

PHARMACIST

POLICY REPORT

Hannah L. Maxey, PhD, RDH
Connor W. Norwood, MHA
Courtney R. Randolph, BS

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Policy Report: 2012 Indiana Pharmacist Workforce

WHAT'S THE ISSUE?

The role of pharmacists in today's dynamic health system is constantly evolving and the evidence base which illustrates the value of utilizing pharmacy services continues to grow. For example, medication reconciliation services provided by pharmacists can reduce medication discrepancies and may be an important component of improving transitions of care.¹ Furthermore, integration of pharmacists into collaborative care models has potential to alleviate the overwhelming workloads experienced by primary care physicians and ultimately increase access to primary health care services.¹ Over the years, many organizations have recognized that pharmacists, as well as many other health care professionals, have potential to play expanded roles in health care delivery. In fact, an increase in education and training requirements for pharmacists in recent years has made the pharmacist workforce well-suited to fill these expanded roles, which many suggest may alleviate, to some degree, the demand burden placed on the traditional primary care workforce.

Today, pharmacists must earn a PharmD degree (Doctorate of Pharmacy) in order to graduate from a pharmacy school accredited by the Accreditation Council for Pharmacy Education (ACPE). Many pharmacists also train as clinical pharmacists, working with physicians and other health professionals to increase care coordination among the health care team. These pharmacists undergo training in direct patient care settings and are frequently granted decision-making roles, through collaborative practice agreements. Furthermore, they provide clinical expertise to aid in medication therapy management and other pharmacy services. However, the pharmacist role in health care delivery has not progressed as quickly as many had anticipated, despite the recent increase in demand for health services and the increase in education and training requirements.

Although pharmacists are now trained at the doctorate level in both academic and clinical settings, the pharmacist role in patient care has been limited by several federal policies, such as the exclusion of pharmacists in the definition of a health care provider. Without the distinction of a health care provider, pharmacists are unable to receive reimbursement for pharmacy services that are an important part of coordinated primary care delivery. With approximately 75 cents of every health care dollar spent on chronic conditions² and 58% of adults on chronic disease medications,³ pharmacists may be strategically positioned to fill gaps in the primary care workforce, especially as it relates to chronic disease management. However, federal policies must empower these pharmacists to practice at the full scope of their education and training in order to maximize the capacity of the primary care workforce throughout the country.

RELEVANT TO INDIANA

On the state-level, the expansion of the Healthy Indiana Plan (HIP 2.0), which expands health insurance to low-income patients, is expected to further increase health care access for newly insured Hoosiers. This widespread increase in access has resulted in an increase in health care provider demand. Unfortunately, at the time, the primary care workforce supply is not sufficient to meet the needs of the health system. In order to improve access to primary care services, the health system must explore and implement new and innovative models for health care delivery that may maximize the capacity of its current workforce. For example, health care delivery models may try to incorporate new or expanded roles of various health professionals, such as pharmacists, into the primary care team. Pharmacists are not currently utilized to the full extent of their education and training and therefore may be well-suited to fill expanded roles in health care.

In order to fully leverage the pharmacist workforce in primary care delivery, which is focused more and more on cost-effective and team-based models, the pharmacist workforce must be clearly understood. Policymakers and health professionals must examine data that depicts the practice characteristics, demographics, capacity, and even the evolving role of pharmacists. Furthermore, these data must influence policy discussions that may lead to a more efficient health system.

Licensure Survey Data

Indiana is fortunate to have a mechanism in place to collect robust data on the professional health care workforce. Data are collected through surveys administered by the Indiana Professional Licensing Agency (IPLA) in conjunction with biennial license renewals. Data collected through licensure surveys provide valuable insight into the supply of licensed health professionals in Indiana, including pharmacists. Indiana may have a foundation for data collection and analysis, but these data must be utilized and widely disseminated in an easily-digestible format so that stakeholders may capitalize on this information. Incorporation of these data in policy discussions will undoubtedly result in the development and implementation of evidence-based policies that can meet the identified needs of the health workforce and the health system.

This report provides a ‘snapshot’ of the most recent data on Indiana’s pharmacist workforce, identifies emerging issues, and presents information pertinent to workforce planning and policy. Comprehensive data are available in the *Data Report: 2012 Indiana Pharmacist Workforce* at <http://hdl.handle.net/1805/6479>.

