

Eye Health in the West Midlands

A summary descriptive analysis of eye health activity

Background and purpose

Eye health and eye care services have historically had a lower profile compared to many other specialties. Arguably this remains the case and there is a view that the importance of eye health has been underrepresented in many STP plans. This is, however, beginning to change and number of recent publications have highlighted the need for change in order to respond to the particular challenges faced within eye health.

Alongside these externally driven developments the West Midlands Local Eye Health Network (WM LEHN) are working to develop and promote an understanding of the importance of eye health and a greater awareness of the range and volume of activity relating to eye health that takes place across the West Midlands every year. From this starting position the LEHN are aiming to engage STP's and ICS's across the region in a process of change to improve, enhance and begin to reconfigure eye health services across the region to meet current and future challenges.

The Strategy Unit have been commissioned to support this work and this report is the output from the first stage of this work. Its aim is to provide a detailed quantitative overview of nature and scale of current and historical acute eye health related activity across the region.

It will provide indications of how demand may change over the next few years as a result of expected changes in population size and structure as well as other non demographic factors. It also begins to illustrate some of the connections between sight loss and blindness and how it impacts on other areas of healthcare utilisation.

Alongside this descriptive analysis the Strategy Unit are also carrying out a qualitative review of the literature to summarise the evidence about the wider implications of poor eye health, the interactions between eye health and other diseases or demands for healthcare. In addition it will identify and describe current state and strategic opportunities relating to eye health service provision, organisation of services, new interventions and treatments.

Taken together this work will provide an informed basis for discussions, to be facilitated by the Strategy Unit, with clinical and managerial leaders across the West Midlands. The purpose of which will be to identify, agree and prioritise some of the key opportunities for eye health across the region. For example the process might explore opportunities arising from different ways of organising services, opportunities for efficiency, opportunities arising from new interventions or treatments etc.

Summary and key findings

The analysis illustrates the scale and nature of current eye related acute healthcare activity across the West Midlands. Analysis of historical activity data shows there have been some very significant changes in volume and type of activity carried out across the region. The following points summarise the key findings from this analysis:

- Non elective (emergency) inpatient activity has seen only a modest increase in recent years
- Population projections suggest continued modest levels of non elective inpatient growth in future
- Elective inpatient activity has seen very significant expansion to levels that are nearly double those seen just ten years ago.
- Inpatient efficiency has improved such that most elective patients no longer require an overnight stay
- The average cost of the second highest volume elective procedure (injections into vitreous body) has fallen significantly
- Very considerable growth has been seen in elective admissions for macula degeneration and other retinal disorders and the procedures associated with these conditions

Summary of key findings

- Continued very high levels of growth in elective admissions is likely for some high volume conditions
- People from areas of high deprivation are less likely to be admitted for an elective procedure with the notable exception of treatment for diabetic retinopathy.
- Outpatient attendances have also increased very considerably in recent years.
- Outpatient referrals from optometrists have increased whilst fewer now come from GPs
- Evaluation of retina saw the largest growth and now accounts for around half of all OP attendances where a procedure was recorded.
- There was also considerable growth in the number of OP attendances where an “operation on vitreous body” was carried out.
- Growth forecasts based on historical trends suggest that continued high levels of growth in outpatient appointments is a plausible scenario.
- People with sight loss or blindness appear to be more likely to be admitted as an emergency

Non-elective inpatient admissions

Non elective activity levels and demographic profile of patients

Non elective (emergency) admissions have seen only marginal growth in recent years showing a compound annual growth rate of just 1.24%.

13% of non elective admissions were for young children. And more than half of admissions were for those aged under 50. Less than 1 in 5 admissions were for people aged over 75.

Figure 1 Trends in non elective admissions

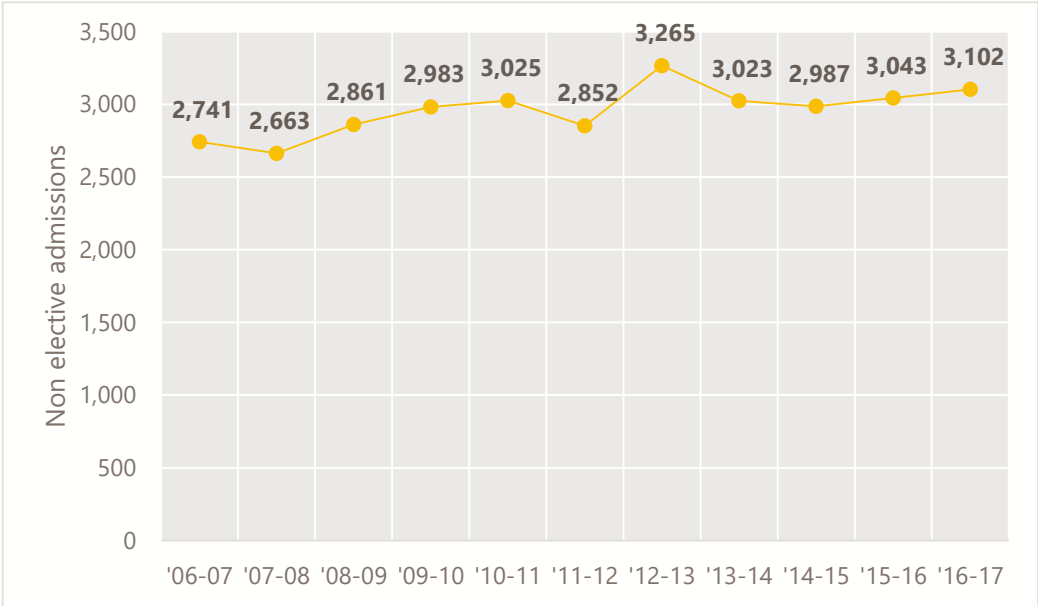
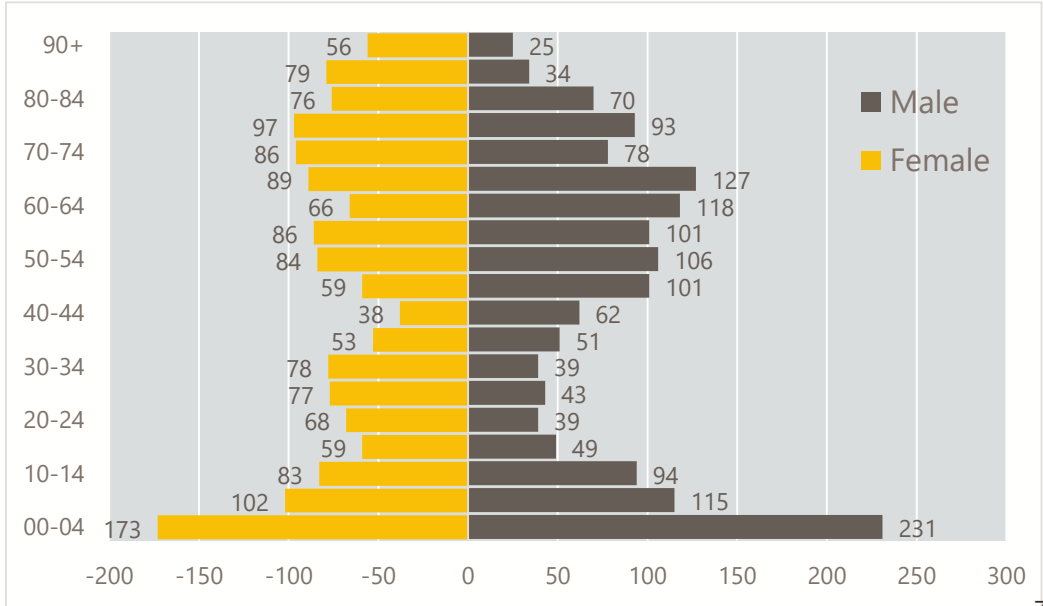


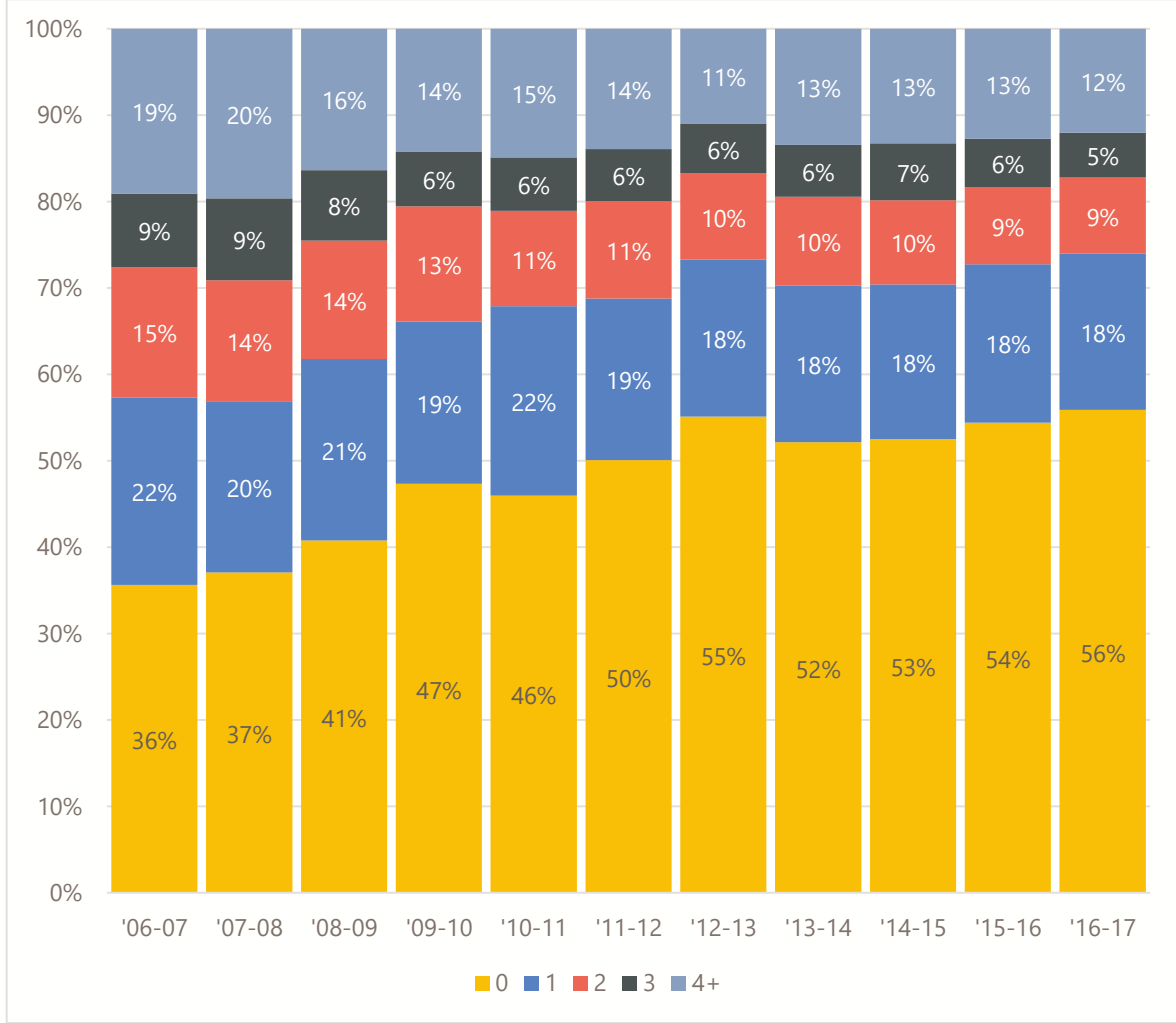
Figure 2 Age structure of non elective admissions (2016/17)



Length of Stay

There were significant efficiency improvements in relation to length of stay between 2006 and 2012. However in more recent years there has been only marginal further improvement suggesting the limits of what may be easily achievable have been achieved.

Figure 3 Trends in elective admission length of stay (LOS)



Non elective costs and admission source

Figure 4 shows that despite the growth in activity overall expenditure on non elective admissions has fallen considerably over the last five years. It has fallen from a peak of around £4.2m to less than 3.5m in 2016/17. The average cost per admission has fallen by around 17% since 2011/12.

Figure 5 shows that in recent years there has been a considerable reduction in the proportion of non elective admissions being referred from consultant clinics and a corresponding growth in admissions referred from general practice.

Figure 4 Trends in expenditure and average costs

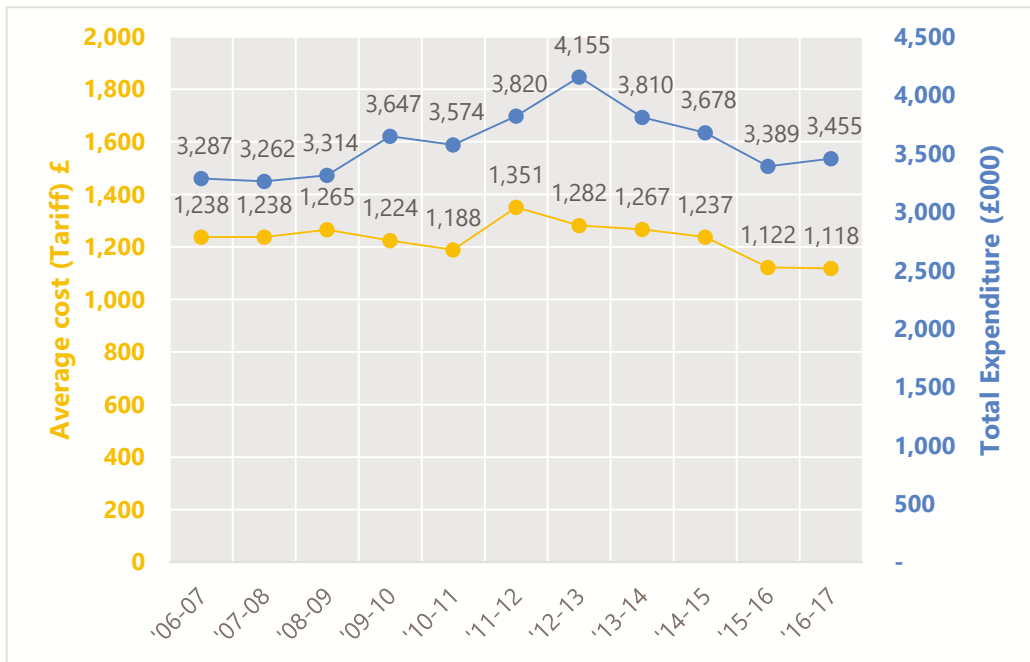
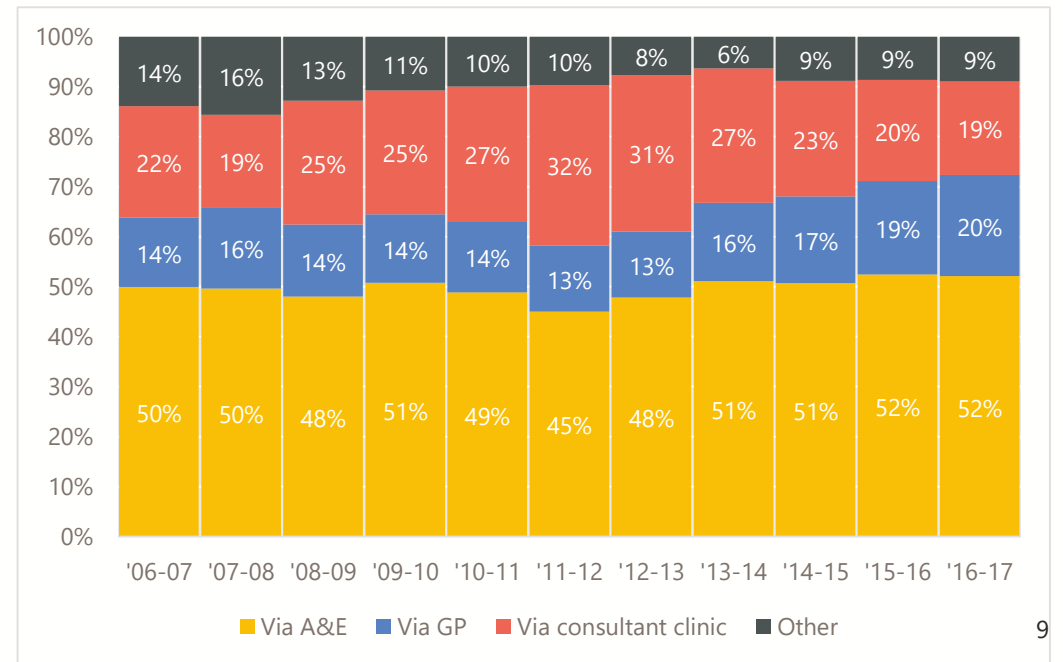


Figure 5 Trends in admission source



Non elective admissions - diagnoses and procedures

The most common diagnosis for non elective admission was for an indefinite diagnosis of "Visual disturbances". The large majority of these admissions had no procedure carried out other than diagnostics.

