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Mark J. Braun, Executive Director

January 15, 2020

Governor Kim Reynolds
Office of the Governor
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Des Moines, IA 50319

Mr. Charlie Smithson
Secretary of the Senate
State Capitol Building
Des Moines IA 50319

Ms. Meghan Nelson
Chief Clerk of the House
State Capitol Building
Des Moines IA 50319

Glen Dickinson, Director
Legislative Services Agency
State Capitol Building
Des Moines IA 50319

Re: Physician Workforce Study Report

Dear Governor Reynolds and Members of the Iowa General Assembly:

Pursuant to HF532 §4 2019 Iowa Acts, Ch. 55.4, enclosed is the Physician Workforce Study Report prepared by the University of Iowa Carver College of Medicine's Office of Statewide Clinical Education Programs.

If you have any questions or need more information, please don't hesitate to contact this office.

Sincerely,

Mark J. Braun

\\Box Sync\Board of Regents Shared\BF\Legislative\2020\Reports\

Attachments

cc: Robin Madison
Legislative Liaisons
Legislative Log

Report to the Governor of Iowa and the General Assembly on
“Physician Workforce Study”
As Requested in
House File 532, Section 4

University of Iowa Carver College of Medicine
Office of Statewide Clinical Education Programs
January 2020

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EXECUTIVE SUMMARY

The vitality of Iowa depends on accessible and high-quality healthcare. Demographic analyses demonstrate that the population of Iowa is growing slowly and is aging. At the same time, the population is shifting slowly from rural to urban counties. Today, Iowa ranks 42nd in the nation for the number of physicians per 100,000 population and this represents both primary care and non-primary care physicians. Projecting future health care and physician workforce needs is complicated as health delivery practices change over time as do physician work patterns. If current healthcare utilization and delivery patterns continue, the projected needs for all physicians will escalate. Therefore, it is critical to develop strategies that will favor further growth of the Iowa physician and provider workforces.

Attracting and retaining physicians for Iowans will require many partners including but not exclusive to the K-12 education system, communities, colleges and universities, medical schools, residency and fellowship programs, the state of Iowa's legislative and administrative branches, insurance companies and the health care systems and clinics throughout the state. Each partner is in a position to contribute in meaningful ways to the success of educating, recruiting and retaining physicians for Iowa.

Highlights from forty years of experience tracking the Iowa physician workforce

- The physician workforce has had a long history of consistent growth with the growth in numbers of physicians outpacing population growth for almost forty years. During the most recent five-year period, the rate of growth declined to a rate comparable to the rate of population growth in the state.
- The general population of Iowa has shifted from rural to urban counties. Currently, 46% of the population resides in the 88 rural counties. By 2030, 44% of the population is projected to live in rural counties. As the population of Iowa has shifted from rural to urban counties, the physician workforce has followed suit. In 1978, 37% of all physicians practiced in Iowa's 88 rural counties. By 2018, only 23% of physicians practiced in rural counties.
- The rate of physician attrition in Iowa has been stable with about 6% of all physicians leaving practice each year. Attrition has occurred in both primary and specialist physicians. Relocation is consistently the principal cause of attrition followed by retirement. The primary reasons underlying Iowa physician relocation are practice factors (e.g. interpersonal relationships, call schedules, business management), family factors and geographic/community factors.
- The demographics of the Iowa physician workforce demonstrate that the Iowa physicians are younger than the average age of physicians nationally. There is an increasing percentage of female physicians and approximately 20% of the workforce is comprised of international medical graduates (IMGs).
- The percentage of physicians in primary care has declined over time. At the end of 2018, 31% of physicians were practicing primary care while 69% were specialists. Family medicine physicians play a major role in meeting the health care needs of rural Iowans. In 2018, 46% of the Iowa population resided in the

88 rural counties of Iowa and 46% of the family medicine physicians also resided in those counties. Over 55% of the state's family medicine physicians trained in the Iowa Family Medicine Residency Network and many of these physicians are practicing in rural locations. When analyzing the total population of clinicians practicing in rural communities, physicians make up 52% of the providers in rural Iowa and nurse practitioners and physician assistants combined, account for 48% of the rural providers. Specialty care in rural Iowa relies heavily on visiting consultants originating from regional medical centers.

- Currently, graduates of the two medical schools in Iowa make up 42% of the physician workforce in the state.

Highlights of projected physician workforce shortages in Iowa

- The census bureau estimates the Iowa general population will increase by 4.9% or by 155,154 people by 2030. By 2030, 22.5% of Iowans are projected to be 65 years of age or older, which is up nearly 15% from 2000. The demand for physician services is expected to increase due to the increase in population and the aging of Iowa with the expected diseases associated with aging.
- If current trends continue, Iowa's shortage of primary and non-primary care physician workforce will worsen over the next decade. The Association of American Medical Colleges workforce predictions suggest that the specialist workforce needs for the nation will be wide-reaching with needs ranging for medical and pediatric subspecialists, hospitalists and surgical specialists and others. The top specialty priorities (shortages) identified by the 11 major health systems and clinics in Iowa are gastroenterology, neurology and pulmonary/critical care physicians. Psychiatry has the most intense immediate demand while family medicine physicians consistently have the highest number of opportunities available in Iowa. Although current recruitment activity for obstetricians is low in Iowa, obstetrical care is a major concern due to the lack of access in rural areas.
- Trends suggest that physician practices will continue to shift from rural to urban settings. The physician shortage in rural Iowa will worsen compared to urban counties.
- Nationally, the expanded role of nurse practitioners and physician assistants continue to make an impact on the overall physician shortages. The Association of American Medical Colleges (April 2019) continues to measure this impact on physician demand. There is little information to indicate the extent to which nurse practitioners and physician assistants might displace demand for physicians. However, there is a growing body of literature both in the U.S. and internationally that indicates nurse practitioners and physician assistants can provide high quality care, increase physician productivity, and in some specialties, perform many of the same functions as physicians.

Current Status of medical training in Iowa

Throughout the country the number of medical students has escalated more rapidly than the number of residency positions. Currently, Iowa ranks #10 out of 50 states for the number of

medical students trained per 100,000 population. The University of Iowa matriculates 152 medical students each year while Des Moines University matriculates 218 medical students. All medical students must complete a residency to become board-eligible and licensed to practice medicine in the state and some go on to specialized fellowship training. Residency and fellowship training is globally called graduate medical education (GME). However, Iowa ranks number 25 out of 50 states for the number of graduate medical education positions and when one looks at the ratio of medical students/graduate medical education positions, Iowa ranks in the bottom ten states.

- The Iowa Family Medicine Residency Network has played a major role in developing the rural Iowa physician workforce. However, several of these programs are struggling financially and their continued viability is at risk. Two new psychiatry residency programs were created over the past five years in Des Moines. However, even with these two new programs, it is unlikely to meet the significantly underserved psychiatric needs of Iowans.
- Based upon three different articles on a national level, the specialties most consistently identified for residency and fellowship expansion are vascular surgery, cardiology, neurosurgery and neurology. However, federal support for graduate medical education positions has been relatively stagnant since 1997. Today Iowa health systems are subsidizing graduate medical education by over \$50 million.

Strategies to enhance the physician workforce

Iowa has, and will continue to experience, challenges in growing the physician workforce. In addition to the absolute number of physicians serving the state there is a maldistribution of physicians around the state. Growing the number of physicians will require attention to not only recruitment, but also retention and strategies must be developed to enhance the viability of health care practice sites in rural locations.

- The number one reason for physician attrition is the practice factor of “attitudes/values/relationships within the practice.” Strategies that help mitigate negative interpersonal relationships is an important approach to reducing physician relocation. Concentrating physicians into larger practices may allow for a more palatable social environment and will reduce the days on call, which is another key factor in provider satisfaction. Some recruiters have targeted recruitment of pairs of physicians from a particular residency class to improve the interpersonal environment for new recruits.
- The percentage of women entering the physician workforce is escalating dramatically and most have a working spouse. At the same time, the number of dual career physician families is also increasing. Successful recruitment of these physicians will require nearby employment opportunities for the spouse, child care and strong K-12 education.
- Escalation of telehealth and team-based care opportunities (embedding physical therapy, nurse practitioners, physician assistants within a practice) provide professional support and will likely improve retention rates within the rural setting. Dissemination of telehealth will require enhanced broadband coverage throughout the state.

- Nurse practitioners and physician assistants will extend reach into rural settings and the number of individuals coming out of training is escalating rapidly. The state should evaluate whether physician assistants should be credentialed to practice independently.

Enhancing graduate medical education

Residency training is expensive and long-term support for training programs is critical. Federal support for new residency slots is currently capped, which means that any additional slots require another mechanism for long-term financial support or a change to the federal cap. Nationally, teaching hospitals are operating 10,000 residency positions without Medicare support. In Iowa, 509 of the 1,145 graduate medical education positions lack Medicare funding. Expansion of positions without funding sources is extremely risky during a time of financial distress for many hospitals.

- The Iowa Family Medicine Residency Network has played an important role training many of the physicians who are practicing in rural Iowa. However, these programs are facing financial difficulties and several are strongly considering closing their residency program. Strategies to improve the financial stability of these programs need to be considered including additional state support. Public/private partnerships should also be considered to further expand the financial support for these community-based family medicine residency programs as these programs are a major source of Iowa's rural physicians. The partnerships could go beyond the current health systems/community hospitals to other key rural stakeholders (Farm Bureau, Hy-Vee, etc.).
- Psychiatry services are in short supply in Iowa and around the nation. The state appropriations for the two new psychiatry residency programs in Des Moines are time-limited. Due to the federal cap on residency positions, no federal dollars will be provided for these programs. Long-term support must be considered to ensure sustainability. The state has also allocated short term funding to develop a psychiatry residency rural training track program. Unfortunately, most stakeholders chose not to participate because of the concerns over longevity of the support for this costly endeavor. Psychiatric services can be supplemented by expanding mental health care training within primary care, nurse practitioner and physician assistant training programs across the state.
- Similarly, obstetrical care is challenged around the state with many hospitals shuttering their labor and delivery suites due to a lack of obstetricians and general surgeons who can provide cesarean section support. Creating training opportunities to enhance obstetrical training for family medicine providers could have significant benefits in rural locations. Strategies that need to be considered include creation of a family medicine/OB fellowship, nurse midwife training, expanding the current OB residency program at the University of Iowa and/or creation of a new OB residency program in a community-based setting.
- To improve the retention rate of residents in training from Iowa residency programs, there is an opportunity to enhance outreach to all residency programs as well as nurse practitioner and physician assistant programs in the state and region to introduce practice opportunities to upcoming graduates. Longitudinal tracking of graduates could also be beneficial so that new opportunities can be shared with former graduates.

- Increasingly telemedicine will play a role in supporting primary care medical practices around the state. Residency programs must enhance training opportunities in telemedicine, E-Visits and E-Consults to ultimately improve support to rural Iowans.

Enriched practice model and public policy opportunities

Health care delivery is expensive and many hospitals and clinics around Iowa must recruit and retain the necessary workforce as well as maintain sufficient patient volumes to support practice viability, quality measures and financial sustainability. Estimates suggest that a primary care provider needs 1500-2000 active patients to sustain a practice. Given the fact that some do not seek medical care or have access to health insurance, estimates suggest that this would require a population of 3500 individuals per primary care physician. Specialty care requires much larger patient catchment areas to ensure practice viability and often needs sophisticated medical equipment.

- Primary care practices are needed throughout the state along with access to 24-hour urgent care that might be located in critical access hospital locations. However, even in these disseminated practices, teams of providers will need to coalesce to provide call coverage and physician satisfaction. These practices will need to embed physicians, nurse practitioners and physician assistants. Telehealth services can provide significant support to these practices using models such as the University of Iowa tele-emergency medicine program, radiology support and other consultant services.
- Access to specialty care needs to be regionalized within the state through creation of a small number of large multispecialty clinics with hospital capabilities for services such as labor and delivery and secondary level specialty care. From these large hubs, specialty physicians can reach out to smaller communities through visiting consultant clinics and telehealth. Concurrent with expansion of hub and spoke systems, communities may need to consider creation of transportation options for elderly and less able patients. One could consider creation of 4-6 multispecialty clinics that are strategically located within driving distance of large hospital-based systems. The large hospital-based systems could provide sources for some subspecialty visiting physicians that practice predominantly in a large health system, but travel to the multispecialty clinics on a routine basis. Other subspecialty physicians will likely reside in the community where the large multispecialty clinics are located.
- Tertiary and quaternary levels of health care should remain in large health systems.
- Improvements in Medicare and Medicaid reimbursement levels will make Iowa more competitive for physician practice.
- Loan repayment programs can influence job decisions. Expanding the number of Primary Care Rural Iowa Loan repayment recipients for Iowa medical school graduates locating to rural practice would be beneficial along with expanding the eligible specialties to include obstetrics and gynecology within the qualifying criteria.
- Health care is increasingly moving to digital platforms. Telehealth payment parity needs to be considered. This will also require investments in broadband technology throughout the state.

- Iowa has an increasing number of international medical graduates practicing in the state. There are opportunities to expand the Conrad 30 J-1 Visa Waiver Program to encourage physicians to practice in shortage specialties and underserved communities.
- Tax incentives similar to Tax Increment Financing for physicians beginning a practice in rural Iowa could be established. Physician practices are a proven economic stimulus to the community. Tax credits or other financial incentives could also support expansion of visiting consultant clinics to rural Iowa communities and family medicine physicians who perform obstetrical care in rural counties to cover the additional liability insurance costs of practicing OB.
- Malpractice tort reform should to be explored to improve the practice environment in Iowa. In a similar fashion, malpractice coverage for resident physicians in community programs is also becoming an issue. Besides being extraordinarily expensive, purchase of these policies that cover resident physicians is becoming more difficult to procure. New options to cover malpractice for resident physicians in community-based residency programs need to be explored.

BACKGROUND

This report is the result of legislation from the General Assembly of the State of Iowa signed by Governor Kim Reynolds on May 1, 2019. The legislation is House File 532, an act relating to the physician workforce in the state including the awarding of medical residency positions in the state.

Within Section 4 of this act (Physician Workforce Study) is a request for “the University of Iowa Carver College of Medicine to conduct a study regarding the state’s workforce challenges related to the recruitment and retention of primary and specialty care physicians. The study shall include, at a minimum, an examination of current physician workforce, the identification of projected physician workforce shortages by region of the state, and an analysis of the availability of residency positions, and shall specifically emphasize the recruitment and retention of physicians in rural Iowa. The University of Iowa Carver College of Medicine shall submit a report of the findings of the study and policy recommendations to address physician workforce needs to the governor and the general assembly by January 15, 2020.”

This report relies on data from the Iowa Health Professions Inventory. Iowa is recognized as the leader in the country for having a system that continuously inventory major categories of the health professions workforce, including the physician workforce. A portion of the Inventory, the Iowa Physician Information System has tracked Iowa’s physician population for the past 42 years, allowing the ability to observe trends and forecast physician supply based on historical data. The data system was established by the Office of Statewide Clinical Education Programs (OSCEP) at the University of Iowa Carver College of Medicine in 1977. OSCEP continues to operate the database today.

The database contains more than 150 fields of information from a range of sources. Examples of data fields include degree, address, county, gender, professional activity, birth date, medical college, residency and fellowship training information, specialty certifications, and other information. It accounts for all allopathic and osteopathic physicians. The Iowa Physician Information system has been used to characterize the population, monitor trends in the workforce, and to some extent predict changes in the supply of physicians.

The tracking system was the principal source of the data analyzed for the development of this report. The benchmark date of December 31, 2018 was the effective date for most of the data examined for this report. Benchmarking occurs at the end of the calendar year, so December 2018 was the most recent complete year of tracking.

Key contributors to this report include:

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A special thank you to the University of Iowa Carver College of Medicine Task Force that convened in June 2006 and created a Report on the Iowa Physician Workforce. Much of that work created the template for this report and this 2019 team has been able to utilize some of that 2007 report to be updated in a similar format.

The Iowa Medical Society assembled a physician workforce stakeholder meeting on October 23, 2019 that included 43 representatives from Iowa health systems, Des Moines University, University of Iowa, physician recruiters, government representatives and others from across the state. Their input provided important content and context for this report.

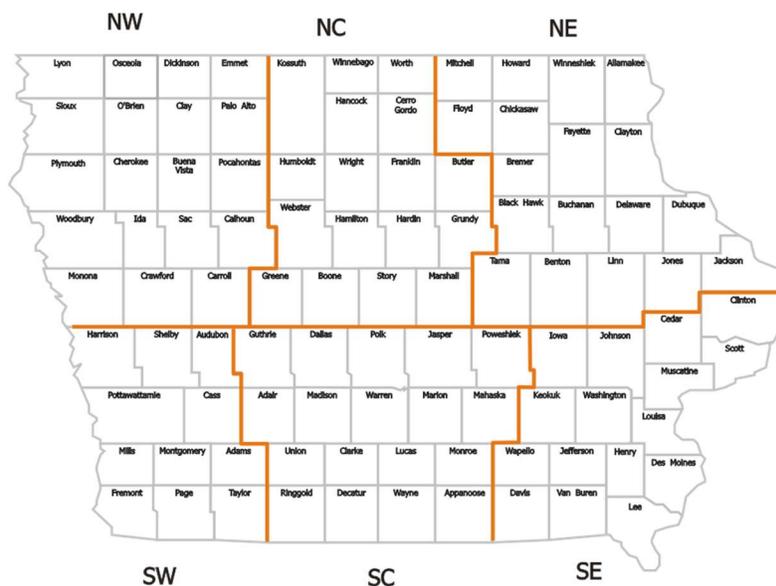
CONTEXT

There are many factual considerations and understandings that provide important context to consider, such as:

- The quality of health care in Iowa is very good relative to other states. According to a 2019 report by the Commonwealth Fund, (Radley, et al, 2019), Iowa ranks #8 of 51 on state health system performance and according to the Iowa Medical Society (2019), Iowa ranks number two in the nation for the quality of health care.
- The largest impacts upon physician demand are an increase in the population being served and the aging of the U.S. population (Association of American Medical Colleges, 2019).
- Iowa's aging population will alter the demand and utilization of physician services. It is generally understood that the elderly need and consume more medical services than younger adults and adolescents. Given Iowa's aging population, it is reasonable to expect its physician supply requirement to increase as the population ages (Robert Graham Center, 2013). According to the State Data Center of Iowa and the Iowa Department of Aging (May 2018), those 65 and older number 514,215 individuals or 16.4% of all Iowans. This percentage placed Iowa 16th in the percentage of population age 65 and older. This percentage is projected to grow.
- The Iowa physician workforce is faced with generally unfavorable conditions due to the relatively low level of reimbursement for their services. This is particularly true in the case of public payers. While unfavorable payment schedules are not limited to Iowa, it is noteworthy, as previously cited, that Iowa ranks 80th out of 89 Medicare payment localities (Iowa Medical Society, 2019).
- Iowa is considered a rural state. For purposes of this study with physician workforce, we have utilized the Rural Urban Continuum Codes and modified them for this study. Based upon this dataset, OSCEP defines eleven counties in Iowa as urban and containing 54% of the population of Iowa. The counties defined as urban were, Polk, Story, Dallas, Warren, Woodbury, Pottawattamie, Blackhawk, Dubuque, Scott, Linn and Johnson. The other 88 counties were rural with 46% of the population.
- Attracting health professionals to the rural Midwest, including much of Iowa, is a continuing challenge. This reality is likely explained, at least in part, by the two previous contextual points on reimbursement and rurality. Geographic location is also a significant contributor to this challenge. Thus, when contemplating new professional recruitment and retention strategies, or when evaluating strategies currently in use, it is important to recognize that Iowa faces a greater challenge than many other states.
- Access to care has dimensions beyond merely the supply of providers, including the ability to pay through health insurance or out-of-pocket, transportation, and cultural considerations. Having an adequate supply of physicians and other providers ideally distributed across Iowa would not resolve all health service access issues in the current health care system. Remaining to be addressed are affordability of service, transportation issues, access to broadband and telemedicine opportunities and cultural influences that affect access in a diverse population.

- Physicians do not just direct how the healthcare dollar is spent. They also create a massive amount of economic activity. According to the American Medical Association’s (January 2018) report “The National Economic Impact of Physicians”, the combined economic output of office-based physicians in the U.S. is \$2.3 trillion, while each office-based physician generates over \$3.1 million in economic output and supports an average of 17 jobs. The economic role physicians play in healthcare is likely to keep them in high demand and ensure that they are an integral part of the growth in healthcare jobs.
- Hospital closures have become a national trend and Iowa has particular challenges. As rural populations decline and the number of individuals seeking healthcare services declines, it becomes more economically challenging to maintain the existing healthcare system in rural Iowa. The population in the 88 rural counties within Iowa declined over the last forty years from 57% residing in the 88 rural counties to 46% in 2018. This decline is projected to continue in both number and percentage of Iowa’s total population. Although no hospitals have closed within Iowa over the past ten years, there have been numerous obstetrical delivery unit closures, which is a sign of distress for these rural hospitals. Nationally, between 2010 and 2019, 118 rural hospitals closed (University of North Carolina, 2019). A number of rural hospitals in Iowa are under financial distress that may lead to closure, which would result in further limiting access to health care for those communities.
- The Office of Statewide Clinical Education Programs for many years has utilized a definition of regions within Iowa. The map below breaks the state into six regions of Northwest, North Central, Northeast, Southwest, South Central and Southeast.

IOWA REGIONS



CAVEATS

Any discussion of physician supply and future workforce requirements would be incomplete if it failed to acknowledge several caveats. Particular considerations that must be acknowledged are:

- (1) Health Care System Reform: This report is based upon the existing health care delivery system including Medicaid expansion for the state of Iowa and the presence of the Affordable Care Act. If Iowa or the nation were to effect health care system reform, estimates of physician supply requirements would almost certainly differ from those that many experts are projecting today.
- (2) Practice Feasibility: In rural communities, there is often an expressed desire, and sometimes an effort, to attract specialists other than family medicine physicians to rural hospital communities. While successful specialist recruitment can sometimes be accomplished in some rural settings, typically the outcome is negative or a short-term success. The reason is related to practice feasibility and the need to achieve a certain “critical mass” in order for recruitment, and more importantly retention, to be successful.

The feasibility of a medical practice in a given specialty must take multiple considerations into account. First, the patient base must be financially sufficient to support a new practitioner at a level competitive with other opportunities. Next, the practice content (i.e., types of patient diagnoses and procedures) must be sufficiently balanced and distributed to assure the professional satisfaction of prospective specialists. Finally, there is the all-important factor of call and coverage. If one is to be the only physician in his/her specialty in the community, how will after office hours calls and emergencies be covered so the physician has an acceptable amount of time off? Likewise, how will the practice be covered for periods of vacation, continuing education and personal leave? Call and coverage arrangements improve slightly when there are two or more physicians in the same specialty, but that arrangement usually intensifies concerns in other areas (e.g., practice income and procedure volumes), thus underlining the need for reasonable expectations with regard to recruitment prospects.