INDIANA’S PHARMACIST WORKFORCE

DEFINING THE WORKFORCE

Pharmacists are one of the oldest medical professions.⁴ Historically, pharmacists have been largely responsible for patients’ medication management. This role includes activities such as processing prescriptions, clarifying dosages, and monitoring drug utilization.⁵ Medication therapy management is a vital aspect of health care. In recent years, the pharmacist workforce has been trained to take on a more disease- and patient-oriented decision-making role within a collaborative care team. This role transition may be a result of the recent increase in education and training requirements implemented by ACPE. Understanding the composition, distribution, and capacity of Indiana’s pharmacist workforce is critical to informing policy discussions at the state level that aim to fully leverage the advanced education and training of pharmacists.

PHARMACIST SUPPLY IN INDIANA

In 2012, there were a total of 10,553 pharmacist license renewals. After applying exclusion criteria, including: online renewals, response to the survey, and reporting an Indiana practice location,

only 4,790 of these pharmacists were included in this report (For further information on inclusion and exclusion criteria for this report, please refer to the *Data Report: 2012 Indiana Pharmacist Workforce*).

PRACTICE CHARACTERISTICS

Specialty

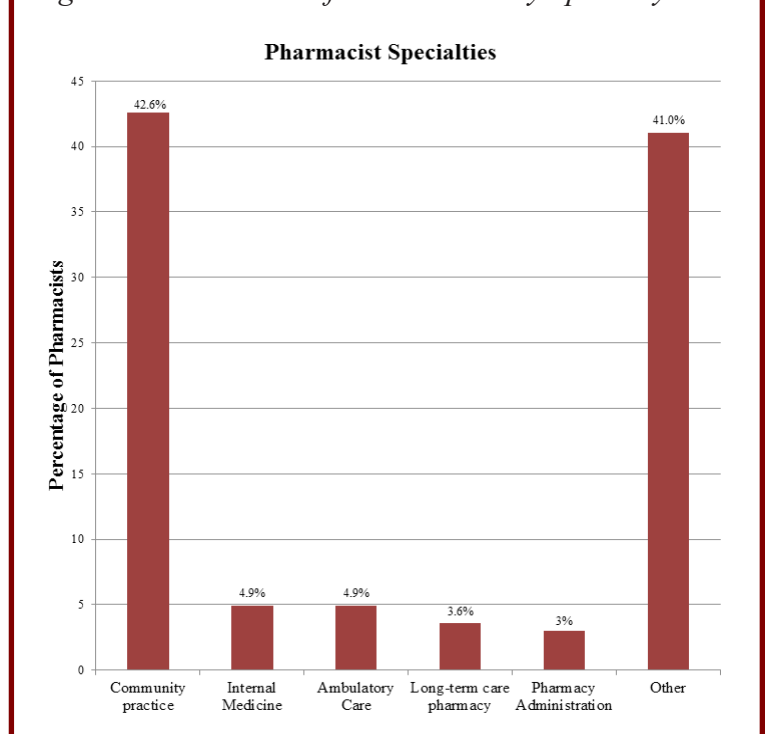
Pharmacists are versatile and well-suited to adapt to the needs of the health system due to the variety of specialty areas in which pharmacists may work. Nearly half of the pharmacists in Indiana report specializing in community practice (42.6%). Other top specialties include internal medicine (4.9%), ambulatory care (4.9%), long-term care (3.6%), and pharmacy administration (3.0%). Figure 1 depicts the breakdown of pharmacists by specialty. The Board of Pharmacy Specialties (BPS) officially recognizes eight pharmacy specialties. Unfortunately, the response options on the “2012

PHARMACY SPECIALTIES RECOGNIZED BY THE BOARD OF PHARMACY SPECIALTIES:

1. Ambulatory Care
2. Critical Care
3. Nuclear
4. Nutrition Support
5. Oncology
6. Pediatric
7. Pharmacotherapy
8. Psychiatric

Indiana Pharmacist Re-licensure Survey” did not completely match these recognized specialty areas. This may explain the large proportion of respondents who marked “other” as their specialty (41.0%), in 2012. However, future data collection efforts in Indiana will use the Health Resources and Services Administration’s (HRSA) pharmacist minimum data set (MDS) which more closely aligns with the specialties outlined by BPS. The use of standardized data collection tools capable of

Figure 1: Breakdown of Pharmacists by Specialty



gathering uniform and high resolution information on the various health professionals will be pivotal to policy and research initiatives that aim to study longitudinal workforce data and examine workforce issues at a national level.

