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Does patient age and criticality affect the paramedic student's opportunity to be a team leader?



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Background

- Paramedic students must act and demonstrate competency as team leader in prehospital patient care encounters to successfully graduate their paramedic program.
- Previous research has shown that the higher acuity of the patient encounter, the student's likelihood to lead decreased (Gosford et. al., 2010)
- Whether patient age and acuity affects students opportunity to act as team lead has not been studied.

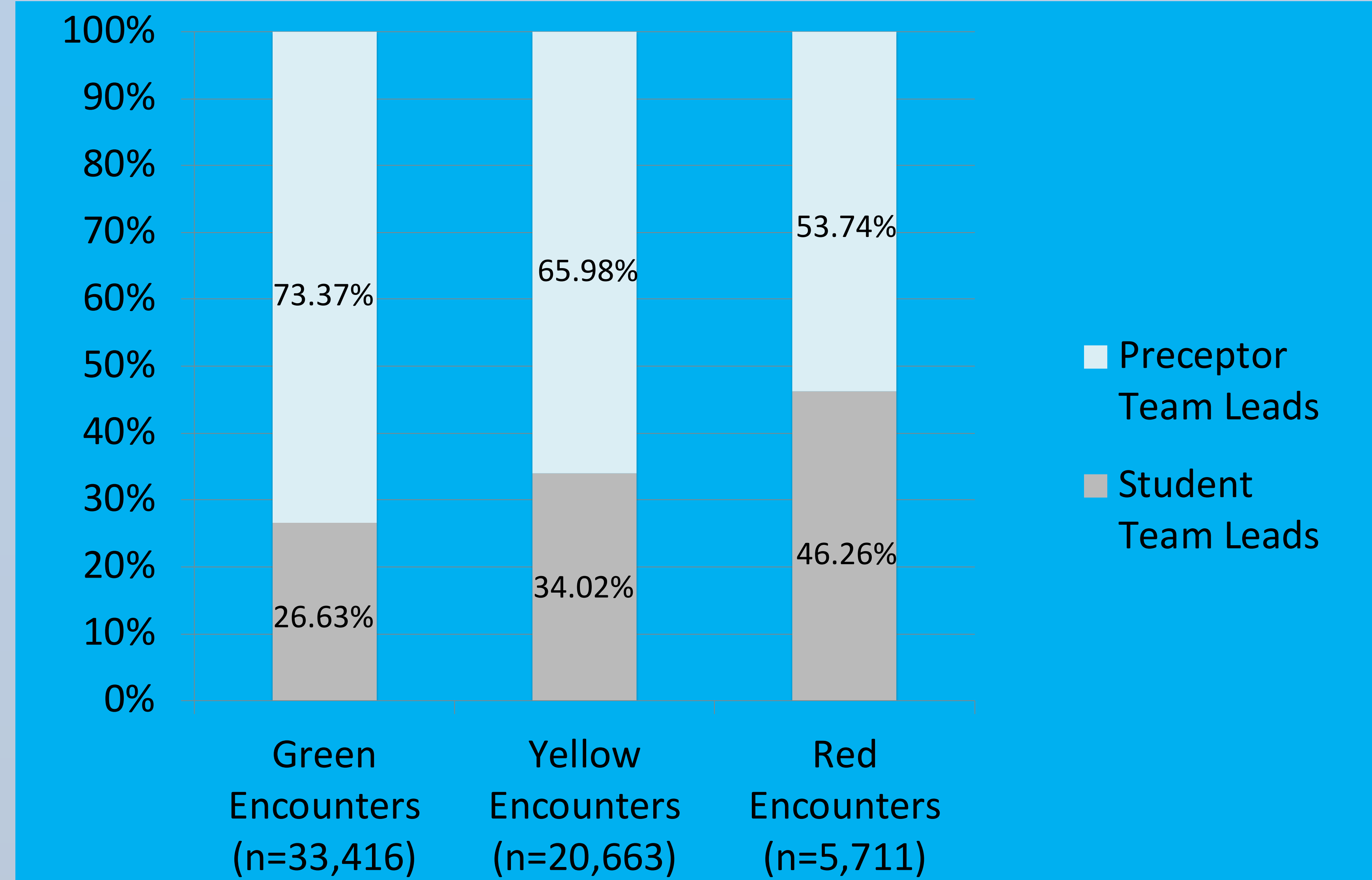
Objective

The objective of this research was to determine if the age of the patient and the criticality of the patient affected the student's frequency and likelihood of team leads.

