An Analysis of 2021-2022 PharmD Industry Fellowships

James G. Alexander, PharmD[1], Preston Skersick, PharmD[2], Vineet Pradhan, PharmD[3], My Tran, PharmD[4], Austin Mullins, PharmD[5], Pranita Chilakamarri, PharmD[6]

1. IPhO Executive Director and Founder
2. US Medical Affairs Fellow, GlaxoSmithKline/University of North Carolina
3. Global Scientific Training Fellow, Merck/Rutgers University
4. Regulatory Affairs Fellow, Boehringer Ingelheim
5. Medical Affairs Fellow, AbbVie/University of Southern California
6. Clinical Research Fellow, Pfizer/MCPHS University

The authors would like to acknowledge the contributions of IPhO National Fellows Council members Amanda Cline, PharmD, Mohammad Khan, PharmD, and Amna Paracha, PharmD.

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Introduction

Approximately 15,000 pharmacists completed their degrees in 2018-2019 compared to 7,000 in the year 2000.[1] Unfortunately, there has not been a corresponding increase in jobs for pharmacists, or an offset in pharmacists leaving the workforce. In fact, workplace supply and demand trends have recently shifted. According to the Bureau of Labor Statistics (BLS), in 2020, the estimated 10-year decline of 2% (322,200 to 315,300 pharmacists) will be below the national employment growth by 10%.[2,3] These statistics describe the surplus of pharmacists contributing to salary stagnation over the same period. In addition, a recent survey found that 82% of PharmDs working within the pharmaceutical industry ("industry") were either "extremely" or "mostly" satisfied with their positions for various reasons, including compensation, opportunities for advancement, and autonomy.[4] , These factors have contributed to an increasing number of pharmacy graduates pursuing non-traditional pharmacy careers. Until recently, entry level positions in traditional pharmacy practice have generally had higher compensation than entry level positions within industry, but these differences have now narrowed or disappeared. Today, one of the most common barriers to pharmacist employment in industry is increased competition for this highly desirable practice setting and an insufficient number of fellowships and entry level roles.

While traditional pharmacy practice opportunities may be stagnating, the pharmaceutical industry has experienced a record high number of new product approvals, which has contributed to an increase in industry employment opportunities, including roles for pharmacists. The FDA Center for Drug Evaluation and Research (CDER) has approved 45 new molecular entities (NMEs) and biologics as of December 2021 and 53 in 2020 despite disruptions caused by COVID-19.[5] This robust R&D environment provides increasing professional opportunities within the industry and is also likely contributing to the continued growth of pharmaceutical industry fellowships.

As a result, pharmaceutical companies continue to fill their talent pipelines with pharmacists as they recognize that PharmDs are among the best-equipped professionals to contribute to the development, commercialization, promotion, and optimal use of medications.

Currently, 92 companies train PharmDs through Post-Doctoral Industry Fellowship Programs. The number of PharmDs participating in fellowships has grown significantly over the past decade and has reached a new high of 738 fellows this year. Of the 15,000-20,000 pharmacists currently employed in the US pharmaceutical industry, more than 20% have completed a PharmD Industry Fellowship.[6]

The objectives of this annual report from the Industry Pharmacists Organization (IPhO) are to describe: i) characteristics of current 2021-2022 fellowship programs, and ii) emerging trends in PharmD Industry Fellowships based on 8-year longitudinal data. This valuable report is designed to increase awareness among all fellowship program stakeholders, including students and recent graduates interested in industry, current fellows, fellowship program administrators, and fellowship preceptors and leaders at sponsor companies.

Methods

IPhO maintains a comprehensive, proprietary database of all PharmD fellows currently participating in PharmD Industry Fellowship Programs. Data is obtained from a variety of publicly available sources, combined with information proprietary to IPhO. For the 2021-2022 Annual Analysis, database lockdown was October 27, 2021. The following data fields were utilized and evaluated:

1. Fellowship Department/Functional Area
2. Fellowship Sponsor Company
3. Fellowship Program Affiliation
4. Fellowship Program Duration
5. Fellows' Alma Mater
6. Fellowship Diversity

Data from the 2021-2022 analysis were also compared with results from similar analyses from 2014-2015 through 2020-2021[7-13] to yield 8-year trends.

