

# Practice Profile and Geographical Distribution of Ophthalmologists in the Philippines

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## Abstract

**Objectives:** Determine practice profile, distribution, ophthalmology/population ratio (OPR), and density per region, and compare them based on the dimensions of eyecare services: availability, affordability, accessibility, and adequacy. **Methods:** A cross-sectional study of members and non-members of the Philippine Academy of Ophthalmology (PAO) from August to December 2022 using an online survey. **Results:** There were 1140 respondents, 636(58%) males. 979(86%) were actively practicing. 852(89%) hold only or predominantly private practice. 541(55%) were general ophthalmologists (GO). 134 respondents are still in training. Primary clinics were highest in the National Capital Region (NCR) (34%). 80% of all clinics of ophthalmologists are located in Luzon. Ophthalmologists held clinics in only 244(15%) municipalities/cities. 22% of municipalities/cities in Luzon, 9% in Visayas, and 8% in Mindanao had ophthalmologists. **Conclusion:** Almost all were seeing patients in practice or in training. Despite a slight male predominance, women ophthalmologists were >20-35% in Western countries. There was an increase in density to 15.6. NCR has the highest density (52.8), better than the United Kingdom (49) in 2012. Luzon had the highest density among the 3 major areas in the Philippines at 21.8, better than China's 20 in 2016. Region 12 and the Bangsamoro Autonomous Region of Muslim Mindanao (BARMM) had low density.

**Keywords:** *Ophthalmologists, Philippines, Distribution, Ophthalmology.*

## Introduction

In 2010, a global survey involving 213 ophthalmologic societies was done to determine the number of ophthalmologists in practice and training <sup>[1]</sup>. It showed that there remained a gap between the rate of the global population reaching 60 years old and the rate of ophthalmologists getting trained, despite having more than 200,000 ophthalmologists in 193 countries <sup>[1]</sup>. It was recommended that aggressive training of eye care personnel be done to address the gap <sup>[1]</sup>. In 2016, another global survey was done to determine the number of ophthalmologists globally and whether it was sufficient to address the global needs for eye care <sup>[2]</sup>. It showed that, despite an increase to more than 232,866 ophthalmologists in 194 countries, there was a huge disparity in the distribution of the ophthalmic workforce <sup>[2]</sup>. The maldistribution has been well-documented, with most ophthalmologists concentrated in the metropolitan areas <sup>[3-6]</sup>.

*In line with Universal Eye Health:* a global action plan 2014–2019, the International Council of Ophthalmology maintains a list of ophthalmologists per country <sup>[7]</sup>. Shown was the number of ophthalmologists in the Philippines from 2012–2013 at 1,467 for the then national population of 101,716,359 <sup>[7]</sup>. This translated to 14 ophthalmologists per million Filipinos or 3.5 per 250,000

population <sup>[7]</sup>. This is higher than the World Health Organization's recommended minimum ophthalmologist per population ratio (OPR) of 1:250,000 population <sup>[6]</sup>. It is also higher than the 3.7 per million population in low-income countries <sup>[2]</sup>. However, there has been no data on the distribution of ophthalmologists in the Philippines. There is also no data on how many perform surgery, an important data point to determine how responsive the current workforce is to the eye health needs of the population, particularly cataract. There is also no data on how the Philippines addressed the gap between the need for and the training of eye care personnel after a decade.

This study aims to determine the current number of ophthalmologists in training and in practice, who perform surgery, have subspecialty training, and their geographical distribution in the country. This is crucial, especially in the Republic Act 1122 or the "Universal Health Care" Law implementation, which aims to ensure that every Filipino gets the best possible quality of health care, including eye care <sup>[8]</sup>. This study also determined the OPR and density of each region. Assessing these will help in better identifying areas that are underserved in eye care. Lastly, this study relates the data on ophthalmologists to the dimensions of health care services, namely availability, affordability, accessibility, and adequacy.

## Methods

This is a prospective cross-sectional study that received ethical approval from the University of the Philippines Manila Research Ethics Board. It adhered to the Declaration of Helsinki and the Data Privacy Law of 2012. A link to a 2-part online survey composed of an informed consent from the participant and a 12-item questionnaire was made available by the Philippine Academy of Ophthalmology (PAO) secretariat and shared in the PAO social media account to PAO members, members-in-training, and non-members who are involved in the practice of ophthalmology in the country. The deidentified data were then given to the authors for analysis. The survey was made available from August to December 2022. The survey can only be answered once by a respondent to avoid duplication of entry. Respondents who did not consent to answer the survey were excluded. The computed sample size for a population of 2000 to achieve a 95% confidence level and a 5% margin of error was 323. Results are summarized and tabulated using Microsoft Excel version 2016 (Microsoft Corporation, Redmond, WA, USA) and Stata 14 (StataCorp, College Station, TX: StataCorp LP).