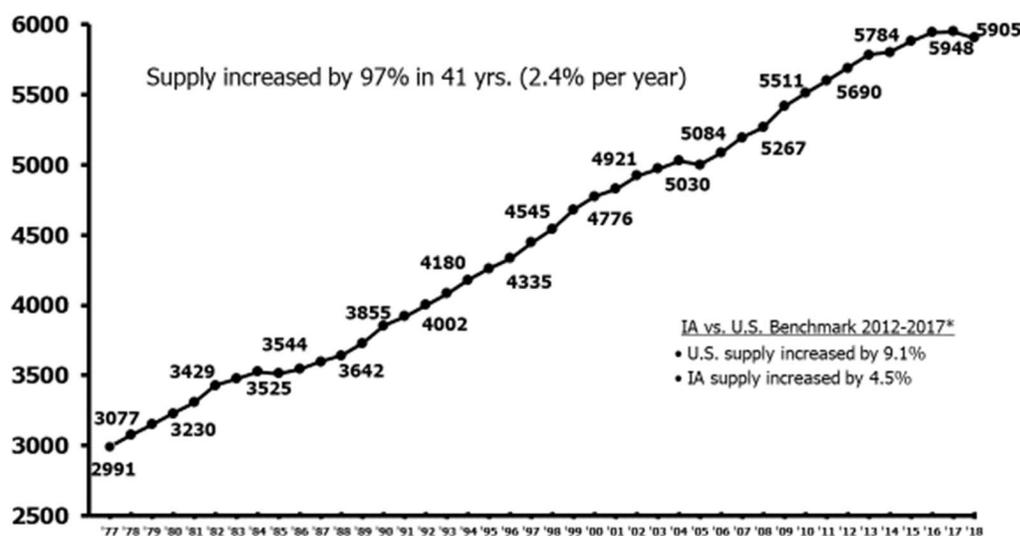
- (3) Physicians-To-100,000 Population (PTP) Ratios: These ratios do not account for travel by patients into or out of a defined geographic region
- (4) Physician Assistants and Advanced Practice Nurses have become significant contributors as providers in patient care throughout Iowa. Although not formally charged with this analysis by the General Assembly, an analysis of the workforce with a focus upon rural areas of Iowa, would be lacking without at least a brief discussion of this component of the provider workforce.
- (5) According to a report by the Association of American Medical Colleges (April 2019), if underserved populations had care utilization patterns like those of populations with fewer access barriers, demand for physicians could rise substantially.

EXAMINATION OF THE CURRENT PHYSICIAN WORKFORCE IN IOWA

Growth of Iowa's Physician Population

From 1977 to 2018, the physician workforce in Iowa has increased from 2,991 to 5,905 (Figure 1). This represents an increase of 97% in 41 years, or an average of 2.4% per year. This compares to a population growth rate of 0.2% per year during these 41 years.

**FIGURE 1 – IOWA PHYSICIAN SUPPLY
1977-2018**



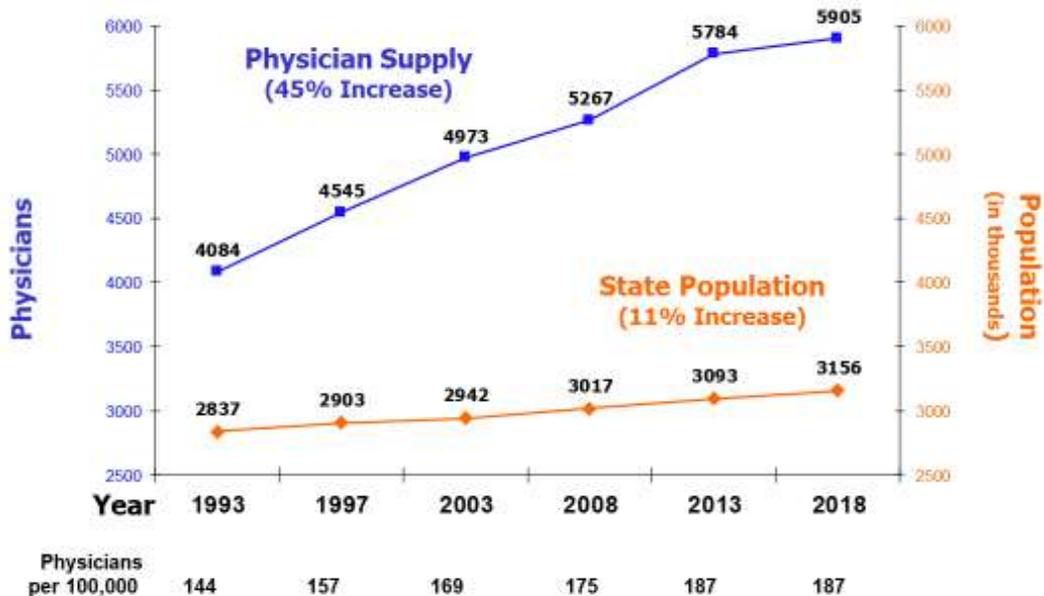
* Source: AAMC, 2018 Physician Specialty Data Book, April 2018 Edition

Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs
UI Carver College of Medicine, May 2019

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Considering the growth of Iowa's physician population in the context of the growth of its population since 1993 is revealing. As a consequence of their different growth rates (45% vs. 11%), the number of physicians per 100,000 population increased from 144 to 187 per 100,000 Iowan. (Figure 2). However, that ratio of 187/100,000 population has remained relatively constant since 2013. Since 2014, the population of Iowa has grown by 2.04% (0.41% per year) and the physician workforce has grown by 2.09% (0.42% per year). Therefore, the physician growth is equivalent to the population growth in Iowa during the past five years (Figure 3).

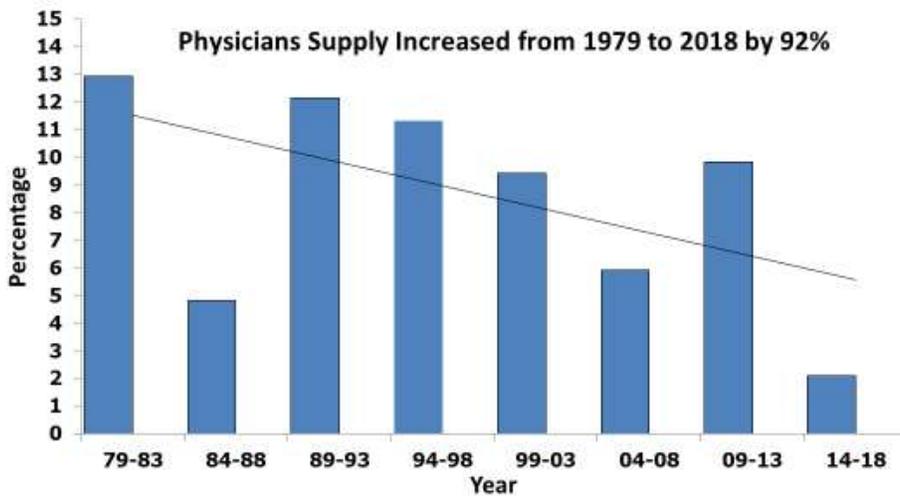
FIGURE 2 – IOWA PHYSICIAN SUPPLY VS POPULATION



Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, May 2019

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FIGURE 3 – IOWA PHYSICIAN SUPPLY FIVE YEAR PERCENTAGE INCREASE 1979-2018



Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, June 2019

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The physician workforce in Iowa has grown by 12% over the past 10 years (Appendix 2). When breaking the changes out by 27 different physician specialties, 23 have had growth with the greatest being hospital medicine with an increase of 278% (a relatively new specialty), followed by pediatrics at 25%. Only four specialties have declined or had no growth. The four include family medicine (-1%), psychiatry (0%), radiology (0%) and pathology (-13%).

Figure 4 demonstrates the growth rates in numbers of physicians, nurse practitioners and physician assistants. Since 2002, physicians increased by 20% (984), nurse practitioners by 191% (1,663) and physician assistants by 94% (474).

**FIGURE 4 – IOWA HEALTH PROFESSIONS INVENTORY
2002-2018**



Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs
UI Carver College of Medicine, June 2019

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Conclusions on growth of Iowa physicians:

- Since 1977, Iowa has nearly doubled the number of physicians practicing in Iowa (97% growth) while the population has grown by 8.3%. This is an annual rate of growth for the physician workforce of 2.4%.
- Since 2014, the physician growth is equivalent to the population growth in Iowa.
- Of all medical specialties, family medicine, psychiatry, radiology and pathology have had decreases in the number of physicians in Iowa.

Physician Entry and Exit from the Iowa Workforce

Each year, the physician workforce in Iowa changes with physicians entering and physicians leaving the state. These changes are accurately tracked each year by OSCEP. During 2018, there was a net loss of 43 physicians (-0.73% reduction), composed of 392 entering practice in Iowa and

435 leaving practice in Iowa. In comparison, 2017 had a net gain of six and over the last ten years, the average net gain was 75 (Figure 5).

FIGURE 5 – PHYSICIAN ENTRY AND EXIT

	<u>2018</u>	<u>Prior Year</u>	<u>Prior Ten-Year Average</u>
Physicians Entering	392	447	408
Physicians Leaving	-435	-441	-333
Net Gain	- 43	+ 6	+ 75

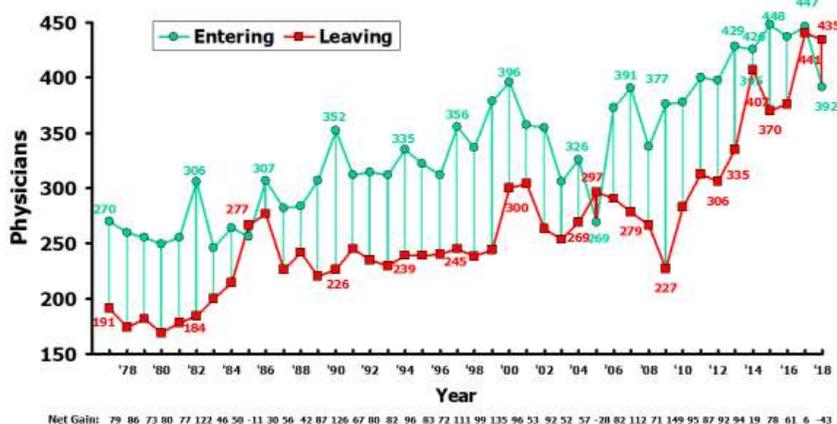
Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, May 2019

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The pattern of physician entry and exit in Iowa over the past 41 years is shown in Figure 6. During this 41-year period, an annual average of 336 new physicians entered Iowa (green line) and 265 physicians left (red line) due to relocation, retirement or other causes of attrition. The difference between these two figures (the number between the two trend lines in Figure 6) represents the annual net change in the total number of physicians practicing in Iowa. Over the past 41 years, the average change is an increase of 71 physicians per year. Since 1977, only three years had net losses. In 1985, there was a net loss of 11, in 2005, the net loss was 28, and in 2018, the net loss was 43 physicians.

This analysis can be done on any physician specialty within Iowa. For example, in psychiatry & child psychiatry, over the last ten years, 176 psychiatrists have been added, but 177 psychiatrists were lost. This results in a net loss of one psychiatrist over 10 years resulting in the current supply of 222 psychiatrists in 2018 compared to 223 in 2008.

**FIGURE 6 – NEXT GAIN/LOSS IN IOWA PHYSICIANS
1977 – 2018**



Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, May 2019

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Conclusions on physician entry and exit from the Iowa workforce

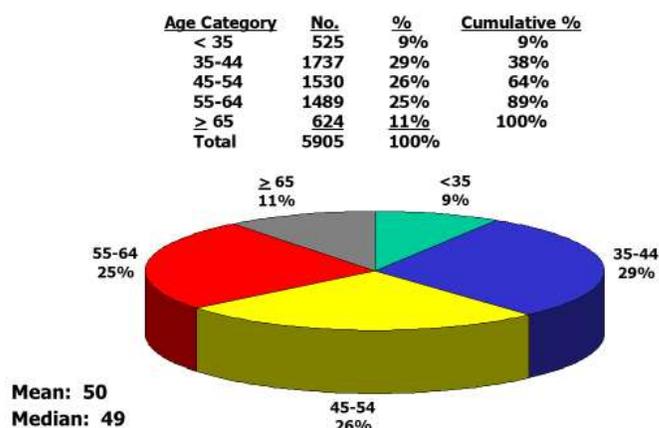
- The annual total movement of physicians in and out of Iowa medical practices is substantial, over the past ten years averaging 741 physicians per year (408 in and 333 out), or approximately 13% of all physicians are either entering or leaving. Retention of even a fraction of those physicians exiting Iowa (333/year) represents a strategic opportunity.
- Over the last 10 years, Iowa experienced an average net gain of 75 physicians per year.
- Over the last 5 years, Iowa experienced an average net gain of 13 physicians per year.
- During 2018, there was a net decline of 43 physicians and 2017 had a net increase of 6.

Physician Demographics

Age

As displayed in Figure 7 below, 36% of Iowa physicians (n = 2,113) are 55 years or older. This compares favorably to national data of 42% of physicians over age 55. The distribution of physician ages in Iowa is also relatively equal, so that as one group ages, there is a comparable number of physicians to fill in for that age cohort. Physician age is correlated with retirement probability and annual hours worked.

**FIGURE 7 – AGE DISTRIBUTION OF IOWA PHYSICIANS
2018**



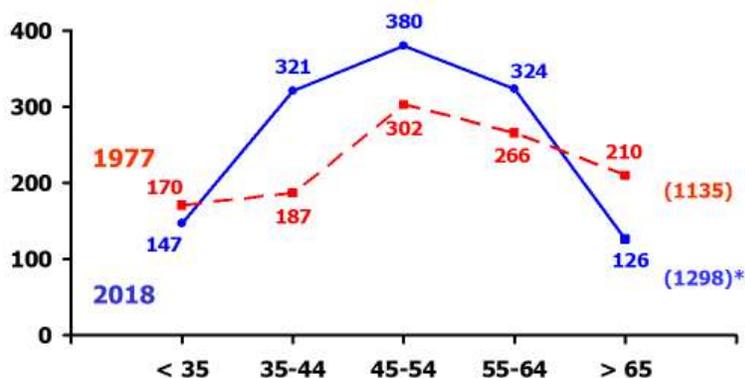
Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, May 2019

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According to a study by the Association of American Medical Colleges (2017), approximately 17% of all physicians are under the age of 40. The Iowa physician workforce under the age of 40 is 18.8% (OSCEP data). Both ends of the age groups place Iowa in a relatively favorable position for the physician population, ranking 39th (higher is better) out of 50 states.

The distribution of physician ages varies across specialties and varies over time within a given specialty. For example, in 1977, 42% of Iowa's family physicians were age 55 or over whereas in 2018, 35% of the Iowa family medicine physicians were in that age range (Figure 8). The shift reduced the mean and median ages of Iowa's family physicians by two and three years, respectively. This is a favorable trend for the age of family physicians in Iowa.

**FIGURE 8 – IOWA FAMILY PHYSICIANS
AGE DISTRIBUTION FOR 1977 AND 2018**



*Family Medicine (specialty id=000), including 42 hospitalists

• 2018 Mean: 49 Median: 49

• 1977 Mean: 51 Median: 52

Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs,
UI Carver College of Medicine, May 2019

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The data in Figure 9 confirms that rural physicians in total are older than their urban counterparts. When looking at key specialties, family medicine is equal in age at 49 in rural and urban, otherwise, all other specialties are older in rural areas. General pediatrics has the greatest age difference with rural pediatricians 7 years older than urban practicing pediatricians.

FIGURE 9 – AVERAGE AGE OF RURAL VS URBAN PHYSICIANS

Specialty	Average Age of Rural Physicians	Average Age of Urban Physicians
All Physicians	51	49
Emergency Medicine	50	47
Family Medicine	49	49
General Internal Medicine	51	47
General Pediatrics	52	45
General Surgery	52	50
Hospital Medicine	45	41
Obstetricians & Gynecologists	52	47
Psychiatrists	54	53

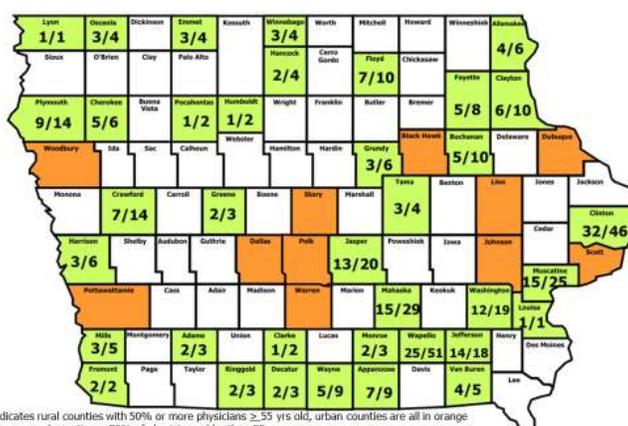
The age analysis by region (Figure 10) demonstrates that the Northwest region of Iowa has the highest percentage of physicians over the age of 55 at 41%. On the other hand, the lowest percentage of physicians over 55 years old is in the Northeast and South Central regions at 34%. The highest percentage of physicians under the age of 45 is the North Central region at 40%. The Northwest region has the lowest percentage of physicians under the age of 45 at 33% followed closely by the Southwest region at 34% (Appendix 3 for age frequency by region).

FIGURE 10 – AGE ANALYSIS BY REGION

	Northwest Region	North Central Region	Northeast Region	Southwest Region	South Central Region	Southeast Region
<35	9%	9%	10%	8%	9%	8%
35-44	24%	31%	29%	26%	30%	30%
45-54	26%	22%	27%	29%	26%	26%
55-64	29%	28%	24%	27%	24%	25%
65 & >	12%	10%	10%	10%	10%	11%
Totals	100%	100%	100%	100%	100%	100%

The analysis of counties in which 50% of all physicians are greater than or equal to 55 (Figure 11), displays 37 of 99 counties with this concerning trend. All of these are rural counties. This means that over the next decade, these rural counties will likely lose at least half of their physician workforce. When broken out into six regions, the Southeast region has the highest percentage with 7 of 16 (44%) counties facing this concern compared to the North Central region having 5 of 17 counties (32%). The southernmost counties have 15 of the 37 counties at retirement risk for their physician workforce.

**FIGURE 11 – DISTRIBUTION OF ALL PHYSICIANS
COUNTIES WITH 50% OF PHYSICIANS > 55 YEARS OLD*
2018**

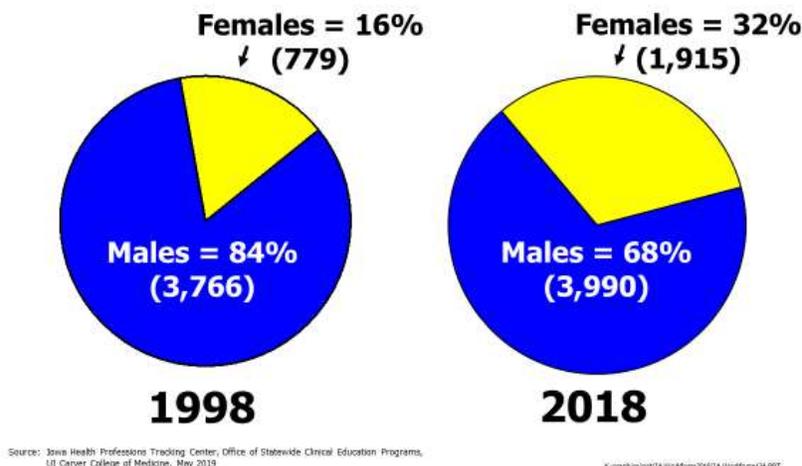


Excluded from our urban classification due to > 50% rural population: Benton, Bremer, Grundy, Guthrie, Harrison, Jones, Madison, Mills, Plymouth, & Washington, counties

Gender

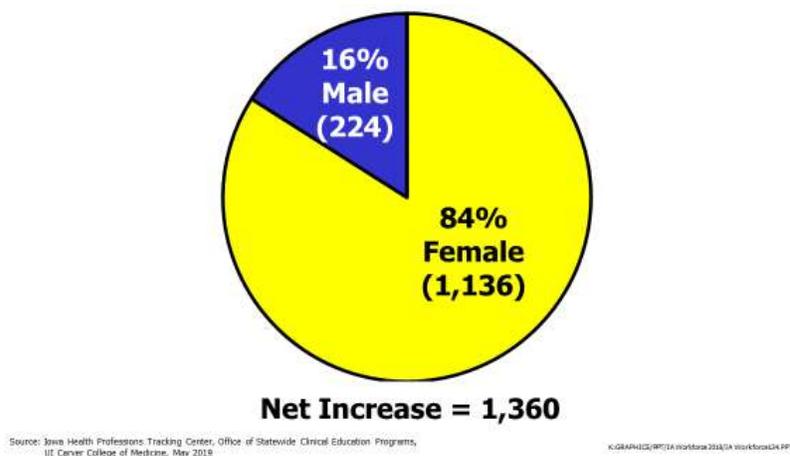
An increasingly important demographic consideration for physician workforce analysis is gender. Today, the number of women entering careers in medicine is the same as the number of males. Therefore, the ratio of women-to-men in the physician population is increasing annually. In 1998, 16% of Iowa's physicians were women. Since then, the percentage has doubled to 32% (Figure 12).

**FIGURE 12 – IOWA PHYSICIAN POPULATION
GENDER**



This increase is even more noteworthy when considered in the context of the overall increase in the number of Iowa physicians during the same period. Fully 84% (1,136) of the total net gain in Iowa physicians (1,360) from 1998 through 2018 were female (Figure 13).

**FIGURE 13 – NET GROWTH IN IOWA PHYSICIAN POPULATION
MALE VS FEMALE
1998 - 2018**



According to U.S. Department of Health and Human Services Health Resources and Services Administration (October 2006), because work and retirement patterns differ systematically for male and female physicians, the increasing proportion of physicians who are female has implications for the overall supply of physician services.

Nationally, female physicians are more likely than their male counterparts to choose non-surgical specialties and to spend fewer hour per year providing patient care. They are also less likely to work in rural areas, and they tend to retire slightly earlier (HRSA, October 2006).

In Iowa, 21% of female physicians (Figure 14) work in rural counties versus 25% male physicians and female physicians have a greater preference for the primary care specialties of family medicine, internal medicine and general pediatrics (Figure 15). Family medicine is the most common specialty of both genders. General pediatrics and OB-Gyn are more commonly practiced by females compared to males. Additionally, in Iowa for 2018, the average age of female physicians retiring was 65 and males retired at an average age of 67.

FIGURE 14 - RURAL-URBAN GENDER PREFERENCES

Gender	Rural #	Rural %	Urban #	Urban %
Female	405	21%	1,510	79%
Male	978	25%	3,012	75%

FIGURE 15 - TOP TEN SPECIALTY PREFERENCES BY GENDER

Top ten specialty preference of females	# of females	% of females	Top ten specialty preference of males	# of males	% of males
Total all specialties	1,915		Total all specialties	3,990	
1. Family Medicine	499	26%	1. Family Medicine	799	20%
2. Internal Medicine	209	11%	2. Internal Medicine	314	8%
3. General Pediatrics	184	10%	3. Emergency Med.	280	7%
4. OB-Gyn	151	8%	4. Anesthesiology	237	6%
5. Anesthesiology	69	4%	5. Orthopedic Surgery	199	5%
6. Psychiatry	64	3%	6. General Surgery	178	4%
7. General Surgery	41	2%	7. Radiology	170	4%
8. Ophthalmology	36	2%	8. Cardiology	161	4%
9. Radiology	34	2%	9. Psychiatry	124	3%
10. Pathology	33	2%	10. General Pediatrics	112	3%

Work Hours

According to a report from the Association of American Medical Colleges (2019) over the past decade, physicians of all ages tend to work fewer hours. The decline in hours worked is particularly large when comparing recent hours worked patterns of younger physicians relative to physicians of a similar age a decade ago. Published research attributes parts of this decline in work hours to high rates of physician burnout and a growing proportion of physicians who are employed by a hospital

system or clinic rather than being self-employed. A Merritt Hawkins survey (2018), indicates that employed physicians see 12% fewer patients per day than independent physicians.