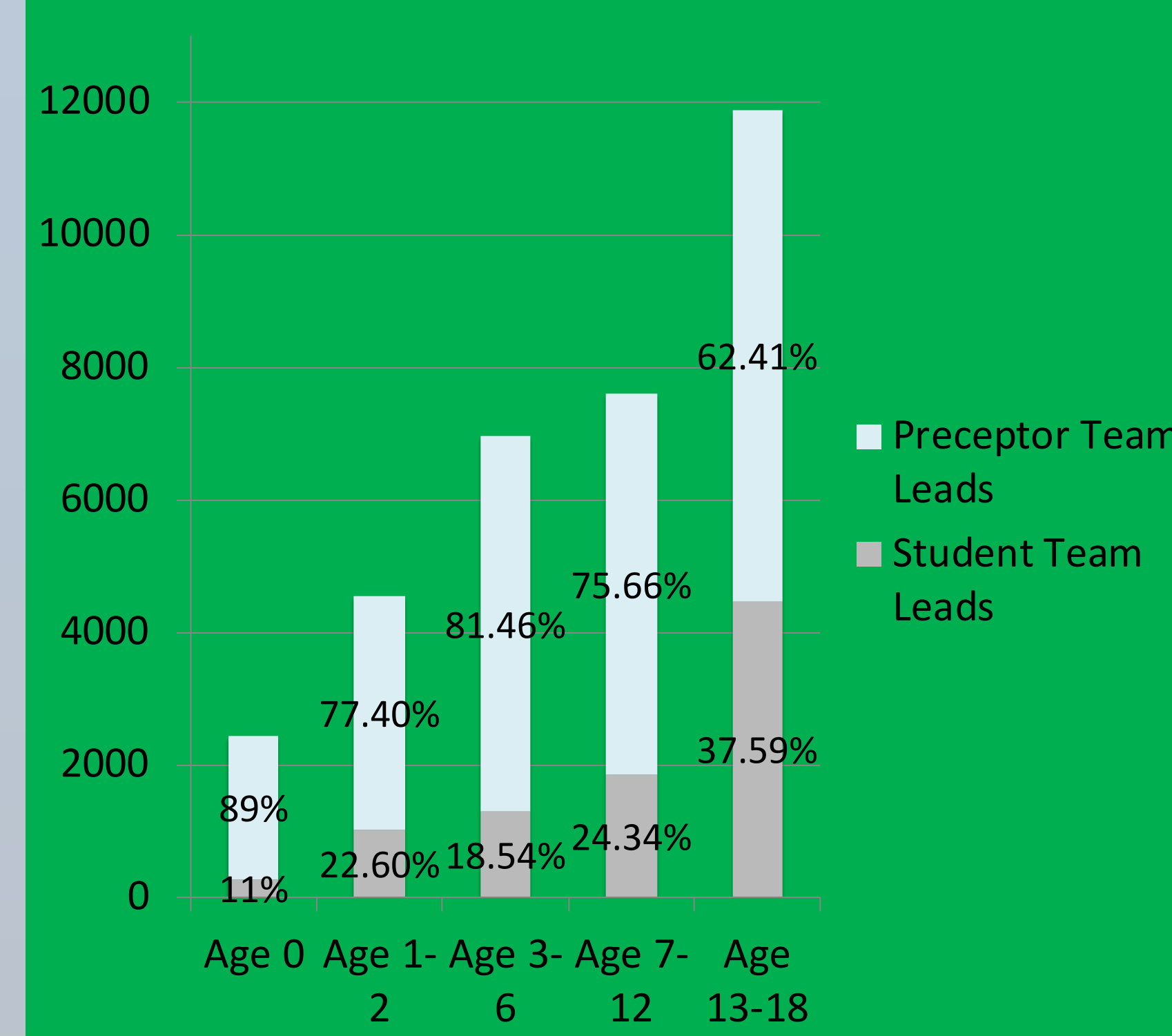
Methods

- A retrospective review of student records from FISDAP®, a national online emergency medical services (EMS) student tracking system, was completed.
- The database provided 537,343 patient encounters, among 5,720 students from January 2010 to December 2018.
- Team lead was determined by whether students selected the "I was the (Successful) Team Leader" box during patient documentation.
- Age was divided into subgroups of patients less than 18 years old and by patient's older than 18 years old.
- Criticality was divided by color categories, as available in FISDAP by the following definitions:
 - "Green - non-critical ambulatory"
 - "Yellow - illness/injuries not yet life threatening"