Figure 6 2016/17 NEL admissions by diagnosis

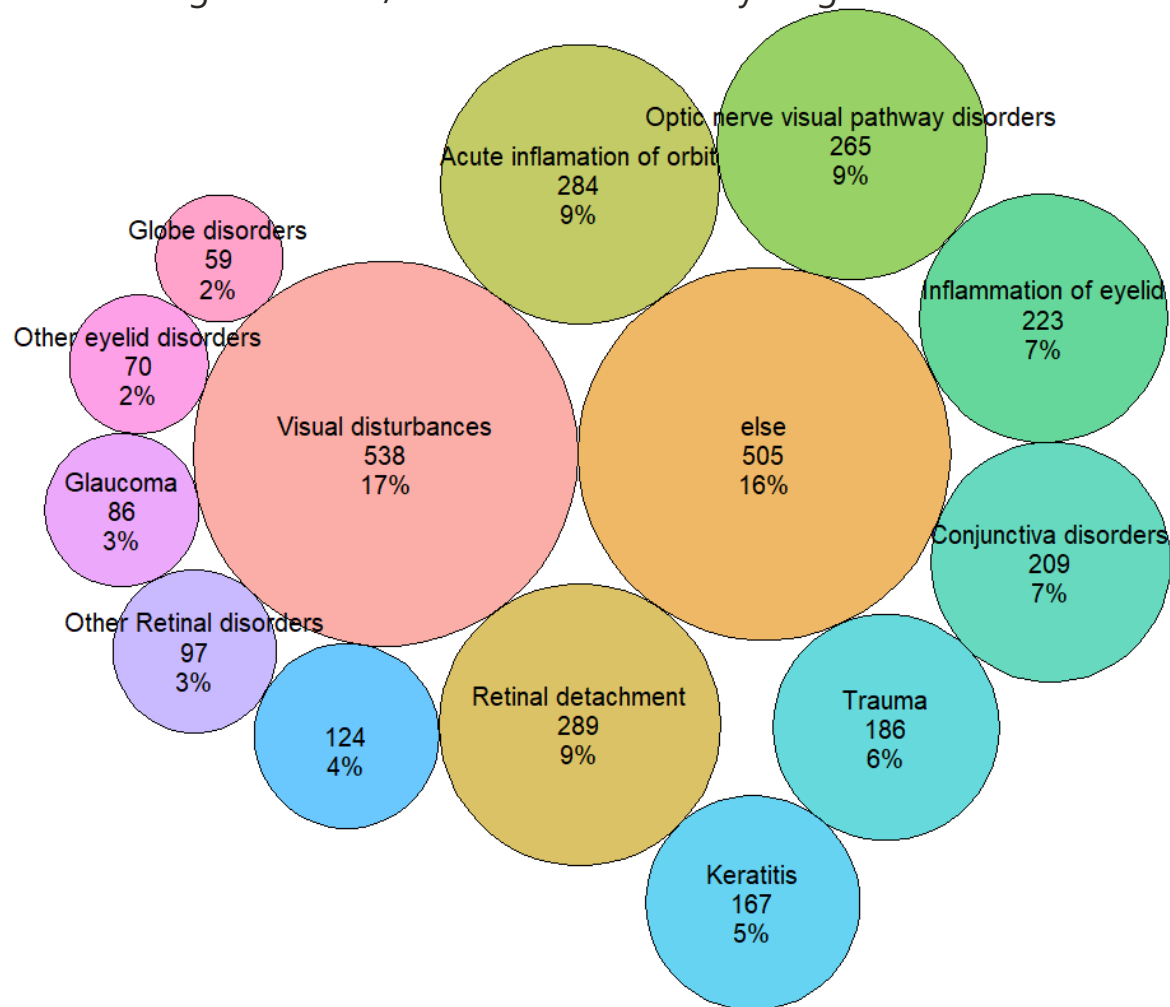
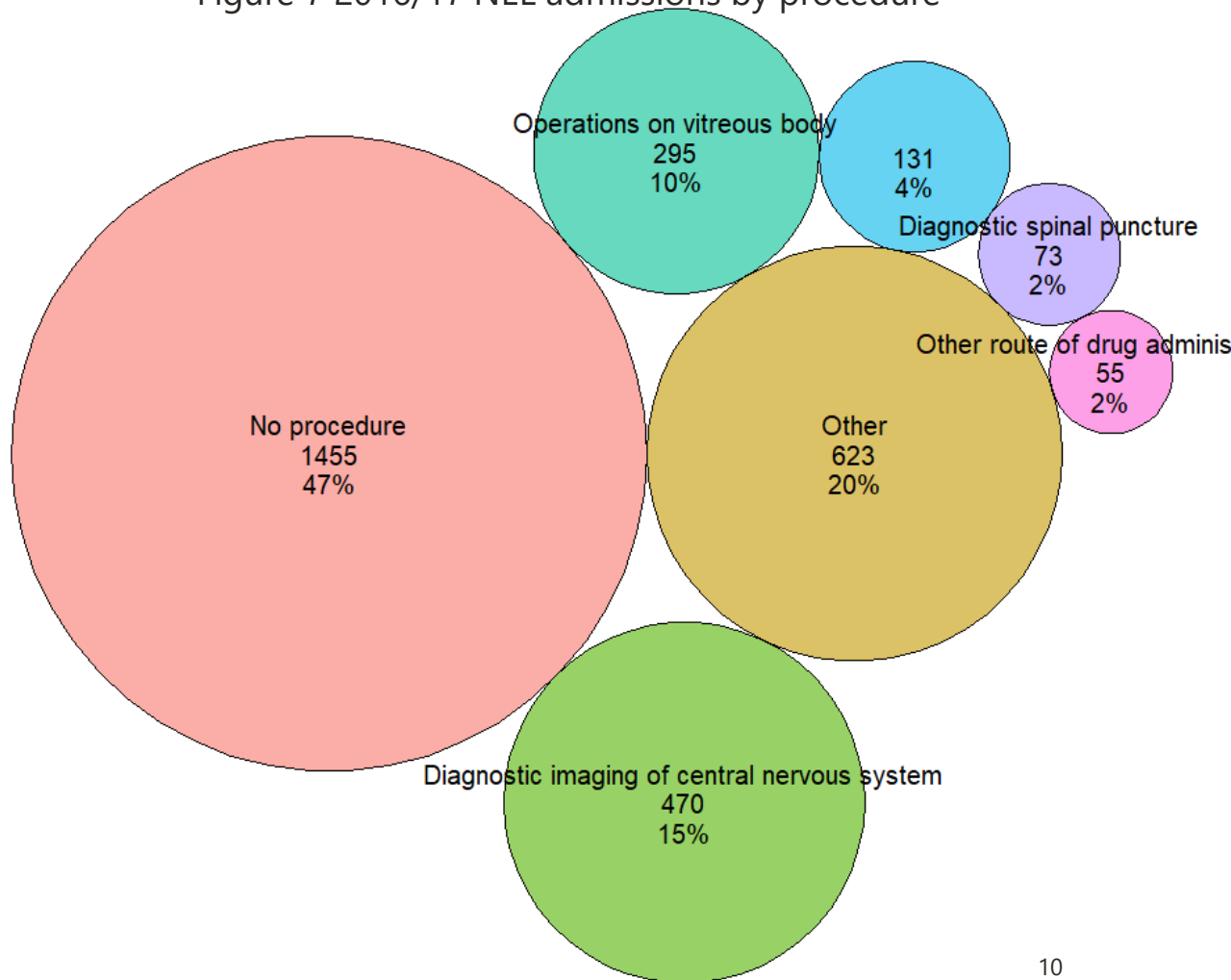


Figure 7 2016/17 NEL admissions by procedure



Trends and projections in non elective admissions

The following charts illustrate trends in activity over the last 10 years and also show projected activity **based on applying age and gender specific sub national population projections to the 2016/17 baseline dataset**. The example below illustrates how the charts should be interpreted.

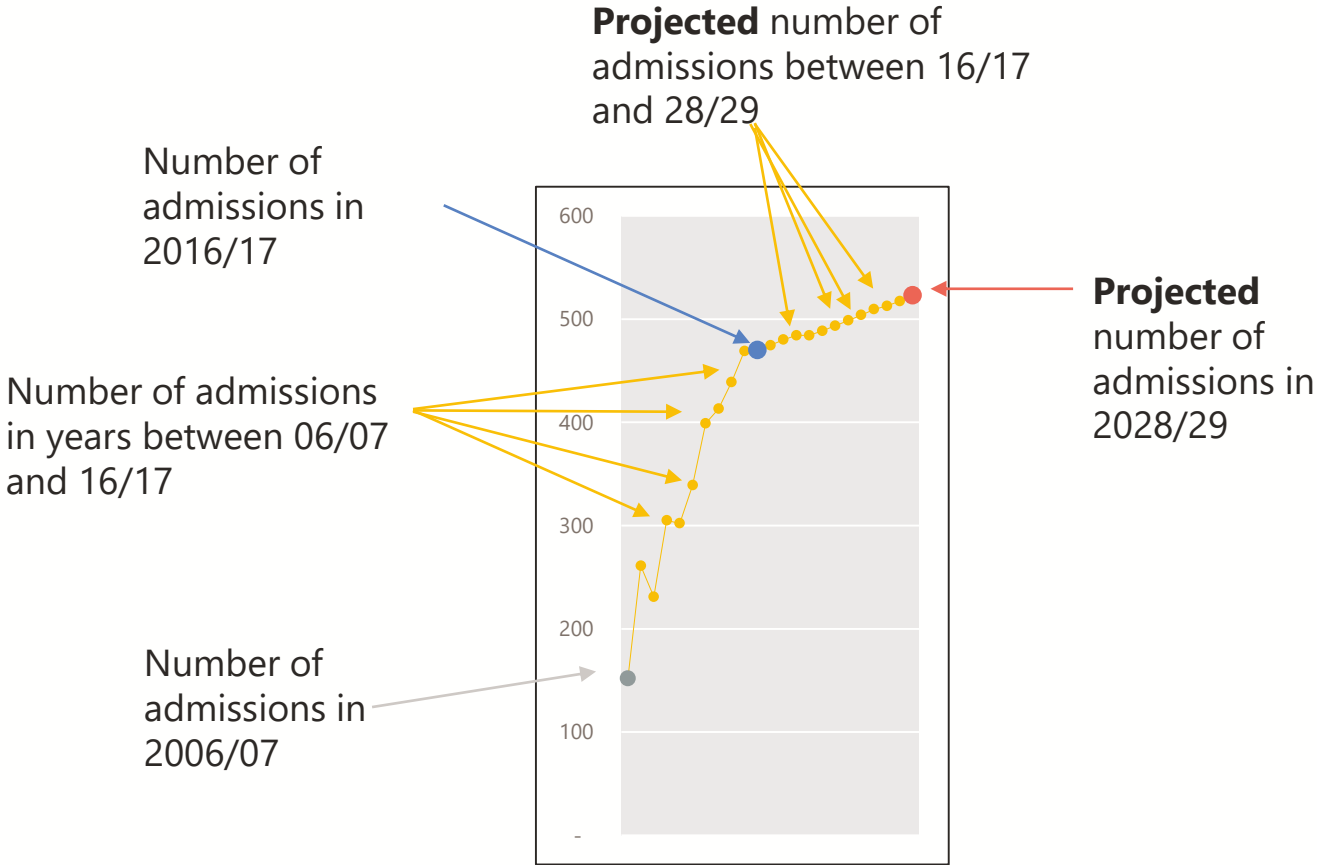


Figure 8 shows trends and forecasts in non elective admissions split by primary diagnosis.

Overall this typical approach to forecasting future activity would estimate that over the next 10 years the number of non elective admissions would increase from **3,102** admissions in 16/17 to around **3,410** in 2028/29 (**9.9%** over 11 years) which is broadly in line with levels of historical growth seen in slide 7.

For individual diagnoses some more notable growth has been seen. Admissions for visual disturbances, optic nerve pathway disorders and inflammation of eyelid have all increased considerably.