1. 8-year Trend in Fellowship Program Size
2. 8-year Trend in Fellowship Positions by Department/Functional Area
3. 8-year Trend in Sponsor Companies

Results and Discussion

A total of 738 fellows were identified in the database. This consisted of 431 first-year fellows and 307 second-year fellows. Results are reported in the following sections:

A) Characterization of PharmD Fellows in 2021-22 Industry Fellowship Programs
    1. Fellows by Department/Functional Area
    2. Fellowship Sponsor Company
    3. Fellowship Program Affiliation
    4. Fellowship Program Duration
    5. Fellows' Alma Mater
    6. Fellowship Diversity

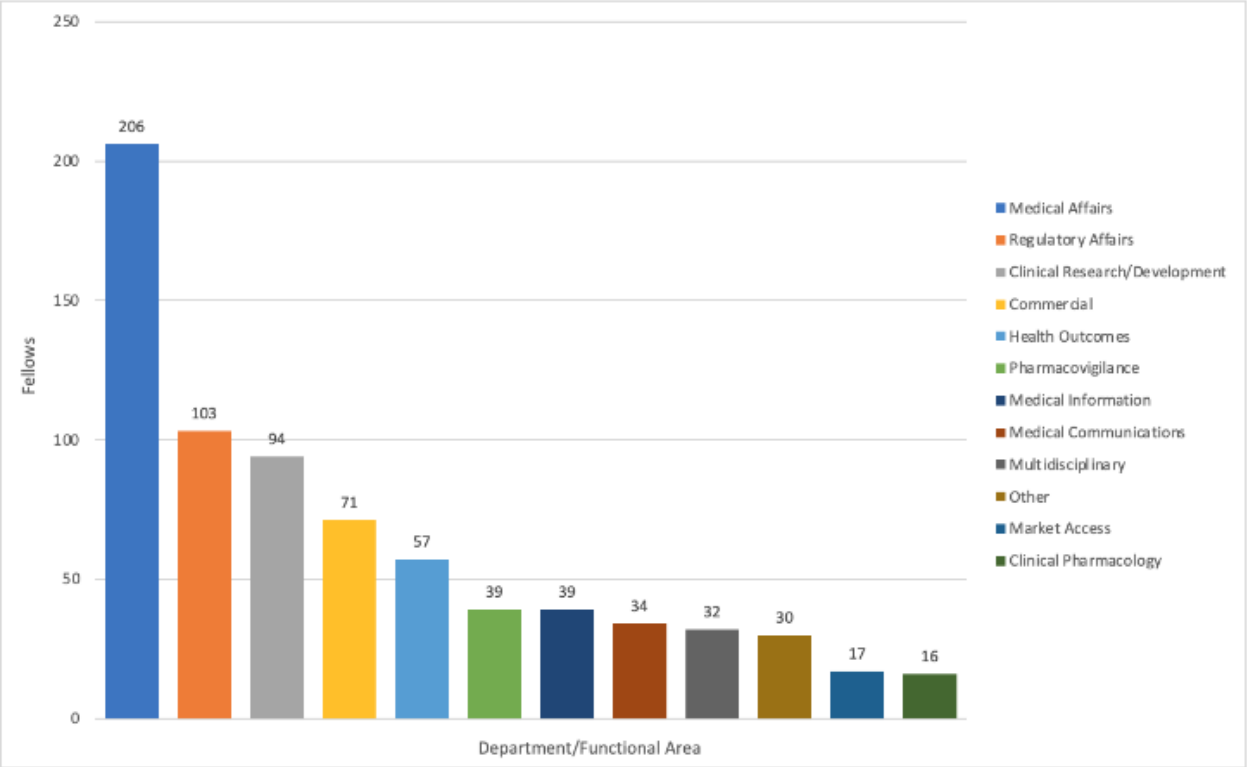
B) Eight-Year Trends in Fellowship Positions
    1. 8-year Trends in Number of Fellowship Positions
    2. 8-year Trends in Fellowship Department/Functional Area
    3. 8-year Trends in Fellowship Sponsor Company

Characterization of PharmD Fellows in 2021-2022 Industry Fellowship Programs

Fellowship Department/Functional Area

The top five individual fellowship functional areas in 2021-2022 included Medical Affairs (n=206), Regulatory Affairs (n=103), Clinical Research/Development (n=94), Commercial (n=71), and Health Outcomes (n=57). Thirty-two fellowships were multidisciplinary in nature, which allows the fellow to rotate through multiple functional areas. Functional areas defined as "Other" (n=30) included areas that did not fall into the predefined categories, such as policy/patient advocacy, quality assurance and knowledge management. When combined to account for overlap and similarity, clinical research/development and clinical pharmacology represent the second largest functional area for fellowship positions (n=110). PharmDs remain very well equipped to fulfill fellowship roles in the pharmaceutical industry according to these data.