## Results

1140 survey respondents were all included in the study. The 1098 (96%) respondents are members of the Philippine Academy of Ophthalmology (PAO). With the recent official PAO membership count of 1939, the survey response rate from PAO members was at 57%. We considered other ways of approaching practicing ophthalmologists in the Philippines at the onset of the study, including calling the Department of Health and getting in touch with Municipal Health Officers to know how many physicians practice ophthalmology in their area. It never progressed due to the ongoing pandemic then. We tried communicating with PHIC on the number of physicians who filed claims for cataract surgery. However, this can limit the subject to those who just do surgery and have privacy concerns. We tried using the PAO Secretariat membership database and interviewing PAO chapter officers but due to privacy concerns, the members' data in the database cannot be collected for research purposes.

Six hundred sixty-three (58%) are male. The mean age of respondents was 47±12 years. Nine hundred thirty-seven (96%) practice both medical and surgical ophthalmology. Based on the status of practice, 979 (86%) are in active practice. Semi-retired (1%) are ophthalmologists who no longer practice but are still involved in training. Figure 1 summarizes the distribution of practice status of the respondents.

For those in active practice, the mean age was 49±10 years. Five hundred sixty-three (57%) of them only held private practice, while 316 (32%) had mixed practice but with predominantly private ones (Figure 2). Only 11% are purely or with predominantly government institution-based practice. Of those in active practice, 541 (55%) were general ophthalmologists (GO). Four hundred seventy-one (84%) GO held only or predominantly private practices. The 393 (70%) of the 541 GO have no subspecialty training while 55 (10%) received further training in cataract surgery. The remaining see patients with other eye diseases under one (7 ophthalmologists) or multiple subspecialties such as Glaucoma, Neuro-Ophthalmology, External Disease (ED) and Cornea, Uveitis, Medical and Surgical Retina, Oculoplastics and Orbit, Pediatrics, Oncology, Low Vision, Pathology, and Genetics. The most common subspecialty where eye diseases of patients seen by actively

practicing GOs fall under was Cataract and Refractive Surgery, followed by ED Cornea, and Glaucoma (Figure 2).

There are 408 actively practicing ophthalmologists with subspecialty training who have combined practice (general ophthalmology and subspecialty). Three hundred seventy-four (92%) hold purely or predominantly private practices. Of the 408, 252 see patients with eye diseases under multiple subspecialties. The most common subspecialty where eye diseases of patients are seen falls under Cataract and Refractive Surgery (Figure 3).

There are 30 actively practicing ophthalmologists with pure subspecialty practice. Twenty-eight (93%) hold purely or predominantly private practices. Of the 30, 18 see patients with eye diseases under only one subspecialty. The most common subspecialty where eye diseases of patients are seen falls under Medical Retina (Figure 4).

There are 134 respondents who were still in training: 105 in residency, 27 in fellowship, and 2 in preceptorship. Seventy-three (54%) residents were trained in government hospitals, while 30 in private hospitals, and 2 in mixed but predominantly private hospitals. Thirty-two were in their first year, 25 in their second year, 38 in their third year, and 9 in their fourth year. Twenty (74%) fellows were training in government hospitals, while 5 in private hospitals, 2 in mixed but predominantly private, and 1 in mixed but predominantly public hospitals. Seven were in their second year of training. Most fellows were training in the Retina subspecialty (Figure 5). Thirteen fellows were training in >2 subspecialties: 9 in medical and surgical retina, 3 in cataract/refractive and ED cornea, and 1 in cataract/refractive, ED cornea, and glaucoma.

Most primary clinics or hospital affiliations of all respondents were located in the National Capital Region at 493 (34%), followed by Region 4A at 126 (11%) and Region 3 at 109 (10%). For the 979 actively practicing ophthalmologists, Table 1 summarizes the distribution of their clinics or hospital affiliations per region. Six hundred twenty-eight (64%) of them had secondary clinics in 719 other separate areas. There were 263 (42%) who had secondary clinics different from the region of their primary clinic. NCR & region 4 was the most common (102), followed by NCR & region 3 (75) and NCR & region 5 (13). There are 24 who held clinics in three separate regions, with the NCR, region 3 & region 4 being the most common at 12. Four held clinics in Luzon & Visayas, 4 in Visayas & Mindanao, and 3 in Luzon & Mindanao.

The regional location of the primary, secondary, and primary + secondary clinics or hospital affiliations was highest in the National Capital Region (NCR) at 712 (42%), followed by region 4A at 229 (13%) and region 3 at 206 (12%). Eighty percent of all clinics of actively practicing ophthalmologists are located in Luzon. GO clinics were mostly in the NCR (28%), followed by region 4A (13%) and region 3 (12%). Ophthalmologists with combined practice were mostly in the NCR (52%) too, followed by region 4A (11%) and region 3 (8%). Ophthalmologists with purely subspecialty practice were mostly in the NCR (78%), too. Respondents who were in training were mostly from NCR (78%), too, followed by region 1 (10%) and region 4A (3%).

The Philippines has a total of 1635 municipalities and cities. Actively practicing ophthalmologists held primary or secondary clinics in only 244 (15%) municipalities and cities. Seventy percent were in Luzon despite Luzon having only 47% (765) of all the municipalities and cities in the Philippines. Only 22% (171/ 765) of all municipalities and cities in Luzon, 9% (36/ 408) in Visayas, and 8% (37/462) in Mindanao had ophthalmologists.