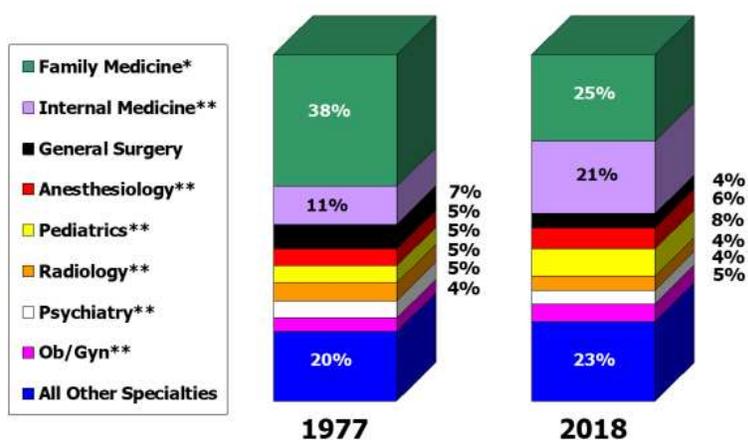
Based upon data in the Iowa Physician Information System, the legal arrangement for physicians practicing in Iowa has shifted dramatically. Currently, 42% of physicians (2,492 physicians) are employed by an integrated health system, which compares to 24% (857 physicians) 30 years ago. This contributes to greater physician movement when there is not an “ownership” position by the physician as well as lower levels of production.

Specialty Mix

Another important demographic measure is the percentage of physicians in primary care versus non-primary care. Primary care typically includes family medicine, general internal medical and general pediatrics. One of the reasons that primary care is in high demand is the evolution of alternative delivery systems of care with a focus upon prevention, quality payments and care coordination not just for individuals but for large patient groups. In the population health model, primary care physician led teams coordinate care for defined populations, such as blocks of Medicare patients, under a global payment model where the health system (and, increasingly, its physicians) assume risk. Today, the model is being implemented through a growing number of accountable care organizations (ACOs), large medical groups, hospital systems and major employers.

The specialty mix of Iowa physicians reflects a trend toward more specialist physicians and fewer primary care physicians as a percentage of all physicians (Figure 16). The percentage of primary care physicians has remained relatively stable when combining the percentages of internal medicine, pediatrics and family medicine, but there has been a decline in family medicine physicians as a whole. However, many of the pediatricians and internal medicine physicians noted in this graph are practicing within subspecialties.

FIGURE 16 – SPECIALTY MIX OF IOWA PHYSICIANS



*Includes residency-trained FM practicing Emergency Medicine

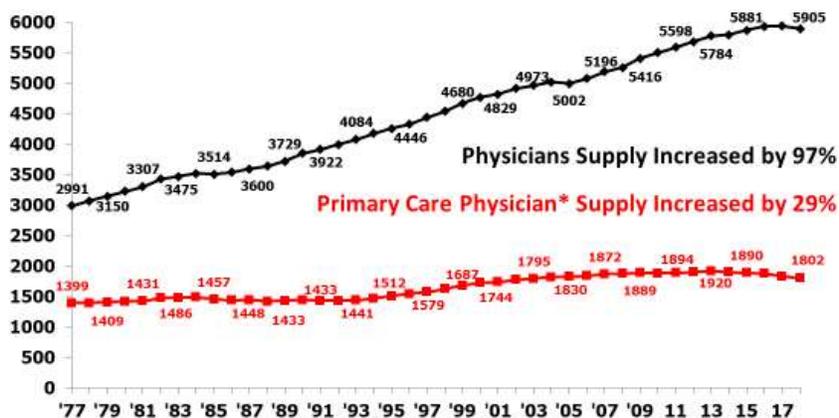
**Includes subspecialties

Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine
Iowa Health Professions Tracking Center, May 2019

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Figures 17 and 18 graphically display the flat growth rate of primary care physicians since 1977 relative to all physicians and the substantial growth of non-primary care physicians during that same period of time.

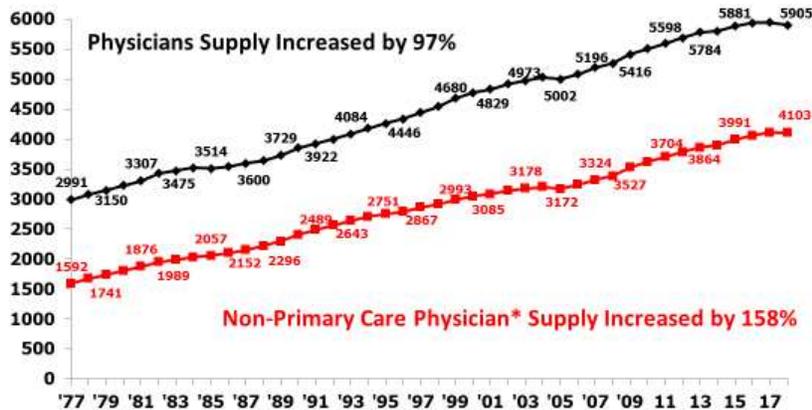
**FIGURE 17 – IOWA PHYSICIAN SUPPLY
ALL PHYSICIANS VS PRIMARY CARE PHYSICIANS
1977 – 2018**



*Primary Care: Family Medicine, Emergency Medicine with FM Residency, General Internal Medicine, General Pediatrics, less Administration and Hospitalists

Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs
UI Carver College of Medicine, June 2019

**FIGURE 18 – IOWA PHYSICIAN SUPPLY
ALL PHYSICIANS VS NON-PRIMARY CARE PHYSICIANS
1977 – 2018**



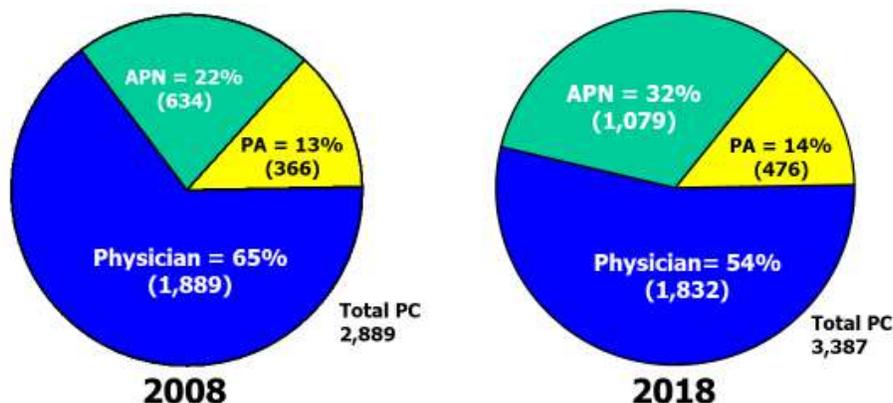
*Non-Primary Care: All physicians including Hospitalists and Administration, less Family Medicine, General Internal Medicine, General Pediatrics,

Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs
UI Carver College of Medicine, June 2019

The Mix of Primary Care Providers in Iowa

It is important to recognize that the face of primary care in Iowa is changing. Currently, only 54% of the primary care providers are physicians compared to 65% in 2008 (Figure 19). Rural communities have filled many of their primary care positions with nurse practitioners and physician assistants in lieu of primary care physicians.

**FIGURE 19 – IOWA PRIMARY CARE* WORKFORCE
PHYSICIAN – APN - PA
2008 VS 2018**



***Primary Care – less Hospitalists & Administration**
Physicians – Family Medicine, General Internal Medicine, & General Pediatrics
Physician Assistants – Family Medicine, General Internal Medicine, & General Pediatrics
Advanced Practice Nurses – ANP, FNP, & PNP for 2008 vs. Specialty designation for 2018

Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, July 2019

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Conclusions on age, gender, work hours and specialty mix of the Iowa physician workforce:

- The average age of Iowa's overall physician population is younger than that of the nation's physician workforce and are evenly distributed in the age categories.
- Women make up an increasing proportion of the physician workforce in Iowa.
- Women have a slightly higher predilection for practicing in urban counties.
- Physicians of all ages are working fewer hours, particularly when compared to physicians a decade ago. This is attributed to high rates of physician burnout and a growing proportion of physicians who are employed by a health care system.
- Specialists have grown at a much higher rate than primary care physicians in Iowa.
- Physician assistants and nurse practitioners are 46% of the primary care workforce.

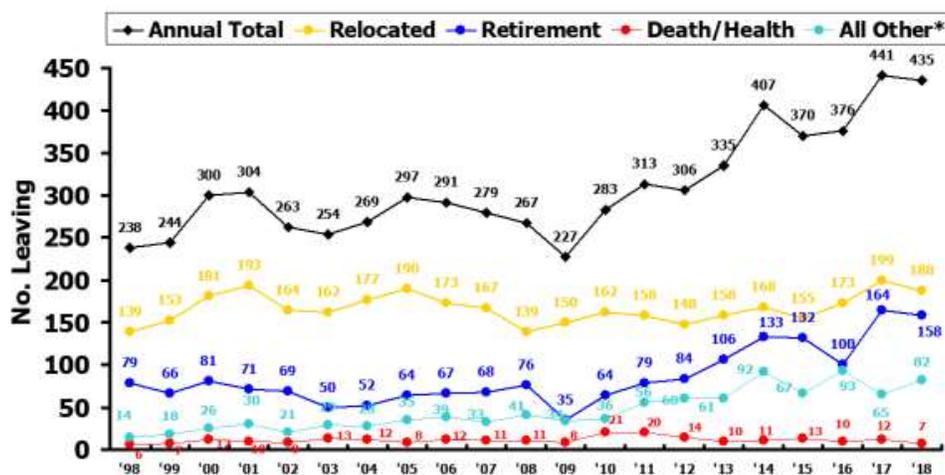
Attrition

The average annual rate of attrition as a percentage of the total number of Iowa physicians has remained fairly constant at approximately 6% in each of the 10-year periods since 1977. Over time,

the principal causes of physician departure from Iowa's workforce are relocation and retirement in that order. Health, further training, death, and other reasons for practice termination account for relatively small fractions of annual attrition.

Figure 20 displays the pattern of attrition in the Iowa physician population from 1998 through 2018. The black line represents the *total* net loss of physicians annually for the 20-year period. The yellow line shows the annual number of physicians leaving Iowa practices and relocating to other states. In 2018, relocation accounted for 43% of the total attrition.

**FIGURE 20 – PHYSICIANS LEAVING IOWA PRACTICES
1998 – 2018
-ALL SPECIALTIES-**



*All other categories: Locum Tenens, Inactive, Loss of License, Military, Training, and Unknown

Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine
Iowa Health Professions Tracking Center, May 2019

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Physician retirements (blue line) have been increasing during the past nine years, with the average retirement age being 67 years old. In 2018, retirements accounted for 36% (158) of the 435 physicians leaving the Iowa workforce. Annually, 106 new physicians (10-year average) must enter practice in Iowa to replace those physicians expected to retire.

Death and disability (red line) account for the loss of 6-21 physicians per year (2-7%).

Miscellaneous causes of attrition (aqua line) have been increasing in recent years. These reasons include leaving practice for inactive status, further training, locum tenens work, military service and disciplinary actions.

Reasons for relocation

The two factors that contribute to the net gain of physicians each year are the number of new physicians entering practice in the state and the number leaving practice for whatever reasons. In a competitive recruitment market, it is just as important to have effective retention and succession strategies as it is to have recruitment strategies, especially if the number of physicians relocating

their practices to other states is high. From Iowa's perspective, this means being able to identify the precise reasons for practice termination.

A study was conducted in September 2019 to identify the reasons for relocation. The Carver College of Medicine sent a questionnaire from the Vice President for Medical Affairs and Dean of the Carver College of Medicine, Brooks Jackson, M.D., to all physicians who relocated during 2017 and 2018 that could be located in their new practice outside of Iowa. This survey had a sample size of 370 physicians with a response rate of 27% (100 physicians). Of all specialties who had physicians relocate during 2017 and 2018, family medicine had the highest number with 53 (Appendix 4), i.e., 4% of the total number of family medicine physicians in Iowa. The highest percentage of relocation based upon the number of physicians within that specialty was nephrology (18%) followed by hospital medicine (10%) and radiology (9%).

The findings of the 2019 relocation study are that practice factors are the most significant factor for relocation. The second most important element was family factors followed by geographic/community factors in that order (Figure 21).

**FIGURE 21 – 2017-2018 SURVEY RESULTS
FACTORS CAUSING RELOCATION
100 RESPONDENTS**

<u>Factor Categories*</u>	<u>No. of Respondents Citing Factor Category</u>	<u>% of Respondents</u>
• Practice Factors	77	77%
• Family Factors	66	66%
• Geographic/ Community Factors	69	69%
•Fantastic Academic Package	21	21%

* Respondents could select more than one factor in each category.

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The most important element cited for relocation within practice factors was the attitudes, values and relationships within the workplace, followed in importance by salary/income, work schedule and call coverage schedule (Figure 22). Knowing these elements can help focus strategies to impact the relocation rate of physicians. Recognizing the importance of interpersonal relationships as one of the most important elements of retention should drive strategies for improvement in this metric.

FIGURE 22 – 2017-2018 SURVEY RESULTS PRACTICE FACTORS

<u>Factors</u>	<u>No. of Citations</u>	<u>As % of All Respondents (100)</u>
• Attitudes/values/relationships within practice	74	74%
• Salary/Income	69	69%
• Work schedule	67	67%
• Call coverage schedule	65	65%
• Other compensation (i.e., benefits, vacation)	59	59%
• Heavy workload	54	54%
• Promotion Opportunity	52	52%
• Career Change	47	47%
• Reimbursement from payers	41	41%

Conclusion: The most frequently cited practice factors were relationships within the practice, income, work schedule and call coverage

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Data was analyzed to determine if there was a difference in relocation rates for rural or urban physicians and if so, which specialties were most likely to relocate. The results of this analysis provide a mixed message. The overall relocation rate was identical with 6% in rural and urban counties. Overall, there were 291 urban relocators and 79 rural relocators.

When evaluating rates by specialty, general surgery had equal rates of relocation between rural and urban counties. Relocation rates for family medicine, OB/Gyn, general internal medicine, diagnostic radiology and cardiology were higher in rural counties than urban counties, while psychiatry, pediatrics, emergency medicine, hospital medicine, anesthesiology and nephrology all had relocation rates that were less in rural counties than urban counties (Appendix 5).

When considering the relocation rates by region, the relocation rates in the South Central region experienced the lowest rate of 5% while all other regions were either 6% or 7% (Appendix 6).

The highest rates of relocation were noted as:

General internal medicine: 33% relocation rate in the Northwest region and 11% in the North Central region.

Hospital medicine: 20% relocation rate in the Northwest region and the Southeast region was 23%.

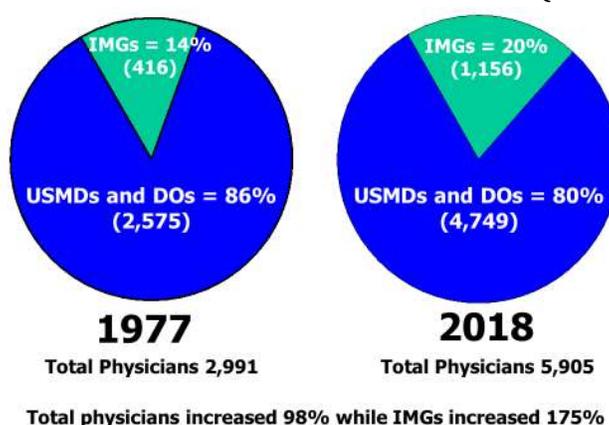
Diagnostic radiology: Northwest region had 17% and North Central region had 19% relocation rates.

Obstetrics and gynecology: Relocation rates of 14% in the North Central region and 18% in the Southwest region.

International medical graduates (IMGs)

International medical graduates (IMGs) are physicians whose medical education occurred in schools outside the U.S. and Canada. They are an important asset in Iowa's health care system contributing substantially to the physician population as well as to medical education and research. The proportion of the Iowa physician workforce that are IMGs has risen from 14% in 1977 to 20% in 2018 (Figure 23). During that period, the total physician population grew from 2,991 physicians to 5,905 physicians or an increase of 2,914 (97%). Of that total increase of 2,914, the number of IMGs increased by 740 which means that IMGs accounted for 25% of the increase in total physicians.

**FIGURE 23 – IOWA PHYSICIAN POPULATION
INTERNATIONAL MEDICAL GRADUATES (IMGs)**



Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine
Iowa Health Professions Tracking Center, May 2019

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For the 10-year period, 2009-2018, IMGs represented, on average, 31% of the physicians entering and 28% of those leaving practices in Iowa. Although IMGs constitute 20% of all Iowa physicians, they are disproportionately represented in both the entry and the exit of the physician workforce.

Conclusions on attrition of Iowa physicians:

- Relocation of Iowa physicians to other states is substantial (average of 166 physicians/year over the last ten years) and it is the principal cause of attrition (43% of the total attrition in 2018).
- The reasons underlying Iowa physician relocation are practice issues, family factors and geographic/community factors. Within the practice issues, the number one reason cited for relocation was “attitudes, values and relationships” followed by salary/income, work schedule and call coverage. Strategies to address these reasons for relocating out of Iowa must be addressed to reduce the export of Iowa physicians.
- 65% of respondents in the relocation study would be open to returning to Iowa to practice.
- 36% of respondents moved to states that were contiguous to Iowa.
- Generally, it appears that relocation is a statewide issue, not focused only in rural or urban counties. However, due to the smaller numbers of physicians in rural counties, relocation or

attrition of any kind creates greater challenges in rural counties as there is less overall physician capacity to tolerate attrition.

- Both the number and percentage of Iowa physicians retiring from practice is increasing with an average age of retirement at 67 years compared to the age of retirement in 2007 was 65. This later retirement age has had a favorable impact on the physician workforce.
- IMGs constitute 20% of the total physician workforce but account for a disproportionate percentage (~30%) of both physicians entering and leaving Iowa.
- The high rate of IMG turnover presents both an opportunity and a challenge for recruitment and retention of this important physician population.

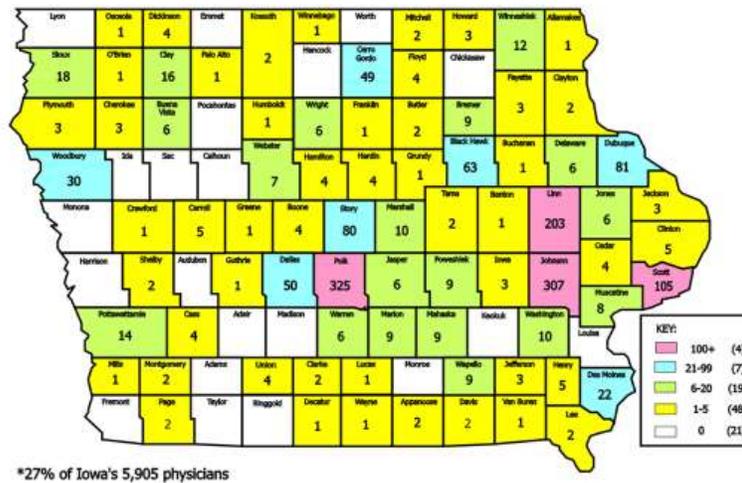
THE TWO MEDICAL SCHOOLS AS A SOURCE OF PHYSICIANS FOR IOWA

Of all the Iowa physicians (5,905) at the end of 2018, 1,601 (27%) are graduates of the University of Iowa Carver College of Medicine (UI CCOM) and 909 (15%) are graduates of Des Moines University (DMU). This equates to a total of 2,510 physicians (42%) (Figure 24) that have graduated from one of the two medical schools in Iowa. The location of these graduates is noted in Figures 25 and 26. The class size of the University of Iowa Carver College of Medicine is 152 and Des Moines University has 218 per class for a total of 370. When graduate medical education (residency and fellowship) experience is combined with undergraduate medical education (medical school), almost 60% of physicians in Iowa had some training in the state.

**FIGURE 24 – IOWA PHYSICIAN WITH MEDICAN EDUCATION/
TRAINING IN STATE OF IOWA
2018**

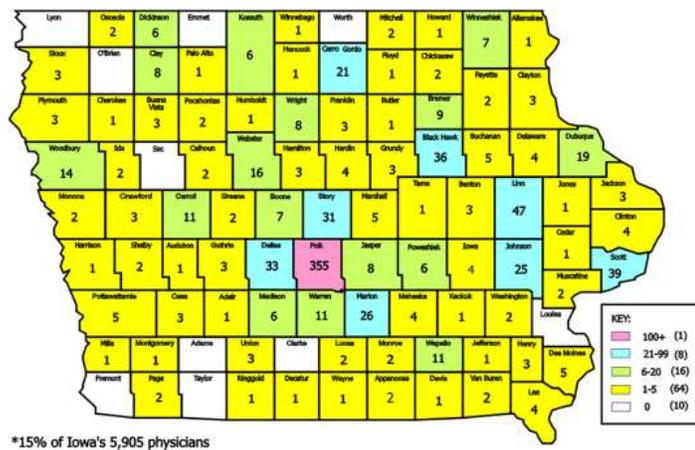
	No.	% of Total	Cumulative %	No.	% of Total
• Physicians w/ IA Med. Ed. Exp.				3371	57.1%
– Medical School (only)	1105	18.7%	18.7%		
– Medical School/Residency	1247	39.8%	24.7 %		
– Medical School, Residency and Fellowship	117	2.0%	41.8%		
– Medical School and Fellowship	41	0.7%	42.5%		
– Residency (only)	602	10.2%	52.7%		
– Residency/Fellowship	134	2.3%	55.0%		
– Fellowship (only)	125	2.1%	57.1%		
Subtotals	3371	57.1%			
• No Iowa Med. Ed. Exp.				2534	42.9%
Total Iowa Physician Population				5905	100.0%

**FIGURE 25 – DISTRIBUTION OF UI MEDICAL GRADUATES (1,601)*
ACTIVE PHYSICIANS
2018**



Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, May 2019

**FIGURE 26 – DISTRIBUTION OF DMU OSTEOPATHIC GRADUATES (909)*
ACTIVE PHYSICIANS
2018**



Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, May 2019

Conclusions on the two medical schools as a source of physicians for Iowa:

- The two medical schools are an important source of physicians to serve the Iowa population making up 42% of the Iowa physician workforce.
- Graduate medical education within the state contributes to an additional 14.6% of the Iowa workforce and can serve as a mechanism to import physicians into the state workforce.

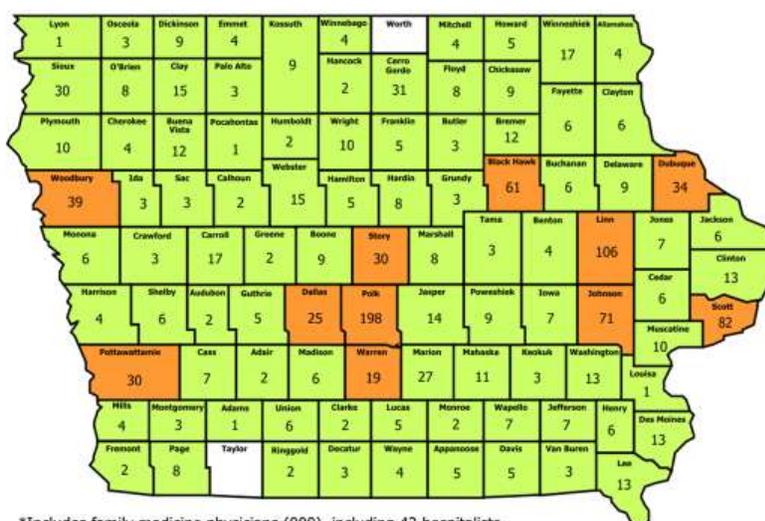
All non-primary care physicians by region

<i>Non Primary Care Physicians (NPCPs)</i>	# of all NPCPs	% of all NPCPs	% of the Iowa population
All of Iowa	4,061	-	-
Northwest Region	202	5%	11%
North Central Region	357	9%	12%
Northeast Region	824	20%	23%
Southwest Region	113	3%	6%
South Central Region	1,105	27%	26%
Southeast Region	1,460	36%	21%
Rural	682	17%	46%
Urban	3,379	83%	54%

Geographic distribution of family medicine physicians

The distribution of family medicine physicians is impacted by the fact that they can be supported in smaller communities due to their wide scope of practice. Forty-six percent of the Iowa population resides in rural counties and 46% (603) of all family medicine physicians practice in these rural counties. The 54% of the population residing in the 11 urban counties are supported by 54% (695) of Iowa's family medicine physicians (Figure 30).