Figure 8 non elective admission trends and forecasts by primary diagnosis

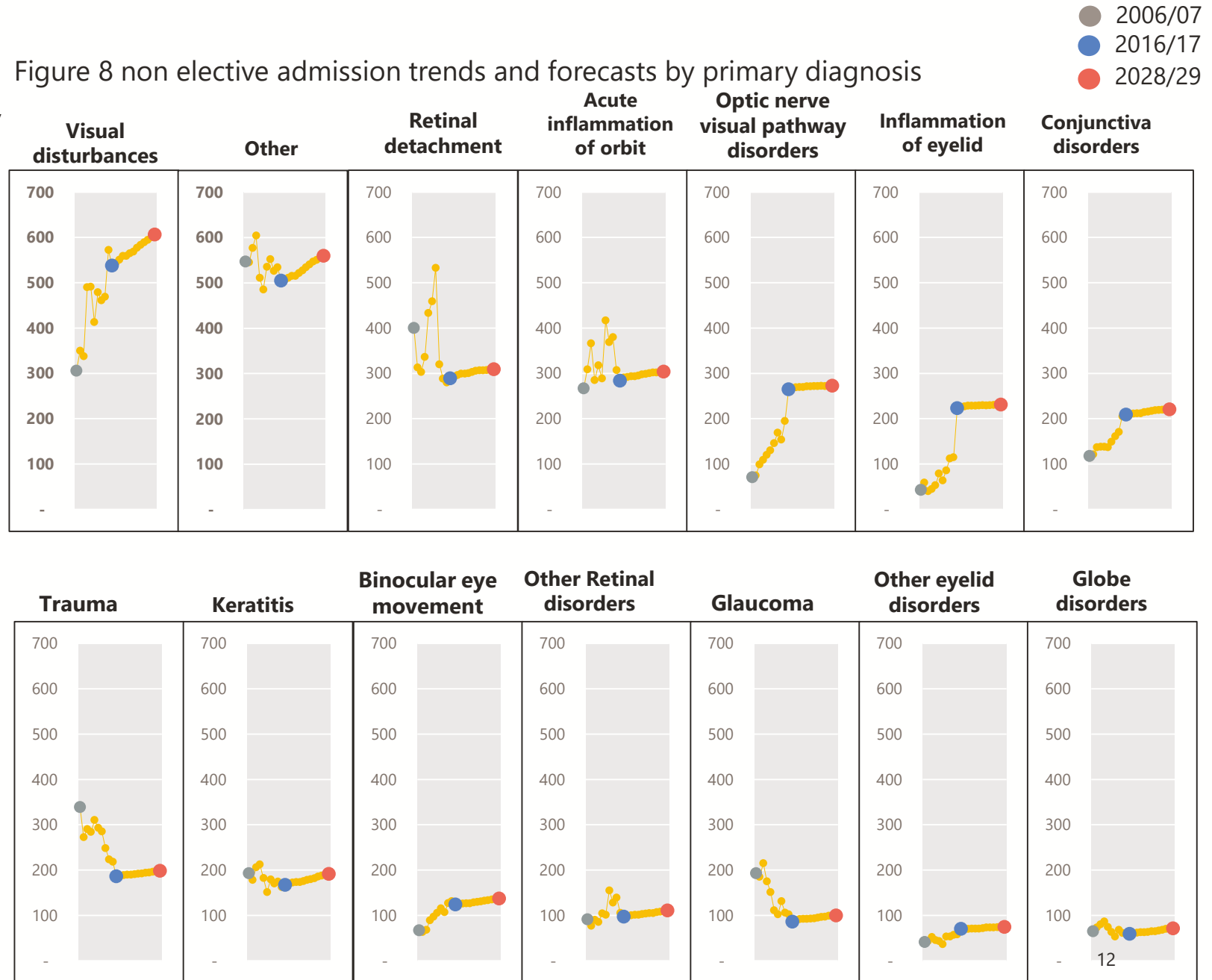
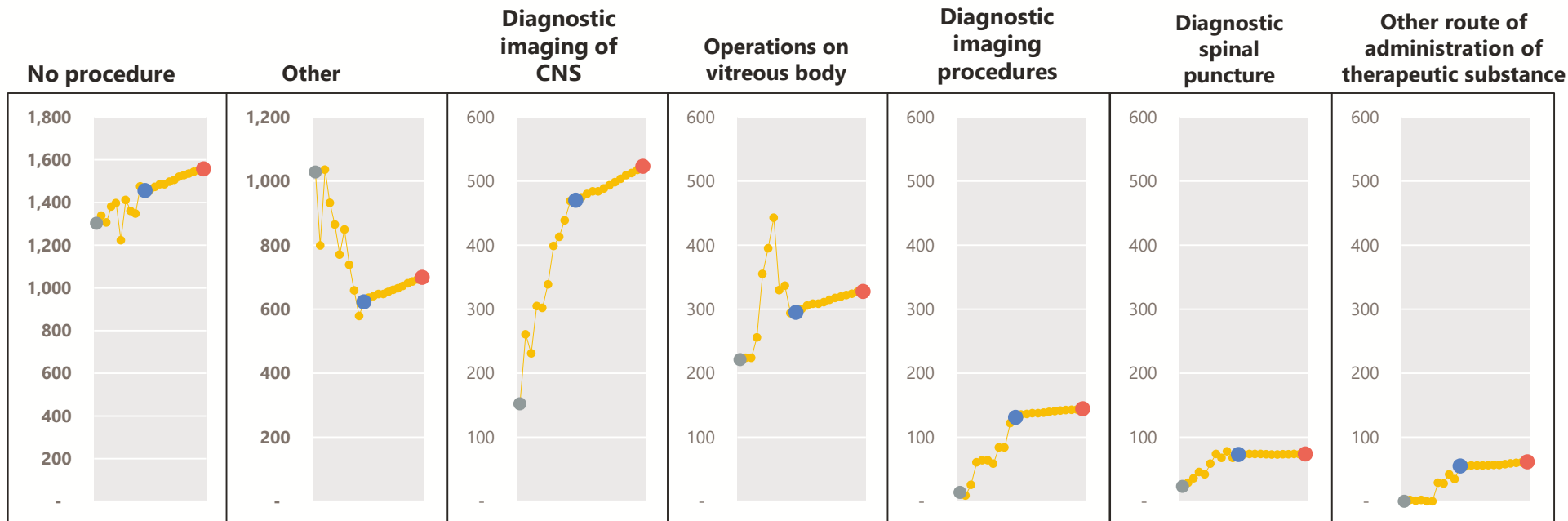


Figure 9 illustrates trends and forecasts by procedure. Over the last few years there has been considerable growth in the number of non elective admissions where the primary procedure is diagnostic in nature alongside a corresponding reduction in "Other" operations. A more detailed analysis could serve to better understand the reasons for these changes which may reflect real changes in clinical activity resulting from changes in guidance or the availability of new treatments or technology or else they may more simply reflect changes in recording practice. However such an analysis is beyond the scope of this descriptive work.

Figure 9 non elective admission trends and forecasts by procedure



Elective inpatient admissions

Elective activity levels and demographic profile of patients

Across the West Midlands eye related elective inpatient admissions have risen rapidly over the last 10 years. There were nearly twice as many admissions seen in 2016/17 as there were in 2006/07 and there is little indication that growth is abating.

The large majority of elective activity is for patients over 65. Overall there were more admissions for women (54%) although for under 60 year olds around 54% of admissions were for men.

Figure 10 Trends in elective admissions

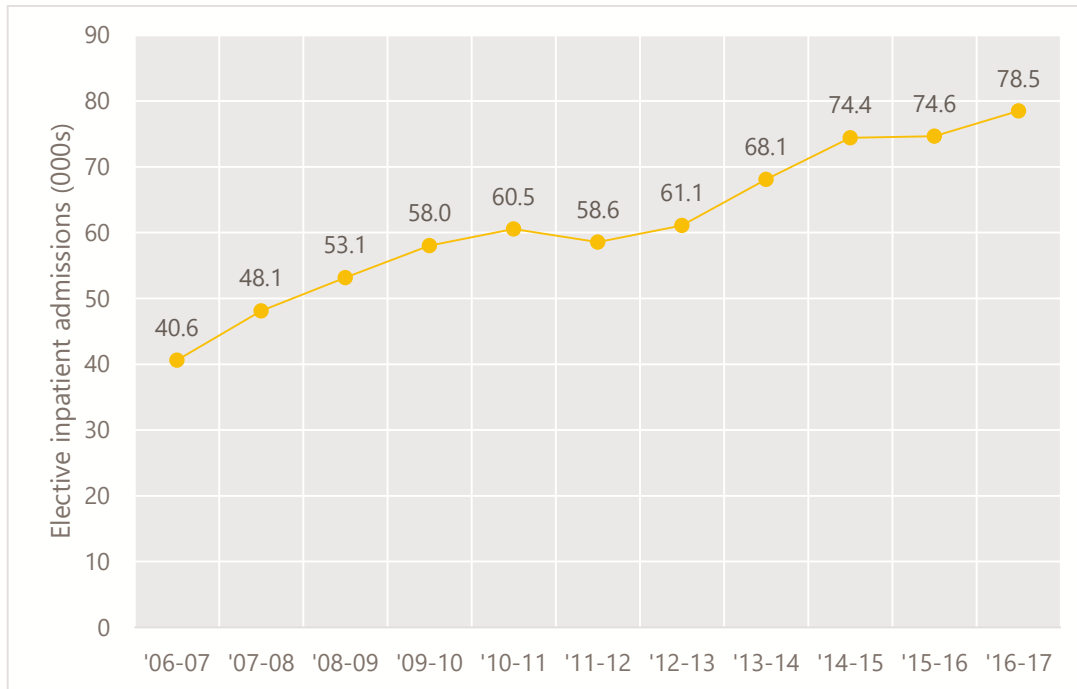
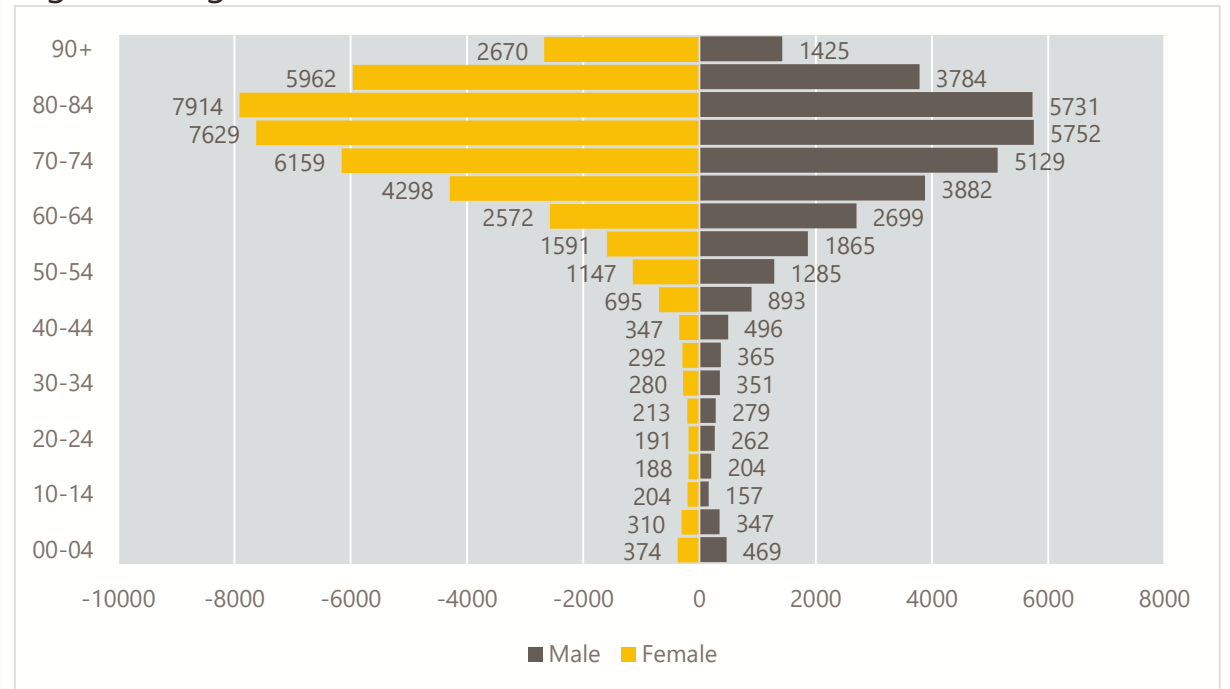


Figure 11 Age structure of elective admissions (2016/17)



Admission type and length of stay

The majority of elective admissions are now admitted for day surgery. Correspondingly only a very small number of cases now stay in hospital for more than 1 night. As with non elective admissions most of the improvements were achieved between 2006 and 2012 with only marginal subsequent improvements.

Figure 12 Trends in elective admission type

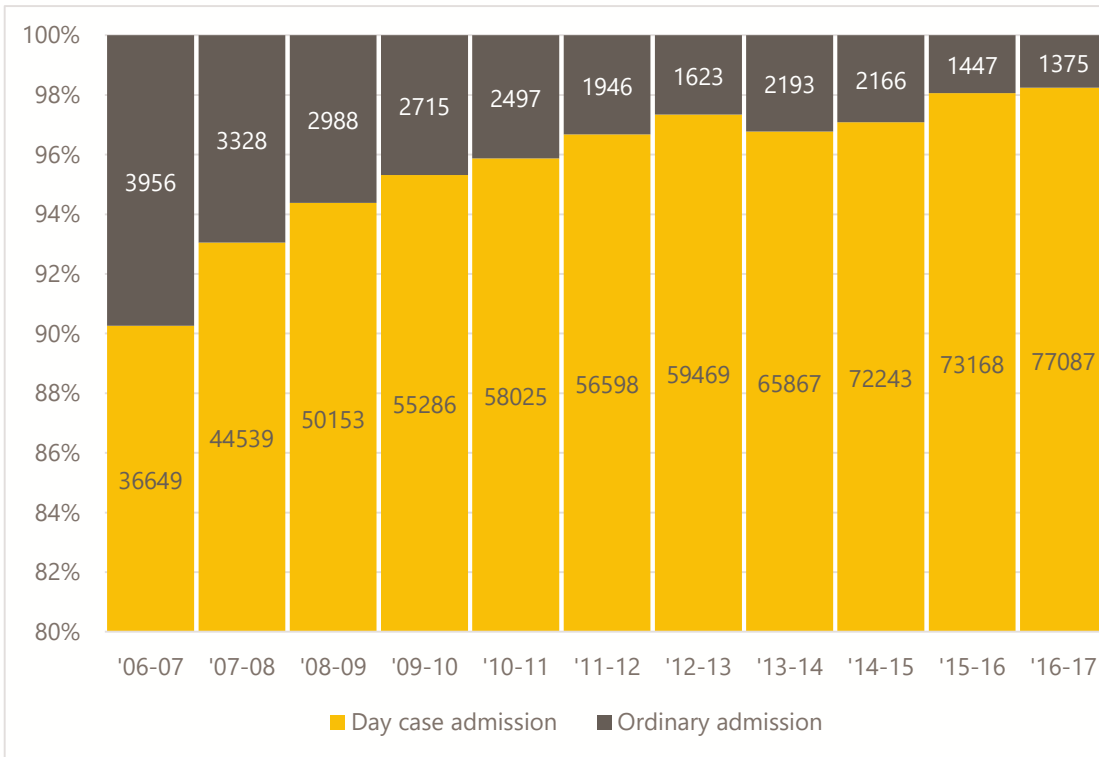
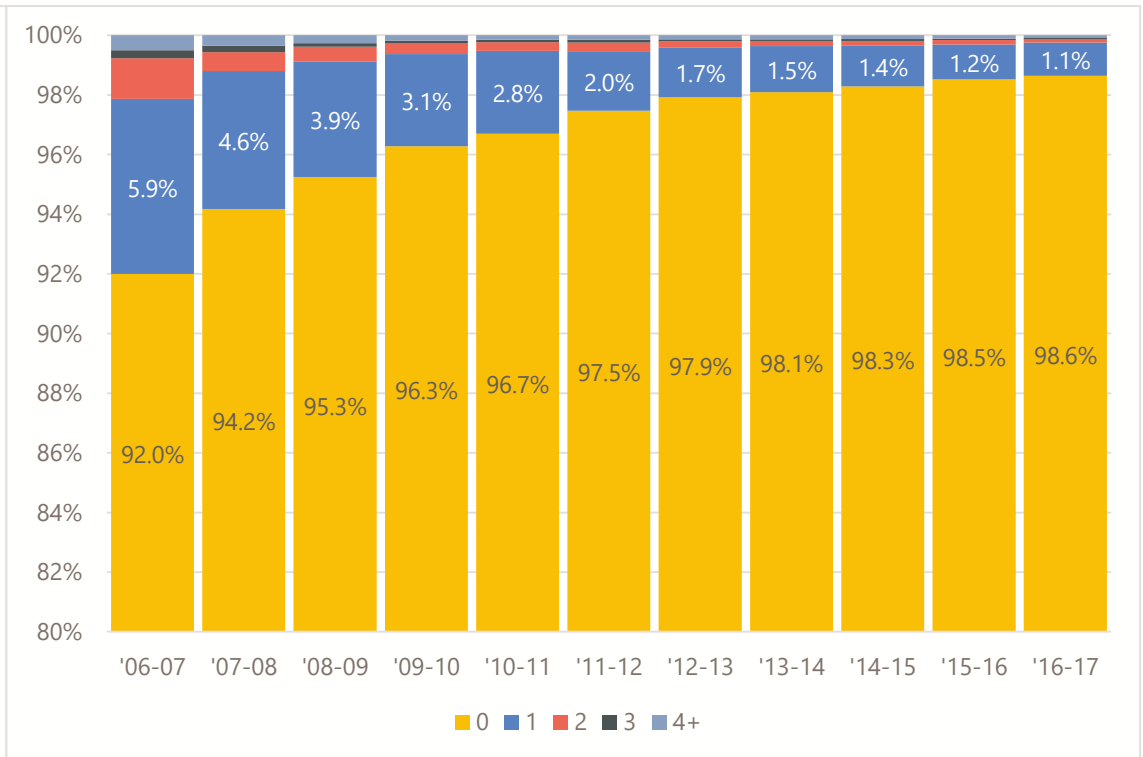


Figure 13 Trends in elective admission length of stay (LOS)