 - "Red - critical, life-threatening illness/injury"
 - "Black - patient dead on arrival" (Excluded from analysis)
- SPSS was utilized for descriptive analysis of the data to quantify frequency of team lead by age, subgroup and criticality.
- Odds ratio analysis via Epi Info™ was utilized to quantify likelihood of student having opportunity to team lead based on age and criticality.
 - The age group "13-18" was used as referent group.
 - Younger groups were compared to referent groups via odds ratios.
 - The student group was compared to the preceptor group.
 - Results were also stratified by patient criticality.

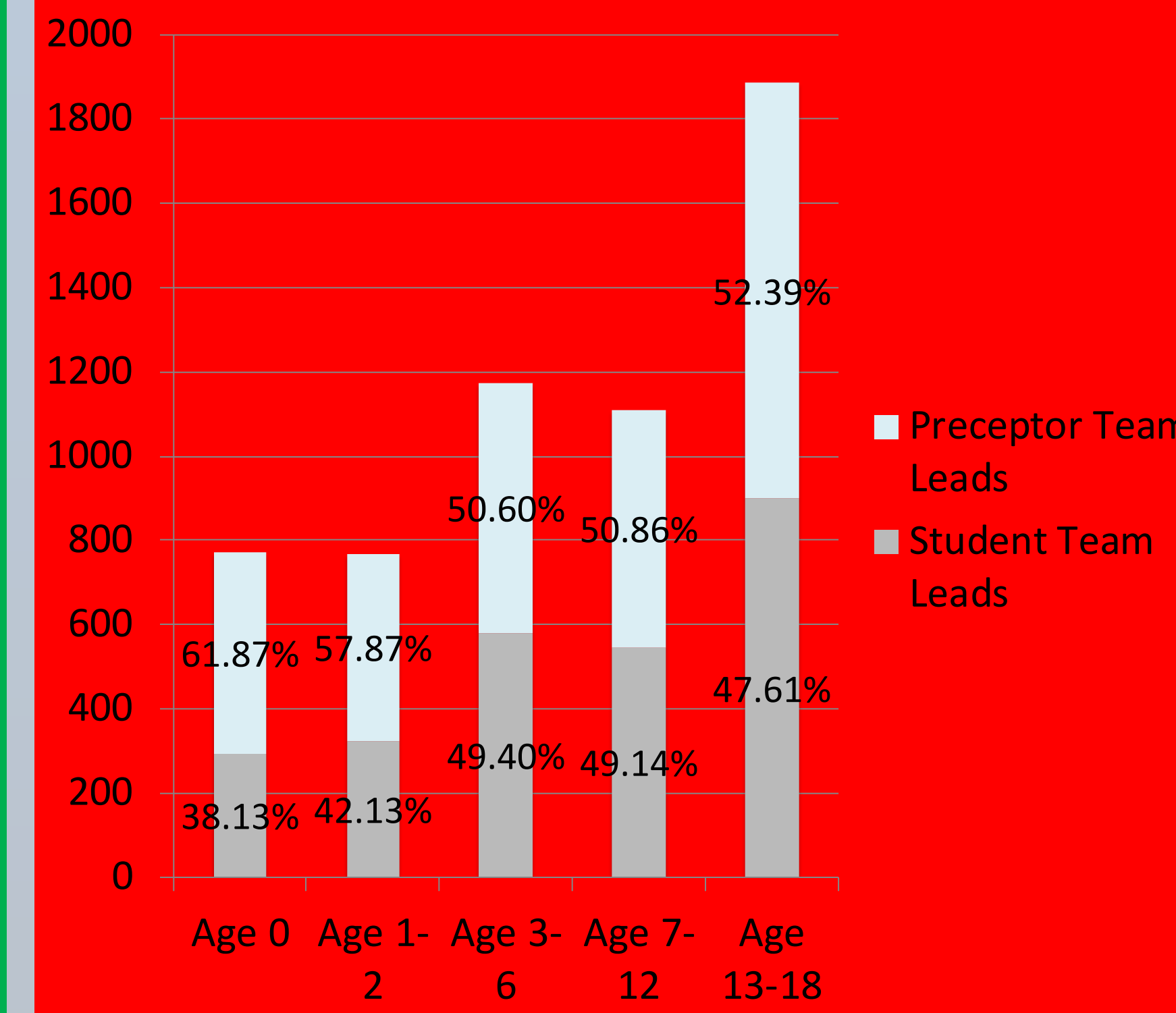
Percentages of Pediatric Team Leads by Criticality



