



Correlation of Variables for Program Success and First Time SEE Scores for Nurse Anesthesia Practice Program Students at AdventHealth University

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Problem

- Nurse Anesthesia program difficulty
- Limited seat availability
- Selection and admission requirements have been established
- Program admission does not guarantee graduation
- Preadmission variables may identify applicants most likely to succeed

PICOT Questions

- For student registered nurse anesthetists enrolled in master's and doctoral degree programs **(P)**, do the pre-admission cumulative grade point average (cGPA), science grade point average (sGPA), total Graduate Record Examination (GRE) score, or Health Sciences Reasoning Test (HSRT) overall score **(I)** correlate with nurse anesthesia program grade point average (NAPGPA) **(O)** or the first Self-Evaluation Examination (SEE) total score **(O)**?
- For student registered nurse anesthetists who enrolled into the AdventHealth University Doctor of Nurse Anesthesia Practice Program in 2018-2020 **(P)**, do the pre-admission cumulative grade point average (cGPA), science grade point average (sGPA), total Graduate Record Examination (GRE) score, or Health Sciences Reasoning Test (HSRT) overall score **(I)** correlate with the nurse anesthesia program grade point average (NAPGPA) **(O)** at the end of fourth trimester **(T)** or the first Self-Evaluation Examination (SEE) total score **(O)** during the fifth trimester **(T)**?

Literature Review & Synthesis

- **sGPA and cGPA:** cGPA of 3.36 and sGPA of 3.30 predicted high probability of successfully passing the NCE; however, no evidence directly supports whether undergraduate cumulative GPA or science GPA correlates with higher NCE scores.
- For every one-point increase in cGPA, the chance of successfully completing a graduate nursing program increases up to 7.12 times and students were 4.2 times less likely to experience academic probation.
- cGPA of 3.36, sGPA of 3.30, and undergraduate nursing GPA of 3.36 significantly correlates to student success.

Literature Review & Synthesis

- **GRE:** Literature suggests GRE has little predictive value compared to undergraduate GPA; however, there is limited research showing a positive relationship between total GRE score and academic progression for SRNAs.
- **HSRT:** Literature demonstrates a lack of moderate to strong correlations between HSRT scores and academic performance. The usefulness of the HSRT as an admission instrument may be limited due to the absence of literature in the context of nurse anesthesia graduate programs.
- **SEE:** Strong correlation between second and third year SEE scores and performance on the first NCE attempt.

Site Description

- AdventHealth University, Orlando, Florida



Project Methods and Data Collection Plan

Data Collection

- Project Design
 - This scholarly project did not require informed consent since it was a retrospective review of de-identified data and did not involve human subjects.
 - The de-identified data was statistically analyzed using the 4.4.2.0 (The R Foundation for Statistical Computing, Vienna, Austria) by the AdventHealth Cares Team Statistician Dr. Tho Nguyen.
 - A univariate analysis was used to determine mean and standard deviation for each variable.
 - The Spearman's Rho's Correlation Test was performed to determine if there were any significant correlations.
- Inclusion Criteria
 - Deidentified data from students who enrolled in AHU's DNAP program during 2018-2020
- Exclusion Criteria
 - Students who did not take the SEE in the fifth trimester

Project Aims & Objectives

- To determine if pre-admission cumulative grade point average (cGPA), science grade point average (sGPA), total GRE score, or the HSRT overall score have a correlation with nurse anesthesia program GPA (NAPGPA) at the end of the fourth trimester or the first SEE total score during the fifth trimester.
- **Objective 1-** Determine the correlations of cGPA, sGPA, total GRE score, and the HSRT overall score with the NAPGPA of SRNAs who enrolled at AHU's DNAP program in 2018-2020.
- **Objective 2-** Determine the correlations of cGPA, sGPA, total GRE score, and the HSRT overall score with the first SEE total score of SRNAs who enrolled at AHU's DNAP program in 2018-2020.
- **Objective 3-** Determine the correlation between the nurse anesthesia program grade point average (NAPGPA) at the end of the fourth trimester and the first (SEE) total score during the fifth trimester of SRNAs who enrolled at AHU's DNAP program in 2018-2020.
- **Objective 4-** Make evidence-based recommendations for AHU faculty on the pre-admission variables that may influence selection of optimal candidates to succeed within the program, on the first SEE, and thus later on the initial NCE attempts.