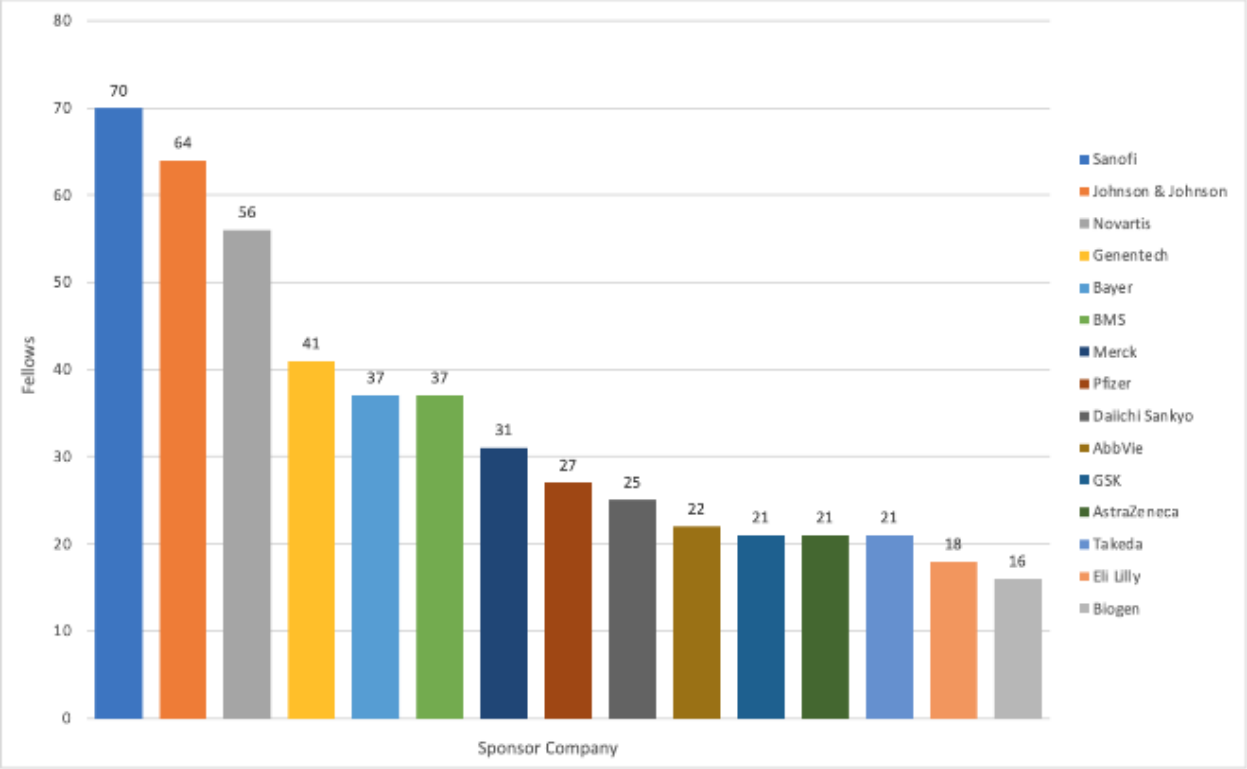
Figure 1: Fellowships by Department/Functional Areas (N=738 Fellows)



Fellowship Sponsor Company

Of the 92 companies sponsoring fellows in 2021-2022, the top five companies with regard to number of fellows were: Sanofi (n=70), Johnson & Johnson (n=64), Novartis (n=56), Genentech (n=41) and both Bristol-Myers Squibb and Bayer (n=37). The top 15 sponsoring companies offer nearly 70% of all fellowship positions and are represented in the figure below. Several of these sponsors have maintained a position as a top employer of PharmD Fellows over several years, suggesting that PharmDs are highly valued within these companies (see 7-Year Trend in Fellowship Positions Offered Through Various Sponsor Companies").