**FIGURE 30 – FAMILY PHYSICIANS (1,298)*
ALL PROFESSIONAL ACTIVITIES**



*Includes family medicine physicians (000), including 42 hospitalists
(22% of Iowa's 5,905 physicians)

Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs,
UI Carver College of Medicine, May 2015

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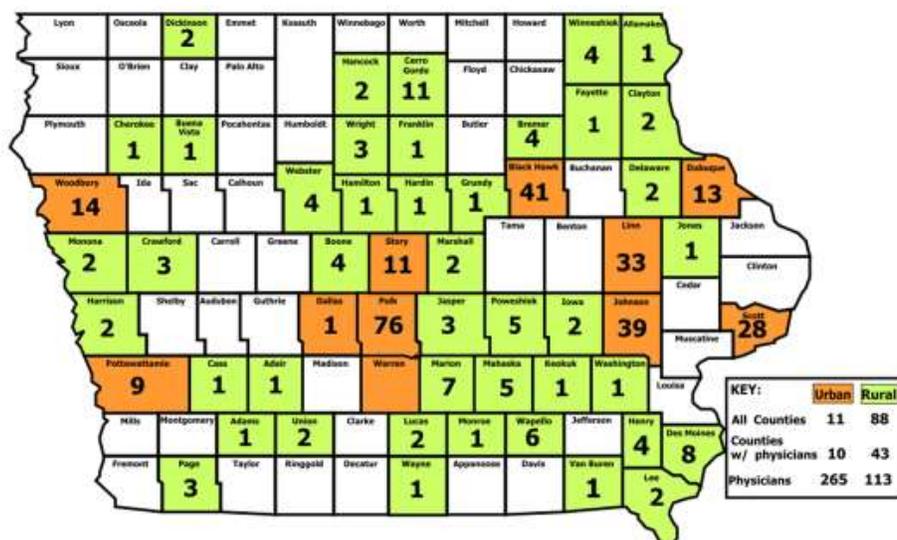
Distribution of family medicine physicians in Iowa by region

FAMILY MEDICINE	Number of FM physicians	% of FM physicians	% of the Iowa population
All of Iowa	1,298	-	-
Northwest Region	173	13%	11%
North Central Region	146	11%	12%
Northeast Region	307	24%	23%
Southwest Region	67	5%	6%
South Central Region	345	27%	26%
Southeast Region	260	20%	21%
Rural	603	46%	46%
Urban	695	54%	54%

Geographic distribution of emergency medicine physicians

Seventy percent (265) of emergency medicine physicians practice in the 11 urban counties and 30% (113) practice in the 88 rural counties (Figure 37).

**FIGURE 37 – DISTRIBUTION OF EMERGENCY MEDICINE (378)
2018**



Excluded from our urban classification due to > 50% rural population: Benton, Bremer, Grundy, Guthrie, Harrison, Jones, Madison, Mills, Plymouth, & Washington, counties

Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, May 2019

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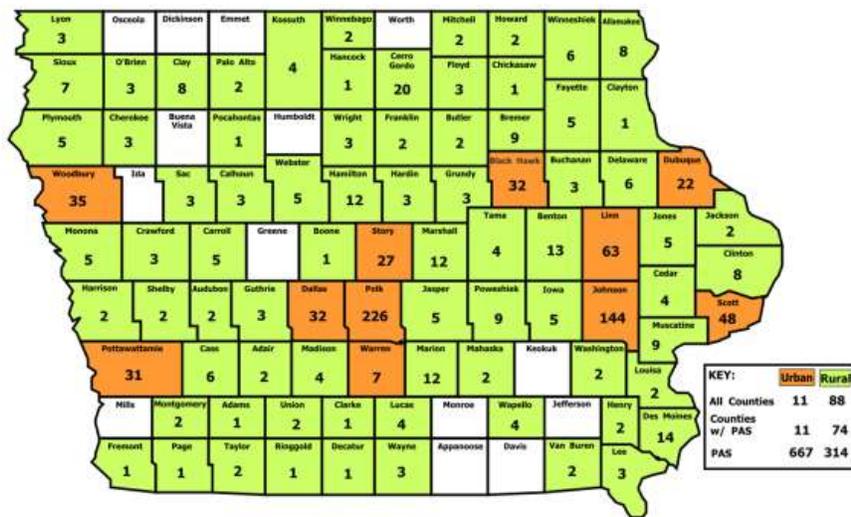
Distribution of emergency medicine physicians in Iowa by region

EMERGENCY MEDICINE (EMPs)	# of EMPs	% of EMPs	% of the Iowa population
All of Iowa	378	-	-
Northwest Region	23	6%	11%
North Central Region	41	11%	12%
Northeast Region	102	27%	23%
Southwest Region	16	4%	6%
South Central Region	104	28%	26%
Southeast Region	92	24%	21%
Rural	113	30%	46%
Urban	265	70%	54%

Geographic distribution of physician assistants

Sixty-eight percent (667) of physician assistants practice in these 11 urban counties and 32% (314) practice in the 88 rural counties (Figure 39).

FIGURE 39 – DISTRIBUTION OF PHYSICIAN ASSISTANTS (981) 2018



Excluded from our urban classification due to > 50% rural population: Benton, Bremer, Grundy, Guthrie, Harrison, Jones, Madison, Mills, Plymouth, & Washington, counties
 Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, July 2019
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Distribution of physician assistants in Iowa by region

PHYSICIAN ASSISTANTS (PAs)	# of PAs	% of PAs	% of the Iowa population
All of Iowa	981	-	-
Northwest Region	86	9%	11%
North Central Region	97	10%	12%
Northeast Region	187	19%	23%
Southwest Region	50	5%	6%
South Central Region	314	32%	26%
Southeast Region	247	25%	21%
Rural	314	32%	46%
Urban	667	68%	54%

Current percentage of specialists in rural and urban counties

Figure 40 compares the rural-urban distribution of all physicians, nurse practitioners and physician assistants in 27 medical specialties. Family medicine has the highest percentage (46%) located in rural counties followed by general surgery (41%). The least rural among these specialties is allergy/immunology (4%), anesthesiology and rheumatology (5%), plastic surgery (6%), infectious diseases and gastroenterology (7%). A higher percentage of nurse practitioners practice in rural counties compared to physician assistants, though state laws defining practice requirements could account for some of the difference.

**FIGURE 40 – 2018 PERCENT OF PHYSICIANS PRACTICING IN RURAL VS URBAN COUNTY
2018**

Specialty	2018 Percent practicing in rural county	2018 Percent practicing in urban county
All physicians	23%	77%
Allergy/Immunology	4%	96%
Anesthesiology	5%	95%
Cardiology	11%	89%
Dermatology	16%	84%
Emergency Medicine	11%	89%
Endocrinology	11%	89%
Family Medicine	46%	54%
Gastroenterology	7%	93%
General Internal Medicine	20%	80%
General Pediatrics	19%	81%
General Surgery	41%	59%
Hematology/Oncology	9%	91%
Hospital Medicine	19%	81%
Infectious Disease	7%	93%
Nephrology	12%	88%
Neurology	11%	89%
Neurosurgery	10%	90%
Obstetrics & Gynecology	27%	73%
Ophthalmology	12%	88%
Orthopedic Surgery	24%	76%
Pathology	10%	90%
Plastic Surgery	6%	94%
Psychiatry	17%	83%
Pulmonology	9%	91%
Radiology	21%	79%
Rheumatology	5%	96%
Urology	22%	78%
All Nurse Practitioners	37%	63%
All Physician Assistants	32%	68%

Further comments on rural-urban distribution of physicians

The population of Iowa has shifted and continues to shift from living in rural counties to urban counties (State Data Center, 2019). In 1978, 57% of the population lived in these 88 rural counties. Forty years later, in 2018, 46% of the population lived in these same 88 rural counties. The Iowa State Data Center projects that by 2040, 43% of the population will reside in these rural counties (Appendix 7).

When analyzing the rural-urban distribution of these medical specialties over time, overall, there is a shift of **all** physicians from rural counties to urban counties. Forty years ago, 37% of all physicians practiced in a rural county. By 2018, 23% of all physicians practice in rural counties (Appendix 8).

When broken out over the last 40 years, for some key specialties serving rural counties, general surgeons have declined from 44% to 41% in 2018 (Appendix 9); psychiatrists from 39% to 17% (Appendix 10) and family medicine has declined from 62% to 46% (Appendix 11). The one exception is the number of OB/Gyns has actually increased from 21% to 27% practicing in rural counties (Appendix 12). Overall, of the 1,383 rural physicians, 603 or 44% are family medicine physicians, demonstrating the importance of family medicine physicians in providing access to health care for rural Iowans.

With a recent focus upon access to mental health care in Iowa, it was noted by Cherry et al. (2018) that although mental health-related office visits are often made to psychiatrists, primary care physicians can serve as the main source of treatment for patients with mental health issues. According to Cherry, nationally, mental health-related visit rates by physician specialty were 693 per 10,000 adults for psychiatrists and 397 per 10,000 adults for primary care physicians. However, in rural areas, primary care physicians serve 54% of mental health patients. Thus, nationally, primary care physicians are the primary source of mental health care to rural populations.

Conclusions for geographic distribution of physicians in Iowa:

- The population of Iowa has shifted from 57% living in 88 rural counties in 1978 to 46% living in these rural counties in 2018. This population shift is expected to continue over the next 30 years based on projections from the state data center.
- A shift of all physicians has occurred over the last forty years from 37% practicing in rural counties in 1978 to 23% in 2018 practicing in rural counties.
- Family medicine continues to be the most widely distributed physician specialty within Iowa, practicing in 97 of the 99 counties. Additionally, 46% of family medicine physicians practice in the 88 rural counties with 46% of the population. Conversely, 54% practice in the 11 rural counties with 54% of the population.
- General surgery is the next highest percentage practicing in rural counties with 41%. The least rural specialties are allergy/immunology, rheumatology and anesthesiology.

Visiting Consultant Clinics

When reviewing the distribution of non-primary care physicians in Iowa, one cannot overlook the presence of visiting consultant clinics as a source of specialist medical care which improves access within rural communities. A Visiting Consultant (VC) Clinic is an arrangement for regular visits to a rural site by a specialist, usually one from a nearby urban area. These clinics are a collaborative effort between a specialty practice and a rural hospital (or clinic) located in communities that are too small to support their own specialist.

In the spring of 2019, the University of Iowa Carver College of Medicine, Office of Statewide Clinical Education Programs conducted a survey of Visiting Consultant Clinics active in Iowa. The results of the survey show that 40 non-primary care specialties participated in VC clinics around the state. These clinic sites occurred in 110 communities. 775 non-primary care physicians or 19% (775 of 4,061 non-primary care physicians) provide their services in these VC clinics and originate from 69 larger cities in and immediately adjacent to Iowa.

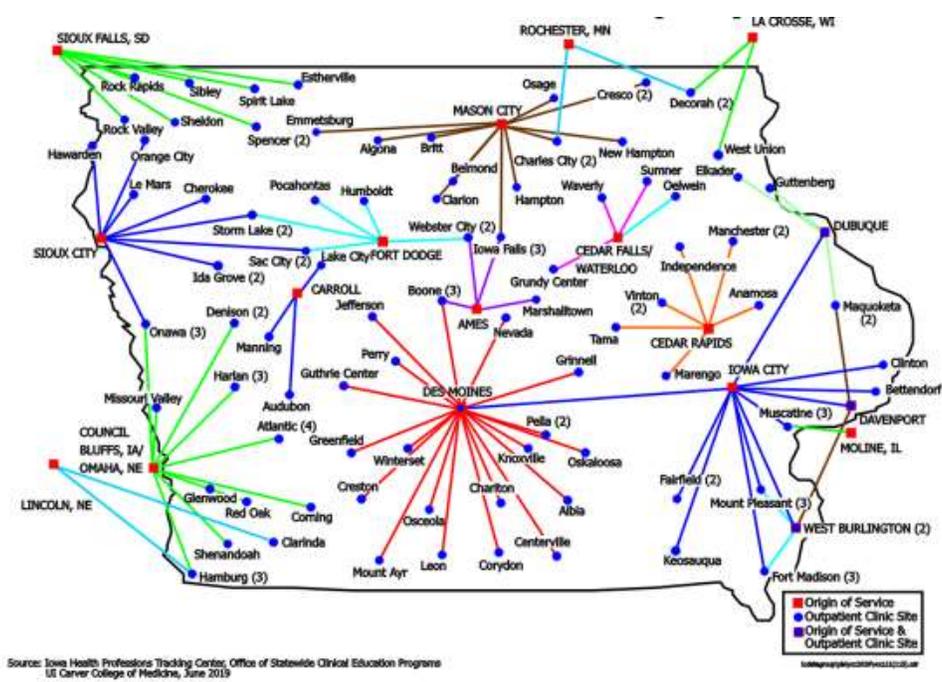
Iowa VCCs occur with different frequencies ranging from “less than once per month” to “4+ per month”. Considering the physician drive time required for VC clinics, it is assumed that VC clinic time is equal to 5 hours per clinic. One can calculate the total number of hours of clinic provided, divide by full time hours of 2080 per year and arrive at 50 additional full-time equivalents (FTEs) were provided through VC clinics within Iowa to serve the rural population. These 50 FTEs are an important and a very significant provision of care to rural communities in Iowa, especially since these clinics are with non-primary care physicians.

An article by Gruca, et al (2018) regarding cardiology VC clinics in Iowa, noted that cardiologists in Iowa and adjoining states have expanded access to cardiology care from 18 counties to 89 counties out of the total 99 counties in Iowa. In these additional 71 counties, each without a full-time cardiologist, VC clinics can accommodate more than 50% of the office visits in the patient’s home county.

The VC clinics broken down by specialties across Iowa, including their corresponding FTE conversion is reported in Appendix 13. Maps for cardiology (Figure 41), orthopedic surgery, medical oncology and general surgery (Appendix 14, 15 and 16) demonstrate the outreach providing specialty medical care to rural communities.

According to an article by Johnston, et al. (December 2019), people living in rural areas have worse health outcomes than their urban counterparts. They found that rural residence was associated with a 40 percent higher preventable hospitalization rate and a 23 percent higher mortality rate, compared to urban residence. Access to specialists accounted for 55 percent and 40 percent of the rural-urban difference in preventable hospitalizations and mortality, respectively. These VC clinics can prove to be a valuable resource for rural Iowans in response to this difference in health outcomes.

**FIGURE 41 – VISITING CONSULTANT CLINICS
CARDIOVASCULAR DISEASE (121)**



Conclusion of Visiting Consultant Clinics:

- Visiting consultant clinics serve as an effective strategy to provide access to specialty physician care in rural communities where the population cannot support a full time specialist.

IDENTIFICATION OF PROJECTED PHYSICIAN WORKFORCE SHORTAGES BY REGION OF THE STATE

Current demand analysis for key specialties in Iowa to identify physician workforce shortages by region:

The definition of a physician shortage is the difference between the demand for physician services and the existing or projected supply of physicians to meet that demand. Because the Iowa Physician Information System has continuously tracked the supply of Iowa physicians and has recorded changes in the physician population, it can be used to forecast future supply with some level of reliability. The demand side is more challenging and controversial. There are multiple sources that may be used to estimate the demand for physician services, thus generating forecasts for shortages.

One approach used for this report was to utilize results from the current OSCEP physician demand studies for selected specialties. This does not cover all physician demand in Iowa or project demand in the future. It does quantify current demand for the primary care physician workforce and selected other specialties. One can gauge demand based upon this history. The number of job vacancies and new opportunities are determined by the staff in OSCEP through contacting every possible employer or practice entity for a given specialty. This technique, used by workforce analysts, accounts for all job openings at the specific point in time of the survey and thereby virtually ensures a 100% response rate.

Physician demand studies have been conducted on an annual basis by staff in OSCEP since 1977 for select medical and surgical specialties. The specialties selected have interest for both urban and rural health care systems. The results of these findings are published, and a booklet (as well as an online version which is continuously updated) is created for each specialty and distributed to each resident physician in the state of Iowa to make them aware of the opportunities within Iowa along with contact information and details. The document is also used when physicians outside of Iowa are seeking a position in Iowa and contact the Carver College of Medicine for assistance. This information has led to numerous residents and other physicians exploring and selecting Iowa sites for their practice.

The other benefit of conducting this demand analysis is to have a longitudinal record of the demand for each specialty. This analysis was completed in August 2019 and included the following specialties: Family Medicine, General Internal Medicine, Hospital Medicine, Psychiatry, Emergency Medicine, General Pediatrics, General Surgery and Obstetrics & Gynecology plus Nurse Practitioner and Physician Assistant positions. Figure 42 summarizes the current demand for each specialty. Within these eight specialties, the statewide demand was 361 physicians. The calculation for primary care physicians shows 195 positions being recruited in Iowa.

FIGURE 42 – SUMMARY OF CURRENT DEMAND FOR SELECT SPECIALTIES

Specialty	Current Demand
Family Medicine	145
General Internal Medicine	34
Pediatrics	16
Total Primary Care Physicians	195
Emergency Medicine	45
General Surgery	17
Hospital Medicine	27
Obstetrics & Gynecology	14
Psychiatry	61
Total Physician Demand (8 specialties)	361
Nurse Practitioners/Physician Assistants/Midwives/CRNAs	150

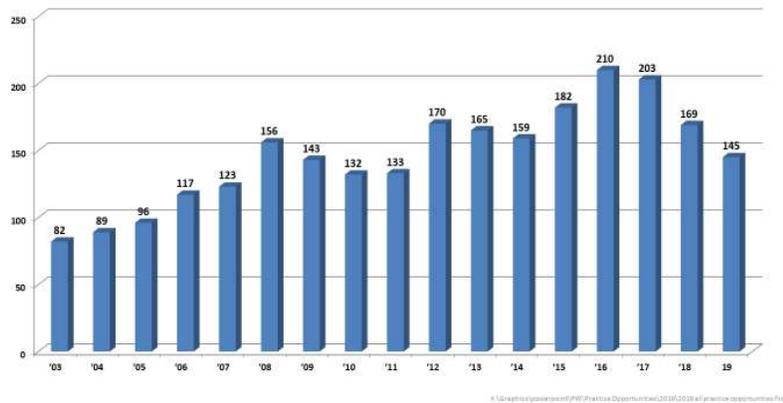
The demand trends over time for key specialties are displayed in the following bar graphs. These describe the shortages by specialty at a given point in time.

Current Demand for Family Medicine

The results of the current and prior demand studies for family medicine physicians are shown in Figure 43. The number of openings rose steadily from 2003 with 82 positions and peaking in 2016 with 210 positions, a 156% increase. However, since 2016 demand declined from 210 to 145 in 2019, a 31% reduction. Although this is the lowest level of demand since 2011, family medicine remains the most highly sought specialty in terms of the number of positions being actively recruited in Iowa.

The map and analytics of the 145 positions show (Appendix 18) Northeast Iowa and Northwest Iowa have the greatest demand with 31 and 30 open positions and Southwest Iowa has the least number with 9. Communities greater than 50,000 population have the greatest demand while only one town under 1,000 in population is seeking a family medicine physician. Hospital proximity is a key driver of demand as 91% (132 positions) of communities actively recruiting family medicine physicians have a hospital within that community.

**FIGURE 43 – FAMILY MEDICINE
2019 PRACTICE OPPORTUNITIES**



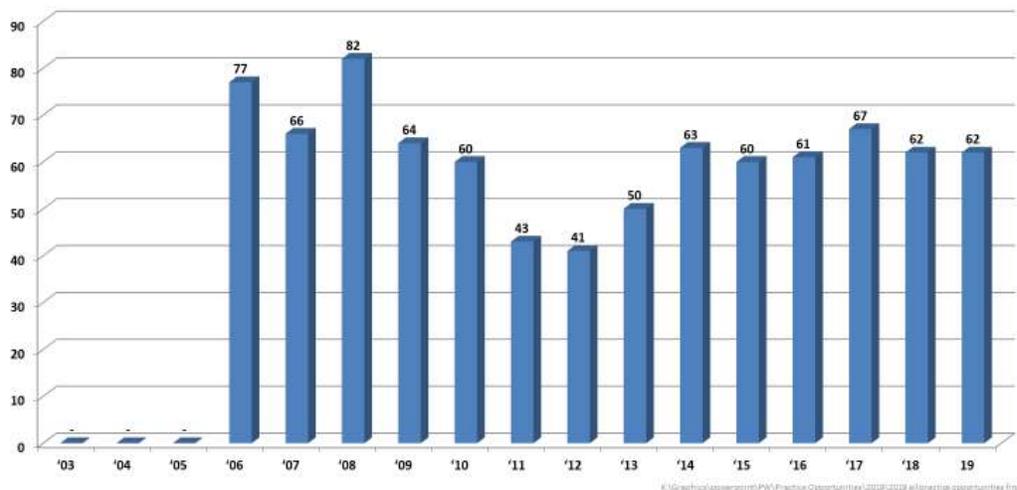
This is the result of the defined shortages by region for family medicine:

Region	Current Shortage/Demand
Northwest	30
North Central	19
Northeast	31
Southwest	9
South Central	28
Southeast	28
Total Shortage	145

Current demand for Psychiatry

The demand study demonstrated there were 63 full- and part-time practice opportunities for psychiatrists, 43 in adult psychiatry and 20 in child psychiatry in August 2019. These are in 27 communities. The demand for psychiatrists in Iowa since 2006 is shown in Figure 44. Demand for psychiatrists has remained stable over the last six years varying from 60–67 positions being actively recruited across the state (Appendix 23 for specific locations of these positions by region).

**FIGURE 44 - PSYCHIATRY
2019 PRACTICE OPPORTUNITIES**



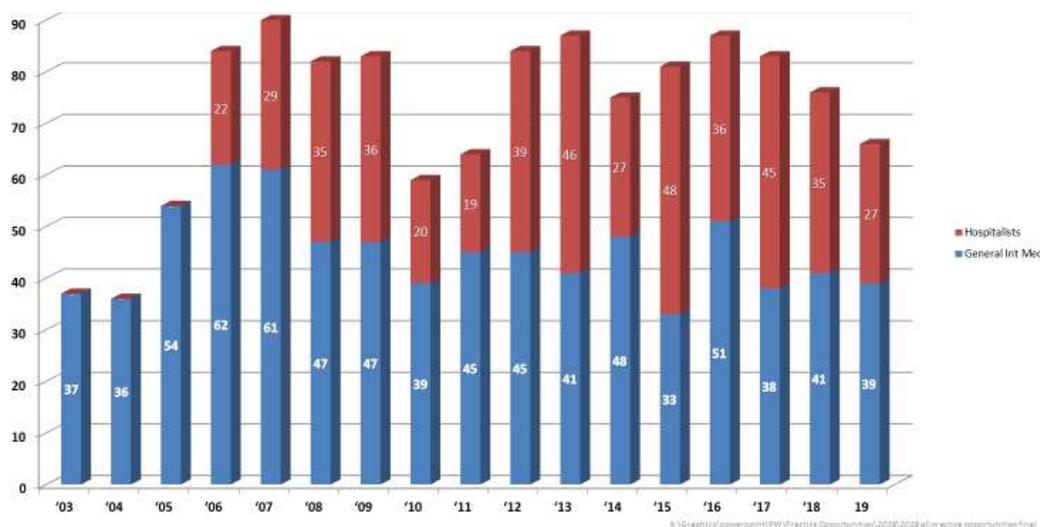
Region	Current Shortage/Demand for Psychiatry
Northwest	8
North Central	2
Northeast	23
Southwest	1
South Central	10
Southeast	19
Total Shortage	63

Current Demand for General Internal Medicine

The demand study conducted in 2019 found a slight reduction in demand for general internists compared to recent years. The total number of openings is 34; a decrease of 7 over the number in 2018 (Figure 45). When the relatively new (for Iowa) role of “hospitalist” is included in the count, the number of openings in general internal medicine increases to 61; 34 positions in primary care clinic settings and 27 full-time hospitalist positions. In addition to these two roles, 5 additional roles are being recruited for internal medicine physicians (Appendix 19).

