

## BRIEF

# Employment Trends for Doctor of Pharmacy Graduates of Research-Intensive Institutions, 2013-2017

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**Objective.** To determine the current state of employment for doctor of pharmacy (PharmD) graduates based on 5-year trends among graduates of research-intensive institutions and the Pharmacist Demand Index.

**Methods.** Data from a cross-sectional survey of PharmD graduates from 10 research-intensive colleges of pharmacy conducted over a 5-year period were used to generate an overview of graduating students' experiences and the outcomes of their job searches.

**Results.** The average response rate of graduates of programs over the 5 years was 75.4%. Overall, 86% of graduates had postgraduate placements (ie, jobs, residencies, fellowships, further education) at the time of graduation. Across all years, 85% of respondents who had placements indicated they were satisfied with the postgraduation offer they received.

**Conclusion.** An examination of postgraduate outcomes of research-intensive schools and the Pharmacist Demand Indicator over the past 5 years indicates a trend toward a balance between the supply and demand for pharmacists. Careful attention needs to be given to these two metrics moving forward.

**Keywords:** graduates, employment, demand, placement

## INTRODUCTION

Over the last several years, those in the pharmacy profession have speculated about the employment outlook for pharmacists, in particular that for recent graduates.<sup>1</sup> Many media reports surrounding this topic have been negative,<sup>2,3</sup> potentially discouraging students currently enrolled in pharmacy programs and negatively influencing the applicant pool.

In the 1990s, the demand for pharmacists outpaced the supply. During that time, there were anecdotal reports of employers offering bonuses and other incentives, including cars, to pharmacy graduates for signing with their company. Since 2000, many new colleges and schools of pharmacy have been established and existing colleges and schools have increased their enrollment, resulting in an increase in the number of graduates.<sup>1</sup> There are currently 142 accredited pharmacy colleges and schools in the United States with one additional school in pre-candidate

status,<sup>4</sup> an increase of nearly 60 institutions since 2000.<sup>5</sup> In 2016, there were 14,466 pharmacy graduates, as compared to 7,760 in 2000.<sup>4</sup>

The increase in the number of programs and graduates is only part of the picture of the changing demand for pharmacists. Among other factors, economic pressures, such as the recession of 2008, population and demographic changes (ie, aging of the baby boomer population), increased prescription drug use, and pharmacists' roles in the health care system also influence demand.<sup>6-8</sup> The Pharmacist Demand Indicator (PDI), formerly known as the Aggregate Demand Index (ADI), is a measure of the demand for pharmacists in the United States. The PDI is generated quarterly and is based on findings from a survey of panelists who hire pharmacists on a direct and regular basis.<sup>9</sup> The PDI scale ranges from 1 (demand is much less than pharmacist supply) to 5 (high demand), with higher numbers indicating more jobs for pharmacists and employers having difficulty filling open positions. A PDI of 3.0 indicates balance between pharmacist supply and demand. As of October 2017, the national

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PDI was 2.68 for staff pharmacists,<sup>9</sup> indicating a slightly lower pharmacist demand as compared to the supply.

## METHODS

Since 2012, 10 research-intensive colleges of pharmacy have collaborated on a project to longitudinally assess and track graduates' placement data. As of spring 2017, five consecutive years of quantitative and qualitative outcomes have been tabulated for the graduates of 10 US programs located along the East Coast and in the Midwest. A detailed description of the development and methodology of the PDI was previously published.<sup>10</sup> Major outcomes tracked over the time period 2013-2017 are: placement in jobs, residencies, or fellowships; satisfaction with placement; salary; time spent searching; and perceived difficulty in finding placement. The project was approved by each college or school's institutional review board.

All graduates of 10 colleges and schools of pharmacy from the classes of 2013 through 2017 were surveyed at the time of graduation (n=6,421), with surveys typically administered within 3 weeks of graduation from their respective programs. In 2013, the group consisted of eight schools with two additional schools added in 2014.

## RESULTS

The average response rate of graduates across programs over the 5 years (2013-2017) was 75.4% (4,841

graduates; range 72.1% to 78.6% per year). Across all respondents, 62.5% of graduates had applied for a job and 44.7% of graduates had accepted a job at the time they completed the survey. As they were going through their postgraduate placement process, graduates often applied for both jobs and residencies or fellowships. The average annual salary of those accepting jobs was \$109,900, with salaries relatively stable across the 5 years (range, \$108,200 to \$111,500). About 16% of those who accepted jobs reported difficulty in finding employment (ie, the graduates selected difficult or extremely difficult on a 4-point scale ranging from "not at all difficult" to "extremely difficult"). Interestingly, this percentage was relatively flat over the 5-year period (Table 1). Graduates reported spending an average of 2.7 months looking for a job.

