RESEARCH BRIEF

The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to PACKRAT Performance

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Date: January 2025

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With over three decades of experience in PA education, Dr. Scott Massey is a recognized authority in the field. He has demonstrated his expertise as a program director at the esteemed Central Michigan University and as the research chair in the Department of PA Studies at the University of Pittsburgh. Dr. Massey's influence extends beyond practical experience; he has significantly contributed to accreditation, assessment, and student success. His innovative methodologies have guided numerous PA programs to ARC-PA accreditation and have improved program outcomes. His predictive statistical risk modeling has enabled schools to anticipate student results. Dr. Massey has published articles related to predictive modeling and educational outcomes. He has also conducted longitudinal research in stress among graduate Health Science students. His commitment to advancing the PA field is evident through participation in PAEA committees, councils, and educational initiatives.

Additional Information

If you would like to ask questions about the research brief, access the full research study, or express interest in participating in future research studies, reach out to:

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Research Brief: The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to **PACKRAT Performance**

Abstract

This research study investigates the relationship between PA-CAT (Physician Assistant College Admissions Test) scores and PACKRAT (Physician Assistant Clinical Knowledge Rating and Assessment Tool) performance among 750 participants. Both assessments serve as measures of clinical knowledge and readiness in physician assistant (PA) students, offering valuable insights into their academic preparation and progression within PA programs.

Physician Assistant College Admissions Test (PA-CAT)

The PA-CAT is a discipline-specific assessment consisting of 240 test items designed to evaluate knowledge and application across nine prerequisite science subjects critical for success in the rigorous Physician Assistant (PA) curriculum. The PA-CAT has been developed specifically for use by PA educators and their admissions departments as part of a holistic admissions process.

As of July 20, 2024, the PA-CAT has been administered to 4,315 examinees since its inception on May 1, 2020. Each examinee receives one composite scaled score, which reflects overall performance across all test items, along with three subject-specific scaled scores in Anatomy & Physiology, Biology, and Chemistry. The reliability of the composite score is exceptionally high (0.939), making it a dependable indicator of examinee knowledge and application skills in the prerequisite sciences and a strong predictor of success in PA program coursework.

Analysis of Overall Results

The findings reveal that students with PA-CAT scores exceeding 500 generally achieve higher PACKRAT scores, with most PA-CAT scores falling within the 501–550 range. These results indicate a positive correlation between PACKRAT performance and specific knowledge benchmarks assessed by the PA-CAT, emphasizing the PA-CAT's predictive utility in identifying students poised for strong academic performance.

Initial Research Phase Results

During the initial research phase, PA-CAT scores exhibit a consistent trend: students with higher PA-CAT scores tend to achieve correspondingly higher PACKRAT scores. Notably, average PACKRAT scores show a significant increase among students in the upper percentiles of PA-CAT performance. This suggests that PA-CAT scores can serve as a reliable predictor of PACKRAT results, particularly in evaluating knowledge tied to research-focused learning domains.