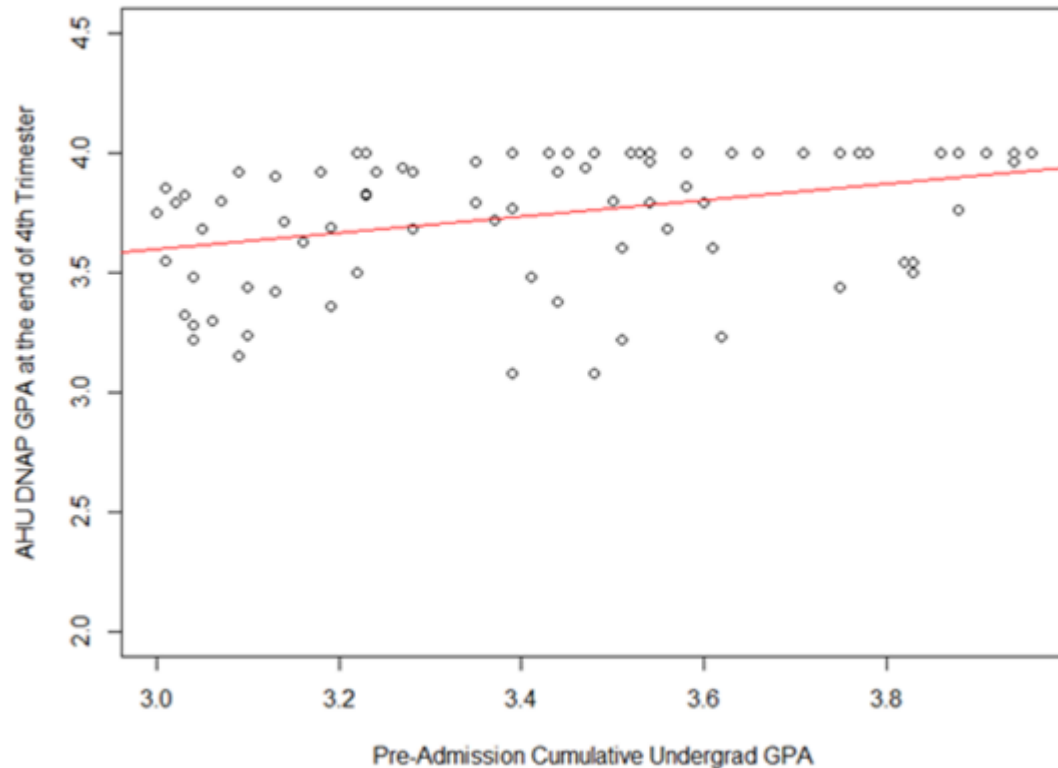


Results

Based on Outcome Tables

Objective 1: Determine the correlations of cGPA, sGPA, total GRE score, and the HSRT overall score with the NAPGPA of SRNAs who enrolled at AHU's DNAP in 2018-2020

