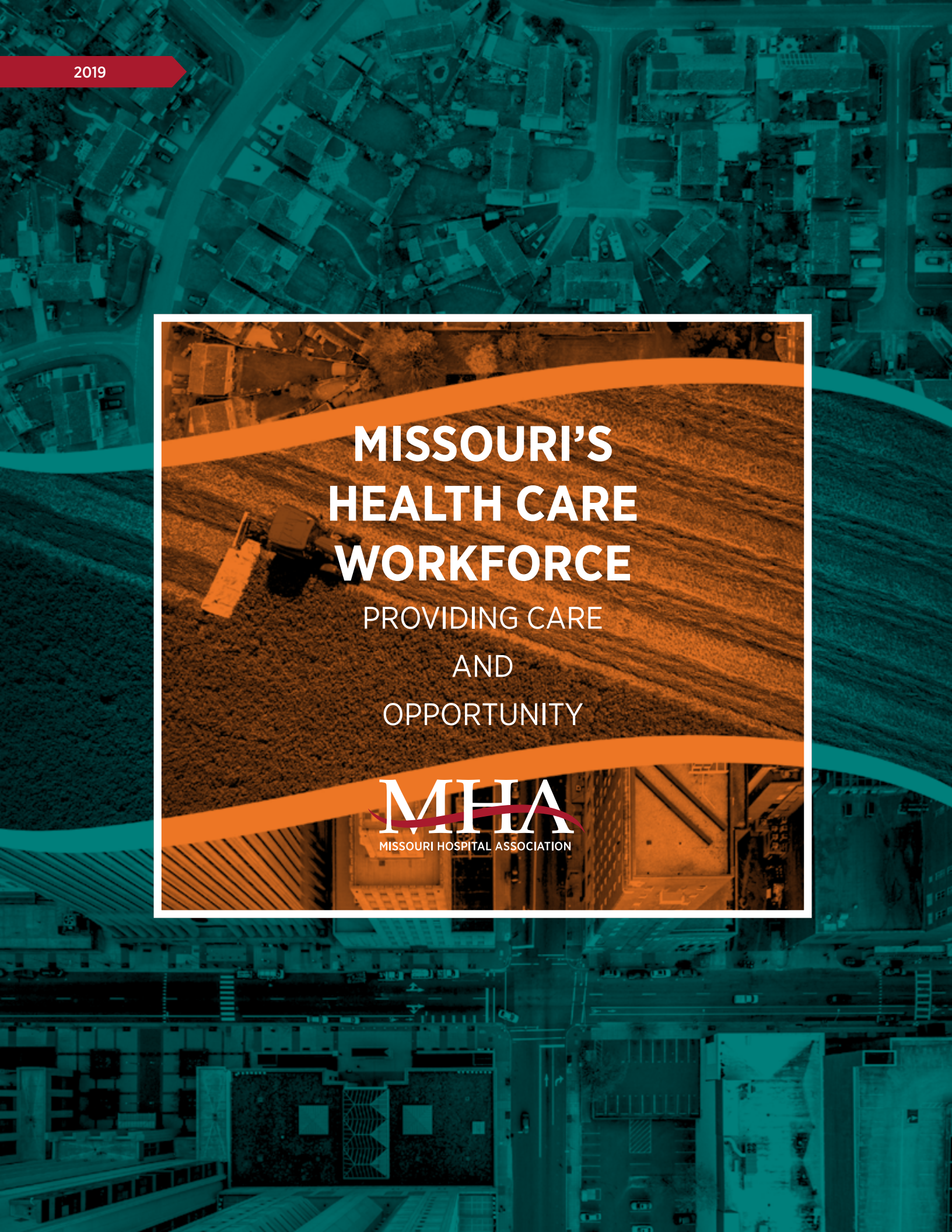
2019



MISSOURI'S HEALTH CARE WORKFORCE

PROVIDING CARE AND OPPORTUNITY

MHA
MISSOURI HOSPITAL ASSOCIATION

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EXECUTIVE SUMMARY

Health care delivery is people-centered. Although it is common to think of doctors and nurses as the core of the health care workforce, dozens of other categories of health care workers — clinicians, therapists, technicians and assistive personnel — support these caregivers. Behind these workers are back office, business-focused and operational staff that assist with compliance, technology, billing and recordkeeping, and the other functions that allow health care organizations — from small, independent physician practices, to large academic medical centers — to deliver care.

The benefits of the health care workforce are twofold. First, without the skilled clinical workers and support personnel, health care systems couldn't function to benefit the individuals and communities they serve. Second, where these caregivers and their supporting infrastructure exist, they provide an economic benefit to the community.

Missouri has an immediate and long-term need for clinical and assistive health care workers. The state's poorer-than-average health, demographics and geography are driving statewide, regional and local demand for employees of all types. Moreover, since many of these professionals have strong backgrounds in health sciences, the demand for their expertise extends beyond the physician's office or hospital bedside. For example, high-skill practitioners are increasingly being attracted to nonclinical positions in the health insurance and pharmaceutical industries, while low-skill, entry-level workers are more difficult to find and retain in a job market with very low unemployment.

Investments in the health care workforce benefit residents as they seek care and as health care workers' pay and benefits ripple through the economy. This report reviews the status of the hospital workforce and forecasts the demands for the larger health care workforce, with recommendations for strategic investments that can deliver the right workers — locally and at the statewide level. Although the two datasets are imperfectly aligned — today's hospital workforce and tomorrow's workers sector-wide — taken together they are complementary and informative.

The first part of this report includes analysis of Missouri's current hospital workforce. It finds increased turnover rates among many hospital-

based health care professions. While vacancies have decreased for several positions, overall, the findings indicate a health care workforce shortage that is progressively getting worse — including an **all-time-high employee turnover rate of 19.5 percent.** Of the 28 hospital occupations surveyed, all indicated an employee turnover rate of more than 7 percent. Among these same occupations, 23 had a vacancy rate of more than 5 percent. The hospital positions with the highest vacancies were licensed practical nurse, housekeeper, staff nurse, surgical technician and sterile processing technician. Staff nurse is the single largest employment category surveyed.

The health care workforce is important to all Missourians. Missouri's poor health status, demographic changes and advances in health technology portend health care needs will increase. Medical technologies will increasingly offer tools to manage health and workers will be needed to provide health services to a growing, aging population.

The second part of this report examines the health care workforce needs through 2030.

Missouri employment in health care is expected to grow approximately twice as fast as general employment between today and 2030. A job in the medical field tends to have a higher salary than the average job in the economy. This means high school and college graduates will have opportunities in health professions.

Jobs for health care "practitioners" generally have higher than average salaries, and these employment categories will continue to provide opportunity as demand for health care services grows and the incumbent workforce ages and retires.

Jobs in "assistive" health care specialties will continue to offer opportunities for less-skilled workers. Turnover and vacancy in these positions are high. The state's aging population will increase the need for workers providing assistive care in long-term care, homes and other settings.

A strong health care workforce benefits individuals and communities through health care delivery and health improvement. Regional and local variation in worker availability calls for tailored approaches to workforce investment. Individuals with professional medical licensure are, and will remain, in demand within clinical settings. However, the value of these skills will continue to put pressure on provider organizations as these workers are attracted to jobs outside of the clinical environment. Maintaining the clinical workforce in appropriate numbers is essential for health care delivery and health improvement. As such, a set of recommendations for state, local and health care stakeholder investments, follow the data in this report.

PART ONE

MISSOURI'S HOSPITAL WORKFORCE 2019

Figure 1 Missouri Hospital Turnover 2015-2019

Source: Missouri Board of Healing Arts, 2018

Hospitals aren't as much bricks-and-mortar institutions as they are organizations of highly skilled and professionally-diverse workers that serve within. Without an effective, efficient workforce, delivery of health care services would be impossible. Part I of this report identifies the status of the workforce that serves in Missouri's hospitals.

A strong health care and hospital workforce is essential to provide high quality care. Workforce investments can contribute to the success of an organization through recruitment cost savings, reduced turnover, higher patient satisfaction and increased quality of care.

In 2018, hospitals reported increased turnover rates among the majority of the health care positions surveyed, while vacancies decreased for several positions. Increased turnover rates translate into high costs for staff recruitment and training, and can lead to less consistent patient care.

Hospitals can proactively address workforce vacancy and turnover by finding new and creative ways to improve recruitment and retention, overcome the challenges of staff retirements, and implement effective onboarding strategies to help new workers adapt to the workplace culture. In addition, by establishing local workforce partnerships to recruit, educate and train the next generation of students and elevate existing staff in high-demand fields, hospitals can mitigate staffing challenges in the health care sector.

In 2018, turnover rates among many hospital-based health care professions increased, while vacancies decreased for several positions. Similar to last year's report, the data this year illustrate a health care workforce shortage that is progressively getting worse with employee turnover at an all-time high of 19.5 percent **(Figure 1)**.

Health Care Workforce Demand

Health care and social assistance is the largest employment sector in the state.[1] The number of Missourians working in health care occupations is expected to grow by 14 percent and account for 18 percent of job growth between 2016 and 2026.[2]

Job postings are an indicator of demand.

In 2018, the industry with the most job postings in Missouri was hospitals, with 41,435 total job postings — 36,426 postings in urban areas and 5,009 postings in rural areas.[3]

According to the Bureau of Labor Statistics, job growth is expected to grow 7 percent through 2026, but the demand for health care practitioners is expected to grow at double that rate and health care support at more than triple that rate.[4]

[1] U.S. Bureau of Labor Statistics. (n.d.) Quarterly Census of Employment and Wages. Retrieved April 2019 from https://www.bls.gov/cew/
[2] Missouri Economic Research and Information Center. (n.d.) Long-term Occupational Projections. Retrieved April 2019 from https://www.missourieconomy.org/occupations/occ_proj.stm
[3] Missouri Economic Research and Information Center. (n.d.) *Real-Time Labor Market Summary (Jan-Dec 2018)* (Rep.).
[4] U.S. Bureau of Labor Statistics. (2019, April). Occupational Outlook Handbook. Retrieved April 2019 from https://www.bls.gov/ooh/healthcare/home.htm

TURNOVER

Turnover is often an indication of employee movement within health settings or professions. Of the 28 hospital occupations surveyed, all had an employee turnover rate of more than 7 percent **(Table 1)**. Hospital positions with the highest turnover include nurse assistants, food service worker/dietary aide, housekeeper, licensed practical nurse and sterile processing technician **(Table 2)**.

