CastleBranch

ENROLLMENT, COMPLETIONS, AND RETENTION IN NURSING PROGRAMS NATIONWIDE

BACKGROUND

Job openings for nurses are projected to increase at a faster rate than any other occupation through 2026.[1] In order to meet rising workforce demand, schools of nursing need to focus on retention efforts and understand their impact. In nursing education, increasing enrollment without increasing completions is misspent effort since a student who does not graduate cannot obtain licensure and enter the workforce. Thus, to understand the true impact of enrollment increases, completions must be considered.

The aim of this study was to **evaluate automatic forecasting models to be used to make predictions on nursing program enrollment at the clinical rotation stage and on RN program completions**. The overall goal is to help ADN faculty understand year-over-year growth patterns and what these patterns tell us about retention.

LIMITATIONS

Due to limitations with available data, causation was not established between the influential factors and retention. Additionally, degree completion data for the nursing students that placed orders at the clinical rotation stage was not available. RN completion data was obtained through an outside source (IPEDS) in which information was limited to allow for these counts to be tied to specific nursing students that placed orders. Therefore, the yearly nursing program enrollment and RN completion data sets are treated as independent samples from their respective populations.

IMPLICATIONS

If a program is able to get its students to clinical experience enrollment (CEE), those students are more likely to complete the program, inferring that **the program is able to neutrally or positively affect retention**. Because our figures indicate that year-over-year clinical experience enrollment and year-over-year completion are increasing, we can then infer that **retention is also increasing**.

The potential pool of prospective nursing graduates will always be greater than the number of those who go on to complete their degree for a given year. Then if the respective year-over-year projected growth rates are applied to each variable, it can be observed that the graduation rate is increasing each year for students that reach the clinical rotation stage. In conclusion, it is projected that **retention for the period between clinical rotations and degree completion is increasing year over year**. If nursing programs are able get their students to the clinical phase, there is a higher chance that these students will graduate.

This data represents a national population of programs and no single initiative can be attributed to increased retention, however, there are some generalizations:

- Increasing enrollment numbers at the clinical rotation stage (essentially, more students are completing administrative requirements to attend clinical) could indicate **validation that admissions processes are resulting in fewer early first-semester withdrawals**.
- Increasing completions could indicate **validation that student success efforts are contributing to more students graduating**.
- The current rates of enrollment at the clinical rotation stage and completions indicate that **both will increase during the next five years** and educators should create plans to support continuation of these trends.

RESULTS

A logarithmic regression model was deemed appropriate for predicting nursing enrollment at the clinical rotation stage. The coefficient of determination (R-squared) value (0.963) and adjusted R-squared (0.95) are both close to 1. Both the predictor, number of years since 2014, (p-value of 0.003 < 0.01) and constant coefficient (p-value of 0.000 < 0.01) are **statistically significant**. A linear regression model was considered appropriate for predicting RN completions. Both R-squared (0.997) and adjusted R-squared (0.996) are close to 1. Both the predictor, number of years since 2014, (p-value of 0.000 < 0.01) and constant coefficient (p-value of 0.000 < 0.01) are **statistically significant**.

Year-over-year growth is projected for both nursing program enrollment at the clinical rotation stage and RN completions through 2027. Nursing program enrollment at this stage is projected to grow at a rate that decreases over time. RN completions are projected to grow at a constant rate each year that is greater than that of the enrollment growth rate. When assessing various demographic variables, it was notable that when historical nursing program enrollment data is separated by gender, both male and female data also follow an increasing logarithmic trend.

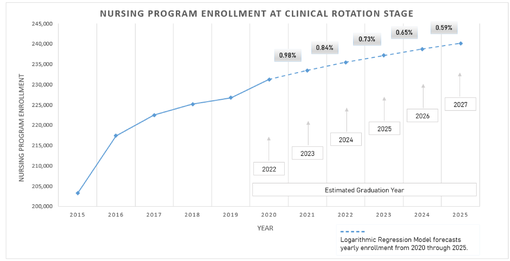

Figure 1: Total students who placed compliance orders by year from 1,548 nursing programs for 2015-2019. Compliance orders placed used as a proxy for enrollment at the clinical rotation stage. The year-over-year percentage increase in enrollment is calculated for the projected values. Yearly enrollment at this stage provides an estimation for prospective graduates two years later.

METHODS

1. We collected historical data of the number of students in 1,548 various degree-seeking nursing programs across 49 U.S. states who placed compliance orders over a five-year period (2015-2019). Orders placed in all five years were used as a proxy for enrollment at the clinical rotation stage milestone.
2. We used a **logarithmic regression model to predict annual students with orders over the next six years** (through 2025). A plus two-year offset was then applied to estimate prospective nursing graduates from these 1,548 programs through 2027. We also collected historical data of the number of completions for CIP code 51.38, which is all RN degrees (i.e. everything not LPN/CNA) over a five-year period (2015-2019) for 1,829 programs across the United States. Programs were only included if their completion data was available for all five consecutive years.[2]
3. We used a **linear regression model to predict annual RN completions over the next eight years** (through 2027). We then assessed the actual and projected year-over-year percent increases in potential nursing graduates vs. RN completions. Since both datasets of 1,548 and 1,829 programs are varied enough representations of the larger populations of all nursing programs at the clinical rotation stage and all nursing programs with RN completions, respectively, we can use year-over-year percent increases to provide a comparison of future growth patterns.

Figure 2: RN completions (CIP code 51.38) by year for 1,829 nursing programs with available completion data for 2015-2019. The year-over-year percentage increase in RN completions is calculated for the projected values.

REFERENCES

1. Haddad, L. M., Annamaraju, P., & Toney-Butler, T. J. (2020). Nursing shortage. StatPearls Publishing. Available from: https://www.ncbi.nlm.nih.gov/books/NBK493175/
2. U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2014-2019, Completions. Retrieved from https://nces.ed.gov/ipeds/use-the-data on May 19, 2021.