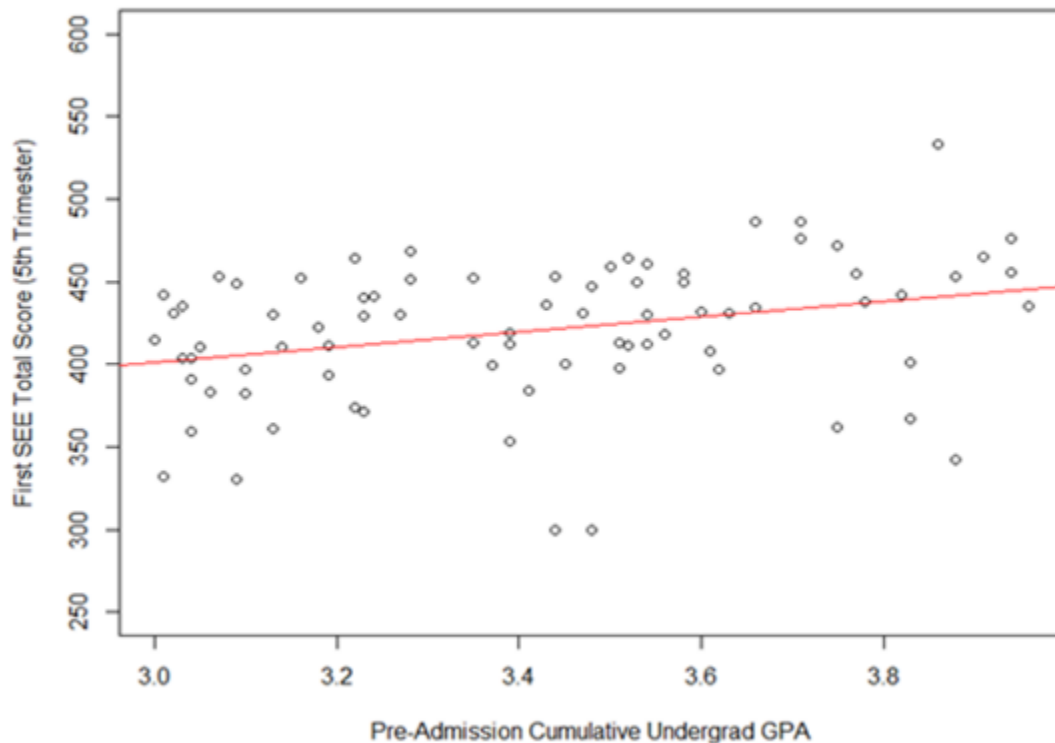
The Spearman's Rho Correlation Test identified statistical significance between cGPA with NAPGPA.



cGPA	NAPGPA	Lower CI	Upper CI
2.9	3.51	2.88	3.79
3.0	3.65	3.30	3.83
3.1	3.76	3.56	3.87
3.2	3.83	3.72	3.90
3.3	3.88	3.81	3.92
3.4	3.92	3.87	3.94
3.5	3.94	3.91	3.96
3.6	3.96	3.93	3.98
3.7	3.97	3.95	3.99
3.8	3.98	3.96	3.99
3.9	3.99	3.97	4.00
4.0	3.99	3.98	4.00

Objective 2: Determine the correlations of cGPA, sGPA, total GRE score, and the HSRT overall score with the first SEE total score of SRNAs who enrolled at AHU's DNAP Program in 2018-2020.