Most primary and secondary clinics were located in Quezon City at 258 (29%). Cebu City had the most in the Visayas, while Davao City had the most in Mindanao (Table 2). All are

metropolitan areas as defined by the National Economic and Development Authority (NEDA), with Quezon City being part of Metro Manila (**Table 2**). Aside from regions 2, 3, 4B, 9, 12, NCR, and BARMM, the rest have their capital as the place with the most actively practicing ophthalmologists.

Table 3 summarizes the distribution of clinics of actively practicing ophthalmologists based on location in municipalities and cities. Taytay, Rizal, is the municipality with the most primary and secondary clinic locations at 17. NCR is the region with the most actively practicing ophthalmologists, with 7 of its cities in the top 10, and 12 out of its 16 are included in the top 20 of cities or

municipalities where most actively practicing ophthalmologists hold their clinics or their hospital affiliations (**Table 3**).

Most actively practicing ophthalmologists see patients 2-6 days per week in their primary clinic (94%) and their secondary clinics (63%) (**Tables 4 and 5**). The locations of the primary clinics of actively practicing ophthalmologists who see patients 2-6 days per week were located in NCR (34%), region 4A (11%), and region 3 (11%). The locations of the secondary clinics of actively practicing ophthalmologists who see patients 2-6 days per week were located in NCR (57%), region 3 (12%), and region 4A (9%).

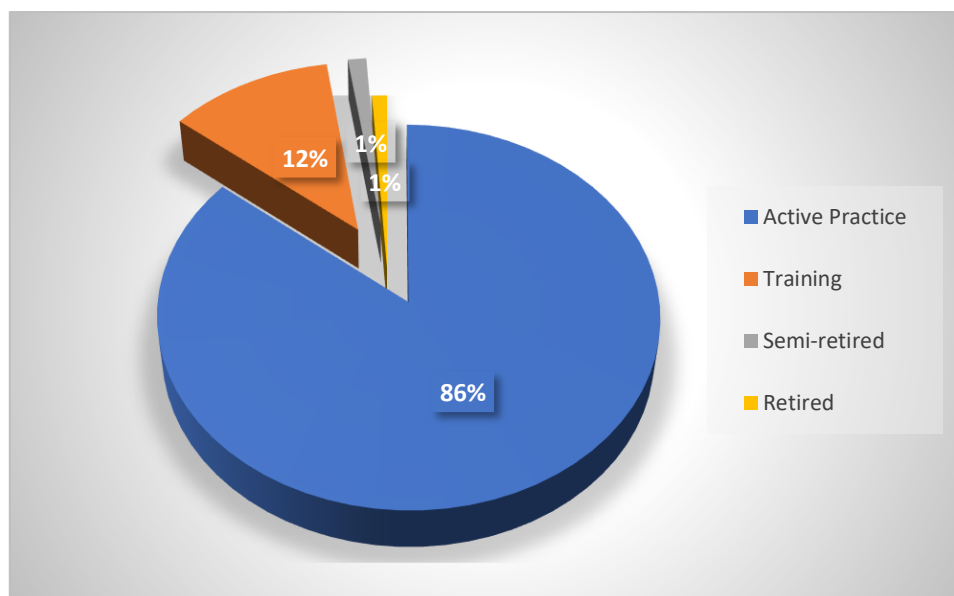


Figure 1. Practice status of survey respondents.