Hospital medicine has become popular as a career choice for internal medicine physicians in Iowa as well as nationally. In Iowa, since 2012, the 320 general internal medicine residency graduates from the University of Iowa, Iowa Methodist Medical Center, MercyOne Des Moines Medical Center and MercyOne North Iowa Medical Center in Mason City, 53% have chosen to continue their graduate medical education and specialize. Of the 47% (149) who have entered practice, 60% chose hospital medicine as their career while 40% chose to enter a traditional clinic-based practice. This new career preference of hospital medicine has negatively impacted the number of physicians entering the primary care workforce.

**FIGURE 45 – GENERAL INTERNAL MEDICINE
2019 PRACTICE OPPORTUNITIES**

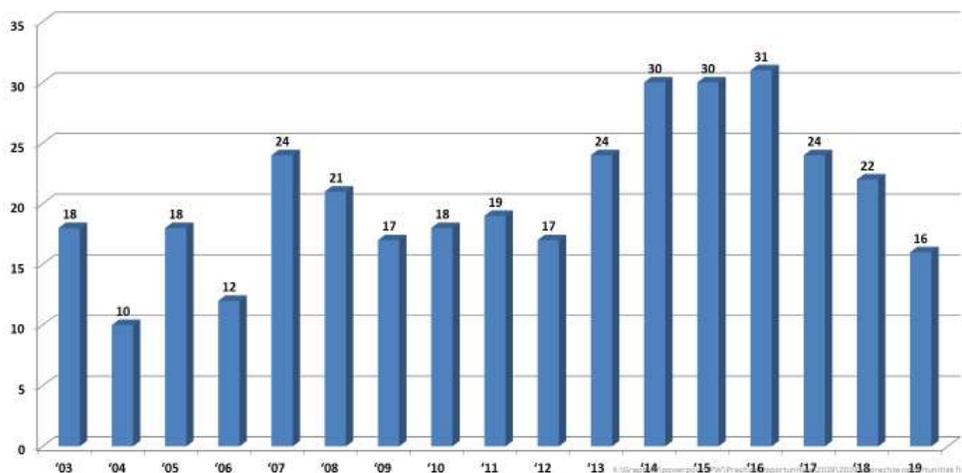


Region	Current Shortage/Demand for Internal Medicine	Region	Current Shortage/Demand for Hospital Medicine
Northwest	3	Northwest	0
North Central	5	North Central	3
Northeast	3	Northeast	3
Southwest	2	Southwest	1
South Central	9	South Central	6
Southeast	12	Southeast	14
Total Shortage	34	Total Shortage	27

Current Demand for Pediatrics

In 2019, the demand for pediatrics in Iowa has declined to the lowest level of demand since 2006 (Figure 46). The current demand is for 16 positions across Iowa after peaking at 31 in 2016. These 16 opportunities exist within 11 different communities. An additional 4 positions are in non-traditional settings (teaching, community health center and pediatric emergency medicine) for a total of 20 opportunities in 11 communities (Appendix 20 for details on the location of these opportunities).

**FIGURE 46 – PEDIATRICS
2019 PRACTICE OPPORTUNITIES**

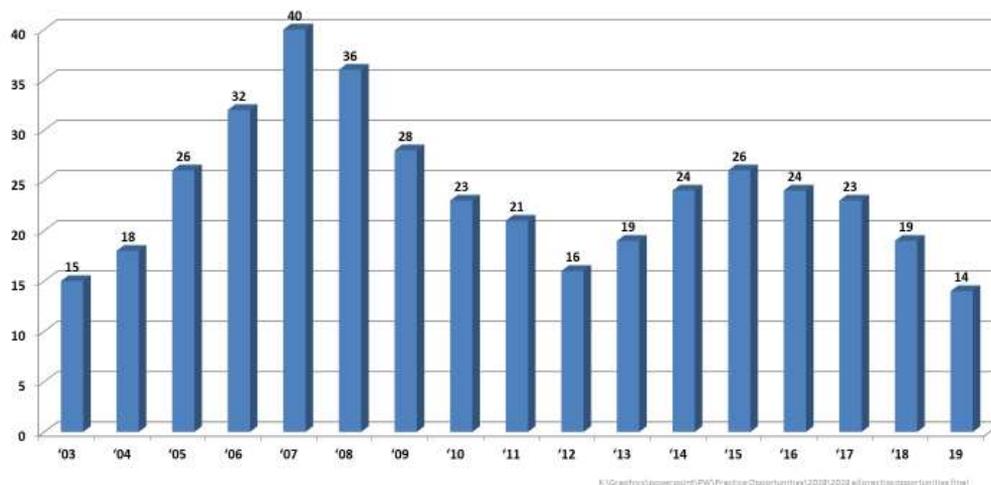


Region	Current Shortage/Demand for Pediatrics
Northwest	4
North Central	2
Northeast	1
Southwest	0
South Central	3
Southeast	6
Total Shortage	16

Current Demand for Obstetrics/Gynecology

In 2019, the demand for obstetrics and gynecology physicians demonstrate a slow and steady decline since 2015 (Figure 47). The current demand of 14 is the lowest since before 2003. The pattern above appears to be cyclical with peak in demand in 2007 and 2015. The 14 current opportunities exist in 11 communities, all of which have at least one OB physician within the community. The smallest community recruiting an obstetrician/gynecologist in 2019 is Muscatine with a population of 22,886 (Appendix 22 for details). According to the Iowa Department of Public Health (2017), Iowa has a declining birth rate. This factor contributes to the demand of obstetricians as well as numerous hospitals have closed their obstetrical units.

**FIGURE 47 – OBSTETRICS/GYNECOLOGY
2019 PRACTICE OPPORTUNITIES**

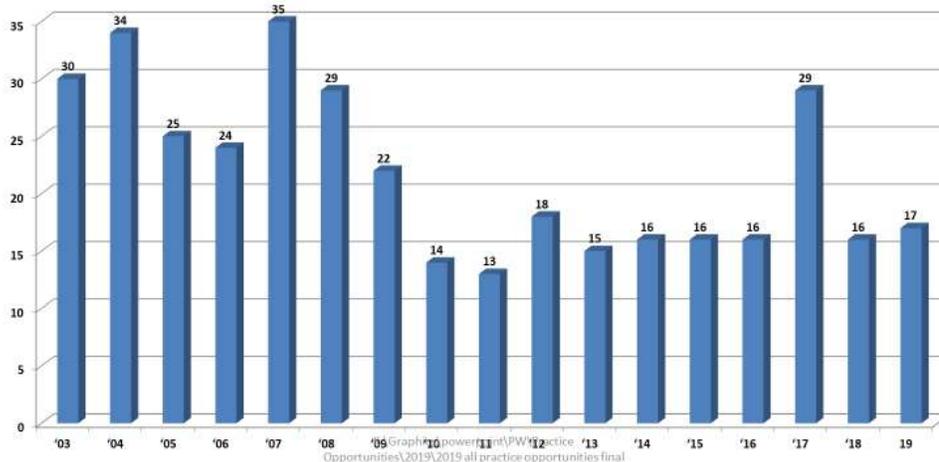


Region	Current Shortage/Demand for Ob/Gyn
Northwest	0
North Central	2
Northeast	4
Southwest	1
South Central	1
Southeast	6
Total Shortage	14

Current Demand for General Surgery

The results of the recent and past demand studies for general surgery are shown in Figure 48. The number of openings can be described as a “steady state” from 2010 through 2019 ranging from 13 to 18 with one outlier at 29 positions in 2017. The 17 opportunities in 2019 are located in 17 communities. Successful rural surgeon recruitment efforts have value beyond regular general surgery services. Surgeons may provide critical back-up C-section support that allows family medicine physicians to practice obstetrics (Appendix 21 for details).

**FIGURE 48 – GENERAL SURGERY
2019 PRACTICE OPPORTUNITIES**

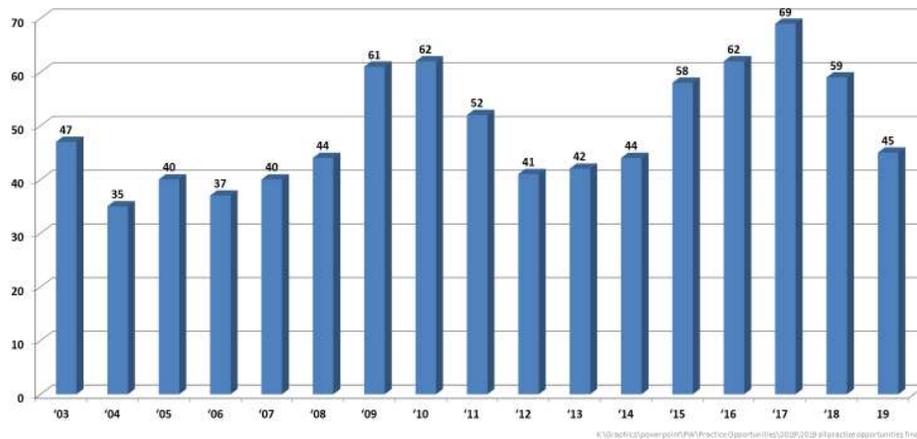


Region	Current Shortage/Demand for General Surgery
Northwest	5
North Central	1
Northeast	6
Southwest	0
South Central	3
Southeast	2
Total Shortage	17

Current Demand for Emergency Medicine

Emergency medicine remains a highly recruited specialty across Iowa with 45 opportunities (Figure 49) in 28 communities. Seven of the 28 communities are limiting their search to only board-certified emergency medicine physicians while the balance of 21 communities allow family medicine physicians to practice as emergency medicine physicians. The 45 current opportunities represent the lowest level of demand since 2014 (Appendix 24 for details).

**FIGURE 49 – EMERGENCY MEDICINE
2019 PRACTICE OPPORTUNITIES**



Region	Current Shortage/Demand for Emergency Medicine
Northwest	17
North Central	7
Northeast	5
Southwest	3
South Central	2
Southeast	11
Total Shortage	45

A Survey of Leading Physician Recruiters in Iowa Health Care Systems

To consider the overall recruitment needs in Iowa, twelve lead recruiters for large clinics and health care systems in Iowa were surveyed in October 2019 by the Carver College of Medicine, Office of Statewide Clinical Education Programs. They were asked:

What is your greatest primary care need?

What is your greatest non-primary care need? (they could list their top three priorities)

The results of this survey were that family medicine is the greatest primary care need with 8 of 12 recruiters indicating family medicine as their number one priority for primary care. For the non-primary care needs, gastroenterology was the most frequently cited specialty, noted by 6 of the 12 systems/large clinic recruiters. Neurology was the next most frequently cited non-primary care specialty with 4 stating this as a major priority. This was followed by pulmonary/critical care medicine, cited by 3 health systems/large clinics. The health systems and large clinics represent both rural and urban counties and cover most of Iowa.

Demand data from a major national physician recruiting firm (Merritt-Hawkins)

Merritt-Hawkins top fifteen most requested national searches by specialty (Figure 50) :

FIGURE 50 - FIFTEEN TOP PHYSICIAN SEARCHES NATIONALLY

	Specialty	Number of Searches Performed in prior year
1.	Family Medicine	457
2.	Psychiatry	199
3.	OB/Gyn	161
4.	General Internal Medicine	148
5.	Radiology	148
6.	Hospitalist	143
7.	Neurology	97
8.	Gastroenterology	85
9.	Pediatrics	85
10.	Cardiology	84
11.	Emergency Medicine	76
12.	Orthopedic surgery	73
13.	Anesthesiology	70
14.	Dermatology	60
15.	Pulmonology	56

American Medical Association Report on Rankings

The 2015 American Medical Association report titled “Physician Characteristics and Distribution in the U.S., 2015 Edition, Division of Survey and Data Resources”, evaluated specialty physicians per 100,000 population. This analysis ranked family medicine in Iowa at #6 per 100,000 population followed by otolaryngology at #15. The lowest rankings were for OB-Gyn and emergency medicine tied at 51st. While this data can help a state identify where they are positioned relative to other states, it does not necessarily imply that the number one position is ideal. (Figure 51).

FIGURE 51

Physician Specialty	Iowa Ranking
Total Active Physicians	43
Anesthesiology	37
Cardiology	38
Diagnostic Radiology	49
Emergency Medicine	51
Family Medicine	6
General Surgery	42
Internal Medicine	46
Neurosurgery	48
Neurology	37
Obstetrics & Gynecology	51
Ophthalmology	23
Orthopedic Surgery	47
Otolaryngology	15
Pediatrics	47
Clinical Pathology	27
Psychiatry	45
Pulmonary Disease	39
Urology	40

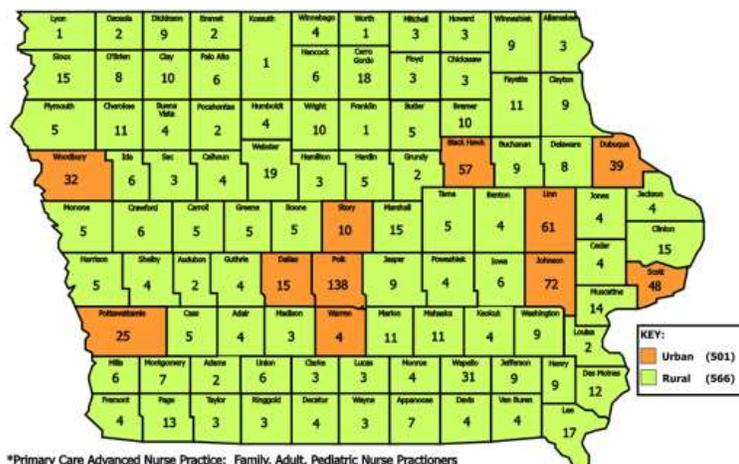
Allied Health Providers in Primary Care

Primary care nurse practitioner & physician assistant workforce impact on access to primary care in Iowa

Fifty-three percent (566) of the primary care nurse practitioners practice in Iowa’s 88 rural counties and 47% (501) practice in urban settings. As stated earlier, 46% of the Iowa population resides in these 88 rural counties (Figure 52).

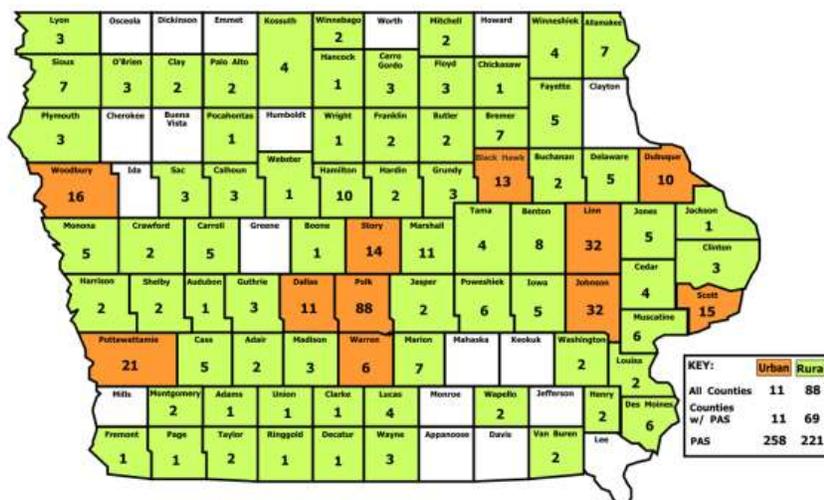
This compares to 46% of primary care physician assistants practicing in rural counties (Figure 53) and 54% practicing in urban counties. There are over two times as many nurse practitioners compared to physician assistants in the state.

FIGURE 52 – DISTRIBUTION OF PRIMARY CARE BY RURAL VS URBAN ADVANCED REGISTERED NURSE PRACTITIONERS* (1,067) 2018



*Primary Care Advanced Nurse Practice: Family, Adult, Pediatric Nurse Practitioners
 Excluded from our urban classification due to > 50% rural population: Benton, Bremer, Grundy, Guthrie, Hamilton, Jones, Madison, Mills, Plymouth, & Washington counties
 Key reflect the number of APNs in Urban counties and Rural counties
 Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, October 2019

FIGURE 53 – DISTRIBUTION OF PRIMARY CARE PHYSICIAN ASSISTANTS (479)

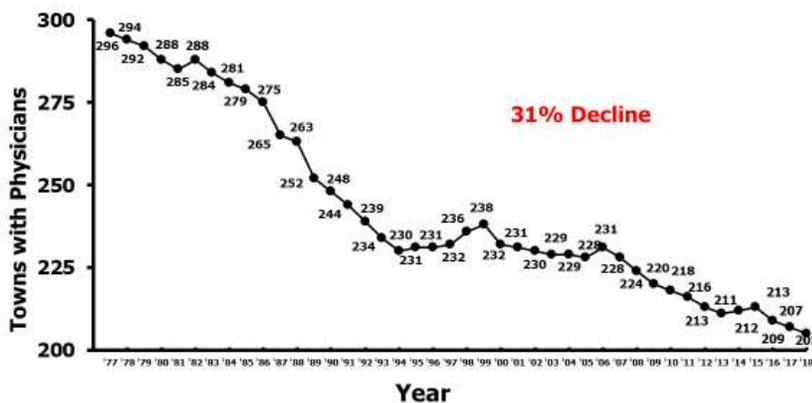


2018

Excluded from our urban classification due to > 50% rural population: Benton, Bremer, Grundy, Guthrie, Harrison, Jones, Madison, Mills, Plymouth, & Washington, counties
 Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, July 2019
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Figure 54 displays data that pertains to access to medical care in rural Iowa communities. In 1977, there were 296 communities in Iowa served by at least one physician. Currently, there are 205 communities in Iowa served by at least one physician. This reduction is in the smaller rural communities.

FIGURE 54 – IOWA PHYSICIAN SUPPLY TOWNS WITH AT LEAST ONE PHYSICIAN 1977 – 2018

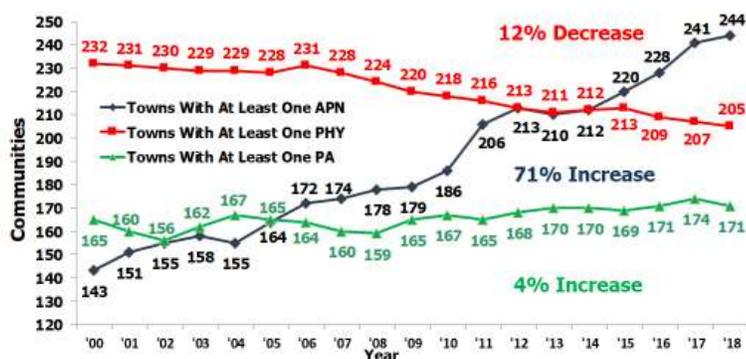


Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine
 Iowa Health Professions Tracking Center, May 2019
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However, there is a bright side to serving rural Iowa with health care providers. When combining the nurse practitioners and physician assistants with the physician workforce, the three together

now serve 309 unique communities (Figure 55). This is an increase of 13 communities, over the 296 communities in 1977, which are now being served by a health care provider.

**FIGURE 55 – COMMUNITIES WITH PA, APN, OR PHYSICIAN
2000 - 2018**



Source: Iowa Health Professions Tracking Center, Office of Statewide Clinical Education Programs, UI Carver College of Medicine, June 2019.

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Based upon a study by Young et al (2019) called “The impact of non-physician providers on measures of spatial accessibility for primary care: A constrained optimization analysis for the state of Iowa”, when considering only primary care physicians, the average number of the Iowa population with inadequate access to primary care was 222,109 (7%) of Iowa’s population. Most of this underserved population (86%) was in rural areas with low population density. The addition of nurse practitioners and physician assistants to the primary care workforce reduced the underserved population by 65% to 78,252 individuals (2.5% of Iowa’s population). The inclusion of nurse practitioners and physician assistants greatly reduces but does not eliminate all areas of inadequate spatial access to primary care. This quantifies the important role of nurse practitioners and physician assistants to improve the spatial access to care for rural Iowans.

Although nurse practitioners and physician assistants sometimes may be considered a replacement for physicians, they also complement physicians by providing services within the scope of their training with physicians directing overall care and which can enable physicians to handle more complex cases. The provider workforce is strengthened by the increase of these non-physician providers.

Summary of the current demand analysis for Iowa by region:

- Family medicine is consistently the specialty with the highest number of open positions across Iowa with 145 positions currently available. Psychiatry follows with 63 positions. Considering there are fewer total positions available for psychiatry, the intensity of the demand for psychiatry is significantly greater.
- The current demand for primary care physicians in Iowa is a total of 195 positions including family medicine, general internal medicine and pediatrics.

- Gastroenterology was noted as the specialty in greatest demand followed by neurology, according to Iowa based physician recruiters.
- Similar to Iowa, family medicine and psychiatry are the two most in demand specialties nationally.
- The Northeast region and Northwest region have the greatest demand for family medicine. The Southeast region has the least demand.
- The Northeast region and Southeast region have the greatest demand for psychiatry and the Southwest region has the least demand.
- Nurse practitioners and physician assistants have made a positive impact on access to care, particularly in rural Iowa.
- The combined effect of nurse practitioners and physician assistants provide an additional 1,263 providers to the rural counties in Iowa.

FORECASTING THE FUTURE SUPPLY OF PHYSICIANS

Historical 5-year physician growth rates in Iowa

The historical rates of growth in the number of physicians in Iowa have changed over time and vary by primary care and non-primary care (specialists). The growth rates peaked and are now slowing for all physicians (Figure 56). If the current trend continues, there will be continued slight declines in the growth rates to the point where there will be a plateauing of the number of physicians in Iowan and reductions in primary care physicians. In the last five years, Iowa has a net loss of 121 primary care physicians (6.3%).

FIGURE 56

Time Period	ALL PHYSICIANS Average Annual Growth Rate
1979 - 1983	2.6% per year
1984 - 1988	1.0%
1989 - 1993	2.4%
1994 - 1998	2.3%
1999 - 2003	1.9%
2004 - 2008	1.2%
2009 - 2013	2.0%
2014 - 2018	0.4%
	PRIMARY CARE PHYSICIANS Average Annual Growth Rate
1979 - 1983	1.3%
1984 - 1988	-0.9%
1989 - 1993	0.2%
1994 - 1998	2.6%
1999 - 2003	1.9%
2004 - 2008	0.9%
2009 - 2013	0.4%
2014 - 2018	-1.3%
	NON-PRIMARY CARE PHYSICIANS Average Annual Growth Rate
1979 - 1983	3.7%
1984 - 1988	2.4%
1989 - 1993	3.9%
1994 - 1998	2.1%
1999 - 2003	1.9%
2004 - 2008	1.4%
2009 - 2013	2.8%
2014 - 2018	1.3%

FORECASTING PHYSICIAN NEEDS OVER THE NEXT FIVE TO TEN YEARS

Projecting future physician needs is complex and many factors in health care are changing rapidly. The data presented in this section is an attempt to understand how the physician workforce may change in the next five to ten years. We have provided projections from several national organizations as well as a global assessment that was performed at the University of Iowa using a historical methodology.

