

Improving Pharmacy Calculations NAPLEX Performance Through Structured Training and Curricular Repetition

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Key Takeaways

- The University of Findlay's NAPLEX ranking has increased from #101 in 2017 to #8 in 2022.
- Since implementing calculation's curriculum changes in 2019, researchers have observed positive changes in the NAPLEX's Domain 4 (Perform Calculations).
- The University of Findlay had more students in Level 4 (Exceeds the Minimum) than the national average in Domain 4 (Perform Calculations) in 2021 and 2022.

Abstract

In 2019, the University of Findlay began a formalized effort to improve calculations training and exposure throughout the four-year curriculum. Through reformatting calculations curriculum and the addition of competency exams, the primary objective was to improve performance on Domain 4 (Perform Calculations) of the licensure examination (NAPLEX). A secondary objective evaluated the association of these curriculum changes with overall NAPLEX pass rates. The University of Findlay college ranking for pass rates on the NAPLEX improved over time from #101 (2017) to #8-tie (2022). In addition, students from the University of Findlay scored higher on Domain 4 (Perform Calculations) than the national averages. These preliminary associations suggest that calculations and NAPLEX preparation curriculum changes improved competency in pharmacy calculations and perhaps overall NAPLEX performance.

Introduction

Researchers at the University of Findlay identified knowledge gaps in the calculations portion of the North American Pharmacist Licensure Examination (NAPLEX). There are a total of 6 competency domains on the NAPLEX including Domain 4 "Perform Calculations." Domain 4 makes up approximately 14% of the NAPLEX¹.

Researchers across varying institutions have begun implementing curriculum changes to improve scoring on the calculations areas on the NAPLEX. One institution obtained positive results after implementing an evidence-based approach to teaching known as Gagne's nine events of instructional design². Another study found that students believe repeated testing is beneficial to retention of pharmacy calculations and drug knowledge, but very few will do it on their own³. This is suggestive that the implementation of repeated testing across the curriculum has the potential to improve overall student performance on pharmaceutical calculations which may improve calculations competence on the NAPLEX as well.