Across all programs over the 5 years, 47.2% of graduates applied for residencies. This percentage trended upward from 2014 to 2017, increasing from 43.8% to 51.7% of respondents. Of all respondents, 35.4% accepted a residency position, with 33% of those accepting residencies indicating difficulty finding a position. The level of reported difficulty fluctuated over time (between 26.9% and 37.4%), but no notable trends were identified. In contrast, there was a slow but steady trend of graduates submitting more residency program applications, increasing from an average of 8.3 applications per candidate in 2013 to 10.3

Table 1. Summary of Postgraduation Placements of Pharmacy Students Overall and By Year

	2013 <sup>a</sup>	2014	2015	2016	2017	Total
Number of Respondents	783	1017	992	1,030	1,019	4,841
Response Rate (percent)	78.6	74.6	72.1	77	75.6	75.4
Job Placement						Average
Percent Applying for Jobs	67.6	63.3	64.5	59.4	59.2	62.5
Percent Accepting a Job	46.9	45	48.1	43.1	40.9	44.7
Average Salary	\$111,500	\$109,500	\$108,200	\$110,600	\$108,500	\$109,900
Percent Reporting Difficulty Finding a Job	14.8	15.6	16.2	16.8	15.1	15.7
Average Time Spent Looking (months)	2.6	2.8	3.1	2.7	2.6	2.7
Residency Placement						Average
Percent Applying for Residencies	48.7	43.8	44.4	47.7	51.7	47.2
Percent Accepting a Residency	37.7	32.5	33	35	39.4	35.4
Average Number of Applications Submitted	8.3	8.3	9.5	9.6	10.3	9.2
Percent Reporting Difficulty Finding a Residency	33.3	26.9	36.5	37.4	30.7	33
Other Postgraduation Placements						Average
Percent Accepting Fellowships	1.8	3.3	2.1	5.2	4.1	3.4
Percent Pursuing Additional Education	2	2.8	3.5	2.6	3.3	2.9
Summary						Average
Percent with Postgraduation Placement	88.4	83.7	86.7	86	87.7	86.4
Percent Satisfied with Postgraduation Placements	83.6	85.3	86.4	85.4	85.7	85.3

<sup>a</sup> Data are for the eight schools that were in the Big Ten Pharmacy Assessment Collaborative in 2013; all other years reflect data for the 10 schools

applications per candidate in 2017 (average of 9.2 applications per candidate over the 5 years).

An average of 6.3% of respondents went on to complete fellowships or additional postgraduate training. Postgraduate degrees pursued included master of science, master of business administration, master of public health, and doctorate degrees, as well as degrees in health care administration and health informatics.

Overall, 86.4% of graduates had postgraduate placements (ie, jobs, residencies, fellowships, further education) at the time of graduation. Across all years, 85.3% of those who had placements indicated they were satisfied with the postgraduation offer they received (range 83.6% to 86.4% per year).

Students were asked to rank the importance (on a scale ranging from “not at all important” to “very important”) of 18 factors to their employment decision-making process about their postgraduate plans. The top five influential factors were: professional growth, practice setting, geographic preference, opportunity for advancement, and family/personal circumstances. These top five factors were the same for those graduates who were satisfied with postgraduate offers and those who were dissatisfied. However, the order of importance of the factors differed (Table 2).

## DISCUSSION

These data on postgraduation placement show that overall job placement rates among the programs represented in this study have not changed appreciably over the last 5 years. Over 86% of student pharmacists have a job at the time they graduate, and 85% of these graduates are satisfied with their plans. While graduates were not directly asked why they were dissatisfied with the offers received, the presence or absence of the factors they identified as being influential in their decision making likely contributed to their dissatisfaction with their offers. Pharmacy educators should consider the existing data, trends, and predictions to ensure that programs continue to respond to the health care needs and demands of society.

According to the Bureau of Labor Statistics, the median annual pay for pharmacists in May 2017 was \$124,170.<sup>8</sup> The Bureau of Labor Statistics predicts average job growth for pharmacists but notes that the increase

in the number of pharmacy graduates will create more competition for those jobs. The job outlook for pharmacists is projected to increase by 6% from 2016 to 2026, on par with the rate of increase of all occupations in the United States.<sup>8</sup> The pharmacist job outlook may vary depending on the practice setting. For example, growth in the community pharmacy setting is predicted to be modest, while higher growth is anticipated in ambulatory care settings (hospitals or health systems [eg, clinics], physician offices, and outpatient care centers). This growth may be the result of increasing acceptance and expansion of comprehensive medication management provided by clinical pharmacists integrated into health care teams.<sup>11,12</sup>

Pharmacy education is responding to prepare the practitioners of the future. Throughout the academy, curricula are being revised to address new pharmacy education accreditation standards that emphasize the Pharmacists' Patient Care Process and interprofessional collaboration.<sup>13</sup> An increasing number of pharmacy graduates are seeking additional training and advanced credentials to prepare them for diverse and specialized practice settings.

The pharmacy profession has proposed legislation (provider status) to recognize pharmacists and their services in Medicare Part B across all states. This recognition would ensure reimbursement for pharmacy services, and if approved would likely increase demand for pharmacists. The impact would depend on the scope of services covered (ie, the benefit), patient eligibility, and credentialing requirements. Our colleges need to be ready for pharmacists' changing roles.