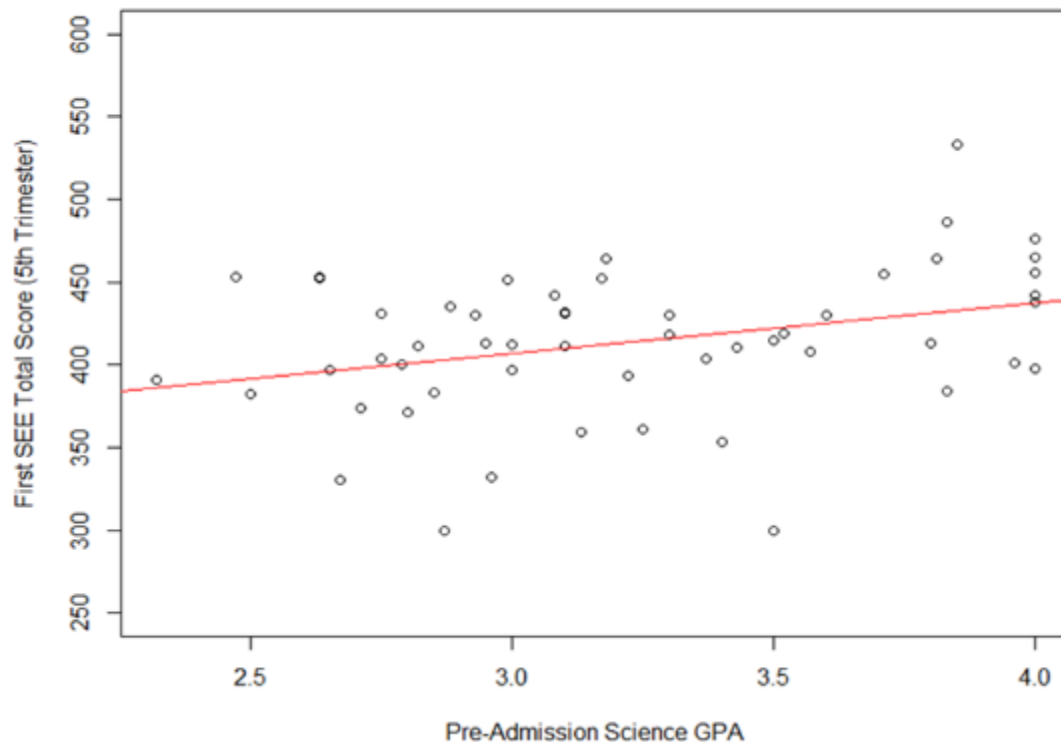
The Spearman's Rho Correlation Test identified statistical significance between cGPA with the SEE total score.



cGPA	SEE	Lower CI	Upper CI
2.9	395.4	369.9	417.5
3.0	402.0	381.2	420.3
3.1	408.3	391.7	423.3
3.2	414.4	401.2	426.5
3.3	420.2	409.4	430.3
3.4	425.9	416.3	434.8
3.5	431.3	421.7	440.2
3.6	436.4	425.9	446.2
3.7	441.4	429.3	452.5
3.8	446.2	432.1	458.8
3.9	450.8	434.7	464.9
4.0	455.2	437.1	470.7

Objective 2: Determine the correlations of cGPA, sGPA, total GRE score, and the HSRT overall score with the first SEE total score of SRNAs who enrolled at AHU's DNAP Program in 2018-2020.

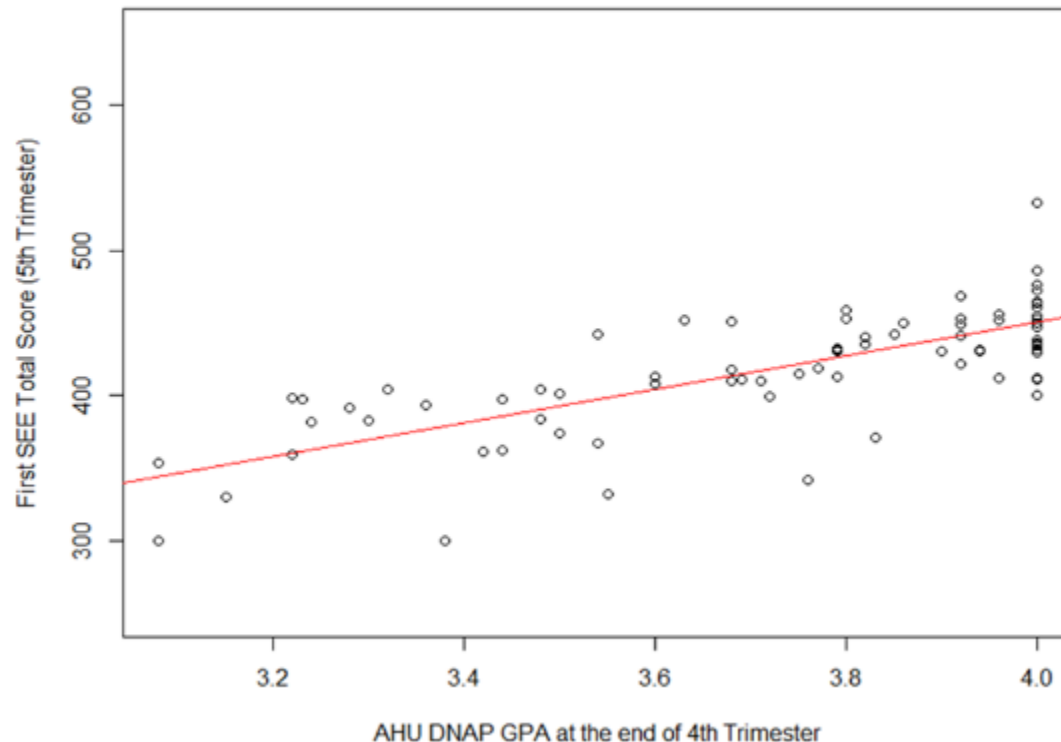
- The Spearman's Rho Correlation Test identified statistical significance between sGPA with the SEE total score.



