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Final Report

Australian Optometry Workforce Projections to 2040

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Abbreviations

Abbreviation	Name
ABS	Australian Bureau of Statistics
Ahpra	Australian Health Practitioner Regulation Agency
AMD	Age-related macular degeneration
CBEH	Centre for the Business and Economics of Health
DOHAC	Department of Health and Aged Care
FTE	Full-time equivalent
MBS	Medicare Benefits Schedule
MMM	Modified Monash Model
NHWDS	National Health Workforce Dataset
OCANZ	Optometry Council of Australia and New Zealand
UQ	The University of Queensland
WHO	World Health Organization

1. Executive Summary

1.1 Background

The optometry workforce plays a key role in Australia's primary healthcare system, delivering accessible and effective eye care services. Optometrists are university-educated and registered allied health professionals who are qualified to examine the eyes and visual system, diagnose and manage eye diseases, and prescribe optical corrections including glasses and contact lenses.

Australia's optometry workforce has grown substantially over the past decade, with registered optometrists increasing from 4,586 in 2012 to 7,405 in 2024. Despite this growth, significant geographic maldistribution persists, with most optometrists concentrated in metropolitan and large regional centres, reducing access to eye care for rural and remote communities.

Demographic, epidemiological, and socioeconomic factors have driven rapid growth in demand for optometry services. However, some community groups delay seeking eye care due to concerns about affordability of services and glasses, limited health literacy, or a lack of access to local optometry care.

The optometry profession has proactively used supply and demand methods to inform workforce planning, though previous studies have yielded differing results. Some forecast a marked undersupply of optometrists to meet community needs, while others predict an oversupply of practitioners, raising concerns about under- and unemployment, particularly in metropolitan areas.

1.2 Methods

The objective of this study was to forecast the optimal supply of optometrists in the Australian workforce in five-year increments from 2025 to 2040.

The methodology included supply analysis (number of optometrists), population needs-based analysis (projected number of optometrists to meet population needs) and a gap analysis (workforce shortage or oversupply). A service utilisation (demand projection) model is provided as an alternative approach to forecasting demand for clinical optometry services.

The supply methodology uses a traditional stock-and-flow approach and refers to the pool of practicing optometrists who can provide optometry services within the Australian primary care setting. The 'stock' refers to the current number of the active health workforce, while the 'flow' includes both inflow and outflow to the profession over the 15-year period. Three scenarios were used to forecast supply, a 2% (lower threshold), 5.1% (most likely scenario) and 10% (upper threshold) exit rate.

A population needs-based approach was used to forecast the number of optometrists required to meet the needs of the Australian population. In this model, the population need

for optometry services (as differentiated from specialist ophthalmology care) was determined by the size of the population and demographic characteristics; the state of health or level of health in the population; and the level of optometry services that are planned or necessary to maintain optimal health. The supply and needs-based requirements components were integrated to compare the current and projected gaps in the optometry workforce. Importantly, this model explicitly considers the needs of the population, regardless of whether they have previously sought eye care.

Finally, service utilisation methods were used as an alternative approach to forecasting demand for optometry services. This method combines the current demand for optometry services with the projected prevalence (i.e., growth rate) in eye conditions typically managed by optometrists.

1.3 Findings

The three scenarios show a different picture of the optometry workforce supply over the 15-year period. With a 5.1% exit rate, there is steady and stable growth from a baseline of 7,234 optometrists in 2025 to 8,093 optometrists in 2040. With a 2% attrition rate, there is a much sharper increase in the workforce size to 11,249 optometrists by 2040. In contrast with a 10% attrition rate, the expected number of optometrists drops below baseline with a workforce size of 5,026 by 2040.

Using a population needs-based approach, the population need for optometry services is projected to increase over the 15 years. A baseline of 9,010 optometrists to meet population need is identified for 2025, increasing to 11,479 optometrists in 2040. This reflects an increase in the population requiring optometry services from a range of factors such as an ageing population and increasing burden of disease from chronic disease and multimorbidity.

With a 5.1% exit rate, a shortfall of optometrists is forecasted at all time points. This commences with an undersupply of 1,776 optometrists in 2025 extending to 3,056 optometrists by 2040. With a 10% exit rate, the shortfall of optometrists is considerably larger, and expected to be 6,124 practitioners by 2040. At a 2% exit rate, a shortfall of optometrists is predicted in 2025, 2030 and 2035, however reaches an equilibrium (due to the supply of optometrists) by 2040.

Using service utilisation methods as an alternative approach, the demand for optometry services is projected to increase slightly from a baseline of 4,403 optometrists in 2025, to 4,745 optometrists in 2040. A surplus of between 2,831 and 3,348 and 6,514 optometrists continues in 2040 with 2% and 5.1% exit rates respectively. With a 10% exit rate, however, the gap between supply and demand narrows and almost reaches equilibrium. This finding must be considered with caution as it underestimates the true demand for the broad range of eye conditions that are managed by optometrists. It also overestimates the gap between supply and demand, with a larger workforce surplus projected than is needed given optometry service patterns and scope of practice.

1.4 Opportunities for the optometry workforce

The supply, demand and needs-based modelling provide powerful information to support optometry workforce planning.

Using a needs-based planning approach, there is a projected undersupply of optometrists to meet population needs over the 15-year period. The needs-based approach explicitly considers the health needs of the population, not only those who have previously accessed care. While demand is embedded within the model, it is restricted by the accessibility and affordability of services. It is important to account for these and other challenges as part of workforce planning and identify opportunities to advocate for funding, policy and practice changes to improve the accessibility and equity of optometry services.

Most optometry services are billed through Medicare. However, the gap between available rebates and the costs of providing some services, as well as the expenses associated with some optical items (i.e., glasses), may be a barrier for some people. Advocating for an increase to MBS rebates and the frequency of comprehensive consultations may be an effective strategy to remove cost barriers and improve community-wide access to optometry care.

A review of optometry education and training programs is recommended in the short-term to maximise workforce supply. At a 5.1% exit rate, the supply of new graduates and overseas trained practitioners replaces those who have left the profession but does not address the gap between supply and projected population need. While optometry programs have expanded over the last two decades, the annual number of graduates is small and any changes to a training program (including the development of a new program) is likely to take several years. Additionally, it takes three to five years to train an optometrist. The training lag for new practitioners therefore requires a considerable lead in time to make a meaningful impact on workforce supply.

Consideration should also be given to the employment and working conditions of the existing optometry workforce. Reducing the gap between supply and need requires that health professions remain practicing within the workforce. This is particularly important in rural and remote settings where challenges in recruiting and retaining health practitioners persists.

Finally, there are opportunities to refine optometry scope of practice. Exploration of technological advancements, collaborative and shared care models, tele-optometry and AI-driven diagnosis are required to enable optometrists to work to the top of licence and provide high-quality, efficient, equitable and accessible services to Australian communities.

2. Introduction

2.1 Background

The optometry workforce plays a key role in the Australian healthcare system, delivering effective and accessible services, often as the first point of contact for people seeking expert eye care. Optometrists are university-educated and registered allied health professionals who are qualified to examine the eyes and visual system, diagnose and manage eye diseases, and prescribe optical corrections including glasses and contact lenses.(1) In addition, optometrists provide education, advice and work in collaboration with ophthalmologists and other medical and allied health practitioners to provide comprehensive eye care services.(2)

Through comprehensive eye examinations, optometrists routinely detect early manifestations of ocular pathologies and systemic conditions including diabetes mellitus and hypertension, enabling prompt intervention and management.(3, 4) This proactive approach preserves vision and generates substantial economic benefits, with every dollar invested in preventative eye care contributing approximately $5 in return through productivity gains and avoided healthcare costs.(5, 6)

In the 2023/24 financial year, the optometry workforce provided over 11 million Medicare billed optometry services.(7) Despite the widespread availability of optometry care, up to 40% of Australians neglect regular eye examinations, resulting in undiagnosed and untreated vision-limiting conditions.(8) Factors that limit access to optometry services include affordability, health literacy, geographic barriers and cultural considerations.(6, 8, 9) Addressing these challenges necessitates coordinated public health initiatives, particularly for vulnerable populations.(10)

