Predictors of applicant pool diversity during the physician assistant admissions cycle

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Introduction
Health workforce diversity

• The USA is becoming more diverse.
• Many parts of the health workforce, including the PA profession, have not kept pace with that trend.
• This gap has significant impacts on patients and providers.
Benefits of a diverse health workforce

A diverse health workforce benefits patients and providers.

- Varying patient preferences for provider race and gender
- Evidence of increased satisfaction for patients and providers
- Racial biases influence perceptions of pain among both lay people and doctors.
- This can alter patients’ treatment plans.
Admissions

• Admission to training programs is the first major gateway into the health professions.
• To get into the workforce, you have to get into school.
• To get into school, you have to apply.
• Most studies focus on matriculation; few have examined the application phase.
  • Example: Tactics like holistic admissions require having a diverse applicant pool to begin with.
The sponsoring institution must demonstrate its commitment to student, faculty and staff diversity and inclusion by:

a) supporting the program in defining its goal(s) for diversity and inclusion,
b) supporting the program in implementing recruitment strategies,
c) supporting the program in implementing retention strategies, and
d) making available, resources which promote diversity and inclusion.
Aim

Examine the relationship between PA program characteristics and the diversity of their applicant pools to better understand flows of diversity into the profession
Methods
Sample

• 2017-2018 CASPA cycle
• 26,616 applicants
  • Includes only applicants that provided race/ethnicity data
• 183 PA programs
  • Excludes programs with a pre-PA phase
Diversity summary metrics

- Proportion of underrepresented minority applicants (URM)
- Proportion of underrepresented in medicine applicants (URMed)
- Simpson’s diversity index (SDI)
Underrepresented Minority definition

URM:
• Hispanic or
• Any non-white race or
• Any non-white race in combination with white race

Not URM:
• Non-Hispanic, single-race white
Underrepresented in Med. definition

URMed:
• Hispanic or
• Any non-Asian, non-white race or
• Any non-Asian, non-white race in combination with Asian or white races

Non-URMed:
• Non-Hispanic, single-race Asian
• Non-Hispanic, single-race white
• Non-Hispanic Asian and white
Simpson’s diversity index

Originated in biology and economics but has been used in education research as well.

Definition: the probability that two entities taken at random from the dataset of interest represent different types.

First, categorize each applicant into an ethnicity/race combination:
• American Indian or Native Alaskan
• Asian
• Black or African American
• Native Hawaiian or Pacific Islander
• White
• Hispanic or Latino (of any race)
• Two or more races
Example: High Simpson diversity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>n</th>
<th>Proportion</th>
<th>Squared proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>5</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>0.2</td>
<td>0.04</td>
</tr>
<tr>
<td>Black</td>
<td>2</td>
<td>0.2</td>
<td>0.04</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1</td>
<td>0.1</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>1.0</td>
<td>0.34</td>
</tr>
</tbody>
</table>

SDI = 1 – 0.34 = 0.66
**Example: Low Simpson diversity**

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>n</th>
<th>Proportion</th>
<th>Squared proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>9</td>
<td>0.9</td>
<td>0.81</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>0.1</td>
<td>0.01</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>1.0</td>
<td>0.82</td>
</tr>
</tbody>
</table>

SDI = 1 – 0.82 = **0.18**
Statistical methods

Independent variables
• Accreditation status: Provisional, **Continuing**, or Probation
• Academic health center status: AHC or **Non-AHC**
• Public/private status: Public or **Private**
• Require GRE: **Yes** or No
• Rural-Urban Continuum Code:
  • RUCC 1 (Metro area, pop. 1M or greater)
  • RUCC 2 (Metro area, pop. 250K-1M)
  • RUCC 3 (Metro area, pop. < 250K)
  • RUCC 4-9 (Non-metro area)
• Number of applicants
• Number of matriculants
Results
The diagram shows the relationship between various factors and the diversity of underrepresented minority students in medicine, measured by the Underrepresented Minority (%) and the Simpson's Diversity Index.

Factors include:
- Academic Health Center
- Accreditation: Probation
- Accreditation: Provisional
- No GRE required
- Public program
- RUCC 2 (Metro area, pop. 250K-1M)
- RUCC 3 (Metro area, pop. < 250K)
- RUCC 4-9 (Non-metro area)
- Number of applicants
- Number of matriculants

The estimates are represented on a scale from -0.1 to 0.1, with green circles indicating a significance level of p ≤ .05 and grey circles indicating p > .05.
The diagram shows the relationship between various factors and the Underrepresented Minority (%) and Underrepresented in Medicine (%) in different settings. The factors include:

- Academic Health Center
- Accreditation: Probation
- Accreditation: Provisional
- No GRE required
- Public program
- RUCC 2 (Metro area, pop. 250K-1M)
- RUCC 3 (Metro area, pop. < 250K)
- RUCC 4-9 (Non-metro area)

The estimates are represented by plots with confidence intervals, indicating the p-values with different colors: green for p ≤ .05 and gray for p > .05. The diversity index is also presented in the rightmost column.

The graph highlights the impact of different factors on the diversity of minority groups and students in medicine, with public programs and certain RUCC categories showing notable differences.
Discussion
Finding: the metric matters

Example
White: 15
Asian: 9
Hispanic: 1
Finding: the metric matters

Example
White: 15
Asian: 9
Hispanic: 1
Finding: consistent program correlates

- Accreditation status
- Require GRE
- RUCC
- Number of applicants
What can programs do?

