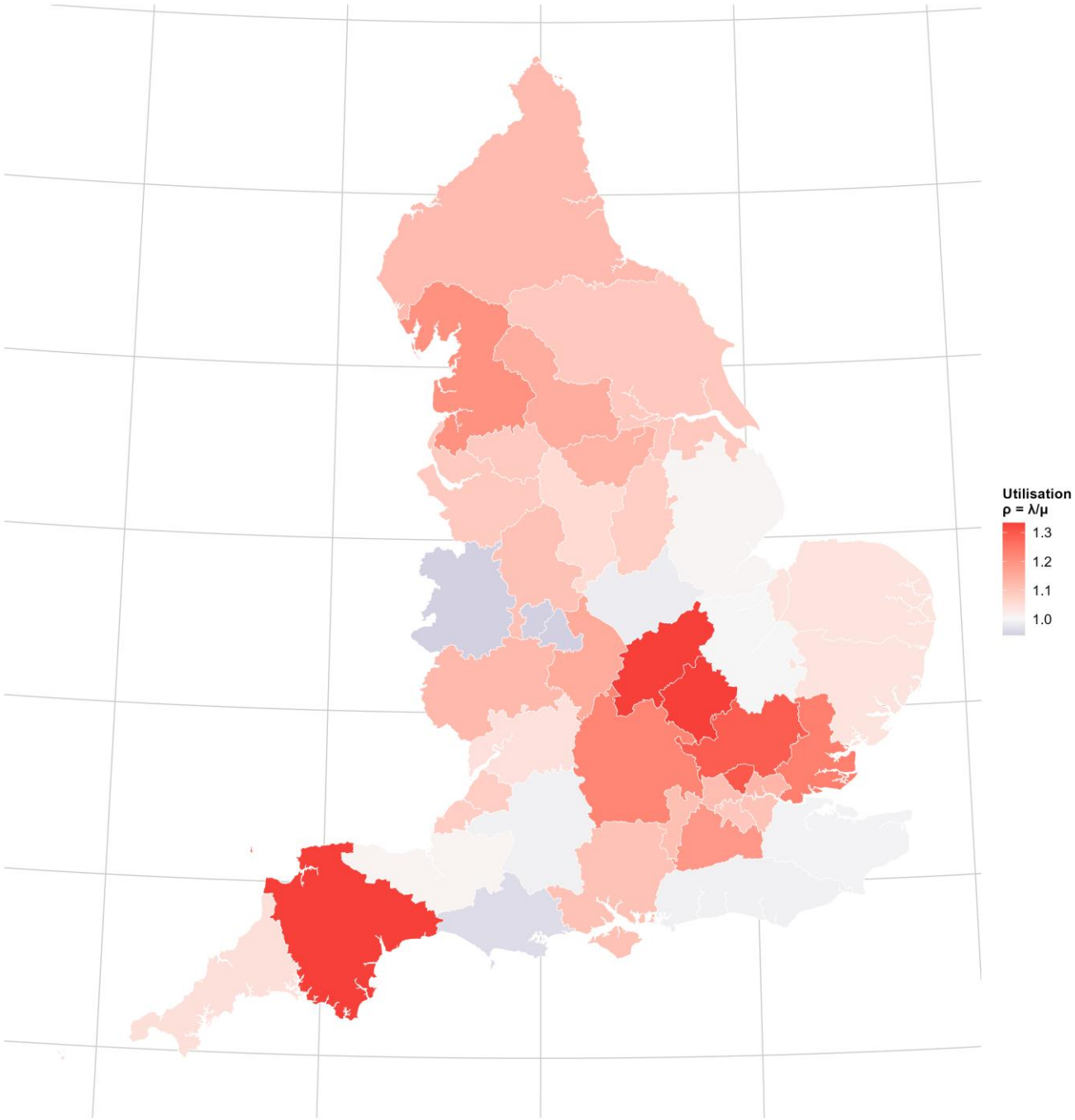
[34] Beasly, J.D. Queuing Theory. Available at: https://people.brunel.ac.uk/~mastjjb/jeb/or/queue.html#:~:text=One%20factor%20that%20is%20of,intensity%20is%200.5/4%20=%200.125
Pandit, J.J., Pandit, M. and Reynard, J.M. (2010), Understanding waiting lists as the matching of surgical capacity to demand: are we wasting enough surgical time?. https://doi.org/10.1111/j.1365-2044.2010.06278.x
Worthington, D., Utley, M., & Suen, D. (2020). Infinite-server queueing models of demand in healthcare: A review of applications and ideas for further work. https://doi.org/10.1080/01605682.2019.1609878

[35] For each ICB and month, utilisation (ρ) = arrivals (λ) ÷ completions (μ). Arrivals = new RTT pathways in that month (RTT Part_3, "New RTT periods"). Completions = pathways that finished in that month (Part_1A admitted + Part_1B non-admitted). So ρ = λ/μ, calculated when μ > 0. For more details on the methodology, see Appendix A.

[36] Watson, G. and Fisher, E. (2025). "Why is the planned care waiting list coming down and what does the data really tell us?" QualityWatch, Nuffield Trust / Health Foundation, 13 August 2025. https://nuffieldtrust.org.uk/news-item/why-is-the-planned-care-waiting-list-coming-down-and-what-does-the-data-really-tell-us
Office for Statistics Regulation (2026). "Review of compliance with the Code of Practice for Statistics: Referral to Treatment (RTT) statistics." March 2026. https://osr.statisticsauthority.gov.uk/publication/nhs-englands-referral-to-treatment-rtt/

Figure 6.1: Change in ophthalmology waiting list pressures, by ICB, during 2025



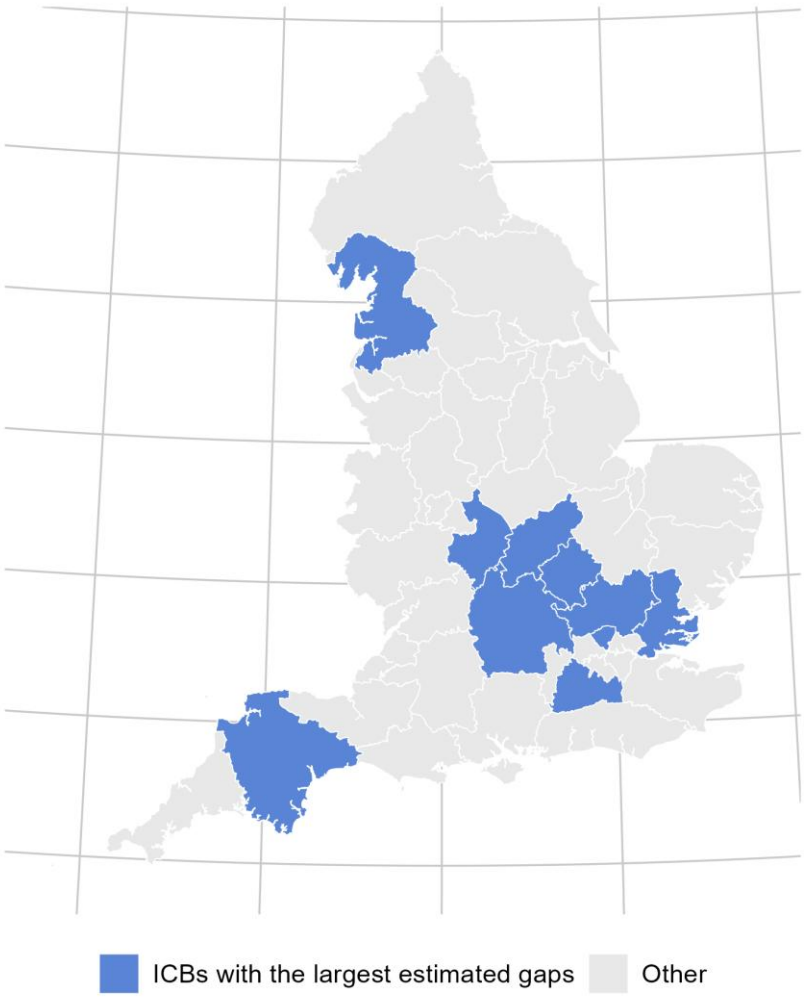
Source: CEPA analysis (see above)

The table and map below show the ICBs with the largest utilisation rates, i.e. the largest increase in waiting list pressures during 2025, as measured by growth in new referrals relative to the number of completed pathways. Many of the ICBs with the largest growth in waiting list pressures are clustered around London. This mirrors the results for cataracts (Section 3) and AMD (Section 4). A discussion of the results is provided in Section 10.