2.2 The Australian optometry workforce

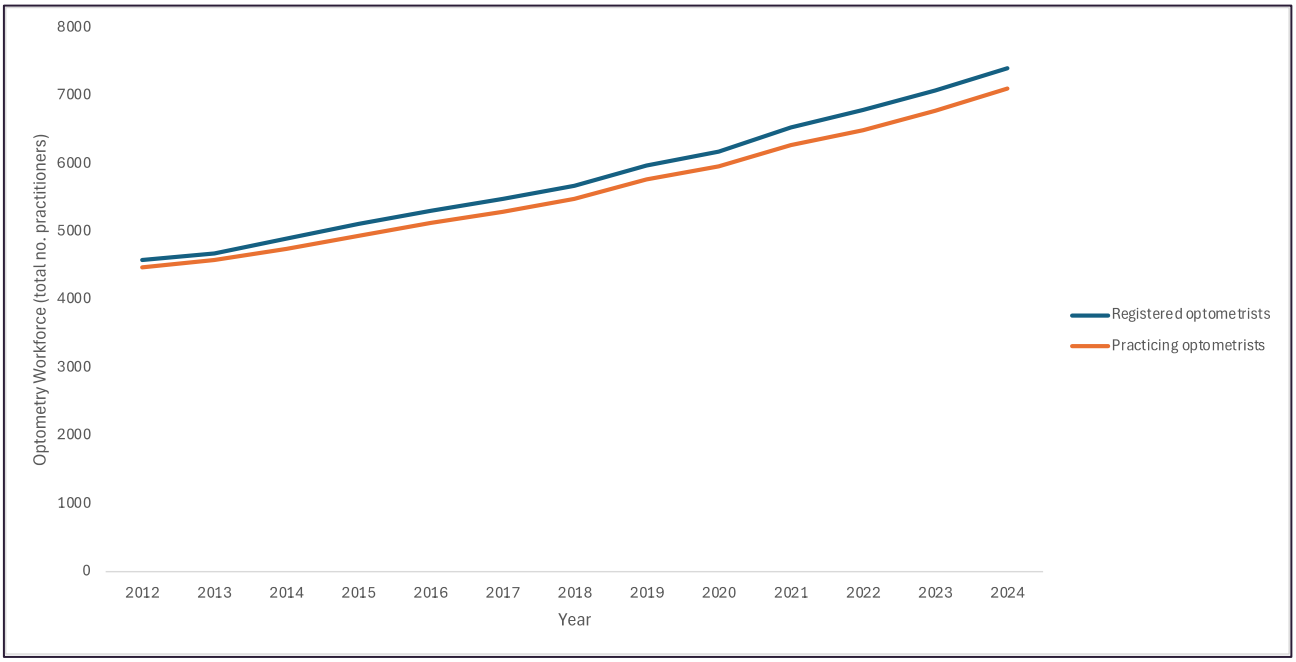
The Australian optometry workforce has experienced growth over the past decade, with the number of registered optometrists increasing from 4,486 in 2012 to 7,405 in 2024. As of December 2024, over 95% of the workforce (7,104 optometrists) hold general registration, with the remainder holding non-practising (275 optometrists, 4%) or limited registration (26 optometrists, 1%) (Figure 1).

Female optometrists make up 60% of the optometry workforce, a shift from the historical male dominance within the profession.(11, 12) The optometry workforce is also reasonably young, with 56% of the workforce aged less than 35 years of age. At the other end of the workforce continuum, 11% of the workforce are aged over 60 years. It is likely that a proportion of this group will reduce working hours, move to non-practicing roles or retire within the next five years.(11, 13)

The growth in practitioner numbers has coincided with an evolving scope of optometry practice. The proportion of optometrists who hold an endorsement for scheduled

medicines has increased from 30% in 2012 to 78% in December 2024, reflecting a change to education programs to support prescribing rights at registration, as well as expanded clinical capabilities within the profession.(11)

Figure 1: Optometry workforce, 2012 to 2024



There are currently seven optometry schools in Australia, graduating between 400 and 450 new optometrists to the workforce each year. There are different undergraduate and graduate programs, ranging from three to five years in length (Table 1).

The most significant contributing factor to the size of the optometry workforce over the past 12 years has been a change to optometry programs, with a growth in student numbers for existing programs, as well as the establishment of additional optometry training programs. However, the number of students graduating from these new programs remains reasonably small, with less than a total of 60 graduates from the University of Canberra and University of Western Australia programs together.

A small number of graduates from Auckland University also join the Australian optometry workforce each year. It is estimated that graduates from Auckland University represent almost 15% of the Australian optometry workforce.(14)

Table 1. Australian optometry programs

University	Program	Length of Program (full time)	Total Annual Number of Graduates
The University of Melbourne	Doctor of Optometry (graduate entry)	4 years	400 – 450 graduates
University of New South Wales	Bachelor of Vision Science/Master of Clinical Optometry	5 years	
Queensland University of Technology	Bachelor of Vision Science Master of Optometry	3 years 2 years	
Deakin University	Bachelor of Vision Science/Master of Optometry	4 years (10 trimesters)	
Flinders University	Bachelor of Medical Science (Vision Science)/Master of Optometry	5 years	
University of Canberra	Bachelor of Vision Science Master of Optometry	3 years 2 years	
The University of Western Australia	Doctor of Optometry (graduate entry)	3 years	

Despite overall workforce growth, geographic maldistribution persists, with most optometrists working in metropolitan and regional centres.(11, 12)

Data from the National Health Workforce Dataset (the NHWDS) in 2023 (15) indicated that over 5,500 registered optometrists practice in Modified Monash Model (MMM) 1 (metropolitan areas), MMM2 (regional centres) and MMM3 (large rural towns). Optometry full-time equivalent (FTE) per 100,000 population were highest in metropolitan (22.7), large rural (25.3) and medium rural towns (21.0). The smallest optometry FTE per 100,000 population was observed in very remote communities (3.5) and small rural towns (3.6).

In line with these findings, weekly hours were reported to be highest in remote and very remote communities (39.2 and 35.3 hours respectively). The lowest weekly hours were

identified in small rural towns (32.8) and metropolitan areas (33.5), as shown in Table 2. This finding may, however, underestimate hours spent in rural communities through outreach programs such as the Visiting Optometrist Scheme.

Table 2: Distribution of full-time equivalent (FTE) optometrists by MMM classification

MMM area	Headcount	FTE	Weekly hours	FTE per 100,00
MMM1 – Metropolitan	4,953	4,365	33.5	22.7
MMM2 – Regional centres	533	484	34.6	19.8
MMM3 – Large rural towns	438	423	36.7	25.3
MMM4 – Medium rural towns	231	212	34.9	21.0
MMM5 – Small rural towns	76	66	32.8	3.6
MMM6 – Remote communities	28	30	39.2	9.8
MMM& - Very remote communities	8	7	35.3	3.5
Total	**6,275**	**5,595**	**33.9**	**21.0**

2.3 Demand for optometry services

The demand for eye care services in Australia continues to grow rapidly, driven by multiple interconnected demographic, epidemiological, and socioeconomic factors.

2.3.1 Demographic drivers

Australia's population is growing rapidly and will likely exceed 31 million by 2034.(16) This growth will naturally increase demand for all healthcare services, including eye care. The spatial distribution of this population growth across metropolitan centres and into regional areas necessitates strategic planning to ensure equitable access to optometry services for all communities.(12, 17, 18)

The age structure of Australia's population represents a critical determinant in workforce planning. Approximately 17% of Australians are aged 65 years and over, with this proportion projected to increase over the coming decades. By 2064-65, the population aged 65 years and older is projected to reach 24%.(16) The ageing population is particularly relevant to optometry service provision, as the incidence and prevalence of age-related ocular conditions including cataracts, presbyopia, glaucoma, and age-related

macular degeneration (AMD) increases with advancing age.(19, 20) Research indicates that timely assessment and intervention can mitigate vision impairment, highlighting the importance of enabling equitable access to optometry services for older Australians.(19-21)

2.3.2 Epidemiological Factors

The increasing prevalence of chronic diseases and multimorbidity presents a substantial driver of optometry service demands. Chronic conditions such as diabetes, hypertension, and cardiovascular disease are associated with sight-threatening ocular complications including diabetic retinopathy and hypertensive retinopathy.(22) Best practice guidelines for the management of diabetic retinopathy recommend that Indigenous Australians with diabetes have annual eye screening by an optometrist or ophthalmologist, while non-Indigenous Australians should have eye screening every two years.(23) The rate of diabetic eye screening completed by optometrists increased consistently, from 890 per 100,000 people in 2014-15 to 1,050 per 100,000 people in 2018-19. The prevalence of diabetes in the Australian population remained similar over this time, from 5.1% (age-standardised 4.7%) in 2014-15 to 4.9% (age-standardised 4.3%) in 2017-18.(24)

People presenting with multiple chronic conditions require more complex and integrated care approaches. Research by Dillion and colleagues (25) found that multimorbidity is most often associated with higher utilisation of optometry services, necessitating enhanced coordination between optometrists, ophthalmologists and other health professionals. The increasing complexity and need for collaborative care represents a shift in optometry service requirements, beyond just a simple increase in the demand for services.

2.3.4 Socioeconomic and Policy Influences

The Medicare Benefits Schedule (MBS) provides consumers with rebates of 80-100% of scheduled fees for most general health and eye care services. However, expenditure on eyecare and related vision services has increased over the past 10 years.(8) Medicare rebates for optometry services currently sit at A$35.55 - $70.55 per optometry consultation. However, the recommended optometry service fees are higher at between AUD$65-132 per consultation, which may result in a co-payment for some optometry consultations or may be otherwise subsidised by the sale of glasses.(26) Additionally, MBS billing limits the frequency of some comprehensive consultations to once every three years, which may further increase costs for consumers and impact the affordability and utilisation of optometry services, in some cases resulting in delayed access to care and poorer health outcomes.(8, 9)

Private health insurance coverage also influences the utilisation of optometry services in Australia. Over 50% of Australians hold some form of private health insurance, with ancillary benefits covering optical services.(27) This insurance coverage typically facilitates access to some optical appliances (e.g., insurance rebates for glasses). However, recent

policy reforms, increasing cost of living and affordability concerns have contributed to declining insurance participation rates and levels of cover, potentially reshaping future patterns of service demand.(28, 29)

The availability of bulk-billed optometry services, MBS rebates and the interplay between public and private funding mechanisms remains a critical determinant in shaping access to and demand for optometry care.