Many hospitals indicate finding qualified entry-level staff is difficult due to competitive pay from different industries or larger companies, low unemployment, shallower job pools in rural areas and lack of training programs. These careers are critical to patient care and require minimal formal education. There is tremendous potential for health care employers to work in partnership with educators to train and recruit the entry-level staff needed to serve patients in their communities.

VACANCY

Vacancy can indicate a shortage in skilled workers and an inability to hire candidates. Of the 28 hospital occupations surveyed, 23 occupations have an employee vacancy of more than 5 percent **(Table 1)**. Hospital positions with the highest vacancy are licensed practical nurse, housekeeper, staff nurse, surgical technician and sterile processing technician **(Table 3)**.

When people hear "health care careers," they often think only of doctors and nurses. However, health care organizations need staff in various functions. Many of the fastest-growing health care roles will require considerably less training than what is needed to become a physician or registered nurse.

Staff nurse, licensed practical nurse, surgical technician and sonographer/ultrasound technician remain among the top 10 hospital professions with the highest vacancy from 2018 to 2019 **(Table 3)**.

Table 1. 2019 Missouri Survey Highlights

JOB TITLE COLLECTED JANUARY 2019	WORKING NUMBER OF EMPLOYEES	NUMBER OF VACANT POSITIONS	EMPLOYEE VACANCY RATE	TOTAL EMPLOYEE SEPARATIONS	EMPLOYEE TURNOVER RATE
Nursing & Medical					
Nurse Assistants – Patient Care Technician, Certified Nurse Assistant or Unlicensed Assistive Personnel (UAP)	11,453	1,182	9.4%	4,609	36.5%
Licensed Practical Nurse (LPN)	1,550	214	12.1%	398	22.6%
Nurse Practitioner (APRN)	1,440	110	7.1%	227	14.6%
Staff Nurse (R.N.)	33,928	3,768	10.0%	5,726	15.2%
Physician Assistant	877	28	3.1%	138	15.2%
Employed Physicians	4,263	268	5.9%	322	7.1%
Diagnostic Imaging					
CT Technologist R.T.	751	61	7.5%	96	11.8%
Magnetic Resonance Imaging (MRI) Technologist	422	27	6.0%	43	9.6%
Mammography Technologist	273	18	6.2%	22	7.7%
Nuclear Medicine Technologist	302	25	7.6%	32	9.8%
Radiology Technologist – Certified	1,880	145	7.2%	298	14.7%
Sonographer/Ultrasound Technologist (RDMS)	907	90	9.1%	136	13.6%
Laboratory					
Medical Laboratory Technician (MLT)	378	24	6.0%	67	16.7%
Medical Technologist (MT)	1,516	111	6.8%	208	12.8%
Therapies					
Occupational Therapist	944	57	5.7%	139	13.8%
Occupational Therapy Assistant – Certified (COTA)	255	9	3.2%	34	12.9%
Physical Therapist	1,606	111	6.4%	196	11.4%
Physical Therapy Assistant – Certified (PTA)	600	19	3.1%	78	12.6%
Respiratory Therapist – Certified	520	31	5.7%	97	17.6%
Respiratory Therapist – Registered	1,998	157	7.3%	378	17.5%
Pharmacy					
Pharmacist – Clinical & Retail	1,593	64	3.9%	223	13.5%
Pharmacy Technician	1,207	102	7.8%	261	19.9%
Surgery					
Surgical Technician	1,302	143	9.9%	231	16.0%
Sterile Processing Technician	618	64	9.4%	139	20.4%
Miscellaneous Hospital-Based Positions					
Medical Records Coder	791	36	4.4%	112	13.5%
Housekeeper	3,829	458	10.7%	1412	32.9%
Registered Dietician	471	26	5.2%	61	12.2%
Food Service Worker/Dietary Aid	2,704	271	9.1%	1,073	36.1%
Clinic & Physician Practices					
Nurse – Staff (R.N.) – Clinic	3,925	414	9.5%	224	5.2%
Licensed Practical Nurse (LPN) – Clinic	1,960	143	6.8%	335	15.9%
Nurse Practitioner (APRN) – Clinic	1,740	107	5.8%	250	13.5%
Medical Assistant – Clinic	2,404	183	7.1%	515	19.9%

Source: Missouri Hospital Association Annual Workforce Survey

Table 2. Missouri Hospitals' Top 10 Professions With the Highest Employee Turnover

Job Title — Collected January 2019	Employee Turnover Rate
Nurse Assistants (Patient Care Technician, Certified Nurse Assistant or Unlicensed Assistive Personnel (UAP)	36.5%
Food Service Worker/Dietary Aid	36.1%
Housekeeper	32.9%
Licensed Practical Nurse (LPN)	22.6%
Sterile Processing Technician	20.4%
Pharmacy Technician	19.9%
Respiratory Therapist — Certified	17.6%
Respiratory Therapist — Registered	17.5%
Medical Laboratory Technician (MLT)	16.7%
Surgical Technician	16.0%

Source: Missouri Hospital Association Annual Workforce Survey

Table 3. Missouri Hospitals' Top 10 Professions With the Highest Employee Vacancy

Job Title — Collected January 2019	Employee Vacancy Rate
Licensed Practical Nurse (LPN)	12.0%
Housekeeper	10.7%
Staff Nurse (R.N.)	10.0%
Surgical Technician	9.9%
Sterile Processing Technician	9.4%
Nurse Assistants (Patient Care Technician, Certified Nurse Assistant or Unlicensed Assistive Personnel (UAP)	9.4%
Food Service Worker/Dietary Aid	9.1%
Sonographer/Ultrasound Technologist (RDMS)	9.1%
Pharmacy Technician	7.8%
Nuclear Medicine Technologist	7.6%

Source: Missouri Hospital Association Annual Workforce Survey

Missouri's Hospital Nursing Workforce

Nurses dominate hospital staffing as the single largest category of employee and are essential to the delivery of care. Staff nurse vacancy has declined from 13.3 percent in 2017 to 10 percent in 2018 **(Figure 2)**. Missouri had 33,928 staff nurses working in hospitals and 3,768 vacant positons in 2018 **(Table 1)**. Although nursing vacancy rates are down, hospitals report difficulty in recruiting nurses into specialty roles, including behavioral health.

Hospital staff nurse turnover has declined slightly to 15.2 percent from 16 percent in 2018 **(Figure 2)**. In 2018, the clinic-based staff nurse category experienced the largest decrease in turnover at 5.2 percent from 23 percent in 2018 **(Table 1)**.

Advanced Practice Providers

Hospital nurse practitioner and physician assistant vacancy rates decreased in 2018 **(Table 1)**. These gains are attributable in part to expanded access to education and training systems, and as response to growing demand for these high-skill workers. These providers — most of whom work in primary care — increase health care value by extending the reach of physicians. Ensuring these health care professionals can practice at the top-level of their education extends the geographic reach and number of patients physicians can serve without reducing the quality of care.