How will your program define and measure diversity?

Think about the entire admissions process, especially the steps before matriculation.

Consider how admissions requirements may affect prospective applicants.

Think about how to increase the size of your applicant pool, especially attracting underrepresented groups.
What can PAEA do?

Tell the stories of programs’ successes in recruiting and retaining diverse student bodies.

Listen to members and engage them with resources like the DEI and Project Access toolkits.

Broaden research to incorporate other domains of diversity.
Next steps

Incorporate the matriculation phase
  • Do programs retain or lose their applicant pool diversity?

Account for geographic catchment in admissions
  • Do programs draw from the local area or elsewhere?

Incorporate other domains of diversity
  • What type of programs attract students from rural areas?

Broaden study to include more application cycles
  • Do we see similar patterns in other years?
Related work

Examining barriers to matriculation among students from historically underrepresented backgrounds

• Strength in Differences? The Importance of Diversity to Students When Choosing a Physician Assistant Program
• Predicting Physician Assistant Program Matriculation Among Diverse Applicants: The Influences of Underrepresented Minority Status, Age, and Gender
• Does Prior Community College Attendance Predict Diversity in Health Professions Schools? The Case of Physician Assistants
# Accreditation status

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<thead>
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<th></th>
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<tr>
<td>Provisional</td>
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<td>21.9</td>
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<tr>
<td>Probation</td>
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<tr>
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<tr>
<td><strong>Total</strong></td>
<td>183</td>
<td><strong>100.0</strong></td>
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### Academic health center status

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<td>67.2</td>
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<tr>
<td>Yes</td>
<td>60</td>
<td>32.8</td>
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<td>183</td>
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## Public/private status

<table>
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<th>%</th>
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<tbody>
<tr>
<td>Private</td>
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<td>66.1</td>
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<tr>
<td>Public</td>
<td>60</td>
<td>32.8</td>
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<tr>
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<td>1.1</td>
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<tr>
<td>Total</td>
<td>183</td>
<td>100.0</td>
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</table>


## Require GRE

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<tbody>
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<tr>
<td>No</td>
<td>83</td>
<td>45.4</td>
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<tr>
<td>Total</td>
<td>183</td>
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## RUCC

<table>
<thead>
<tr>
<th>Category</th>
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<th>%</th>
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</thead>
<tbody>
<tr>
<td>RUCC 1 (Metro area, pop. &gt; 1M)</td>
<td>100</td>
<td>54.6</td>
</tr>
<tr>
<td>RUCC 2 (Metro area, pop. 250K-1M)</td>
<td>50</td>
<td>27.3</td>
</tr>
<tr>
<td>RUCC 3 (Metro area, pop. &lt; 250K)</td>
<td>17</td>
<td>9.3</td>
</tr>
<tr>
<td>RUCC 4-9 (Non-metro area)</td>
<td>16</td>
<td>8.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>183</td>
<td>100.0</td>
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URMed

<table>
<thead>
<tr>
<th>Factor</th>
<th>Estimate</th>
<th>95% Confidence Interval</th>
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<tbody>
<tr>
<td>Academic Health Center</td>
<td>0.00</td>
<td>[-0.02, 0.02]</td>
</tr>
<tr>
<td>Accreditation: Probation</td>
<td>0.03</td>
<td>[-0.01, 0.06]</td>
</tr>
<tr>
<td>Accreditation: Provisional</td>
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<td>[0.00, 0.06]</td>
</tr>
<tr>
<td>No GRE required</td>
<td>0.01</td>
<td>[-0.01, 0.03]</td>
</tr>
<tr>
<td>Public program</td>
<td>0.01</td>
<td>[-0.01, 0.04]</td>
</tr>
<tr>
<td>RUCC 2 (Metro area, pop. 250K-1M)</td>
<td>-0.02</td>
<td>[-0.04, 0.01]</td>
</tr>
<tr>
<td>RUCC 3 (Metro area, pop. &lt; 250K)</td>
<td>-0.03</td>
<td>[-0.07, 0.00]</td>
</tr>
<tr>
<td>RUCC 4-9 (Non-metro area)</td>
<td>-0.04</td>
<td>[-0.08, -0.01]</td>
</tr>
<tr>
<td>Number of applicants</td>
<td>0.02</td>
<td>[0.01, 0.04]</td>
</tr>
<tr>
<td>Number of matriculants</td>
<td>0.00</td>
<td>[-0.01, 0.01]</td>
</tr>
</tbody>
</table>

Estimate

- Green circle: p ≤ .05
- Gray circle: p > .05
Diversity in the USA

The U.S. population is becoming more diverse.

• 1.3% American Indian or Alaskan Native
• 5.9% Asian
• 13.4% Black or African American
• 0.2% Native Hawaiian or Pacific Islander
• 60.1% non-Hispanic white
Health workforce diversity

2019 MD graduates
• 0.2% American Indian or Alaskan Native
• 21.6% Asian
• 6.2% Black or African American
• 0.1% Native Hawaiian or Pacific Islander
• 54.6% non-Hispanic white

2019 PA graduates
• 0.5% American Indian or Alaskan Native
• 8.6% Asian
• 3.2% Black or African American
• 1.0% Native Hawaiian or Pacific Islander
• 71.7% white