Capacity

When examining workforce capacity, it is not sufficient to do a head count of licensed health providers. Pharmacists often hold a current license, but may not spend all of their time providing direct patient care or pharmacy services. Workforce capacity for patient care is more accurately assessed using pharmacists' reported full-time equivalency (FTE) or by using the number of hours per week a pharmacist reports conducting pharmacy-related activities. For example, a headcount of pharmacists in Indiana overestimates pharmacist capacity. If all 4,790 pharmacists were assumed to practice 40 hours per week, workforce capacity would be estimated at 144% its actual capacity. The true capacity of Indiana's pharmacist workforce, to provide pharmaceutical services and patient care, was 3,334 FTEs in 2012. This example demonstrates the value of gathering high resolution supply information from health professionals on a routine basis instead of relying on workforce data that does not account for actual time in pharmaceutical services, which may result in an inaccurate representation of this workforce capacity to provide pharmacy services. The *Data Report: 2012 Indiana Pharmacist Workforce*, referenced previously, provides a more detailed description of how FTE is reported and documented for these analyses.

EMERGING ISSUES WITH IMPLICATIONS FOR PHARMACIST WORKFORCE

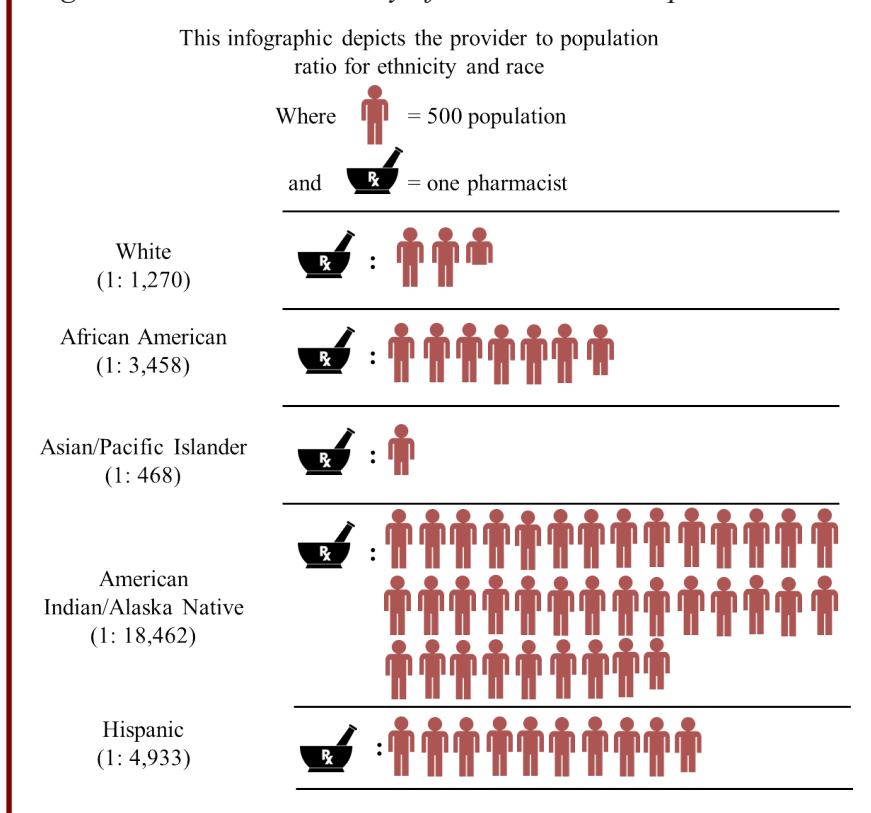
DEMOGRAPHIC CHARACTERISTICS

Race/Ethnicity

Indiana's pharmacist workforce is primarily comprised of non-Hispanic (98.4%) and White (89.9%) professionals. Although not essential, it is ideal for the health workforce to reflect the cultural background of the population served. Pharmacists from selected racial and ethnic minority groups, African American, American Indian/Native Alaskan, and Hispanic, have the lowest representation across Indiana's pharmacist workforce. In order to understand how the ethnic and racial backgrounds of these pharmacists compare to Indiana's population, the infographic in Figure 2 is used to illustrate the ethnic and racial imbalances between the pharmacy workforce and Indiana's population.