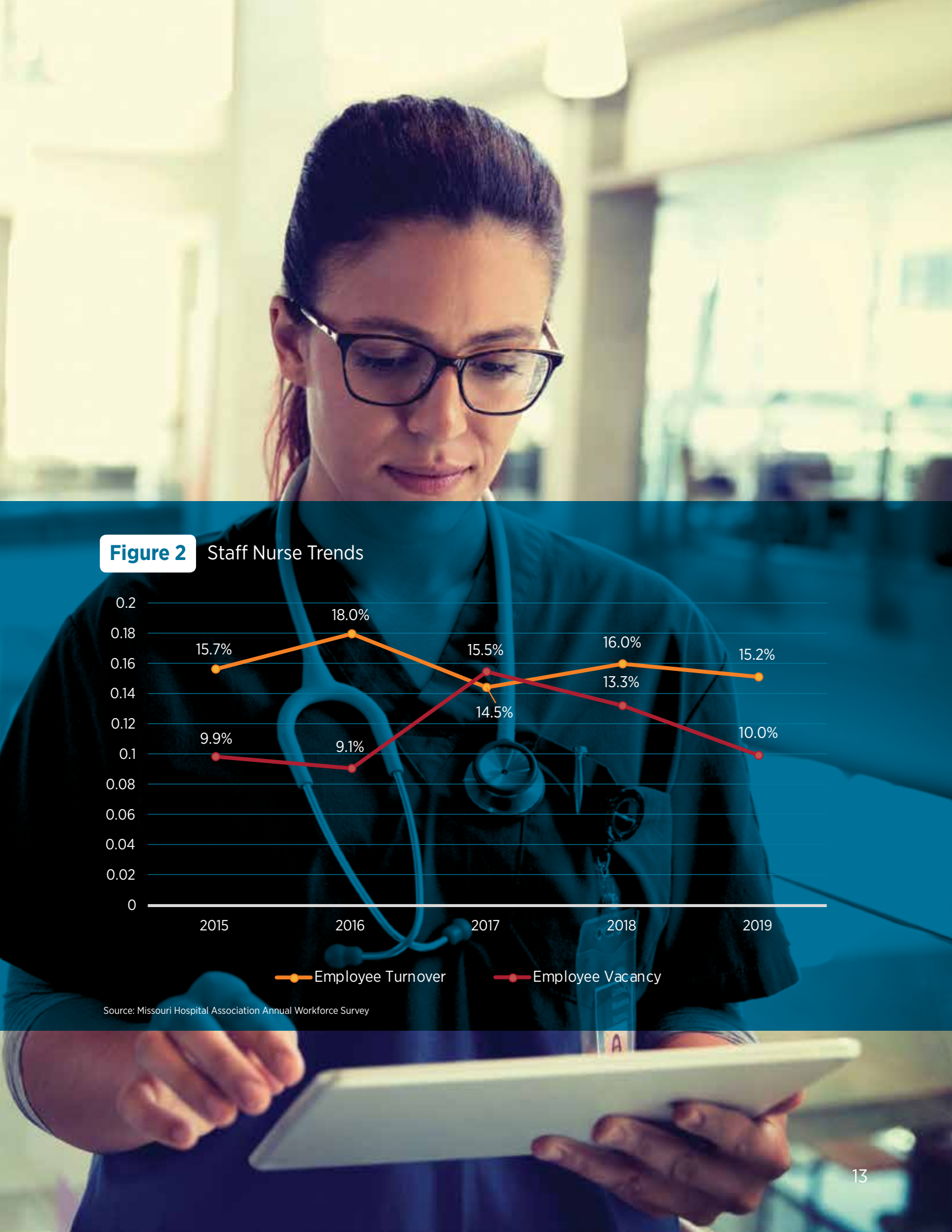


Figure 2 Staff Nurse Trends

Source: Missouri Hospital Association Annual Workforce Survey

PART TWO

PROJECTED DEMAND FOR HEALTH CARE WORKERS — 2019 TO 2030

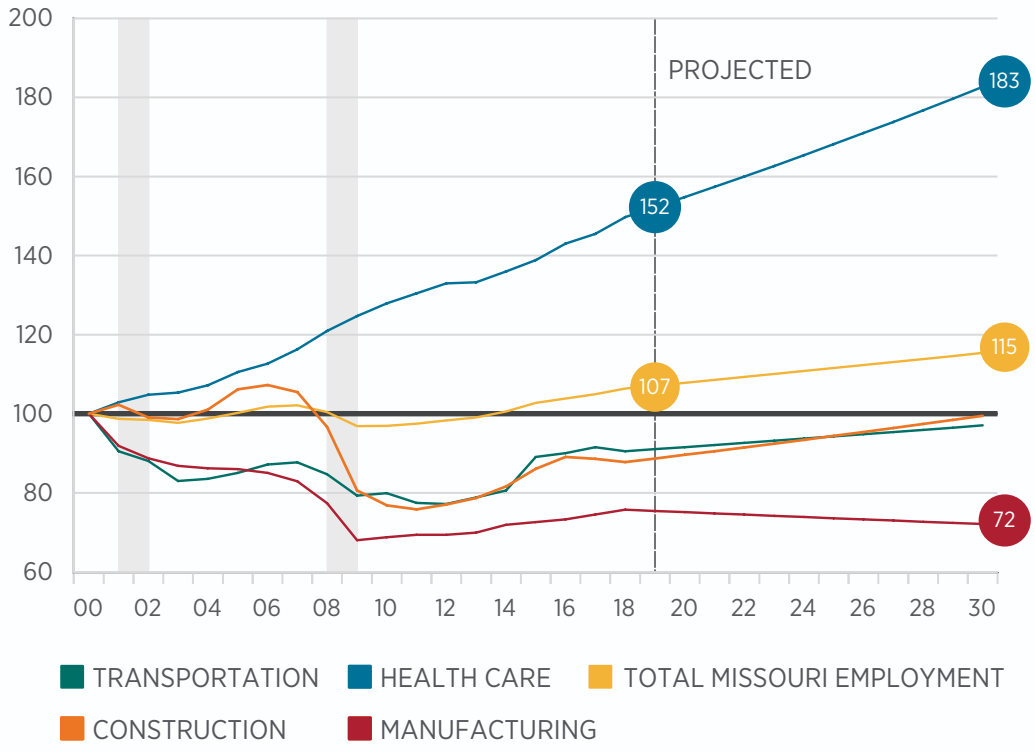
The benefits of a properly aligned health care workforce are twofold. First, individuals who are choosing a career path can invest in skills with confidence that work will be available in their chosen field. Second, as demand for health care services increases, patients will have adequate access to the care they need.

An understanding of anticipated health care workforce demands can encourage individuals to choose health careers and shape public policies to deliver skilled workforce entrants. There can be a significant time lag between the recognition of a health worker shortage and the ability to produce trained workers to meet demand. For example, it can take two to four years to train a registered nurse. Similarly, the time required to educate and train a physician can exceed a decade. These time constraints are based upon the assumption that the educational and vocational facilities required already are in place. If a particular region lacks these facilities, the time lag could be even longer. It can take years to build new educational and vocational facilities, train and hire faculty to teach future students, and to begin the accreditation and licensing process. All of this time and investment must occur before a single student has enrolled.

Most Missouri adults age 25 and older have at least a high school diploma. A significant portion of Missourians have a college degree.[1] Educational and other on-the-job training beyond a K-12 education can help prepare Missourians for future employment. However, the time and resources spent on receiving that education and training can be expensive and

[1] Of Missourians over age 25, approximately 89 percent have a high school diploma or its equivalent, 53.3 percent have at least some college/postsecondary education, and 36 percent have completed some form of college/postsecondary education.

Figure 3 Past and Projected Employment in Missouri



Source: Occupational Employment Statistics, U.S. Bureau of Labor Statistics and author's calculations

time consuming. As a result, individuals and the workforce system benefit from an understanding of whether education or on-the-job training for a particular job will be valuable over time.

Figure 3 illustrates the projected demand for health care workers by plotting indexed employment for Missouri between 2000 and 2030, in several industries and overall, with the base year set at 100.

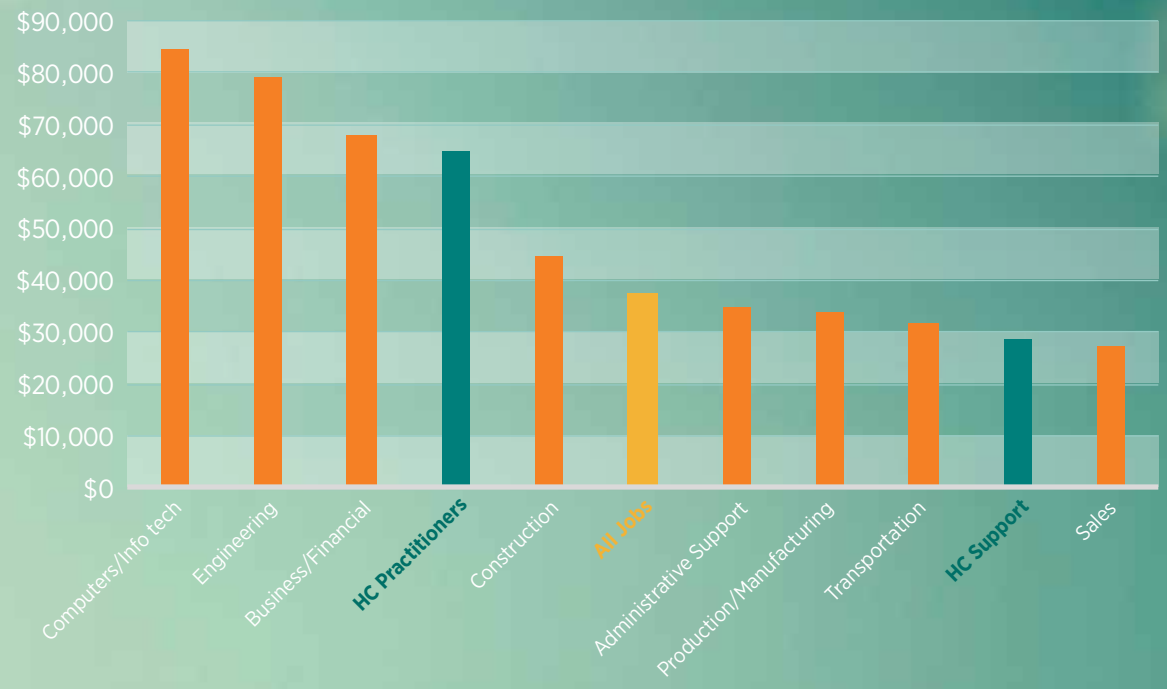
Currently, employment in health care is up 52 percent since 2000. It is expected to increase steadily. In fact, employment in the health care sector is projected to be 83 percent larger in 2030 than it was in 2000. This is a phenomenal level of growth — especially when compared to other industries. Employment in transportation and construction is currently smaller today than it was in the year 2000. These industries are projected to remain slightly below 2000 levels in 2030. Manufacturing fares even worse. Employment is projected to have shrunk 28 percent in 2030 compared to the year 2000. Total employment in Missouri has grown only 7 percent since the year 2000, and is projected to grow by 15 percent in 2030 relative to the 2000 baseline. These estimates indicate employment in many different industries is either stagnant or declining, compared to health care.

Not only has health care been a driving force in employment growth for the state of Missouri, but it tends to produce relatively high-wage jobs. **Figures 4 and 5** show average annual pay for several different industries.[2]

Health care is broken up into three different segments — physicians, health care practitioners and health care support. Health care practitioners include all who practice medicine, such as doctors, nurses, dental hygienists, etc., whereas health care support workers are in supportive roles such as medical billing, medical transcription, home health aides and the like. Both **Figures 4 and 5** count health care support workers and health care practitioners as the same, but **Figure 5** breaks out physicians as their own separate category. From **Figure 4**, it is obvious that health care practitioners earn significantly more than the average worker while health care support workers do not earn as much as an average worker. On a national basis, health care practitioners earn $64,770 per year on average while a health care support worker earns $28,710. This compares to the average worker who earns $37,690. Health care practitioners earn about 72 percent more than the average worker, while health care support workers earn 24 percent less than an average worker. **Figure 5** shows that physicians are paid significantly more than other employees.

