



The Well-Rounded Applicant: Admissions and Other Data as NAPLEX® and MPJE® Performance Determinants

Fadia T. Shaya, PhD, MPH, Professor and Vice-Chair for Academic Affairs, University of Maryland School of Pharmacy
Lisa Lebovitz, JD, Assistant Dean for Academic Affairs & Assessment, University of Maryland School of Pharmacy
Viktor Chirikov, MS, PhD Candidate, University of Maryland School of Pharmacy
Lauren S. Schlesselman, MA Ed Psych, PharmD, Assistant Dean for Academic & Strategic Initiatives and Associate Clinical Professor, University of Connecticut School of Pharmacy
Sauna Buring, PharmD, Associate Dean for Professional Education and Assessment, James L. Winkle College of Pharmacy, University of Cincinnati

Background

Most Likely to Succeed: What is the perfect combination of admission variables that would enable schools to identify applicants who will excel in pharmacy school and score well on the licensing exams?

Several recent studies indicate that predictors of success on the North American Pharmacists Licensure Examination (NAPLEX®) may be school-specific, based on the particular pool of applicants a school attracts due to factors such as demographics and location. A literature search was unable to find any published research related to Multistate Pharmacy Jurisprudence Examination (MPJE®) predictors of success despite the fact that a thorough understanding of pharmacy laws is as essential to good practice as comprehensive clinical training.

Last year admission data and scores on the NAPLEX® and MPJE® of 383 PharmD students who graduated from University of Maryland School of Pharmacy between 2011 and 2013 were analyzed. Findings included **higher final PharmD GPA** was associated with higher NAPLEX® and MPJE® scores, while **being older than 25 years** was associated with lower scores for both exams; **PCAT chemistry, reading comprehension, and verbal ability** were associated with higher NAPLEX® scores, but not with higher MPJE® scores.

To determine if this was unique to one school, three schools agreed to share data in order to participate in an expanded analysis.

Objective

The objective of this project was to identify the determinants of better performance for students taking the NAPLEX® and MPJE®.

Methods

We collected data on 1,012 PharmD students who graduated from the University of Maryland School of Pharmacy, the University of Cincinnati James L. Winkle College of Pharmacy, and the University of Connecticut School of Pharmacy and took the NAPLEX® and MPJE®. Maryland and Cincinnati provided four years of data (2011-2014) and Connecticut provided two years of data (2013-2014).

Using ordinary least squares regression, we evaluated the following factors considered to be associated with higher scores on the two examinations:

- 1) pre-admission criteria such as PCAT® composite and subtest scores, cumulative GPA at admissions, and type of degree from the institution prior to pharmacy school
- 2) cumulative GPA at the completion of the PharmD program and duration of study
- 3) age, gender, and geographic location at the time of application to pharmacy school.

Results

- higher percentiles on **PCAT® chemistry and verbal ability** were associated with higher NAPLEX scores
- higher percentile on **PCAT® reading comprehension** correlated with higher MPJE scores
- higher **final PharmD GPA** was associated with higher scores for both exams
- higher NAPLEX scores were achieved by **male students**
- students **older than 25 years** had lower NAPLEX scores

Table 1. NAPLEX scores by school & PharmD students characteristics

	n	Cincinnati		Connecticut		Maryland	
		N=339	Mean	n	Mean	n	Mean
Passing percentage, %	339	99.4%		154	98.1%	519	97.3%
Graduation Year							
2011	85	107.2	-	-	121	107.2	
2012	92	105.2	-	-	145	102.9	
2013	94	106.6	77	107.9	122	103.3	
2014	68	109.6	77	103.3	131	104.8	