In the infographic, the ratio of population per pharmacist is presented for the largest racial and ethnic groups: White, African American, Asian/Pacific Islander, American Indian/Alaska Native and Hispanic. Note that there are approximately 468 Asian/Pacific Islander residents for every 1 Asian/Pacific

Figure 2: Race and Ethnicity of Pharmacist to Population



Islander pharmacist; whereas there are approximately 1,270 White Indiana residents for every 1 White pharmacist and 3,458 African American residents for every 1 African American pharmacist. There are 4,933 Hispanic Indiana residents for every 1 Hispanic pharmacist. The American Indian/Alaska Native resident to pharmacist ratio is perhaps the most alarming with roughly 18,462 American Indian/Alaska Native residents for every 1 American Indian/Alaska Native pharmacist. Imbalances in demographic composition of the population and pharmacist workforce most impact the American Indian/Alaska Native and Hispanic populations.

It is not necessary that health care providers and patients be of the same racial or ethnic group for successful health care delivery; however, greater levels of diversity are linked to advancing cultural competency, increasing access to high-quality health care services, and optimal management of the health system.⁶ Strategies for cultivating a more racially and ethnically diverse workforce which reflects the demographics of Indiana's population should be considered alongside any supply initiatives.

Gender

Diversification of the health workforce to align population and health workforce demographics has become an accepted strategy to advancing cultural competency, increasing access to high-quality health care services, and achieving optimal management of the health care system.⁶ Diversification is many times discussed in the context of racial and ethnic demographics. However, more and more organizations are recognizing the need to encompass gender, as well as other key demographic characteristics, in this strategy to diversify the health workforce to best meet the health care needs of the populations they serve.

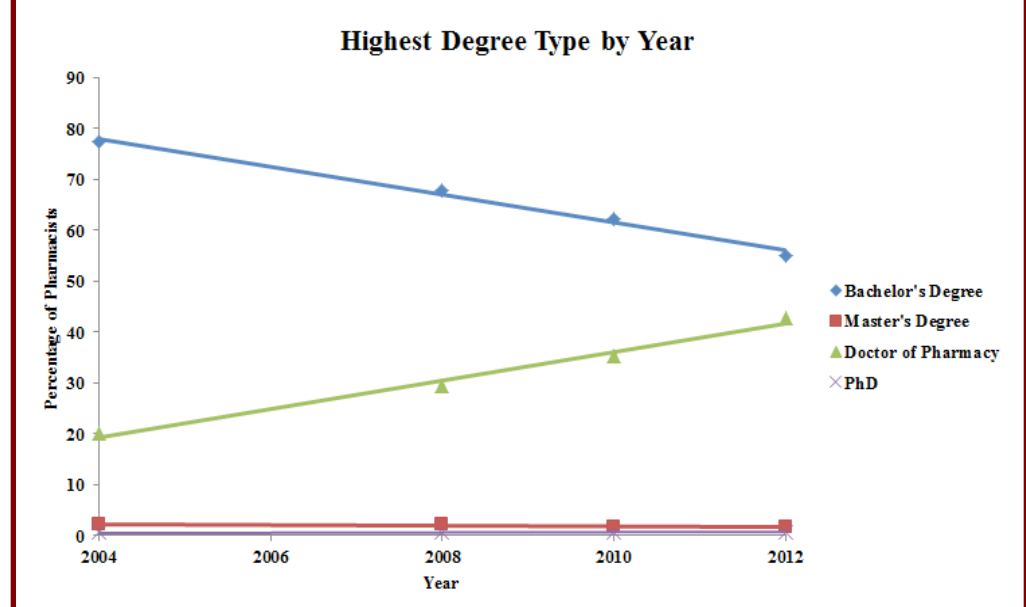
In 2012, the majority of the pharmacists in Indiana were females (58.0%). The ratio of females to males within this workforce has gradually increased since 2004, when the proportion of females was 52.4%. In addition to a higher proportion of females, this female pharmacist workforce is generally younger (40.9 years) than Indiana's male pharmacist workforce (46.9 years). Male and female providers have different practice characteristics and contribute to health workforce capacity in slightly different ways. Therefore, health policy initiatives must look at key demographics such as race, ethnicity, and gender during policy discussions. Furthermore, these policy initiatives must understand how trends in demographics such as the feminization of the workforce will impact health care delivery moving forward.