Methods

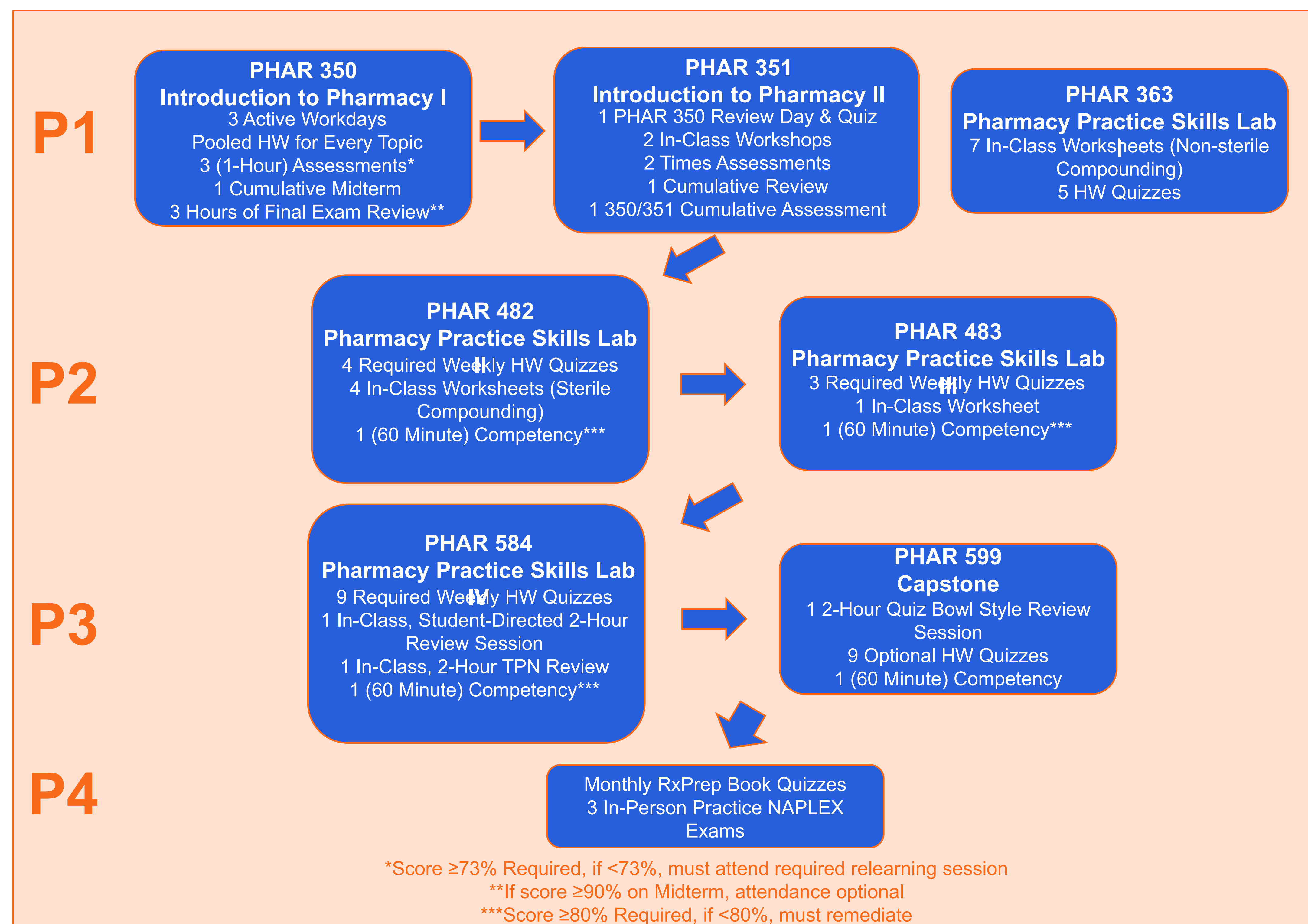


Figure 1. Changes to the calculations curriculum are shown across University of Findlay's four-year professional curriculum.

Results

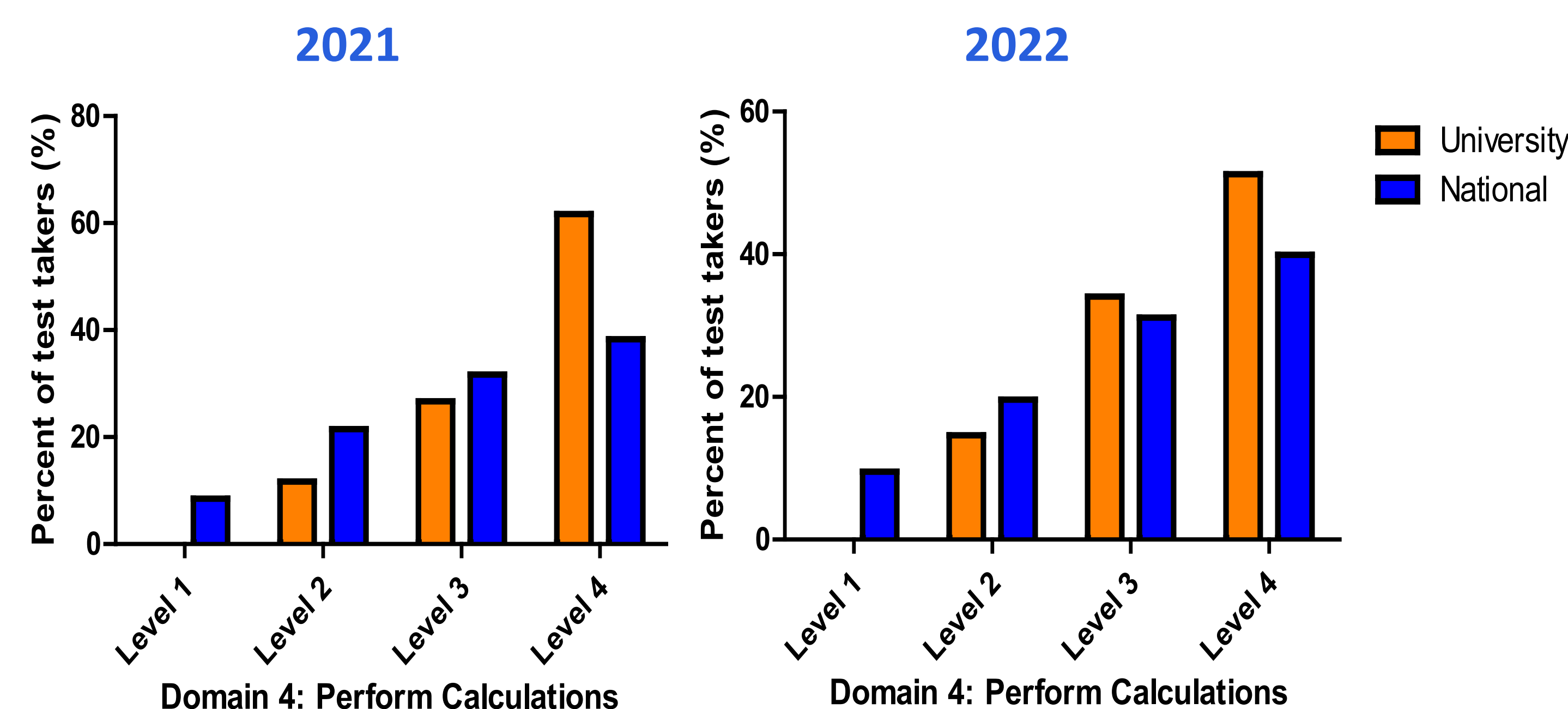


Figure 2. The University of Findlay results (orange) on Domain 4 (Perform Calculations) of the NAPLEX over 2 years (2021 and 2022) are shown against the national average (blue).

