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Longitudinal Trends in Pharmacists Licensure Examination Performance: Evidence for Outcomes-Based Quality Assurance in Pharmacy Education

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ABSTRACT

Licensure examination performance is a relevant external outcome indicator in professional education and can provide evidence for program evaluation, benchmarking, and continuous quality improvement. Objective: This study examined longitudinal trends in Pharmacists Licensure Examination (PLE) performance at the University of Perpetual Help System DALTA–Calamba from January 2010 to April 2026 and explored their implications for outcomes-based quality assurance. Methods: A retrospective longitudinal descriptive study was conducted using aggregate institutional records from 29 PLE administrations. Variables were first-time taker passing percentage, overall institutional passing percentage, and national passing average. Examination-period means, institutional-national percentage-point gaps, period comparisons, and exploratory linear trends across sequential examination administrations were calculated. Because complete examinee-level denominators were unavailable for all observations, percentages were analyzed as unweighted examination-period measures rather than pooled cumulative pass rates. Results: Across 29 administrations, mean first-time taker, institutional, and national passing percentages were 62.70%, 50.79%, and 58.91%, respectively. In 2010–2019, the corresponding means were 49.33%, 43.15%, and 57.06%. In April 2022–April 2026, they were 89.34%, 64.27%, and 62.71%. The mean institutional-national gap shifted from −13.91 percentage points in 2010–2019 to +1.57 percentage points in the recent period. The institution exceeded the national average in six of nine recent administrations. Exploratory trend analysis showed positive trends for first-time performance (slope=1.87 percentage points per administration, r=0.64, p<.001) and overall institutional performance (slope=1.02, r=0.51, p=.005). Conclusion: Licensure outcomes improved substantially over the study period, especially among first-time takers. Longitudinal licensure data can function as one component of an outcomes-based quality assurance system when results are benchmarked, disaggregated, linked to academic interventions, and reassessed. The study does not establish that accreditation or any single institutional intervention caused the observed improvement.

Keywords: *pharmacy education, licensure examination, quality assurance, accreditation, outcomes-based education, program evaluation, Philippines.*

INTRODUCTION

Quality assurance in higher education increasingly emphasizes evidence of educational outcomes rather than compliance with inputs alone. In the Philippines, the Commission on Higher Education (CHED)

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established an outcomes-based and typology-based quality assurance framework through CMO No. 46, series of 2012, and the current policies, standards, and guidelines for the Bachelor of Science in Pharmacy are set out in CMO No. 25, series of 2021. These policy directions place learning outcomes, program effectiveness, and continuous improvement at the center of quality assurance.

Internationally, pharmacy education quality assurance similarly emphasizes the relationship among educational outcomes, structures, processes, and continuous improvement. The International Pharmaceutical Federation (FIP) Global Framework for Quality Assurance of Pharmacy Education describes quality assurance as a systematic process intended not only to assure minimum standards but also to foster an institutional culture of continuous quality improvement.

Professional licensure examination outcomes are one potentially useful external indicator within this broader quality system. They offer a nationally standardized point of comparison, but they do not independently define educational quality. Research in pharmacy education has shown that licensure performance is associated with multiple student- and program-level factors, including academic performance, curricular assessment, remediation, and institutional characteristics (McCall et al., 2007; Park et al., 2021; Spivey et al., 2020; Maerten-Rivera et al., 2022). These findings argue against attributing licensure outcomes to a single intervention or accreditation status.

For academic programs, the more useful quality assurance question is therefore not merely whether graduates passed a licensure examination, but what longitudinal patterns reveal about program outcomes, where performance gaps occur, and how those findings can inform curriculum review, assessment, student support, faculty development, and subsequent monitoring.

The College of Pharmacy of the University of Perpetual Help System DALTA–Calamba maintains a historical summary of Pharmacists Licensure Examination (PLE) performance from January 2010 through April 2026. The record includes first-time taker passing percentages, overall institutional passing percentages, and corresponding national passing averages. The extended time series provides an opportunity to characterize long-term performance, benchmark institutional results against national outcomes, and identify areas requiring closer quality-assurance attention.

This study aimed to analyze longitudinal PLE performance across 29 examination administrations from 2010 to April 2026. Specifically, it sought to (1) describe first-time, institutional, and national passing trends; (2) compare institutional performance with the national benchmark; (3) contrast an earlier 2010–2019 period with a recent April 2022–April 2026 period; (4) examine exploratory temporal trends; and (5) discuss implications for outcomes-based quality assurance, accreditation evidence, and continuous improvement in pharmacy education.