PHARMACIST EDUCATION

Pharmacist education and training has undergone significant transformation over the last few decades. The debate over curriculum length and content for the pharmacist profession went on for nearly 40 years. In 1989, the debate finally ended when ACPE announced that it would only accredit PharmD programs starting in the year 2000. After ACPE's initial announcement, the educational guidelines and standards for pharmacy education that influence the behaviors, attitudes, and clinical knowledge of these health care providers began to drastically evolve. Pharmacists practicing today may have graduated from an ACPE accredited pharmacy program with a bachelor's or master's degree. However, those that graduated after 2006 were required to obtain a PharmD degree at an accredited pharmacy school. Although all pharmacists licensed in Indiana graduated from an accredited pharmacy program, it is important to recognize that those pharmacists with bachelor's or master's degrees had a different educational experience as compared to their PharmD colleagues. Therefore, the educational characteristics of the pharmacist workforce should be examined along any health workforce policy initiatives.

The transition toward higher educated pharmacists has been reflected in the data since Indiana started collecting data on this workforce in 2004. Figure 3 illustrates trends in the highest degree obtained by pharmacists. In 2004, 77.4% of the pharmacist workforce practiced with the highest degree of a baccalaureate. This decreased to 55.0% in 2012. The percentage of pharmacists holding a PharmD demonstrated the opposite trend, comprising only 20.0% of the workforce in 2004 and more than doubling to 42.8% in 2012. The proportions of pharmacists with master's degrees and PhDs have remained relatively unchanged over the years. This increase in pharmacists trained at the doctorate level is a reflection of changes to ACPE accreditation standard, and it is likely that this trend will continue.

Figure 3: Highest Degree Type by Year



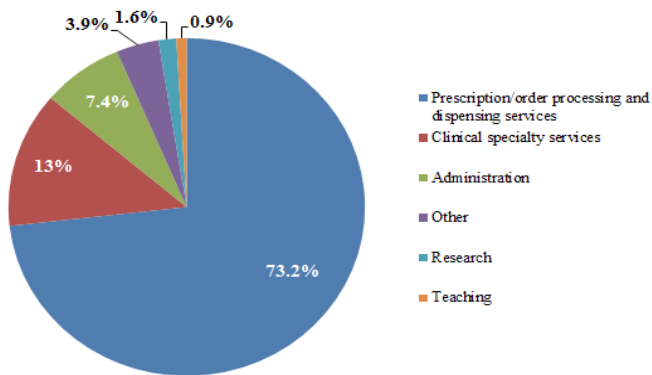
PHARMACY PRACTICE

The recent increase in education and training within the pharmacy profession was fueled by national pharmacy organizations pursuing academic recognition for the increased hours in externships/internships/experience by pharmacy students as this time was being spent in addition to the coursework hours that were required of the bachelor's degree itself.⁷ Some organizations were frustrated by this requirement, as attending additional years of schooling did not necessarily precipitate higher salaries or increased recognition from the health care community. In fact, professionals who received either a bachelor's degree or a PharmD were ultimately both considered "pharmacists."

Historically, pharmacists have been a product-oriented profession. However, recent increases to education and training requirements within the pharmacy profession have placed pharmacists in a strategic position to evolve into a more patient-centered professional role. Unfortunately, there continues to be many obstacles to this transition, including resistance to broader roles, reimbursement barriers, and fixed practice environments, which have likely resulted in limitations to pharmacist practice expansion.⁸

The "2012 Pharmacist Re-licensure Survey" contained two questions which help to understand the pharmacist role and how it may be expanding to provide direct patient care in Indiana. First, pharmacists were asked to report in which activity they spend most of their professional time. The results are presented in Figure 4. The majority of pharmacists reported spending most of their time in prescription/order processing and dispensing services (73.2%), with only 13.0% of pharmacists spending the majority of their time in clinical services. National surveys were also conducted on work activities for pharmacists. In 2014, pharmacists (n=1,117) reported 21% of their work time spent on patient care services not associated with medications. This was an increase from 16% of work time spent on patient care services in 2009 (n=889).⁹ This question was asked for the first time on the "2012 Pharmacist Re-licensure Survey" and therefore this data

Figure 4: Activity Most Time Spent In



cannot be trended over time, which limits interpretation and analysis. Luckily, data collection efforts in Indiana are becoming more standardized and uniform across the health professions as a result of IPLA and the Health Workforce Studies Program at the Indiana University School of Medicine moving to implement HRSA's Minimum Data Sets (MDS). The pharmacist MDS will continue to ask this question as well as collect other relevant data on the clinical activities of pharmacists that will be important for informing policy discussions at the state and national level. Furthermore, implementation of the MDS in Indiana will allow Indiana to study how the contribution of its pharmacist workforce compares to the national pharmacist workforce.