Figure 2: Fellows by Sponsor Companies (n=507 Fellows in Top 15 Companies)*

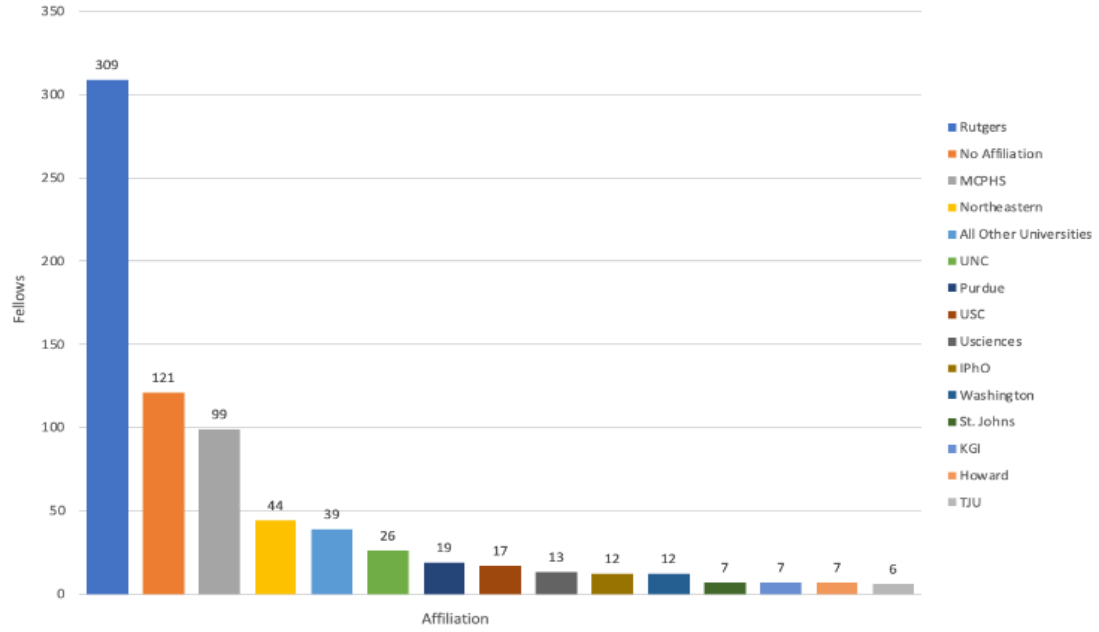


*Abbreviations: The following sponsor companies were combined under: "Johnson & Johnson" – Johnson & Johnson Consumer Inc, McNeil, Janssen, and Actelion; "Novartis" – Novartis and Sandoz; "Genentech" – Roche and Genentech; "Sanofi" – Sanofi, Sanofi Genzyme, Sanofi Pasteur, and Bioverativ; "Abbvie" - Abbvie, Allergan, and PCYC

Fellowship Program Affiliation

Eighty-four percent (n=617) of all fellowship positions were offered through collaboration, or "affiliation," between two or more entities. The vast majority of positions offered through academic partners were Rutgers University (n=309) and MCPHS University (n=99). Together, the two programs employ over 50% of all current fellows. Currently, 121 fellowship positions (16.4%) are offered through employers who do not have an affiliation with an academic institution. Possible reasons for this may include monetary cost of affiliation, distance from affiliating university, significant time spent at academic institution away from the sponsor company, or a lack of sponsor interest in an academic affiliate.

Figure 3: Fellowship Programs with an Academic or Non-Academic Affiliation (N=738 Fellows)