Table 6.1: ICBs with the largest increase in ophthalmology waiting list pressures during 2025

Integrated Care Board (ICB)	NHS Region	Utilisation rate
NHS Devon	South West	1.397
NHS Bedfordshire, Luton and Milton Keynes	East of England	1.367
NHS Northamptonshire	Midlands	1.336
NHS North Central London	London	1.297
NHS Hertfordshire and West Essex	East of England	1.29
NHS Mid and South Essex	East of England	1.235
NHS Buckinghamshire, Oxfordshire and Berkshire West	South East	1.223
NHS Lancashire and South Cumbria	North West	1.201
NHS Surrey Heartlands	South East	1.189
NHS Coventry and Warwickshire	Midlands	1.151

Figure 6.2: ICBs with the largest increase in ophthalmology waiting list pressures during 2025



Source: CEPA analysis (see above)

7. EYE CARE OUTPATIENT APPOINTMENTS

In addition to ophthalmology waiting list pressures (chapter 6), a further 'gap analysis' measure for eye care overall is to apply 'age standardisation' to existing vision outpatient appointment rates. 'Age standardisation' works by expressing an indicator (outpatient appointments) in terms of "the overall rate that would occur in a standard population age structure if it experienced the age-specific rates of the observed population"[37]. Effectively, this adjusts ICB treatment rates for the primary driver of overall eye care demand – which is age – across ICBs, so that ICB treatment rates can be compared on a like-for-like basis.

Based on this metric, ICBs with below average age-standardised treatment rates undertake fewer treatments than would be expected based on that ICB's age profile, and therefore have the largest estimated treatment gap.

The table and map below show the ICBs which are the most 'below average' in terms of age-standardised outpatient appointments. In the table, the right-hand column shows the difference in the number of outpatient attendances (per thousand people) between the given ICB and the England-wide average, adjusting for differences in age structure.

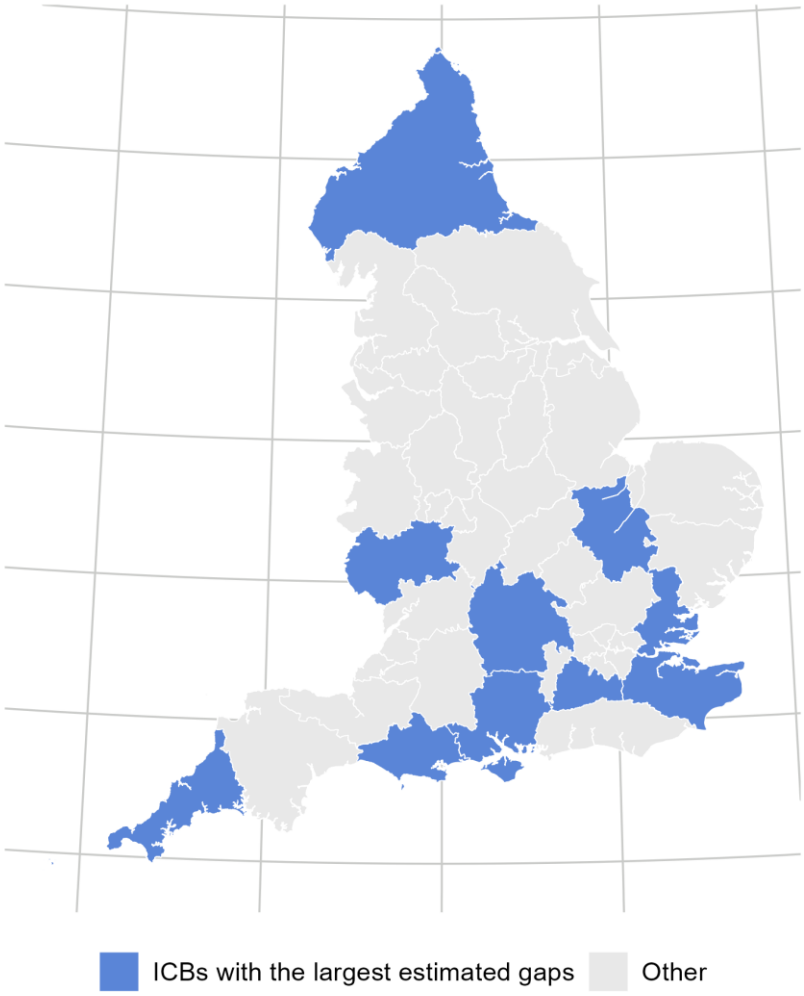
For this outpatient measure, the ICBs with the largest estimated 'gaps' are more concentrated in the South of England, although not exclusively, which mirrors the results for the metrics in previous sections of this report. A discussion of the results is provided in Section 10.

Table 7.1: ICBs with the fewest age-standardised vision outpatient appointments, per 1,000, FY 2023

Integrated Care Board (ICB)	NHS Region	Treatment gap versus average
NHS Buckinghamshire, Oxfordshire and Berkshire West	South East	-46.807
NHS Mid and South Essex	East of England	-41.135
NHS Kent and Medway	South East	-34.64
NHS Herefordshire and Worcestershire	Midlands	-31.241
NHS North East and North Cumbria	North East & Yorkshire	-24.51
NHS Cambridgeshire and Peterborough	East of England	-19.985
NHS Surrey Heartlands	South East	-16.832
NHS Cornwall and the Isles of Scilly	South West	-16.825
NHS Hampshire and Isle of Wight	South East	-13.922
NHS Dorset	South West	-13.092

[37] Department of Health and Social Care, Directly standardized rates (DSRs).

Figure 7.1: ICBs with the fewest age-standardised vision outpatient appointments, per 1,000, FY 2023



Source: CEPA analysis (see above)

8. OVERVIEW ACROSS THE 'GAP ANALYSIS' METRICS

In this section, we bring together the five metrics (across Sections 3 – 7 of this report) to consider which ICBs have the largest treatment gaps for eye care *overall*.

There are different potential approaches to aggregating the metrics across ICBs, to identify the ICBs with the biggest gaps *overall*. The overall rankings are similar – but slightly different – under different mathematical approaches. Below, we present two aggregation approaches:

- **Approach 1: Based on rankings**. We ranked the ICBs for each of the five metrics. For each ICB, for each metric, we identified whether the ICB is above average (i.e. ranked in the top half of ICBs) or below average (ranked in the bottom half). We then identified which ICBs are ranked in the bottom half for the most metrics.
- **Approach 2: Based on metric scores**. For each metric, we assigned each ICB a score based on the metric value in relation to other ICBs. This is known as the 'Z score', based on an assumed normal distribution of values across ICBs. A **negative Z score indicates a larger treatment gap**, whereas a positive Z score indicates that treatments are higher than expected based on prevalence. For each ICB, we took the arithmetic average of the Z scores across the five metrics. ICBs with average Z scores that are highly negative are those with the largest gaps on average (across the five metrics).

Results based on rankings (aggregation approach 1)

There are 42 ICBs in total, and in the table below, red signifies a ranking in the bottom half of ICBs, while grey signifies a ranking in the top half. Looking overall across the metrics, we find that there are 10 ICBs ranked in the bottom half of ICBs in at least four out of five metrics. Of these 10 ICBs, there are 3 ICBs which are ranked in the bottom half for all five metrics: Surrey Heartlands; Buckinghamshire, Oxfordshire and Berkshire West; and Mid and South Essex. The table below also shows several ICBs with the smallest gaps. Of these, there are two ICBs (Black Country, and Suffolk and North East Essex) which are ranked in the top half of ICBs for all five metrics.

Table 8.1: ICBs with the largest (and smallest) treatment gaps, across all five metrics (using aggregation method 1)

ICB	NHS region	Cataracts	AMD	Glaucoma	Waiting lists	Outpatients
10 ICBs with the biggest gaps						
NHS Surrey Heartlands	South East	33	41	42	34	35
NHS Buckinghamshire, Oxfordshire and Berkshire West	South East	41	40	26	36	41
NHS Mid and South Essex	East of England	32	38	28	37	40
NHS Bedfordshire, Luton and Milton Keynes	East of England	26	33	41	41	18
NHS Hertfordshire and West Essex	East of England	37	37	25	38	9
NHS Hampshire and Isle of Wight	South East	19	23	32	25	33
NHS Derby and Derbyshire	Midlands	23	26	39	16	24
NHS North Central London	London	30	22	31	39	6
NHS South West London	London	29	34	35	22	8
NHS Bath and North East Somerset, Swindon and Wiltshire	South West	36	30	23	6	28
3 ICBs with the smallest gaps						
NHS Black Country	Midlands	12	4	16	2	1
NHS Suffolk and North East Essex	East of England	6	15	8	12	15
NHS Coventry and Warwickshire	Midlands	3	7	2	33	3

Note: For Frimley ICB, data is only available for two out of the five metrics, so it is not included in the table above. Frimley ICB ranks in the bottom half of ICBs for both metrics (glaucoma and waiting list pressures).

For completeness, the full table of rankings – across all ICBs and metrics – is shown below. Many ICBs have larger gaps for some metrics but smaller gaps for other metrics, indicated by a mix of red and grey cells.