2.4 Optometry Supply and Demand Modelling

Previous studies of optometry workforce supply and demand have presented contrasting projections. Recent econometric modelling conducted by Deloitte Access Economics (the 2024 Deloitte report) forecasted an increase in the supply of optometrists from 5,266 FTE optometrists in 2022 to 8,261 FTE optometrists in 2042, a 57% increase in the size of the workforce. Demand for optometry services was also expected to increase, with 78% growth over the 20-year period. A larger growth was identified in metropolitan areas (83%), while a smaller, but still substantial growth of 67% was forecasted for rural areas. This projected demand was greater than supply, resulting in an undersupply of approximately 1,102 FTE optometrists by 2042. The demand modelling used by Deloitte was based on prior measures of utilisation and considered population size and indicators of need.(30)

The 2024 Deloitte report builds on the findings from prior studies (*Optometry Workforce Report: 2018-27* (the 2018 Report) and *Optometry Report 2009-2030* (the 2011 Report)).(30-32) The 2018 Report forecasted that demand for optometry services would outpace supply over the 12-year period, resulting in an undersupply of optometrists from 2018, with a deficit of 1,188 FTE optometrists by 2037. The model predicted slow growth in the optometry workforce from 4,114 optometrists in 2018, to 6,653 by 2037. Service utilisation was projected using five different methods, and projected to increase from 4,234 FTE optometrists in 2018 to 7,841 in 2037.(31) The 2011 Report also identified an undersupply of optometrists to meet demand, despite additional undergraduate placements offered by new programs at Deakin and Flinders Universities.(32)

The three studies undertaken by Deloitte contrast with other optometry supply and demand models that suggest workforce adequacy or surplus. A study of optometry supply and demand from 2011-2036 predicted an oversupply of 1,200 FTE optometrists by 2036. Modelling was based on nine scenarios of predicted demand, assuming the maintenance of service utilisation, or an increase of 10-20%. A surplus was identified for all jurisdictions except Queensland, the Northern Territory and Tasmania, where predicted supply was close to expected demand.(33) These finding are consistent with earlier work undertaken by Kiely and colleagues,(34) which predicted an excess of almost 7% optometrists compared with demand by 2031, assuming that service utilisation is maintained or increased slightly.

The optometry supply and demand modelling projects have all used different timeframes and methodology, contributing to contrasting findings regarding an under- or oversupply of

optometrists to meet service demands. Despite these different projections, the studies consistently identified a geographic maldistribution of practitioners across metropolitan, regional and rural areas. A recent study found that the proportion of optometrists practicing in metropolitan centres was greater than the proportion of the population, with a lower proportion of optometrists, relative to population size, in regional and rural areas.(12) Earlier reports also noted an inequity in optometry service distribution that has remained largely static over the past two decades.(12, 35, 36)

2.5 Issues raised by the optometry workforce

The contradictory supply and demand models and recent increase in optometry graduates has led to growing concerns within the sector regarding an oversupply of optometrists in the coming years. Current utilisation patterns of optometric services demonstrate a potential misalignment between service provision and population need, with metropolitan areas experiencing a high proportion of optometrists (when compared to population size), while rural and remote regions remain underserved.(12, 35, 36)

Reports of a potential oversupply of the optometry workforce are often linked to concerns of under- and unemployment for health practitioners. While increased optometry graduate numbers should improve the known maldistribution of the workforce, research suggests that most new graduate clinicians establish practices in metropolitan locations, rather than addressing shortages in regional and rural areas.(36) As has been identified for other health professions, this distribution pattern has proven resistant to change, despite a range of rural placement initiatives and financial incentive programs.(12, 37, 38)

Optometry workforce challenges must be contextualised within a rapidly evolving healthcare landscape, with new technologies, emerging areas of practice and value-based models of care. Teleoptometry, artificial intelligence-assisted diagnostics, and automated refractive technologies are transforming traditional practice models, with research suggesting that these innovations are cost effective and may reduce the demand for certain optometry services in the short to medium-term.(39, 40) Simultaneously, expanding scope of practice in areas such as laser procedures, therapeutic injections, collaborative models of specialist care and increasing optometry presence within public health settings will contribute to changing patterns of service utilisation, as well as the development of advanced clinical skills.(41)

Consolidation of practices by private entities within the optometry sector further complicates workforce projections. These changes require advanced workforce planning that is beyond basic supply-demand scenarios and accounts for population health needs and the changing dynamics of optometry service provision in Australia.(12, 30)

2.6 Objective of this project

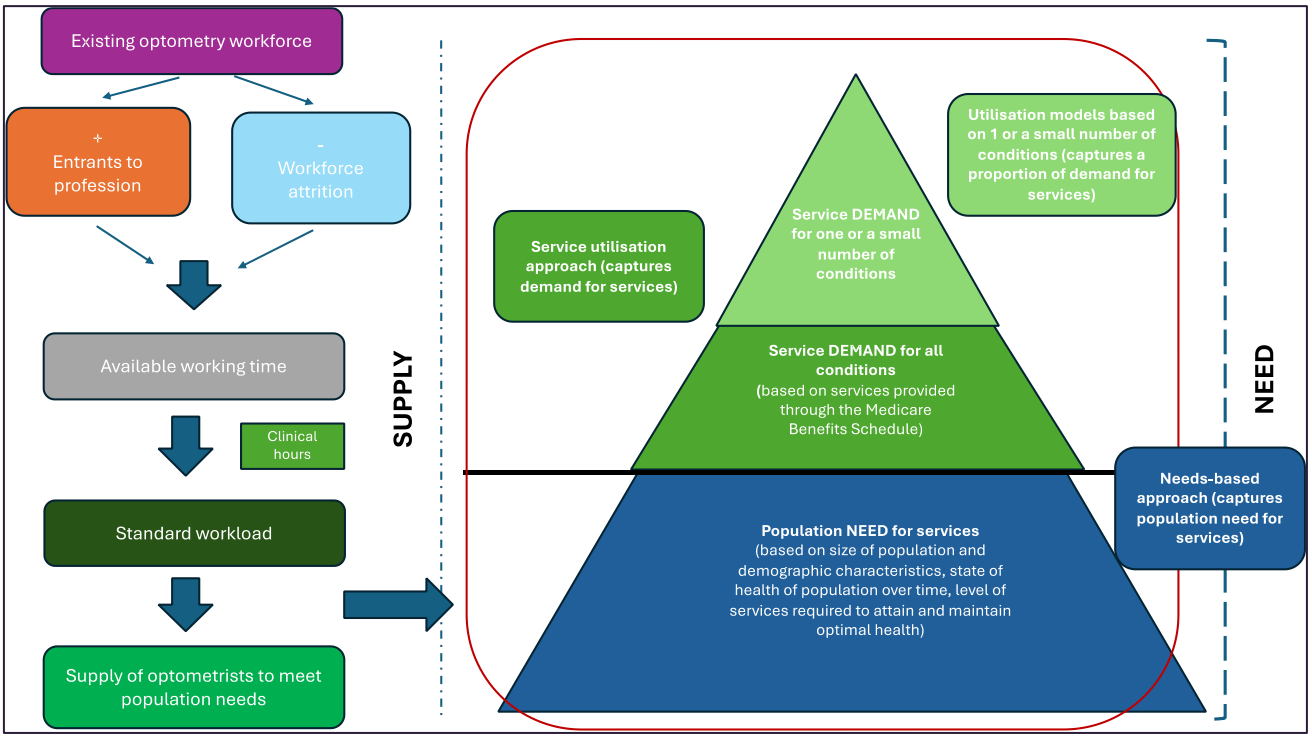
Optometry Australia commissioned the Centre for the Business and Economics of Health (CBEH), The University of Queensland (UQ) to forecast the optimal supply of optometrists in the Australian workforce in five-year increments from 2025 to 2040.

3. Methodology

This section provides an overview of the modelling approaches used to forecast the supply and demand for optometrists over the 15-year period. It describes a new approach for analysing the changing need for eye care within the Australian population. The modelling includes supply analysis (supply projection), population needs analysis (optometry workforce requirement to meet population needs) and a gap analysis (workforce shortage or oversupply). A service utilisation approach is provided as an alternative approach to forecasting demand for optometry services.

The methodology for the approach is shown in Figure 2 and detailed in the following sections. Supply is shown on the left-hand side while the population needs-based approach is shown on the right. Service utilisation (demand) is embedded within population need, however expanded to include the needs of the whole population.

