Perfect Storm: Looming Crisis for Missourians Needing Pharmacy-Based Health Care Services

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Introduction

Meteorologists described it as a "perfect storm" off the coast of New England in 1991 when two very powerful weather fronts converged with a hurricane unfortunately resulting in devastating consequences for a fishing boat and its crew [1]. When hurricanes strike, meteorologists can model potential damage based on leading indicators such as the storm surge and wind speeds. Yet, the overall damage from the storm can be difficult predict, especially when flooding, tornados, and other off shoots of the storm occur on land. Leading indicators are helpful to model potential damage, for sure, but some level of uncertainty always remains, and often those indicators are subtle then ignored or debated then forgotten. Indeed, "seeing around corners" can be difficult, but we should certainly pay attention to leading indicators to best prepare for the future [2].

Here, we present leading indicators strongly suggesting imminent significant negative consequences for pharmacy-based health and wellness services. Two years ago [3], we predicted an imminent shortage of pharmacists, a shortage which has arguably already arrived, especially in community pharmacies. While we may have done a reasonable job of modeling numbers of graduates, we failed to consider other factors that could exacerbate the shortage creating even further damage, especially here in Missouri. Using data available to member organizations of the American Association of Colleges of Pharmacy (AACP), we updated our predictive model to show the rapidly declining number of pharmacy graduates through 2026 using the latest national enrollment data. We also provide additional leading indicators in Missouri such as an aging pharmacist population and a more exaggerated decline in aspiring pharmacists compared to bordering states which suggests that Missouri may be hit harder by this storm than in surrounding states. Further, we highlight data from the National Association of Boards of Pharmacy (NABP) demonstrating a significant increase in the percentage of graduates who have not sought licensure in their graduation year. All these leading indicators demonstrate that a perfect storm is heading right for our state.

No doubt, Missourians are facing a significant decline in access to pharmacy-based health and wellness services that will get far worse in the near future. Closures of community pharmacies are already

happening at an alarming rate [4], so the rapid decline in licensed practicing pharmacists in Missouri will no doubt continue to contribute to further closures. Ultimately, services provided by pharmacists in health systems, ambulatory care centers, specialty pharmacies, public health organizations and the like will be hit hard by this perfect storm. And, of course, pharmacy schools are already hurt by the low enrollment as revenue declines affect our ability to hire and retain faculty and staff. Some would claim this is an academic problem created by rising tuition and fees, unsustainable increases in enrollment, and failure to react quickly enough to changing market demands. We acknowledge that as pharmacy school deans, we rely on enrollment for the viability of our programs, our schools, and our universities. Yet, we argue that this is not an academic problem, this is a problem for all of us in every domain of pharmacy, and most importantly, a problem for the public at large and our patients. While current pharmacy school enrollment data demonstrates that we cannot stop this perfect storm from hitting Missouri, we believe there are some things we can do now to hopefully create an inflection point if Missouri pharmacists, K-12 educators, career counselors, and policy makers work together.

Enrollment Numbers

Figure 1 demonstrates clearly the rapid increase and subsequent rapid decrease in pharmacy school enrollments from 2000-present. A significant demand for pharmacists in the 1980's-1990's stimulated a growth in the number of seats available for pharmacy students nationwide. Those available seats were increased in historically long-standing programs such as the University of Missouri-Kansas City (UMKC) and the St. Louis College of Pharmacy (STLCOP) at University of Health Sciences and Pharmacy, but also through a rapid rise in the number of universities offering professional pharmacy degrees. We currently have 140 fully accredited pharmacy programs in the United States [5], that at the peak of pharmacist supply in 2018 or 2019 produced about 14,000 new pharmacists nation-wide. Using AACP data, we estimated attrition rates at approximately 11% over the next 3 years which was the average attrition rate nationally over the past 5 years. Combining enrollment with attrition, our model suggests that the number of pharmacist graduates will drop below 8,000 by 2026.

An Aging Pharmacist Population in Missouri

We downloaded the list of licensed pharmacists in Missouri from the State Board of Pharmacy website [6], and sorted licensees based upon initial year of licensure in the state. We created an estimate of the age of the licensees based upon the high likelihood that pharmacists licensed before approximately 2000 would most likely have been at least 23 years of age upon licensure as they likely completed 5-year bachelor's degree programs. Then, following the year 2005, nearly all graduates would have been coming from Pharm.D. programs as that became the entry level degree for licensure. Those Pharm.D. graduates would most likely be at least 24 years of age upon graduation as they likely completed 6-year Pharm.D. programs, save the occasional "Doogie Howser" protégé who is obviously quite rare. As shown in Table 1, approximately 25.9% of Missouri-licensed pharmacist would have to be at least 50 years old in 2026, while 14.8% would have to be at least 59 years old in 2026. While we do not have access to average retirement ages, we do know that practicing health care providers including dentists, nurses, pharmacists and physicians have physically and mentally demanding and yes sometimes very stressful jobs that can lead to earlier retirement or career changes. Eligibility for social security benefits for retirement is age 62, so we speculate that nearly 15% of Missouri licensed pharmacists would be social security eligible in 2028.

