

Comparison of 3-year and 4-year Pharm.D. Programs

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Objective

The purpose of this study is to compare general characteristics and key outcomes between three- and four-year pharmacy programs.

Background

A three-year pharmacy program, compared to a four-year traditional pharmacy program, is an accelerated alternative that allow students to complete their pharmacy degree one year earlier. A major appeal of accelerated programs is the potential to begin earning an income one year earlier than those in traditional programs. However, there have been concerns that year-round classes limit the time students are able to participate in research and internships, which may be disadvantageous to students. Currently, a total of sixteen three-year pharmacy programs exist in the United States. In a 2014 study, retrospective data was collected on students who matriculated at the Worcester and Manchester campuses of MCPHS and similar data was observed pertaining to on-time graduation rates between students in the accelerated program at Worcester as compared to students in the traditional program at Manchester.¹ In our study, we conducted a nationwide comparison between three-year and four-year pharmacy programs to determine differences in general characteristics and key outcomes.

Methods

- Design: Retrospective Analysis
- Subjects: All three-and four-year PharmD programs
- Survey Characteristics:
 - Analysis of publically available data retrieved from AACP, ASHP, PharmCAS
 - Variables retrieved for analysis:
 - General characteristics
 - Class size
 - Location
 - Institution type (private vs. public)
 - Outcomes
 - NAPLEX Pass Rate
 - On-time graduation rate
 - Post-graduation employment rate
 - Residency Match Rate
- Statistical Analysis:
 - Statistical Tests
 - Nominal outcomes: Chi-square test
 - Continuous outcomes: Independent sample t-test
 - Software: IBM® SPSS Statistics Version 27

Results- Basic Characteristics

Figure 1: Average Class Size

Year	Four-Year Programs Class Size (±sd)	Three-Year Programs Class Size (±sd)	p-value	Mean Difference (95% CI)
Class of 2016	118.6 (61.3)	109.1 (47.0)	0.717	9.4 (-42.3 – 61.2)
Class of 2017	117.1 (56.4)	115.6 (59.8)	0.951	1.4 (-46.9 – 49.9)
Class of 2018	113.7 (51.8)	109.6 (55.1)	0.854	4.1 (-40.2 – 48.4)
Class of 2019	109.5 (50.7)	127.0 (57.9)	0.369	-17.4 (-55.8 – 21.0)
Class of 2020	111.4 (50.7)	136.7 (79.3)	0.249	-25.2 (-68.5 – 18.1)

Figure 2: Location by Region

Year	Four-Year Programs Proportion	Three-Year Programs Proportion	p-value
West	17.8%	31.3%	0.251
South	29.7%	18.8%	
Midwest	28.0%	12.5%	
East	24.6%	37.5%	

Figure 3: Institution Type

Year	Four-Year Programs Proportion	Three-Year Programs Proportion	p-value	Odds Ratio (95% CI)
Private	44.9%	93.8%	<0.001	0.05 (0.01-0.43)
Public	55.1%	6.3%		

Results- Outcomes Comparison

Figure 4: On-Time Graduation Rate

Year	Four-Year Program Rate (±sd)	Three-Year Program Rate (±sd)	p-value	Mean Difference (95% CI)
2016	87.9% (16.9%)	87.9% (7.2%)	0.998	7.0 (-14.0 – 14.0)
2017	85.0% (15.1%)	88.3% (4.3%)	0.603	6.2 (-15.7 – 9.2)
2018	86.5% (14.4%)	84.1% (10.7%)	0.700	6.1 (-9.8 – 14.6)
2019	86.5% (14.0%)	84.1% (5.2%)	0.597	4.5 (-6.6 – 11.4)
2020	80.6% (24.6%)	84.8% (6.2%)	0.683	10.2 (-25.0 – 16.6)

Figure 5: Post-Graduate Employment Rate

Year	Four-Year Program Rate (±sd)	Three-Year Program Rate (±sd)	p-value	Mean Difference (95% CI)
2016	80.6% (19.3%)	89.8% (12.4%)	0.526	-9.2% (-62.0 – 43.7%)
2017	83.4% (21.1%)	91.0% (9.9%)	0.625	-7.6% (-43.1 – 27.9%)
2018	81.0% (25.0%)	94.5% (5.0%)	0.461	-13.5% (-50.4 – 23.5%)
2019	70.1% (31.2%)	79.5% (13.4%)	0.680	-9.4% (-55.3 – 36.6%)

Figure 6: NAPLEX Pass Rate

Year	Four-Year Program Rate (±sd)	Three-Year Program Rate (±sd)	p-value	Mean Difference (95% CI)
2017	87.5% (8.3%)	79.6% (6.0%)	0.001	7.8% (3.5 - 12.3%)
2018	89.1% (7.7%)	81.8% (8.4%)	0.001	7.3% (3.1 - 11.4%)
2019	87.8% (8.4%)	79.7% (8.1%)	<0.001	8.1% (3.7 - 12.5%)

Figure 7: Residency Match Rate

Year	Four-Year Program Rate (±sd)	Three-Year Program Rate (±sd)	p-value	Mean Difference (95% CI)
2018	64.1% (16.3%)	54.2% (17.5%)	0.026	9.9% (1.2 – 18.6%)
2019	62.9% (16.3%)	47.8% (13.7%)	0.001	15.1% (6.7 – 23.5%)
2020	61.1% (15.7%)	47.7% (11.6%)	0.001	13.4% (5.3 – 21.5%)

Conclusion

Three-year PharmD programs were more likely to be offered by private rather than public institutions. Class size and location were not significantly different between programs, though three-year programs tended to be located near the West and East Coast rather than the South or Midwest. No difference in on-time graduation or post-graduate employment rates were observed; however, four-year programs had significantly higher NAPLEX pass rates and residence match rates. Further analyses will be conducted, specifically a time-series analysis and multivariable analysis, to control for differences in school characteristics when evaluating outcomes.

References

1. Steinberg M, Morin AK. The Impact of Prematriculation Admission Characteristics on Graduation Rates in an Accelerated Doctor of Pharmacy Program. Am J Pharm Educ. 2015 Oct 25;79(8):118.