Figure 2. Population needs-based approach to optometry supply and demand



3.1 Guiding principles

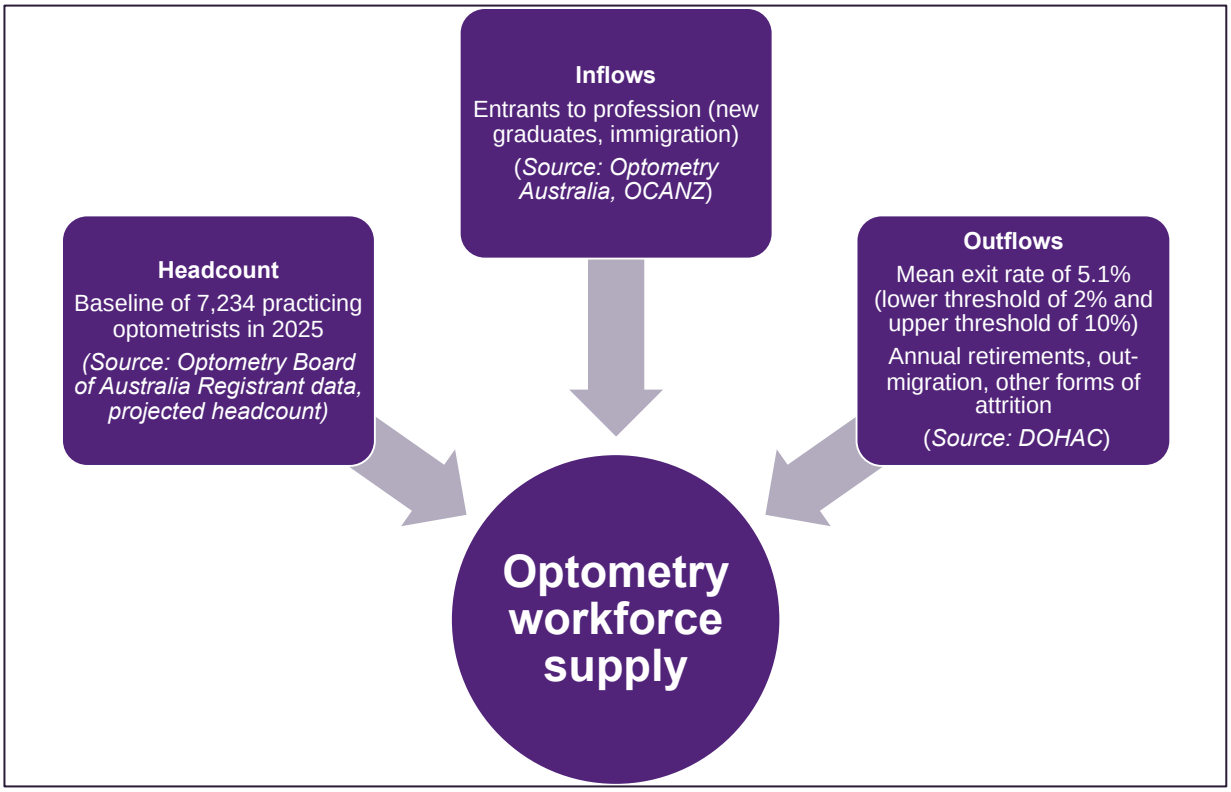
The following guiding principles were used for all modelling approaches, enabling the most comprehensive and accurate approach within the limitations of the available datasets.

- *Accuracy and reliability* – Input data for the models was based on the most comprehensive datasets available. The NHWDS serves as a primary source of data for the optometry workforce. Inputs for the population needs-based and service utilisation models are based on service data from the MBS and population data from the Australian Bureau of Statistics (ABS). The population needs analysis uses information from relevant clinical studies, where available, or otherwise as reported within the National Health Survey.
- *Flexibility and resilience* – Flexibility within workforce planning is essential. Three scenarios are used to project different supply and demand trajectories, enabling preparedness for various possible futures.
- *A comprehensive approach* – Different workforce planning models may be beneficial for different settings and circumstances. Service utilisation is embedded within the needs-based model, enabling a measure of demand, as well as the workforce requirements needed to meet the needs of the population, regardless of whether they have previously accessed care.
- *Equity and accessibility* – The population needs-based analysis enables planning for the equitable distribution of the optometry workforce across geographic regions and demographic groups.

3.2 Supply model methodology

The supply model methodology uses a traditional stock-and-flow approach and refers to the pool of qualified health professionals who can provide optometry services within the Australian primary care setting. The ‘stock’ refers to the current number of the active health workforce, while the ‘flow’ includes both inflow and outflow to the profession over the 15-year period (Figure 3).(42)

Figure 3. Supply model inputs and data sources



3.2.1 Optometrist Headcount (pool of qualified practitioners)

Data on the pool of qualified optometrists was obtained from the Optometry Board of Australia Registrant Data (01 July to 30 September 2024).(43) The baseline number of optometrists was calculated by accounting for a workforce of 6,881 practicing optometrists and assuming 353 new graduates and a 0.2% annual immigration rate over the 15-year period. Due to the timing of graduations, it was assumed that Deakin University new graduates were included in the number of optometrists reported in the 2024 dataset. Additionally, it was assumed that a small number of graduates from the University of Auckland were included in the 2024 dataset.

A headcount of 7,234 practicing optometrists was predicted for 2025, the first year of the stock-and-flow model. The baseline headcount accounts for optometrists who currently hold practicing registration and excludes those with limited registration, including postgraduate training or supervised practice, teaching or research. This approach was used to estimate as close as possible, the practicing stock of optometrists in the workforce over the 15-year period.

3.2.2 Optometry Workforce Supply Inflows

Supply inflows were estimated with consideration of entrants to the profession from domestic training programs and overseas migration. Movement of optometrists across states and territories is acknowledged but was not considered as part of the supply model methodology.

Future graduate registrations were estimated with consideration of the average number of annual enrolments into the seven accredited optometry courses, accounting for dropouts and noting consistently high completion and graduation rates. An annual average of 434 new graduates was included in the model, assuming no change to the number and size of optometry programs and cohorts over the 15-year period.

The number of overseas migrants entering the clinical optometry workforce each year was estimated using data provided by the Optometry Council of Australia and New Zealand (OCANZ) and based on number of people who successfully pass the Competency in Optometry Examination each year. Successful completion of this exam is required to apply for limited/provisional registration with the Optometry Board of Australia. This data was averaged from 76 successful completions from 2018/19 to 2023/2024.(44, 45)

3.2.3 Optometry Workforce Supply Outflows

Three scenarios are provided for net outflows from the optometry workforce. All three models include permanent movements from the workforce, retirements and deaths, and range from 2% (lower threshold), 5.1% (most stable scenario) and 10% (upper threshold).

Previous optometry workforce research has indicated a 2% exit rate for optometrists based on specific time periods,(12) while data from the Department of Health and Ageing (DOHAC) reported an average exit rate of 5.1% from 2012 to 2024, the length of the National Registration and Accreditation Scheme (NRAS).(41) A 10% exit rate is provided as the upper threshold for the model.

Temporary movements from the workforce (e.g., secondments, maternity leave, travel) were not considered as part of the model, as it was assumed that practitioners would likely retain their general registration. Permanent movements from the workforce were included within the three exit rate scenarios.

3.3 Population Needs Analysis

A population needs based approach was used to determine the number of optometrists required to meet the needs of the Australian population. This methodology was adapted from the World Health Organization (WHO) conceptual framework for workforce planning as described by Asamani and colleagues.(42) In this model, the population need for health services is determined by the size of the population and demographic characteristics; the state of health or level of health in the population; and the level of services (type and frequency) that are planned or necessary to maintain optimal health.

3.3.1 Population health service needs

Changes in population size, structure and needs are key drives of a community's need for optometry services. Population projections were sourced from the ABS series B data, and based on mortality, fertility, internal and external migration rates.(46) Measures of the population level of health were determined with consideration of common eye conditions, chronic conditions with a high burden of visual impairment and acute presentations and other assessments.

Prevalence rates were sourced from the ABS (National Health Survey) or from clinical studies from Australia or other comparable countries. The level of service was determined based on the type of optometry intervention typically offered and the frequency of service required and were sourced from relevant clinical guidelines. Consultation length was based on MBS item numbers, with mean and maximum time sourced from a recent optometry workforce survey undertaken by Flinders University and provided by Optometry Australia, as well as from expert clinical review.

Common eye conditions, consultation type, frequency, length and assumptions are provided in Appendix 1,2 and 3.

3.3.2 Standard workload

The productivity measure for the population needs analysis is a 'standard workload', which is described as the number of services that an optometrist can undertake within a given year. In this model, the standard workload is a function of the available working time of an optometrist, as determined by their clinical hours and the service standard, or amount of time required to deliver the service.(42)

An average number of 31.3 clinical hours per week (and 6.26 clinical hours per day) was taken from the NHWDS. It is acknowledged that not all optometrists work full time, and 125.2 working hours per month was used as the measure of average service provision. The time per intervention or service type was based on MBS item numbers, a recent optometry workforce survey and expert clinical review, as described above.

The standard workload productivity measure relates only to patient care activities that can be counted per patient, including the provision of clinical notes and patient reports. The model excludes any non-patient care activities undertaken by optometrists.

3.3.3 Needs versus supply gap analysis

The supply and needs-based requirements components were integrated to compare the current and projected gaps in the optometry workforce over the 15-year period. In this model, a negative gap is a supply shortfall and indicates that there is a number needed to be trained or incorporated into the workforce through recruitment or migration strategies. In contrast, a positive gap indicates an oversupply of the workforce in comparison with population need.(42)

3.4 Service utilisation analysis (demand)

The service utilisation approach was employed as a comparative model to the needs-based method. This method was used to forecast the demand for optometrists in Australia over the 15-year period. This method combines the current demand for optometry services with the projected prevalence (i.e., growth rate) in eye conditions typically managed by optometrists, such as myopia.

The service utilisation rate was used to estimate the base projection for the demand for optometry services in 2025. It was based on the MBS-specific historical patient-level utilisation of optometry services and adjusted to reflect state and territory per capita population values.