Fewer Graduates Seeking Licensure

Dr. Al Carter, Executive Director of the National Boards of Pharmacy, presented to AACP members at the Annual Meeting in Boston in July 2024. Among the most interesting data he presented was the percentage of pharmacy graduates who are NOT sitting for the NAPLEX during the year they graduated.

Table 2 demonstrates that the percentage of non-test-takers rose from 1.9% in 2018 to 8.3% in 2023. On the one hand, these data should not be a surprise and in some ways we could potentially be satisfied that it supports our long-standing contention that there are many careers that graduates can pursue with their pharmacy degrees. And, indeed, many of those careers do not require licensure as a pharmacist. Such jobs could include positions in pharmaceutical industry, insurance companies, and medical writing to name a few. However, we find the data quite alarming for multiple reasons, not the least of which is the fact that more than 600 new drugs have been approved by the FDA since one of our authors graduated from pharmacy school, and he claims that he would have difficulty passing the NAPLEX if he sat for it today. People often choose to change careers at some point in their lifetime, but not having the license to practice pharmacy severely limits options in the pharmacy profession. But, the most alarming aspect of this data is that the number of pharmacists entering practice is clearly going to be lower than our models predicted in 2022 [3], and indeed what we predict with updated numbers here. Our model in Figure 1 does not include percentages of graduates who choose not to sit for the NAPLEX, but if it did, we would predict the number of licensed pharmacists entering the market in 2026 could be 14% lower if the trend continues. That is to say, instead of approximately 8,000 pharmacy graduates in 2026, perhaps the number would be 6,880 pharmacy graduates sitting for the NAPLEX. Apply also the national average pass rate for first time NAPLEX test takers (77.5% in 2023 [7]) and the number drops to 5,332 *licensed* pharmacy graduates.

Pharmacist Demand

Even at the peak of the number of graduates (Figure 1) in 2018-2019, we argue that the number of new pharmacists produced was perhaps just getting close to meeting demand for pharmacists rather than flooding the market, as some have claimed. Evidence in support of this contention is the United States Bureau of Labor and Statistics (USBLS) data estimating a need for approximately 13,500 new pharmacists yearly to make up for those who change careers or retire, and the need is estimated to grow at a rate of 3% over the next 10 years [8]. While the exact methodology used by USBLS to estimate these numbers is difficult to track down, we strongly believe that the USBLS underestimates the number of pharmacy graduates needed because it most likely does not consider the variety of pharmacy careers our students take. For example, in addition to health systems, community pharmacies, and ambulatory care centers, we see our graduates taking positions in pharmaceutical industry, regulatory agencies such as state boards of pharmacy and others, public health organizations, insurance companies, research organizations, military and many others [9]. Further evidence in support of our contention are the very high placement rates that graduates from our pharmacy programs in Missouri have enjoyed. For example, we survey at the time of graduation (as required by ACPE) and typically find placement rates of 85-95% in full-time employment or post-graduate residency training at the time of survey. We do not believe this means that 5-15% were unable to find jobs, but rather that number reflects graduates who do not answer the question or have not yet found the exact job they wanted when we survey in April or May. We have tried to do follow-up employment surveys later, but the response rate is understandably low, so the actual placement rate is not known.

Need for More Recruitment Efforts

Clearly, the number of licensed pharmacists entering practice in Missouri will plummet over the next 3 years, and the impact this will have on reducing already low access to health and wellness services and pharmacist-provided primary care will be dramatic. Due to reductions in enrollment, and subsequent revenue, both schools of pharmacy are operating on minimal faculty and staff levels. However, both schools are trying to invest in advertising and recruitment efforts, including efforts in Missouri high schools and universities. But, we simply do not have enough people to get out to all locations where students interested in health careers may reside. We believe that we need more recruitment efforts,

especially here in Missouri. Table 3 shows that Missouri currently ranks 8 out of 9 states, including all bordering states, based on the number of pharmacy applicants this year. In contrast, Nebraska, Kentucky and Arkansas have far more applicants when normalized for state population. While we do not know what those states are doing for recruitment, it seems logical to ask Missouri pharmacists to help in recruitment efforts whenever possible. A few suggestions that might be helpful include participating in career days, reaching out and providing information to high school guidance counselors, reaching out to community colleges, referring students who might be interested in health professions, and helping to spread a positive word about the many careers available for pharmacy graduates.

