



Disparities in the EMS pathway to completion at an urban community college

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Introduction

Disparities in access and opportunity for high quality emergency care exist and persist, creating gaps in outcomes across racial/ethnic groups and socially disadvantaged populations. Increasing diversity of the EMS workforce may reduce disparities in patient outcomes in the prehospital setting. Opportunity to join and move through the EMS education pathway is an important consideration in our examination of workforce diversity issues.

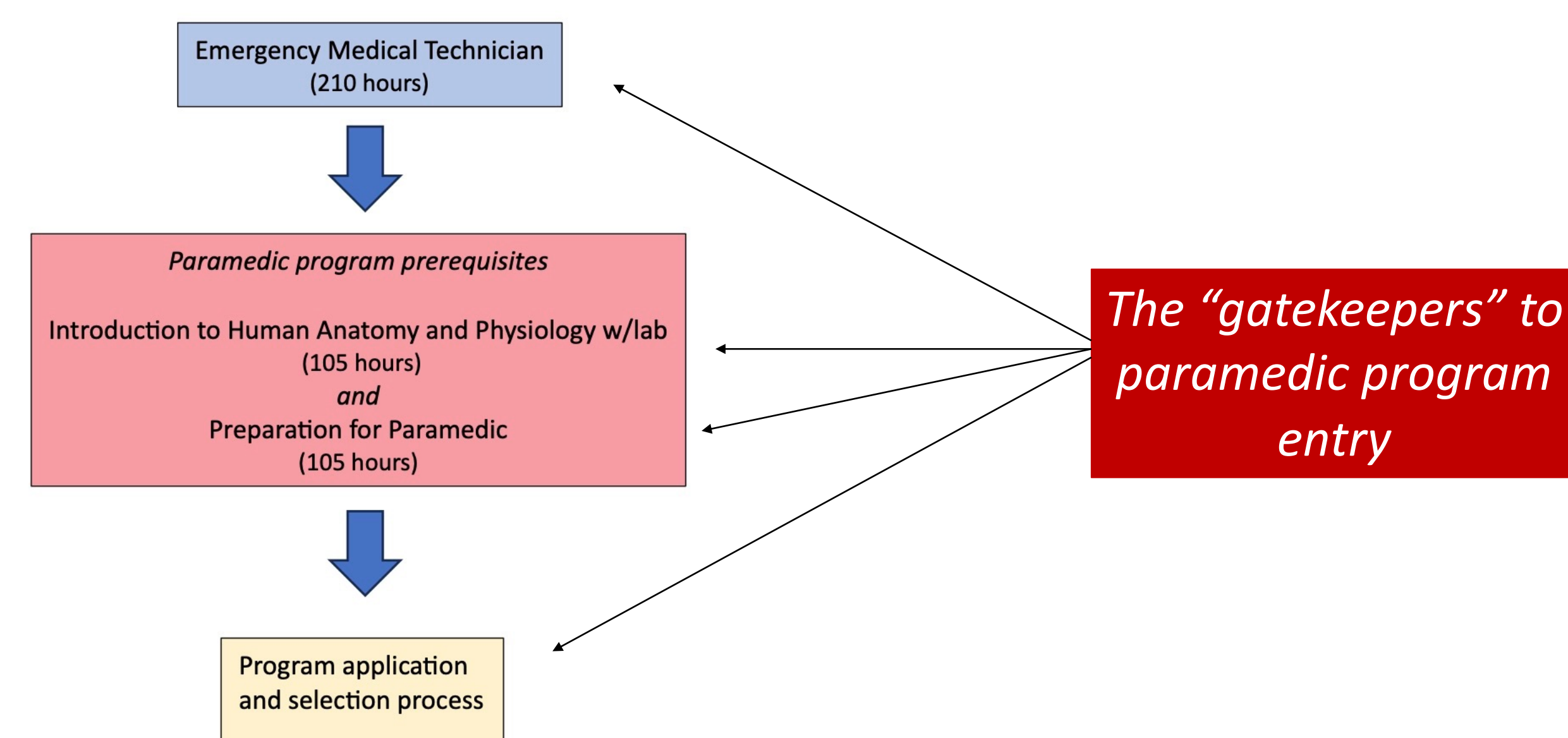
Research Objective

The objective of this study is to examine disaggregated student success outcomes for “gatekeeper courses” along the EMS pathway from EMT completion to paramedic program entry at one urban community college.

