



# Ophthalmology Departments Remain Among the Least Diverse Clinical Departments at United States Medical Schools

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**Purpose:** The current demographics of the ophthalmology workforce do not reflect the diverse United States population, which has implications for addressing health disparities. The demographics of ophthalmology department faculty may influence the recruitment of underrepresented students into the field. This study sought to determine how the racial and ethnic demographics of ophthalmology department faculty compare with those of other clinical departments at United States medical schools.

**Design:** Secondary data analysis of medical school faculty demographic data from the 2019 American Association of Medical Colleges (AAMC) Faculty Roster.

**Participants:** Clinical faculty and department chairs at United States medical schools.

**Methods:** We analyzed the racial and ethnic demographics of clinical department faculty and department chairpersons using data from the 2019 AAMC Faculty Roster. We calculated the proportion of underrepresented minority (URM) faculty in ophthalmology and in 17 other clinical departments. We analyzed these data for statistically significant differences between ophthalmology and other clinical departments. In addition, we compared the percentage of URM ophthalmology faculty with the proportion of URM persons among graduating United States medical students and in the United States population using data from the Medical School Graduation Questionnaire and the United States census, respectively.

**Main Outcome Measures:** The proportion of URM persons, defined as Black, Hispanic or Latino, Native American, or Native Hawaiian or Pacific Islander among clinical faculty and department chairs.

**Results:** Ophthalmology faculty are less racially and ethnically diverse than graduating medical students and the general United States population. When compared with 17 other clinical departments, ophthalmology has the third-lowest proportion of URM faculty, with only radiology and orthopedic surgery having a smaller proportion of URM faculty. These differences were statistically significant in most departments (12 of 18). No statistically significant difference was found in the proportion of URM department chairs in ophthalmology compared with most other clinical departments, although the absolute number of URM chairs in ophthalmology is low at only 8 chairpersons.

**Conclusions:** More work must be done to increase the recruitment of URM physicians into ophthalmology faculty positions to obtain parity with other clinical departments and with the diverse patient populations that physicians serve. *Ophthalmology* 2021;■:1–6 © 2021 by the American Academy of Ophthalmology

The United States population is rapidly diversifying, with minority populations constituting 38% of the population in 2014 and expected to exceed 50% of the population by 2044 according to the United States Census Bureau.<sup>1</sup> Despite these population changes, the physician workforce has remained less diverse, with only 12% of United States physicians being underrepresented minorities (URMs) in medicine, defined as Black, Hispanic or Latino, Native American, and Native Hawaiian or Pacific Islander.<sup>2</sup> Creating a physician workforce that reflects the diverse patient population in its care is a just and equitable goal in its own right, but also has implications for health disparities in the United States because URM physicians are more likely to work in impoverished areas and areas federally designated as medically underserved.<sup>3,4</sup>

Additionally, patients who see physicians of their own ethnicity rate their physicians as more likely to engage them in participatory decision making about treatment choices.<sup>5</sup> A diverse physician workforce would provide patients with access to diverse physicians, would improve cross-cultural communication, and would lead to more patient involvement in care, higher levels of patient satisfaction, and better health outcomes.<sup>5</sup>

The disparities in representation of Black, Hispanic or Latino, and Native American physicians extend to the field of ophthalmology as well. In 2015, Xierali et al<sup>6</sup> reported that only 6% of ophthalmologists with direct patient care were URM physicians. This percentage increased to 7.2% when examining physicians who graduated in 1980 or later and to 7.7% when examining the number of URM

ophthalmology residents in 2014.<sup>6</sup> No significant change was found in the percentage of URM ophthalmology residents in the decade from 2005 through 2014, with the number of Hispanic or Latino and Native American residents remaining relatively unchanged and the number of Black residents decreasing slightly.<sup>6</sup> According to data from the Association of University Professors of Ophthalmology, the percentage of URM applicants matching into ophthalmology ranged from 4.9% to 10.8% from 2016 to 2019, with an average of 8.4%. These applicants consisted of only Black or Hispanic or Latino candidates, because no Native Americans or Native Hawaiian or Pacific Islanders participated during those years.<sup>7</sup> Currently, URM physicians on average are more likely to practice in primary care than White physicians, and almost one quarter of Native American physicians in particular practice in family medicine.<sup>8</sup> The significant racial and ethnic disparities in vision health and access to eye care provide one reason why ensuring a diverse workforce should be a priority for the field of ophthalmology.<sup>6,9–12</sup>

In this study, we analyzed the most recent available data on the racial and ethnic composition of ophthalmology faculty at United States medical schools and compared it with the demographics of other clinical departments, with the demographics of graduating medical students, and with the United States population.