Table 8.2: ICB rankings across all five metrics for all ICBs

ICB	NHS region	Cataracts	AMD	Glaucoma	Waiting lists	Outpatients
NHS Lancashire and South Cumbria	North West	7	35	7	35	2
NHS South Yorkshire	North East & Yorkshire	17	16	4	31	11
NHS Herefordshire and Worcestershire	Midlands	18	5	20	29	38
NHS Mid and South Essex	East of England	32	38	28	37	40
NHS Bedfordshire, Luton and Milton Keynes	East of England	26	33	41	41	18
NHS Birmingham and Solihull	Midlands	27	8	14	3	12
NHS North East and North Cumbria	North East & Yorkshire	2	2	34	28	37
NHS Derby and Derbyshire	Midlands	23	26	39	16	24
NHS Suffolk and North East Essex	East of England	6	15	8	12	15
NHS Devon	South West	24	14	11	42	14
NHS Lincolnshire	Midlands	11	24	5	10	29
NHS Leicester, Leicestershire and Rutland	Midlands	16	32	6	5	22
NHS South East London	London	15	27	30	23	13
NHS Kent and Medway	South East	39	20	29	8	39
NHS Hertfordshire and West Essex	East of England	37	37	25	38	9
NHS North East London	London	10	10	17	30	20
NHS North Central London	London	30	22	31	39	6
NHS Norfolk and Waveney	East of England	38	18	9	13	31
NHS Staffordshire and Stoke-on-Trent	Midlands	8	13	15	24	10
NHS Frimley	South East			33	26	
NHS Sussex	South East	34	19	21	7	17
NHS Shropshire, Telford and Wrekin	Midlands	4	29	27	1	4
NHS Greater Manchester	North West	5	3	22	19	26
NHS Humber and North Yorkshire	North East & Yorkshire	25	1	3	21	7
NHS Bath and North East Somerset, Swindon and Wiltshire	South West	36	30	23	6	28
NHS Northamptonshire	Midlands	22	21	10	40	5
NHS Gloucestershire	South West	13	6	40	14	25
NHS Hampshire and Isle of Wight	South East	19	23	32	25	33
NHS North West London	London	14	12	38	27	19
NHS Somerset	South West	35	17	19	11	30
NHS Nottingham and Nottinghamshire	Midlands	31	25	13	18	23
NHS Cornwall and the Isles of Scilly	South West	40	11	1	15	34
NHS Buckinghamshire, Oxfordshire and Berkshire West	South East	41	40	26	36	41
NHS Black Country	Midlands	12	4	16	2	1
NHS Cambridgeshire and Peterborough	East of England	21	31	18	9	36
NHS Bristol, North Somerset and South Gloucestershire	South West	1	9	37	17	27
NHS Dorset	South West	28	36	12	4	32
NHS South West London	London	29	34	35	22	8
NHS West Yorkshire	North East & Yorkshire	9	28	36	32	21
NHS Coventry and Warwickshire	Midlands	3	7	2	33	3
NHS Surrey Heartlands	South East	33	41	42	34	35
NHS Cheshire and Merseyside	North West	20	39	24	20	16

Note: For Frimley ICB, data is only available for two out of the five metrics.

Results based on metric scores (aggregation approach 2)

Under this second approach to aggregation, the tables below show:

- The 10 ICBs with the largest treatment gaps (as indicated by the most negative composite Z score).
- The 3 ICBs with the smallest treatment gaps (as indicated by the most positive composite Z score).

Table 8.3: The 10 ICBs with the largest treatment gaps, across all five metrics (using aggregation method 2)

Integrated Care Board (ICB)	NHS Region	Composite Z score	Z scores by metric*				
			Cat	AMD	Gla	WL	OP
NHS Buckinghamshire, Oxfordshire and Berkshire West	South East	-1.66	-2.81	-1.68	-0.6	-0.98	-2.23
NHS Mid and South Essex	East of England	-1.13	-0.67	-1.19	-0.76	-1.08	-1.97
NHS Surrey Heartlands	South East	-1.12	-0.7	-1.9	-1.44	-0.71	-0.84
NHS Bedfordshire, Luton and Milton Keynes	East of England	-0.82	-0.11	-0.64	-1.39	-2.14	0.17
NHS Kent and Medway	South East	-0.69	-1.67	-0.15	-0.79	0.85	-1.67
NHS Hertfordshire and West Essex	East of England	-0.66	-1.14	-1.02	-0.59	-1.52	0.97
NHS North Central London	London	-0.41	-0.63	-0.17	-0.85	-1.58	1.16
NHS Hampshire and Isle of Wight	South East	-0.34	0.07	-0.17	-0.85	-0.06	-0.7
NHS Cheshire and Merseyside	North West	-0.29	0.07	-1.43	-0.4	0.07	0.25
NHS Derby and Derbyshire	Midlands	-0.28	0.04	-0.31	-1.26	0.34	-0.24

** Key: Cat = Cataracts; Gla = Glaucoma; WL = waiting list pressures; OP = outpatients*
Note: For Frimley ICB, data is only available for two out of the five metrics, so it is not included above. Based on Frimley ICB's available metrics (glaucoma and waiting list pressures), its composite Z-score would be -0.49.

Table 8.4: The 3 ICBs with the smallest treatment gaps, across all five metrics (using aggregation method 2)

Integrated Care Board (ICB)	NHS Region	Composite Z score	Z scores by metric*				
			Cat	AMD	Gla	WL	OP
NHS Humber and North Yorkshire	North East and Yorkshire	1.28	-0.02	3.62	1.64	0.07	1.1
NHS Black Country	Midlands	1.14	0.57	1.27	0.53	1.34	1.97
NHS Coventry and Warwickshire	Midlands	1.04	1.59	0.84	1.73	-0.41	1.46

** Key: Cat = Cataracts; Gla = Glaucoma; WL = waiting list pressures; OP = outpatients*

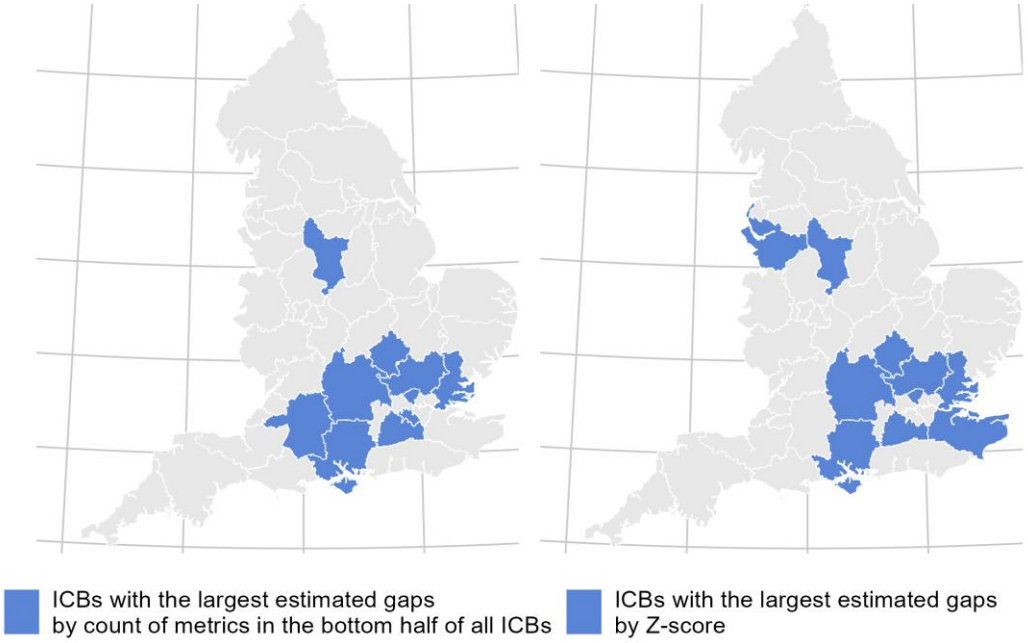
The results across the two aggregation methods are not identical, but they exhibit a degree of commonality. For example, the four ICBs with the highest combined gaps are the same under both aggregation methods (albeit with differences in order). These four ICBs are: Buckinghamshire, Oxfordshire and Berkshire West ICB; Mid and South Essex ICB; Surrey Heartlands ICB; and Bedfordshire, Luton and Milton Keynes ICB. Some ICBs are in the list of 10 ICBs with the largest gaps under one aggregation method, but not under the other, e.g. South West London ICB.

This pattern of commonality also occurs for the ICBs with the *smallest* treatment gaps. Of the 'top three' ICBs presented for each aggregation method, two ICBs are present in both lists: Black Country ICB and Coventry and Warwickshire ICB.

Results: Geographical distribution

The 10 ICBs with the largest treatment gaps are show below, under both aggregation methods. While there are some differences in the ICBs across these aggregation methods (as noted above), both exhibit significant clusters of ICBs around London. There could be several potential drivers for this, which are discussed in Section 10.