sGPA	SEE	Lower CI	Upper CI
2.9	403.8	389.7	417.8
3.0	406.8	393.9	419.6
3.1	409.8	397.8	421.8
3.2	412.8	401.3	424.4
3.3	415.9	404.2	427.5
3.4	418.9	406.6	431.1
3.5	421.9	408.6	435.1
3.6	424.9	410.3	439.5
3.7	427.9	411.7	444.2
3.8	431.0	413.0	449.0
3.9	434.0	414.1	453.9
4.0	437.0	415.1	459.0

Objective 3: Determine the correlation between the nurse anesthesia program grade point average (NAPGPA) at the end of the fourth trimester and the first (SEE) total score during the fifth trimester of SRNAs who enrolled at AHU's DNAP program in 2018-2020.

- The Spearman's Rho Correlation Test identified statistical significance between the NAPGPA with SEE total score.



NAPGPA	SEE	Lower CI	Upper CI
3.5	395.5	386.1	404.6
3.6	407.6	400.0	415.0
3.7	419.2	412.6	425.5
3.8	430.3	423.9	436.4
3.9	440.9	434.0	447.6
4.0	451.1	443.2	458.7



Discussion

Discussion

- The most current data collected from the 2020 SEE Evaluation Report regarding the SEE total score that correlated with passing the NCE on the first attempt spanned from September 1, 2019 to December 31, 2020, and the minimum SEE total score correlating to passing the NCE on the first attempt was 443.1 (SD: 35.4) (NBCRNA, 2021).
- Using one standard deviation below the minimum SEE total score that correlated to a passing performance on the first-time NCE attempt, a SEE total score of 407.7 is used as a benchmark for academic recommendations.

Objective 1: Determine the correlations of cGPA, sGPA, total GRE score, and the HSRT overall score with the NAPGPA of SRNAs who enrolled at AHU's DNAP program in 2018-2020.

- Data from this study's linear regression model showed a cGPA of 3.10 correlated with a NAPGPA of 3.76.
- The moderate positive relationship between cGPA with NAPGPA could support substantial weighting of the pre-admission cGPA in AHU's DNAP Program pre-admission process.
- The relationship between the HSRT with NAPGPA is weakly positive; as a result, the usefulness of the HSRT is unclear.
- The relationship between the total GRE score and NAPGPA showed a weak positive correlation. Thus, the HSRT does not seem strong enough to replace the GRE as a standardized testing method for academic predictors for SRNA success.

Objective 2: Determine the correlations of cGPA, sGPA, total GRE score, and the HSRT overall score with the first SEE total score of SRNAs who enrolled at AHU's DNAP Program in 2018-2020.