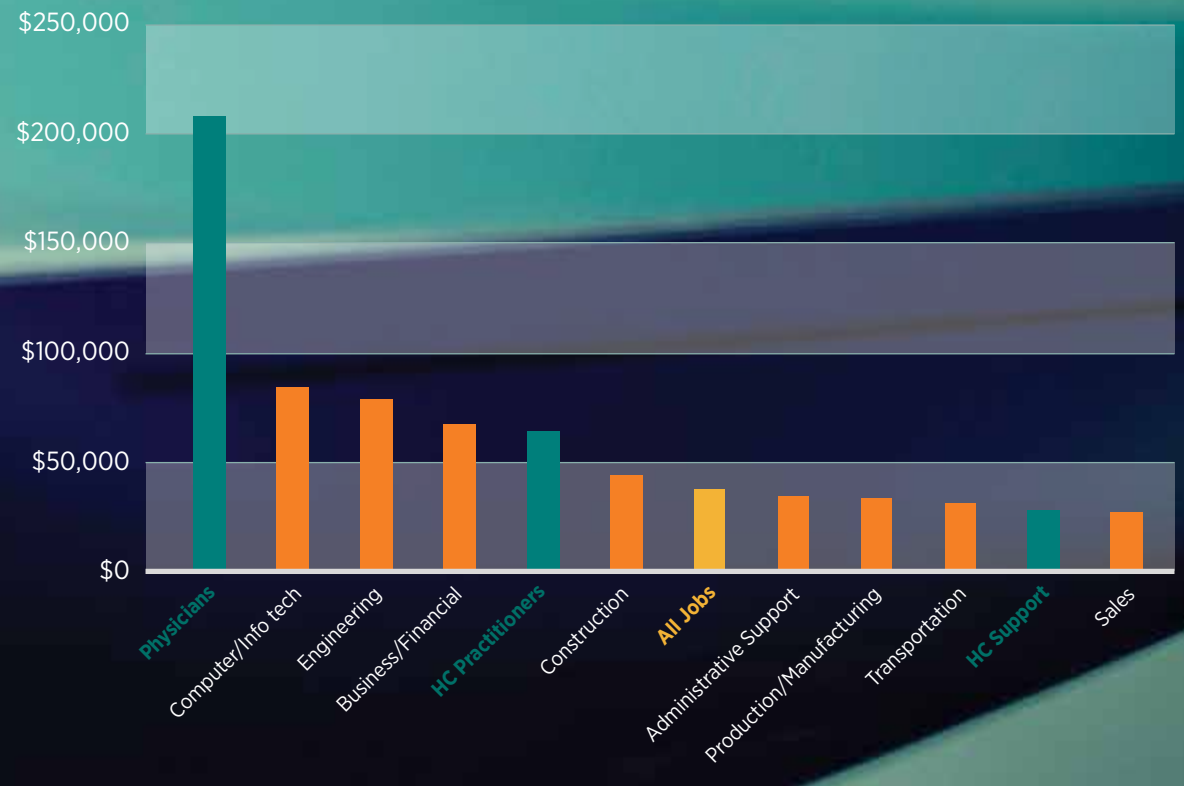
[2] U.S. Bureau of Labor Statistics. (2019, April). Occupational Outlook Handbook https://www.bls.gov/ooh/healthcare/home.htm

Figure 4 Average Annual Earnings of Employees in Several Different Industries



Source: Occupational Outlook Handbook, U.S. Bureau of Labor Statistics

Figure 5 Average Annual Earnings of Employees in Several Different Industries



Source: Occupational Outlook Handbook, U.S. Bureau of Labor Statistics

MISSOURI'S HEALTH CARE WORKFORCE

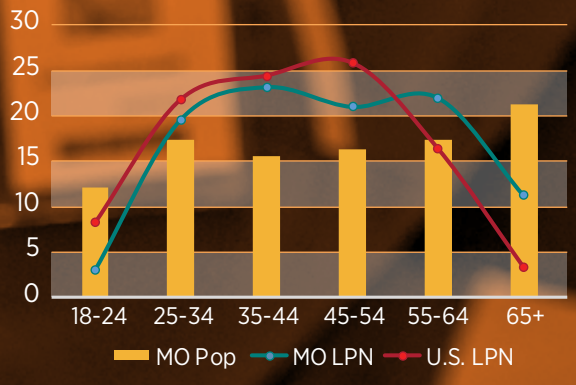
An understanding of the current composition of the health care workforce is important to anticipate how to meet Missourians' future health care needs. There are many factors that will influence the demands placed upon, and the supply of, Missouri's health care workforce in 2030. Health care workers are generally divided into two broad categories — practitioners and support. As noted earlier, health care practitioners are actually practicing some form of medicine. These positions include physicians, nurses and other high-skill, knowledge-based clinicians. Health care support workers provide the human infrastructure for health care organizations, including workers in billing, care support, home health aides or other low-skill jobs. Generally, but not always, health care practitioners must undergo some degree of specialized education and/or training before beginning work. Comparatively, health care support workers usually do not require specialized education or training prior to becoming employed — but they might undergo on-the-job training. Since health care practitioners are generally licensed to some degree, there is often supplementary data available from licensure organizations or boards for practitioners. This is seldom available for health care support workers. As a result, this report is more detailed for health care practitioners than health care support workers.

To evaluate the workforce, employment and wages data were collected for health care practitioner and support workers at the state and national level. This allows employment projections based upon probable future population levels, incomes, health status and other factors.

The data indicate variation in health care workforce needs throughout the country and within job categories. Overall, the U.S. should see growth of 16.5 percent in total employment in the broad category of "health care practitioners" between 2017 and 2030 while Missouri should see growth of 20.2 percent. For the broad category of "health care support" workers, Missouri will see employment grow by 24.3 percent while U.S. employment grows 14.6 percent.[3]

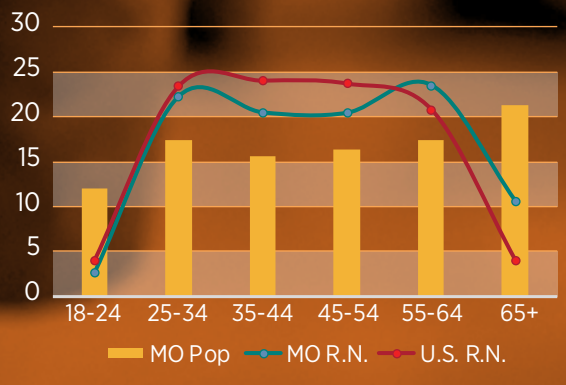
Observing current levels and ages of health care workers does much to reveal possible future employment scenarios. Approximately 46 percent of health care workers in the health care practitioners category are nurses. Fortunately, due to licensing and other requirements, excellent data on nurses at the county level exist in Missouri.[4] **Figures 6 and 7** show the age distribution of LPNs and R.N.s for the state of Missouri and the U.S. For the sake of comparison, the percentage of the Missouri population age 18 and older is shown in bar graphs. In Missouri, 12 percent of the adult population is between the ages of 18 and 24, but only 3 percent of Missouri LPNs are in that age bracket. For the U.S., slightly more than 8 percent of all LPNs are between 18 and 24 years of age. Comparatively, 17.4 percent of the adult population in Missouri is between ages 55 and 64, while 21 percent of R.N.s nationwide and almost 24 percent of R.N.s in Missouri are in that age bracket. As indicated in **Figures 6 and 7**, Missouri's nursing workforce is older than the national nursing workforce.

Figure 6 Age Breakout As A Percent of Missouri Adult Population, Missouri LPN Workforce, U.S. LPN Workforce



Source: Census Bureau, State Nursing Board of Missouri, National Center for Health Workforce Analysis

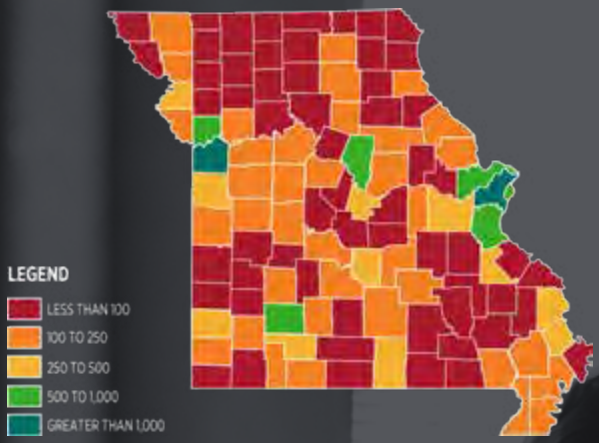
Figure 7 Age Breakout As A Percent of Missouri Adult Population, Missouri R.N. Workforce, U.S. R.N. Workforce



Source: Census Bureau, State Nursing Board of Missouri, National Center for Health Workforce Analysis

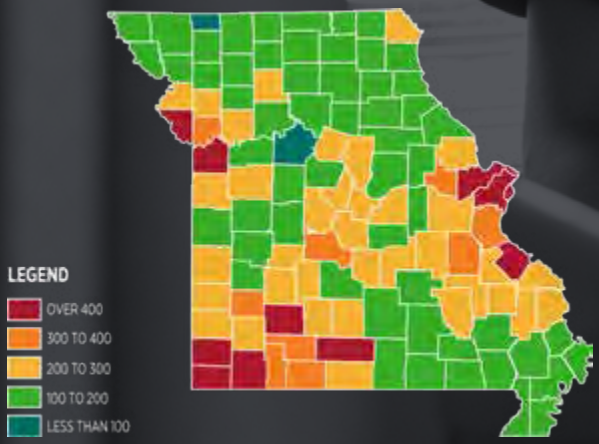
[3] Projections Management Partnership, U.S. Department of Labor, Employment and Training Administration, and author's calculations.
[4] Lucht, J., McDavid, E., Ramachandran, M., Greever-Rice, T., Quinn, K. & Scheidt, L. (2018). Missouri Nursing Workforce Report. Missouri State Board of Nursing. Retreived from https://pr.mo.gov/boards/nursing/workforce-report.pdf

Figure 8 LPNs per County



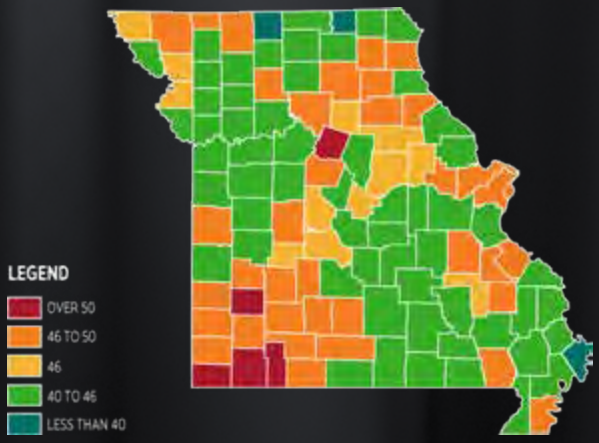
Source: Missouri State Board of Nursing Data

Figure 9 Population per LPNs



Source: Missouri State Board of Nursing Data

Figure 10 Average Age of LPNs by County



Source: Missouri State Board of Nursing Data

Currently, there are 23,439 R.N.s and 1,523 LPNs who are licensed to work in Missouri but are working outside of the state. This leaves a total of 86,968 R.N.s and 20,466 LPNs in Missouri. However, these R.N.s and LPNs are not evenly distributed throughout the state.