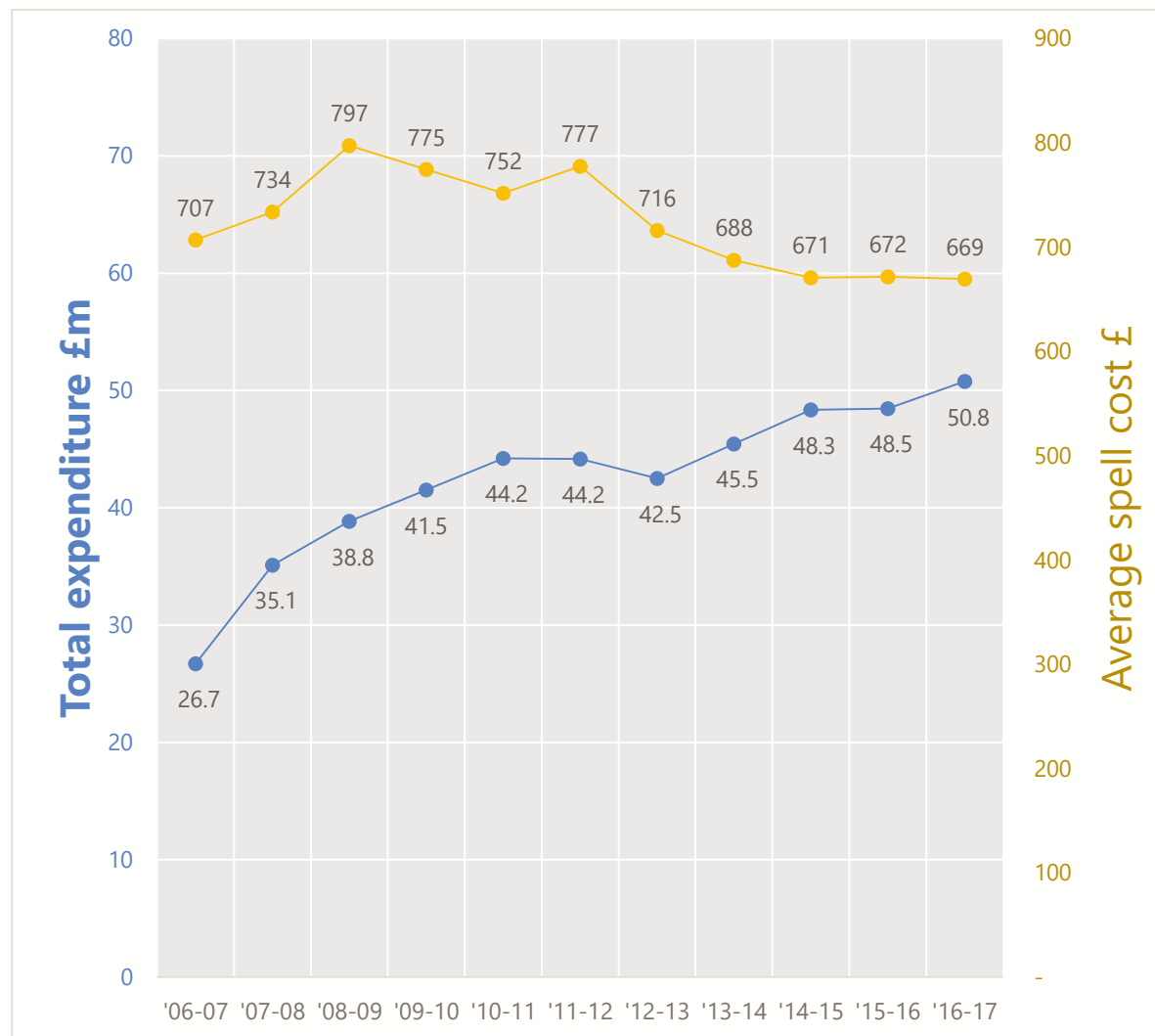


Elective costs

Across the West Midlands expenditure on eye related elective inpatient admissions has nearly doubled in the last 10 years. The increase is largely as a result of rising demand although it has been partially offset by a reduction in average HRG tariff costs for inpatient spells.

The table on the subsequent slide shows how total expenditure and tariff costs for specific procedures have changed in recent years. Most notably expenditure on "Operations on vitreous body"¹ has increased very significantly in the past 10 years as a result of very significant demand growth but the average cost of these admissions has also fallen from £1,400 to around £400.

Figure 14 Trends in expenditure and average costs



¹ 90% of these are coded as C794 injection into vitreous body

Table1 Trends in expenditure and average costs for elective procedures

	Expenditure			Average cost per spell			Expenditure Trend	Av. Cost Trend
	2006/07	2016/17	% increase	2006/07	2016/17	% increase		
Prosthesis of lens	£14,611,731	£27,297,080	87%	£708	£752	6%		
Operations on vitreous body	£1,304,316	£11,203,599	759%	£1,404	£454	-68%		
Other	£4,416,974	£5,394,896	22%	£807	£926	15%		
Extirpation of lesion of eyelid	£1,075,690	£1,106,742	3%	£601	£691	15%		
Filtering operations on iris	£382,608	£927,676	142%	£860	£1,081	26%		
Combined operations on muscles of eye	£449,328	£892,670	99%	£814	£1,136	40%		
Extracapsular extraction of lens	£165,692	£807,706	387%	£764	£758	-1%		
Correction of deformity of eyelid	£495,229	£728,681	47%	£615	£685	11%		
Plastic operations on cornea	£239,400	£659,497	175%	£1,197	£1,585	32%		
Correction of ptosis of eyelid	£328,455	£483,860	47%	£860	£878	2%		
Operations on canthus	£179,242	£330,907	85%	£744	£899	21%		
Operations following glaucoma surgery	£125,183	£267,704	114%	£649	£703	8%		
Other operations on eye	£549,231	£226,230	-59%	£569	£417	-27%		
Destruction of lesion of retina	£798,063	£201,990	-75%	£408	£435	7%		
Incision of capsule of lens	£794,480	£83,373	-90%	£653	£174	-73%		

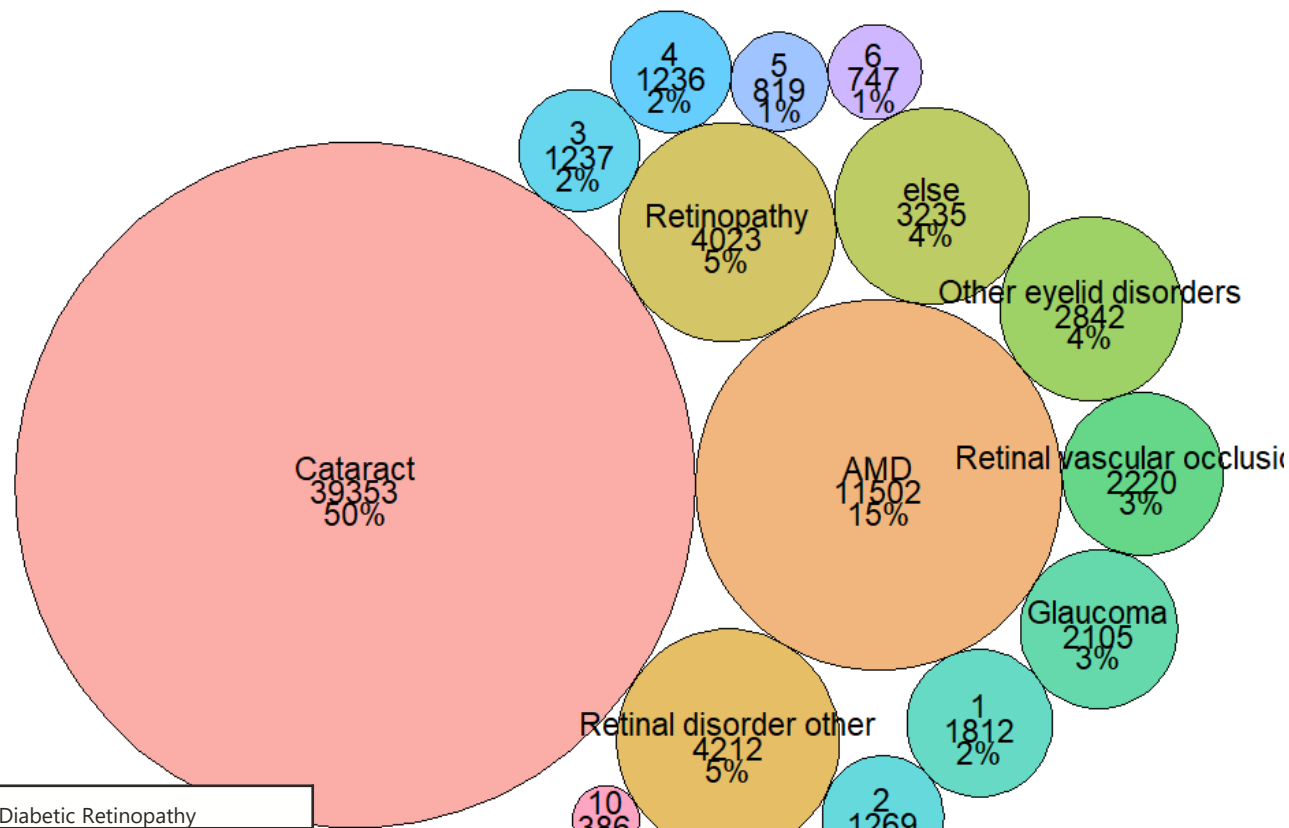
Elective admissions - diagnoses and procedures

Figures 15 and 16 on the following slide illustrates the relative scale of elective admissions by diagnoses and procedures carried out.

Around half of all elective admissions have a primary diagnosis of cataract. The second most common single diagnosis was macula degeneration which accounts for a further 15% of admissions. Retinal disorders combined (retinopathy, diabetic retinopathy, other retinal disorders and retinal vascular occlusions combined account for another 16% of admissions.

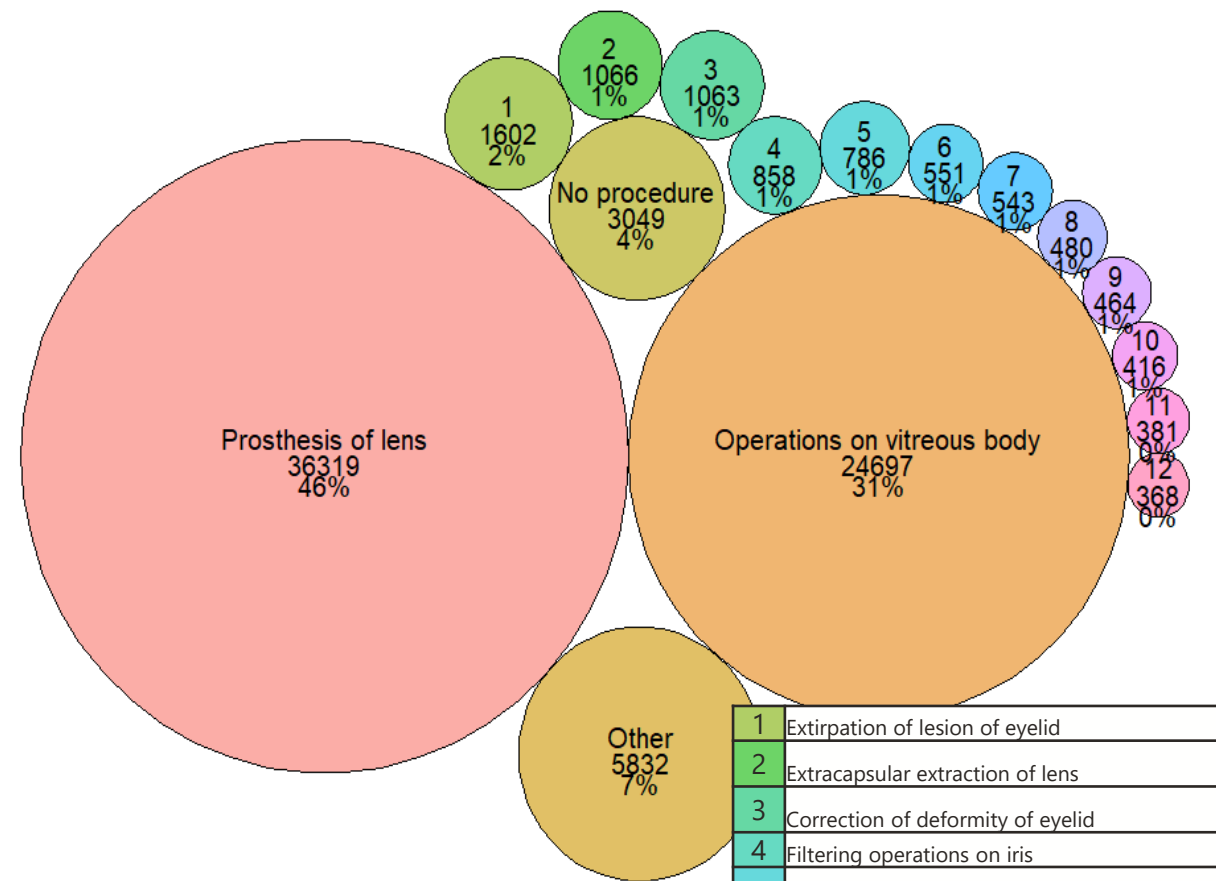
Prothesis of lens procedures (carried out for most cataract admissions) also account for around half of all primary procedures recorded. Another 31% of procedures are "Operations on vitreous body" most of which are C794 injections into vitreous body. This procedure is the typical procedure for most admissions with a retina related diagnoses.

Figure 15 Elective admissions by diagnosis (2016/17)



1	Diabetic Retinopathy
2	Binocular eye movement
3	Neoplasm
4	Retinal detachment
5	Lacrimal system disorders
6	Corneal and other corneal disorders
7	Inflammation of eyelid
8	Visual disturbances
9	Vitreous body disorders
10	Conjunctiva disorders

Figure 16 Elective admissions by procedure (2016/17)



1	Extirpation of lesion of eyelid
2	Extracapsular extraction of lens
3	Correction of deformity of eyelid
4	Filtering operations on iris
5	Combined operations on muscles of eye
6	Correction of ptosis of eyelid
7	Other operations on eye
8	Incision of capsule of lens
9	Destruction of lesion of retina
10	Plastic operations on cornea
11	Operations following glaucoma surgery
12	Operations on canthus

Trends and demographic projections in elective admissions

Figure 17 on the following slide show trends and forecasts (again based on applying age and gender population projections to the 2016/17 baseline dataset) in elective admissions split by primary diagnosis and procedure.

Very considerable growth has been seen in admissions for a number of diagnoses. Most notably for macula degeneration and other retinal disorders. Figure 18 shows that corresponding levels of growth has been seen in procedures related to these conditions. Most notably for operations on the vitreous body (90% of which are eye injections) which as previously noted is the typical procedure for most retinal diagnoses.

Overall the demographic based approach to forecasting future activity would estimate that over the next 10 years the number of non elective admissions would increase from just over 78K admissions in 16/17 to around 95K in 2028/29 (around 21% over 11 years) which is notably less than the growth seen over the previous ten years (see slide 13). It is likely therefore that these forecasts underestimate the level of future activity for reasons that will be discussed later. An alternative approach to forecasting that accounts for other non demographic growth factors was applied in order to provide an alternate set of activity estimates. This approach is described and the resultant estimates provided in subsequent slides which will provide a range of potential activity estimates.