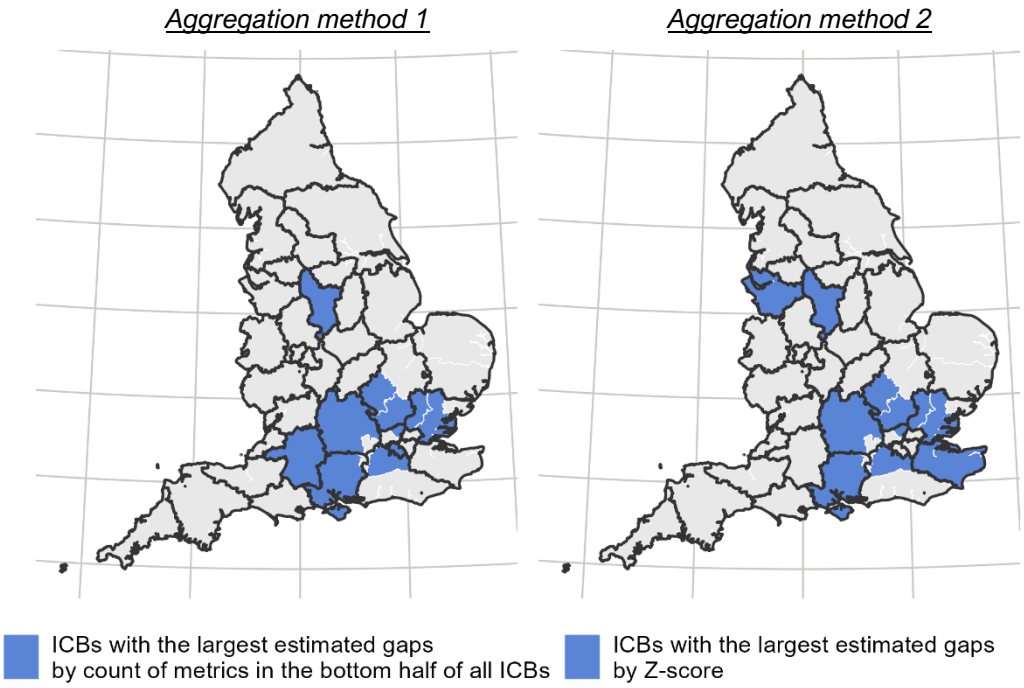
Figure 8.1: ICBs with the largest gaps combined, under aggregation method 1 (left) and method 2 (right)



Source: CEPA analysis

Several ICB boundary changes are occurring from April 2026. The official geographical shapefiles have not yet been published as of March 2026. Below (and in Appendix B) we have estimated the ICB boundaries post-April 2026, using Lower layer Super Output Area (LSOA) data from the Office for National Statistics (ONS).

Figure 8.2: ICBs with the largest gaps combined, using estimated post-April 2026 boundaries



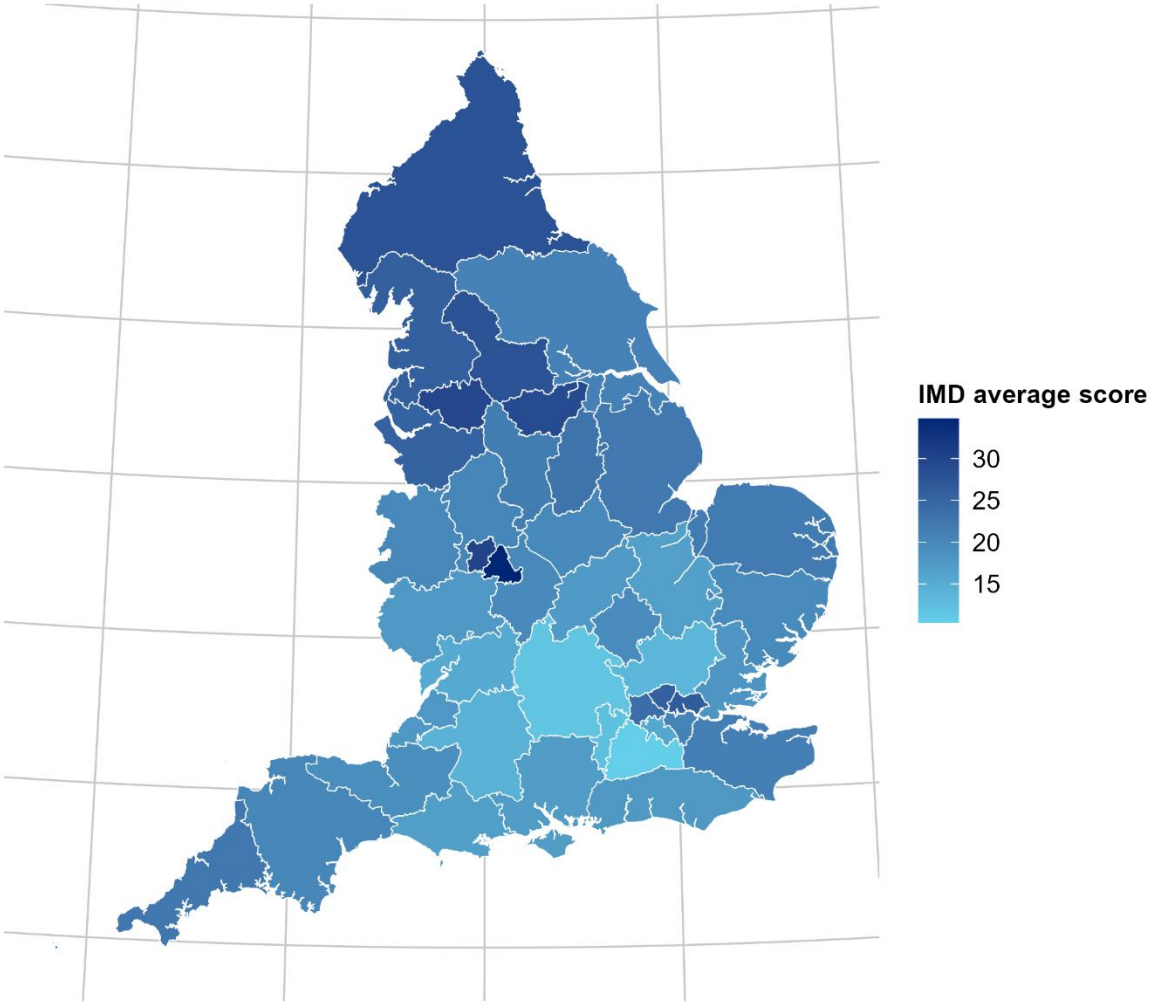
Source: CEPA analysis

9. LINK WITH DEPRIVATION

Based on available data, in this study, we have explored whether there is a systematic relationship (across ICBs) between the 'gap analysis' and the level of deprivation.[38]

The UK government defines deprivation as a state in which people lack resources across a range of areas that affect their living conditions. In this study, we use the Index of Multiple Deprivation (IMD): This is the official measure of relative deprivation in England, which estimates deprivation as a function of seven domains that impact an individual's living conditions (income, employment, education, health, crime, barriers to housing and services, and living environment).[39] The IMD provides a ranking of deprivation across neighbourhoods, which are aggregated to ICB level in this study. A higher IMD score corresponds to a higher level of deprivation.

Figure 9.1: IMD scores aggregated to ICB level



Source: CEPA analysis (see above). Higher values indicate higher deprivation

To explore whether there is a systematic relationship (across ICBs) between the 'gap analysis' and the level of deprivation, we regressed each of our five metrics against the average IMD score for each ICB. The results are presented in the table below.

[38] Analysis by other characteristics (e.g. gender, ethnicity, disability) would require more granular data (e.g. at patient level) than is publicly available, which is discussed within Section 10 of this report.
[39] English indices of deprivation 2025: statistical release - GOV.UK

Table 9.1: Analysis of statistical relationship between deprivation and the five 'gap analysis' metrics

Metric	Is there a statistically significant relationship?*	Direction of relationship	p value	Spearman's rho**	Significance
Cataract treatment gap index	Yes	Higher deprivation associated with higher relative treatment levels (lower treatment gap)	0.022	0.356	Significant at 5% level
AMD treatment gap index	Yes	Higher deprivation associated with higher relative treatment levels (lower treatment gap)	0.004	0.435	Significant at 5% level and at 1% level
Glaucoma treatment gap index	No	-	0.078	0.275	
Waiting list pressure (utilisation ρ)	No	-	0.616	-0.079	
Outpatient attendance gap	No	-	0.062	0.294	