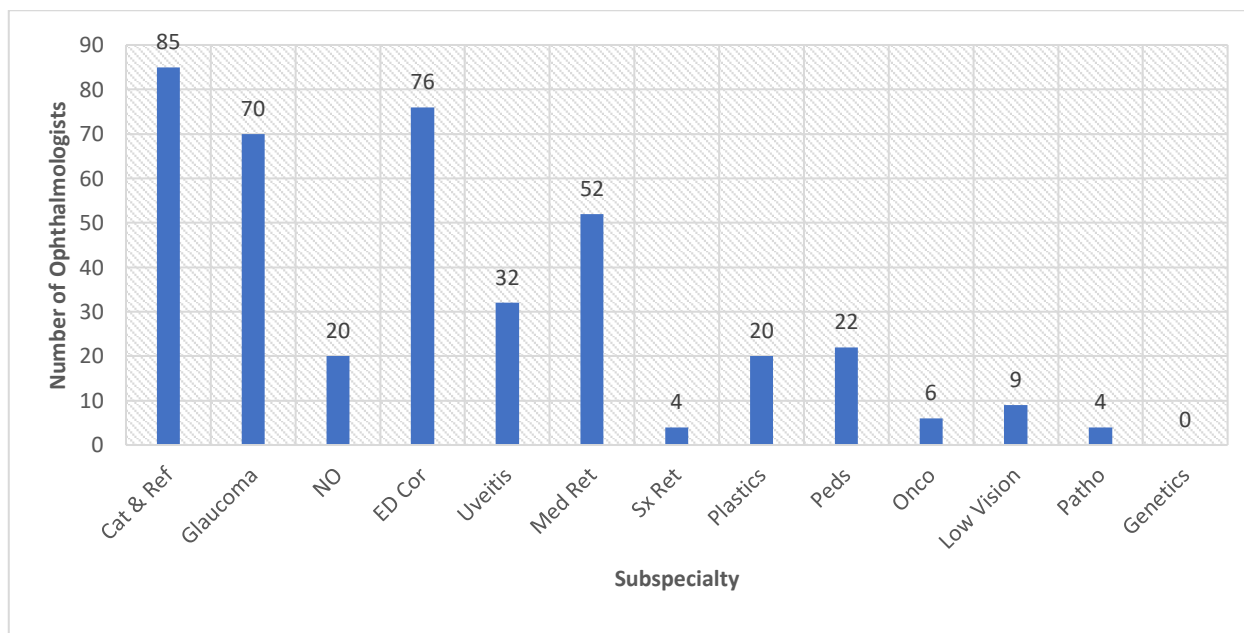
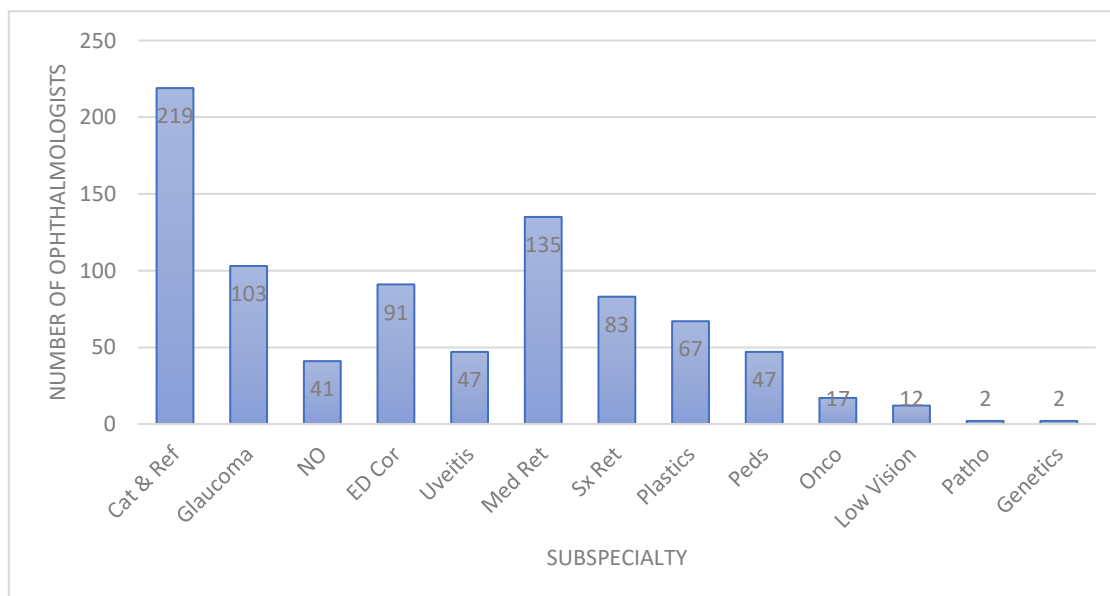
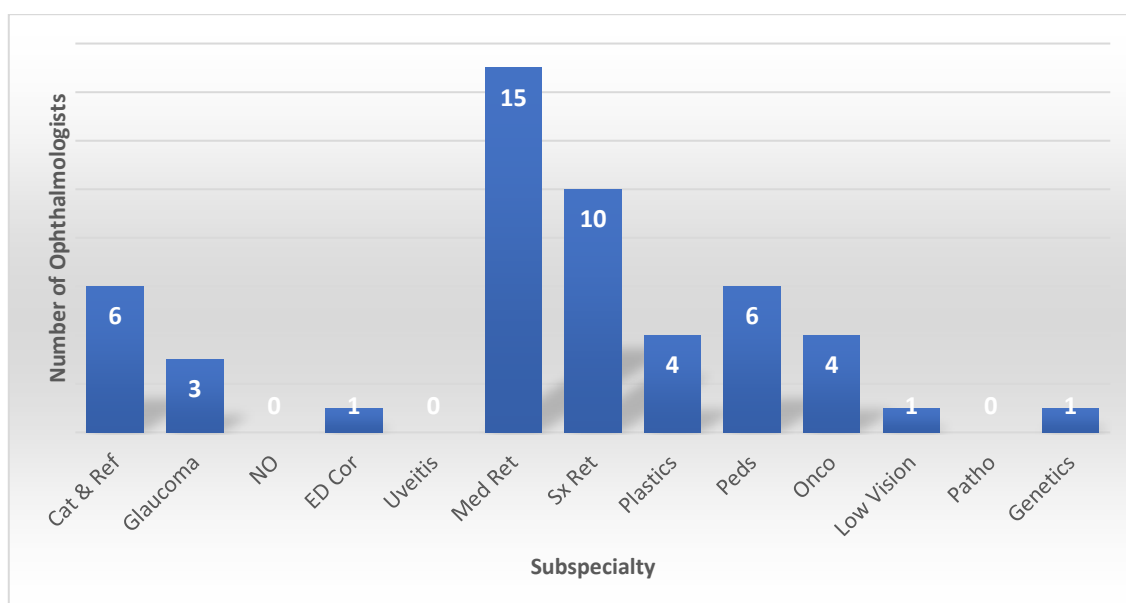