Forecasts from Association of American Medical Colleges:

The Association of American Medical Colleges provides a highly sophisticated model for predicting utilization of physicians versus supply of physicians. The data from AAMC is **only at a national level**. They project that physician demand will grow faster than supply, leading to a projected **total physician shortfall of between 46,900 and 121,900 physicians by 2032**. A primary care physician shortage of 21,100 to 55,200 physicians is projected by 2032 and non-primary care specialty categories of 24,800 to 65,800. This specialty shortfall includes a 14,300 to 23,400 deficit in 2032 for surgical specialties (Association of American Medical Colleges, 2019). Although this does not provide specific information for Iowa, this sophisticated study demonstrates that shortages exist nationally in both primary care and non-primary care specialties with the greater shortage being in the latter. This applies to the circumstances in Iowa although the exact magnitude of the numbers in Iowa are difficult to determine without more time and resources.

Forecasts of primary care physicians from Robert Graham Center

The Robert Graham Center projects the Iowa primary care physician workforce necessary to maintain current primary care utilization rates, accounting for increased demand due to aging, population growth, and an increasingly insured population due to the Affordable Care Act. To maintain current rates of utilization, they predict Iowa will need an additional **119 primary care physicians by 2030, a 5% increase** compared to the state's current primary care physician workforce. The largest factor for this increase is due to the impact of an aging population. This report does not break out data at a regional or county level (Robert Graham Center, 2013).

Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services state level projections for supply and demand of primary care physicians

The workforce study conducted by HRSA predicts Iowa will have a **deficit of 200 primary care physicians in Iowa by 2025** (Bureau of Health Workforce, Health Resources and Services Administration, September 30, 2019).

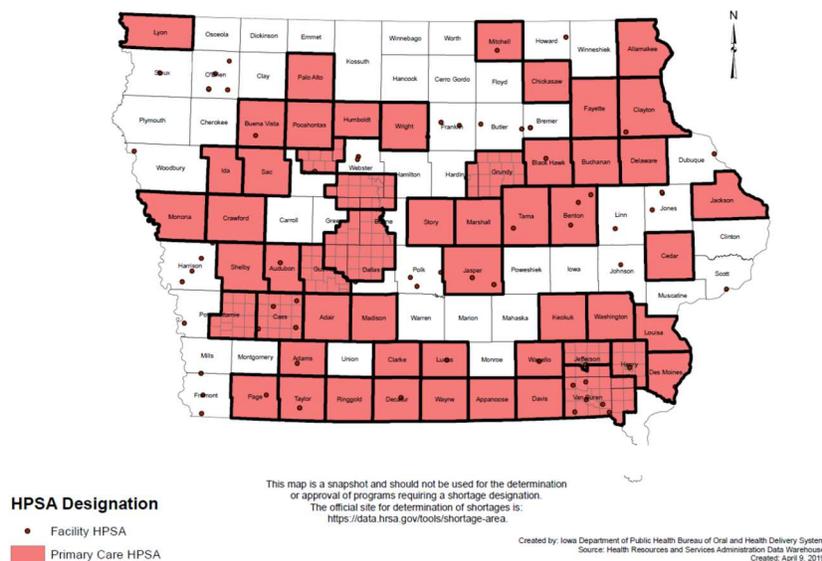
Health Professional Shortage Area (HRSA) Designations in Iowa

HRSA Primary care shortage areas

A Health Professional Shortage Area (HPSA) is a geographic area, population group, or facility designated by the Federal Bureau of Health Professions: Shortage Designation Branch as having an acute shortage of primary health care professionals. These designations are calculated by only counting the number of primary care physicians within these areas and specifically does not include primary care nurse practitioners or physician assistants (Figure 57).

According to their current calculations, **95 primary care physicians** (Bureau of Health Professions, Shortage Designation Branch – Primary Care, 2019) would need to begin practicing in Iowa in these underserved areas to remove all of the state's HPSA designations. Currently 58 counties or partial counties are designated as HPSAs with a population of 651,570. To calculate this need, they primarily consider the population to provider ratio of 3,500 to 1. The typical primary care provider would be expected to support approximately 1,500 patients. For primary care physicians, this is an unrealistically high ratio, but may reflect the fact that only around half of the population actually utilizes primary health care appropriately.

FIGURE 57
IOWA FEDERAL PRIMARY HEALTH CARE SHORTAGE DESIGNATIONS

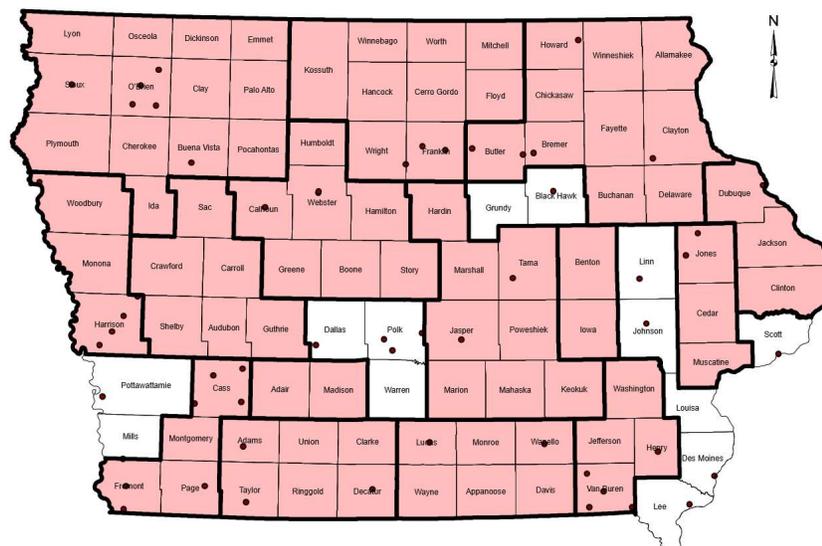


HRSA Mental health shortage areas

The Bureau of Health Professions, Shortage Designation Branch also designates Mental Health shortage areas (2019). Iowa would **need 53 psychiatrists** to remove all the mental health HPSA designations in Iowa (Figure 58). This calculation utilizes a ratio of 30,000 population to 1 psychiatrist. HPSA designations are based on psychiatrists only; they do not consider the availability of additional mental health services provided by other mental health providers in the

area, such as clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage and family therapists. A total of 86 counties in Iowa currently qualify as Mental Health Care Shortage areas.

FIGURE 58
IOWA FEDERAL MENTAL HEALTH CARE SHORTAGE DESIGNATIONS



This map is a snapshot and should not be used for the determination or approval of programs requiring a shortage designation. The official site for determination of shortages is: <https://data.hrsa.gov/tools/shortage-area>.

HPSA Designation

- Facility HPSA
- Mental Health HPSA

Created by: Iowa Department of Public Health Bureau of Oral and Health Del
Source: Health Resources and Services Administration Data
Created:

Computational Forecasting of Physician Supply for Iowa

The University of Iowa team used an established modeling program to project physician needs to help elucidate the upcoming physician workforce projections for Iowa. To project physician need, the first step is to forecast Iowa's future supply of physicians. Forecasts for the Iowa physician workforce for 2025 and 2030 were computed using a widely used time series model (Holt, 1957). This analysis was conducted by Professor Thomas Gruca, PhD, of the Tippie College of Business, University of Iowa.

The forecasts were separated into primary care physicians and non-primary care physicians. The results suggest that the primary care physician workforce will decline over the next 12 years by 15% or about 1% per year (-273). The non-primary care physician workforce will grow by 6% (+249) or 0.5% per year. This results in an overall net decrease over the next twelve years of -24 physicians (gain of 249 non-primary care and losing 273 primary care physicians).

Data were broken out by the six regions as well as the rural–urban designations. The results are shown for the number of physicians in 2018 versus 2025 and 2030 in Figures 59 and 60.

Rural counties are predicted to have a decline of 209 (-30%) primary care physicians by 2030 and a gain of 96 (14%) non-primary care physicians. Urban counties are predicted to lose 64 (-6%) primary care physicians by 2030. Meanwhile, urban counties are predicted to gain 153 (5%) non-primary care physicians growing 0.4% per year.

Regionally, the South Central and South East regions are predicted to lose the greatest number of primary care physicians with -79 and -65 respectively (Figure 59). All regions are forecast to grow in non-primary care physician numbers over the next twelve years. The smallest increases are forecast to be in the Southwest region (2) and the North Central region (14) (Figure 60).

Note that the forecasting results reported are based on a method best suited to relatively short time horizons. Additionally, regional analysis is subject to more instability due to the smaller numbers of physicians in each region. Some of the projected increases in the number of physicians at the regional level are based on recent growth patterns that may or may not continue.

FIGURE 59

Forecast for the number of primary care physicians in Iowa

Primary Care Physicians (PCP)	2018 PCPs	Projected PCPs in 2025	Projected PCPs in 2030	Net Loss or Gain 2018 - 2030
Northwest Region	191	175	163	-28
North Central Region	196	179	167	-29
Northeast Region	393	359	335	-58
Southwest Region	94	86	80	-14
South Central Region	535	489	456	-79
Southeast Region	435	397	370	-65
All Regions	1,844	1,685	1,571	-273
All Rural Counties (88)	701	579	492	-209
All Urban Counties (11)	1,143	1,106	1,079	-64

FIGURE 60

Forecast for the number of *non-primary care* physicians in Iowa

Non-Primary Care Physicians (NPCPs)	2018 NPCPs	Projected NPCPs in 2025	Projected NPCPs in 2030	Net Loss or Gain from 2018 - 2030
Northwest Region	202	211	218	+16
North Central Region	357	357	371	+14
Northeast Region	824	816	847	+23
Southwest Region	113	111	115	+2
South Central Region	1,105	1,131	1,173	+68
Southeast Region	1,460	1,528	1,586	+126
All Regions	4,061	4,154	4,310	+249
All Rural Counties (88)	682	686	778	+96
All Urban Counties (11)	3,379	3,468	3,532	+153

Physician retirement ages could impact physician workforce demand projections

The average retirement age for the entire Iowa physician workforce is currently 67 years old. When analyzing 26 different physician specialties and all physicians (Appendix 17), there are certain regions that have a higher vulnerability of being impacted by retirement over the next decade. The Northwest region has the highest percentage of physicians (40%) at 55 years old or greater. The Northwest region also leads the state with 11 different specialties with at least 50% of their physicians over the age of 55 (Appendix 17). The Southeast region has the least number with only two specialties having 50% or more over the age of 55.

Considering specialties for the entire state, allergy and immunology have the highest percentage of physicians over the age of 55 (56%) and an average retirement age of 66. Cardiology follows with 50% over the age of 55 but an average retirement age of 70. Cardiology is also the “oldest” of the specialties noted in this study. The specialties with the earliest average retirement age are oncology/hematology and gastroenterology at 64.

Summary of the findings of identification of workforce shortages by region of the state

- Physician workforce shortage analyses are challenging and will be affected by changes in the care delivery methods, payment models, use of allied health providers and changes in the state population.
- Based upon the analysis of internal and external data, it is clear that Iowa currently has a physician workforce shortage (OSCEP demand study, HPSA designations, HRSA prediction and state rankings by the AAMC). Projecting into the future, the primary care physician shortage will become more severe and the non-primary care shortage will remain in a state of shortage.

- Physician relocation and retirement patterns across the state contribute to the forecasts. The Northwest, Southwest and Southeast regions have equal relocation rates (7%). The Northwest region also has the highest percentage of physicians 55 years or older (41%).
- The ratio analysis forecasts the most severe primary care shortages in rural Iowa and the South Central region. However, the entire state is short primary care physicians.
- Rural Iowa counties will have even greater access challenges in the future than those living in urban counties.

ANALYSIS OF THE AVAILABILITY OF RESIDENCY POSITIONS

Association of American Medical Colleges data on characterizing residencies by state

The Association of American Medical Colleges (2017) provides data for all states which contains specific rankings characterizing physician training programs. Some of their rankings relevant to Iowa include:

- Iowa ranks 40 out of 45 states overall with a ratio of GME slots per number of medical students (number one ranking is the best).
- Iowa ranks 10th for the total number of medical students enrolled in medical schools per 100,000 population (UI and DMU) at 1,549.
- Iowa ranks 25th for overall residency slots per 100,000.
- Iowa ranks 21st for the number in primary care residency programs.
- Iowa ranks 44 of 50 (number one is the best retention) states for physicians retained from graduate medical education at 35.7%.

Current residency programs in Iowa

Of the 5,905 physicians practicing in Iowa, 2,126 or 36%, are graduates of a residency and/or fellowship program in Iowa. The roster of all of Iowa's graduate medical education (GME) programs is included as Appendix 25 of this report. The programs and their 2019-20 first year and total positions are listed by community and sponsoring institution.

An inventory of Iowa's 129 GME programs includes 45 different residency programs and 84 different fellowship programs (Figure 61). Within these 129 different programs, there are 906 residency positions and 240 fellowship positions for a total of 1,146 total residency and fellowship positions in Iowa (Figure 62). Of these total positions (Figure 63), 793 (69%) are at the University of Iowa Hospitals and Clinics while the balance are located in Des Moines (237), Davenport (18), Cedar Rapids (21), Waterloo (18), Mason City (41) and Sioux City (18). Of the 906 residency positions, there are 251 first year positions.

FIGURE 61 – RESIDENCY AND FELLOWSHIP PROGRAMS IN IOWA IN 2020

# of Residency & Fellowship programs	Residency Programs	Fellowship Programs	First Year Positions
129	45	84	251

FIGURE 62 – RESIDENCY AND FELLOWSHIP POSITIONS BY COMMUNITY IN 2020

Community	% of GME Positions	# of Residency & Fellowship Positions	Residency Positions	Fellowship Positions
Iowa City	69%	793	570	223
Des Moines	21%	237	231	6
Rest of State*	10%	116	105	11
Total in Iowa	100%	1,146	906	240

*Rest of state includes Davenport (18), Cedar Rapids (21), Waterloo (18), Mason City (41), Sioux City (18)

The data in Figure 63 demonstrates the value of residency programs as a recruiting mechanism for Iowa with an overall retention rate of 54% based upon these key specialties. OSCEP tracks retention rates for residents in family medicine, general internal medicine, pediatrics, psychiatry, OB/Gyn and general surgery. The percentage of residents that enter Iowa practices within each of these physician specialties is noted in the data with family medicine and psychiatry having the highest retention rates at 59% and 60% respectively, over the last ten years.

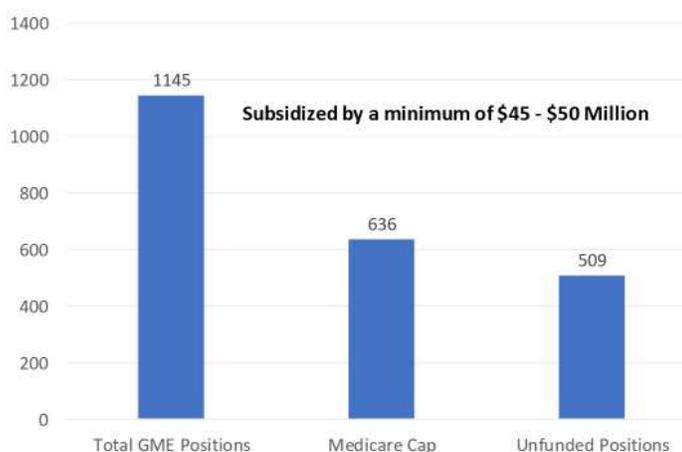
**FIGURE 63 – IOWA RETENTION RATES FOR SELECT RESIDENCY PROGRAMS
2010 – 2019**

Residency Programs	Total Entering Practice	Entering Iowa Practices	Entering Non-Iowa Practices	% Entering Iowa Practices
Psychiatry	72	43	29	60%
Family Medicine	515	302	213	59%
General Internal Medicine	178	90	88	51%
General Pediatrics	99	47	52	48%
Obstetrics-Gynecology	28	12	16	43%
General Surgery	70	21	49	30%
Totals	849	458	391	54%

Financing of Graduate Medical Education (GME)

Funding of graduate medical education is a complex topic. The primary source of GME funding is through the Center for Medicare and Medicaid Services (CMS). As stated earlier, there are approximately 1,146 GME positions in Iowa. Due to a “cap” on positions funded by Medicare in 1997, only 636 of these positions are funded by CMS (Figure 64). Since that freeze on GME positions, sponsors continue to add new positions and programs but without federal support. This leaves 509 unfunded positions that are supported by the sponsoring hospital. Based on reasonable assumptions regarding salaries and benefits for residents, it is estimated that hospitals in Iowa are subsidizing GME by a minimum of \$45-\$50 million annually. Other sources of funding include Medicaid, some commercial payers and subsidies from the sponsoring institution.

**FIGURE 64 – FUNDING OF GME
FROZEN SINCE 1997/98**



Iowa Family Medicine Residency Training Network

The Iowa Family Medicine Residency Training Network is a story of success for the entire state. This network of family medicine residency programs exists as the result of a forward-thinking state legislature, the University of Iowa Carver College of Medicine, and most importantly, local communities. Together, they created these family medicine residency programs in the mid-1970s. These family medicine residency programs are affiliated with the University of Iowa but are locally controlled and managed. They collaborate as programs with the same mission of providing family medicine physicians to their region and across Iowa.

These programs have significantly improved access to primary care. The maps below display the location of the family medicine residency programs (Figure 65) and of the graduates of these programs (Figure 66). Of the 1,490 family medicine physicians in Iowa, 840 or 56% of all family

medicine physicians in Iowa are graduates of one of these eight programs. Forty-three percent of the graduates have chosen to practice in communities with populations under 10,000.

FIGURE 65 – IOWA FAMILY MEDICINE RESIDENCY TRAINING NETWORK SITES (8)

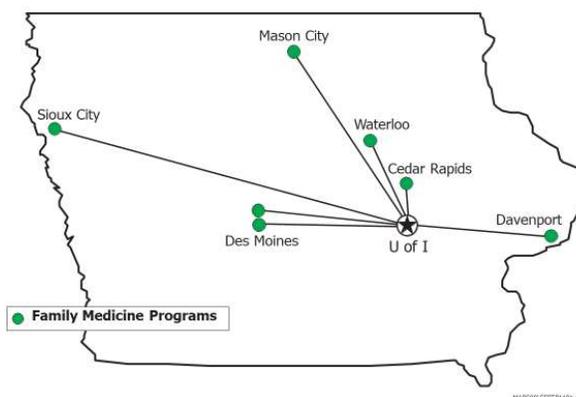
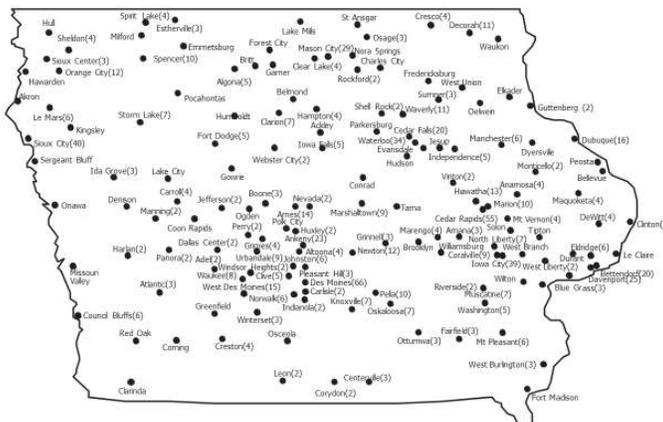


FIGURE 66 – IOWA FAMILY MEDICINE GRADUATES PRACTICING IN IOWA (840)*



Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, November 2018

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Today though, the family medicine residency programs in Iowa face significant challenges. In the 2019 match, two of the family medicine residency programs did not fill their positions in the initial match process. It is clearly a challenge to appeal to and match with graduates from the two medical schools for many of the family medicine residency programs. The majority of students from both schools choose to leave Iowa for their family medicine residency training. Nationally, it must be noted that interest in family medicine has declined. In 2019, 9% of all U.S. trained MDs matched in family medicine and when combined with all osteopathic students, the percentage increased to

11%. Sixty-three percent of all family medicine positions in the U.S. were filled by U.S. MD or DO graduates leaving the balance for international medical graduates to fill the positions.

Financial viability is also challenged, and some hospital systems are questioning their ability to sustain their residency programs. The sponsors recognize that in some years, their community or region may not need any of the graduates to practice locally, or the graduates do not want to practice in the community or region. In that case, they are educating physicians for the welfare of other communities, other regions and other states. Some sponsors are considering eliminating their programs due to the high costs required relative to the local benefit and instead will use their subsidies to recruit physicians rather than “growing their own”. This is a cost-benefit issue for the local leadership.

Identifying future training needs based upon national trends

In a study conducted by Dall, et al (2013), a group of researchers utilized predictors of disease prevalence and aging data to model future demand for health care services for the population. Although it is not specific to Iowa, the national data is likely to reflect similar trends in Iowa. These trends are relative to an aging population as well as high rates of obesity which point to an increasing prevalence of chronic diseases.

Primary care providers will play an important role in providing preventive services and caring for this growing elderly population. However, with the expansion of medical knowledge and treatment options for many chronic diseases there has been a proliferation of medical and surgical specialties and subspecialties. More than one-third of patients are referred to a specialist annually from a primary care physician, and these specialists play essential roles in the diagnosis, treatment, and monitoring of patients afflicted with diseases and adverse medical events. This study approach resulted in a microsimulation model to determine the predicted health care services needed for a population.

The results of this study found that the greatest growth in demand for physicians by 2025 were in:

1. Vascular surgery (31% growth in demand)
2. Cardiology (20%)
3. Neurological surgery and radiology (18%)
4. General surgery, nephrology, neurology and pulmonology (all at 17%)

In another article by Darves (2017), she highlights national shortages in psychiatry, particularly child psychiatry. She notes that while primary care and psychiatry are two sectors designated federal Health Professional Shortage Areas by the U.S. Health Resources and Services Administration (HRSA), there are growing shortages in many specialties, especially surgical specialties that are not well tracked. Vascular surgery and neurosurgery were two specialties that rose to the top of the priorities nationally, however, urology anticipates a 41% shortfall in 2025, general surgeons, ophthalmologists and orthopedic surgeons also are anticipated to experience shortages. Other non-surgical specialties, for example endocrinology and rheumatology will likely

experience shortages. For all of the specialties in short supply, the most severe shortages will be relative to rural populations.

A methodology has been developed for the Center for Medicare and Medicaid Services (CMS) that uses workforce data to decide which specialties and states to target for graduate medical education expansion (Fraher et al, 2017). The assumption was that Congress would provide 3,000 new GME slots over 5 years for a total increase of 15,000 new positions to address the physician shortage. One of the findings that was unexpected was that a relatively large number of positions should be allocated to Iowa. This implies that relative to other states, Iowa does indeed have a physician shortage and an inadequate number of GME positions to support the need. Although the article was of interest and supported the need for Iowa to obtain more GME positions, the funding from Congress did not materialize. Based upon this CMS methodology the top five areas identified as priorities for increased number of GME positions included:

1. Internal medicine – 440 new first year positions
2. Psychiatry – 314
3. Family medicine – 313
4. Cardiology – 246
5. Emergency medicine – 211

In summary, there is no clear method for determining which residency programs should be expanded. Different methodologies will produce different results. Many times, these decisions are made locally, based upon unique demand situations and requiring very thoughtful choices, knowing that additional funding from CMS will not be provided.