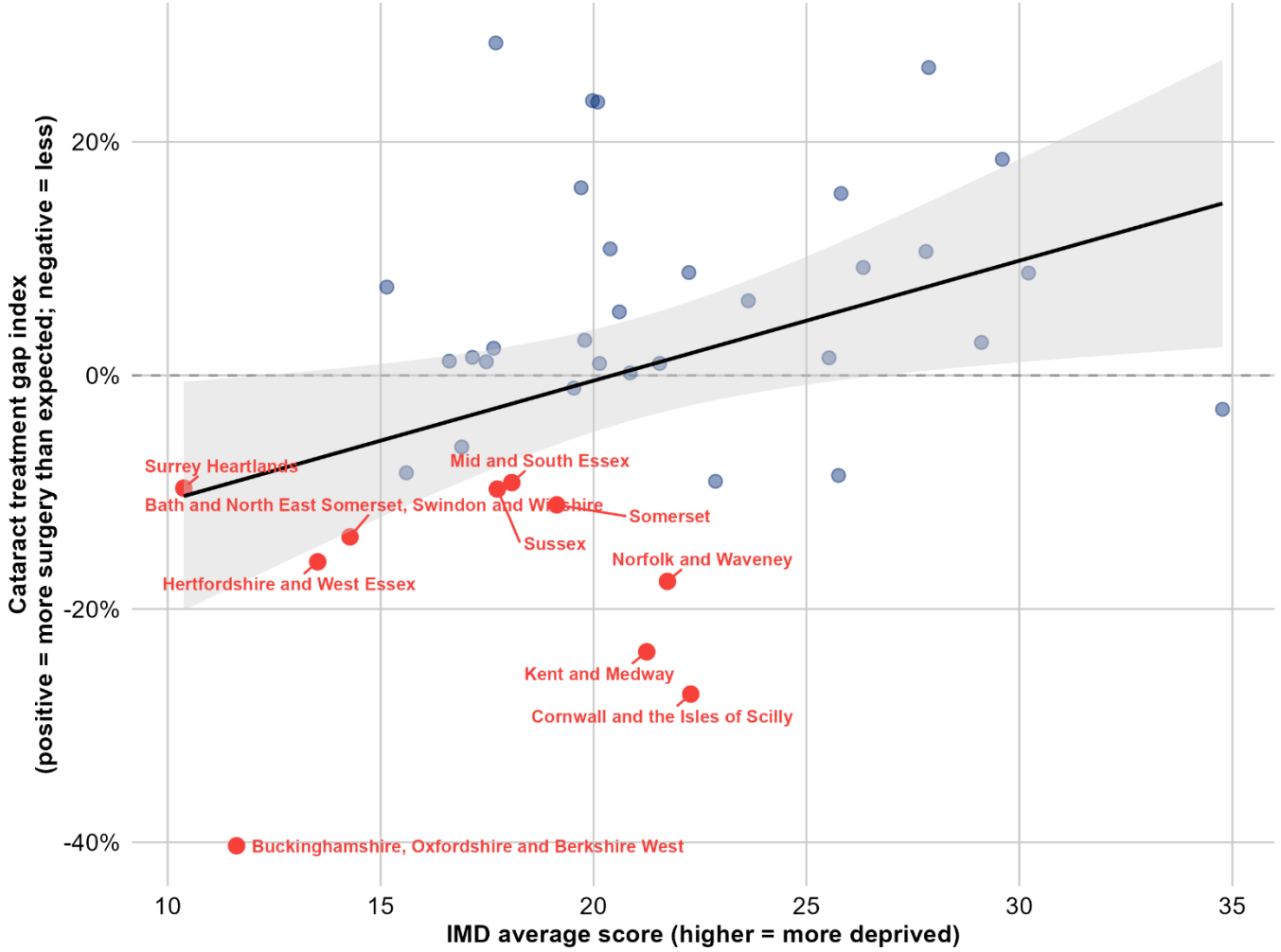
**Note: Statistical significance assessed at 5% level.*
*** Spearman's rho is a measure of the strength of the correlation, ranging from -1 to +1. Where higher deprivation is associated with lower treatment gap, that corresponds to a positive value for Spearman's rho, because a treatment gap (i.e. shortfall) is represented by a negative number.*

Overall, the relationship between deprivation and the 'gap analysis' is not definitive, when considering all of the five metrics 'in the round'. For two of the metrics – cataracts and AMD – there is a statistically significant relationship. However, for the other three metrics, there is not a statistically significant relationship.

Across the ICBs, on average, areas with lower deprivation exhibit larger gaps between estimated eye disease prevalence and observed treatment activity. Some of the Home Counties, among the least deprived areas in England, record relatively high treatment gaps for both cataract surgery and AMD injections. Meanwhile, ICBs with a higher level of deprivation, such as some large urban centres, have comparatively higher treatment rates relative to their modelled disease burden.

As an example, the chart below shows the relationship between deprivation (IMD) and the cataract treatment gap index. The upward slope of the line indicates that – on average across ICBs – an increase in deprivation is associated with higher treatment levels relative to prevalence estimates (and therefore a lower treatment gap).

Figure 9.2: Regression of cataract treatment gap index versus IMD scores, by ICB



Source: CEPA analysis

10. DISCUSSION

Gap analysis

First, the results in Chapter 6 present an important 'headline' finding – that the pressures on waiting lists for eye care (in terms of new referrals versus completed pathways) have risen for the vast majority of ICBs in 2025. Waiting list pressures are an indication of the balance between the demand for care and the availability of treatment and associated services.[40]. The change in pressures on waiting lists could be due to a range of factors, including those discussed below. The analysis in Chapter 6 (summarised in the table below) indicates that waiting list pressures have grown significantly.

*Table 10.1: ICBs grouped by changes in waiting list flows, 2025**

Additional referrals relative to completed pathways *	Number of ICBs
30% or more	3
20-30%	5
10-20%	12
0-10%	14
Negative (completed pathways exceed additional referrals)	8

* *Waiting list data is December 2024 – November 2025 inclusive.*

Second, across Sections 3-8 in this report, we have identified variation across ICBs in terms of the gap between prevalence estimates and treatment rates. The five 'gap analysis' metrics in this report (Sections 3-7) all provide slightly different rankings across ICBs. However, when considered in aggregate (Section 8), many of the ICBs with the largest relative treatment gaps appear to be clustered around (but outside of) London. It is important to interpret this finding with care and there are several possible explanations, including the following:

- **Variations in care pathways across ICBs**. ICBs (as well as eye care providers and individual clinicians) may have different thresholds for referrals and treatment, linked to clinical judgement, the availability of resources and/or other potential factors. This can create differences in treatment rates.
- **Variations in commissioning (including funding) across ICBs**. For example, the College of Optometrists has stated that a lack of funding risks creating and/or exacerbating shortfalls in access to eye care.[41] [42]
- **Variations in diagnosis**. If patients are diagnosed with greater accuracy this may reduce the need for precautionary treatment. If patients are diagnosed with greater frequency, this may increase the volume of referrals and treatments, by mitigating the potential for undiagnosed groups of patients.
- **Out-of-area patient flows**. Our analysis identifies that several ICBs outside of London (including the Home Counties) have relatively high treatment gaps overall (considering all five metrics). Given the availability of specialist services within London, this could be due to individuals travelling into London to access care. If this is occurring, it could be driven by demand-side factors (e.g. patients choosing to travel to attend specialist centres) and/or supply-side factors (e.g. a lack of access to care where individuals live). The data does not explicitly support this hypothesis, because for cataracts, AMD and glaucoma, *none* of the top ten ICBs in terms of highest treatment rates are in London. However, an analysis of patient level data and/or out of area flows would be required to test this hypothesis in more detail.
- **Unobserved variation in prevalence**. The prevalence estimates in this study are based on the UK Eye Care Data Hub, which are driven by age. While some academic studies indicate a relationship between prevalence and other demographic factors – such as ethnicity – the development of more refined prevalence estimates would require detailed econometric modelling across multiple variables. Overall, the

[40] 'Headline' NHS waiting list statistics (incomplete pathways) include adjustments and data validation, e.g. 'unreported removals'
[41] Lack of funding threatens commissioning of urgent care eye services in England - College of Optometrists
[42] Initial analysis does not indicate a statistically significant correlation between ICB treatment gaps and either ICB funding allocations (2025/26) or the change in ICB funding allocations (from 2024/25 to 2025/26)

age-based prevalence estimates in this study are likely to be a reasonable proxy for underlying prevalence, but refinements to the prevalence estimates could impact the results of the gap analysis. For example, the analysis in Sections 4 and 5 indicates that variation in treatment rates (rather than variation in prevalence) is the main driver of treatment gaps for AMD and glaucoma across ICBs. This finding could be more nuanced if prevalence estimates are built-up from a wider set of explanatory variables.

Some of these factors (above) are related. For example, if there are restrictions on the availability of diagnosis and/or treatment in a given ICB (including long waiting times), that may disincentivise individuals from presenting with potential eye health conditions, which would impact the rate of diagnosis – and therefore treatment. As a further example, optimised changes to care pathways can improve efficiency and increase the levels of treatment that are deliverable within a given funding envelope.