Table 2. MPJE scores by school and PharmD students characteristics

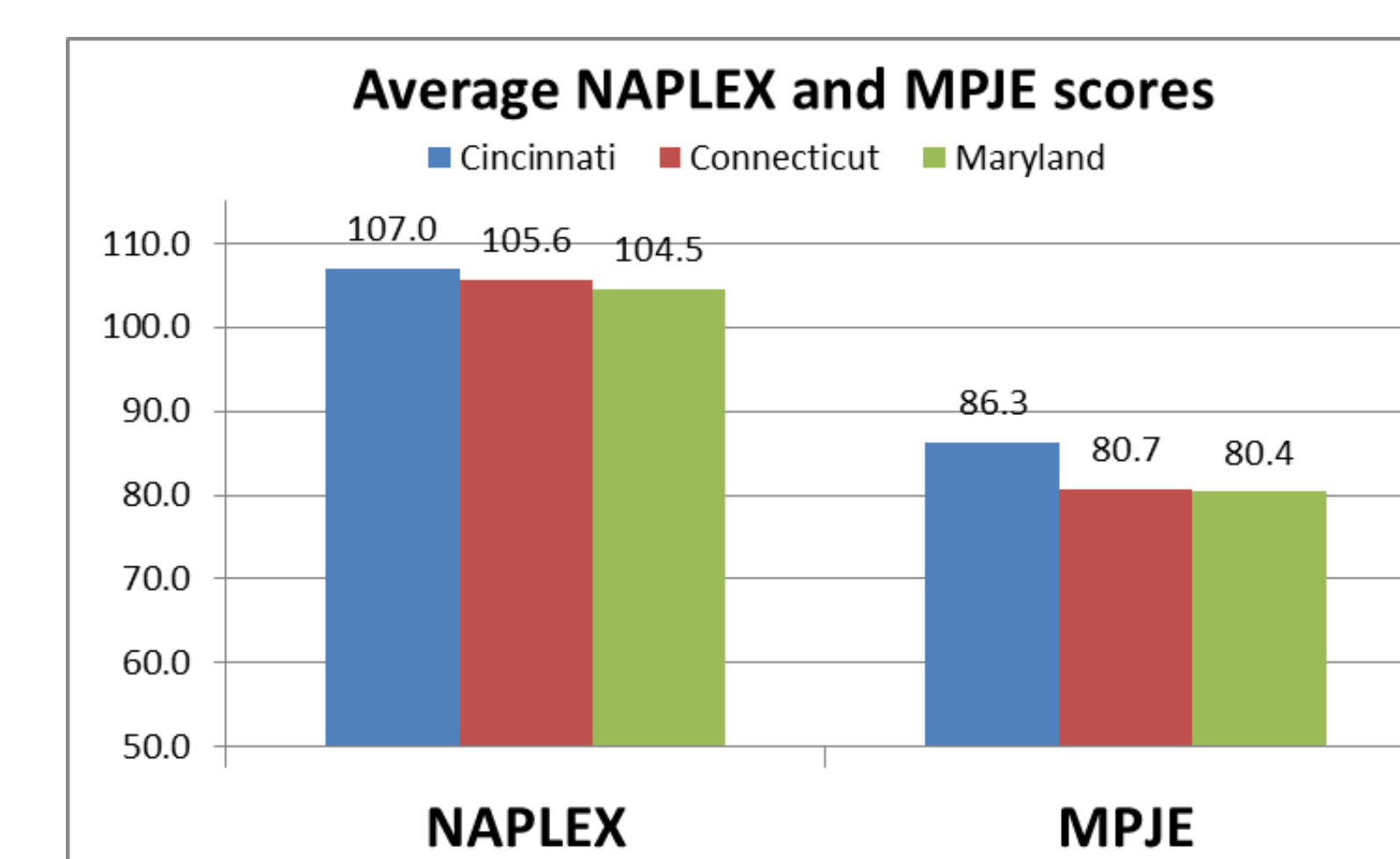
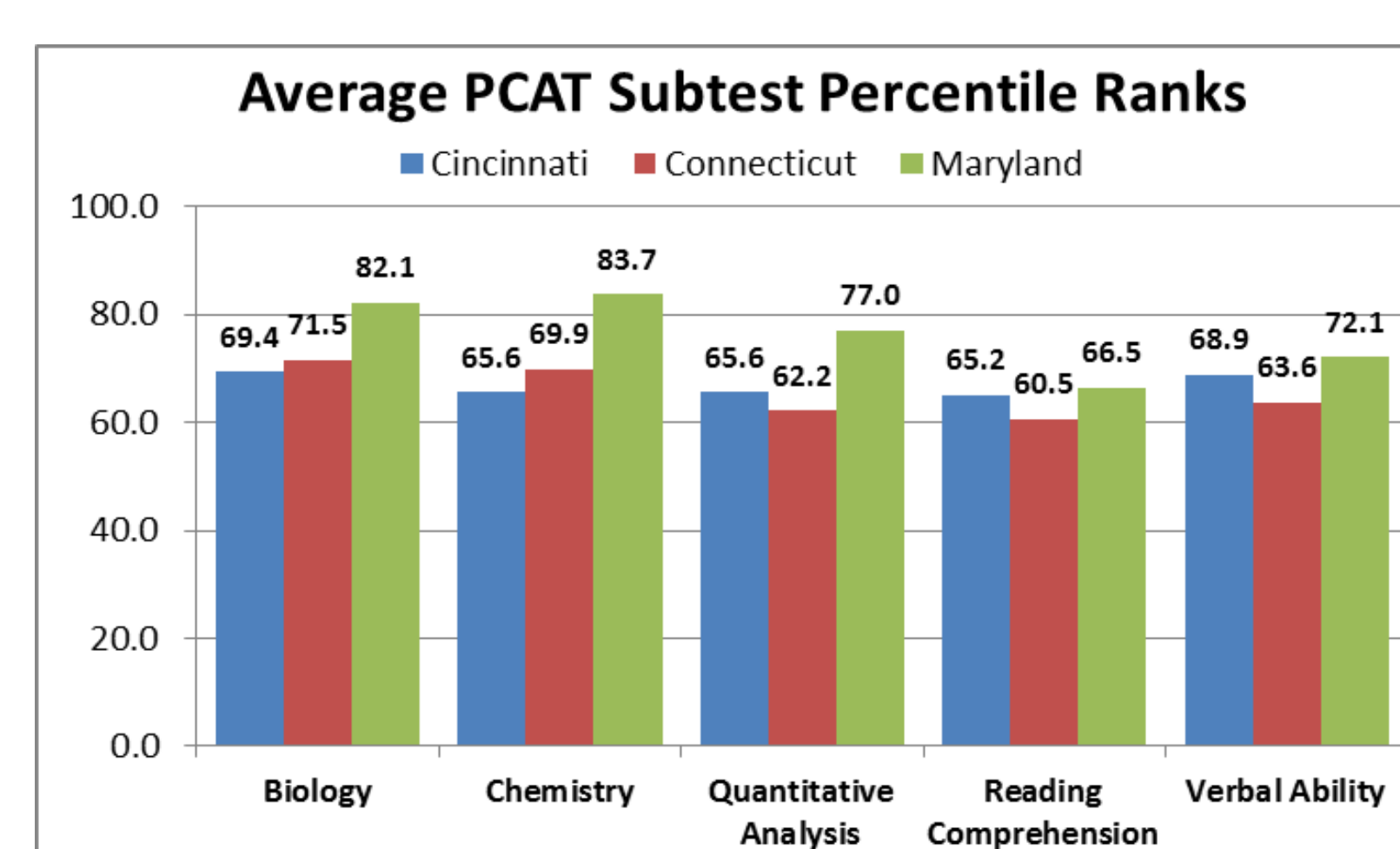