Figure 17 Trends and projections in admissions by **diagnosis**

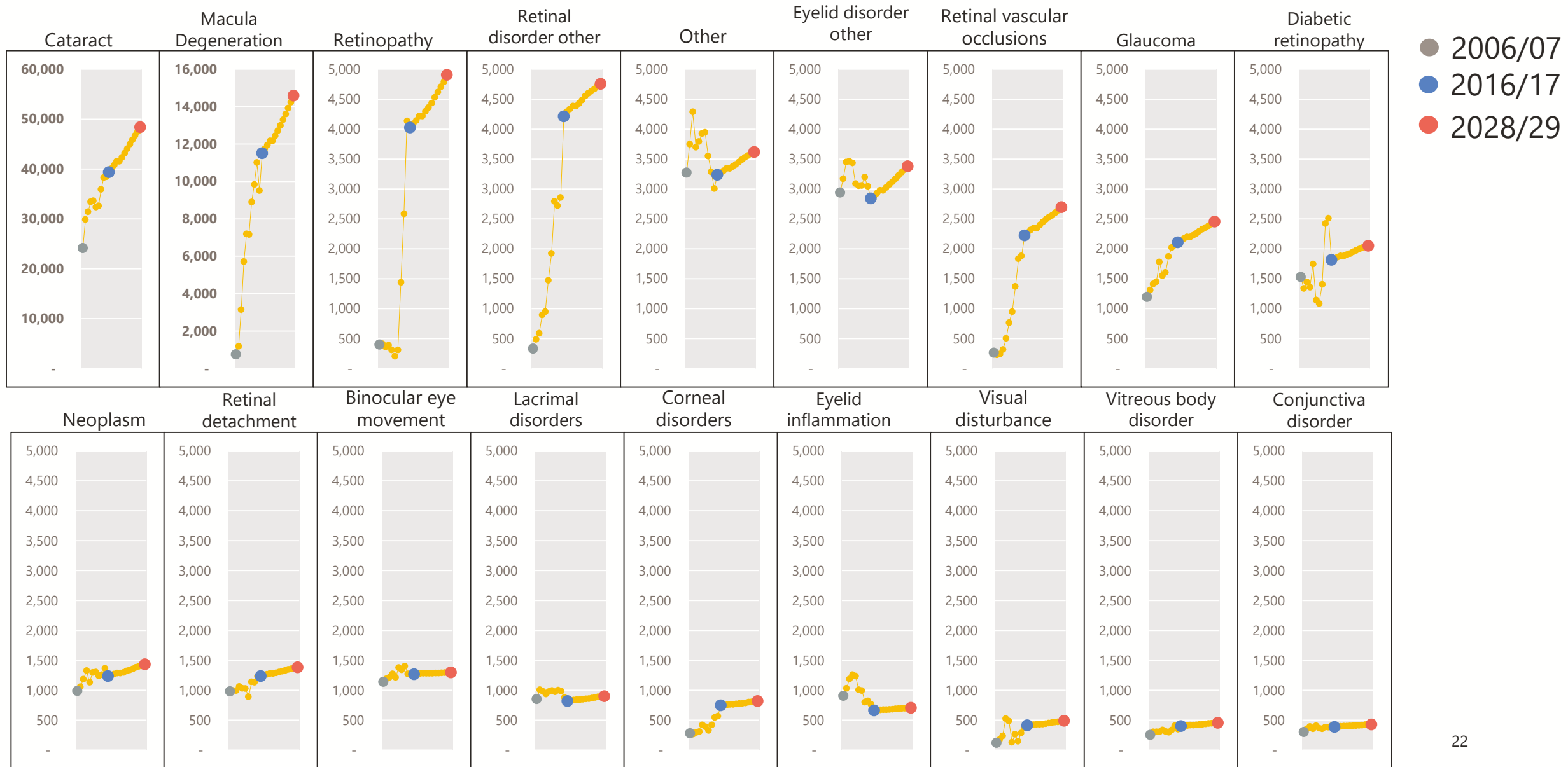
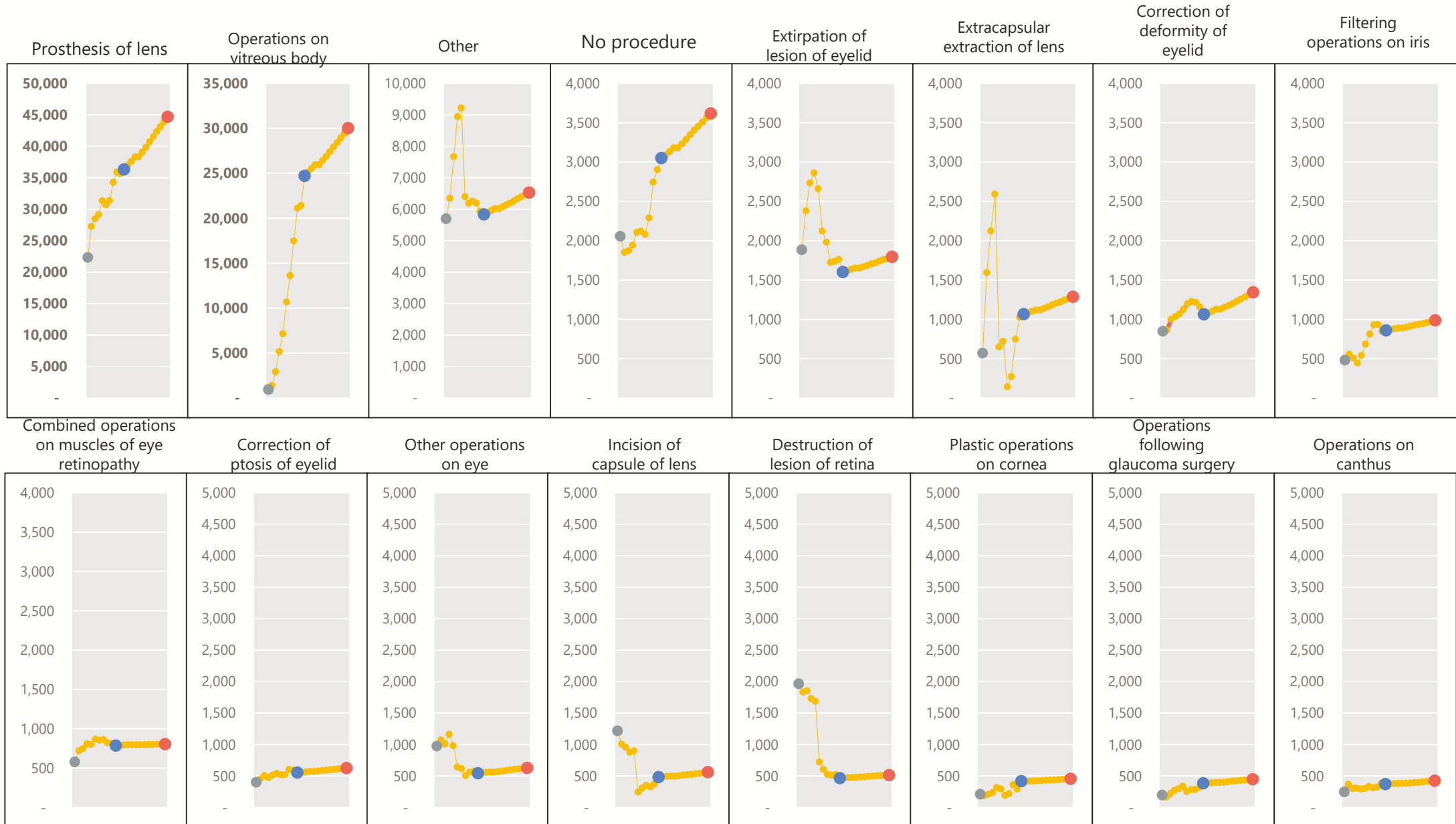


Figure 18 Trends and projections in admissions by **procedure**



Non demographic growth projections

The previous slides provide projections of elective admissions and procedures based on demographic changes alone. However as was previously noted it is clear that other factors have resulted in additional growth in elective activity levels for some diagnoses. One obvious example is increasing levels of obesity and diabetes have undoubtedly resulted in increased admissions for diabetic retinopathy, another would be the availability of new treatments for age related macular degeneration (AMD) which has also resulted in very significant growth in admissions for this condition, this growth has been further compounded by the requirement for regular and ongoing treatment in the form of eye injections leading to a growing pool of patients requiring multiple admissions over a prolonged period of time.

Accurately disaggregating and quantifying the various factors that might have historically influenced activity and then predicting future impacts is a non trivial task requiring a much more sophisticated modelling approach that is beyond the scope of this exploratory descriptive analysis.

However given that in some cases there are likely to be factors, such as those considered above, that will have a on-going and significant impact on future activity levels it is important to provide an indication of what that may mean for future activity levels (and therefore capacity required to respond). The following slides outline our approach to estimating impact beyond demographic changes alone.

A forecasting methodology (Holts-Winters exponential smoothing algorithm) was applied to historical trend data for each of the diagnosis groups. Figure 19 illustrates the results for admissions for AMD of this forecasting approach alongside previous estimates based on the application of ONS demographic projections.

The supplementary forecasting approach suggests that activity in 2028/29 may be very much higher than if growth was dependant on population change alone.

However, In the case of AMD at some future point the pool of patients requiring ongoing treatment will stabilise and it is therefore likely that future levels of activity will fall between these two estimates.

Figure 19 Projected elective admissions for Macula degeneration

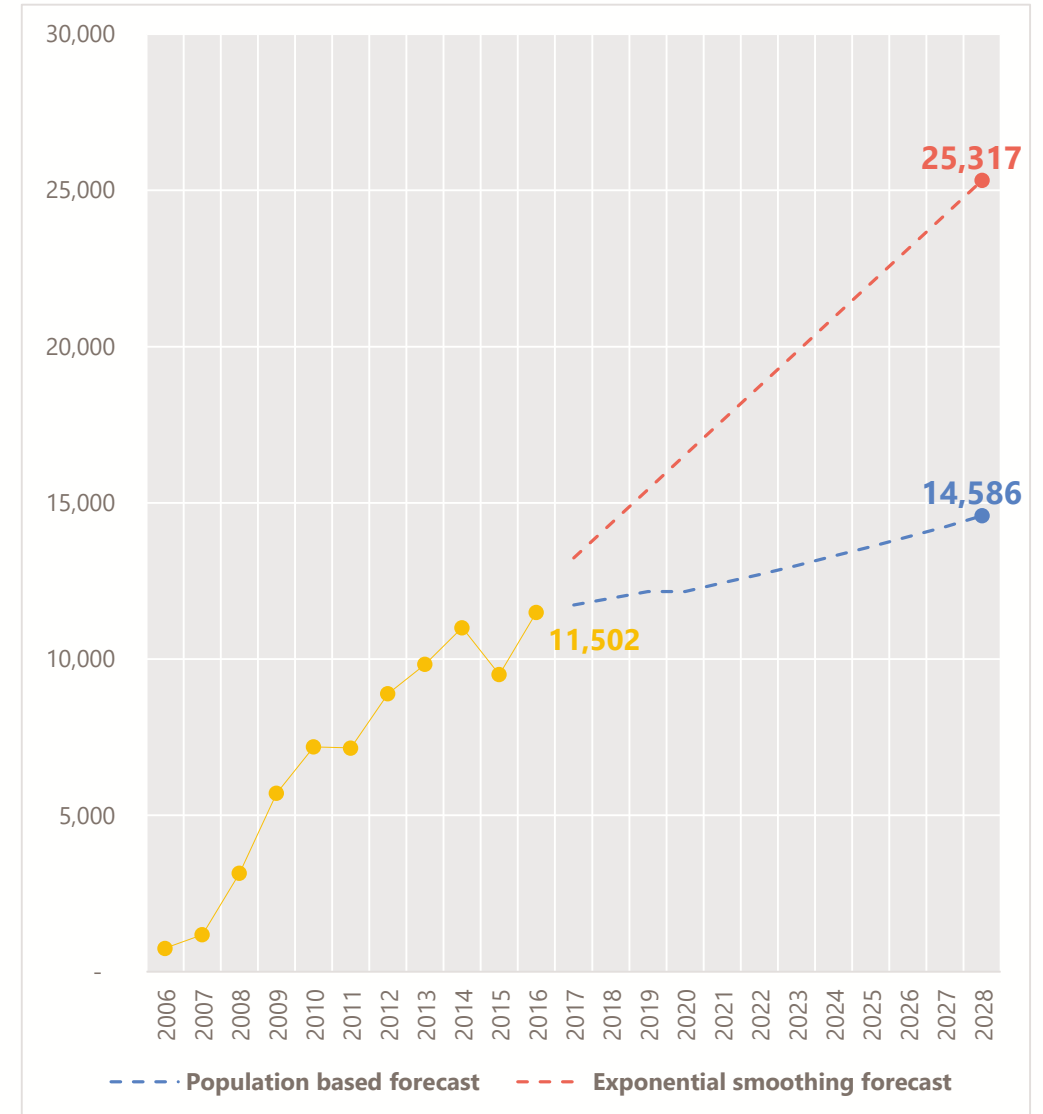


Table 2 shows the results of applying both forecasting approaches to each diagnosis group and table 3 shows the corresponding impact on procedures.

Overall demographic projections alone would suggest that elective inpatient admissions would increase to around 95K admissions (21%) by 2027/28 but historical growth based forecasts suggest a much higher increase to around 128K (63%). High rates of growth are forecast for AMD and other retinal disorders in particular.

STPs may require a greater level of certainty in future demand in order to make plans to ensure they are able to meet that demand. Most sophisticated approaches to modelling that could deliver that assurance are available. A Markov model would potentially be appropriate for this purpose.

Table 2 Demographic and historical trend forecasts by diagnosis

	Estimated admissions 2028/29					
	2006/07	2016/17	Estimate 1. Demographic impact	% increase	Estimate 2. Forecast from historical trend	% increase
Cataract	24,110	39,353	48,370	23%	54,391	38%
Macula Degeneration	748	11,502	14,586	27%	25,317	120%
Retinopathy	398	4,023	4,906	22%	7,988	99%
Retinal disorder other else	331	4,212	4,756	13%	16,068	281%
Other eyelid disorders	3,273	3,235	3,616	12%	2,514	-22%
Retinal vascular occlusions	2,939	2,842	3,376	19%	2,434	-14%
Glaucoma	262	2,220	2,693	21%	4,947	123%
Diabetic Retinopathy	1,193	2,105	2,454	17%	3,206	52%
Neoplasm	1,529	1,812	2,047	13%	2,975	64%
Retinal detachment	990	1,237	1,436	16%	1,620	31%
Binocular eye movement	981	1,236	1,383	12%	1,488	20%
Lacrimal system disorders	1,141	1,269	1,299	2%	1,483	17%
Corneal and other corneal disorders	854	819	903	10%	778	-5%
Inflammation of eyelid	281	747	821	10%	1,109	48%
Visual disturbances	908	662	708	7%	-	-100%
Vitreous body disorders	122	413	488	18%	503	22%
Total	254	402	456	13%	521	30%
Total	40,617	78,475	94,728	21%	127,802	63%

Table 3 Demographic and historical trend forecasts by procedure

	Estimated admissions 2028/29					
	2006/07	2016/17	Estimate 1. Demographic impact	% increase	Estimate 2. Forecast from historical trend	% increase
Prosthesis of lens	22,351	36,319	44,689	23%	50,096	38%
Operations on vitreous body	942	24,697	30,024	22%	56,690	130%
Other	5,696	5,832	6,526	12%	6,756	16%
No procedure	2,056	3,049	3,618	19%	4,375	43%
Extirpation of lesion of eyelid	1,884	1,602	1,796	12%	1,128	-30%
Extracapsular extraction of lens	571	1,066	1,286	21%	1,458	37%
Correction of deformity of eyelid	849	1,063	1,344	26%	913	-14%
Filtering operations on iris	480	858	987	15%	1,274	48%
Combined operations on muscles of eye	579	786	805	2%	915	16%
Correction of ptosis of eyelid	401	551	624	13%	469	-15%
Other operations on eye	975	543	629	16%	736	36%
Incision of capsule of lens	1,217	480	560	17%	662	38%
Destruction of lesion of retina	1,965	464	512	10%	847	82%
Plastic operations on cornea	208	416	453	9%	556	34%
Operations following glaucoma surgery	195	381	448	18%	510	34%
Operations on canthus	248	368	423	15%	417	13%
Total	40,617	78,475	94,725	21%	127,802	63%

Equality and access

The charts below illustrate differences in elective admissions by deprivation levels. Figure 15 shows how admissions compare to the WM population. Around 30% of the West Midlands population live in the most deprived areas but only around 23% of admissions are for patients from this segment of the population i.e. those living in the most deprived area are **less likely** to be admitted for an eye condition. Figure 16 illustrates the differences between the population and admission by deprivation quintile.