We acknowledge that our results may not be generalizable to all pharmacy graduates, as all of the schools included in this study have public, research-intensive, established pharmacy programs. Additionally, most of the schools are located in the 12 states that make up the Midwestern United States. The graduates in this study, therefore, may have been more likely to seek jobs in this region of the country. Pharmacy graduates seeking positions in other regions of the country may experience more or less difficulty in finding a job, depending on the PDI. Evaluation of the PDI across regions shows that three of the four US regions (Northeast, Midwest, South) had a

Table 2. Top Five Factors Influencing Graduates' Postgraduation Decisions in Rank Order

Factors for Respondents Satisfied with Postgraduate Plans	Factors for Respondents Dissatisfied with Postgraduate Plans
1. Practice setting	1. Opportunity for professional growth
2. Opportunity for professional growth	2. Practice setting
3. Geographic preferences	3. Opportunity for advancement
4. Opportunity for advancement	4. Family or personal circumstances
5. Family or personal circumstances	5. Geographic preferences

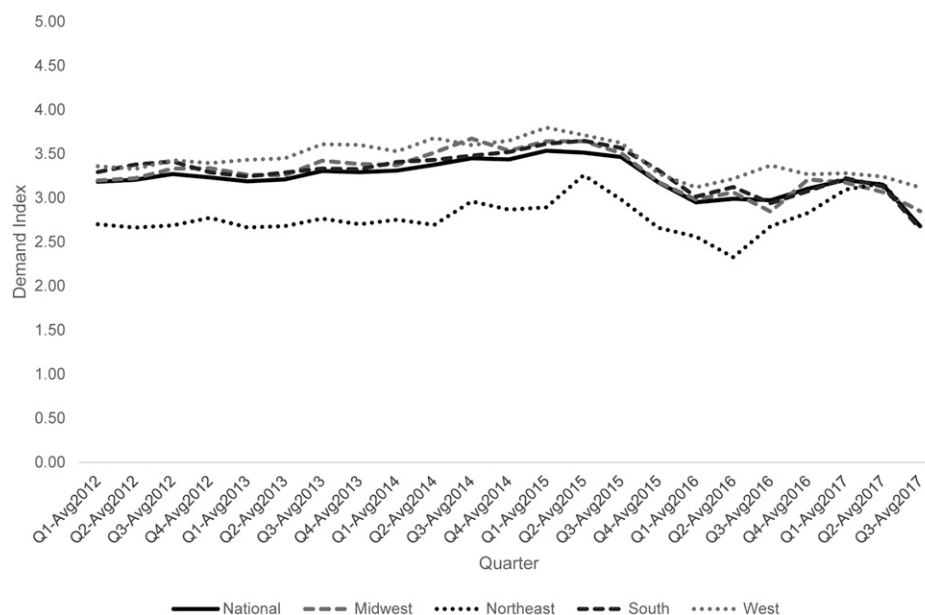


Figure 1. Pharmacy Demand Indicator Trends, Nationally and by Region<sup>a,b</sup>

<sup>a</sup> Data obtained from the Pharmacy Workforce Center. In September 2016, the methodology of calculating the Aggregate Demand Index was changed and renamed to the Pharmacist Demand Indicator (PDI). The ADI is continued in the PDI as the staff or generalist rating.

<sup>b</sup> Midwest (IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD); Northeast (NJ, NY, PA, CT, MA, ME, NH, RI, VT); South (AL, KY, MS, TN, DE, DC, FL, GA, NC, SC, VA, WV, AR, LA, OK, TX); West (AZ, CO, ID, MT, NV, NM, UT, WY, AK, CA, HI, OR, WA)

PDI of slightly lower than 3.0 as of quarter 3 in 2017 (Figure 1), while the West region's PDI was 3.12.<sup>9</sup> While not shown in the figure, upon closer inspection of the data, two geographic divisions out of nine have a PDI higher than 3.0: the West South Central United States (Arkansas, Louisiana, Oklahoma, and Texas), 3.15, and the Pacific United States (Alaska, California, Hawaii, Oregon and Washington), 3.39.<sup>9</sup> The PDI by US region for the last five years is shown in Figure 1. The PDI has generally remained around 3.0, with fluctuations by geographic region and division in 2015-2016. The data suggest relative balance in pharmacist supply and demand in the last year, with a slight dip in quarter 3 of 2017, which rebounded to 2.98 in quarter 4 of 2017. The PDI in combination with trends in placement of pharmacy graduates are valuable tools for PharmD programs with respect to planning and advising students about the future of the profession.

## CONCLUSION

Like many fields within and outside of the health care sector, pharmacy has seen changes over the past few decades because of economic realities and changes in health care practice overall. The large sign-on bonuses and plentiful jobs seen in the 1980s and 1990s no longer exist, and some see the current balance of supply and demand for pharmacists as concerning. Our data, combined with data

from other sources, support a steady state, which we believe is a healthy state for the pharmacy profession. Survey findings show that pharmacy is a profession that provides a satisfying career and high-paying jobs.<sup>14</sup> Our responsibility as educators and advocates for our profession is to continue to monitor changes, to prepare our graduates for the practice of tomorrow, and to present the many opportunities the pharmacy profession has to offer.

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