Methods

We examined existing college data for students enrolled in courses that are considered “gatekeepers” to paramedic program entry. Demographic data were extracted from student applications to the state community college system and include ethnicity, gender, military service veteran, financial need, disability services eligible, foster youth, and first-generation college student. Overall percent success are examined for the Emergency Medical Technician certification course and two paramedic prerequisite courses as shown in the figure below. Disaggregated course success outcomes by individual equity group were compared to overall course percent success over a 5-year period (2017-2022).

EMS Pathway



Percentage Point Gap (PPG) method as described by the state chancellor’s office was used to examine subgroups for disproportionate impact considering margin of error by sample size (95% CI).

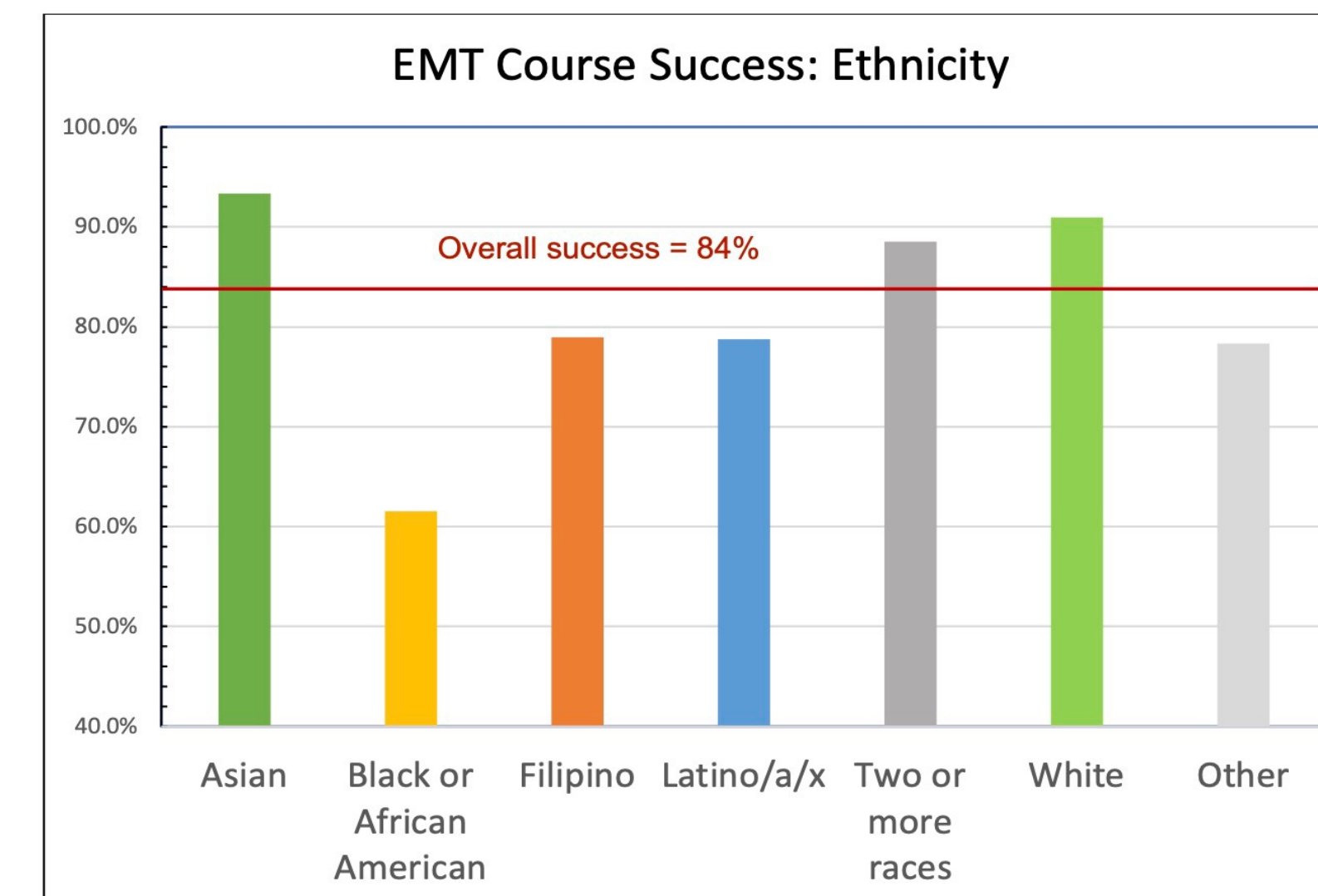
$$\text{Percentage Point Gap (PPG)} = \text{Course completion rate (\% for disaggregated subgroup)} - \text{Course completion rate (\% for all students)}$$