METHODS

Study design and setting

This retrospective longitudinal descriptive study analyzed aggregate PLE performance records of the College of Pharmacy, University of Perpetual Help System DALTA–Calamba Campus, Laguna, Philippines. The dataset covered 29 examination administrations from January 2010 through April 2026.

Data Source and Study Variables

The study drew on official Pharmacists Licensure Examination (PLE) results released by the Professional Regulation Commission (PRC). The College has routinely kept a historical summary of its board examination performance, and the figures in this summary were taken from the same PRC results. In this way, both the institutional results and the national passing rates used for comparison came from a common official source. For each examination period, the available data included the passing percentage of first-time takers, the overall institutional passing percentage, and the national passing average. Only

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aggregate numerical results were used. No student names, identification numbers, individual grades, or other personally identifiable information formed part of the analysis.

An institutional-national performance gap was calculated for each administration as institutional passing percentage minus national passing average. Positive values indicated performance above the national benchmark; negative values indicated performance below the national benchmark.

Period comparison

For purposes of comparison, the examination results were viewed in two broad periods: January 2010 to August 2019 as the earlier period (18 examination administrations), and April 2022 to April 2026 as the recent period (9 administrations). The year 2020 marked an unusual interruption in the series because scheduled licensure examinations were cancelled or postponed during the COVID-19 pandemic. This gap should therefore not be interpreted as missing College data. PLE results became available again in the dataset in June and November 2021. These two 2021 examination periods were included in the overall longitudinal analysis, but they were kept outside the earlier-versus-recent comparison because they occurred during the transition from pandemic-related disruption to the resumption of licensure examinations.

Statistical Analysis

Descriptive statistics included means, standard deviations, minima, maxima, and percentage-point differences. The primary comparison used unweighted examination-period means because complete examinee-level denominators were not available for all historical percentages. Accordingly, these values should not be interpreted as cumulative institutional pass rates.

Exploratory ordinary least-squares linear regressions were conducted using sequential examination administration (1–29) as the independent variable and each reported passing percentage as the dependent variable. Pearson correlation coefficients and two-sided p values were reported. Because examination administrations were not evenly spaced in calendar time and observations were aggregate percentages, these analyses were intended to describe direction and strength of trend rather than estimate a causal annual effect. Statistical significance was defined as $p<.05$.

Ethical Considerations and Data Privacy

This study examined existing, aggregate records of Pharmacists Licensure Examination performance. The information consisted only of numerical results such as first-time taker passing percentages, overall institutional passing percentages, and national passing averages. The researchers did not collect or review student names, identification numbers, individual academic records, contact details, or any other personally identifiable information. There was also no direct involvement of human participants through surveys, interviews, or interventions. National results used for benchmarking were drawn from official PRC releases, and the College's historical performance summary was based on the same PRC-reported data. Following institutional guidance for the use of aggregate, non-identifiable performance data, formal research ethics committee review was not required. The information was analyzed only at the aggregate level for research, program evaluation, quality assurance, and continuous improvement.

RESULTS AND DISCUSSION

Overall longitudinal performance

Across all 29 examination administrations, the mean first-time taker passing percentage was 62.70% (*SD 24.95*; range 14.29%–100.00%). The mean overall institutional passing percentage was 50.79% (*SD 17.10*; range 12.50%–83.33%), compared with a mean national passing average of 58.91% (*SD 9.28*; range 36.28%–80.57%).

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Table 1. *Summary of examination-period performance*

Period	Number of exams	First-time mean (%)	Institutional mean (%)	National mean (%)
All administrations, 2010–Apr 2026	29	62.70	50.79	58.91
Earlier period, 2010–2019	18	49.33	43.15	57.06
Recent period, Apr 2022–Apr 2026	9	89.34	64.27	62.71

Earlier versus recent examination periods

During 2010–2019, the mean first-time taker passing percentage was 49.33%, the institutional passing percentage was 43.15%, and the national passing average was 57.06%. The mean institutional-national gap was therefore −13.91 percentage points.

During April 2022–April 2026, mean first-time performance increased to 89.34%, while the mean institutional passing percentage increased to 64.27%, compared with a national mean of 62.71%. The mean institutional-national gap was +1.57 percentage points. Thus, the difference between the two period-specific gaps represented an improvement of approximately 15.48 percentage points in institutional performance relative to the national benchmark.

First-time taker performance

The largest descriptive improvement occurred among first-time takers: the examination-period mean increased by 40.01 percentage points, from 49.33% in 2010–2019 to 89.34% in April 2022–April 2026. First-time takers achieved a reported 100% passing percentage in April 2022, April 2023, April 2024, and April 2026.