- Data from this study's linear regression model showed a pre-admission cGPA of 3.10 correlates with a SEE total score of 408.3.
- Data from this study's linear regression model showed a pre-admission sGPA of 3.10 correlates with a SEE total score of 409.8.
- The moderate positive relationships between cGPA with SEE total score, and sGPA with SEE total score could support substantial weighting of the pre-admission cGPA and sGPA in AHU's DNAP Program pre-admission process.
- The relationship between the HSRT with SEE total score is weakly positive; as a result, the usefulness of the HSRT is unclear.
- The relationship between the total GRE score with SEE total score showed a fair positive correlation. Thus, the HSRT does not seem strong enough to replace the GRE as a standardized testing method for academic predictors for SRNA success.

Objective 3: Determine the correlation between the nurse anesthesia program grade point average (NAPGPA) at the end of the fourth trimester and the first (SEE) total score during the fifth trimester of SRNAs who enrolled at AHU's DNAP program in 2018-2020.

- Data from the linear regression model showed a mean NAPGPA of 3.60 correlates with a SEE total score of 407.7.
- The strong positive correlation between NAPGPA and SEE total score could support the program's enforcement of high programmatic academic performance requirements.



Limitations

Limitations

- Small sample size of 80 DNAP Program SRNAs
- cGPA only included undergraduate GPA and did not include graduate level courses
- Science GPA was unavailable for 26 SRNAs, so N=54 regarding that factor.
- Two SRNAs were exempt from taking the GRE because they already earned a graduate-level degree prior to DNAP Program application.
- Data was gathered from only one university, so the results are not generalizable to other universities.
- The range of time when the SEE was taken (September – November in 5th trimester)
- NAPGPA was calculated inclusive of all DNAP and non-DNAP specific course grades.
- Literature specific to doctoral nurse anesthesia programs was limited due to the required transition to doctoral degree programs by 2022.



Recommendations

Preadmission recommendations

- Increase the AHU DNAP Program's minimum cGPA requirement from 3.00 to 3.10
- Add sGPA into the pre-admission requirements with, a minimum sGPA of 3.10 for AHU DNAP Program applicants
- Do not use the HSRT as a replacement for the GRE
- Consider minimal weighting of the total GRE score in the admission rubric

Program Progression recommendations

- Increase the threshold NAPGPA to 3.60 instead of 3.00
- Implement an academic performance improvement plan if the NAPGPA falls below the 3.60 threshold during any of the first four trimesters of AHU's DNAP Program.

References

- American Association of Nurse Anesthetist. (2021). *Certified registered nurse anesthetists fact sheet*. AANA. <https://www.aana.com/membership/become-a-crna/crna-fact-sheet.>
- Burns, S. M. (2011). Predicting academic progression for student registered nurse anesthetists. *AANA journal*, 79(3), 193–201.
- Council on Accreditation [COA]. (2021). *Standards for accreditation of nurse anesthesia educational programs*. <https://www.coacrna.org/wp-content/uploads/2021/03/Standards-for-Accreditation-of-Nurse-Anesthesia-Programs-Practice-Doctorate-revised-January-2021.pdf>
- Cox, W. C., & McLaughlin, J. E. (2014). Association of Health Sciences Reasoning Test scores with academic and experiential performance. *American Journal of Pharmaceutical Education*, 78(4), 73 . <https://doi.org/10.5688/ajpe78473>
- Cox, W. C., Persky, A., & Blalock, S. J. (2013). Correlation of the Health Sciences Reasoning Test with student admission variables. *American Journal of Pharmaceutical Education*, 77(6), 118 . <https://doi.org/10.5688/ajpe776118>
- National Board of Certified Registered Nurse Anesthetists [NBCRNA]. (2020). *Self- Evaluation Examination (SEE) resources*. https://www.nbcrna.com/docs/default-source/initial-certification/program-administration/evaluation_new_see_posting_dec2017-final.pdf