Another key determinant in optometry service utilisation is the prevalence rate of visual impairments. Consistent with recent workforce modelling studies, the likely growth in myopia was estimated.(30) Myopia was selected as the most extensively recorded condition necessitating optometric care. Using data from the National Health Survey, the prevalence of myopia was observed to be 26% and 28% between 2018 and 2022, respectively. This implies a 2% increase in the prevalence of myopia over the four years, or a growth of 0.5% per annum. This accounts for the population growth, which is built into the model by adjusting for the growth rate in myopia prevalence. The intuition is that the growth in myopia prevalence is directly aligned with the growth in the population. This growth rate is applied to the base case demand for optometry services to forecast future demand for optometry services.

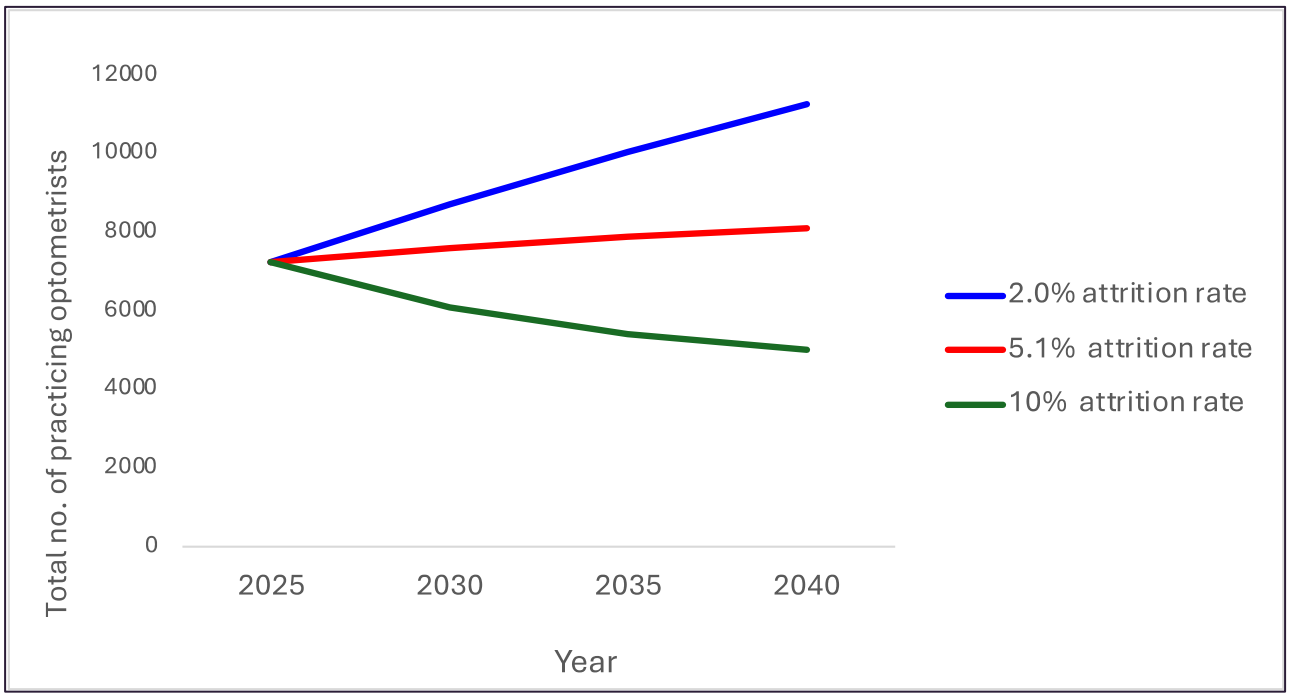
4. Findings

This section provides a summary of the supply, population needs-based and utilisation models for the optometry workforce in five-year increments from 2025 to 2040.

4.1 Workforce supply

The three scenarios (2%, 5.1% and 10% exit rates) show a different picture of the projected optometry workforce over the 15-year period (Figure 4).

Figure 4: Optometry workforce projections, 2025 - 2040



With a 5.1% exit rate, there is a steady and stable growth in the optometry workforce from a baseline of 7,234 optometrists in 2025 to 8,093 optometrists in 2040. This is a growth of 859 optometrists over the 15 year-period.

With a 2% attrition rate (lower threshold), there is a much sharper increase in the workforce size to 11,259 optometrists by 2040. In contrast with a 10% attrition rate (upper threshold), the expected number of optometrists drops below baseline with a workforce size of 5,026 by 2040. This is a loss of 2,208 optometrists from the baseline headcount in 2025 (Table 3).

Table 3. Summary of optometry supply 2025 - 2040

Scenarios	Optometry workforce (registered optometrists)			
	2025	2030	2035	2040
2% exit rate	7,234	8,699	10,037	11,259
5.1% exit rate	7,234	7,595	7,875	8,093
10% exit rate	7,234	6,104	5,429	5,026

Overall, the 2% and 5.1% scenarios project a growth in the supply of optometrists. The primary driver of growth in the workforce is from new graduates. With a 5.1% exit rate, the growth in the workforce is slowed, with the volume of new entrants effectively replacing optometrists who leave the workforce across each of the five-year periods.

The 2% and 5.1% scenarios present a more optimistic view of the workforce when compared to a 10% exit rate, where the workforce size is markedly decreased over time.

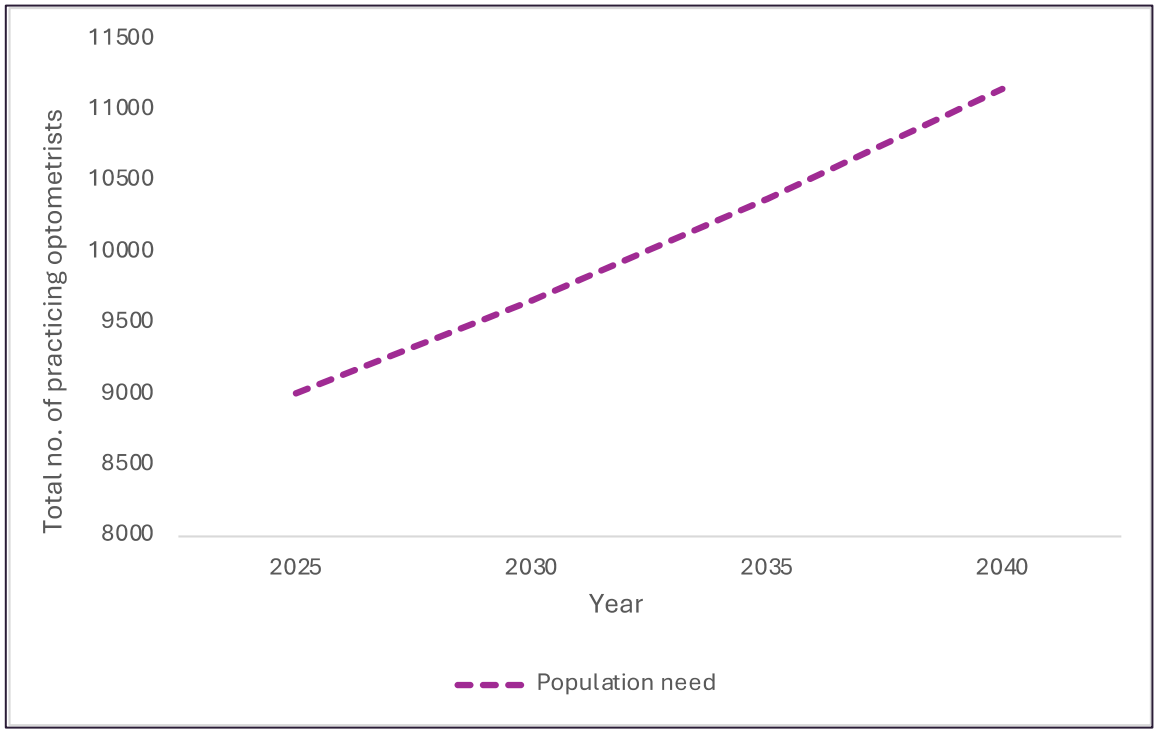
This model accounts for a stable number of new graduates entering the workforce each year from the seven Australian optometry programs. The impact of migration on the model is negligible.

4.2 Population need and optometry workforce requirements

The population need for optometry services is projected to increase over the 15 years. A baseline of 9,010 optometrists to meet population needs is identified for 2025 increasing to 11,149 optometrists in 2040 (Figure 5).

The increase in population need reflects an increase in the population requiring optometry services from a range of factors including an ageing population and increasing burden of disease from chronic disease and multimorbidity. It accounts for the population that requires optometry services, regardless of whether they have previously accessed or can afford these services.