The survey also asked pharmacists to report on immunization administration. Although each state has specific laws and regulations dictating which types of vaccines the pharmacist may administer and to what age range of patients, all 50 states allow pharmacists to administer vaccinations as of 2009.¹⁰ In 2012, about half (49.4%) of Indiana pharmacists reported having received training to administer immunizations and 3.8% intend to pursue training within the next 12 months. The administration of immunizations by pharmacists is an important first step to expanding the role of pharmacists in patient care delivery.

Although pharmacists today are receiving more education and training than they ever have before, nearly $\frac{3}{4}$ of the pharmacist workforce still reports spending most of their time in prescription/order processing and dispensing services. Policy discussions at the state and national level must use these types of data and conduct additional research to completely understand how new and existing health policies may fully leverage the pharmacist workforce and their clinical expertise by allowing them to practice within the full scope of their education and training.

DISTRIBUTION OF THE PHARMACIST WORKFORCE

The distribution of pharmacist FTE to Indiana's population by county is illustrated in Map 1. Overall, there were 1,451 Indiana residents per pharmacist FTE. However,

PHARMACIST SALARY TO DEBT RATIO

A group of researchers at University of Kentucky developed the Salary:Indebtedness Index (SII) under the direction of Jeff Cain. The SII was developed out of the need for a measure that was capable of examining the return on investment for various health professional students. The index calculated the SII ratio by dividing the average first year salary for a specified profession by the average indebtedness of the student. The primary purpose of the SII was to determine if changes in salary paralleled changes in student debt loads. The SII ratio can be categorized as follows:

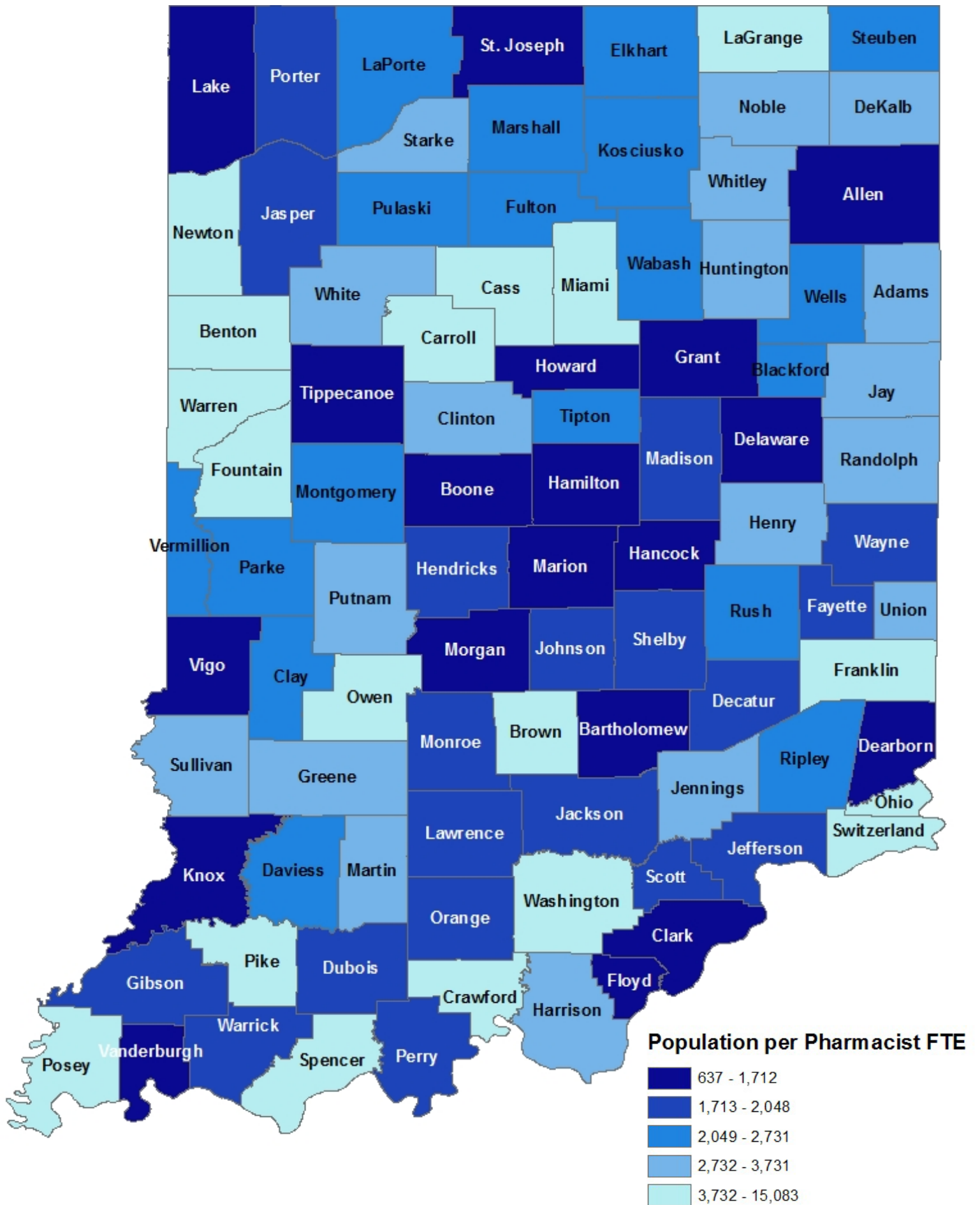
1. SII > 1: indicates that the average student debt load is less than the average first year salary
2. SII = 1: indicates that the average student debt load is equal to the average first year salary
3. SII < 1: indicates that the average student debt load is greater than the average first year salary.