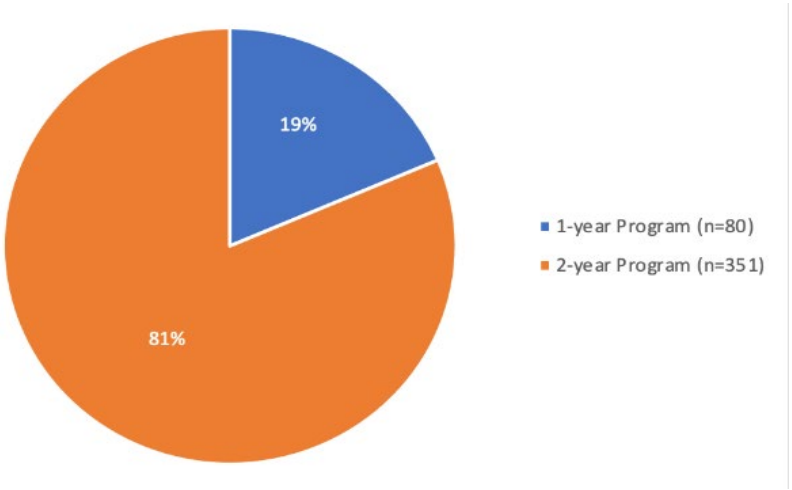


*Abbreviations: MCPHS – Massachusetts College of Pharmacy and Health Science; UNC – University of North Carolina; USC – University of Southern California; KGI – Keck Graduate Institute; USciences – University of the Sciences; IPhO – Industry Pharmacists Organization; TJU - Thomas Jefferson University

Fellowship Program Duration

Of the 431 first-year fellows included in this study, 351 (81%) were in two-year programs versus 80 (19%) in one-year programs. Among all 738 current fellows who began a fellowship in either 2020 or 2021, 11% were in a one-year program.

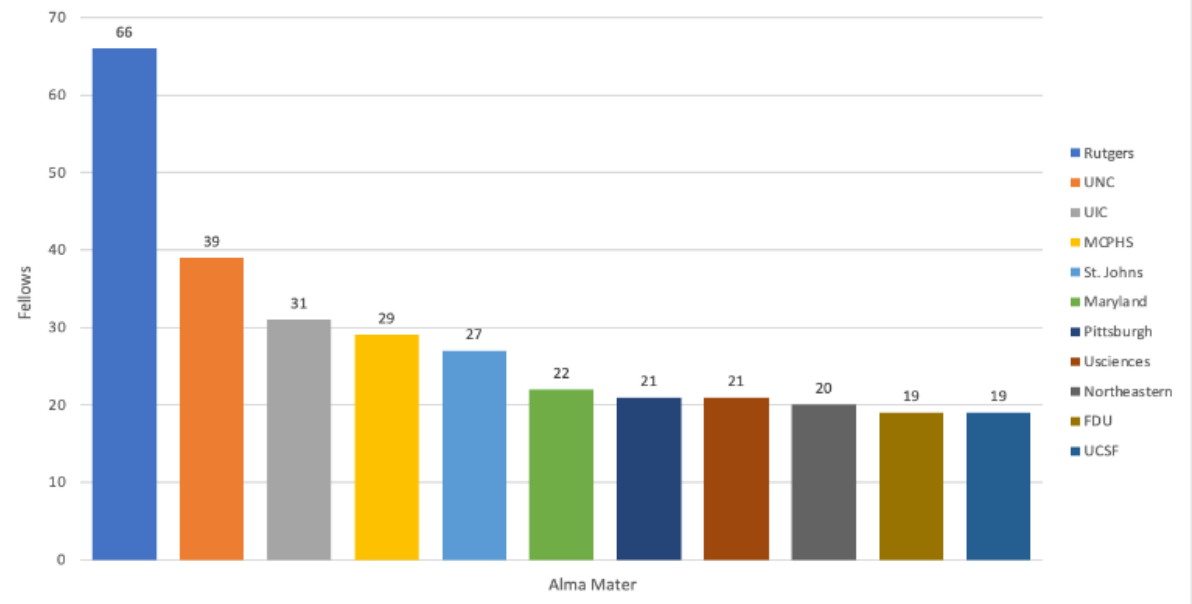
Figure 4: 2021-2022 or 2021-2023 Fellowships by Program Duration (N=431 First-year Fellows)



Fellows' Alma Mater

In 2021-2022, over 109 unique pharmacy school alma maters were represented among the cohort of 738 fellows, a 55% increase in unique schools represented over the past 5 years (n=70). The top 5 most common alma mater were Rutgers University (n=66) followed by University of North Carolina (n=39), University of Illinois-Chicago (n=31), Massachusetts College of Pharmacy and Health Sciences (MCPHS) (n=29), and St. John's University (n=27). Since 2016-2017, UNC and St. John's University have replaced the University of Sciences and Northeastern University within the top 5, although they still remain within the Top 10. The top 10 most common alma maters are represented in the figure below.