Need for More Incentive Programs

Some states, including Missouri, have offered grant programs to assist with recruitment of health professionals. Last year, two bills were proposed in the Missouri House of Representatives to assist with recruitment of health professionals. House Bill 1925 would have provided grants to health care professionals if they agreed to reside and practice for at least 5 years in a rural Missouri county (defined as a county with a population <35,000). House Bill 1898 was a loan repayment program for health care professionals who agreed to practice in "areas of defined need". Both programs included a variety of health care professionals in addition to physicians and nurses, such as chiropractors, counselors, dentists, nurses, psychologists, social workers and other therapists. However, pharmacists were not included in these proposed programs. We believe that Missouri pharmacists could assist here by contacting their state legislators to let them know of the imminent crisis shortage of pharmacists, closure of pharmacies, and need to attract more students to the profession.

Assist with Training Pharmacy Technicians

While much of what we propose will require long-term commitment and results would not be expected for many years, we believe there are other things we can do to help Missouri pharmacists in the more immediate future. Both STLCOP and UMKC are involved with pharmacy technician training programs, including programs residing in Missouri high schools. Not only would these technicians be potential recruitments to pharmacy school, but more importantly in the near term, most pharmacists would agree that highly skilled and knowledgeable technicians can make their day much easier and less stressful. Pharmacy technicians can start work at age of 18 and begin contributing to the overall workload involved in caring for the public and our patients.

Get the Aid of Influencers

Today's marketing environment is a lot more complicated than when we went to pharmacy school. In addition to mainstream television and radio channels, we now contend with multiple streaming paths and multiple browser and social media platforms. Both schools are currently using social media channels to the best of our ability to recruit potential pharmacy students. While they do allow the advantage of specifically focusing on certain age groups, these platforms are also expensive and short-lived. We believe that our efforts would be tremendously assisted if we had a well-known influencer willing to speak about their positive experiences with pharmacists and pharmacy teams. Do you know someone famous who would willing to help us out? If you do, let us know.

Continue to Fight for Patient Access to Pharmacists and Pharmacies

Finally, another key factor in getting students to consider careers in pharmacy is make sure the profession itself is seen as viable, sustainable, and rewarding to younger generations. Transformation of the profession continues at a pace slower than we would like, but we need to maintain efforts to ensure that the public and our patients have access to pharmacists and pharmacy teams to get health and wellness primary care services they need. This means that pharmacists and pharmacy organizations

need to continue to fight for appropriate payment for services and fair practices regarding managed care and medication management. With a reduction in the number of pharmacists, it is possible that pharmacists will continue to see more workload; therefore, efforts focused on pharmacist well-being are critical [10]. Pharmacy is not alone in health care professions in experiencing burnout in practitioners as certainly our colleagues in medicine and nursing are dealing with this as well. But every effort aimed at improving working conditions for pharmacists is time well-spent for the long-term survival of our profession.

Conclusion

Unfortunately, our nation is facing a crisis-level shortage of pharmacy graduates within the next couple of years, and this shortage comes on top of a current shortage of pharmacists working in the community pharmacy sector. While there is nothing we can do to stop the imminent shortage, we can raise awareness and try to get people to work with us to solve this problem. Through the generous work of organizations like AACP, the American Pharmacist Association, the American Society of Health-Systems Pharmacists, as well as our two Missouri schools of pharmacy, we have plenty of resources to share that highlight the exciting plethora of careers possible with a pharmacy degree.

The Missouri Society of Health-System Pharmacists, The Missouri Pharmacy Association, The Missouri Borad of Pharmacy, STLCOP and UMKC have formed the Coalition to MOve Pharmacy Forward to ensure we are addressing pharmacy challenges together. We believe that if we work together, we can create an inflection point soon that would begin to reverse the trend and get more highly educated and trained pharmacists and pharmacy technicians into the health care workforce in Missouri. Are you willing to help us? If so, please feel free to reach out to either one of us at any time. We welcome your assistance.