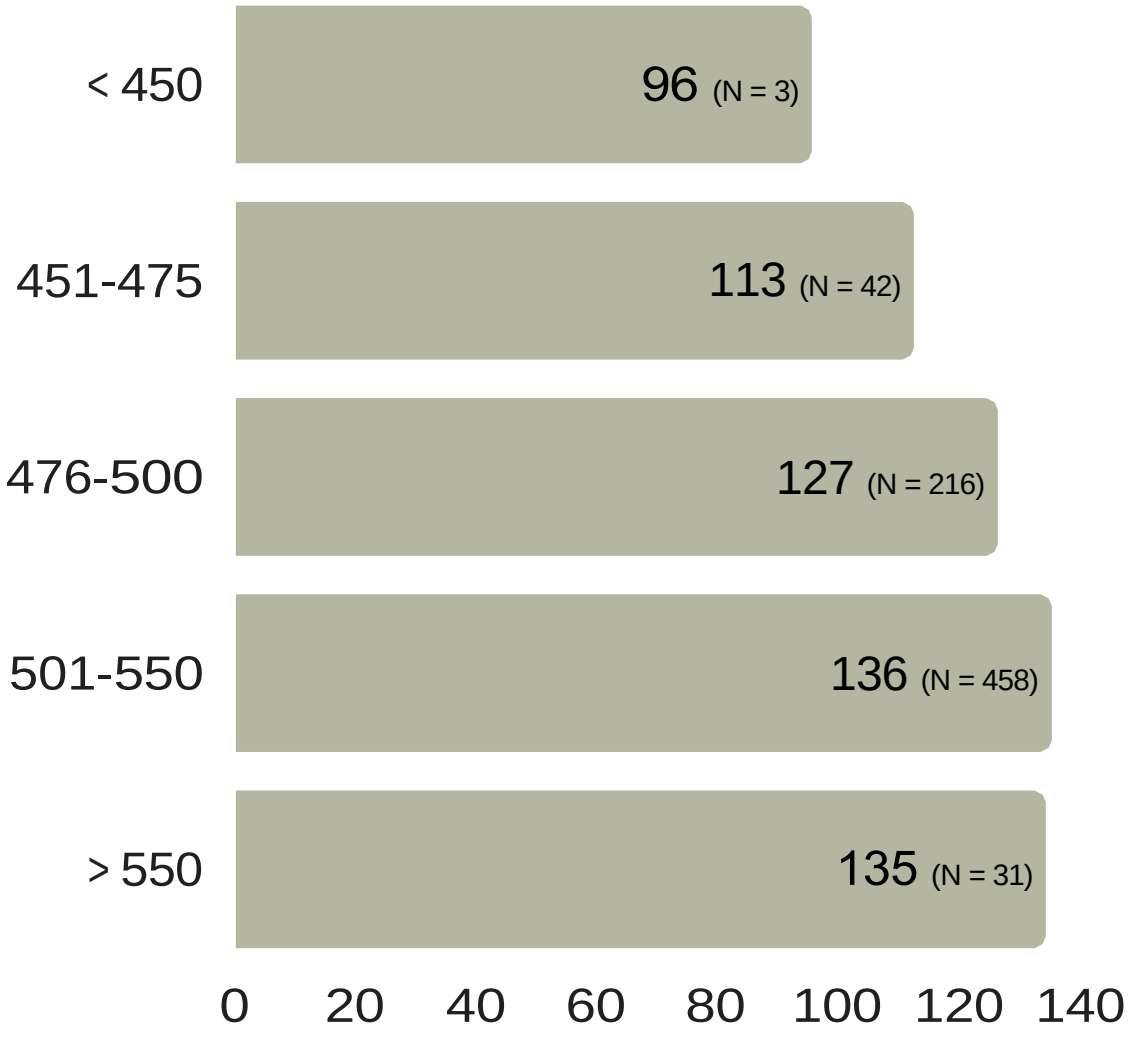
Ongoing Research Phase Results

During the current ongoing research phase, the score distribution aligns with trends observed in both overall and research-specific analyses. Students with higher PA-CAT scores consistently achieve elevated PACKRAT scores, highlighting the PA-CAT's effectiveness as an indicator of curriculum mastery. The data suggest that students with stronger foundational knowledge, as reflected in their PA-CAT performance, are better positioned to excel in curriculum-based assessments such as the PACKRAT.