Figure 5: Fellow's Alma Mater (n=290 Fellows in Top 10 Alma Maters)



*Abbreviations: MCPHS- Massachusetts College of Pharmacy and Health Sciences, USciences- University of the Sciences, UNC- University of North Carolina, UIC- University of Illinois at Chicago, FDU- Fairleigh Dickinson University, UCSF- University of California San Francisco

Fellowship Diversity

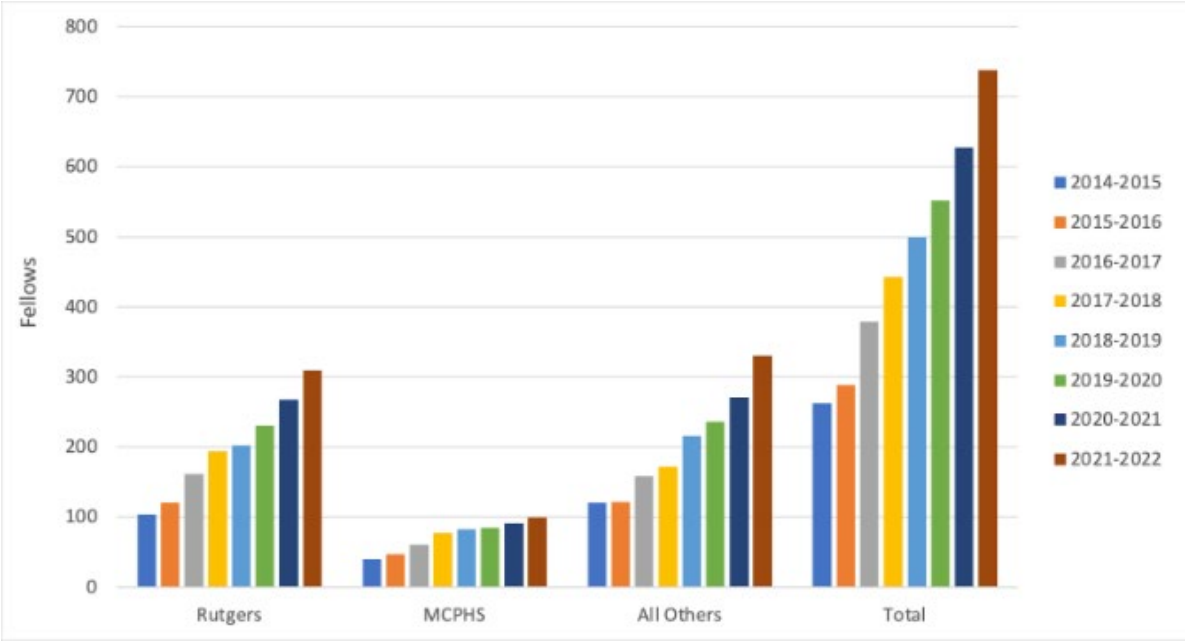
With an increasing need for representation more reflective of the general US population, fellowship programs and affiliated companies have implemented diversity programs to address this issue. Fellowship programs have not only seen a large surge in black pharmacist applicants over recent years, but also in black pharmacists offered and accepting fellowship positions. In 2020-2021, a total of 63 of the 628 fellows were black, accounting for roughly 10.0%. Of the 738 fellows in the 2021-2022 cycle, 12.7% (n=94) were black. Overall, in the incoming class of 2021-22 fellows, there was roughly a 50% (49.2%) year-on-year increase versus 2020-2021 in black pharmacists obtaining fellowship positions, marking encouraging progress toward addressing underrepresentation.

Eight-Year Trends in Fellowship Positions

8-year Trend in Fellowship Program Size

Overall, there has been an 182% increase in fellowship programs over the last 8 years, increasing from 262 fellows in 2014-15 to 738 fellows in 2021-2022. Notably, there was record growth in the number of fellowship positions (+110) from 2020-21 to 2021-22. The total number of fellowship positions has nearly tripled since 2014-2015. Rutgers University fellowship programs have grown from 103 to 309 (+200%) positions during that time, while MCPHS fellowship positions have increased from 39 to 99 (+153%). There has also been a similar +175% increase in all other programs.