Figure 1. Percentage Point Gap Formula (Center for Urban Education, 2015)

Results

EMT certification course

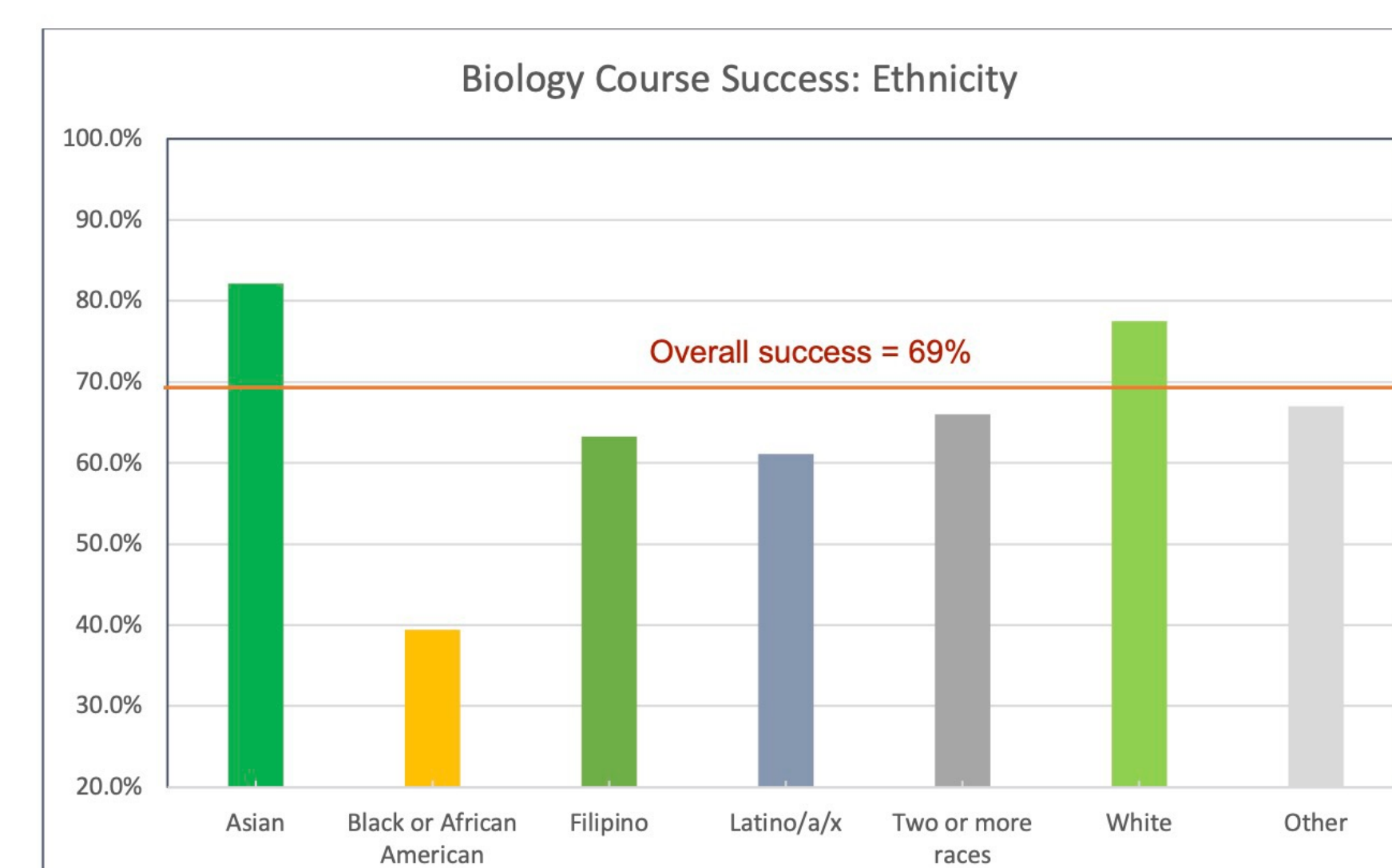
A total of 856 students were enrolled in the EMT certification course between 2017 and 2022. Course success overall was 84%. Disproportionate impact was found in African American students (61.5%). Disproportionate impact was not found for other equity groups.