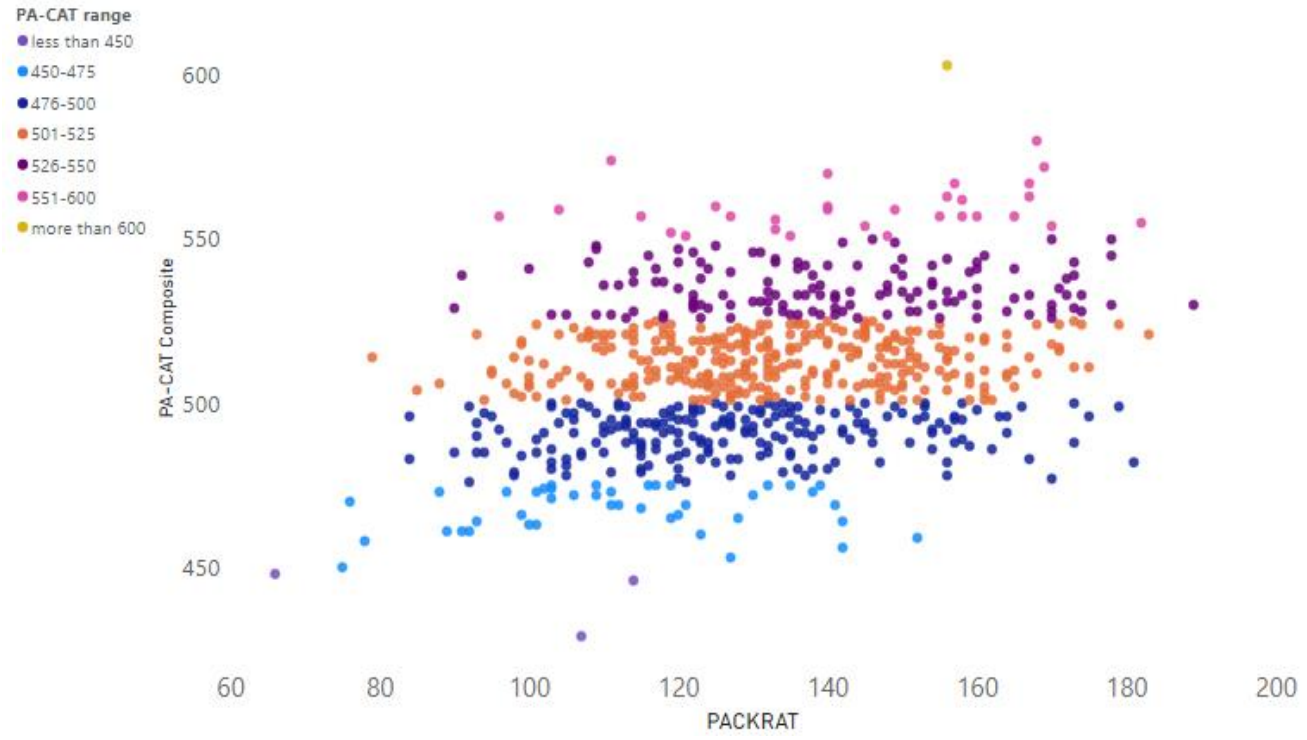
Comparison of PA-CAT Scores Ranges with PACKRAT Results

The graph below illustrates the distribution of PA-CAT score ranges on the left, with bars to the right of each range representing the average PACKRAT score and the number of examinees (N) within each PA-CAT score range. For example, three examinees scored 450 or below on the PA-CAT, with an average PACKRAT score of 96.

The national average for the PACKRAT is 130. The study findings suggest that examinees scoring above 500 on the PA-CAT are more likely to achieve an average PACKRAT score of 136 or above. This threshold may serve as a useful guideline for PA programs incorporating the PA-CAT into their admissions process, helping to identify candidates most likely to excel in the program, perform well on the PACKRAT, graduate successfully, and pass the PANCE.



Distribution of PA-CAT Categories



In the scatterplot, we can observe the relationship between PACKRAT scores (x-axis) and PA-CAT scores (y-axis) across different score ranges.

501-525 (Pink): These points are more centrally located around higher PACKRAT scores, with fewer instances of very low or high PACKRAT scores, suggesting a stronger correlation between higher PACKRAT and PA-CAT scores.