What are the most important influencers for students for medical specialty choice?

According to an annual survey done by the Association of American Medical Colleges (July 2019), the strongest influence on specialty choice reported by 2019 graduation questionnaire respondents was “Fit with personality, interests, and skills”. Eighty-seven percent of respondents indicated that “fit” had a strong influence. Similarly, “Content of specialty” was selected by 83% of respondents as having a strong influence. The third most frequently cited strong influence on specialty choice by 2019 graduates was “Role model influence” at 51%. Personal fit, content, and role modeling have been the three most frequently cited influences on specialty choice by each of the past five classes of medical school graduates.

The percent of medical school graduates who said their financial concerns affected their choice of medical specialty went up slightly in 2019. The portion of 2019 graduates who said that the level of education debt had a strong or moderate influence was 22%, a slight increase over the 21% who reported similar opinions in 2018.

A study of the medical students matching into the specialties of family medicine, internal medicine, pediatrics and psychiatry is done each year by the Carver College of Medicine Office of Statewide

Clinical Education Programs. The study asks each student to select the top reasons they selected a specialty. The top five reasons and percentages selected over the past three years include:

- Personal/Academic /Professional interest = 93%
- Gained interest after rotation = 78%
- Work/life balance = 63%
- Medical school mentor practice in specialization = 45%
- Employment opportunities = 36%

These results for the Carver College of Medicine graduates are consistent with the AAMC survey.

Why do medical students select a specific location/site for their residency training?

An additional survey is conducted annually, by the Office of Statewide Clinical Education Programs regarding why medical students at the Carver College of Medicine select a specific residency program within their chosen specialty. The students selected for this survey are those matching in family medicine, internal medicine, pediatrics and psychiatry. The top five reasons and the percent selecting that choice are:

- Resident morale = 68%
- Fit with existing residents = 53%
- Geographic location of residency program = 51%
- Reputation of residency program = 40%
- Residency curriculum/skills = 39%

This information is shared with the residency program directors to help them create an attractive environment for recruiting medical students. Making the most of an interview experience is critical for a successful residency match and having positive residents is the most critical factor to consider. Geography is also a very important factor.

An annual survey of University of Iowa Carver College of Medicine graduates training in non-Iowa residency programs

OSCEP also conducts an annual survey of the University of Iowa Carver College of Medicine graduates training in non-Iowa residency programs. All students who have matched in family medicine, internal medicine, pediatrics, obstetrics & gynecology, general surgery and psychiatry are contacted to identify potential physician candidates for Iowa medical practices. The survey ascertains the interest of residents in returning to Iowa following residency training. Over the last five years, 10% of UI graduates in non-Iowa residency programs expressed interest in returning to Iowa.

Each resident who shows interest in returning to Iowa receives a list of services offered by OSCEP, a form which helps OSCEP understand what the resident is seeking in Iowa, and information about Iowa practice opportunities. OSCEP staff will provide individualized assistance to support the selection of the right community in Iowa for the resident.

Creating new or expanding existing residency programs within Iowa

It is reasonable to consider the benefits of establishing new residency and fellowship programs in Iowa. Two new psychiatry residency programs in Des Moines were developed over the last two years and the results of that investment will take several years to realize. There will likely be additional psychiatry needs beyond the recent expansion of psychiatry residency positions in Des Moines, particularly to attract psychiatrists interested in a rural practice.

Challenges to starting new or expanding existing residency programs include:

- The accreditation requirements for residency programs specify the educational resources required for approval of a new program, including the number of qualified faculty and program directors as well as the volume of patients and patient diagnoses that must be available for learning.
- Reimbursement caps make starting a new program or expanding an existing program very difficult, because there is no other financial source to offset the additional costs of training more residents or fellows. It is estimated that sponsoring organizations (hospitals) across the state subsidize residency and fellowship positions by a minimum of \$45-\$50 million.

Challenges to developing or expanding community/rural rotations for residents include:

- ACGME requires strict supervision of residents by board certified faculty within their specialty.
- Many residents are married and starting families. It is a major source of dissatisfaction for residents to be required to do rotations away from their home base at distant sites which require being away from family. This dissatisfaction can lead to difficulties recruiting subsequent residents.

Results of availability of residency positions in Iowa:

- Relative to the number of medical students in Iowa, there are not enough residency positions.
- Although Iowa is ranked 6th in the nation for family medicine physicians per 100,000 population, a strong demand remains for family medicine physicians as they represent a large part of the primary care physician workforce in Iowa. Growing the existing programs is ideal; the downside is that it is already difficult to recruit new residents with the number of family medicine positions currently being offered and expansion would increase that challenge. In support of the concept of increasing the family medicine positions is the fact that family medicine physicians support Iowa's low number of obstetricians, pediatricians and psychiatrists as family medicine provides a wide scope of practice which incorporates appropriate elements of these specialties which are in shortage.
- Continued improvement and focus on mental health care education for primary care physicians to help care for rural Iowans would be of particular benefit.

- The development of two new psychiatry residency programs in Des Moines are beneficial for Iowa as there is a significant psychiatry shortage. However, despite these two new programs, it is unlikely that the great demand for psychiatric needs of Iowans, particularly in rural Iowa will be met.
- There are significant financial challenges for the current Iowa residency programs. Without further financial support, closures of family medicine programs may occur soon at existing sites in Iowa. Hospital sponsors have struggled to the point they can no longer afford to subsidize these programs, especially when their own needs for family medicine physicians vary.

RECRUITMENT AND RETENTION OF PHYSICIANS IN RURAL IOWA

Recruiting and retaining physicians in rural Iowa is a challenge. Iowa is not alone as nearly all rural settings in the country share this same challenge. What does it take to recruit in rural Iowa? It depends upon many different factors. While there are examples of success in rural Iowa counties, there are many more that are struggling. The general success formula has been associated with community hospitals that serve as a regional health care provider rather than for a single community. Such examples would be in rural communities such as Mason City, Spencer, Decorah, Carroll, Fort Dodge, Ottumwa, Clinton, Clarion, Creston, Pella and Grinnell. These communities tend to have at least 5,000 people and typically serve nearby communities to expand their population to a size which can more easily support a successful, larger multidisciplinary physician practice.

The recruitment of physicians also depends upon variables such as which specialty the community is seeking, the timing of their efforts, the job content and scope, the location, the recruitment package, contract content, compensation, existing medical community and overall practice feasibility. It is challenging to recruit certain specialties, including family medicine, psychiatry and OB/Gyn, which are all desirable in rural communities. The ability to recruit nurse practitioners and physician assistants is much easier as the supply has grown substantially.

Although family medicine physicians are well distributed between rural and urban counties based upon the percentages of population, there are always communities that are not served by physicians. However, with the addition of significant numbers of nurse practitioners and physician assistants, more Iowa communities now have improved access to primary care. These non-physician providers will become even more important in addressing future physician shortages as an important member of the health care team, particularly for rural communities.

Recruitment and retention strategies that need to be entertained include:

- Addressing practice issues related to attitudes/values/relationships within a practice through continuing education programs within organizations may help address some interpersonal issues and improve the retention rates of physicians. Two important elements that have a strong connection to satisfaction are trust in the leadership team and the quality of the communication across the health care organization.
- Focusing practice opportunities into fewer programs that are larger so that the frequency of call is reduced and diverse medical support can be provided within the practice.
- Spouse employment interests will become increasingly important as many households now have two working adults. Many families will not relocate to a community without an appropriate employment opportunity for both the physician and their spouse.
- Life-style considerations with an emphasis on the conveniences, benefits and relationships in a rural community can be featured.
- Employment contracts that are competitive, friendly and balanced should be developed.
- Signing bonuses and incentive plans are valuable tools along with loan repayment programs with retention incentives.

- Social media is becoming a valuable recruitment tool. National data suggests overwhelming percentages of physicians use social media and prefer learning about positions through email.
- Two important elements that have a strong connection to satisfaction are trust in the leadership team and the quality of the communication across the health care organization.
- Telehealth and team-based care opportunities within the rural setting need to be supported.

When addressing the recruitment and retention of physicians serving rural Iowa counties, the primary focus is upon family medicine, general surgery, obstetrics and gynecology and psychiatry. Although there are examples of other specialty physicians establishing successful practices scattered in rural Iowa communities, one must realize that these are the exceptions rather than the rule.

Successful specialty practices must be located in communities which serve a large regional area to build volumes necessary to sustain a practice. These specialty physicians will frequently serve rural communities through visiting consultant clinics. One can never rule out the possibility of specialty physicians choosing a rural community as they may be attracted to these communities for personal reasons, but the sustainability in the long run may be tenuous.

Conclusions of recruitment and retention of physicians in rural Iowa:

- When focusing upon the recruitment and retention of physicians serving rural Iowa counties, the focus should generally be on family medicine, general surgery, obstetrics & gynecology and psychiatry. These are specialties that are both aligned with the needs of rural Iowans and more likely to have a successful practice in a rural location. Hospital-based specialists such as general surgery, will be limited to rural towns with hospitals.
- Increasing attention must be focused on spouse employment interests as many households now have two working adults and many physicians would not relocate to a community without an appropriate employment opportunity for their spouse.
- The ability to recruit nurse practitioners and physician assistants, according to recruiters across the state, is much easier as the supply has grown. Non-physician providers are a critical piece of the workforce in rural Iowa.
- Fewer but larger practices will likely improve recruitment and retention.
- Support for telehealth and team-based care opportunities within the rural setting will enhance local medical teams and will provide care closer to home for Iowans.

APPENDIX 2

Comparing the number of Iowa physicians by specialty in 2008 and 2018

Specialty	# in 2008	# in 2018	Growth	Percent Change	
All Physicians	5,267	5,905	638	12%	Increase
Allergy/Immunology	20	25	5	25%	Increase
Anesthesiology	290	306	16	6%	Increase
Cardiology	179	192	13	7%	Increase
Dermatology	67	73	6	9%	Increase
Emergency Medicine	289	378	89	31%	Increase
Endocrinology	24	37	13	54%	Increase
Family Medicine*	1,313	1,298	-15	-1%	Decrease
Gastroenterology	87	92	5	6%	Increase
Gen'l Internal Medicine**	447	523	76	17%	Increase
General Pediatrics	236	296	60	25%	Increase
General Surgery	205	219	14	7%	Increase
Hematology/Oncology	84	100	16	19%	Increase
Hospital Medicine	79	299	220	278%	Increase
Infectious Disease	36	44	8	22%	Increase
Nephrology	50	57	7	14%	Increase
Neurology	86	90	4	5%	Increase
Neurosurgery	24	30	6	25%	Increase
OB/GYN	214	245	31	14%	Increase
Ophthalmology	136	145	9	7%	Increase
Orthopedic Surgery	189	204	15	8%	Increase
Pathology	120	104	-16	-13%	Decrease
Plastic Surgery	26	31	5	19%	Increase
Psychiatry & Child Psych	223	222	-1	0%	Decrease
Pulmonology	85	95	10	12%	Increase
Radiology	205	204	-1	0%	Decrease
Rheumatology	36	37	1	3%	Increase
Urology	73	76	3	4%	Increase

*Includes family medicine physicians practicing as hospitalists and in emergency medicine

**Includes internal medicine physicians practicing as hospitalists

APPENDIX 3

Frequency by Age Group by Region

	Northwest Region	North Central Region	Northeast Region	Southwest Region	South Central Region	Southeast Region
<35	36	50	118	17	148	156
35-44	96	172	356	53	495	565
45-54	102	121	331	60	425	491
55-64	113	153	290	56	400	477
65 & >	46	57	122	21	172	206
Totals	393	553	1,217	207	1,640	1,895

APPENDIX 4

Relocation Study Results

Specialty	Number of Relocators	Percent of all Relocators n=370	Number of Physicians within specialty (2018)	Percent of all physicians within specialty
Anesthesiology	12	3%	306	4%
Cardiology	15	4%	192	8%
Diagnostic Radiology	19	5%	204	9%
Emergency Medicine	27	7%	378	7%
Family Medicine	53	14%	1,298	4%
Gen. Internal Medicine	26	8%	334	8%
General Pediatrics	10	3%	296	3%
General Surgery	5	1%	219	2%
Hospital Medicine	37	8%	299	12%
Nephrology	10	3%	57	18%
Obstetrics & Gynecology	18	5%	245	7%
Psychiatry	8	2%	222	4%

APPENDIX 5

Rural – Urban Number of Relocators

Specialty	Total # of Relocators	# of Rural Relocators	Total # Rural Physicians in Specialty	% of Rural Relocation of Rural Relocators by Specialty	# of Urban Relocators	Total # Urban Physicians by Specialty	% of Urban Relocation of Urban Relocators by Specialty
All Physicians	370	79	1,383	6%	291	4,522	6%
Anesthesiology	12	0	15	0%	12	291	4%
Cardiology	15	2	22	9%	13	170	8%
Emer Med	27	5	113	4%	22	265	8%
Family Med	53	31	603	5%	22	695	3%
Gen Int Med	26	6	66	9%	20	268	7%
Gen Pediatrics	10	1	54	2%	9	242	4%
Gen Surgery	5	2	89	2%	3	130	2%
Hospital Med	37	4	57	7%	33	242	14%
Nephrology	10	0	7	0%	10	50	20%
Ob/Gyn	18	6	66	9%	12	179	7%
Psychiatry	8	0	37	0%	8	185	4%
Radiology	19	2	43	19%	17	161	11%

APPENDIX 6

Percentage Relocation Rates for Select Specialties by Region

Specialty	Northwest	North Central	Northeast	Southwest	South Central	Southeast
Anesthesiology	14%	5%	5%	18%	1%	3%
Cardiology	7%	6%	13%	0%	6%	8%
Diagnostic Radiology	17%	19%	16%	0%	4%	6%
Emergency Medicine	4%	0%	6%	6%	9%	11%
Family Medicine	6%	5%	2%	6%	4%	4%
General Internal Medicine	33%	11%	9%	6%	5%	8%
General Pediatrics	9%	7%	0%	9%	1%	8%
General Surgery	4%	0%	4%	0%	0%	3%
Hospital Medicine	20%	6%	10%	0%	9%	23%
Nephrology	-	0%	0%	-	6%	18%
Obstetrics & Gynecology	0%	14%	13%	18%	7%	1%
Psychiatry	0%	0%	5%	0%	11%	4%
Total Relocation Rate	7%	6%	6%	7%	5%	7%

APPENDIX 7

Iowa Population Over 40 Years and Projections

Iowa Population	1978	1988	1998	2008	2018	2025	2030	2035	2040
Rural	1,654,674	1,513,561	1,521,939	1,489,906	1,464,044	1,472,221	1,475,144	1,471,726	1,500,261
Urban	1,263,093	1,254,801	1,380,933	1,526,828	1,694,676	1,778,973	1,838,730	1,892,880	1,987,681
Total	2,917,767	2,768,362	2,902,872	3,016,734	3,158,720	3,251,194	3,313,874	3,364,606	3,487,942
Rural	57%	55%	52%	49%	46%	45%	45%	44%	43%
Urban	43%	45%	48%	51%	54%	55%	55%	56%	57%

APPENDIX 8

Rural-Urban Trends of All Physicians Over Forty Years

All Physicians	1978	1988	1998	2008	2018
Rural	1151 - 37%	1164 - 32%	1344 - 30%	1390 - 26%	1383 - 23%
Urban	1926 - 63%	2478 - 68%	3201 - 70%	3877 - 74%	4522 - 77%

APPENDIX 9

Rural-Urban General Surgeon Trends Over Forty Years

General Surgeons	1978	1988	1998	2008	2018
Rural	99 - 44%	88 - 41%	88 - 45%	93 - 45%	89 - 41%
Urban	125 - 56%	126 - 59%	109 - 55%	112 - 55%	130 - 59%

APPENDIX 10

Rural-Urban Psychiatrist Trends Over Forty Years

Psychiatrist	1978	1988	1998	2008	2018
Rural	58 - 39%	58 - 34%	66 - 29%	77 - 35%	37 - 17%
Urban	90 - 61%	113 - 66%	160 - 71%	146 - 65%	185 - 83%

APPENDIX 11

Rural-Urban Family Medicine Trends Over Forty Years

Family Physicians	1978	1988	1998	2008	2018
Rural	684 - 62%	596 - 56%	619 - 54%	648 - 49%	603 - 46%
Urban	428 - 38%	467 - 44%	533 - 46%	665 - 51%	695 - 54%

APPENDIX 12

Rural-Urban OB/Gyn Trends Over Forty Years

OB/Gyn	1978	1988	1998	2008	2018
Rural	28 - 21%	29 - 21%	43 - 24%	52 - 24%	66 - 27%
Urban	105 - 79%	107 - 79%	139 - 76%	162 - 76%	179 - 73%

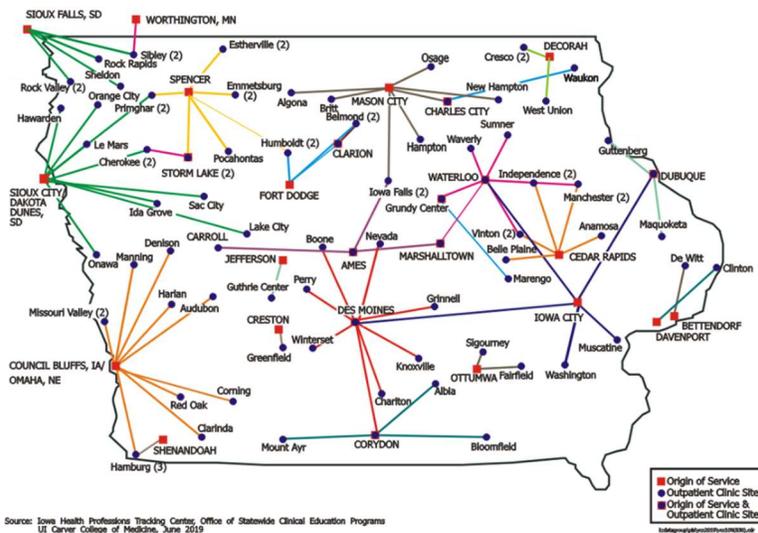
APPENDIX 13

VISITING CONSULTANT CLINICS BY SPECIALTY

VCC Specialty Clinics	Hours of clinic time provided	FTEs
Cardiology	23,130	11.12
Orthopedic Surgery	18,530	8.91
General Surgery	9,740	4.68
Medical Oncology	7,140	3.43
Otolaryngology	5,410	2.60
Obstetrics and Gynecology	4,880	2.35
Urology	4,320	2.08
Ophthalmology	3,340	1.61
Radiation Oncology	3,120	1.5
Gastroenterology	3,000	1.44
Neurology	2,720	1.31
Nephrology	2,500	1.20
Pulmonology	2,180	1.05
Pain Medicine - Anesthesia	1,920	0.92
Dermatology	1,440	0.69
Psychiatry	1,420	0.68
Vascular Surgery	1,300	0.63
Allergy & Immunology	710	0.34
Pediatric Cardiology	650	0.31
Infectious Disease	600	0.29
Others with less than 600 hrs./year	6,610	3.2
Total	104,840	50.4

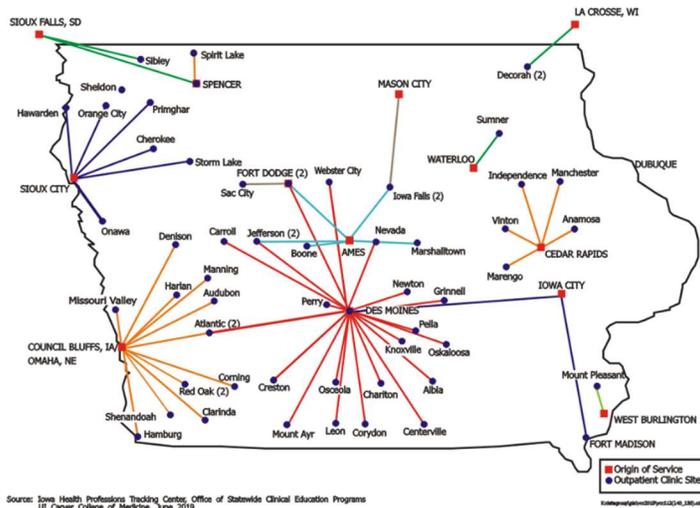
APPENDIX 14

ORTHOPEDIC SURGERY VISITING CONSULTANT CLINICS ORTHOPEDIC SURGERY (89)



APPENDIX 15

MEDICAL ONCOLOGY VISITING CONSULTANT CLINICS MEDICAL ONCOLOGY (56)



APPENDIX 17

Percent of physician workforce age 55 or greater by specialty and by region

Specialty	Average Age of Retirement	All Iowa ≥ 55 y/o	NW IA	NC IA	NE IA	SW IA	SC IA	SE IA
All Physicians	67	36%	40%	38%	34%	37%	35%	36%
Family Medicine	67	35%	33%	39%	31%	31%	39%	33%
Gen'l Internal Medicine	65	31%	50%	35%	25%	39%	28%	33%
Pediatrics	66	28%	57%	37%	23%	36%	21%	32%
Psychiatry & Child Psych	68	48%	58%	45%	51%	50%	52%	44%
General Surgery	68	37%	43%	38%	38%	25%	35%	36%
Emergency Medicine	66	30%	35%	15%	35%	50%	27%	28%
OB/GYN	65	35%	33%	36%	31%	41%	32%	38%
Allergy/Immunology	66	56%	-	67%	40%	-	57%	67%
Cardiology	70	50%	29%	50%	42%	50%	63%	49%
Dermatology	66	38%	100%	27%	36%	-	62%	28%
Endocrinology	67	35%	-	33%	13%	-	36%	50%
Gastroenterology	64	45%	100%	50%	62%	-	38%	40%
Hematology/Oncology	64	33%	50%	36%	29%	33%	24%	36%
Infectious Disease	67	36%	-	33%	50%	-	27%	41%
Nephrology	68	40%	-	33%	45%	-	39%	44%
Neurology	68	41%	100%	56%	33%	-	52%	35%
Pulmonology	67	29%	0%	33%	24%	50%	32%	33%
Rheumatology	67	49%	-	-	57%	-	43%	53%
Neurosurgery	67	43%	-	33%	50%	-	13%	62%
Ophthalmology	68	43%	67%	44%	41%	-	41%	45%
Orthopedic Surgery	68	42%	61%	50%	51%	50%	35%	32%
Plastic Surgery	67	35%	-	50%	33%	-	43%	25%
Urology	66	36%	67%	33%	33%	-	36%	35%
Anesthesiology	65	39%	29%	38%	38%	55%	29%	47%
Radiology	66	38%	75%	48%	31%	-	35%	37%
Pathology	66	41%	50%	38%	26%	67%	45%	43%

APPENDIX 18

**Summary of Family Medicine
Practice Opportunities**

**Iowa Communities Recruiting Family Physicians
2019-2020**

	<u>Practice Opportunities</u>		<u>Communities</u>	
	<u>#</u>	<u>(%)</u>	<u>#</u>	<u>(%)</u>
Statewide	145	(100%)	83	(100%)
<u>Region (# of Counties)</u>				
• North Central (13 Co.)	19	(13%)	14	(17%)
• Northeast (13 Co.)	31	(22%)	18	(22%)
• Northwest (15 Co.)	30	(21%)	18	(22%)
• South Central (14 Co.)	28	(19%)	15	(17%)
• Southeast (11 Co.)	28	(19%)	11	(13%)
• Southwest (7 Co.)	<u>9</u>	<u>(6%)</u>	<u>8</u>	<u>(9%)</u>
Total	145	(100%)	84	(100%)
<u>Community Size*</u>				
• > 50,000	38	(26%)	10	(12%)
• 25,000 - 49,999	17	(11%)	8	(10%)
• 10,000 - 24,999	13	(9%)	9	(11%)
• 5,000 - 9,999	33	(23%)	24	(28%)
• 2,500 - 4,999	20	(14%)	16	(19%)
• 1,000 - 2,499	23	(16%)	16	(19%)
• <1,000	<u>1</u>	<u>(1%)</u>	<u>1</u>	<u>(1%)</u>
Total	145	(100%)	84	(100%)
<u>Hospital Proximity</u>				
• Hospital in the Town	132	(91%)	70	(84%)
• Hospital within 10 miles	5	(3%)	6	(6%)
• Hospital 10+ miles away	<u>8</u>	<u>(6%)</u>	<u>8</u>	<u>(10%)</u>
Total	145	(100%)	84	(100%)