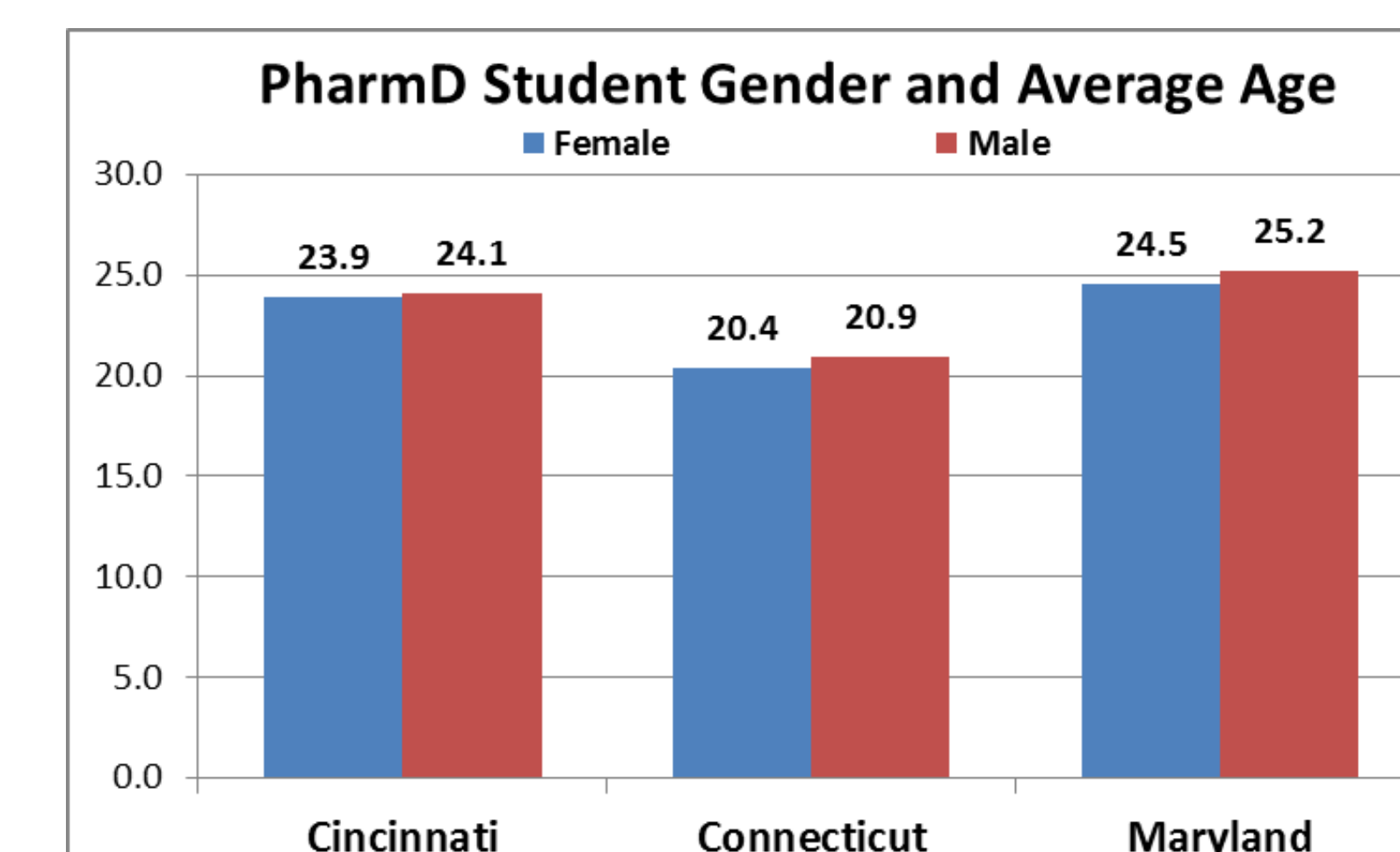
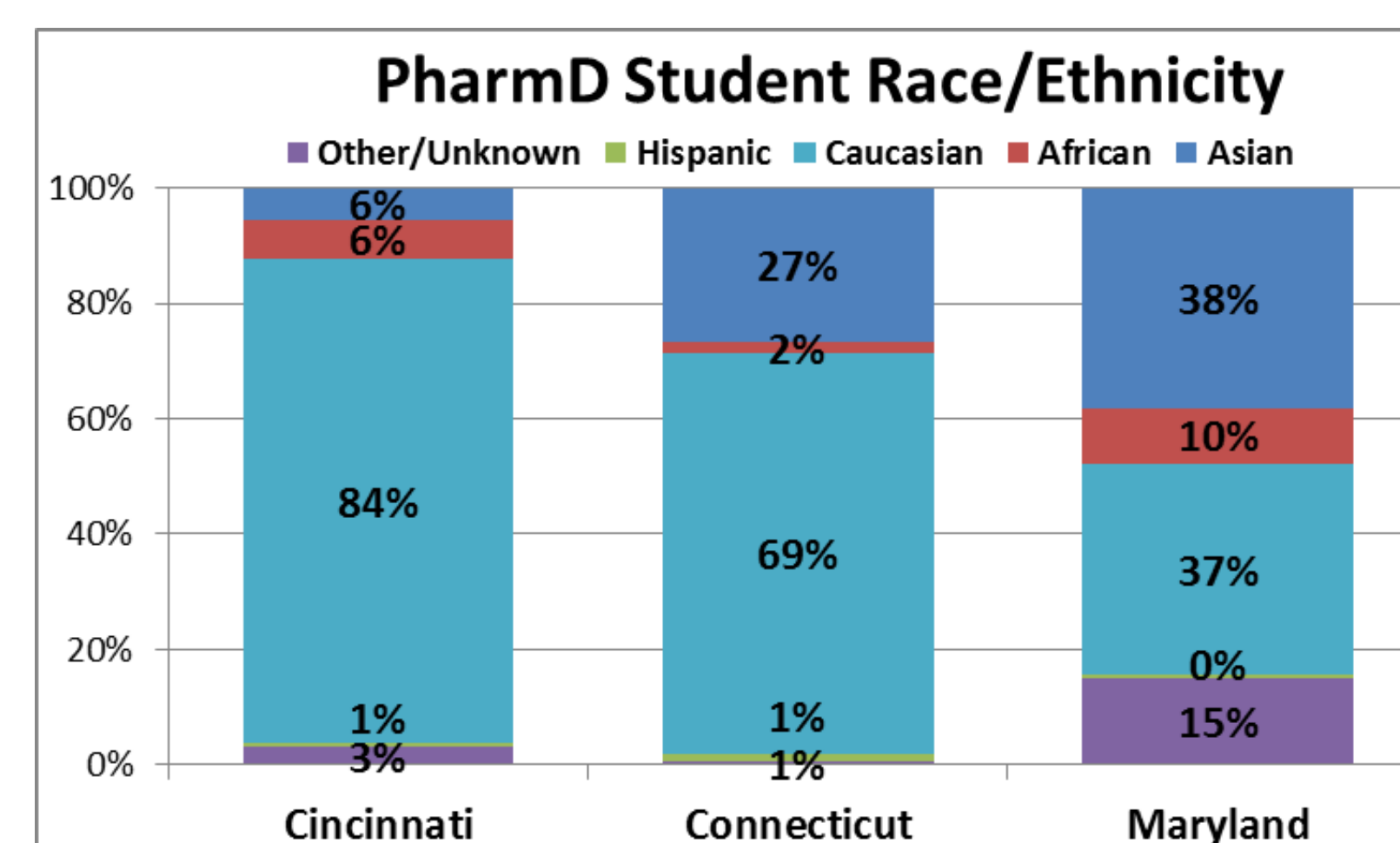
	n	Cincinnati		Connecticut		Maryland	
		N=336	Mean	n	Mean	n	Mean
Passing percentage, %	336	99.4%		154	90.3%	460	87.8%
Graduation Year							
2011	84	86.3	-	-	115	80.3	
2012	92	85.2	-	-	122	79.9	
2013	93	85.9	77	81.1	105	79.6	
2014	67	88.3	77	80.2	118	81.6	