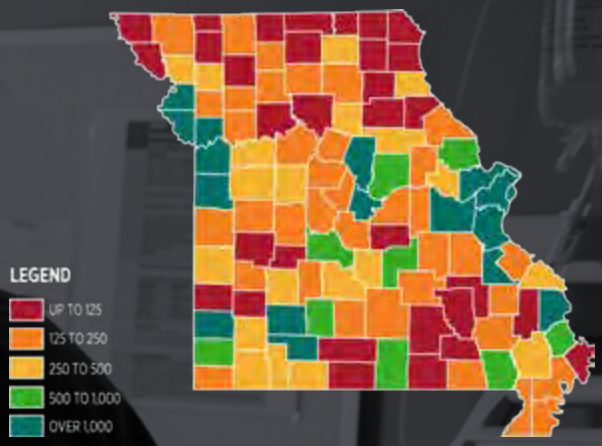
Figures 8 and 9 map out respectively the total count of LPNs and the population per LPN for each of the different counties in Missouri. For the most part, there are few LPNs in each county with the St. Louis and the Kansas City area being the exception. St. Louis County has almost 2,100 LPNs while Jackson County has more than 1,600. However, by looking at the population per LPN, the results are flipped. The St. Louis and Kansas City areas have more persons per LPN (fewer LPNs per capita) than the more rural parts of the state. The southwest corner of the state also has fewer LPNs per capita than northern Missouri. Nationwide, there are approximately 225 people for every LPN. Finally, **Figure 10** maps out the average age of LPNs for each county. Statewide, the weighted average median age of LPNs is 45.9 years of age.[5] However, there are several parts of the state where the median age is significantly higher.

Once again, Kansas City, St. Louis and the southwestern part of the state have relatively high median ages for their LPNs.

Figures 11 and 12 map out similar data for R.N.s in Missouri. **Figure 11** shows the total count of all R.N.s by county. A large majority of R.N.s — 39 percent — work within the St. Louis area. The Kansas City area ranks second having 19 percent of all R.N.s. The Springfield and Columbia areas are third and fourth with 7 percent and 5 percent, respectively. Therefore, approximately 70 percent of all R.N.s in the state work in one of 15 counties. **Figure 12** is similar to **Figure 9** except it shows the population per R.N. Here it is clear that the south central and southwest parts of Missouri have a relatively large population per R.N. (i.e. a low number of R.N.s per capita). For comparison, consider that the U.S. has 108 people for every R.N. Finally, **Figure 13** explains the different median ages for R.N.s. There is a wide distribution of R.N.s by age, but the data identify geographic clusters where R.N.s' median age might become an issue by 2030. Currently, the median age of R.N.s in Missouri is 46.5 years.

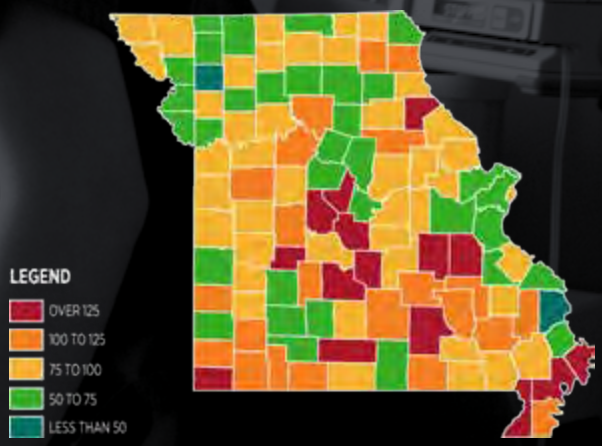
[5] This was accomplished by taking a weighted average of the median ages of LPNs for each county. For example, Adair County has 135 LPNs and a median age of 42 while Dade County has 19 LPNs and a median age of 51. To determine the average age of LPNs, it would be disingenuous to only average median ages across counties (i.e. the average of 51 and 42). If this was done, the average median age in this simple example would be 46.5. Rather the weighted average is based upon the size of the LPN population in the county relative to the total LPN population in the state. In this simple example of Dade and Adair Counties this yields a weighted average median age of 43.1.

Figure 11 R.N.s per County



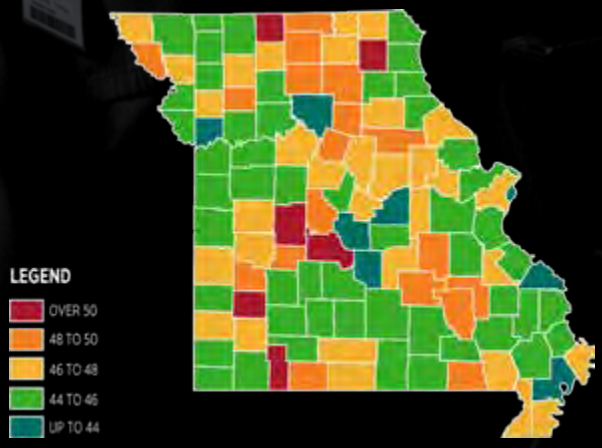
Source: Missouri State Board of Nursing Data

Figure 12 Population per R.N.s



Source: Missouri State Board of Nursing Data

Figure 13 Average Age of R.N.s by County



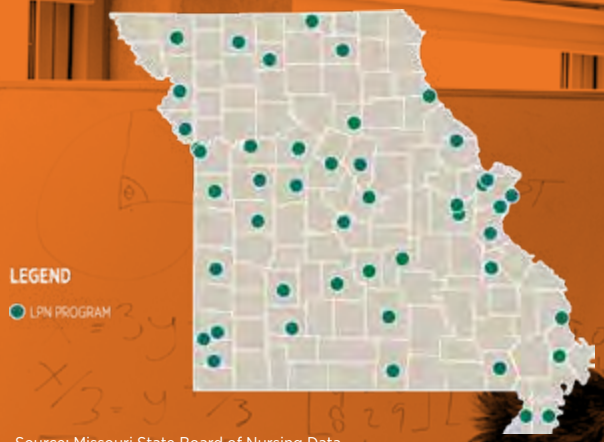
Source: Missouri State Board of Nursing Data

HEALTH CARE EDUCATION IN MISSOURI

As a general rule, health care support positions do not need significant, specialized education — although on-the-job training may be required. Usually, specialized medical education is reserved for health care practitioners including nurses and physicians, among others. LPN coursework generally includes a year in biology, chemistry, anatomy, psychology and nursing, in addition to first aid, emergency medical care and other skills. Prospective LPNs must then take and pass the National Council Licensure Exam. **Figure 18** identifies the large number of Missouri institutions that offer LPN training programs.

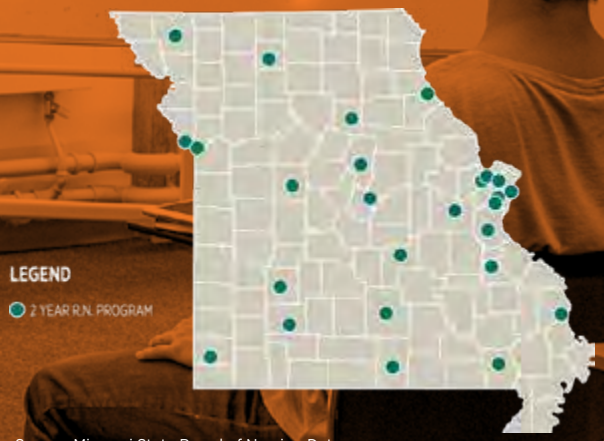
R.N.s can be of two different types. Some R.N.s hold a two-year associate degree in nursing (known as an ADN). To earn this degree, an individual must pursue coursework in anatomy, nursing, chemistry, nutrition, biology, as well as some liberal arts classes. The ADN is the fastest way to become an R.N. and can open many doors for entry-level positions. The Bachelor of Science in Nursing is a four-year degree which mirrors the ADN, but with additional coursework in nursing, the sciences and general education classes. Both the ADN and BSN programs require students to pass the NCLEX before they can be licensed to practice. Missouri has numerous institutions that offer ADN and the BSN coursework, as identified in **Figures 19 and 20**.

Figure 18 LPN Programs in Missouri



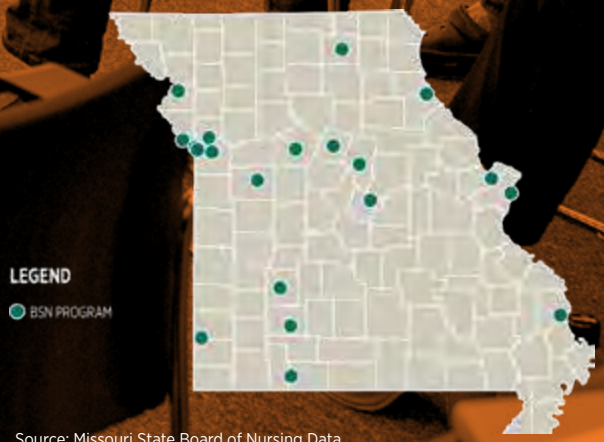
Source: Missouri State Board of Nursing Data

Figure 19 ADN Programs in Missouri



Source: Missouri State Board of Nursing Data

Figure 20 BSN Programs in Missouri

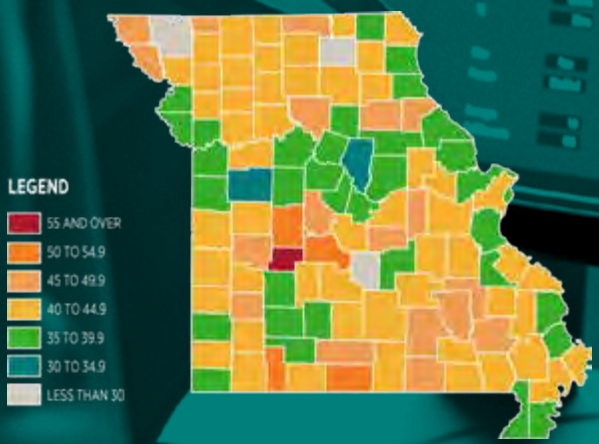


Source: Missouri State Board of Nursing Data

PROJECTING FUTURE HEALTH CARE NEEDS

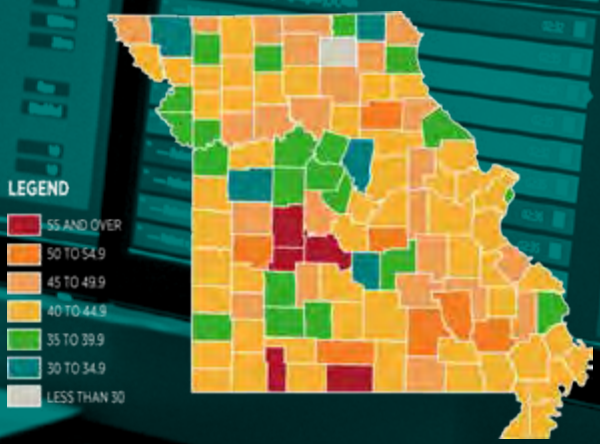
To project future health care jobs, it is necessary to create a model of expected health care demand in 2030. The percent change in demand for medical care is a function of many different factors, including changes in the population size, changes in income and changes in health status, among others. Creating accurate measures for factors such as "average health status" for a county can be difficult. Fortunately, other factors such as age can be used as a proxy. As people age, they tend to spend more on health services. Of a typical person's lifetime medical expenditures, approximately 83 percent occurs after age 40 — 60 percent occurs after age 65. **Figure 21** identifies the wide variety of median ages by county in Missouri. For example, in 2017 Adair County had a median age of 27.6, while Benton County had a median age of 54.1. Overall, most of the counties have a median age below 45 while only 20 percent have a median age of 45 or older.