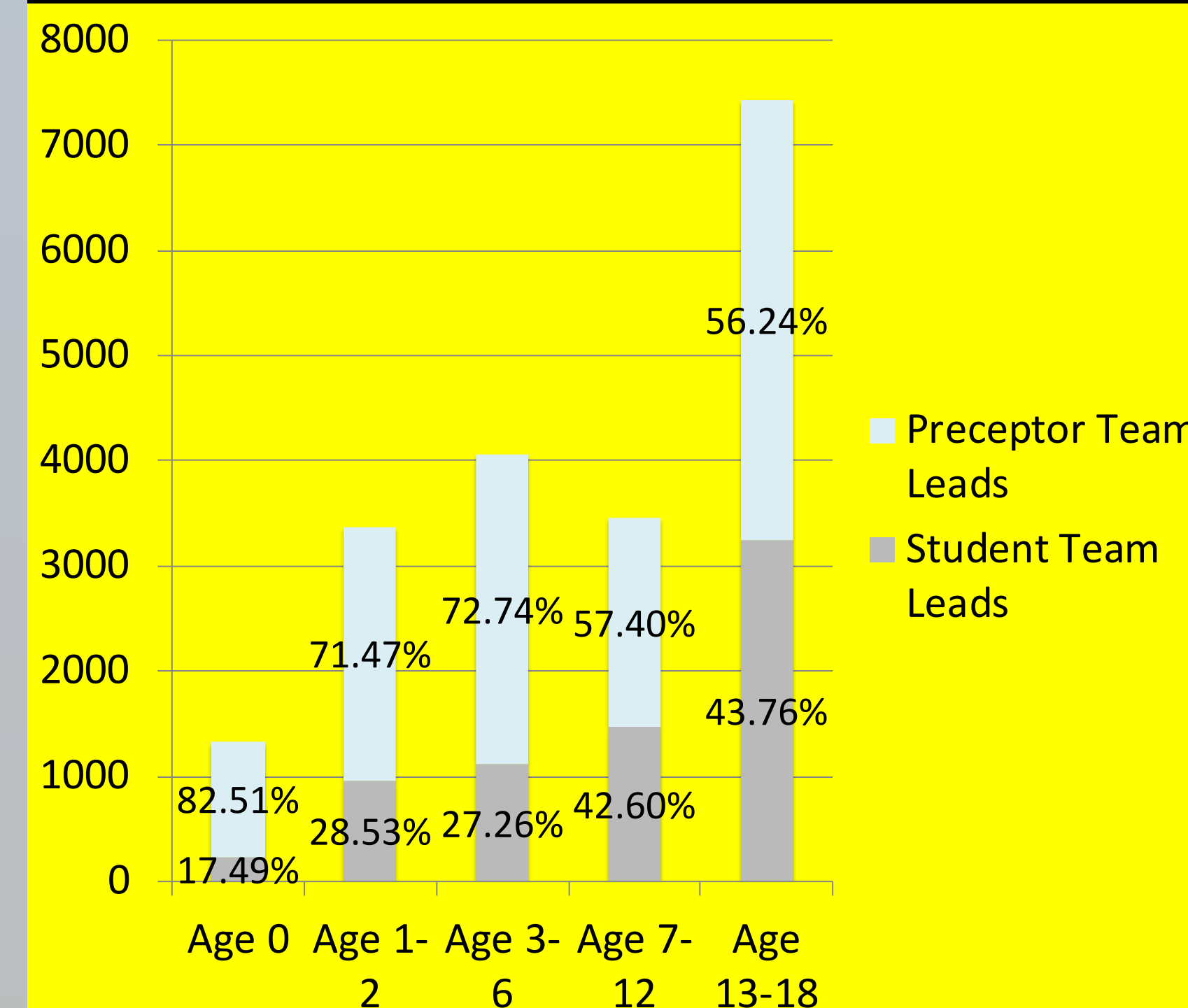
Green Criticality by Age Group



Red Criticality by Age Group



Yellow Criticality by Age Group



Odds of Students Leading Calls

Green Patient Age Group	Compared To...	Odds Ratio (95% CI)	p-value	Student Less Likely to Lead?
0-11 months	13-18 years	0.20 (0.18, 0.23)	p<0.001	Yes
1-2 years	13-18 years	0.54 (0.50, 0.58)	p<0.001	Yes
3-6 years	13-18 years	0.38 (0.35, 0.40)	p<0.001	Yes
7-12 years	13-18 years	0.67 (0.64, 0.70)	p<0.001	Yes

Yellow Patient Age Group	Compared To...	Odds Ratio (95% CI)	p-value	Student Less Likely to Lead?
0-11 months	13-18 years	0.27 (0.23, 0.32)	p<0.001	Yes
1-2 years	13-18 years	0.51 (0.47, 0.56)	p<0.001	Yes
3-6 years	13-18 years	0.48 (0.44, 0.52)	p<0.001	Yes
7-12 years	13-18 years	0.63 (0.59, 0.68)	p<0.001	Yes

Red Patient Age Group	Compared To...	Odds Ratio (95% CI)	p-value	Student Less Likely to Lead?
0-11 months	13-18 years	0.68 (0.57, 0.80)	p<0.001	Yes
1-2 years	13-18 years	0.80 (0.68, 0.95)	0.01	Yes
3-6 years	13-18 years	1.1 (0.93, 1.2)	0.34	No
7-12 years	13-18 years	1.06 (0.92, 1.2)	0.42	No

All Criticality Patient Age Groups	Compared To...	Odds Ratio (95% CI)	p-value	Student Less Likely to Lead?
0-11 months	13-18 years	0.33 (0.30, 0.35)	p<0.001	Yes
1-2 years	13-18 years	0.53 (0.51, 0.56)	p<0.001	Yes
3-6 years	13-18 years	0.47 (0.44, 0.49)	p<0.001	Yes
7-12 years	13-18 years	0.61 (0.58, 0.64)	p<0.001	Yes

Results

- Paramedic students were the team leader for 43.7% (n=234,961) of all patient encounters.
- Paramedic students encountered 66,777 patients under the age of 18 (12.4% of all encounters) and led 30.3% (n=20,245) of those interactions.
- Students encountered 33,416 "green" patients, 20,663 "yellow" patients and 5,711 "red" patients (total = 59,790).
- Students led 26.63% (n = 8,900) of "green" patients, 34.02% (n = 7,029) of "yellow" patients and 46.26% (n = 2,642) of "red" patients.
- Compared to all criticality 13-18 year old patients, students were less likely to lead all other younger patients across criticalities with the exception of red patients 3-6 years old (OR 1.1) and red patients 7-12 years old (OR 1.06).

Conclusions

- Paramedic students led less pre-hospital patient encounters than previous studies in past time frames have shown.
- Paramedic students received even less opportunities to lead with pediatric patients.
- Paramedic students led a higher percentage of critical encounters than lower acuity, non-critical encounters.
- Paramedic students led a similar amount of "Age 0" encounters across criticalities; students, comparatively, did not lead a similar amount of "Age 13-18" encounters across criticalities.
- Students are significantly less likely to lead younger patient encounters across all levels of criticality.