References

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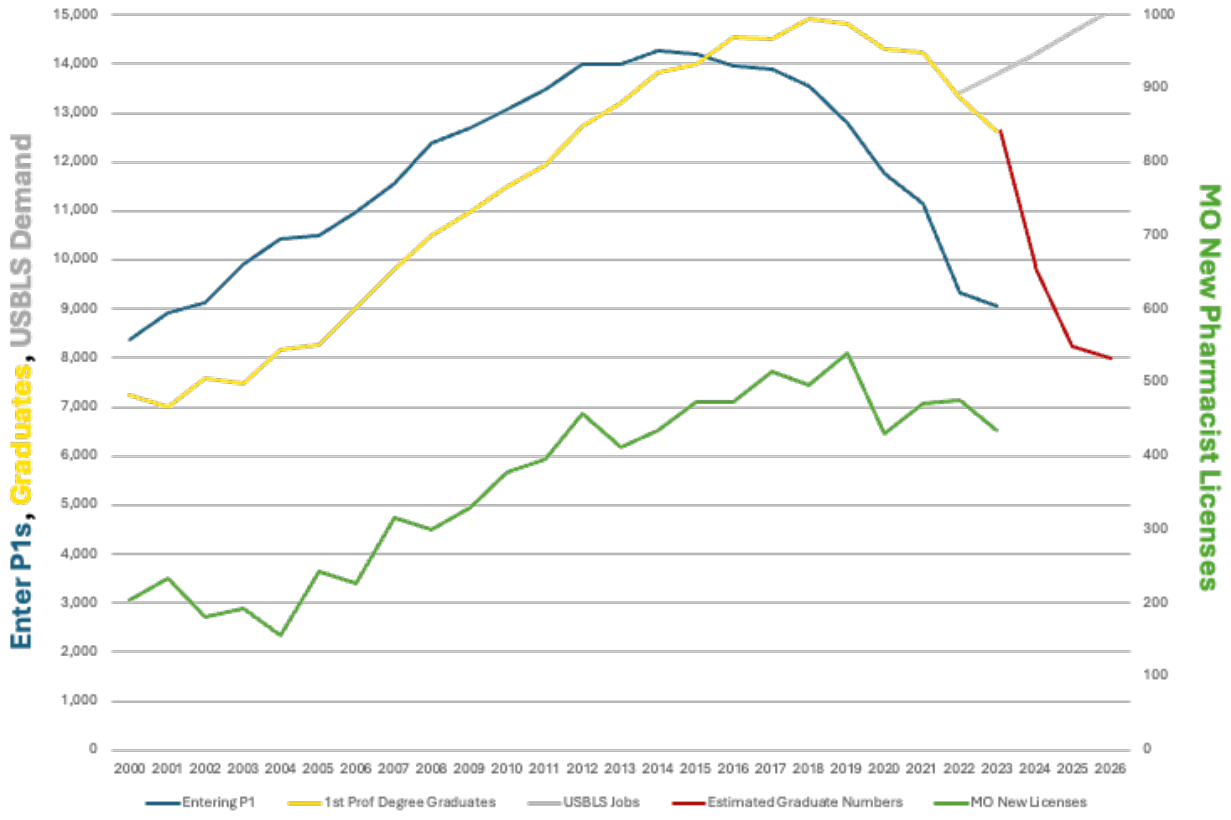
Figure 1:


Enter P1s, Graduates, USBLS Demand
MO New Pharmacist Licenses
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11,000
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2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026
Entering P1
1st Prof Degree Graduates
USBLS Jobs
Estimated Graduate Numbers
MO New Licenses

Table 1:

Year of Initial Licensure	Number (%; N = 11962)	Estimated Age in 2026*
<2000	3101 (25.9%)	>50
<1990	1767 (14.8%)	>59
<1982	782 (6.5%)	>67

*Assuming average age of graduation to be ~24 yrs old
Data downloaded from Missouri Board of Pharmacy in June 2024

Table 2:

	Degree Conferral Year					
Sat for NAPLEX?	2018	2019	2020	2021	2022	2023
Yes	14,549	14,513	14,123	14,037	13,341	12,103
No	275	304	614	859	894	1101
Total	14,824	14,817	14,737	14,896	14,235	13,204
Percent	1.9%	2.1%	4.2%	5.8%	6.3%	8.3%

*Data courtesy of Dr. Al Carter, NABP Executive Director/Secretary

Table 3:

State	Pharmacy Applicants*	State Population^	Applicants/1,000,000
1. Nebraska	92	1,978,379	47
2. Kentucky	197	4,526,154	44
3. Arkansas	130	3,067,732	42
4. Iowa	129	3,207,004	40
5. Tennessee	260	7,126,489	36
6. Kansas	106	2,940,546	36
7. Illinois	434	12,549,689	35
8. Missouri	172	6,196,156	28
9. Oklahoma	84	4,053,824	21

*Applicant data obtained from the AACP PharmCAS Report as of June 5, 2024
^United States Census Bureau annual estimates of resident population www.census.gov