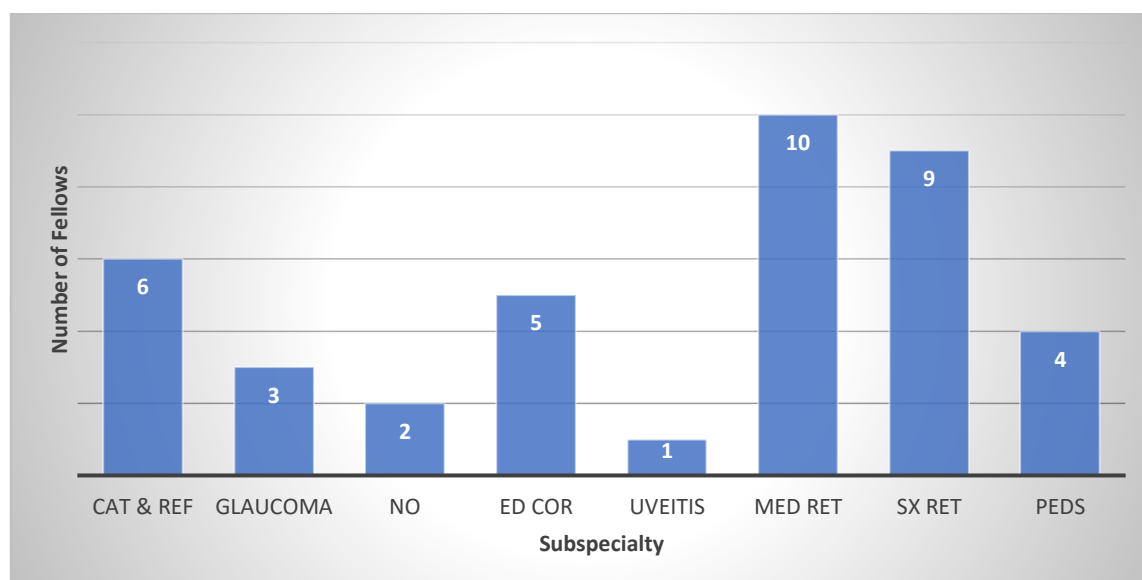
Figure 2. Distribution of Subspecialties where eye diseases of patients are being seen by actively practicing ophthalmologists who engage in general ophthalmology practice.



**Figure 3: Distribution of Subspecialties where eye diseases of patients are being seen by actively practicing ophthalmologists who engage in combined general ophthalmology and subspecialty practice.**



**Figure 4: Distribution of Subspecialties where eye diseases of patients are being seen by actively practicing ophthalmologists who engage in purely subspecialty practice.**



**Figure 5: Distribution of Subspecialties where eye diseases of patients were fellows who were being trained.**

**Table 1: Distribution of the Region where actively practicing Ophthalmologists hold their clinic or their hospital affiliations.**

Location	Primary Clinic (%)	Secondary Clinic (%)	Total
Luzon	749 (76%)	610 (85%)	1359 (80%)
National Capital Region	389 (40%)	323 (45%)	712 (42%)
Cordillera Administrative Region	22	6	28
Region 1 – Ilocos Region	49	32	81
Region 2 – Cagayan Valley	21	18	39
Region 3 – Central Luzon	106 (11%)	100 (14%)	206 (12%)
Region 4A - CALABARZON	121 (12%)	108 (15%)	229 (13%)
Region 4B - MiMAROPA	12	9	21
Region 5 – Bicol Region	29	14	43
Visayas	113 (11.5%)	48 (7%)	161 (9.5%)
Region 6 – Western Visayas	39	12	51
Region 7 – Central Visayas	56	23	79
Region 8 – Eastern Visayas	18	13	31
Mindanao	116 (12%)	61 (8%)	177 (10%)
Region 9 – Zamboanga Peninsula	14	4	18
Region 10 – Northern Mindanao	26	19	45
Region 11 – Davao Region	46	25	71
Region 12 - SOCCSKSARGEN	15	0	15
Region 13 – Caraga Administrative Region	10	10	20
Bangsamoro Autonomous Region in Muslim Mindanao	5	3	8
Abroad	1 (0.5%)	0	1 (0.5%)
Total	979	719	1698