Figure 6: 8-Year Trend in Fellowship Program Size

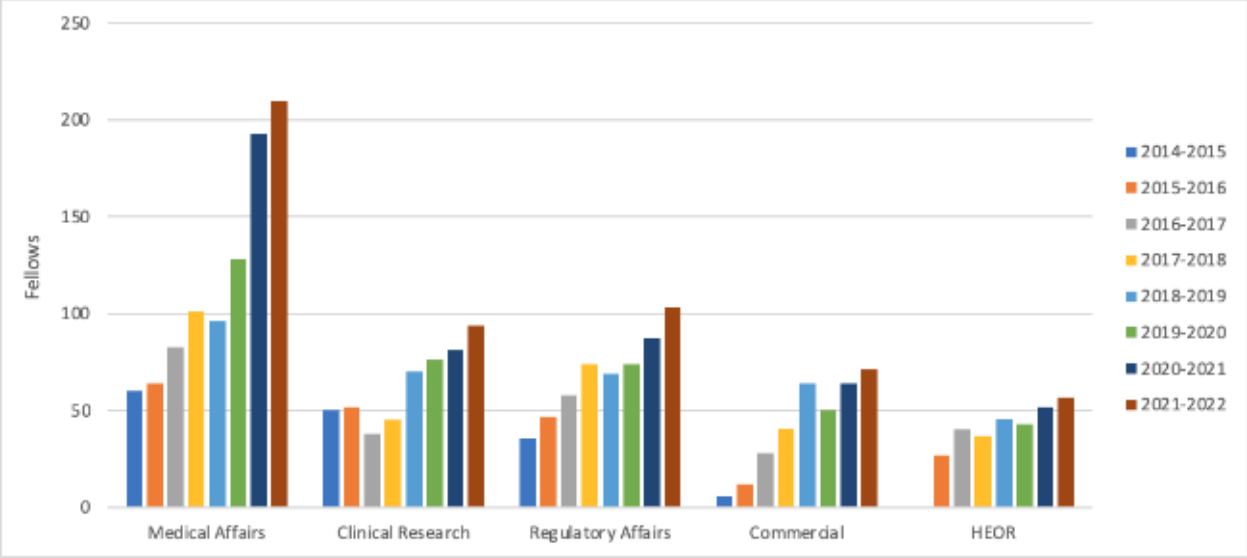


*Abbreviations: MCPHS - Massachusetts College of Pharmacy and Health Sciences

8-Year Trend in Fellowship Positions by Department/Functional Area

All major Department/Functional areas experienced growth in 2021-2022. Over the past 8 years, Medical Affairs and Regulatory Affairs fellowships have increased the most. Clinical Development fellowships have nearly doubled over the past 8 years from 50 positions in 2014-2015 to 94 in 2021-2022. Fellowships in Commercial and HEOR have steadily increased from 2014-2015 to 2021-2022 as well.

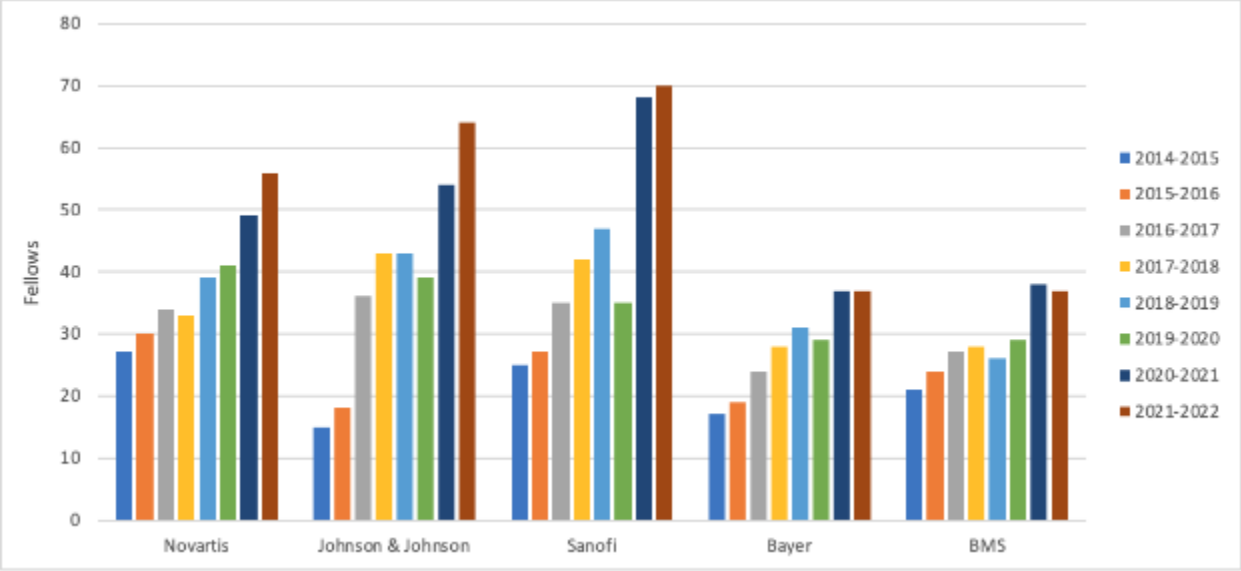
Figure 7: 8-year Trend in Fellowship Positions by Department/Functional Area