## Methods

We obtained demographic data regarding ophthalmology faculty and other department faculty from the annual report entitled, “United States Medical School Faculty,” a set of data tables released by the American Association of Medical Colleges. This annual data report is based on the American Association of Medical Colleges Faculty Roster, a comprehensive database of the demographic, education, and employment characteristics of faculty members at accredited United States MD degree-granting medical schools.<sup>13</sup> The roster was started in 1966 and contains records on approximately 176 000 active faculty and 300 000 inactive faculty. Participation in the database by medical schools is voluntary. Participating schools identify faculty roster representatives who submit data to the roster annually. The Yale Institutional Review Board deemed this research exempt from IRB oversight. The requirement for informed consent was waived because of the retrospective nature of the study. All research adhered to the tenets of the Declaration of Helsinki.

We defined URMs as persons listed under American Indian or Alaskan Native; Black or African American; Hispanic, Latino, or of Spanish origin; Native Hawaiian or other Pacific Islander; and Multiple races—Hispanic/Latino (those who are reported as Hispanic/Latino and at least 1 other race). Those listed as White, Asian, multiple races—non-Hispanic/Latino, Other, and Unknown were considered non-URMs. The categories of Multiple races—Hispanic/Latino and Multiple races—non-Hispanic/Latino allow for unduplicated counts of faculty, because Hispanic or Latino status often is recorded as an ethnic category in addition to race. The faculty roster dataset reports faculty data for 18 department “classifications” in the clinical sciences so that disparately named but similar departments across medical schools can be evaluated as one. For example, neurosurgery and cardiac surgery are included together under the surgery department classification.

Using racial and ethnic demographic data from the 2019 American Association of Medical Colleges Faculty Roster, we calculated the proportion of URM faculty members in the 18 available clinical department classifications, which included ophthalmology. The 2019 faculty report excluded 63 faculty across all departments and 3 chairs because of missing data about gender. We compared the racial and ethnic composition of faculty across clinical departments using the “N – 1” chi-square test as recommended by Campbell<sup>14</sup> and Richardson<sup>15</sup> using MedCalc statistical software (MedCalc Software). A *P* value of less than 0.05 was considered to be statistically significant. In addition, we compared faculty racial and ethnic composition with the composition of graduating United States medical students in 2019 based on the Medical School Graduation Questionnaire, an annual survey administered to all graduating United States medical students.<sup>16</sup> Faculty composition also was compared with the United States population using data from United States Census Bureau American Community Survey 2018.<sup>17</sup>

## Results

In 2019, 157 993 clinical faculty members reported across 18 department classifications. Of these, 3060 were ophthalmology faculty. Table 1 shows a summary of ophthalmology faculty members by reported race or ethnicity. Of the 3060 faculty, 208 (6.8%) are reported as URMs. For each racial category with a URM, wide discrepancies exist between their representation among ophthalmology faculty and their representation in graduating medical students and the general United States population. Black physicians represented only 2.3% of ophthalmology faculty, despite representing 6.7% of graduating medical students and 12.7% of the population. Physicians who identified as Hispanic/Latino alone represented 2.3% of ophthalmology faculty, 8.6% of graduating medical students, and 18.3% of the population. With only 1 Native American faculty member in ophthalmology reported, American Indian/Alaska Native physicians represent 0.03% of ophthalmology faculty, 0.9% of graduating medical students, and 0.9% of the population. Examining the demographics of ophthalmology department chairs revealed a lower representation of URM physicians than in ophthalmology faculty. Of the 106 ophthalmology department chairs reported in this database, 81.1% of chairs are White and 11.3% are Asian, whereas 4 are Black, 4 are Hispanic/Latino, and 0 are Native American or Pacific Islander chairs.