Therefore, an SII that is greater than 1 would be an indicator to suggest that the investment in the education and training as a pharmacist would be justifiable. The research study published by Cain et al. indicated that in 2008, the first year pharmacist's salary was greater than their average indebtedness, the SII was 1.04. However, the SII for pharmacists dropped to .98 as the average first year salary (\$112,160) fell below the student-related indebtedness (\$114,422) in 2011. Comparatively, the SII for medicine has remained high from 2008 to 2011 and the SII for dentistry has remained low during the same time period.

The student debt crisis is a national issue that has undoubtedly become one of the top concerns in the United States due to its implications for workforce development, education, and economic policy. The increasing cost of pharmacy education has reached a point where individuals may think twice before pursuing the required education and training to enter the pharmacy profession. This is in large part due to the growing student-related indebtedness pharmacy graduates are having to endure while first year salaries have not seen similar growth in recent years. "Rising tuition and increased student indebtedness is most likely a multifaceted issue that has origins within the pharmacy academy, the accreditation process, federal and state governments, universities, and finally, student and faculty culture."¹³

Pharmacy, like many other professions, has been influenced by internal and external forces that have contributed to the increasingly difficult task of attaining the minimum necessary education and training required to enter the workforce. Research efforts must focus on examining how the evolving and expanding role of pharmacists within collaborative care teams and in primary care delivery may impact salary earnings, supply and demand projections and ultimately lead to implementation of effective health policies that fully utilize the pharmacist workforce.

Map 1: Indiana Distribution of Pharmacists FTE by County



this was not distributed evenly among urban and rural counties. Pharmacists were more highly concentrated in urban areas with larger populations. There is almost double the number of rural Indiana residents (2,491) per pharmacist FTE compared to urban residents (1,293) per pharmacist FTE. Counties with high concentrations of pharmacists tend to be located in the central part of the state, while counties with low numbers of pharmacists were frequently located near the state border. Pharmacists play a critical role in medication therapy management and may be one of the most accessible health care providers in the community. As such, it is important that Indiana's pharmacist workforce is equitably distributed throughout the State of Indiana in order to ensure Hoosiers have access to these health professionals and the pharmacy services they provide.

SUPPLY, DEMAND, AND ACADEMIC GROWTH

In order for any profession to be sustainable, the supply projections must match future demand. A mismatch between supply and demand will inevitably result in an excess or shortage of health professionals. The Pharmacy Workforce Center (PWC) tracks the pharmacist workforce for multiple pharmacy organizations and has been involved in workforce projections for the profession on the federal level for many years. In 2001, PWC projected a need for 417,000 pharmacists by 2020 and a supply of 260,000 pharmacists.⁸ Therefore, PWC estimated a shortfall of 157,000 pharmacists by the year 2020. Unfortunately, these analyses assumed that the American Pharmacist Association Academy would add only 3 new pharmacy programs per 10 years. PWC had little to no reason to believe that the academy would support significant academic growth that was beyond 3 new programs per 10 years as the size of the academy was relatively stable during the 1980s and 1990s. However, between 2000 and 2012 the size of the academy grew substantially with 47 new programs being added.¹¹ Not only were new programs being added left and right, but existing programs were expanding enrollment. The American Association of Colleges of Pharmacy reported a 70% increase of pharmacy graduates between 2001 and 2011.⁸ Over the 10 year period, the number of first professional PharmD degree graduates increased by 4,931.¹¹ The workforce analyses completed by PWC not only underestimated the academic growth, but the demand projections were lower than expected due to the transformation of the pharmacist role not taking hold as quick or prominently as originally estimated.