Family Medicine Practice Opportunities by Geographic Region

North Central Iowa (NC) (19 Opportunities)

Ackley	Clarion	Iowa Falls	Rockwell
Ames	Clear Lake	Jefferson	Webster
Boone	Forest City	Marshalltown	
Britt	Fort Dodge	Mason City	

Northeast Iowa (NE) (31 Opportunities)

Cedar Falls	Jesup	Osage	
Cedar Rapids	Manchester	Tama	
Charles City	Maquoketa	Traer	
Dubuque	Monticello	Waterloo	
Guttenberg	New Hampton	Waukon	
Independence	Oelwein	West Union	

Northwest Iowa (NW) (30 Opportunities)

Carroll	Hull	Rock Valley	Spencer
Cherokee	Le Mars	Sac City	Spirit Lake
Denison	Orange City	Sibley	Storm Lake
Estherville	Primghar	Sioux Center	
Hawarden	Rock Rapids	Sioux City	

South Central Iowa (SC) (28 Opportunities)

Ankeny	Grinnell	Newton	Urbandale
Centerville	Knoxville	Oskaloosa	West Des Moines
Corydon	Leon	Perry	Waukee
Des Moines	Mount Ayr	Prairie City	

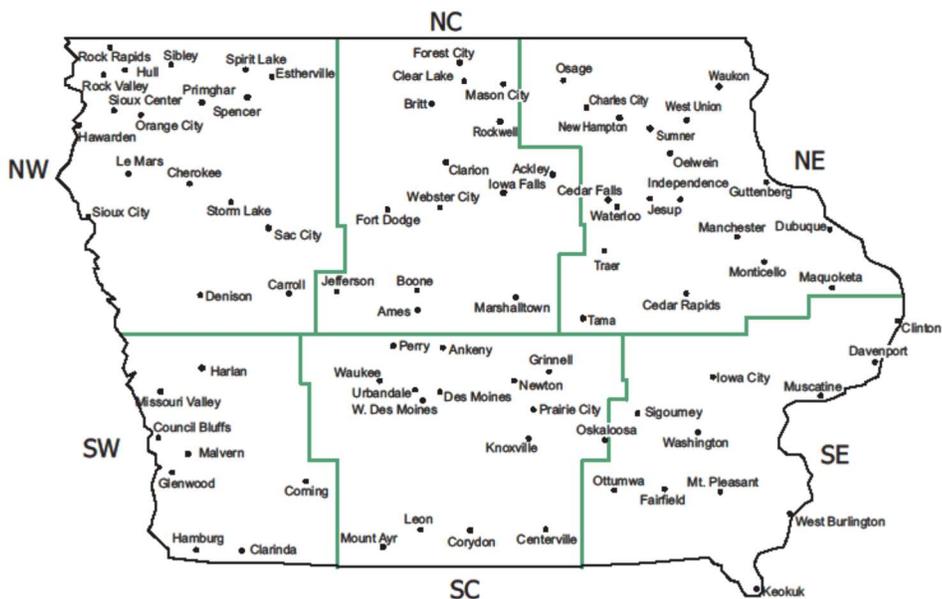
Southeast Iowa (SE) (28 Opportunities)

Clinton	Iowa City	Muscatine	Washington
Davenport	Keokuk	Ottumwa	West Burlington
Fairfield	Mount Pleasant	Sigourney	

Southwest Iowa (SW) (9 Opportunities)

Clarinda	Council Bluffs	Hamburg	Malvern
Corning	Glenwood	Harlan	Missouri Valley

FAMILY MEDICINE OPPORTUNITIES



145 Practice Opportunities in 83 Communities

Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, September 2019

APPENDIX 19

2019 Iowa Communities Recruiting General Internists

Office-Based Opportunities

34 Opportunities in 24 Communities

Ames	Clive	Fort Dodge	Mason City	Spirit Lake
Ankeny	Corning	For Madison	Muscatine	Waterloo
Belmond	Creston	Indianola	Ottumwa	Webster City
Cedar Falls	Des Moines	Iowa City	Red Oak	West Burlington
Clinton	Dubuque	Knoxville	Sioux City	

Hospitalist Opportunities

27 Opportunities in 14 Communities

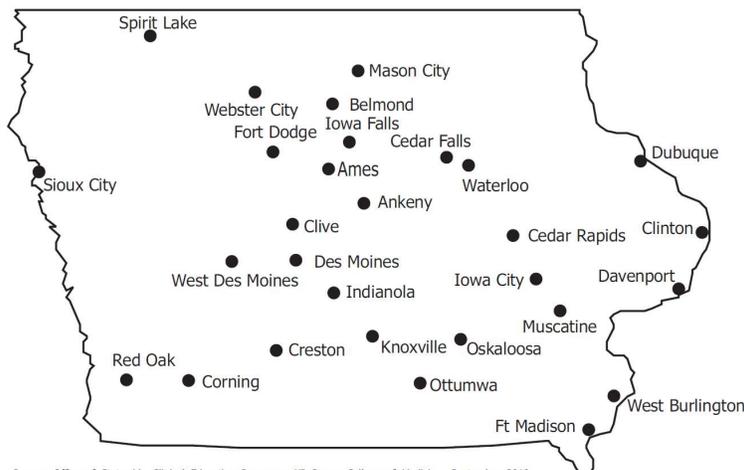
Ames	Fort Dodge	Oskaloosa
Cedar Rapids	Fort Madison	Red Oak
Creston	Indianola	Waterloo
Davenport	Iowa City	West Burlington
Des Moines	Iowa Falls	West Des Moines
Dubuque	Mason City	

Other Opportunities

5 Opportunities in 5 Communities

- Cedar Rapids – Rehab Hospital
- Fort Dodge–Veterans Administration
- Knoxville – Veterans Administration
- Mason City–Veterans Administration
- Ottumwa – Community Health

**GENERAL INTERNAL MEDICINE OPPORTUNITIES
66 PRACTICE OPPORTUNITIES IN 43 COMMUNITIES**



Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, September 2019

APPENDIX 20
2019 Communities Recruiting Pediatricians

Office Based Opportunities

16 Opportunities in 11 Communities

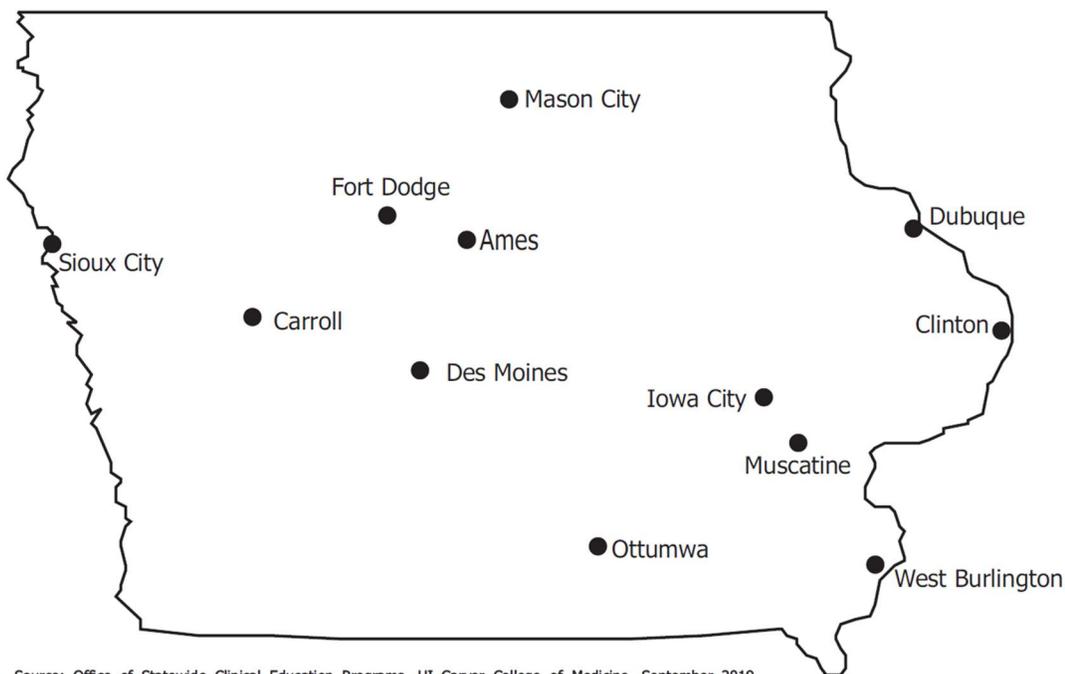
Ames	Dubuque	Muscatine
Carroll	Fort Dodge	Ottumwa
Clinton	Iowa City	Sioux City
Des Moines		West Burlington

Other Opportunities

4 Opportunities in 4 Communities

Des Moines – Pediatric Hospitalist
 Iowa City – Clinical Faculty
 Ottumwa – Community Health

PEDIATRICIAN OPPORTUNITIES
16 PRACTICE OPPORTUNITIES IN 11 COMMUNITIES



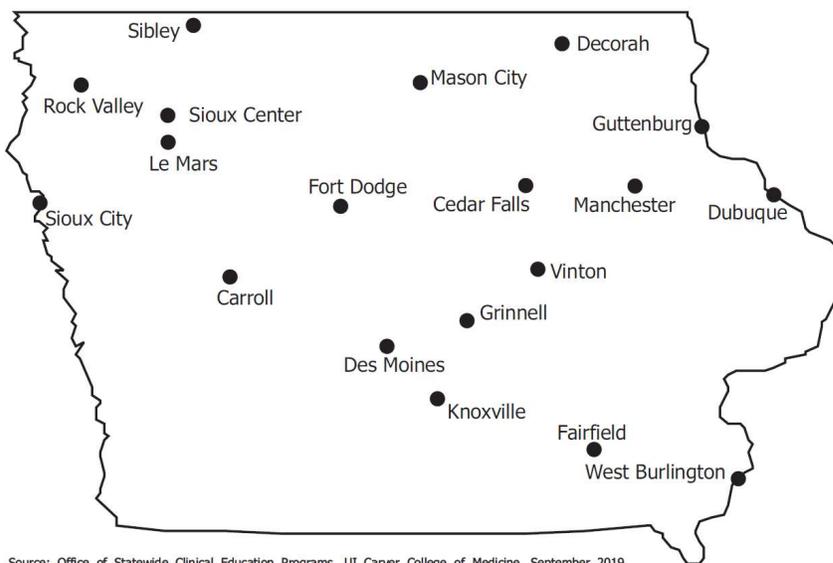
Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, September 2019

APPENDIX 21
2019 Communities Recruiting General Surgeons

Private Practice Opportunities
17 Opportunities in 17 Communities

Carroll	Fairfield	Manchester	Vinton
Cedar Falls	Grinnell	Mason City	West Burlington
Decorah	Guttenberg	Rock Valley	
Des Moines	Knoxville	Sibley	
Dubuque	Le Mars	Sioux Center	

GENERAL SURGERY OPPORTUNITIES
17 PRACTICE OPPORTUNITIES IN 17 COMMUNITIES



Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, September 2019

APPENDIX 22

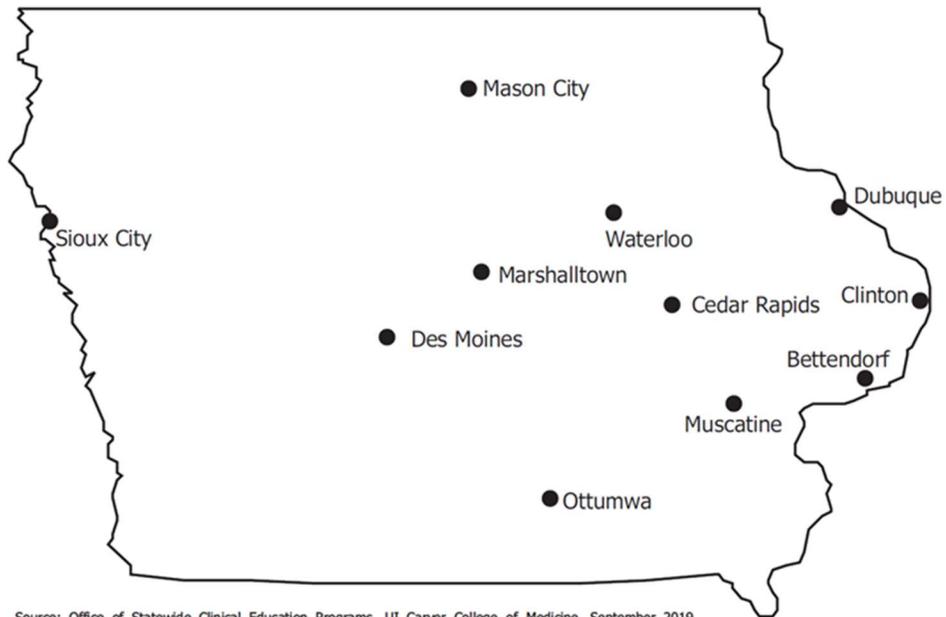
**2019 Iowa Communities Recruiting
Obstetricians / Gynecologists**

Office-Based Opportunities

14 Opportunities in 11 Communities

Bettendorf	Dubuque	Ottumwa
Cedar Rapids	Marshalltown	Sioux City
Clinton	Mason City	Waterloo
Des Moines	Muscatine	

**OBSTETRICIANS/GYNECOLOGISTS OPPORTUNITIES
14 PRACTICE OPPORTUNITIES IN 11 COMMUNITIES**



Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, September 2019

APPENDIX 23

Summary of Psychiatry Practice Opportunities

63 opportunities in 27 communities

FTEs are indicated in () next to the number of opportunities.

**Adult Psychiatry – 34 Opportunities
Opportunities – 9 Opportunities**

Child Psychiatry – 19 Opportunities

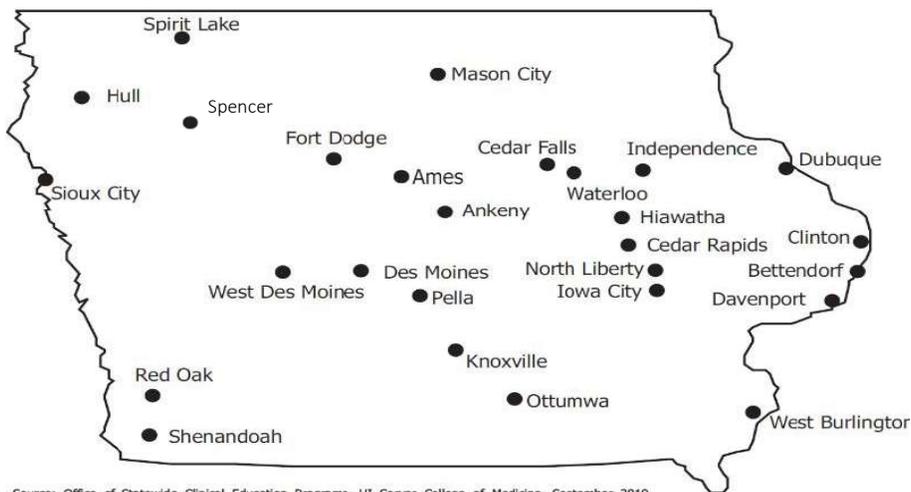
Other

Ames	2 (2)
Bettendorf	1 (1)
Cedar Falls	2 (2)
Cedar Rapids	5 (4.5)
Davenport	2 (2)
Hiawatha	1 (1)
Hull	1 (1)
Independence	1 (1)
Iowa City	3 (3)
Knoxville	1 (1)
Mason City	2 (2)
North Liberty	1 (1)
Ottumwa	1 (1)
Shenandoah	1 (1)
Sioux City	2 (2)
Spencer	1 (1)
Spirit Lake	1 (1)
Waterloo	3 (3)
West Burlington	2 (2)
West Des Moines	<u>1 (1)</u>
Total	34 (33.5)

Cedar Rapids	3 (3)
Des Moines	1 (1)
Hiawatha	1 (1)
Independence	1 (1)
Iowa City	2 (2)
Mason City	1 (1)
North Liberty	1 (1)
Ottumwa	1 (1)
Pella	1 (1)
Sioux City	3 (3)
Waterloo	3 (3)
West Des Moines	<u>2 (2)</u>
Total	20 (20)

<u>Community</u>	<u>#</u>	<u>Opportunity Type</u>
Cedar Rapids	1 (.5)	Rehab Hospital
Independence	2 (2)	State Institution
Iowa City	2 (2)	Clinical Faculty
Knoxville	1 (1)	Federal / VA
Ottumwa	2 (2)	Community Health
West Burlington	<u>1 (1)</u>	Community Health
Total	9 (8.5)	

**PSYCHIATRY OPPORTUNITIES
63 PRACTICE OPPORTUNITIES IN 27 COMMUNITIES**



Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, September 2019

APPENDIX 24

**Iowa Communities Recruiting
Emergency Medicine Physicians**

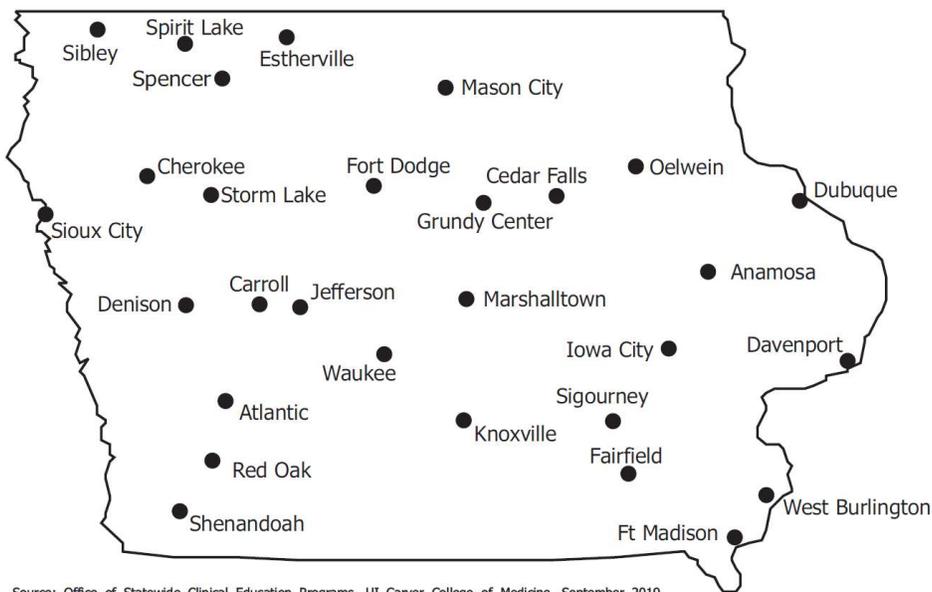
Total EM Opportunities

46 Opportunities in 29 Communities

Anamosa	Dubuque	Knoxville	Sioux City
Atlantic	Estherville	Marshalltown	Spencer
Bettendorf	Fairfield	Mason City	Spirit Lake
Carroll	Fort Dodge	Oelwein	Storm Lake
Cedar Falls	Fort Madison	Red Oak	Waukee
Cherokee	Grundy Center	Shenandoah	West Burlington
Davenport	Iowa City	Sibley	
Denison	Jefferson	Sigourney	

GENERAL MEDICINE OPPORTUNITIES

49 PRACTICE OPPORTUNITIES IN 29 COMMUNITIES



Source: Office of Statewide Clinical Education Programs, UI Carver College of Medicine, September 2019

APPENDIX 25

Iowa Residency Programs

Community/Sponsor	2019 -2020	1st Year Positions	Total Positions
	Type of Residency Program		
Cedar Rapids			
Cedar Rapids Medical Education Foundation	Family Medicine	7	21
Davenport			
Genesis Medical Center	Family Medicine	6	18
Des Moines			
Broadlawns	Family Medicine	8	24
	Transitional Residents	4	4
	Psychiatry (2 here and 2 at Iowa Methodist for a collaborative program)	2	8
Iowa Lutheran	Family Medicine	6	18
Iowa Methodist	General Surgery	4	20
	General Surgery Preliminary	2	2
	Internal Medicine	10	30
	Internal Medicine Preliminary	2	2
	Pediatrics	7	21
	Transitional Residents	4	4
	Psychiatry (2 here and 2 at Broadlawns for a collaborative program)	2	8
MercyOne Medical Center - Des Moines	Family Medicine	8	24
	General Surgery	4	20
	Internal Medicine	10	30
	Psychiatry	4	16
Mason City			
MercyOne Medical Center - North Iowa	Family Medicine	6	18
	Internal Medicine	4	12

Community/Sponsor	Type of Residency Program	1st Year Positions	Total Positions
Sioux City			
Siouxland Medical Education Foundation	Family Medicine	6	18
Waterloo			
Northeast Iowa Medical Education Foundation	Family Medicine	6	18
Totals Outside Iowa City		112	336
Iowa City			
University of Iowa Hospitals and Clinics	Anesthesia	15	60
	Dermatology*	0	15
	Emergency Medicine	9	27
	Family Medicine	6	18
	Family Medicine - Psychiatry	2	10
	Internal Medicine	23	69
	Internal Medicine - Psychiatry	2	10
	Medicine - Preliminary	3	3
	Medicine - Preliminary - Ophthalmology	5	5
	Neurology	8	32
	Neurology - Child	1	3
	Neurosurgery	2	14
	Obstetrics/Gynecology	5	20
	Ophthalmology*	0	15
	Orthopedic Surgery	6	30
	Otolaryngology	3	12
	Otolaryngology - Research	2	12
	Pathology	5	20
	Pediatrics	15	45
	Psychiatry	7	28
	Child Psychiatry	3	6
	Radiology Diagnostic * (5 are 2nd yr. positions)	0	20
	Radiology Diagnostic Integrated Program	3	15
	Radiation Oncology*	0	8
	Radiology Interventional	1	6

Community/Sponsor	Type of Residency Program	1st Year Positions	Total Positions
(UIHC Continued)	Nuclear Medicine*	0	6
	General Surgery	6	30
	Surgery - Preliminary	2	2
	Cardio-Thoracic Surgery	1	7
	Surgery - Vascular	1	7
	Urology	3	15
Totals for UIHC		139	570
Total Residency Positions for Iowa (1st Yr. & Total)		251	906
Iowa Fellowship Programs	2019 - 2020		
Community/Sponsor	Type of Fellowship	No 1st Year Positions	Total Positions
Des Moines			
MercyOne Medical Center - Des Moines	Cardiology	-	6
Mason City			
MercyOne Medical Center - North Iowa	Cardiology	-	9
	Hospice & Palliative Care	-	1
	Interventional Cardiology	-	1
Iowa City			
University of Iowa Hospitals and Clinics	Medical Subspecialties	-	131
	Surgical Subspecialties	-	56
	Anesthesia/Pathology/Radiology Subspecialties	-	36
Total Fellowship Positions		-	240
*Requires a preliminary year for the first year: Dermatology, Nuclear Medicine, Diagnostic Radiology, Radiation Oncology & Ophthalmology			

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