Examining the demographics of the 18 clinical departments as a whole reveals that 15 559 of the 157 993 clinical faculty in 2019 (9.8%) were URMs, significantly higher than the 6.8% of ophthalmology faculty who were URM physicians (*P* < 0.01; Fig 1). When ophthalmology faculty demographics are compared against those of the other 17 clinical departments, ophthalmology is the third lowest in terms of percentage of URM faculty, above only radiology (6.7%) and orthopedic surgery (6.1%; Fig 1). Otolaryngology, often considered a comparable specialty to ophthalmology given that it is also a relatively small surgical subspecialty, showed a higher percentage of URM faculty than ophthalmology with 7.2% URM faculty, but this difference was not statistically significant (*P* = 0.5). Underrepresented minority physicians represented a statistically significantly (*P* < 0.01) smaller portion of ophthalmology faculty compared with pediatric faculty (11.1%), internal medicine faculty (9.8%), and surgery faculty (9.3%). The departments with the highest percentages of URM faculty were obstetrics and gynecology (15.7%), public health and preventative medicine (14.3%), and

Table 1. Ophthalmology Faculty Numbers by Race and Ethnicity

Racial or Ethnic Group	Percentage of Ophthalmology Faculty (No.)*	Percentage of Ophthalmology Department Chairs (No.)*	Percentage of Graduating United States Medical Students <sup>†</sup>	Percentage of United States Population <sup>‡</sup>
American Indian or Alaska Native	0.03 (1)	0 (0)	0.9	0.9
Asian	27.6 (846)	11.3 (12)	23.9	5.6
Black	2.3 (70)	3.8 (4)	6.7	12.7
Hispanic, Latino, or of Spanish origin	2.3 (71)	3.8 (4)	8.6	18.3
Native Hawaiian or other Pacific Islander	0.07 (2)	0 (0)	0.3	0.2
White	60.3 (1844)	81.1 (86)	63.2	72.2
Multiple races			N/A	3.4
Hispanic/Latino	2.1 (64)	0 (0)		
Non-Hispanic/Latino	1.9 (59)	0 (0)		
Other	0.7 (21)	0 (0)	3.0	5.0
Unknown	2.7 (82)	0 (0)	N/A	N/A
Total URM <sup>§</sup>	6.8 (208)	7.6 (8)	16.5	32
Total	3060	106		

N/A = not available; URM = underrepresented minorities.

\*American Association of Medical Colleges faculty roster 2019.

<sup>†</sup>Medical School Graduation Questionnaire 2019. Percentages may not sum to 100% because multiple responses were allowed.

<sup>‡</sup>United States Census American Community Survey 2018.

<sup>§</sup>Sum of Black, Hispanic/Latino, American Indian, Native Hawaiian, and multiple races (Hispanic/Latino).

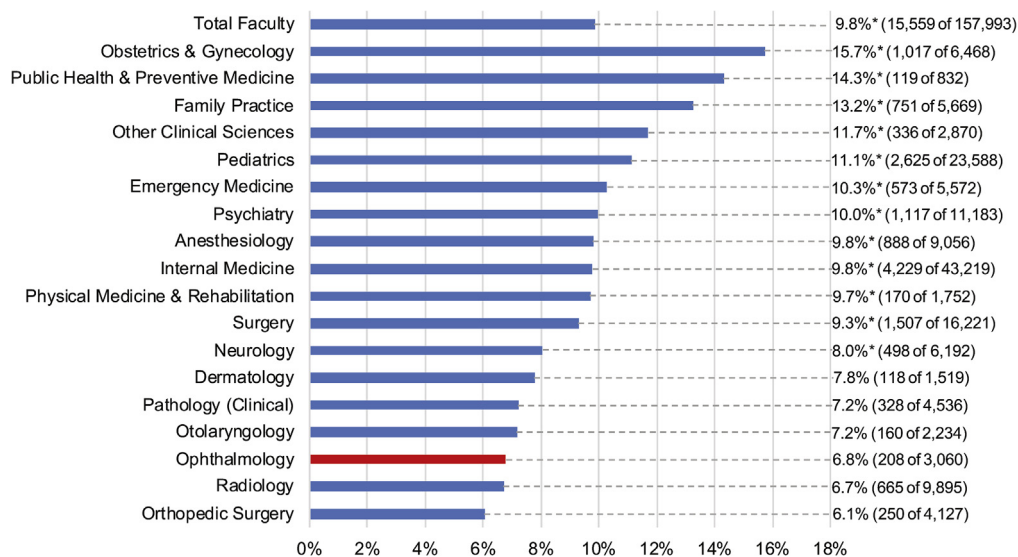
family practice (13.2%), and these proportions were statistically significant in comparison with ophthalmology.