Results (continued)

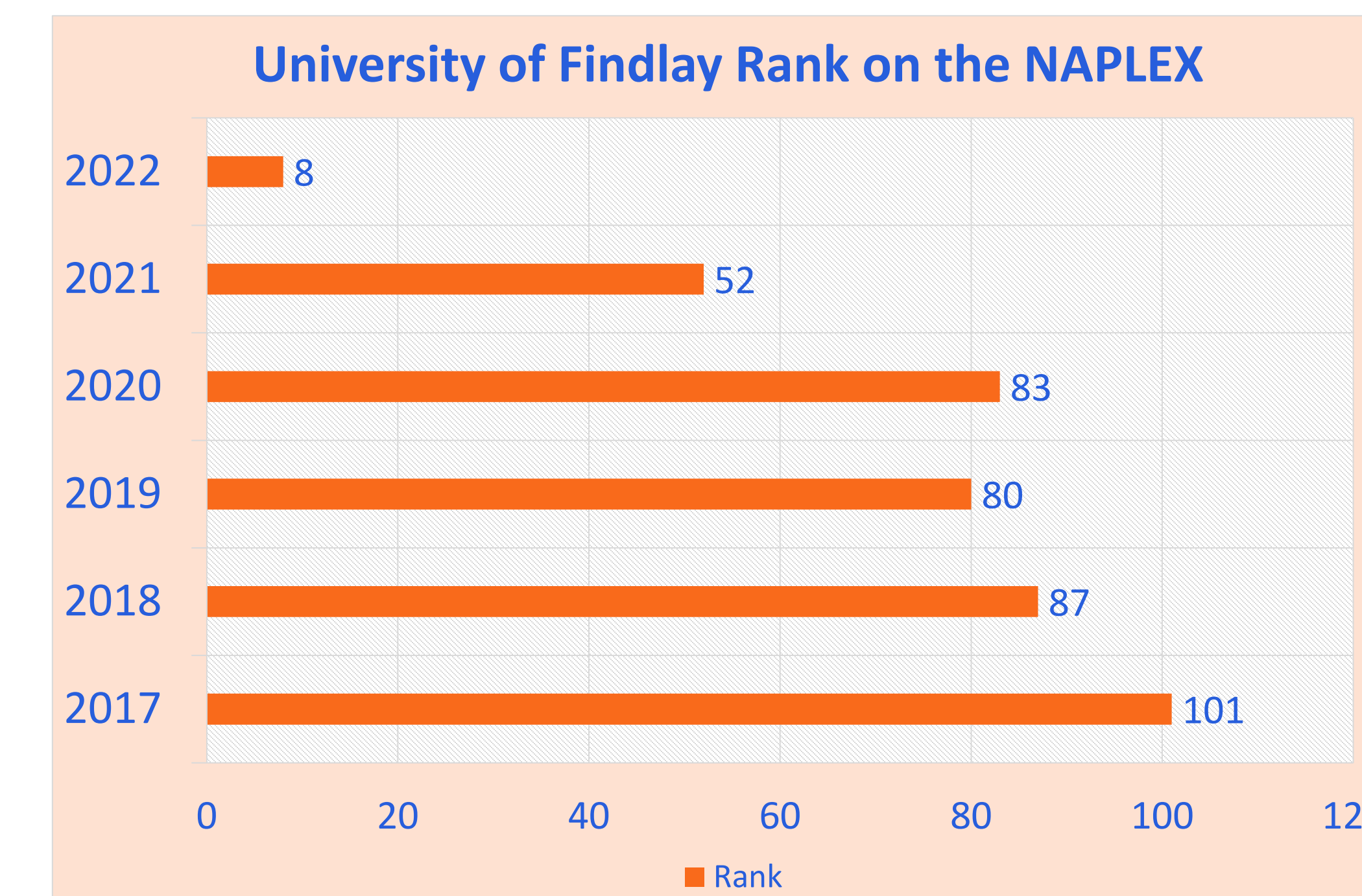


Figure 3. The University of Findlay's overall ranking on the NAPLEX from 2017 to 2022.

Limitations

- NAPLEX results have not yet been compared to individual scores. Since these scores are no longer reported to universities with NAPLEX test results, this will require student self-reporting or another method to use in the future.
- This study can predict only associations and correlations, rather than determine causation.
- Best results occurred after implementation of review during the P4 year making it difficult to assess other changes after that specific implementation.

Conclusion

Based on the preliminary results obtained from this study, there is a possible correlation between the inclusion of additional calculations content in the curriculum and the improved performance on Domain 4 (Perform Calculations) on the NAPLEX. These changes may be associated with an improved overall NAPLEX score as well. Additional analyses will attempt to correlate individual student NAPLEX results with Pharmacy Curriculum Outcomes Assessment (PCOA) results, P4 practice exams, and other indicators of calculations proficiency and NAPLEX preparedness.

References

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