Figure 5. Population needs-based requirements, 2025 to 2040

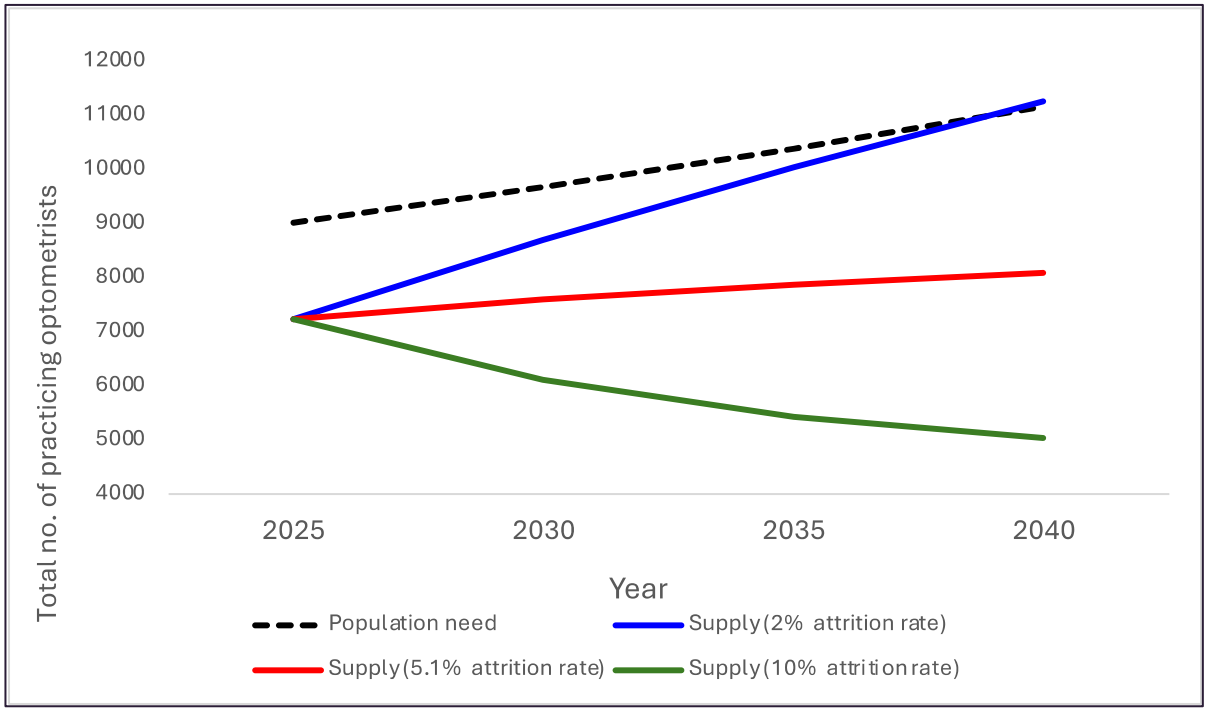


Using a 5.1% exit rate, an undersupply of optometrists is forecasted at all time points, which increases over time. This commences with an undersupply of 1,776 optometrists in 2025 and extends to an undersupply of 3,056 optometrists in 2040.

With a 10% exit rate, the shortfall of optometrists is considerably larger, and it is expected to be 6,124 practitioners by 2040.

At the lower threshold of a 2% exit rate, a shortfall of optometrists is predicted in 2025, 2030 and 2035, however is close to equilibrium by 2040 (Figure 6).

Figure 6. Optometrist workforce supply and population needs-based scenarios, three scenarios, 2025 - 2040



When comparing the population needs-based requirement to optometrist supply, the shortfall of optometrists at a 5.1% exit rate is consistent over time. The consistent shortfall indicates that the workforce will not be able to meet community needs for healthcare over time, without a change in education and training, migration, employment and recruitment and retention.

At a 10% exit rate, the undersupply is significant and increases over time, leading to increasing burden on the existing workforce and decreased community access to optometry services.

At a 2% exit rate, the lower threshold for the model, the undersupply of optometrists is reduced over time and meets an equilibrium close to 2040. While this provides an optimistic view of the workforce, it does not account for any changes to workforce retention that may occur due to an aging workforce, culture, scope of practice or practice and service models.

Workforce supply, population needs-based requirements and the subsequent workforce gaps are shown in Table 4.

Table 4. Workforce supply, population needs based requirements and supply gaps, 2025 - 2040

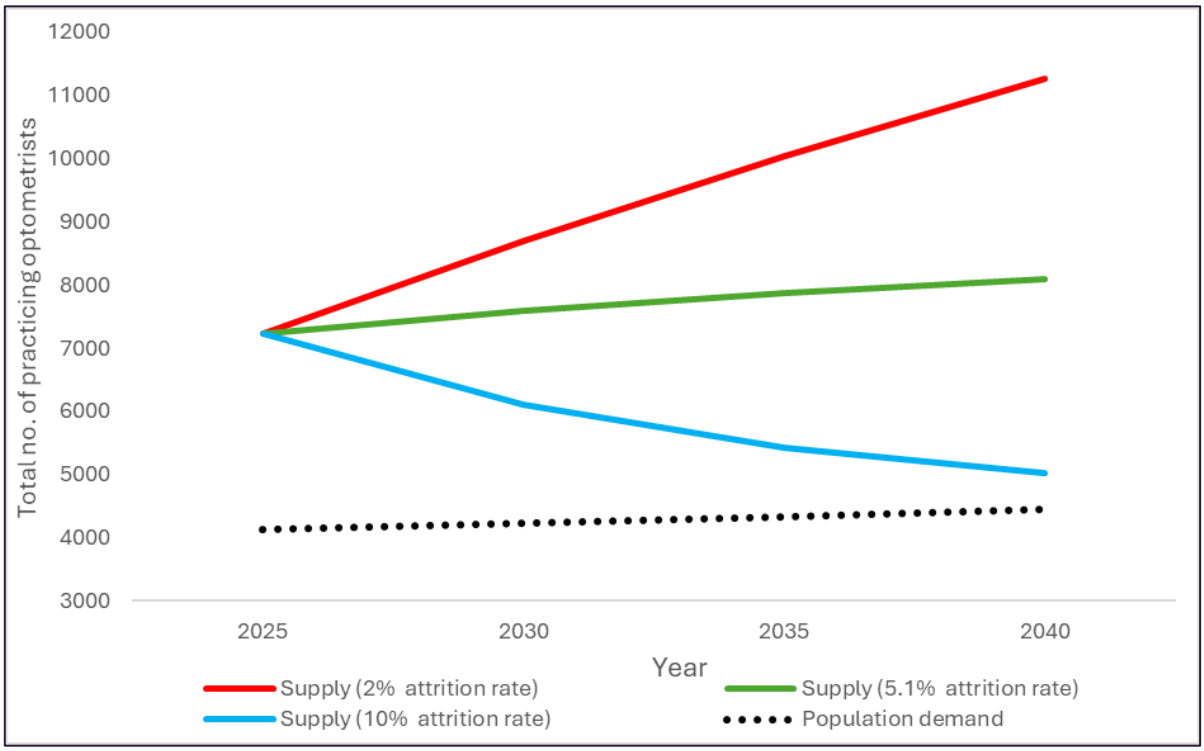
Scenarios	Optometry workforce (practicing optometrists)											
	2025			2030			2035			2040		
	Need	Supply	Gap	Need	Supply	Gap	Need	Supply	Gap	Need	Supply	Gap
2% exit rate	9,010	7,234	-1,776	9,660	8,699	-961	10,373	10,037	-335	11,149	11,259	+110
5.1% exit rate	9,010	7,234	-1,776	9,660	7,595	-2,066	10,373	7,875	-2,498	11,149	8,093	-3,056
10% exit rate	9,010	7,234	-1,776	9,660	6,104	-3,557	10,373	5,429	-4,944	11,149	5,026	-6,124

4.2 Service utilisation, demand and workforce requirements

Using service utilisation methods, as an alternative to population needs, the demand for optometry services is projected to increase slightly over the 15-year period from a baseline of 4,125 optometrists in 2025, to 4,445 optometrists in 2040.

Using the supply forecast for exit rates of 2%, 5.1% and 10%, there are surpluses of optometrists in 2025, 2030 and 2035. At a 2% and 5.1% exit rate, there are surpluses of 6,814 and 3,109 practicing optometrists respectively. With a 10% exit rate, however, the gap between supply and demand narrows and almost reaches equilibrium (Figure 7).

Figure 7. Projected supply and demand, three scenarios, 2024 – 2040



Measures of demand and the supply-demand gap forecasted using this methodology must be interpreted with caution. The demand, which is forecasted with a single condition (myopia), underestimates true demand for the broad range of eye conditions that are managed by optometrists. Therefore, this model also overestimates the gap between supply and demand, predicting a larger workforce surplus than is likely given consideration of optometry service patterns and scope of practice.

The data table for the projected demand and supply-demand gap is provided in Appendix 4.

5. Considerations, limitations and implications

Health workforce planning is a complex, multifaceted and nuanced process that aims to achieve an optimal balance of skilled practitioners to deliver the right services at the right time, in the right place and at an affordable cost, to meet the changing needs of communities.(47, 48) Inaccurate workforce planning models may under or overestimate supply and demand, leading to an under- or over-supply of health practitioners, insufficient investment in education programs, employment and recruitment campaigns, as well as increased costs and reduced access to health care.(49, 50)

5.1 Forecasting workforce supply

The framework for estimating the number of health professionals to meet community demands has evolved over time. The use of a stock-and-flow model is a simple and effective strategy to analyse the supply side of workforce planning, accounting for variables including the baseline size of the workforce, education programs and graduate numbers, migration and attrition over time. The accuracy of this approach, however, is dependent on any assumptions made, as well as the availability and accuracy of input data. Unfortunately, this approach does not capture or account for heterogeneity in the workforce (e.g., age), or any changes to the system, such as a modification to the number or size of education programs, the impacts of migration or changes to employment patterns.(47)

For this study, the in-flow of practitioners into the profession was assumed to be stable each year, assuming no changes to optometry programs or graduate numbers, or from migration. While a significant change to these conditions over a 15-year time horizon is unlikely, it must nonetheless be considered as a limitation of the model and the accuracy of supply estimates.