Examining the demographics of the 2398 department chairs in United States medical schools across the 18 clinical departments showed that 9.3% of chairs are URM physicians (Fig 2), which closely mirrors the 9.6% of clinical faculty who are URM physicians. Among ophthalmology department chairs, only 7.5% are URM physicians, but this did not represent a statistically significant difference from the percentage of total department chairs. In fact, only 1 department, family practice, showed a

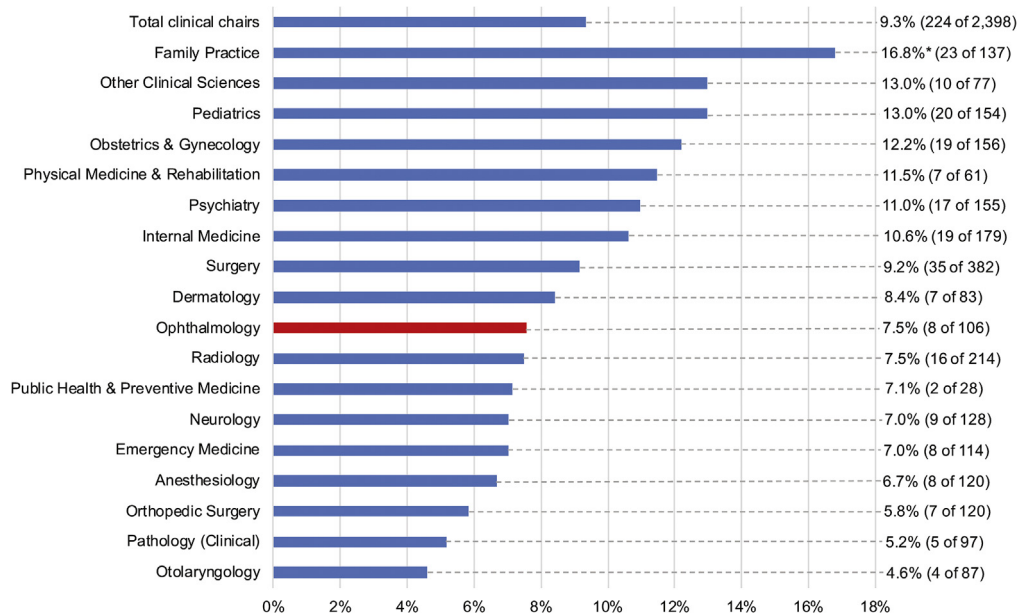
statistically significant difference in percentage of URM department chairs when compared with ophthalmology, with 16.8% of family practice chairs being URM physicians.

## Discussion

In 2009, the Liaison Committee on Medical Education adopted accreditation guidelines that require medical schools to make efforts to increase the accessibility of



**Figure 1.** Bar graph showing the percentage of underrepresented minority (URM) faculty in clinical departments at United States medical schools, with the absolute proportion listed in parenthesis. \*Statistically significant difference in the percentage of URM faculty in a department when compared with ophthalmology,  $P < 0.05$ . Ophthalmology is highlighted in red for emphasis.