Figure 15 Population compared to admissions by deprivation quintile

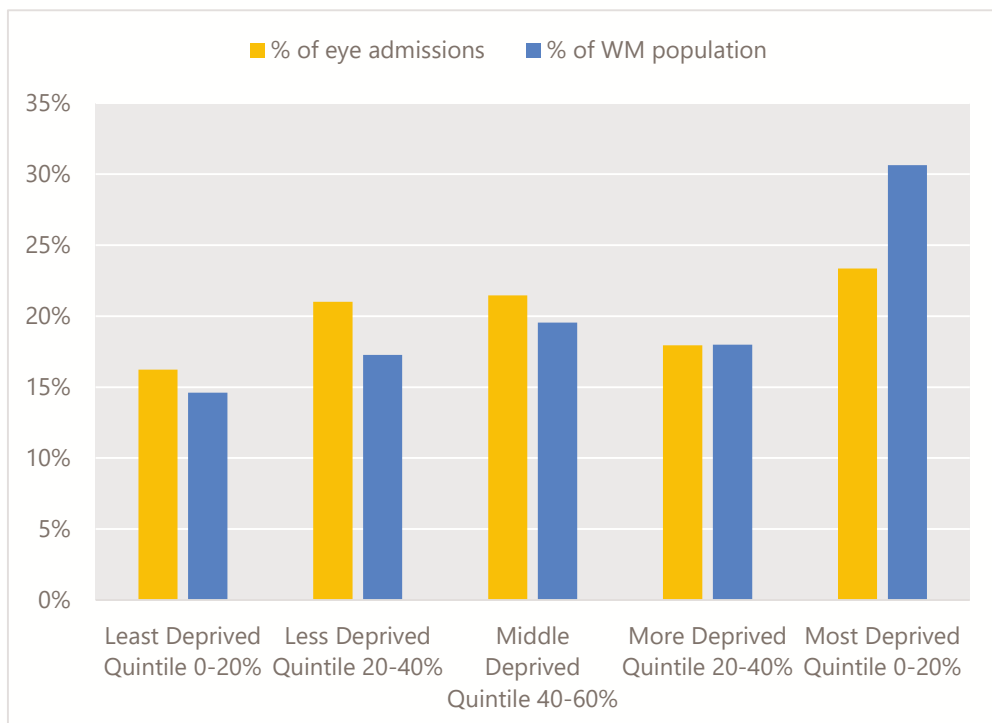


Figure 16 difference between population and admissions by deprivation Quintile

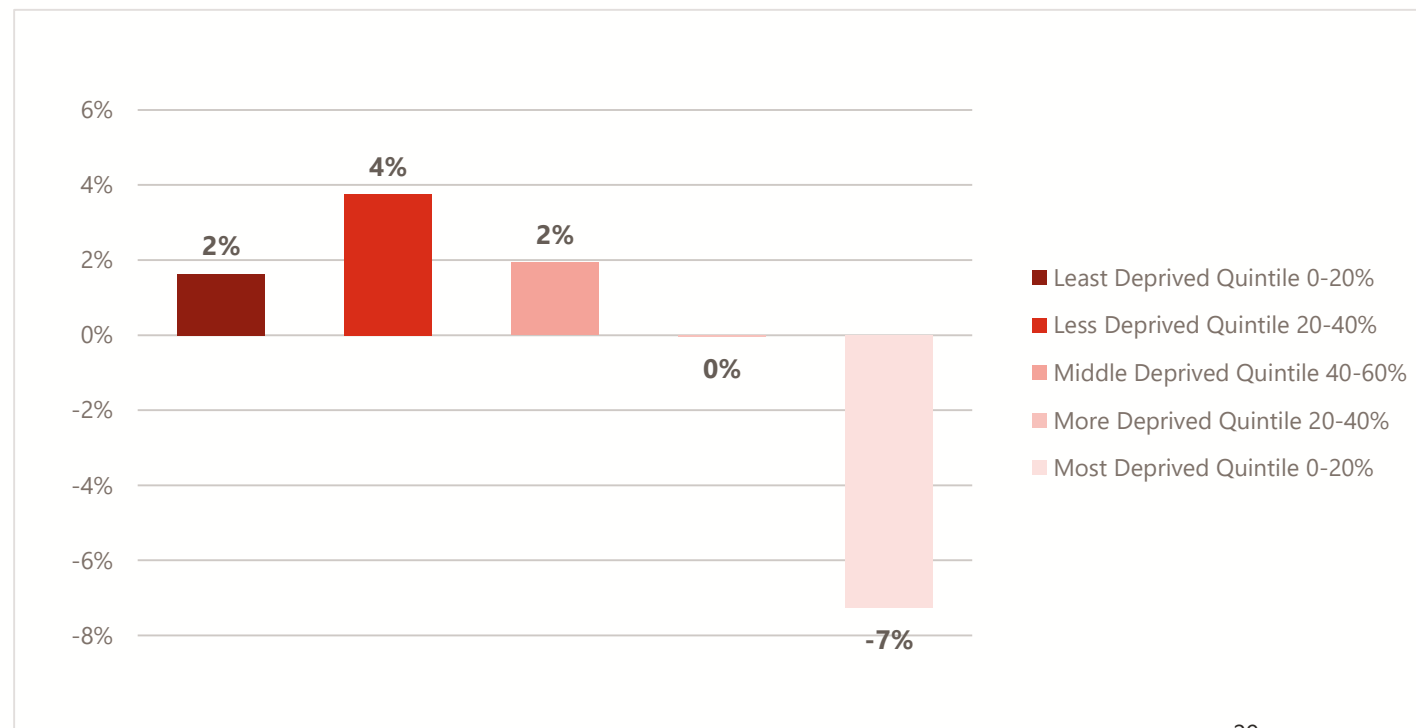
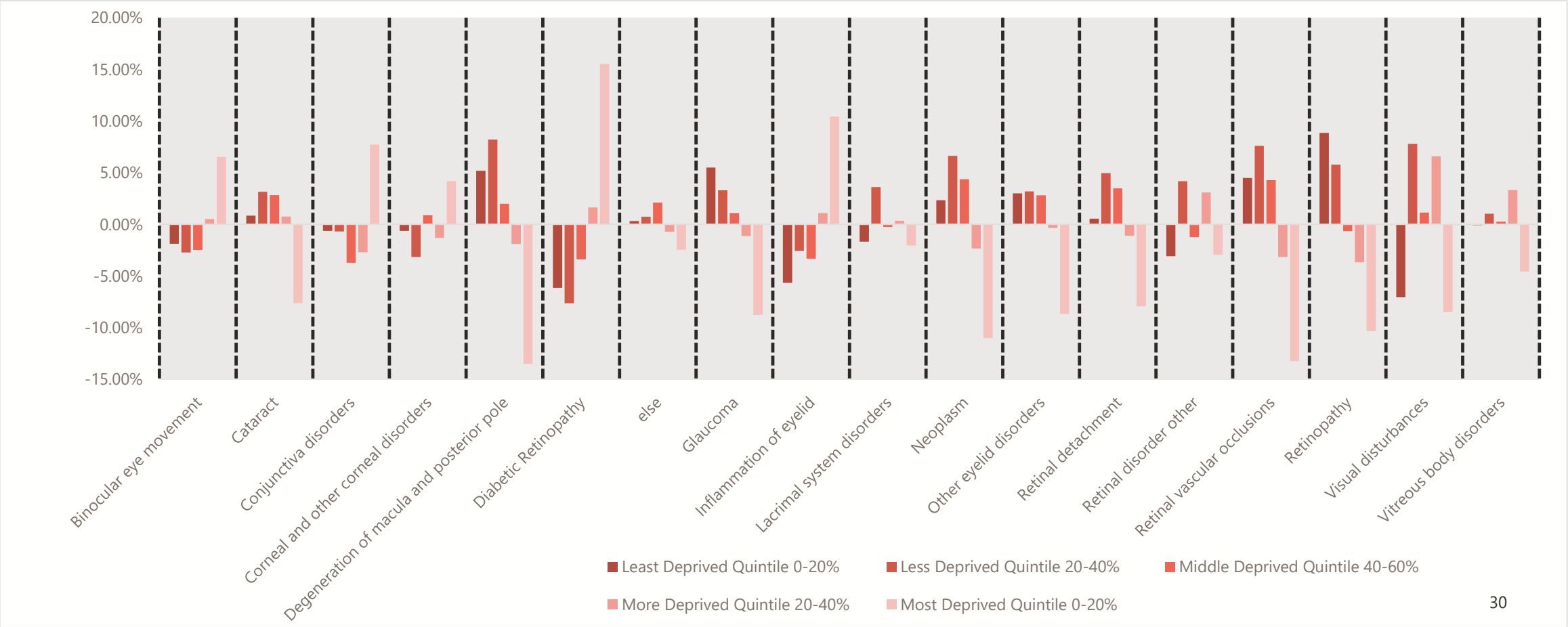


Figure 17 shows that the pattern illustrated in the previous slide is not replicated across all diagnoses. Those from the most deprived areas are less likely to be admitted for a number of conditions including macula degeneration, cataracts and retinopathy but are more likely to be admitted for diabetic retinopathy and inflammation of eyelid.

Figure 17 difference between population and admissions by deprivation Quintile and diagnosis



Outpatient attendances

Ophthalmology is largely an outpatient centred speciality the majority of acute eye related activity occurs within this setting. In 2016/17 there were over **900K** ophthalmology outpatient attendances.

Across the West Midlands attendances have risen rapidly over the last 10 years with over **70% more attendances in 2016/17** as there were in 2006/07.

Figure 18 Trends in outpatient attendances

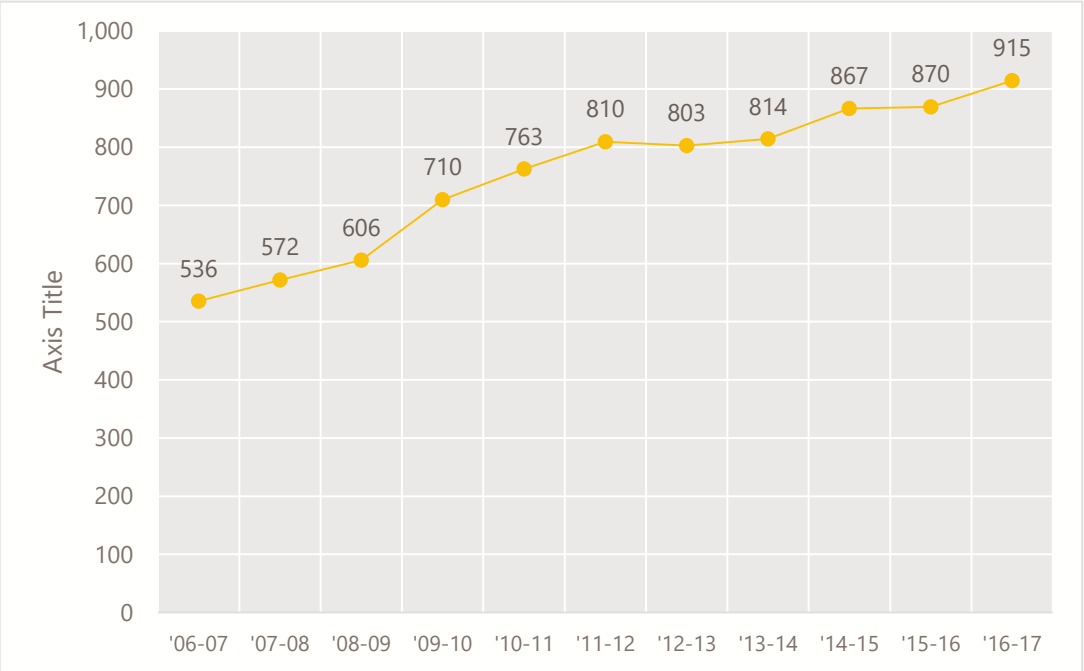
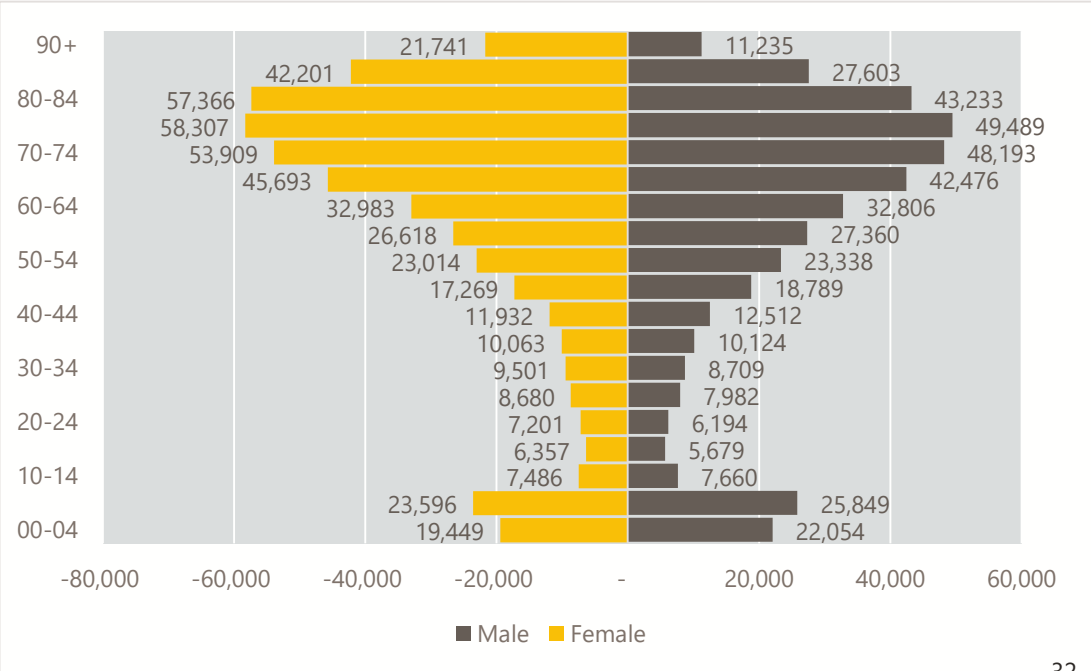


Figure 19 Age structure of outpatient attendances (2016/17)



There has been little change in the ratio of follow up to new attendances. Around 3 out of 4 attendances are follow up appointments.

Some changes in the source of referrals for new attendances has occurred over the last 10 years. In particular there has been a fall in the proportion of referrals coming from general practice alongside an increase in referrals from Optometrists.