The exit rate used to estimate workforce attrition has a significant impact on the accuracy and relevance of supply estimates. For this study, three scenarios were applied, providing flexibility within the model to accommodate different possible futures for the optometry workforce. At a 2% exit rate, the size of the optometry workforce increases substantially, thereby providing a ‘best case view’. A 2% exit rate is consistent with research by Duffy and colleagues,(51) who found that 626 optometrists left the workforce between 2011 and 2019, an average of 78.25 registrants each year.

While an exit rate of 2% is possible for a single year or a couple of years at a time, data from the Australian Government (DOHAC) suggests that the exit rate for optometry sits at the middle point of 5.1% when averaged over a 12-year period.(41) Similarly, recent research exploring the factors associated with retention and attrition of regulated health professionals (using an online survey of practitioners and an analysis of 10 years of Ahpra registration data) found that 5.4% of optometrists intended to leave the profession and a further 5.8% were unsure of their future. The main reasons that health professionals

intended to leave their respective professions were mental burnout, retirement, a lack of recognition and/or feeling undervalued and a lack of professional and personal satisfaction. Reasons that health practitioners may be unsure of their future included a potential career change, workplace issues (including stress and burnout), poor renumeration or a lack of opportunity, retirement considerations and health and family commitments.(13)

At a 5.1% exit rate, the number of optometrists entering the workforce each year effectively replaces those that leave and contributes to a small increase in the size of the workforce over time. At a 10% exit rate, the number of practitioners leaving the profession exceeds those who enter, leading to a sharp decrease in the size of the optometry workforce over time. Although a 10% exit rate is the upper threshold for this model, it is not unprecedented in Australian health care services, and the implications of such workforce shortages must be considered as part of workforce planning.(52)

5.2 Forecasting demand and workforce supply

The second part of workforce planning is inherently more complex and requires an understanding of the number of health professionals required to meet the needs of the system and/or community. There are various models of forecasting demand or need, all of which produce different results and have different underpinning assumptions and limitations.(48, 49)

A popular model of forecasting demand is based on using previous levels of health utilisation to predict the clinical workforce required to deliver health care in the future. Previous optometry supply and demand studies have used different utilisation models and input data, subsequently providing differing forecasts, ranging from a large undersupply of optometrists to meet service demands to an oversupply of optometrists and potential under- or unemployment.(12, 30-33, 53)

The utilisation approach used for this study used myopia as the base condition, consistent with the 2024 Deloitte report, however applied more conservative estimates for length of consultation and frequency of review. Length of consultation was based on MBS items, results from the recent Flinders study and expert review, while frequency of review was based on clinical guidelines where available. The growth rate of myopia was selected as it is the most extensively recorded condition requiring optometric care in the primary care setting. The results of this analysis, which forecast a surplus of optometrists to meet demand across three scenarios (2%, 5.1% and 10%) must be interpreted with caution. Optometrists assess and manage a wide range of eye conditions and visual disturbances, outside of myopia management. Limiting the model to a single condition underestimates future demand for optometry services.

A further limitation of this approach is the use of historical data on 27 different MBS items as an overall estimate of service utilisation. It is likely that a proportion of patients will present multiple visual impairments during a single visit to an optometrist, although these

are recorded separately for individual MBS items. Estimating the baseline demand for optometry services using the service utilisation rate from 27 MBS items will therefore result in a degree of double counting in service utilisation, impacting the accuracy of demand estimates.

The model includes only those services that qualify for Medicare benefits. Although most optometry services are billed through Medicare, the model excludes any non-Medicare services provided in public and private hospitals, as well as for services provided under the *Veteran's Entitlement Act*, *Social Security and Veterans' Entitlements Amendment (No2) Act 1986*, the *Veterans' Entitlement (Transitional Provisions and Consequential Amendments) Act 1986*, the *Military Rehabilitation and Compensation Act 2005*, as well as for services provided for the Civil Aviation Safety Authority.

Importantly, this approach considers only those groups of the population that have previously received optometry services, excluding those people who have not accessed care, despite having a need or untreated eye condition. Affordability, health literacy and geographic barriers have been identified as common reasons why people do not access health care, including optometry services.(6, 8, 9)

The limitations of using utilisation as a measure of demand for workforce planning, and the difference to a population needs-based approach is further summarised in Appendix 5.

5.3 Forecasting need and workforce supply

The complexity and changing nature of workforce planning has led to the use of needs-based approaches to match the supply of health practitioners with the needs of a community.(42) While a utilisation approach focuses on services that have been previously provided, a needs-based approach explicitly considers the care needs of a population, using direct measures of health status. This approach combines information on the health status of a population with demographics, disease prevalence and best practice standards of care.

The approach for this study was adapted from the WHO conceptual framework for workforce planning.(42) In contrast to the utilisation approach described earlier, the needs-based method is more comprehensive and considers the prevalence rates of a range of common visual impairments to estimate the population need for optometry services. While other approaches assume a constant rate of disease prevalence over time, this model adjusts for expected changes in the prevalence of eye conditions.(42) In this way, it is less likely to underestimate demand and considers the level of optometry services needed to meet Australia's eye care needs over the 15-year period.

The population needs-based approach assumes that the population has a certain need for a service, whether they have previously accessed it (or not) or whether they can afford it (or not).(42, 48) While demand is embedded within the model, it can be restricted by the accessibility and affordability of services. Most optometry services are billed through Medicare, however out-of-pocket costs may still apply for some services or for optical

items (e.g., glasses). For patients who cannot afford these costs, their need for eye care will not translate into effective demand. Similarly, for people living in rural and remote areas who do not have a local optometry practice or visiting practitioner, their need for eye care will not translate into demand for optometry services. It is important to account for these and other barriers to care as part of workforce planning and identify opportunities to advocate for funding, policy and practice changes to improve the accessibility and equity of optometry services.(48)

While the needs-based model provides more accurate data to inform workforce planning, there are several limitations. Firstly, the geographic distribution of optometrists was not considered as part of supply modelling. However, it can be reasonably expected that the shortfall of optometrists will be greatest in rural and remote areas, further impacting the burden of disease experienced by rural communities.

In line with other modelling approaches, the needs-based model is limited by the availability and accuracy of input data. Where possible, the prevalence rates for optometry conditions were sourced from clinical studies from Australia or comparable countries. Where clinical evidence was limited, prevalence rates from the National Health Survey were used. As this is self-reported data, it is recognised that the reported prevalence rates may underestimate the true level of need in the population.

It is well recognised that workforce requirements are most often not linear over time and may be impacted by disease patterns (e.g., a pandemic, a severe weather event), health policy, legislation and regulation, technology and models of care.(41, 42) Similarly, workforce supply does not remain constant and may be impacted by legislation, regulation, employment and industrial conditions.(42) The approach also takes a conservative view of optometry services and does not account for any changes to the scope of practice of optometrists over the 15-year time period.

6. Opportunities for the optometry workforce

The findings from the supply, needs-based, and service utilisation approaches provide powerful information to support workforce planning for the optometry profession.

Using a needs-based planning approach, there is a projected undersupply of optometrists to meet population needs over the 15-year period. This undersupply limits the equitable supply of eye care services and highlights opportunities for reform across health policy, employment, education and training and recruitment and retention.

The needs-based approach explicitly considers the health needs of the population, not only those who have previously accessed care. There is a known gap between the MBS rebates available for optometry consultations and the cost of providing care. Additionally, the changing nature of private health insurance cover may impact the level of rebates available for glasses and contact lenses.(8, 9) Ongoing advocacy for an increase to MBS rebates for comprehensive consultations may be an effective strategy to improve the accessibility, affordability and equity of services. Removing barriers to timely and high-quality care will also assist in translating population need into demand for optometry services.

A review of optometry education programs is also required in the short-term to maximise the supply of practicing optometrists over the next two decades. At a 5.1% exit rate, the supply of new graduates and overseas trained practitioners barely replaces those who have left the profession and does not address the gap between supply and projected population need. While optometry programs have expanded over the last two decades, the annual number of graduates is small. Any change to a training program or the development of a new program is likely to take several years to implement. When combined with the time taken to train a new optometrist (minimum of three years for a graduate entry program), the time-lag between education and practicing may be quite substantial, thereby impacting the supply-need gap.

Reducing the gap between supply and need requires that health professionals remain practicing within the workforce. Attention to the employment and working conditions of optometrists is warranted, with job satisfaction, work-life balance and a sense of achievement identified to be important in retaining the health workforce.(13) Strategies to reduce burnout are also critical, with evidence suggesting that multi-level supports (organisational, leadership and individual levels) are required to improve retention, including active and authentic leadership at all levels, safe working environments, teamwork and effective communication.(13, 54)

The projected workforce shortages are likely to have a greater impact on rural and remote communities than metropolitan cities, increasing known geographic maldistribution and the health inequity experienced by these communities. Consideration should be given to strategies to promote optometry careers in rural and remote areas. While rural financial

incentives for optometrists have not been successful to date, review of existing health professional programs (e.g., rural medical programs) is required to determine their applicability and relevance for optometry. New and innovative programs are required to promote optometry practice and retain optometrists in rural and remote communities.(41)

Finally, there are opportunities to expand optometry scope of practice and enable more efficient and equitable service delivery.(41) Technological advancements, collaborative and shared care models, tele-optometry and Artificial Intelligence-driven diagnosis are required to ensure optometrists are providing high-quality, efficient, equitable and accessible services to Australian communities.