Third, it is important to recognise the limitations of the analysis in this study. In particular:

- **Data limitations**. The treatment gap calculations in this report are estimates, for the various reasons set out above. For glaucoma, prescribing data was used, and further analysis could consider developing ICB-level estimates for SLT for glaucoma. More generally, treatment data is subject to coding practices by providers. NHS referral to treatment (RTT) waiting list data does not measure treatment gaps for follow-up appointments and/or ongoing care (e.g. management of chronic disease).
- **Relative performance**. Aside from the waiting list analysis in Section 6, the other metrics in this study provide a *relative* gap analysis, by indicating how ICBs compare to one another. The metrics do not assess whether there is an *absolute* shortfall (or surplus) for a given ICB and condition. An *absolute* analysis would need to account for the precise definition of the prevalence metric. For example, the Eye Care Data Hub and RNIB have different estimates for the prevalence of cataracts. To develop findings in this area would require clinical input regarding treatment rates required with respect to specific prevalence levels.
- **Quality adjustments**. The analysis in this study considers the rates and volumes of treatments. It does not account for potential variations in the quality of care and/or differences in patient health outcomes.

Links with demographic characteristics

As discussed in Section 9, the link between the 'treatment gaps' and deprivation are only statistically significant for two out of five of the metrics in this study. As such, caution should be applied at this stage in drawing any conclusions regarding the relationship. However, as noted in Section 9, for the gap analysis for cataract surgery and AMD injections, less deprived ICBs do – on average – exhibit larger estimated treatment gaps.

One potential hypothesis is that deprived ICBs are disproportionately urban, and English cities host substantially denser specialist infrastructure than suburban or semi-rural areas. Moorfields Eye Hospital, for instance, was the first specialist eye hospital in the world, and its catchment area spans some of London's most deprived ICBs. This may inflate observed treatment volumes in urban areas relative to prevalence estimates. On the other hand, the Home Counties have less of a population mass with which to sustain equivalent specialist capacity locally.

A second potential rationale could be that prevalence estimates underestimate the true level of demand in deprived areas, which would understate the treatment gap. For example, diabetes and smoking are both more prevalent in deprived populations and are known risk factors for eye conditions:

- Diabetes is an established risk factor for AMD: a UK primary care study found Type 1 diabetes to be associated with an odds ratio of 2.25 for AMD overall, rising to 4.58 for wet AMD specifically[43], and a meta-analysis across 24 studies confirmed diabetes as a risk factor for AMD, with the association stronger for late-stage disease[44], the stage driving anti-VEGF demand.

[43] Fujimoto T, Inoue T, Kameda T, Kasaoka N, Inoue-Mochita M, Tsuboi N, and Tanihara H (2012). Involvement of RhoA/Rho-Associated Kinase Signal Transduction Pathway in Dexamethasone-Induced Alterations in Aqueous Outflow. Investigative Ophthalmology & Visual Science, 53(11), pp. 7097–7108. At: https://iovs.arvojournals.org/article.aspx?articleid=2212933

[44] Chen X, Rong SS, Xu Q, Tang FY, Liu Y, Gu H, Tam POS, Chen LJ, Brelén ME, Pang CP, and Zhao C (2014). Diabetes mellitus and risk of age-related macular degeneration: a systematic review and meta-analysis. PLoS ONE, 9(9), e108196. Available at: https://pubmed.ncbi.nlm.nih.gov/25238063/

- Smoking is similarly implicated: positive associations between both current and past smoking and AMD risk were observed in the same UK cohort. [45]

There is some wider evidence to support the relationship with deprivation. For cataracts, analysis of historic NHS surgical workload in England found a positive correlation between area deprivation and cataract surgery rates (r^2 = 0.24). This was partly attributed to there being higher cataract prevalence in deprived areas, although the research also concluded that urban areas attracted larger ophthalmic centres.[46]

Third, deprivation may be associated with the timing of patient presentation and diagnosis, which could affect the volume and nature of treatment activity undertaken subsequently. For example, a study on glaucoma clinics in the UK found an association between multiple deprivation and late presentation of glaucoma.[47] However, late presentation could potentially increase or reduce total treatment rates.

As noted above, the gap analysis in this study predominantly compares ICBs via a *relative* comparison, rather than an *absolute* assessment of whether there is a treatment gap versus prevalence. With respect to deprivation, our analysis does not quantify the absolute level of care required by individuals in deprived areas.

Summary of potential next steps

Summarising and building upon the sections above, there are a number of potential next steps arising from our research. This includes:

- Further analysis regarding the drivers of ICBs which exhibit the largest (and smallest) treatment gaps. As noted above, this could consider the extent of out-of-area patient flows (e.g. using patient level data) and the impact of local commissioning decisions.
- Analysis to consider whether ICBs have an *absolute* shortfall in treatment relative to prevalence. Largely, the research in this report presents a *relative* assessment across ICBs. Clinical input would be required to assess the *absolute* level and nature of health care services required within each ICB.
- A detailed analysis of prevalence estimates by ICB, including the extent to which they could and/or should be adjusted for deprivation and demographic characteristics (such as ethnicity and gender). For example, a study of glaucoma prevalence in the UK estimates that African populations have the highest overall prevalence, followed by Europeans, mixed/other groups, and then Asian groups.[48] For gender, several studies indicate that prevalence is similar for male and female groups (after controlling for other variables such as age), although female prevalence may be marginally higher for cataracts[49] and AMD[50].
- Use of patient-level data to obtain treatment data by demographic characteristic, to support more granular gap analysis linked to demographic characteristics.
- Further interrogation on the link with deprivation, including analysis of the factors driving the results presented in Section 9. This could also consider any existing barriers to individuals receiving diagnosis and/or treatment, and whether these barriers differ with deprivation.

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[45] Thornton, J., Edwards, R., Mitchell, P. et al. Smoking and age-related macular degeneration: a review of association. Eye 19, 935–944 (2005). https://doi.org/10.1038/sj.eye.6701978

[46] Keenan T, Rosen P, Yeates D, and Goldacre M (2007). Time trends and geographical variation in cataract surgery rates in England: study of surgical workload. British Journal of Ophthalmology, 91(7), pp. 901–904. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC1955650/

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[48] Meliante LA, Stuart KV, Luben RN, Nolan WP, Khawaja AP, Foster PJ. Current burden and future projections of glaucoma in the United Kingdom. Br J Ophthalmol. 2026 Jan 20:bjo-2025-328373. doi: 10.1136/bjo-2025-328373.

[49] Hashemi H, Pakzad R, Yekta A, Aghamirsalim M, Pakbin M, Ramin S, Khabazkhoob M. Global and regional prevalence of age-related cataract: a comprehensive systematic review and meta-analysis. Eye (Lond). 2020 Aug;34(8):1357-1370. doi: 10.1038/s41433-020-0806-3.

[50] Owen CG, Jarrar Z, Wormald R, Cook DG, Fletcher AE, Rudnicka AR. The estimated prevalence and incidence of late stage age related macular degeneration in the UK. Br J Ophthalmol. 2012 May;96(5):752-6. doi: 10.1136/bjophthalmol-2011-301109.

APPENDIX A: METHODOLOGY

This Appendix summarises the quantitative methodology underpinning the analysis in this report. All analysis has been undertaken at ICB level across the 42 ICBs in England, with aggregations to NHS England region and England totals where relevant. The analysis covers three specific conditions – cataracts, glaucoma, and age-related macular degeneration (AMD) – as well as an analysis of eye health care overall.

Data Sources

Dataset	Coverage	Used for
DHSC Health Vision Atlas 2024	FY 2022/23, Sub-ICB level	Cataract surgery rates (P4, aged 65+); wet AMD intravitreal injection rates (P1, aged 60+); vision outpatient attendance, crude and age-standardised (OP1, OP2)
NHS England RTT monthly CSVs	Monthly, Dec 2024 – Nov 2025	Ophthalmology waiting times, queue size, and utilisation by ICB
UK Eye Care Data Hub	Age-stratified prevalence rates	Condition prevalence by age for cataracts, glaucoma, and late AMD
ONS ICB population estimates	2022–2024, single-year ages	Population denominators for prevalence estimation and age standardisation
NHSBSA OpenPrescribing (BNF 11.6)	Organisation level, aggregated	Glaucoma prescribing volumes
MHCLG Index of Multiple Deprivation	LSOA level, aggregated to ICB	Deprivation correlation analysis
RNIB SLDT treatment volumes	2019/20, ICS level	Cross-check prevalence source

Prevalence estimates ('demand')

Prevalence was estimated for each ICB using age-stratified rates from the UK Eye Care Data Hub, applied to the ONS 2024 ICB population estimates:

1. Age-specific prevalence rates were mapped to single-year ages (0–90) by interpolating across the published age bands.
2. Expected cases per ICB were calculated as the sum of `population × prevalence_rate` across all single-year ages.
3. Prevalence per 1,000 population was then derived for each ICB.