Table 3. MULTIVARIATE ANALYSES OF PREDICTORS OF NAPLEX AND MPJE

School	NAPLEX score		MPJE score	
	N=1012, R-sq=0.37 Effect	P-value	N=934, R-sq=0.38 Effect	P-value
School				
Maryland	Reference		Reference	
Connecticut	-0.62	0.782	-0.83	0.383
Cincinnati	5.04**	0.004	4.93**	<.0001
Age				
18<=Age<22 yrs	Reference		Reference	
22<=Age<25 yrs	-1.3	0.184	0.06	0.898
Age>=25 yrs	-4.6**	<.0001	0.04	0.942
Missing	3.2	0.362	2.43**	0.005
Graduating Class				
2011	Reference		Reference	
2012	-2.8**	0.009	-0.4	0.377
2013	-1.84*	0.093	-0.1	0.874
2014	-0.7	0.501	1.34**	0.003
Male (vs. Female)	2.1**	0.005	-0.1	0.643
Duration of study >4 years (vs 4 years)	-0.5	0.790	-0.1	0.902
PCAT Biology %	0.00	0.974	-0.01	0.213
PCAT Chemistry %	0.08**	0.001	0.01	0.453
PCAT Quantitative Ability %	0.00	0.828	-0.01	0.271
PCAT Reading Comprehension %	0.02	0.263	0.02**	0.003
PCAT Verbal Ability %	0.10**	<.0001	0.01	0.250
Undergrad Cumulative GPA	0.05	0.968	-0.35	0.485
Final GPA	24.1**	<.0001	6.65**	<.0001

** Significant at level of confidence 0.05

* Significant at level of confidence 0.10



Implications

Schools should explore whether additional student services support can positively impact NAPLEX® and MPJE® scores for older students, and students who entered the PharmD program with low PCAT® verbal ability and reading comprehension.

More schools will be approached for the next iteration of this project.