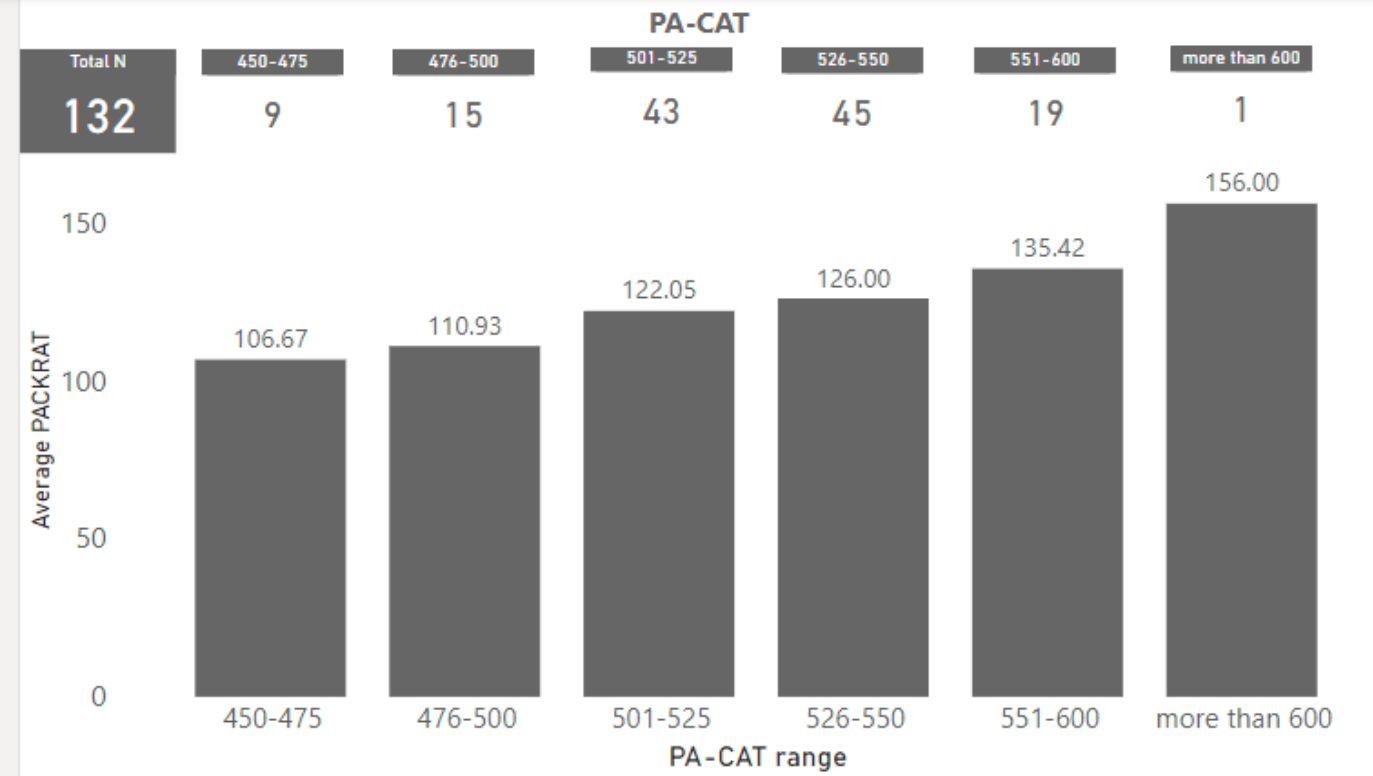
526-550 (Purple): The highest density in this category is around higher PACKRAT scores, emphasizing a correlation where higher PACKRAT scores potentially lead to higher PA-CAT scores.

Positive Correlation: There appears to be a general positive correlation between PACKRAT scores and PA-CAT scores, where higher PACKRAT scores tend to be associated with higher PA-CAT scores. This correlation seems to strengthen as the PACKRAT scores increase, particularly noticeable in the transition from orange to purple categories.

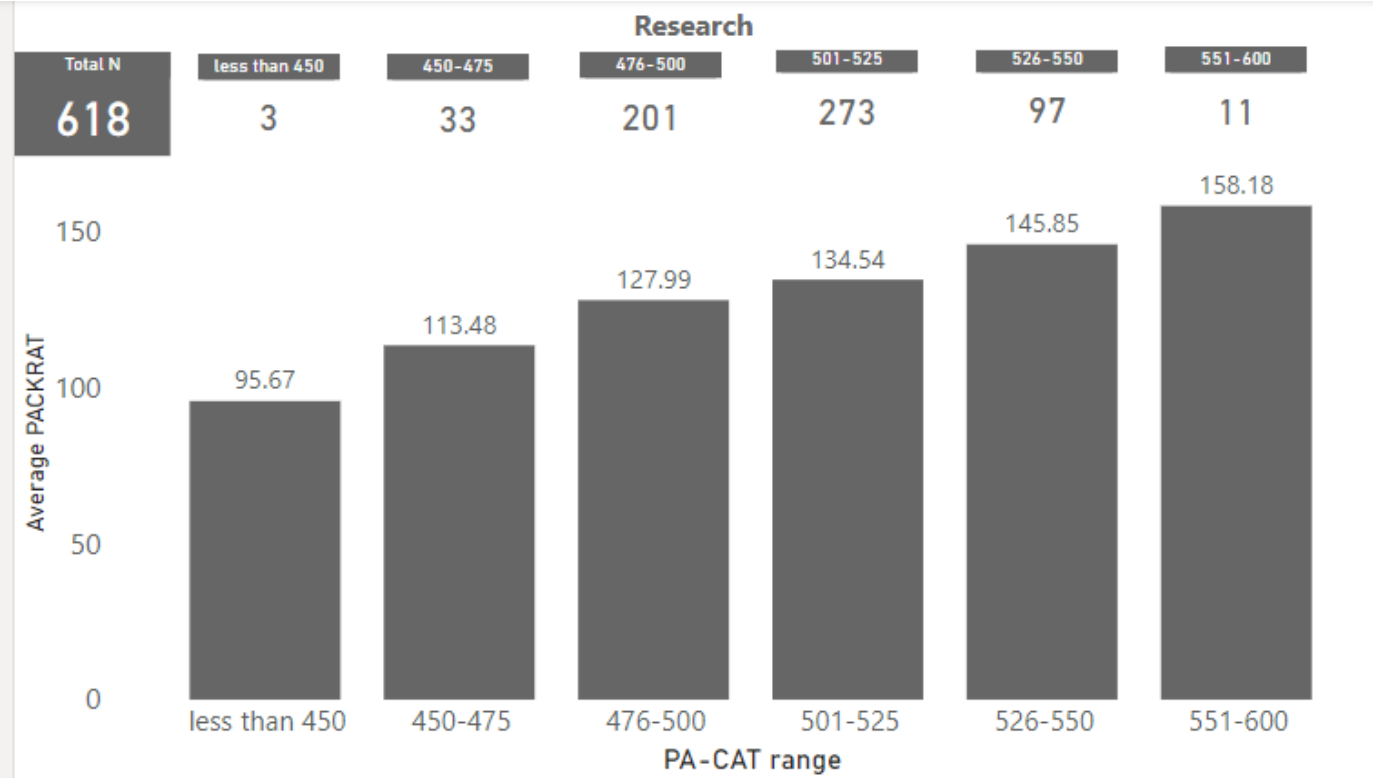
Score Distribution: As PACKRAT scores increase, the variability in PA-CAT scores tends to decrease, especially moving toward the higher PACKRAT scores, suggesting a consolidation of higher PA-CAT outcomes with high PACKRAT performances.