Three age-filtered variants were produced to match supply denominators: all ages (glaucoma), aged ≥ 65 (cataracts, matching DHSC P4), and aged ≥ 60 (AMD, matching DHSC P1). The distribution of prevalence based on the UK Eye Care Data Hub and ONS data was cross-checked with RNIB-derived estimates.

Treatment Activity ('supply')

Treatment data is for the financial year 2022/23 as follows:

- **Cataracts:** DHSC P4 cataract surgery count per 1,000 population aged 65+. Sub-ICB data were aggregated to ICB by summing numerators and denominators, then recomputing rates. The numerator is the number of hospital admissions for cataracts, which are admissions with the procedure "Phacoemulsification of lens" or "Insertion of prosthetic replacement for lens NEC". The denominator is GP registered persons at the age band.
- **Wet AMD:** DHSC P1 intravitreal injection count per 1,000 population aged 60+. Same aggregation approach. Labelled as wet AMD throughout (injections only). This includes both hospital admissions and outpatient appointments, including "Injection into vitreous body" and "Injection of therapeutic substance into posterior segment of eye".

- **Glaucoma:** NHSBSA OpenPrescribing glaucoma treatment items (BNF chapter 11.6), aggregated from prescribing organisation to ICB via a Sub-ICB to ICB crosswalk.
- **Vision outpatient attendances:** DHSC OP1 directly standardised rates (DSR) per 100,000 population (converted to per 1,000). Sub-ICB DSRs were population-weighted to ICB level. DHSC outpatient attendances describes the number of attendances to hospital for vision specialties, which are those falling under HES outpatient data field 130 (Ophthalmology), 216 (Paediatric Ophthalmology), 460 (Medical Ophthalmology), 655 (Orthoptics) and 662 (Optometry).

Treatment Gap Analysis

A **treatment gap index** was computed for each condition at ICB level using a consistent formula throughout:

National rate = total actual supply (England) ÷ total estimated prevalence (England)

Expected supply for ICB *i* = local estimated prevalence × national rate

Treatment gap index = (actual supply − expected supply) ÷ expected supply

A negative index indicates fewer treatments than expected given estimates of prevalence for that ICB. A positive index indicates more treatments than expected. An ICB at the national average has an index of zero.

Condition	Actual supply	Demand denominator
Cataracts	DHSC P4 surgery count	Eye Care Data Hub prevalence, aged ≥ 65
Glaucoma	NHSBSA prescribing items (and cost, separately)	Eye Care Data Hub prevalence, all ages
Wet AMD	DHSC P1 injection count	Eye Care Data Hub late AMD prevalence, aged ≥ 60

For AMD, supply is wet-AMD-only (injections); demand includes all late AMD (wet and dry). Whilst this affects absolute rates, cross-ICB rankings remain valid.

The 'treatment gap' for outpatient attendances is based on ICB age-standardised outpatient attendances minus the England Directly Standardised Rate (DSR) benchmark. No further standardisation is needed as the rates are already age-adjusted.

Ophthalmology Waiting Times and Queue Utilisation

Data source is NHS England RTT monthly CSVs, filtered to ophthalmology (treatment function code C_130), covering a 12-month window (December 2024 – November 2025), ending at the latest available period. Aggregated from Sub-ICB to ICB level by commissioner.

Referral to Treatment (RTT) Part Types

Part type	Meaning
Part 2	Incomplete pathways — patients still waiting at month end (queue stock)
Part 1A + 1B	Completed pathways — admitted and non-admitted (completions, μ)
Part 3	New RTT periods — new clock starts in the month (arrivals, λ)

Key Metrics

Stock metrics (waiting list size, wait bands) are arithmetic means across the 12-month window. Percentages are re-derived from averaged numerators and denominators. Utilisation ρ is computed as mean(λ) ÷ mean(μ).

Metric	Definition
Total waiting	Sum of Part 2 (incomplete) pathways
% within 18 weeks	Patients waiting < 18 weeks ÷ total waiting
% over 52 weeks	Patients waiting > 52 weeks ÷ total waiting

Metric	Definition
Arrivals (λ)	New RTT periods, Part 3 Total
Completions (μ)	Admitted + non-admitted completions, Part 1A + 1B
Utilisation (ρ)	λ ÷ μ
Net queue change (ΔQ)	λ − μ

When ρ > 1, demand exceeds throughput and the waiting list is growing. When ρ < 1, the list is shrinking.

ρ provides an indicative measure of demand relative to throughput, rather than a formal queueing model. RTT clock suspensions, pathway re-starts, and non-clinical pathway closures mean that the precise relationship between referral inflows and queue dynamics is more complex than is implied by the ratio alone. Data is aggregated by commissioning ICB (the organisation responsible for funding the pathway), rather than by patient residence or provider location, so treatment data reflects commissioning rather than the geographic distribution of patients.

Technical notes

- Suppressed cells (fewer than 5 patients in source data) are treated as zero.
- % within 18 weeks uses patients with a known RTT clock start date only, which may modestly overstate performance relative to NHS England's published statistics.
- ρ is an indicative metric, not a formal queueing model. As noted above, RTT clock suspensions, pathway re-starts, and non-clinical closures affect the true relationship between arrivals and queue growth.
- Geography is commissioning accountability – data is attributed to the ICB responsible for commissioning the pathway, not patient residence or provider location.
- Annual average is unweighted; ICBs with fewer than 12 months of data are averaged over the months present.

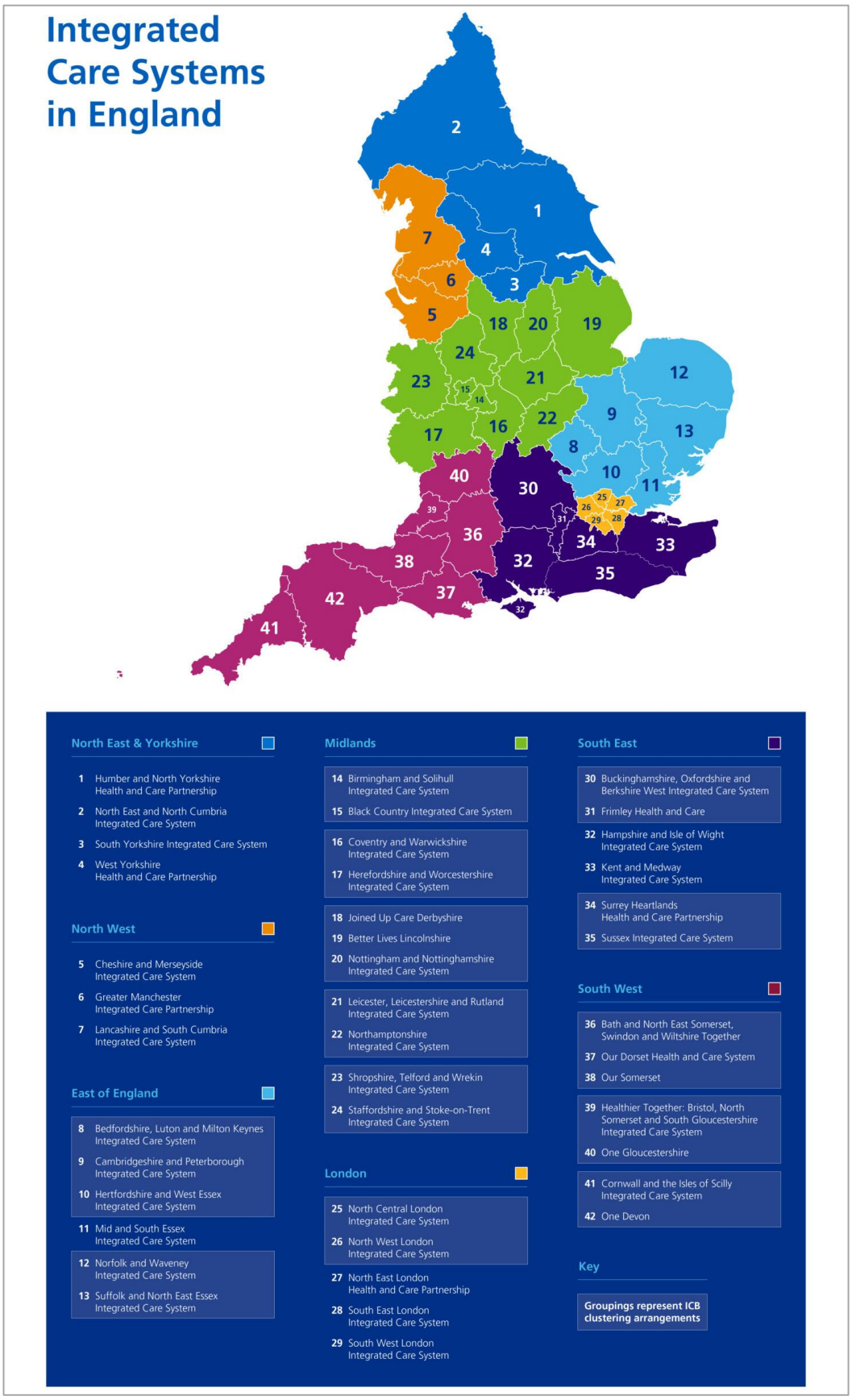
Geography and Data Currency

All outputs use ONS ICB geography codes (ICB23CD) for the 42 ICBs in England. Sub-ICB administrative data was aggregated to ICBs using official ONS lookup tables, with manual corrections applied for known code changes.