Figure 21 Median Age in Missouri



Source: U.S. Census Bureau

Figure 22 Median Age in Missouri in 2030



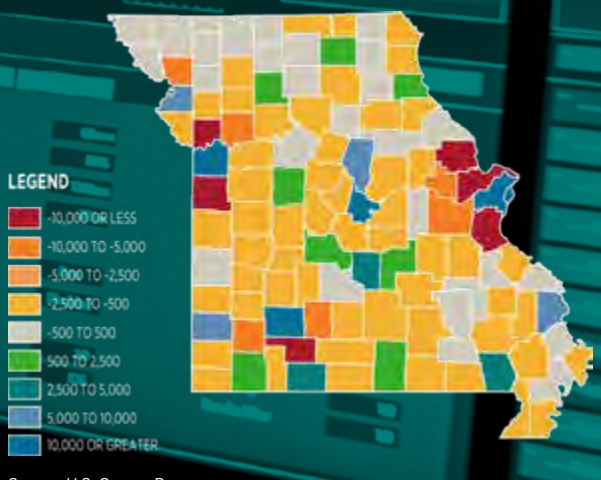
Source: U.S. Census Bureau and author's calculations

By 2030, some counties will see an increase in median age while others might see little change — or even a decline in the median age. **Figure 22** shows projected median age in Missouri. Fifteen counties should see a decline in their median age in 2030 compared to today. Scotland County should see the largest percentage decline in its median age from 36.1 in 2017 to 31.7 in 2030 — a decline of 4.4 years. At the same time, most counties will see an increase. Stone County is projected to experience the largest percentage increase in median age — from 53.8 to 61.6 in 2030 — an increase of 7.8 years. By 2030, almost one-third of Missouri's counties will have a median age of 45 or older.

Some counties will see an increase in population while others will see a decline in population. Lincoln County is projected to experience the largest percentage increase in population at almost 34 percent, while New Madrid County should experience the largest percent decline in population by losing almost 20 percent by 2030. If a county has both a decline in population and a decline in the median age, then it should see a decrease in the demand for medical services. On the other hand, if a county has a population and median age increase, this may indicate that the demand for medical services is anticipated to increase. If a county has an expected decline (increase) in population and an expected increase (decline) in median age, then whether health care demand increases or decreases will depend upon the relative size of the two effects.

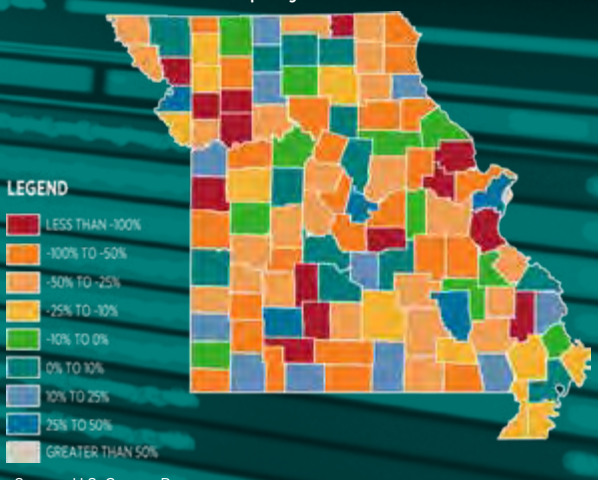
Finally, commuting patterns between counties of residence and counties of employment can place stress on the supply and demand of health care workers. **Figures 23 and 24** illustrate respectively total net commuters and net commuters as a percentage of county employment. For example, in **Figure 23** the counties surrounding St. Louis County have a negative flow of commuters — these counties lose more residents to jobs in other counties than they gain. Meanwhile, St. Louis County and the City of St. Louis have a clear positive flow of commuters. People live in surrounding counties and commute to jobs in St. Louis County and the City of St. Louis. However, the total net commuter counts are not as informative as net commuter counts taken as a percent of county employment. Here we can see that commuters into the City of St. Louis comprise more than 50 percent of the city's employment. On the other hand, counties in southwest Missouri, such as Christian County, lose a population of commuters that is larger than its employment level within the county. Christian County has employment levels of slightly less than 12,000 — but the county loses almost 19,000 residents to jobs in other counties.

Figure 23 Net Commuters



Source: U.S. Census Bureau

Figure 24 Net Commuters as a Percentage of County Employment



Source: U.S. Census Bureau

Tables 4, 5 and 6 list a variety of health care positions in Missouri, divided between health care support positions and health care practitioners. **Table 4** lists the position, educational requirements, amount of work experience required and whether the position needs on-the-job training. The positions are sorted based upon degree requirements. This data is from the Occupational Outlook Handbook.

Table 4. Health Care Positions in Missouri

Position	Education	Work Experience	On-the-job Training
Health Care Support			
Home Health Aide	HS diploma	None	Less than 1 month
Pharmacy Aide	HS diploma	None	Less than 1 month
Physical Therapist Aide	HS diploma	None	Less than 1 month
Orderly	HS diploma	None	Less than 1 month
Occupational Therapy Aides	HS diploma	None	Less than 1 month
Endoscopy Technician	HS diploma	None	None
Medical Equipment Preparers	HS diploma	None	1 to 12 months
Massage Therapist	Postsecondary nondegree	None	None
Nursing Assistant	Postsecondary nondegree	None	None
Medical Transcriptionist	Postsecondary nondegree	None	None
Psychiatric Technicians	Postsecondary nondegree	Less than 5-years	Less than 1 month
Medical Assistant	Postsecondary nondegree	None	None
Phlebotomist	Postsecondary nondegree	None	None
Health Records/Secretary	Postsecondary nondegree	None	1 to 12 months
Medical Records/Health Information Tech	Postsecondary nondegree	None	None
Dental Assistant	Postsecondary nondegree	None	None
Physical Therapist Assistant	Associate	None	Less than 1 month
Occupational Therapist Assistant	Associate	None	None
Health Care Practitioner			
Pharmacy Technicians	HS diploma	None	1 to 12 months
Speech-Language Pathologist Assistant	HS diploma	None	None
Dental Laboratory Technicians	HS diploma	None	1 to 12 months
Opticians, Dispensing	HS diploma	None	More than 1 year
Hearing Aid Specialist	HS diploma	None	1 to 12 months
EMT/Paramedic	Postsecondary nondegree	None	None
Ophthalmic Medical Technicians	Postsecondary nondegree	None	None
Neurodiagnostic Technologists	Postsecondary nondegree	None	None
Ophthalmic Medical Technologists	Postsecondary nondegree	None	None
Radiologic Technician	Postsecondary nondegree	None	None
Surgical Technologist	Postsecondary nondegree	None	None
Licensed Practical Nurse/Licensed Vocational Nurse	Postsecondary nondegree	None	None
Dietetic Technicians	Associate	None	None

Cardiovascular Technologist/Technician	Associate	None	None
Respiratory Therapy Technician	Associate	None	None
Respiratory Therapists	Associate	None	None
Nuclear Medicine Tech	Associate	None	1 to 12 months
MRI Tech	Associate	Less than 5 years	None
Diagnostic Imaging Tech	Associate	None	None
Dental Hygienist	Associate	None	None
Radiation Therapist	Associate	None	None
Recreational Therapist	Bachelor's	None	None
Histotechnologists and Histologic Technicians	Bachelor's	None	None
Medical Clinical Technician	Bachelor's	None	None
Athletic Trainer	Bachelor's	None	None
Exercise Physiologist	Bachelor's	None	None
Dietitians/Nutritionists	Bachelor's	None	Internship/Residency
Registered Nurse	Bachelor's/2-year R.N.	None	None
Orthoptist	Master's	None	None
Speech-Language Pathologist	Maste'rs	None	Internship/Residency
Genetic Counselor	Master's	None	None
Occupational Therapist	Master's	None	None
Nurse Midwife	Master's	None	None
Anesthesiologist Assistant	Master's	None	None
Physician Assistant	Master's	None	None
Advanced Practice Registered Nurse	Master's	None	None
Nurse Anesthetists	Master's	None	None
Chiropractor	Professional Degree	None	None
Podiatrist	Professional Degree	None	Internship/Residency
Audiologist	Professional Degree	None	None
Optometrists	Professional Degree	None	Internship/Residency
Internists, General	Professional Degree	None	Internship/Residency
Physical Therapist	Professional Degree	None	None
Physician, Other	Professional Degree	None	Internship/Residency
Dentist	Professional Degree	None	Internship/Residency
Psychiatrist	Professional Degree	None	Internship/Residency
Family/GP Physician	Professional Degree	None	Internship/Residency
Orthodontist	Professional Degree	None	Internship/Residency
Pediatricians, General	Professional Degree	None	Internship/Residency
Pharmacists	Professional Degree	None	None
Surgeons	Professional Degree	None	Internship/Residency
OB/GYN	Professional Degree	None	Internship/Residency
Anesthesiologists	Professional Degree	None	Internship/Residency

Source: Occupational Outlook Handbook

Table 5 lists the positions in the same order as Table 1 and includes data on the employment levels in 2016, the expected employment levels in 2030, as well as the expected percentage growth within the occupation.[6] For comparison, the national percentage of growth also is included. The last column is the average number of annual openings for the position in Missouri. The average number of annual openings is a reflection of many different factors including, new jobs created from increased demand, retirements of current workers, currently employed persons leaving the position for other employment, etc.