**Table 2: City or Municipality with the most clinics of actively practicing ophthalmologists based on region.**

Region	City or Municipality	Total
Luzon		
National Capital Region	Quezon City	258
Cordillera Administrative Region	Baguio, Benguet	18
Region 1 – Ilocos Region	San Fernando, LU	23
Region 2 – Cagayan Valley	Cauayan, Isabela	15
Region 3 – Central Luzon	Angeles, Pampanga	33
Region 4A - CALABARZON	Calamba, Laguna	34
Region 4B - MiMAROPA	Puerto Princesa, Palawan	10
Region 5 – Bicol Region	Legazpi, Albay	18
Visayas		
Region 6 – Western Visayas	Iloilo City, Iloilo	25
Region 7 – Central Visayas	Cebu City, Cebu	48
Region 8 – Eastern Visayas	Tacloban, Leyte	17
Mindanao		
Region 9 – Zamboanga Peninsula	Zamboanga City, Zamboanga del Sur	15
Region 10 – Northern Mindanao	Cagayan de Oro, Misamis Oriental	27
Region 11 – Davao Region	Davao City, Davao del Sur	52
Region 12 - SOCCSKSARGEN	General Santos, South Cotabato	8
Region 13 – Caraga Administrative Region	Butuan, Agusan del Norte	6
Bangsamoro Autonomous Region in Muslim Mindanao	Marawi, Lanao del Sur	4

**Table 3: Distribution of the city or municipality where most actively practicing ophthalmologists hold their clinics or their hospital affiliations.**

City or municipality	Region	Primary Clinic	Secondary Clinic	Total
1. Quezon City	NCR	159	99	258
2. Manila City	NCR	123	79	202
3. Pasig City	NCR	41	51	92
4. Makati City	NCR	39	27	66
5. Muntinlupa City	NCR	22	31	53
6. Davao City	11	35	17	52
7. Mandaluyong City	NCR	25	25	50
8. Cebu City	7	42	6	48
9. Taguig City	NCR	24	23	47
10. Calamba City	4	12	27	39

**Table 4: Distribution of the frequency of holding primary clinics of actively practicing ophthalmologists**

Frequency	Number	%
5-6 days a week	369	38
2-4 days a week	550	56
Weekly	45	4
2-3 times a month	3	0.7
Monthly	1	0.3
Longer	11	1
No data	0	0

**Table 5: Distribution of the frequency of holding secondary clinics of actively practicing ophthalmologists**

Frequency	Number	%
2-6 days a week	395	63
Weekly	158	25
2-3 times a month	31	5
Monthly	27	4
Longer	1	0.3
No data	7	1
By appointment	4	0.7

**Table 6: Ratio of ophthalmologist to population based on region.**

Location	Total	Population	Ophthalmologist to Population Ratio (OPR)	Density: ophthalmologist per 1,000,000 population
Luzon	1359 (80%)	62,196,942	1:45,767	21.8
National Capital Region	712 (42%)	13,484,462	1:18,939*	52.8
Cordillera Administrative Region	28	1,797,660	1:64,202	15.6
Region 1 – Ilocos Region	81	5,301,139	1:65,446	15.3
Region 2 – Cagayan Valley	39	3,685,744	1:94,506	10.6
Region 3 – Central Luzon	206 (12%)	12,422,172	1:60,301	16.6
Region 4A - CALABARZON	229 (13%)	16,195,042	1:70,720	14.1
Region 4B - MiMAROPA	21	3,228,558	1:153,741	6.5
Region 5 – Bicol Region	43	6,082,165	1:141,445	7.1
Visayas	161 (9.5%)	20,583,861	1:127,850	7.8
Region 6 – Western Visayas	51	7,954,723	1:155,975	6.4
Region 7 – Central Visayas	79	8,081,988	1:102,303	9.8
Region 8 – Eastern Visayas	31	4,547,150	1:146,682	6.8
Mindanao	177 (10%)	26,252,442	1:148,319	6.7
Region 9 – Zamboanga Peninsula	18	3,875,576	1:215,309	4.6
Region 10 – Northern Mindanao	45	5,022,768	1:111,617	9.0
Region 11 – Davao Region	71	5,243,536	1:73,853	13.5
Region 12 - SOCCSKSARGEN	15	4,901,486	1:326,766	3.0
Region 13 – Caraga Administrative Region	20	2,804,788	1:140,239	7.1
Bangsamoro Autonomous Region in Muslim Mindanao	8	4,404,288	1:550,536**	1.8
Abroad	1 (0.5%)			
Total	1698	109,033,245	1:64,213	15.6

\*lowest OPR, \*\*highest OPR

## Discussion

This study presented data on the practice status and the geographical distribution of ophthalmologists in the Philippines. Based on the expected age range of 28-30 years for finishing the residency training, most respondents are practicing for 15-20 years already, considering the mean age of 47 years. Except for 1%, all are actively seeing patients in practice or in training. A slight predominance of males (58%) was noted in this study. However, the proportion of women ophthalmologists in the Philippines is still higher than the estimated 20-35% in Western countries [9-11].

### Availability

To better identify underserved areas since each region has a different population size, the ophthalmologist-to-population ratio (OPR) was

computed using data from the 2020 Population Census of the Philippine Statistics Authority (Table 6) [12]. Based on the national population, the number of ophthalmologists in the country is sufficient for its population based on the World Health Organization's recommended ophthalmologist to population ratio (OPR) of 1 ophthalmologist per 250,000 population [7]. Similarly, the density of the ophthalmologists per 1,000,000 population was also computed for better comparison with the ICO data. There was an increase from 14 ophthalmologists per 1,000,000 population in 2012 to 15.6 [7]. It is now equivalent to the 2012 density of Thailand, one of the countries in Southeast Asian with advanced eye care services [7].