*Abbreviations: HEOR – Health Economics and Outcomes Research
NOTE: No data was collected for HEOR fellowships in 2014-2015.

8-year Trend in Fellowship Positions Offered Through Various Sponsor Companies

Among the top 5 companies that sponsor fellowship programs (Johnson & Johnson, Sanofi, Novartis, Bayer, and Bristol-Myers Squibb), there has been an overall increase in the number of positions since 2014-2015. Collectively, these 5 companies offer more than one-third of all available fellowship positions (36%, n=264). These results suggest that multiple large pharmaceutical companies continue to support and invest in the training of PharmD graduates for careers in the pharmaceutical industry. Of note, there has been an increase in the number of fellows for 2021-2022 in all top sponsor companies except for Bayer which has remained the same and BMS which has rightsized following the Celgene acquisition. Fellowships continue to rise in number, and it will be interesting to observe the trends within individual sponsoring companies throughout the years as career opportunities for pharmacists in industry continue to expand.



Limitations

Functional areas were categorized at the discretion of the authors. This categorization was implemented to stratify functional areas into analyzable categories due to the variability in titles across companies, but may lead to differences in distribution based on the stratification methodology. This includes, but may not be limited to, challenges in accurately and consistently characterizing functional areas such as Medical Affairs, Medical Information, Medical Communications, and Multidisciplinary fellowships. Additionally, the dataset is limited to information collected since 2014-2015, and thus, is not historically comprehensive of all fellowship programs, particularly fellowships offered prior to 2014-15. Nonetheless, IPhO will endeavor to maintain the most complete and accurate database of fellowship programs in the future.

Conclusions

The employment opportunities for pharmacists within industry over the past decade continue to grow due to a greater number of FDA drug approvals, an oversupply of pharmacists in traditional practice settings, and higher job satisfaction in industry roles. This has resulted in an increase in both the supply of pharmacy graduates interested in industry and the demand for highly valued talent by pharmaceutical industry employers. Industry fellowships provide employers with an excellent method of cultivating talent to meet this growing need.

Each year, industry fellowships are spreading into new pharmaceutical, biotechnology, agency, and service provider companies, and these sponsors are continuing to recognize the value of pharmacists in industry. Pharmacy students and recent graduates now have more opportunities to pursue careers in non-traditional fields, and it is important to continue to characterize the ever-changing career landscape.

During 2020, the COVID-19 pandemic created substantial uncertainty across all industries. Although some pharmaceutical companies were able to maintain operations at normal capacities, many companies were forced to adapt and adjust to the new work environment. As the year progressed and fellowship recruitment approached, there was widespread concern among fellowship stakeholders and candidates about how the pandemic would affect the number of available fellowship positions. Surprisingly, there was a record increase (+110) in the number of positions. Considering the pandemic, the large increase in fellowship positions during the 2021-2022 recruitment cycle reinforces the idea that companies recognize the tremendous value that PharmDs bring to the pharmaceutical industry.

The results presented are of interest not only to prospective fellowship candidates, but to fellowship program stakeholders as well. This annual analysis continues to support IPhO's position that pharmaceutical industry employers recognize the significant value and contribution of PharmDs within industry.

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