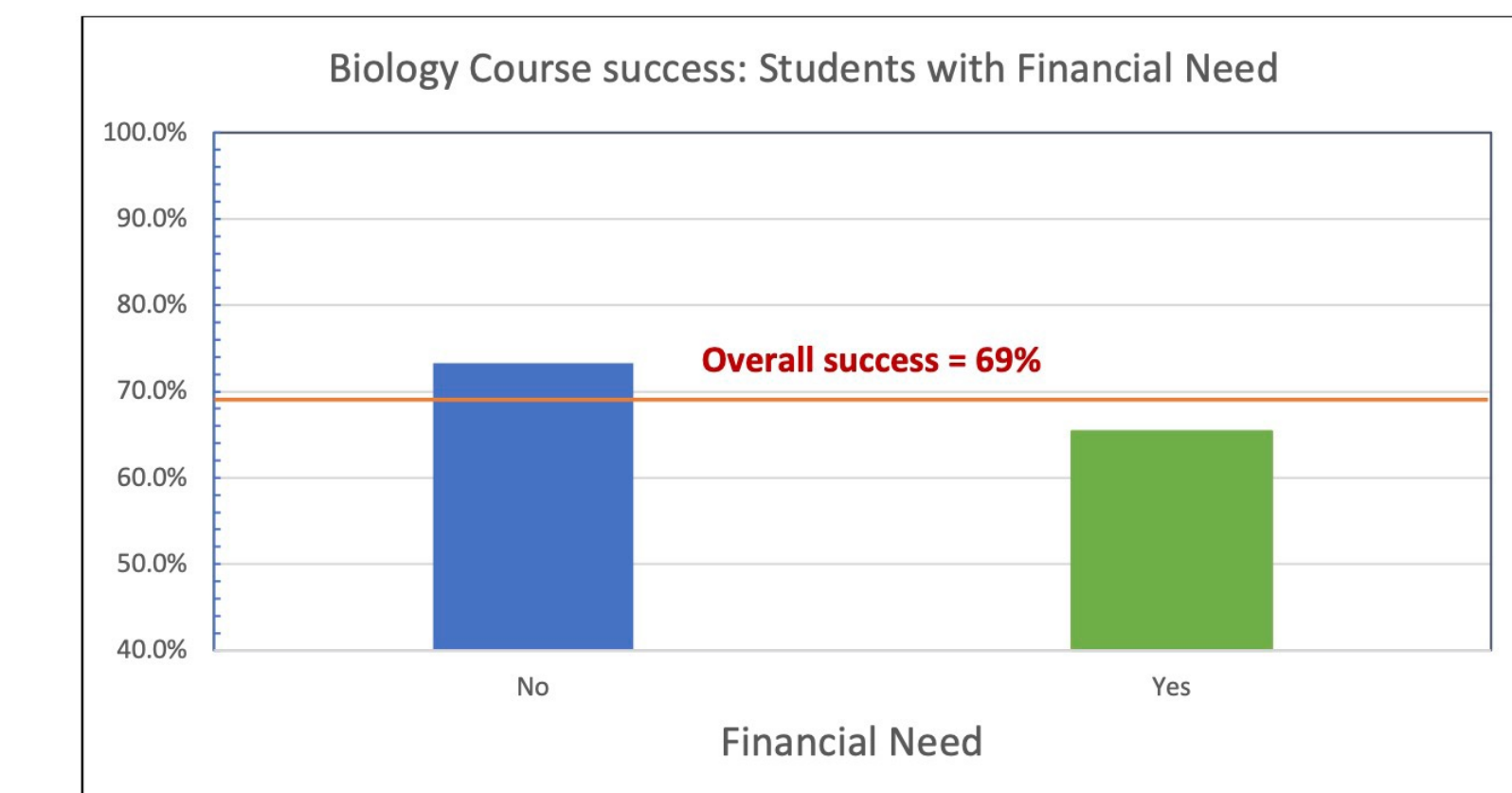
Ethnicity	N	% Course Success	PPG	E
Asian	135	93.3%	9.33%	8%
Black or African American	52	61.5%	-22.46%	14%
Filipino	38	78.9%	-5.05%	16%
Latino/a/x	273	78.8%	-5.25%	6%
Two or more races	61	88.5%	4.52%	13%
White	232	90.9%	6.95%	6%
Other	65	78.3%	-5.68%	12%
ALL	856	84%	0%	