Institutional performance relative to the national benchmark

The institution exceeded the national passing average in six of the nine recent examination administrations. The largest positive gap occurred in April 2024, when the institutional passing percentage was 83.33% compared with a national average of 55.19%, a difference of +28.14 percentage points.

Table 2. *Recent examination administrations in which institutional performance exceeded the national benchmark*

Examination	Institutional (%)	National (%)	Gap (percentage points)
April 2022	42.86	36.28	+6.58
April 2023	66.67	62.42	+4.25
November 2023	82.35	73.65	+8.70
April 2024	83.33	55.19	+28.14
November 2024	77.27	76.27	+1.00
April 2025	68.42	60.30	+8.12

Exploratory trend analysis

Across the 29 sequential examination administrations, first-time taker performance showed a positive linear trend (slope=1.87 percentage points per administration, $r=0.64$, $p<.001$). Overall institutional performance also showed a positive trend (slope=1.02 percentage points per administration, $r=0.51$, $p=.005$). The national passing average showed a smaller positive trend (slope=0.36, $r=0.33$, $p=.076$), which did not reach the prespecified .05 significance threshold.

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A quality-assurance signal in April 2026

In April 2026, first-time takers recorded 100% while the overall institutional passing percentage was 42.86%, below the national passing average of 57.26%. The aggregate dataset does not provide sufficient detail to attribute this difference to repeat examinees; however, the divergence demonstrates why disaggregated analysis by examination attempt and graduation cohort is necessary for quality assurance.

The principal finding of this study is a marked long-term improvement in institutional PLE outcomes, particularly among first-time takers. The recent period was characterized by a substantially higher first-time examination-period mean and by overall institutional performance that, on average, slightly exceeded the national benchmark. The positive exploratory trends across sequential administrations were consistent with these descriptive comparisons.

The findings should be interpreted as evidence of changing outcomes rather than proof of causation. Licensure success is multifactorial. A systematic review by Park et al. (2021) found that pharmacy school GPA and curriculum-based assessment measures were among the most consistent predictors of NAPLEX performance. Multi-institutional work has likewise identified associations between academic performance measures and licensure scores (Maerten-Rivera et al., 2022). Earlier research also linked preadmission and professional-program academic variables to licensure outcomes (McCall et al., 2007; Spivey et al., 2020). Consequently, an institutional trend cannot be validly attributed to accreditation, curriculum revision, review programs, or any single quality intervention without more granular longitudinal evidence.

Nevertheless, licensure outcomes remain valuable within a broader quality-assurance system. CHED's outcomes-based quality framework and BS Pharmacy policies emphasize program outcomes and continuous improvement, while the FIP quality-assurance framework describes educational outcomes, structures, and processes as interconnected dimensions of quality. In this context, PLE data can operate as an external outcome signal that prompts institutional inquiry rather than as a standalone verdict on program quality.

The shift in the mean institutional-national gap from −13.91 percentage points in the earlier period to +1.57 points in the recent period is particularly relevant for benchmarking. National comparison provides context that raw institutional percentages cannot provide because the difficulty, examinee composition, and national performance of individual examination administrations may vary. Benchmarking should therefore be retained in routine program monitoring.

The strong recent first-time taker results are encouraging but should be interpreted in light of cohort size and examinee composition. A 100% passing percentage in a small group does not carry the same statistical stability as a similar percentage from a large cohort. Future institutional reporting should therefore present numerators and denominators alongside percentages and should stratify results by first-time and repeat status.

The April 2026 pattern further illustrates this need. A perfect reported first-time percentage occurred alongside a much lower overall institutional percentage. Without attempt-level data, the reason cannot be determined from the present dataset. For continuous quality improvement, the institution should maintain individual-level but de-identified longitudinal records linking graduation cohort, examination attempt, academic indicators, comprehensive or mock examination performance, and PLE outcome.

For accreditation, the most defensible use of the present findings is to demonstrate systematic outcomes monitoring and evidence-informed improvement. The accreditation narrative should document a closed loop: outcome identification, analysis, intervention, responsible unit, implementation period, follow-up measurement, and decision on whether to sustain, modify, or discontinue the intervention. This is stronger than presenting high passing percentages alone because it demonstrates institutional capacity to learn from performance data.

The results also support a next phase of research focused on predictors of licensure success. Student-level modeling could evaluate whether grades in professional pharmacy courses, cumulative GPA, comprehensive examinations, mock board examinations, remediation history, and other academically

relevant variables predict first-time success. Such research could support an early-warning and targeted-remediation system while providing a more rigorous basis for evaluating the effectiveness of educational interventions.