7. Conclusions

Workforce planning is complex and multifaceted, relying on accurate data to ensure an adequate supply of skilled and capable health professionals to meet the future needs of the Australian population.

This project used three methods to predict the supply, population need and demand for the optometry workforce from 2025 to 2040. The supply of optometrists was forecasted using a stock-and-flow approach and used a 2% (lower threshold), 5.1% (most likely) and 10% (upper threshold) exit rate from the profession. Demand for services was forecasted using a service utilisation approach, however underestimated the true demand for optometry services in the community. Considering these limitations, a population-needs model was used as the preferred approach to match the healthcare workforce to the needs of the population now and into the future.

The needs-based approach makes explicit the needs of the population and the workforce required to address these needs using direct measures of health status. Service utilisation, or demand, is embedded within population need, however is expanded to assume that the population has a certain need, regardless of whether they have previously accessed the service or not.

The population needs-based approach provides powerful information to support workforce planning for the optometry profession. Further consideration of strategies to maximise the accessibility and affordability of optometry services is warranted, encouraging the population need for optometry care to translate into effective and ongoing demand. This should include a review of optometry training programs and graduate numbers, employment and working conditions for practicing optometrists, geographic workforce distribution to promote practice in regional, rural and remote areas, as well as opportunities to expand optometry scope of practice to enable effective, efficient, equitable and high-quality services for Australian communities.

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Appendix 1. Common eye conditions, consultation type and reference

Eye conditions	Consultation type	Frequency of visit	References and Assumptions
Hyperopia	Comprehensive	Once in the year of visit	Expert review
Myopia (0-34 years)		Twice in the year of visit	Clinical research(55) -Recommends comprehensive eye health and vision examinations every six months after treatment established
Myopia (35 years and above)		Once in the year of visit	Expert review -Comprehensive review once per year once treatment established and vision stable
Cataract			Cataract Clinical Standard(56) - More frequent review – lead up to surgery, fast progressing cataract - Less frequent review – stable congenital cataract in adults, early cataract, slow progressing cataract
Macular degeneration		Twice in the year of visit	Optometry Australia Clinical Practice Guide for the Diagnosis and Management of Age-related macular degeneration(57) - Less frequent review – co-management with ophthalmologist, wet AMD - More frequent review – monitoring and early AMD and intermediate dry AMD
Glaucoma			Optometry Australia Clinical Practice Guide for the Management of Open Angle Glaucoma(58) - Non-complicated glaucoma likely to be co-managed with an ophthalmologist - Does not include acute angle closure glaucoma attack (acute presentation) or advanced or complicated glaucoma (management by ophthalmologist) - Glaucoma review six monthly

Eye conditions	Consultation type	Frequency of visit	References and Assumptions
Astigmatism			Expert review
Presbyopia			Expert review
Other disorders of ocular muscles – binocular		Once in the year of visit	Excludes sudden / recent onset diplopia as this would be included in "all acute presentations" Consultations may vary depending on clinical need: - Lower frequency - adult with amblyopia since childhood, and it is stable; asymptomatic adult with low range exophoria at near and large fusional reserves - Medium frequency - adult with symptomatic esophoria managed with spectacles; asymptomatic teenagers with low range exophoria at near and large fusional reserves - Higher frequency of consultation examples - child undergoing vision training for convergence insufficiency
Other disorders of choroid and retina			Excludes sudden / recent onset of flashes and floaters as these would be included in "all acute presentations" Consultations may vary depending on clinical need: - Lower frequency - non-predisposing retinal degenerations such as Pavingstone; macular dystrophies being co-managed with an ophthalmologist - Medium frequency - monitoring of typical choroidal naevus, monitoring of patient previously treated for posterior uveitis, monitoring of patient previously diagnosed with or treated for a chorioretinopathy - Higher frequency – first (mild) case of central serious chorioretinopathy which resolves quickly without treatment
Contact lenses	Follow-up	Once every two years	Clinical research(59)

Appendix 2. Chronic and acute eye conditions, consultation type and reference

Eye conditions	Consultation type	Frequency of visit	References and Assumptions
Diabetes (high risk)		Once in the year of visit	Patients with diabetes and co-morbidities (70% of population with diabetes) – once yearly screening for diabetic retinopathy
Diabetes (lower risk)		Once every two years	Patients with diabetes but no co-morbidities (30% of population with diabetes) – screening every two years for diabetic retinopathy
Cardiovascular disease	Comprehensive	Once in the year of visit	Consultations may vary depending on clinical need: - Lower frequency - screening for conditions including branch retina artery occlusions, branch retinal vein occlusions, malignant hypertension - Higher frequency - ongoing follow up after a stroke, treatment of a branch retinal vein occlusion
Rheumatoid arthritis	Comprehensive	Once in the year of visit	American Academy of Ophthalmology(60) ocular involvement in rheumatoid arthritis screening schedule: - Baseline fundus examination should be performed to rule out preexisting maculopathy - Begin annual screening after 5 years for patients on acceptable doses and without major risk factors
Acute presentations	Follow-up	Twice in the year of visit	Optometry Australia Clinical Practice Guide for the Diagnosis and Management of Anterior Eye Conditions.(61) Consultations may vary depending on clinical need: - Lower frequency (one visit only) - simple bacterial conjunctivitis, conjunctival foreign body, subconjunctival haemorrhage, angle closure glaucoma attack or branch retinal vein occlusion where patient is referred to an ophthalmologist

Eye conditions	Consultation type	Frequency of visit	References and Assumptions
			- medium frequency (two visits) – medium complexity corneal foreign body, new onset of flashes and/or floaters where there is no initial tear/break/hole and review within 6 weeks, simple allergic conjunctivitis where treatment is reviewed - higher frequency (more than two visits) - bacterial keratitis, herpes simplex keratitis, acute anterior uveitis, complex foreign body requiring a bandage contact lens
Driving assessment (where no other visual impairment present)	Comprehensive	Once in the year of visit	People aged 75 years and over who do access optometry service for glasses or other vision impairment (7% prevalence in people aged 75 years or older)

Appendix 3. Consultation type, length and reference

Consultation type	Activity standard (minutes)	Minimum (minutes)	Maximum (minutes)	Reference and Assumptions
Comprehensive initial consultation (all)	28.5	15	40	Minimum from MBS item no. description Median and maximum from Flinders study
Comprehensive initial consultation (diabetes)	28.5	15	40	As for comprehensive initial consultation
Brief initial consultation	15	10	30	Mean time from MBS item no. description
Subsequent consultation	15	10	30	Mean time and maximum time from Flinders study
Contact lenses for specified classes of patients	60	45	120	Minimum approximately 1.5 comprehensive timeslots, mean approximately 2 comprehensive timeslots and maximum approximately 4 comprehensive timeslots
Computerised perimetry	28.5	15	30	Accounts for data entry, patient dark adapting – similar time for one or both eyes
Low vision assessment	28.5	15	40	Comprehensive or review appointment
Children’s vision assessment	28.5	15	40	Comprehensive or review appointment
Corneal foreign body	15	10	30	Mean time and maximum time from Flinders study for follow up examination
Telehealth attendance – short	10	10	15	Item no. indicates consultation less 15 minutes
Telehealth attendance - long	28.5	15	40	Consistent with comprehensive initial assessment (MBS item no.)

Appendix 4. Workforce supply, demand and supply-demand gap using service utilisation methods

Scenarios	Optometry workforce (practicing optometrists)											
	2025			2030			2035			2040		
	Need	Supply	Gap	Need	Supply	Gap	Need	Supply	Gap	Need	Supply	Gap
2% exit rate	4,125	7,234	+3,109	4,229	8,699	+4,470	4336	10,037	+5,701	4,445	11,259	+6,814
5.1% exit rate	4,125	7,234	+3,109	4,229	7,595	+3,366	4336	7,875	+3,539	4,445	8,093	+3,648
10% exit rate	4,125	7,234	+3,109	4,229	6,104	+1,875	4336	5,429	+1,093	4,445	5,026	+580

Appendix 5. Comparison of the service utilisation and needs-based planning approaches

Limitation	Service Utilisation Method	Needs-based approach
Potential to underestimate the future demand for optometry services in Australia	To estimate demand, the prevalence of eye conditions used in this method is restricted to myopia, as it is the most well-documented condition that requires optometry services. ***This approach is likely to underestimate the future demand for optometry services in Australia.***	The needs-based method uses prevalence rates of all common visual impairments and other morbidities to estimate the demand for optometry services.
Double counting of service utilisation	To obtain an overall estimate of the optometry service utilisation rate for use in calculating the base/current year demand for optometry services, historical data on 27 MBS items used. Most people are likely to present multiple visual impairments during a visit to the optometrist, but these are recorded separately for different MBS items. ***Estimating the base year's demand for optometry service using the service utilisation rate obtained from 27 MBS items is likely to suffer from double counting.***	To avoid or limit the problem of double counting of MBS service utilisation, this method clusters MBS items into ten groups. For instance, "all comprehensive initial consultations" is captured as a single optometry service and encapsulates MBS items such as 10905, 10907, 10910, 10911, 10912, 10913, and 10914.
	This method combines all MBS items to produce a single service utilisation rate.	This method does not use a combined service utilisation rate. Instead, it separately employs the 10 grouped optometry services and their time allocations per service in the modelling process.