The National Capital Region (NCR) has the best density at 52.8, despite only being the second most populous region to Region 4A in the country. NCR's OPR is even better than the United



Kingdom's 49 in 2012 and near the United States' 59 in 2012 <sup>[7]</sup>. This can be secondary to NCR having the most equipped eye care facilities in the country. Similarly, Luzon had the best OPR among the 3 major island groups of the Philippines, with 6 of its 8 regions having less than 1:100,000 OPR. Davao Region is the only region outside Luzon with an OPR of <1:100,000 and a density of >10 ophthalmologists per million population. Luzon's density of 21.8 is better than China's 20 in 2016 <sup>[7]</sup>. About 12% of the respondents will be joining the actively practicing group in 1-5 years. This is in addition to the increase of 32% noted in the number of ophthalmologists in the country, based on the number of ophthalmologists in 2012 shown in the International Council of Ophthalmology (ICO) list and the latest membership count of PAO<sup>[7]</sup>.

It is notable, though, that 2 regions, located in Mindanao, have OPR of more than the WHO recommendation: Region 12 and BARMM. The 17- and 29-fold increases in their OPR and density when compared to that of NCR highlight the maldistribution of ophthalmologists in the country, similar to other countries identified by Resnikoff <sup>[2]</sup>. This is a significant concern since BARMM and Region 12 ranked 1<sup>st</sup> and 6<sup>th</sup>, respectively, in the Annual Population Growth Rate by Region from 2015-2020 <sup>[12]</sup>. Region 12's density of 3.0 is lower than Afghanistan's density of 4.0 in 2012, the poorest country in Asia <sup>[7,13]</sup>. BARMM's density of 1.8 is lower than Burundi's 2.0 in 2014, the world's poorest country, as per the World Bank <sup>[7,13]</sup>. Similarly, despite the population of Mindanao being 42% of Luzon's, the increase in OPR between Luzon and Mindanao was 3-fold.

### Accessibility

Only 15% of all municipalities or cities in the country have actively practicing ophthalmologists, further highlighting the maldistribution of ophthalmologists in the country. Despite the Philippines' low OPR/ high density, only 10-20% of all the municipalities and cities had ophthalmologists holding clinics in them. Ten of the 16 regions had their capital having the greatest number of ophthalmologists holding clinics (**Table 3**). All the areas with the most ophthalmologists from the 3 major island groups are metropolises. Although ophthalmologists rely heavily on equipment that is only present in eye care facilities in big cities due to cost, the disparity in the disparity is still glaring. For those in training, 78% listed NCR as their location of clinic, which can further lead to the concentration of ophthalmologists in the said region. The number can also be a result of respondents listing the location of their training institutions, with most accredited ones located in the NCR, despite planning to practice elsewhere.

All these factors that contribute to the maldistribution of access to ophthalmologists are further magnified by the country's geography, as it is made up of more than 7,000 islands. Data on these factors can guide different ophthalmology training institutions in admitting training applicants who hail from said areas. It can also guide practicing ophthalmologists who wish to expand or transfer their practice. This is important, especially in the setting of another public health threat like the COVID-19 pandemic, where travelling to a provincial or regional center for specialized eye care has been limited.

### Affordability

In a country where a significant portion of medical expenses is out-of-pocket, it was expected that a large chunk (89%) of the actively practicing ophthalmologists, with 84% of the GO, had only and predominantly private practice. This negatively affects the affordability of Filipinos' access to eye care services, even with the

national health insurance coverage. The majority of the payment for outpatient consultation, the most common patient encounter for eye care, remains out-of-pocket, unless patients have a private insurance provider. Although the Philippine Health Insurance Corporation's "no balance billing" policy has been of significant help for indigent Filipinos, it is not applicable in most private hospitals. Accessibility issues due to the concentration of ophthalmologists in the cities have led to addition or increase in non-medical expenses such as fare, accommodation, and daily living expenses <sup>[14,15]</sup>.

### Adequacy

Since 96% practice both medical and surgical ophthalmology, ophthalmologists provide adequate care to common eye diseases, primarily cataract. This is significantly higher than the estimated 71-72% of ophthalmologists doing surgery both from low- and high-income countries <sup>[1]</sup>. For those in active practice, 55% were GO. This may not be adequate considering the plan to shift to a primary care approach as a result of the Universal Health Coverage implementation. It is appropriate, though, that more than half of the GO held primary clinics in the three most populous regions: NCR, Calabarzon, and Central Luzon. The need for more GO is being filled by those with combined practice (42%), highlighting the need for those with subspecialty training to continue engaging in combined practice.

Almost all actively practicing ophthalmologists who see patients in their primary clinic do so 2-6 days a week. However, more than half of them were located in the NCR, region 3, and region 4A, which, although they are the 3 most populous regions, still constitute only 39% of the national population. Only 63% see patients 2-6 days per week in their secondary clinics, with 78% of them located in the NCR, region 3, and region 4A. In both the GO and those in combined practice, ocular oncology, ocular pathology, low vision, and genetics were among the least practiced subspecialties. More activities to encourage and enable them to see patients with eye disease under the said subspecialties are recommended particularly for oncology and pathology due to the fatal nature of the ocular malignancies, such as the retinoblastoma since Philippines ranks as one with the highest incidence, and low vision, since visual impairment and blindness are high in the country. Continuing medical education or mentoring on said specialties can encourage actively practicing ophthalmologists to engage more, considering that there was no respondent fellow training in the said specialties.