Implications for Quality Assurance and Accreditation

First, licensure examination analysis should be institutionalized as a recurring quality-assurance activity rather than prepared only during accreditation visits. A longitudinal dashboard should include the number of examinees and passers, first-time and repeat rates, institutional and national rates, variance from internal targets, and trends by graduation cohort.

Second, board outcomes should be linked to curriculum and assessment review. Where subject-level examination information is available, performance should be mapped against program learning outcomes, course learning outcomes, assessment evidence, and relevant professional competencies.

Third, strong and weak examination periods should both trigger inquiry. High-performing cohorts can reveal practices worth institutionalizing, while lower-performing cohorts may identify needs in instruction, assessment, remediation, student support, or review preparation.

Fourth, accreditation evidence should explicitly show the closing of the quality loop: Finding → Analysis → Intervention → Implementation → Follow-up Outcome → Next Action. This sequence makes the evidence developmental rather than merely documentary.

Limitations

This study has several limitations. It is a single-institution analysis based on aggregate historical records, limiting generalizability.

Complete examinee-level denominators were not available for all observations; therefore, examination-period means were unweighted and are not cumulative pass rates.

Cohort sizes likely differed substantially across administrations, and percentages from small cohorts may be unstable.

The dataset did not contain individual academic variables, attempt history, review participation, demographic characteristics, curriculum exposure, faculty variables, or subject-level licensure performance.

The period comparison was descriptive and was not designed as an interrupted time-series evaluation of a specific intervention.

The exploratory linear trends used sequential examination administrations rather than equally spaced calendar time; slopes therefore represent change per administration, not annual change.

Finally, the study cannot determine whether accreditation activities or any specific institutional quality intervention caused the observed improvement.

CONCLUSION

Across 29 Pharmacists Licensure Examination administrations from January 2010 through April 2026, the institution demonstrated substantial long-term improvement in licensure outcomes, with the most pronounced gains among first-time takers. The mean first-time passing percentage increased from 49.33% in 2010–2019 to 89.34% in April 2022–April 2026, while the mean institutional passing percentage increased from 43.15% to 64.27%. Over the same comparison, the mean institutional-national performance gap shifted from −13.91 to +1.57 percentage points. These findings support the use of longitudinal licensure examination performance as one component of outcomes-based program evaluation. Their greatest quality-assurance value lies not in treating passing rates as a single measure of educational quality, but in using the data to identify patterns, benchmark outcomes, guide interventions, and document whether subsequent performance improves. More granular student-level research is needed to identify predictors of first-time licensure success and to evaluate the contribution of specific educational interventions.

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Recommendations

1. Maintain a longitudinal PLE outcomes dashboard containing numerators, denominators, first-time and repeat outcomes, institutional rates, national rates, and internal targets.
2. Conduct cohort- and attempt-level analyses to identify where support is most needed.
3. Link licensure outcomes with de-identified academic records, comprehensive examinations, mock board examinations, and relevant professional-course performance.
4. Map subject-level licensure outcomes, when available, to program learning outcomes and curriculum assessment evidence.
5. Evaluate targeted remediation and board-preparation interventions using predefined outcome indicators.
6. Document quality-assurance actions using a closed-loop matrix that records the finding, analysis, intervention, responsible unit, timeline, evidence, outcome, and next action.
7. Undertake a follow-up retrospective cohort study to identify predictors of first-time PLE success.

Data Disclaimer

The findings in this study are based entirely on aggregate examination results reported by the PRC. The College's historical performance summary was prepared from these same official results and did not contain personally identifiable information about individual examinees. The absence of a 2020 PLE result reflects the disruption of licensure examinations during the COVID-19 pandemic rather than an omission in institutional reporting. The trends described in this paper should be understood as patterns in educational outcomes over time. They do not, by themselves, prove that accreditation, a particular quality assurance activity, or any single institutional intervention caused the improvement observed. In addition, the examination-period means reported in the study are unweighted because complete examinee-level denominators were not available for every historical examination period.

Declarations

Ethics approval: Formal research ethics committee review was not required because the study involved retrospective analysis of aggregate, non-identifiable institutional performance data, did not involve direct human participant interaction, and did not access personally identifiable information, in accordance with institutional guidance.

Consent to participate: Not applicable.

Consent for publication: Not applicable.

Funding: This research received no external funding.

Competing interests: The author declares no competing interests.

Data availability: The analysis was based on aggregate Pharmacists Licensure Examination results reported by the Professional Regulation Commission (PRC). The College's historical performance summary was compiled from these official PRC results. No personally identifiable examinee information was used in the study.

Author contributions**:** M.J.V.F. conceptualized the study, curated the institutional dataset, conducted the analysis, interpreted the findings, drafted and revised the manuscript, and approved the final version

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