**Figure 2.** Bar graph showing the percentage of underrepresented minority (URM) physicians holding clinical department chairs in 2019, with the absolute proportion listed in parenthesis. \*Statistically significant difference in the percentage of URM department chairs when compared with ophthalmology department chairs,  $P < 0.05$ . Ophthalmology is highlighted in red for emphasis.

medical education to students from diverse backgrounds.<sup>18</sup> The proportion of Black, Hispanic or Latino, and Native American students among medical school matriculants has been increasing, but these groups remain underrepresented when compared with the growing United States population, and this representation has not changed significantly in the past 10 years.<sup>19</sup> Meanwhile, the diversity of medical school faculty has been increasing, but has not kept pace with the diversifying medical student body nor the United States population.<sup>20</sup> Disparities exist in the advancement of URM faculty in academic medicine, with URM faculty advancing at lower and slower rates.<sup>21–23</sup> Previous studies also showed lower career satisfaction among URM faculty at academic medical centers.<sup>24</sup> The dearth of URM faculty has implications for URM medical students for whom faculty mentorship may play an important role in their success in medical school.<sup>25</sup> Creating a diverse faculty body in the field of ophthalmology may improve further recruitment of URM students into the field.

In this study, we found that Black, Hispanic or Latino, Native American, and Native Hawaiian or Pacific Islander physicians remain underrepresented among ophthalmology faculty relative to their representation in the general population and among United States medical school graduates and relative to other many other clinical departments. Ophthalmology faculty were the third least diverse in terms of URM faculty among the 18 clinical departments analyzed. These results emphasize the need for more efforts to recruit URM to the field of ophthalmology. Although recent match data suggest a slight increase in URM applicants in ophthalmology in the past 3 years, longer-term

studies have not shown any significant increase in URM ophthalmology residents in the past decade, despite an increasingly diverse group of medical school graduates from which to draw.<sup>6,7,19</sup>

A diverse physician workforce has implications for patient satisfaction and outcomes. Multiple studies have shown that Black and other minority patients often receive differential and less optimal technical health care than White patients.<sup>26–28</sup> Improving diversity in the ophthalmology workforce may improve cross-cultural communication and may lead to higher quality of care, more patient involvement in care, greater adherence to treatment, and better outcomes.<sup>5</sup>

In 2016, the American Academy of Ophthalmology established the Minority Ophthalmology Mentoring program, dedicated to helping URM medical students become competitive ophthalmology residency applicants. Students participating in the program are paired with a faculty mentor, participate in programming at the American Academy of Ophthalmology annual conference, and receive United States Medical Licensing Exam preparatory materials. By 2019, more than 50 students had participated, and the program continues to grow in popularity and to gain support from industry partners and professional societies.<sup>29,30</sup> It remains to be seen what long-term effect this program will have on the number of URM ophthalmology applicants, but data show that participation in the program increased students' interest in pursuing careers in ophthalmology.<sup>30</sup> Additional programs from the National Medical Association, such as the long-standing Rabb-Venable Excellence in Ophthalmology Research program, founded in 2000, also have served an important role in nurturing URM trainees.

Beyond mentoring URM trainees, Aguwa et al<sup>31</sup> further outlined efforts that must be made at all levels to diversify the ophthalmology workforce, ranging from unbiased promotion practices, cultural competency training, and involving more URM faculty in the medical school and residency application processes. Efforts to increase diversity should be collaborative between both minority-specific organizations and larger organizations, which should make strong commitments to increasing diversity.

Some limitations of this study are that people who identify as multiple races are reported in aggregate, which may obscure nuances in the data. For example, approximately half of the Native Americans in the United States identify as Native American and another race.<sup>32</sup> Reporting

multiracial people in aggregate therefore may underestimate the number of Native Americans. This is an important issue to consider in the reporting of racial and ethnic data as the population of multiracial Americans continues to grow.<sup>33</sup> Additionally, data were obtained from multiple sources, so there could be minor discrepancies, but reflect the most accurate information available.

Working toward an ophthalmology workforce that reflects the diverse United States population is an important goal and may be part of the solution in addressing vision health disparities in the United States. It is a challenging and important task that the field of ophthalmology must prioritize.

## Footnotes and Disclosures

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Abbreviations and Acronyms:

**AAMC** = American Association of Medical Colleges;  
**URM** = underrepresented minority.

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