For example, returning to the previously listed position of pharmacy aide, there are currently 1,020 people employed in this position in Missouri; however, this should decline to roughly 990 by the year 2030. As a result, employment within the position is expected to decline by 2.9 percent in Missouri. Missouri's rate of decline is less than the nationwide rate, which projects pharmacy aide positions nationwide will fall by 6.9 percent by 2030. Although the position is facing less employment in the future, there still will be on average approximately 130 openings per year through 2030. The situation is slightly different for the hearing aide specialist. Current employment within Missouri is at 130 and this should grow by 38.5 percent, or 180 positions, by 2030. This rate of job growth is faster than the expected national growth rate of 29.1 percent. Finally, every year on average there should be approximately 160 new jobs.

The average annual number of new openings and growth rates can be a valuable tool for public policy planners and job seekers. In Missouri, most of the health care support and practitioner positions will see employment growth. Furthermore, most of these positions will grow faster than the U.S. workforce overall. Only three of the 73 different positions listed will shrink in size. Currently, the average growth rate of all occupations through the year 2030 is 10.5 percent. In health care though, 56 out of the 73 positions — 77 percent of the health care worker positions — will see employment growth faster than the U.S. average. Unfortunately, only 24 percent of the positions listed will see employment growth faster in Missouri than the U.S. growth for that same position. For example, employment of LPNs will grow 11 percent in Missouri, but 17 percent nationwide. These growth rates can be combined with the number of new openings to suggest short-term changes in public policy. For example, there should be approximately 5,180 new openings for R.N.s and 1,320 new openings for LPNs every year. If graduation rates fall significantly below those levels for any length of time, there will be a severe shortage of nurses statewide. On the other hand, if graduation rates were to exceed these levels, it could lead to a surplus of nurses.[7]

The final row of **Table 5** has data for all positions within Missouri. For example, Missouri's employment growth is expected to be 10.3 percent between 2016 and 2030. Nationally, the growth rate is slightly higher at 10.5 percent. Nearly all of the health care positions are expected to grow faster than Missouri employment in general. Finally, Missouri can expect to have an average of 362,120 new annual openings for all jobs through 2030.

[6] This is the latest year available for data broken down in detail on each position listed.

[7] Astute readers will notice that there are a few fields where the average number of new openings is expected to be zero and yet there is an expected increase in employment in 2030 relative to 2016. This is due to rounding. All of the employment data has been rounded to tens to conform with the data reporting techniques in the Occupational Outlook Handbook (i.e. 13 jobs is reported as 10, while 16 jobs is reported as 20.)

Table 5. Health Care Employment

Position	Missouri 2016 Employment	Missouri 2030 Employment	Missouri Percent Growth	U.S. Percent Growth	Missouri Average Annual Openings
Health Care Support					
Home Health Aide	11,900	18,020	51.4	71.5	1,960
Pharmacy Aide	1,020	990	-2.9	-6.9	130
Physical Therapist Aide	900	1,270	41.1	42.8	180
Orderly	1,140	1,300	14	11.4	150
Occupational Therapy Aides	105	120	14.3	36.7	15
Endoscopy Technician	880	1,120	27.3	17.2	130
Medical Equipment Preparers	1,320	1,570	18.9	15.7	190
Massage Therapist	1,520	2,010	32.2	38.2	200
Nursing Assistant	44,180	50,230	13.7	17.2	5,580
Medical Transcriptionist	1,300	1,090	-16.2	-4.2	130
Psychiatric Technicians	1,440	1,520	5.6	8.5	120
Medical Assistant	9,140	11,410	24.8	42.8	1,200
Phlebotomist	1,950	2,370	21.5	36.7	240
Health Records/Secretary	16,200	20,180	24.6	33.6	2,130
Medical Records/Health Information Tech	5,330	6,250	17.3	20.1	390
Dental Assistant	5,530	6,640	20.1	29.1	720
Physical Therapist Assistant	2,040	2,790	36.8	45.9	320
Occupational Therapist Assistant	1,020	1,360	33.3	42.8	160
Health Care Practitioner					
Pharmacy Technicians	10,410	12,510	20.2	17.2	1,000
Speech-Language Pathologist Assistant	880	1,120	27.3	17.2	130
Dental Laboratory Technicians	790	770	-2.5	20.1	80
Opticians, Dispensing	1,590	1,890	18.9	21.6	140
Hearing Aid Specialist	130	180	38.5	29.1	160
EMT/Paramedic	6,390	7,560	18.3	21.6	480
Ophthalmic Medical Technicians	1,410	1,550	9.9	29.1	120
Neurodiagnostic Technologists	2,600	3,120	20	29.1	210
Ophthalmic Medical Technologists	2,600	3,120	20	29.1	210
Radiologic Technician	2,600	3,120	20	29.1	210
Surgical Technologist	1,890	2,210	16.9	17.2	180
Licensed Practical Nurse/Licensed Vocational Nurse	16,400	18,220	11.1	17.2	1,320
Dietetic Technicians	600	640	6.7	12.8	50
Cardiovascular Technologist/Technician	1,190	1,380	16	14.3	80
Respiratory Therapy Technician	930	320	-65.6	-68.3	0
Respiratory Therapists	2,740	3,850	40.5	33.6	220
Nuclear Medicine Technician	80	100	25	1.4	10

Position	Missouri 2016 Employment	Missouri 2030 Employment	Missouri Percent Growth	U.S. Percent Growth	Missouri Average Annual Openings
Health Care Practitioner — Continued					
MRI Tech	965	1,200	24.4	20.1	70
Diagnostic Imaging Technician	1,380	1,730	25.4	26.1	100
Dental Hygienist	3,120	3,750	20.2	29.1	240
Radiation Therapist	370	420	13.5	18.6	20
Recreational Therapist	560	590	5.4	9.9	30
Histotechnologists and Histologic Technicians	3,880	4,490	15.7	17.2	290
Medical Clinical Technician	4,930	5,660	14.8	20.1	370
Athletic Trainer	500	670	34	33.6	40
Exercise Physiologist	250	290	16	18.7	20
Dietitians/Nutritionists	1,560	1,840	17.9	21.6	120
Registered Nurse	73,780	90,600	22.8	21.6	5,180
Orthoptist	270	310	14.8	18.7	20
Speech-Language Pathologist	3,150	3,880	23.2	26.1	220
Genetic Counselor	50	70	40	42.9	0
Occupational Therapist	2,830	3,650	29	35.1	210
Nurse Midwife	110	140	27.3	30.6	10
Anesthesiologist Assistant	1,030	1,420	37.9	55.4	90
Physician Assistant	1,030	1,420	37.9	55.4	90
Advanced Practice Registered Nurse	4,040	5,700	41.1	53.8	330
Nurse Anesthetists	1,200	1,320	10	23.1	70
Chiropractor	850	930	9.4	18.7	30
Podiatrist	150	160	6.7	14.3	10
Audiologist	230	270	17.4	30.6	10
Optometrists	870	990	13.8	26.1	40
Internists, General	100	110	10	21.6	0
Physical Therapist	4,580	6,110	33.4	41.3	310
Physician, Other	4,650	4,980	7.1	15.7	140
Dentist	2,100	2,550	21.4	27.6	90
Psychiatrist	290	330	13.8	15.7	10
Family/GP Physician	5,500	6,130	11.5	20.1	190
Pediatricians, General	200	210	5	21.6	10
Pharmacists	6,820	7,580	11.1	8.5	350
Surgeons	4,650	4,950	6.5	20.1	140
OB/GYN	230	240	4.3	23.1	10
Anesthesiologists	1,120	1,170	4.5	21.6	30
All Occupations	3,009,180	3,321,140	10.3	10.5	362,120

Source: Occupational Outlook Handbook and author's calculations

Finally, **Table 6** outlines hourly pay for the positions listed in the previous tables, divided into several different columns. The first three columns are pay at the national level while the last three columns are for pay in Missouri. Included within the U.S. and Missouri hourly wages are the 10 percent and 90 percent levels of pay. The pay scale allows policymakers and workers to understand and evaluate expected pay for workforce entrants. For example, home health aides currently collect a median wage of $11.16 per hour in the U.S. The hourly pay for the lowest decile of home health aides is $8.87 while a worker in the 90th percentile could expect $15.03. In Missouri, the pay for these workers would be $8.87 for the lowest 10 percent and $13.50 for the 90th percent. The median hourly wage in Missouri is $10.78. Therefore, someone entering the field of home health aide would have a reasonable chance of earning somewhere between $8.87 to $13.50 an hour in Missouri. Note that even though the pay for the person in the 10th percentile is the same in Missouri as in the rest of the country, the median and 90th percentile pay is lower for the home health aide employed in Missouri. This situation is true for most of the positions listed. In only 21 positions does the person in the 10th percentile earn more in Missouri than in the U.S. At the median level of pay, this is only true 13 times. Only seven positions earn more at the 90th percentile in Missouri than in the U.S. Pharmacist is the only position in Missouri that earns more per hour at the state level than at the national level for the 10th, 50th and 90th percentile.

The last row of the table lists the 10th, 50th and 90th percentile pay for all occupations. In other words, when one looks at all jobs in the U.S., a person earning $9.60 per hour would be in the 10th percentile of all workers while someone earning $46.23 an hour would be at the 90th percentile. For Missouri, the numbers are slightly lower. In Missouri, the median pay is $15.77 per hour while the national median is $18.12. However, the pay range of persons working in the health care field is generally higher than the pay range for all workers in Missouri. In fact, at the 10th percentile, 95 percent of all health care workers make more than corresponding workers in all occupations. When making comparisons at the median hourly pay level, 75 percent of health care workers make more than the median pay of all workers in Missouri. At the 90th percentile, all health care support workers have fallen below the level of $37.83 for all workers, but a significant number of health care practitioners are still above the 90 percent pay level for all occupations.