Figure 20 Trends in outpatient attendances by type

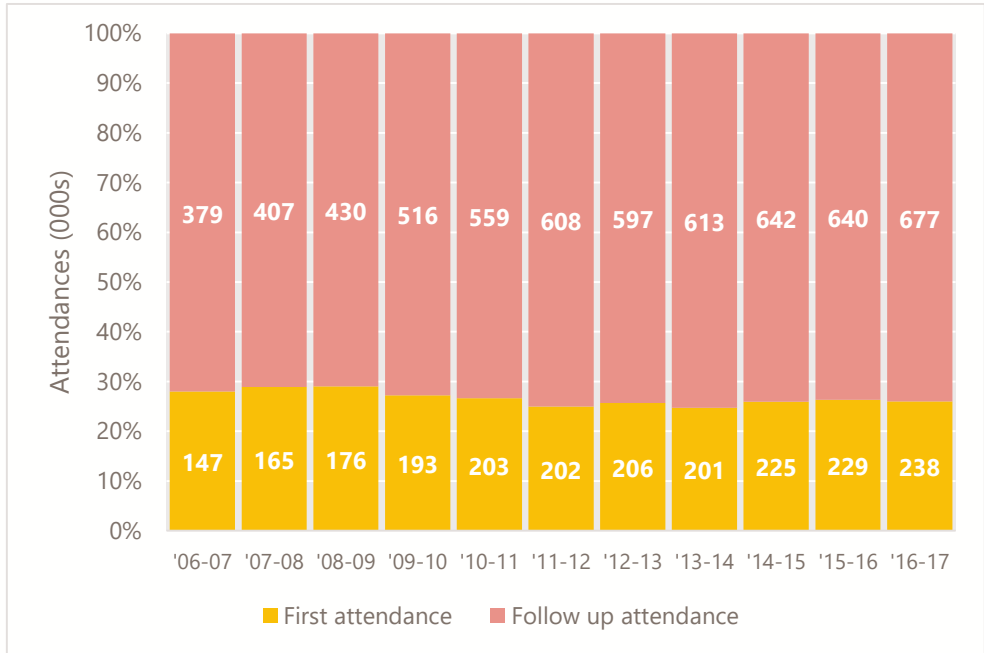
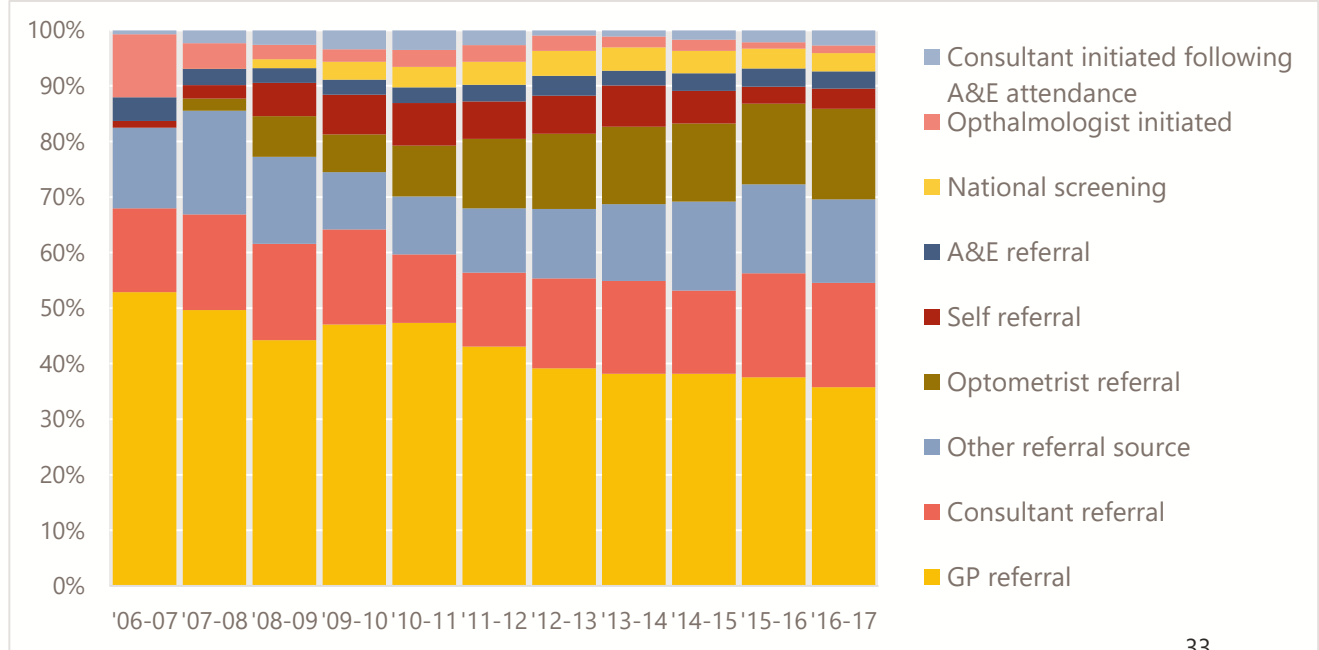


Figure 21 trends in new attendances referral source



Outpatient activity - procedures

Figure 22 Trends in outpatient attendances with/without a procedure recorded

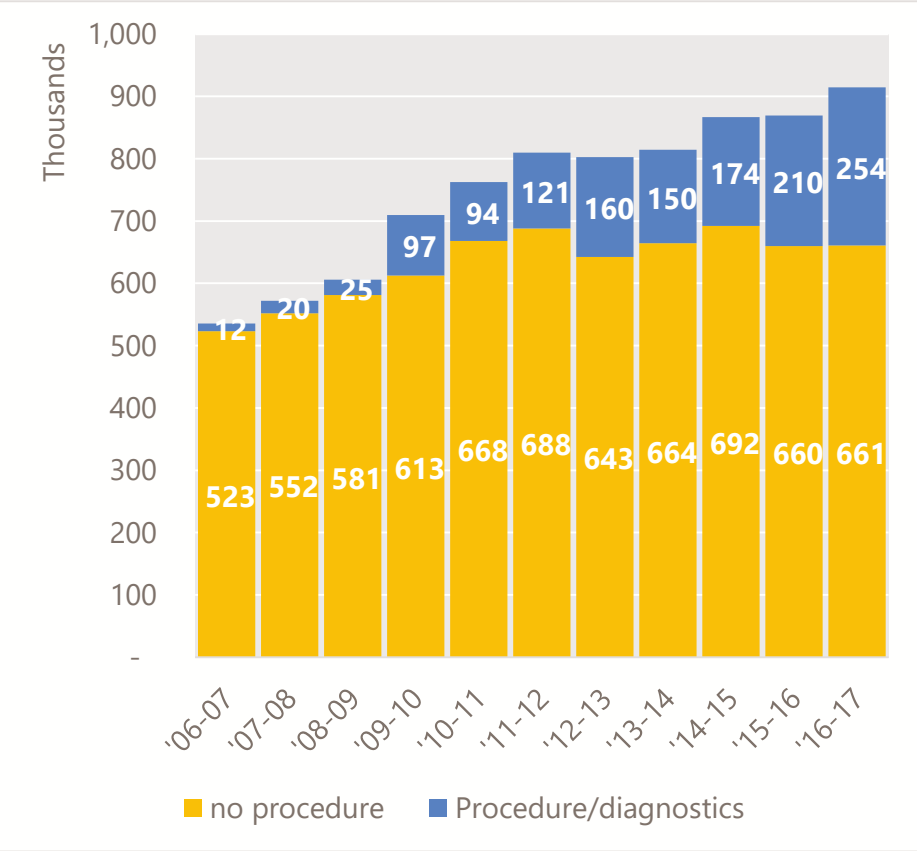
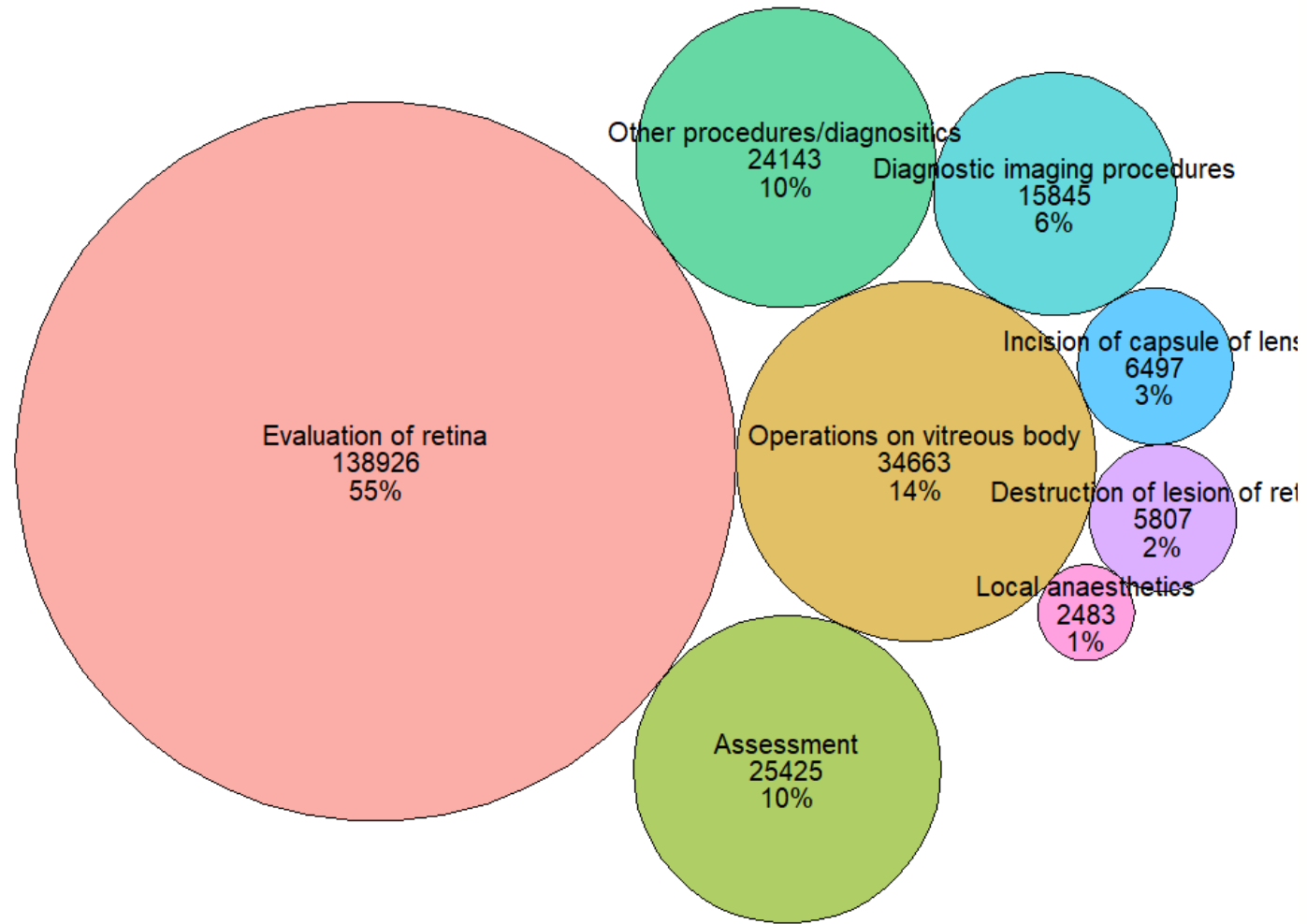


Figure 22 shows that increasingly minor procedures are being carried out within an outpatient setting. Around 28% of attendances now have a procedure recorded. Figure 23 on the following slide shows that whilst the majority of procedures recorded are diagnostic in nature around 1 in 5 are surgical with the most common surgical procedure being operations on vitreous body.

Figure 23 outpatient attendances by procedure (2016/17)



Trends and demographic projections in outpatient attendances

Figure 24 shows trends and forecasts in outpatient attendances by procedure (diagnosis is not recoded within the outpatient dataset).

Evaluation of retina saw the largest growth and now accounts for around half of attendances where a procedure was recorded. There was also a considerable increase in the number of attendances where an “operation on vitreous body” was carried out (primarily C794 injection). In 2016/17 there were nearly 35K such procedures carried out in an outpatient setting. Both of these findings are probably, at least in part, the result of a growing pool of patients with AMD or diabetes who require ongoing treatment, monitoring or screening.

Overall the demographic forecasts would estimate that over the next 10 years the number of outpatient attendances in the West Midlands will increase from just over 914K admissions in 16/17 to over 1m attendances in 2028/29 (which equates to around 16% growth over 11 years) which is considerably less than the 70% growth seen over the last ten years (see slide 32). We would again surmise that as with elective activity it is likely that these forecasts will underestimate the likely level of future activity. As such we have applied the previously described alternative forecasting approach to the data to provide a range of estimates. The results can be seen in table 4 on slide 39.

Figure 24 Trends and projections in admissions by **diagnosis**

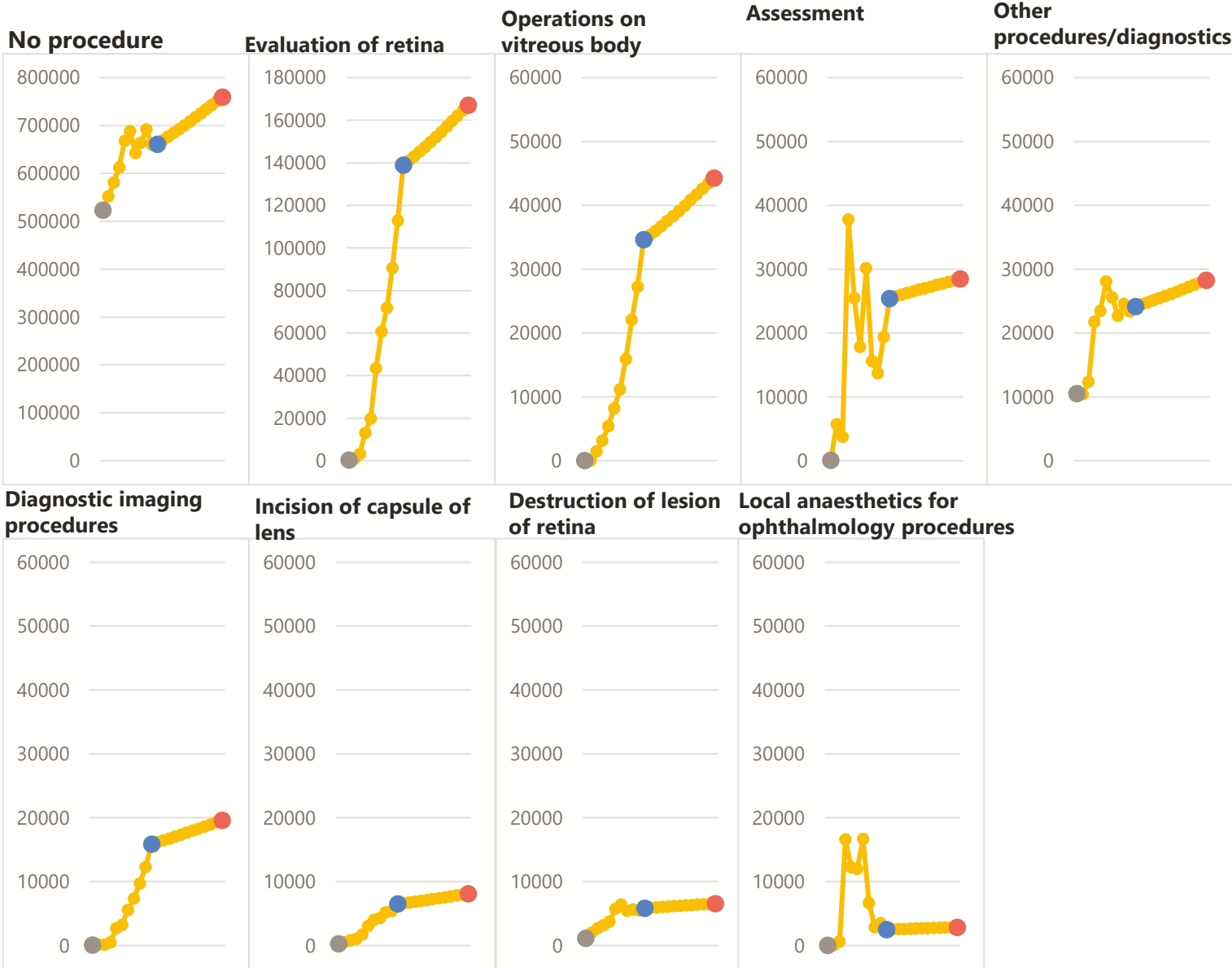


Table 4 shows the results of applying both previously described forecasting approaches to each procedure group.

Historical growth based forecasts suggest a much higher level of growth to the projections based on demographics alone. The secondary forecast estimates that outpatient attendances could increase by **87% to over 1.7 million**. Particularly high rates of growth are forecast for operations on vitreous body, evaluation of retina and diagnostic imaging.

Table 4 Demographic and historical trend forecasts by diagnosis

	Estimated admissions 2028/29					
	2006/07	2016/17	Estimate 1. Demographic impact	% increase	Estimate 2. Forecast from historical trend	% increase
No procedure/diagnostics	523,110	660,906	759,175	115%	838,706	127%
Evaluation of retina	367	138,926	167,091	120%	484,052	348%
Operations on vitreous body	27	34,663	44,268	128%	148,663	429%
Assessment	80	25,425	28,476	112%	44,105	173%
Other procedures/diagnositics	10,521	24,143	28,275	117%	44,588	185%
Diagnostic imaging procedures	59	15,845	19,587	124%	119,888	757%
Incision of capsule of lens	241	6,497	8,095	125%	14,164	218%
Destruction of lesion of retina	1,094	5,807	6,515	112%	12,368	213%
Local anaesthetics for ophthalmology procedures	6	2,483	2,836	114%	3,205	129%
Total	535,505	914,695	1,064,318	116%	1,709,739	187%

Understanding connections between eye health and non eye related non elective healthcare utilisation

The effects of loss of vision are far reaching and extend beyond the direct effect of sight loss, in particular there is a well established link between sight loss and mental health¹.