### Limitations

Although the number of respondents was higher than the computed sample size, the study is still significantly limited by the response rate of 57%, especially since it aimed to identify areas that are underserved in eye care. The survey has been conducted twice to increase participation. It is recommended that for future endeavors, interviewing officers of local chapters of the PAO should be added for data collection to ensure higher coverage, which can include even those who are not PAO members.

### Conclusion

The number of ophthalmologists seeing patients in the country is sufficient and adequate. However, the disparity in distribution, where there remain regions with few ophthalmologists serving a large population, and affordability are significant threats to eye care services.

## List of Abbreviations

BARMM: Bangsamoro Autonomous Region of Muslim Mindanao  
ED: External Disease  
GO: General Ophthalmologist  
ICO: International Council of Ophthalmology  
NCR: National Capital Region  
NEDA: National Economic and Development Authority  
OPR: ophthalmology per population ratio  
PAO: Philippine Academy of Ophthalmology

## Declarations

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There was no financial support received for this paper.

## Conflicts of interest

All authors do not have financial conflicts of interest to declare.

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## Declare

This paper was presented at the ASEAN Ophthalmology Society Annual Congress last year.

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## References

- [1] Resnikoff S, Felch W, Gauthier TM, Spivey B. The number of ophthalmologists in practice and training worldwide: a growing gap despite more than 200,000 practitioners. *Br J Ophthalmol* 2012 Jun;96(6):783-7.
- [2] Resnikoff S, Lansingh VC, Washburn L, et al. Estimated number of ophthalmologists worldwide (International Council of Ophthalmology update): Will we meet the needs? *Br J Ophthalmol* 2020 Apr;104(4):588-592.
- [3] Obamiro K, Jessup B, Allen P, et al. Considerations for Training and Workforce Development to Enhance Rural and Remote Ophthalmology Practice in Australia: A Scoping Review. *Int J Environ Res Public Health* 2022 Jul 14;19(14):8593.
- [4] Feng PW, Ahluwalia A, Feng H, Adelman RA. National Trends in the United States Eye Care Workforce from 1995 to 2017. *Am J Ophthalmol* 2020 Oct; 218:128-135.
- [5] Xulu-Kasaba Z, Mashige KP, Naidoo KS. An assessment of human resource distribution for public eye health

services in KwaZulu-Natal, South Africa. *African Vision Eye Health* 2021;80(1): a583.

- [6] Wang KM, Tseng VL, Liu X, Pan D, et al. Association Between Geographic Distribution of Eye Care Clinicians and Visual Impairment in California. *JAMA Ophthalmol* 2022 Jun 1;140(6):577-584.
- [7] International Council of Ophthalmology. Data on Ophthalmologists Worldwide. 2017: <http://www.icoph.org/ophthalmologists-worldwide.html> (Accessed March 18, 2024).
- [8] Department of Health. Universal Health Care | Department of Health website. 2011: <https://doh.gov.ph/kalusugang-pangkalahatan> (Accessed March 18, 2024).
- [9] Arbisser L, Braga-Mele R, Donaldson K, et al. Roundtable: Women in ophthalmology. 2017: <https://crstoday.com/articles/2017-apr/roundtable-women-in-ophthalmology> (Accessed March 18, 2024)
- [10] Xierali IM, Nivet MA, Wilson MR. Current and Future Status of Diversity in the Ophthalmologist Workforce. *JAMA Ophthalmol* 2016 Sep 1;134(9):1016-23.
- [11] Lo TCS, Rogers SL, Hall AJ, Lim LL. Differences in the practice of ophthalmology by gender in Australia. *Clin Exp Ophthalmol* 2019 Sep;47(7):840-846.
- [12] Philippine Statistics Authority. Highlights of the Philippine Population 2020 Census of Population and Housing (2020 CPH). 2021: <https://psa.gov.ph/content/highlights-philippine-population-2020-census-population-and-housing-2020-cph> (Accessed March 18, 2024).
- [13] World Population Review. Poorest Countries in the World 2023. 2023: <https://worldpopulationreview.com/country-rankings/poorest-countries-in-the-world> (Accessed March 18, 2024).
- [14] Tan RJD, Leon LP. The Cost of Managing Congenital Rubella Syndrome in a Tertiary Government Hospital in Northern Luzon, Philippines. *Acta Med Philipp* 2023Jan;31: <https://actamedicaphilippina.upm.edu.ph/index.php/acta/article/view/4066> (Accessed March 18, 2024).
- [15] Tan RJD, Dacuma MGB. Factors affecting childhood blindness and visual impairment in Baguio General Hospital and Medical Center. *Phil J Health Res Dev* 2021; 25(3), 54-63.



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