Outliers: There are outliers in almost all categories, but especially in the lower and higher ends of the PACKRAT scores, indicating that factors other than PACKRAT might influence PA-CAT scores.

PA-CAT/PACKRAT Comparison (Ongoing Research Phase)



PA-CAT/PACKRAT Comparison (Initial Research Phase)



Summary of Data

- **Total Participants (N = 750):** This dataset includes a total of 750 participants distributed across different PA-CAT score ranges.

Analysis of PACKRAT Scores by PA-CAT Range

1. **Less than 450 (N = 3):** The average PACKRAT score is 95.67. This is the lowest average, indicating that lower PA-CAT scores might be associated with lower PACKRAT scores. However, the small sample size (3) limits the generalizability of this observation.
2. **450-475 (N = 42):** Average PACKRAT score is 112.02, which is higher than the lowest PA-CAT range but still below the overall median.
3. **476-500 (N = 216):** A noticeable increase to an average PACKRAT score of 126.80. This group has a significantly larger sample size, suggesting more robust data.
4. **501-525 (N = 316):** The largest group, with an average PACKRAT score of 132.84, which is above the dataset's median, indicating a positive correlation between higher PACKRAT and PA-CAT scores.
5. **526-550 (N = 142):** Average PACKRAT score increases further to 139.56, showing the trend of increasing PACKRAT scores with higher PA-CAT ranges.
6. **551-600 (N = 30):** Maintains a high average PACKRAT score of 143.77. Though the number of participants is smaller, the high average suggests a strong PACKRAT performance in this high PA-CAT scoring group.
7. **More than 600 (N = 1):** The highest average PACKRAT score of 156.00 has only one participant, making it difficult to draw reliable conclusions about this range.

Conclusions

- **Trend of Increasing Scores:** There is a clear trend where higher PA-CAT ranges generally correspond to higher average PACKRAT scores.

- **Sample Size Considerations:** The reliability of conclusions drawn for the extreme PA-CAT score ranges (less than 450 and more than 600) is impacted by very small sample sizes.

This data reinforces the hypothesis of a positive correlation between PA-CAT and PACKRAT scores, suggesting that targeted interventions to enhance PACKRAT performance may also positively influence PA-CAT outcomes. PA-CAT scores serve as a valuable predictive metric for PACKRAT performance, underscoring their utility in admissions decisions and curriculum evaluations. The consistency observed across overall, research-specific, and PA-CAT-focused analyses highlights the PA-CAT's effectiveness in identifying students well-positioned for success in clinical knowledge assessments. This alignment underscores the PA-CAT's role in supporting academic planning and informed student evaluation within PA programs.