Whilst it is beyond the scope of this exploratory analysis to comprehensively establish and scale all of the links between eye health and other physical and mental health needs the following analysis begins to identify and describe some of those relationships.

For methodological reasons, which will be further discussed, the results should not be viewed as conclusive but should, alongside the previously outlined review of the literature help to inform the planned subsequent deliberative discussions about how best to support the wider needs of this vulnerable group.

¹Bazargan M, Hamm-Baugh VP. The relationship between chronic illness and depression in a community of black elderly persons. J Gerontol Soc Sci. 1995;50B(2): 119-127.

Methodology

In order to understand differences in healthcare utilisation between those with and without sight impairment age specific non elective admission rates were calculated for the blind/vision impaired population and the non vision impaired population.

Ordinarily the rates would be based on admissions for known individuals within each of the above groups. However in this case there is no accessible* data source that can identify individuals with significant sight loss or blindness that can be linked to our inpatient datasets. As a pragmatic alternative in order to estimate the size and structure of the blind/partially sighted population we used prevalence estimates taken from a recent paper by Pelluzo et al "The economic impact of sight loss and blindness in the UK adult population" (2018). The paper brought together data from a range of sources to develop comprehensive prevalence estimates of sight loss by age, gender, severity, ethnicity and cause.

Pelluzo's age specific prevalence estimates for partial sight loss (Snellen score <6/18-6/60) to blindness (Snellen score <6/60) were applied to ONS age specific population estimates to approximate the number of people in the West Midlands with moderate to severe sight loss and blindness.

**Accessing patient level details of those on Local Authority held registers of blind/partially sighted people is beyond the scope of this exploratory descriptive analysis due to the significant IG and resource implications. In addition it is accepted that registrations significantly underestimate the true prevalence of sight loss and blindness.* ⁴²

Non elective admissions for 2016/17 from the West Midlands were extracted from Hospital Episode Statistics (HES) and admissions for people with sight loss/blindness were identified based on the presence of one or more of the diagnoses listed in table 5 within their hospital record (within diagnosis fields 2-15).

Although the presence of some of these diagnoses within a hospital record may not necessarily mean that the person has moderate or severe sight loss an analysis based solely on those with a secondary diagnosis of H54 Visual impairment including blindness will almost certainly significantly underestimate admissions of those with significant sight loss. Therefore we have assumed that the presence of the other diagnoses (which are all common causes of blindness and visual impairment) would suggest that the degree of impairment is significant (i.e. a secondary diagnosis of cataract where the degree of impairment is mild is unlikely to be recorded within a hospital record unless it was particularly relevant to the admission).

Table 5 Diagnoses used to identify blind or partially sighted patients within the HES inpatient dataset

ICD10 code	Description
H54	Visual impairment including blindness
H35	Macular degeneration and other retinal disorders
H40	Glaucoma
H36	Diabetic retinopathy
H25 & H26	Cataract

Table 6 Age specific admission rates for the estimated sight loss population

Age group	West Midlands population	Age specific prevalence of moderate to severe sight loss	Estimate size of sight loss population in the West Midlands	Admissions for patients with sight loss/blindness	Admissions per 1,000 population
00 to 04	365,755	0.03%	91	311	3,401
05 to 09	366,755	0.03%	92	179	1,952
10 to 14	336,756	0.05%	168	97	576
15 to 19	350,498	0.05%	175	85	485
20 to 24	392,638	0.08%	294	91	309
25 to 29	396,038	0.08%	297	114	384
30 to 34	370,923	0.08%	278	144	518
35 to 39	348,549	0.11%	376	182	483
40 to 44	357,667	0.24%	873	302	346
45 to 49	404,907	0.32%	1,292	401	310
50 to 54	401,606	0.53%	2,119	583	275
55 to 59	347,568	0.64%	2,240	672	300
60 to 64	309,542	1.09%	3,384	889	263
65 to 69	316,933	1.89%	6,001	1362	227
70 to 74	262,466	3.11%	8,156	1850	227
75 to 79	197,458	3.72%	7,352	2609	355
80 to 84	144,734	6.63%	9,592	3632	379
85 to 89	89,337	11.69%	10,443	4292	411
90	50,643	16.55%	8,379	4563	545
Total	5,810,773		61,605	22,358	363

Table 6 illustrates the size of the West Midlands population and the estimated number of people by age group who have significantly impaired vision. It also shows the number of non elective admissions for those with a secondary diagnosis suggesting significant sight loss.

In total it is estimated that there are around 62,000 people across the region with moderate to severe sight loss/blindness and an estimated 22,358 admissions for people with sight loss/blindness resulting in an estimated crude admission rate of 363 admissions per 1000 population.

Figure 25 compares age specific admission rates from table 5 with rates for the non sight impaired population.

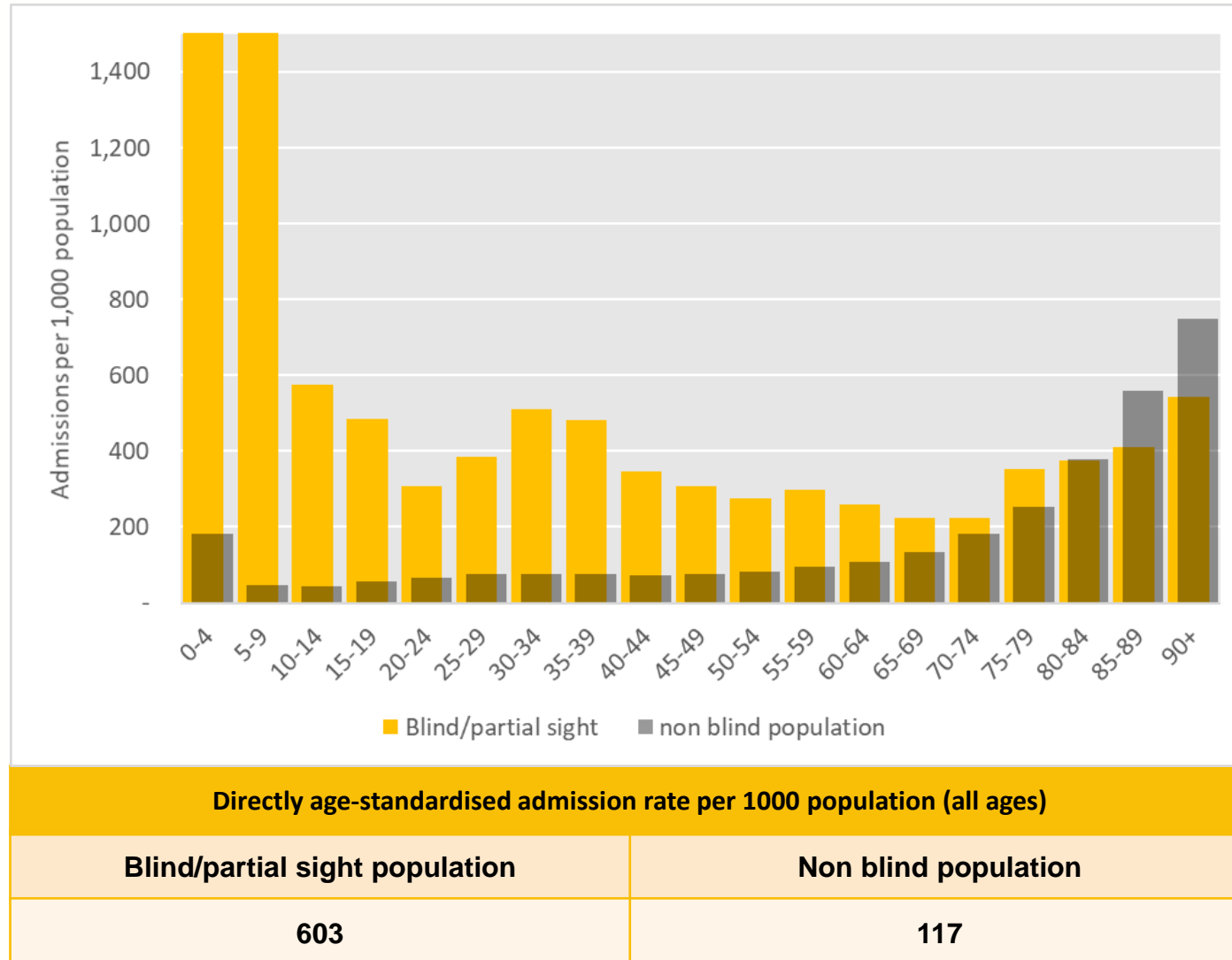
The analysis suggests that the sight loss/blind population has considerably higher admission rates across most age groups with the exception of those aged over 80. It is unclear why very old patients with sight loss may have lower rates of admission overall. Possible explanations include:

- These patients are more likely to live in residential or nursing care and are as such better supported and monitored and are therefore less likely to require an emergency admission
- Sight loss and related eye conditions in very old people are highly prevalent and as such is considered normal and may therefore be less likely to be recorded as a secondary diagnosis (which is used to identify such admissions)

The very high overall admission rates amongst young people (particularly the very young) are likely, at least in part, to reflect a congenital cause with other related health implications.

It is important to reiterate that this analysis is should be viewed as indicative given the assumptions we have made in order to establish both the size the sight loss population and admissions for those with sight loss. Nevertheless, notwithstanding the above observations and caveats, this analysis would suggest that overall those with sight loss/blindness are much more likely to be admitted as an emergency than the non blind population.

Figure 25 Age specific admission rates for the sight loss population compared with population admission rates

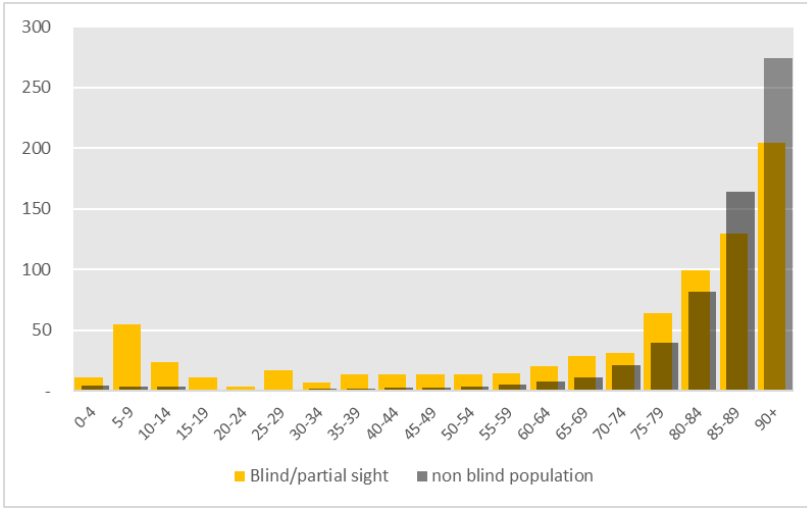


It is likely that those with sight loss or blindness are more at risk of admission for some specific causes. The following charts provide some more specific examples to begin to explore this. Each chart compares the age specific admission rates for a specific cause. They show, for example, that people with sight loss/blindness are more likely to be admitted for falls across most age groups. Similarly the analysis suggests that those with sight loss/blindness are also more likely to be admitted for medicine related reasons and that young people with sight loss appear to be more likely to be admitted for self harm and mental health issues.

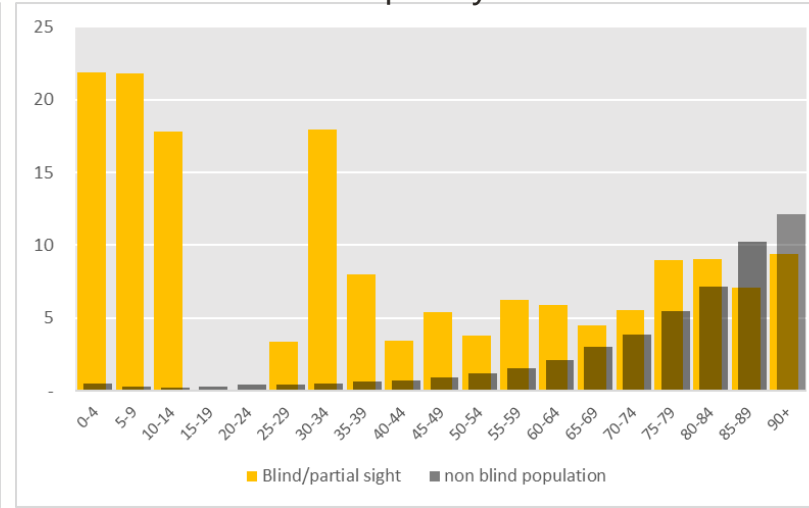
Whilst the observations make no assumption about causality it is nevertheless considered important to understand some of the relationships between blindness and other health needs. The previously outlined qualitative work will also explore this.

Figure 26 Age specific admission rates for the sight loss population compared with population admission rates for specific causes

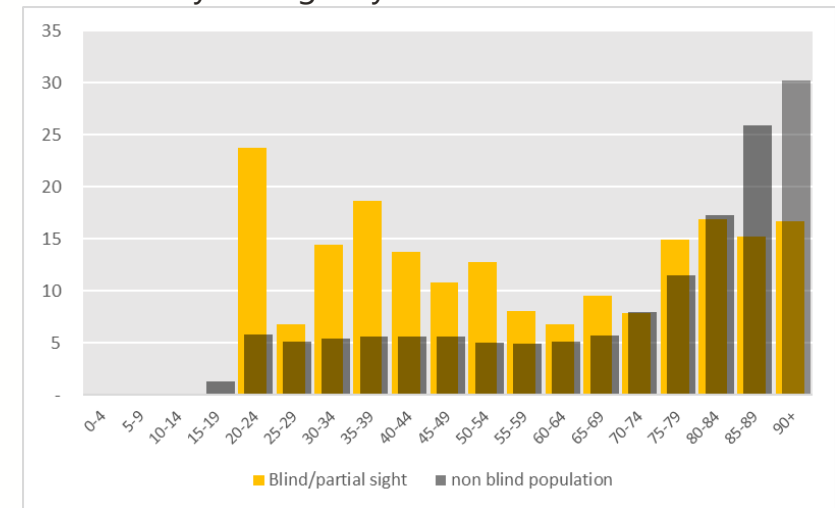
Falls



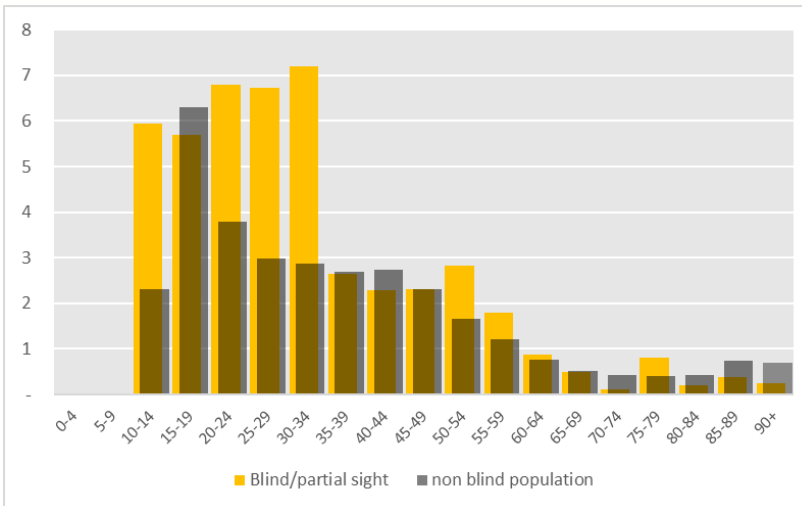
Medicines related – explicitly coded



Ambulatory emergency care amenable



Self Harm



Mental Health