The PWC utilizes a scale, the aggregate demand index (ADI), to report supply and demand balances in this workforce. A trend of the ADI from 2008 to 2012 shows decreasing pharmacist demand, which is currently hovering around the equilibrium between supply and demand.⁸ However, this does not take into account any future projections. HRSA provides employment projections for the health workforce. These projections anticipate pharmacist supply growth of 35% by 2025 and projected demand growth at only 16%.¹²

The combination of unprecedented academic growth and overestimations of demand have caused new pharmacy graduates to find themselves in a difficult position. Although these data suggest that the supply of the pharmacist workforce may outpace the demand, effective health policies may aim to utilize

pharmacists in expanded roles consistent with their advanced education and training in order to ameliorate the potential supply overage, while reducing the burden on primary care providers, and ensuring patient safety.

WHAT'S NEXT?

UNIFORM DATA COLLECTION

As organizations work to understand the composition of the health workforce, it is important that data collection efforts utilize standardized survey tools that are capable of capturing key information on the health professions. HRSA's MDS for pharmacists will be implemented in Indiana starting in 2016, as an effort to standardize data sets and allow for future policy and research analyses.

DEMOGRAPHICS & DIVERSITY

Currently, the pharmacy workforce in Indiana does not reflect the demographics of the population it serves. Many minorities are currently underrepresented in pharmacy professionals, when compared to the race/ethnicity of Indiana's population. While it is not critical that the provider demographics match the population, greater levels of diversity in health professionals are linked to advanced cultural competency, which allows for a higher quality of health care delivery. Additionally, the gender make-up of the pharmacy workforce is changing. More females are pursuing careers in pharmacy and as a result, the ratio of females to males has drastically increased in Indiana over the years. As males and females have different practice characteristics it is important for policy discussions to examine this trend to inform any future policy initiatives.

SUPPLY & DEMAND

Following the expansion and/or addition of 47 pharmacy programs in the 2000s, pharmacist supply has increased considerably over the last few decades. This growth was underestimated and may result in an overage of pharmacists. Policy discussions on role expansion to mitigate the overage may alleviate potential pharmacist workforce strain. Additionally, these data may be an important piece of the policy discussions on the expanded role of pharmacists in primary care delivery that aim to fully leverage the advanced education and training of pharmacists and ultimately improve access to health care.

REFERENCES

1. Avalere Health. Exploring Pharmacists' Role in a Changing Healthcare Environment. 2014.
2. Partnership to Fight Chronic Disease. The Impact of Chronic Disease on U.S. Health and Prosperity: A Collection of Statistics and Commentary. 2009.
3. Associated Press. More than half of Americans on chronic meds. 2008. http://www.nbcnews.com/id/24603120/ns/health-health_care/t/more-half-americans-chronic-meds/#.VWcvaNJVhBd.
4. Buerki RA, Vottero LD. The Profession of Pharmacy and Pharmaceutical Care. New York: Basic Books; 1959.
5. World Health Organization. The role of the pharmacist in the health care system. WHO; 1994.
6. Cohen JJ, Gabriel BA, Terrell C. The case for diversity in the health care workforce. *Health affairs*. 2002;21(5):90-102.
7. Knapp DA. The rocky road to educational change: adopting the entry-level PharmD at Maryland, 1989-93. *Journal of the American Pharmacists Association*. 2011;51(6):692-701.
8. Brown DL. A Looming Joblessness Crisis for New Pharmacy Graduates and the Implications It Holds for the Academy. *American Journal of Pharmaceutical Education*. 2013;77(5).
9. Midwest Pharmacy Workforce Research Consortium. 2014 National Pharmacist Workforce Survey. 2015.
10. Terrie Y. Vaccinations: The Expanding Role of Pharmacists. *Pharmacy Times*. 2010.
11. Brown DL. A looming joblessness crisis for new pharmacy graduates and the implications it holds for the academy. *American journal of pharmaceutical education*. 2013;77(5):90.
12. National Center for Health Workforce Analysis. Health Workforce Projections: Pharmacists 2014.
13. Cain J, Campbell T, Congdon HB, et al. Pharmacy student debt and return on investment of a pharmacy education. *American journal of pharmaceutical education*. 2014;78(1):5.

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