Human Anatomy and Physiology course

For the paramedic prerequisite coursework, a total of 1382 students were enrolled in anatomy and physiology with an overall average success rate of 69%. Disproportional impact was significant for African American (39%) and Latinx (61%) students, and students with financial need (65%).



Ethnicity	N	% Course success	PPG	E
Asian	336	82.1%	13.1%	5%
Black or African American	104	39.4%	-29.6%	10%
Filipino	98	63.3%	-5.7%	10%
Latino/a/x	396	61.1%	-7.9%	5%
Two or more races	100	66.0%	-3.0%	9%
White	276	77.5%	8.5%	6%
Other	72	67.0%	-2.0%	12%
Overall	1382	69%	0.0%	



Financial need	N	% course success	PPG	E
No	573	73.30%	4.30%	4%
Yes	809	65.40%	-3.60%	3%

Paramedic Prep course

The paramedic preparation course had 416 students and overall success of 81%. African American students’ completion was lower than the average (61%); however, a small number of students (n=13) prevented meaningful evaluation. Disproportionate impact was not found for any of the other equity subgroups.

Limitations

- Single community college data so unable to generalize to other programs.
- Single variable analysis of disaggregated demographic data limits understanding of impact on students who belong to multiple equity groups.
- Summer semesters included, which may underestimate the gaps for certain equity groups.

Conclusions

- Disparities in student outcomes exist in a large, urban community college EMS program that currently serves as a pipeline to the EMS workforce.
- Disproportionate impact is most prominent for Black/African American students in two of the “gatekeeper” courses.
- Prerequisite anatomy and physiology showed significant disparities in student success outcomes for Black/African American and Latinx students and for students with financial need.

The Percentage Point gap (PPG) methodology used to evaluate disproportionate impact may be used as a model allowing programs to compare outcomes and share methods for addressing equity performance gaps.

Future Directions

- Engagement in cross college dialogue, data sharing, and take action to eradicate equity gaps.
- Partner with local community-based programs and examine best practices for improving success of Black/African American students in healthcare/EMS and STEM education.