Source	Period
DHSC Vision Atlas supply data	FY 2022/23
NHS RTT waiting times	12-month average (Dec 2024 – Nov 2025)
Eye Care Data Hub prevalence rates	Cross-sectional (undated)
ONS population estimates	2024 mid-year
Glaucoma prescribing (OpenPrescribing)	Aggregated from monthly data
IMD deprivation scores	2025 (most recent release)

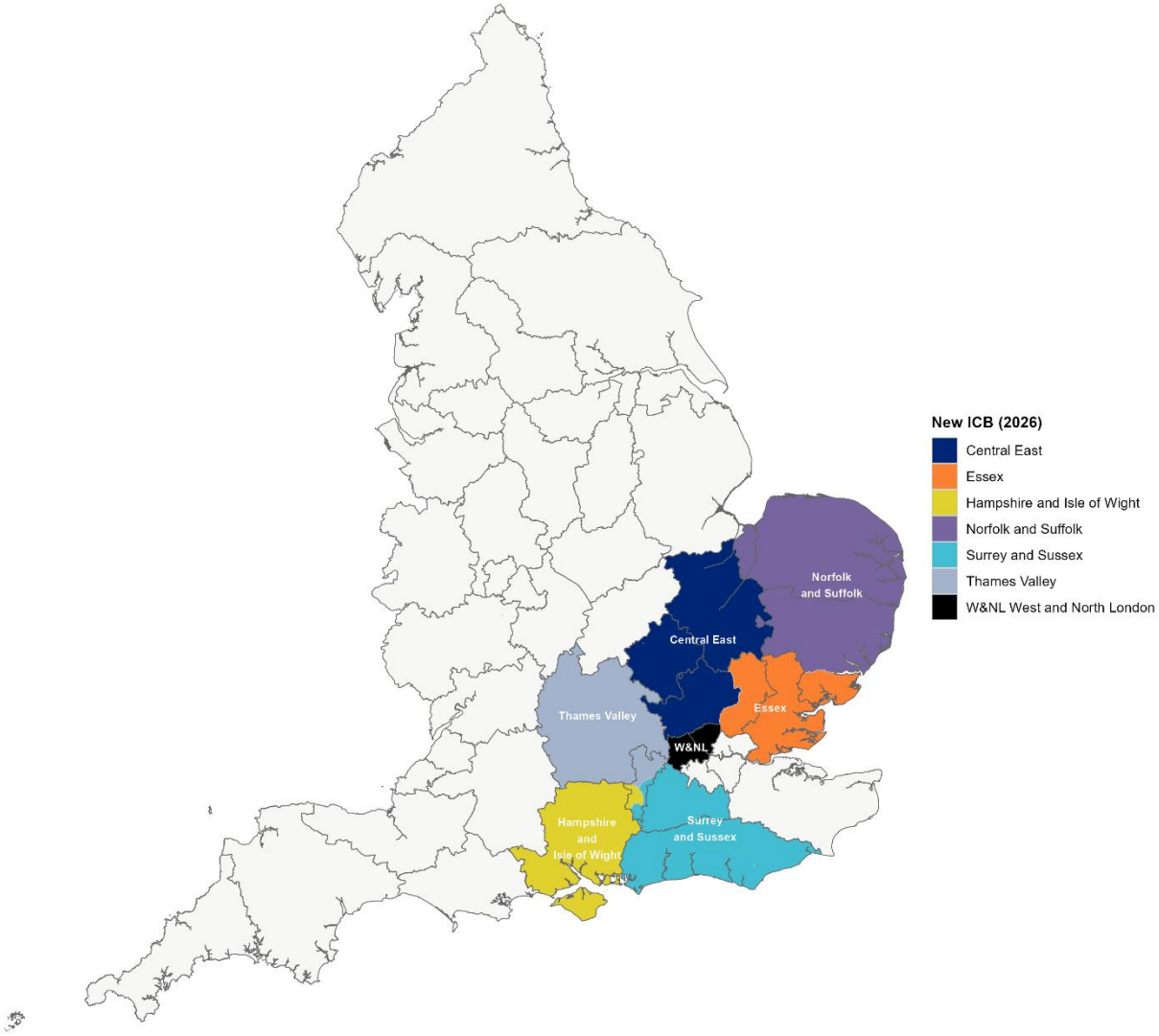
APPENDIX B: ICB BOUNDARIES

Figure B1: ICB boundaries in England pre-April 2026



Source: [NHS England: Integrated care]

*Figure B2: Approximate ICB boundaries for new (merged) ICBs from April 2026**



**Source: CEPA Analysis. Official boundaries are expected to be released April-May 2026.*

APPENDIX C: TABLE OF RESULTS, BY ICB

ICB: Post-April 2026	ICB: Pre-April 2026	Mapping	Overall (method 1)	Overall (method 2)	Cataracts	AMD	Glaucoma	Waiting lists	Outpatients
Bath and North East Somerset, Swindon and Wiltshire	Bath and North East Somerset, Swindon and Wiltshire	Unchanged	●		●				
Birmingham and Solihull	Birmingham and Solihull	Unchanged							
Black Country	Black Country	Unchanged							
Bristol, North Somerset and South Gloucestershire	Bristol, North Somerset and South Gloucestershire	Unchanged					●		
Central East	Bedfordshire, Luton and Milton Keynes	Full	●	●		●	●	●	
	Cambridgeshire and Peterborough	Full							●
	Hertfordshire and West Essex	*Partial**	●	●	●	●		●	
Cheshire and Merseyside	Cheshire and Merseyside	Unchanged		●		●			
Cornwall and the Isles of Scilly	Cornwall and the Isles of Scilly	Unchanged			●				●
Coventry and Warwickshire	Coventry and Warwickshire	Unchanged						●	
Derby and Derbyshire	Derby and Derbyshire	Unchanged	●	●			●		
Devon	Devon	Unchanged						●	
Dorset	Dorset	Unchanged				●			●
Essex	*Hertfordshire and West Essex*	*Partial**	●	●	●	●		●	
	Mid and South Essex	Full	●	●	●	●		●	●
	Suffolk and North East Essex	*Partial**							
Gloucestershire	Gloucestershire	Unchanged					●		
Greater Manchester	Greater Manchester	Unchanged							
Hampshire and Isle of Wight	*Frimley*	*Partial**		●			●		
	Hampshire and Isle of Wight	Unchanged	●	●					●
Herefordshire and Worcestershire	Herefordshire and Worcestershire	Unchanged							●
Humber and North Yorkshire	Humber and North Yorkshire	Unchanged							
Kent and Medway	Kent and Medway	Unchanged		●	●				●
Lancashire and South Cumbria	Lancashire and South Cumbria	Unchanged				●		●	
Leicester, Leicestershire and Rutland	Leicester, Leicestershire and Rutland	Unchanged				●			
Lincolnshire	Lincolnshire	Unchanged							
Norfolk and Suffolk	Norfolk and Waveney	Full			●				
	Suffolk and North East Essex	*Partial**							
North East London	North East London	Unchanged							
North East and North Cumbria	North East and North Cumbria	Unchanged					●		●
Northamptonshire	Northamptonshire	Unchanged						●	
Nottingham and Nottinghamshire	Nottingham and Nottinghamshire	Unchanged							
Shropshire, Telford and Wrekin	Shropshire, Telford and Wrekin	Unchanged							
Somerset	Somerset	Unchanged			●				
South East London	South East London	Unchanged							
South West London	South West London	Unchanged	●			●	●		
South Yorkshire	South Yorkshire	Unchanged							
Staffordshire and Stoke-on-Trent	Staffordshire and Stoke-on-Trent	Unchanged							
Surrey and Sussex	*Frimley*	*Partial**		●			●		
	Surrey Heartlands	Full	●	●	●	●	●	●	●
	Sussex	Full			●				
Thames Valley	Buckinghamshire, Oxfordshire and Berkshire West	Full	●	●	●	●		●	●
	Frimley	*Partial**		●			●		
West Yorkshire	West Yorkshire	Unchanged					●		
West and North London	North Central London	Full	●	●				●	
	North West London	Full					●		

Notes: Red dots designate ICBs with the highest relative treatment gap for each metric. 'Full' indicates an ICB that is fully mapped to a new ICB post-April 2026. 'Partial' indicates an ICB that is split across multiple new ICBs post-April 2026. 'Overall method 2' includes Frimley.*

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