Table 6. Health Care Compensation

Position	U.S. Hourly Wages 10%	U.S. Hourly Wages Median	U.S. Hourly Wages 90%	Missouri Hourly Wages 10%	Missouri Hourly Wages Median	Missouri Hourly Wages 90%
Health Care Support						
Home Health Aide	8.87	11.16	15.03	8.87	10.78	13.50
Pharmacy Aide	9.16	12.56	21.42	8.64	11.59	20.29
Physical Therapist Aide	9.43	12.37	18.50	8.67	11.37	18.07
Orderly	9.73	13.07	19.52	8.52	10.61	14.60
Occupational Therapy Aides	9.97	14.04	28.41	8.43	11.49	26.85
Endoscopy Technician	10.85	17.89	26.78	10.37	17.89	26.21
Medical Equipment Preparers	11.83	17.00	25.11	10.87	14.98	20.40
Massage Therapist	9.76	19.23	37.25	8.85	17.37	28.13
Nursing Assistant	9.94	13.23	18.57	8.91	11.55	16.24
Medical Transcriptionist	10.42	16.95	24.72	10.27	16.58	23.33
Psychiatric Technicians	10.54	15.23	28.65	10.06	13.20	25.53
Medical Assistant	11.46	15.61	22.07	10.68	14.93	19.17
Phlebotomist	11.66	16.19	23.09	10.71	14.91	19.72
Health Records/Secretary	11.66	16.64	24.20	10.56	15.7	21.88
Medical Records/ Health Information Tech	12.41	18.83	31.06	12.60	19.14	29.32
Dental Assistant	12.58	18.09	25.54	12.61	17.46	23.97
Physical Therapist Assistant	17.27	27.61	38.17	17.30	26.01	34.30
Occupational Therapist Assistant	18.76	28.51	38.62	20.28	27.56	36.97
Health Care Practitioner						
Pharmacy Technicians	10.58	15.26	22.58	10.23	14.11	19.83
Speech-Language Pathologist Assistant	10.85	17.89	26.78	10.37	17.89	26.21
Dental Laboratory Technicians	11.23	18.59	30.52	11.00	18.72	28.10
Opticians, Dispensing	11.56	17.43	28.25	10.46	14.40	22.06
Hearing Aid Specialist	13.97	26.38	42.75	14.35	25.361	49.52
EMT/Paramedic	10.52	16.05	27.4	9.98	15.47	24.27
Ophthalmic Medical Technicians	12.05	17.27	25.10	11.01	15.00	22.98
Neurodiagnostic Technologists	13.25	20.10	34.88	12.48	21.84	33.10
Ophthalmic Medical Technologists	13.25	20.10	34.80	12.48	21.84	33.10
Radiologic Technician	13.25	20.10	34.80	12.48	21.84	33.10
Surgical Technologist	15.61	22.26	32.21	14.61	19.89	28.16
Licensed Practical Nurse/ Licensed Vocational Nurse	15.85	21.65	29.34	14.93	19.76	24.70
Dietetic Technicians	9.13	12.74	22.10	8.19	9.84	14.99
Cardiovascular Technologist/ Technician	13.79	26.57	43.64	13.45	24.66	38.71
Respiratory Therapy Technician	14.90	24.21	35.25	17.27	25.89	34.93

Respiratory Therapists	20.73	28.71	39.92	19.24	25.44	35.48
Nuclear Medicine Tech	23.13	38.64	54.03	16.23	21.71	43.75
MRI Tech	23.37	33.62	46.86	21.73	30.01	38.24
Diagnostic Imaging Tech	24.40	34.33	48.00	23.02	33.27	45.07
Dental Hygienist	24.61	35.61	48.72	25.50	34.07	41.85
Radiation Therapist	26.70	38.73	59.14	26.08	36.58	49.88
Recreational Therapist	14.21	22.92	35.68	15.19	20.75	31.82
Histotechnologists and Histologic Technicians	14.25	24.89	38.24	12.75	22.48	35.87
Medical Clinical Technician	14.25	24.89	38.24	12.75	22.48	35.87
Athletic Trainer	14.79	22.42	33.43	15.49	21.56	28.26
Exercise Physiologist	16.47	23.60	37.70	17.21	24.02	42.37
Dietitians/Nutritionists	17.74	28.56	39.94	15.62	23.47	34.68
Registered Nurse	23.41	33.65	50.05	20.67	29.21	41.55
Orthoptist	19.76	35.49	66.43	23.83	31.19	52.61
Speech-Language Pathologist	23.48	36.83	57.17	20.29	35.89	50.50
Genetic Counselor	24.68	37.25	50.06	25.19	32.43	43.30
Occupational Therapist	26.23	40.00	57.91	26.03	37.39	49.22
Nurse Midwife	31.97	48.36	69.07	15.39	29.70	59.66
Anesthesiologist Assistant	32.01	50.41	70.32	16.67	44.41	70.54
Physician Assistant	32.01	50.41	70.32	16.67	44.41	70.54
Advanced Practice Registered Nurse	35.98	49.94	70.01	33.58	45.91	60.66
Nurse Anesthetists	53.13	79.83	100+	41.62	72.1	100+
Chiropractor	16.61	33.00	69.58	13.93	26.05	51.22
Podiatrist	24.49	61.41	100+	42.01	63.68	100+
Audiologist	24.67	36.50	53.44	25.75	34.07	44.21
Optometrists	25.84	53.03	91.39	30.27	48.55	95.25
Internists, General	28.25	92.75	100+	55.34	100+	100+
Physical Therapist	28.40	41.76	58.97	27.90	37.71	49.73
Physician, Other	29.04	100+	100+	34.63	100+	100+
Dentist	33.28	72.81	100+	43.4	72.96	100+
Psychiatrist	34.41	100+	100+	55.31	100+	100+
Family/GP Physician	35.21	95.55	100+	26.23	80.53	100+
Pediatricians, General	39.74	83.00	100+	36.82	87.75	100+
Pharmacists	42.03	59.70	75.64	50.5	60.02	75.86
Surgeons	42.48	100+	100+	84.51	100+	100+
OB/GYN	44.81	100+	100+	41.54	100+	100+
Anesthesiologists	59.42	100+	100+	57.07	100+	100+
All Occupations	9.60	18.12	46.23	8.54	15.77	37.83

Source: Occupational Outlook Handbook

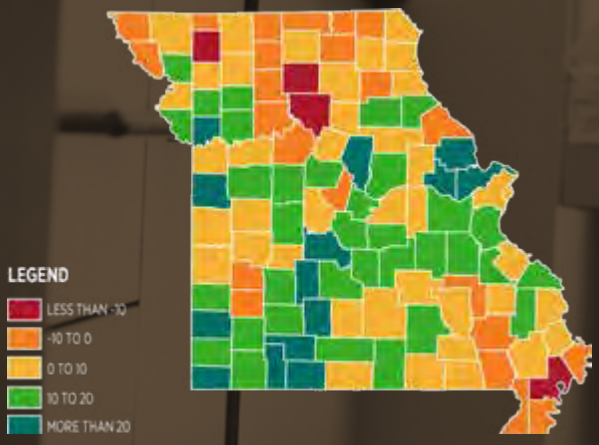
Employment projections throughout 2030, outlined in **Table 5**, may not be equally distributed throughout the state. In fact, it is unlikely that they will be. **Figure 25** predicts future need for various positions where detailed geographic data is available.

Figure 25 shows the expected change in demand for health care in 2030 by county. Significant portions of the northern part of the state will see declines in the demand for health care in 2030 relative to the levels of demand in 2017. At the same time, the southwest and central portion of the state will see significant increases in demand for health care services. These uneven changes in health care demand within the state can create interesting situations. For example, almost 53 percent of R.N.s will work within 40 miles of where they attended high school.[8] Research on workforce mobility in Minnesota demonstrated that only 13 percent of R.N.s will move to a different region of the state for employment from the region where they received their nursing education.[9] The degree of immobility for LPNs is even higher and can range as high as 96 percent — meaning less than 4 percent of LPNs were employed in a different region from where they graduated.[10] This immobility can lead to workforce imbalance. If two counties on different sides of the state have the same number of new R.N.s entering the workforce, but differing changes in their demand for the services of R.N.s, the result could be local surpluses or shortages of R.N.s.

Since there is detailed county level data in Missouri on the number of physicians, R.N.s and LPNs, it is possible to predict county level surpluses or shortages for these particular positions. The data point to an extreme surplus of LPNs in Missouri — especially in the northern and southeastern part of the state. However, southwest Missouri is much more likely to experience a shortage of LPNs. Similarly, southwest Missouri also is more likely to experience a shortage of R.N.s — although not as severe as for LPNs. Although the general outlook for R.N.s in Missouri is one of surplus, there are portions of the state — especially central and south central Missouri — that are expected to experience shortages. LPNs and R.N.s who live in a county with an extreme surplus might have to commute to another county to find employment that conforms to their wage expectations.

The physician outlook is different. Only three counties and the City of St. Louis should have an extreme surplus while six other counties can be expected to have a mild surplus. For the most part, a majority of the state can expect a shortage or extreme shortage of physicians. Without additional physicians, patients in many Missouri counties can be expected to either have long waits to see a local physician or need to travel to another county to receive physician care.

Figure 25 Percent Change in Demand for Health Care: 2017 to 2030



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CONCLUSIONS

Demand will grow throughout the next decade for health care workers. At the same time, health careers will continue to offer Missourians entering health-related careers average wages.

Presently, workforce shortages are evident in several essential hospital workforce categories — including, but not limited to, nursing. While the forecast for the health care workforce finds areas of shortage and surplus by 2030, it cannot anticipate how many of these licensed and credentialed medical professionals will pursue employment outside of the clinical environment. For example, a significant number of Missouri nurses practice outside of the state, outside of a clinical environment or work in entirely different professions. Nonetheless, they maintain licensed status.

Regional supply and demand variation exists in the current hospital workforce and is projected in the 2030 workforce. Aligning the demand for credentialed health care workers with the academic pipeline to train these workers could mitigate part of the imbalance. Research suggests that some categories of workers remain close to home after training. This could suggest that allocation of training slots should be adjusted to meet regional variation, or that recruitment into these professions should be more vigorous in areas of projected high demand.

Physician shortages are evident presently, and loom as an ongoing threat to patient access. This will create additional opportunity for advanced practice registered nurses and physician assistants, who can extend the reach of primary care. Moreover, there is upward pressure on the nursing workforce — at least in the hospital environment — for R.N.s with BSN degrees. Public policy that incents new entrants and incumbent workers to advance their skills and practice at the "top of their licenses" will create expanded opportunities for workers.

Turnover is currently high in many health care support positions. However, higher than average wages and shrinking alternatives in traditional employment categories will allow these health care jobs to remain attractive to lesser-skilled workers. Unemployment among health care practitioners is much lower than the unemployment rate. While surpluses in some practitioner categories will marginally influence wages locally, more credentialed health care workers who are willing to commute or relocate within the state should benefit from ongoing higher-than-average wages.

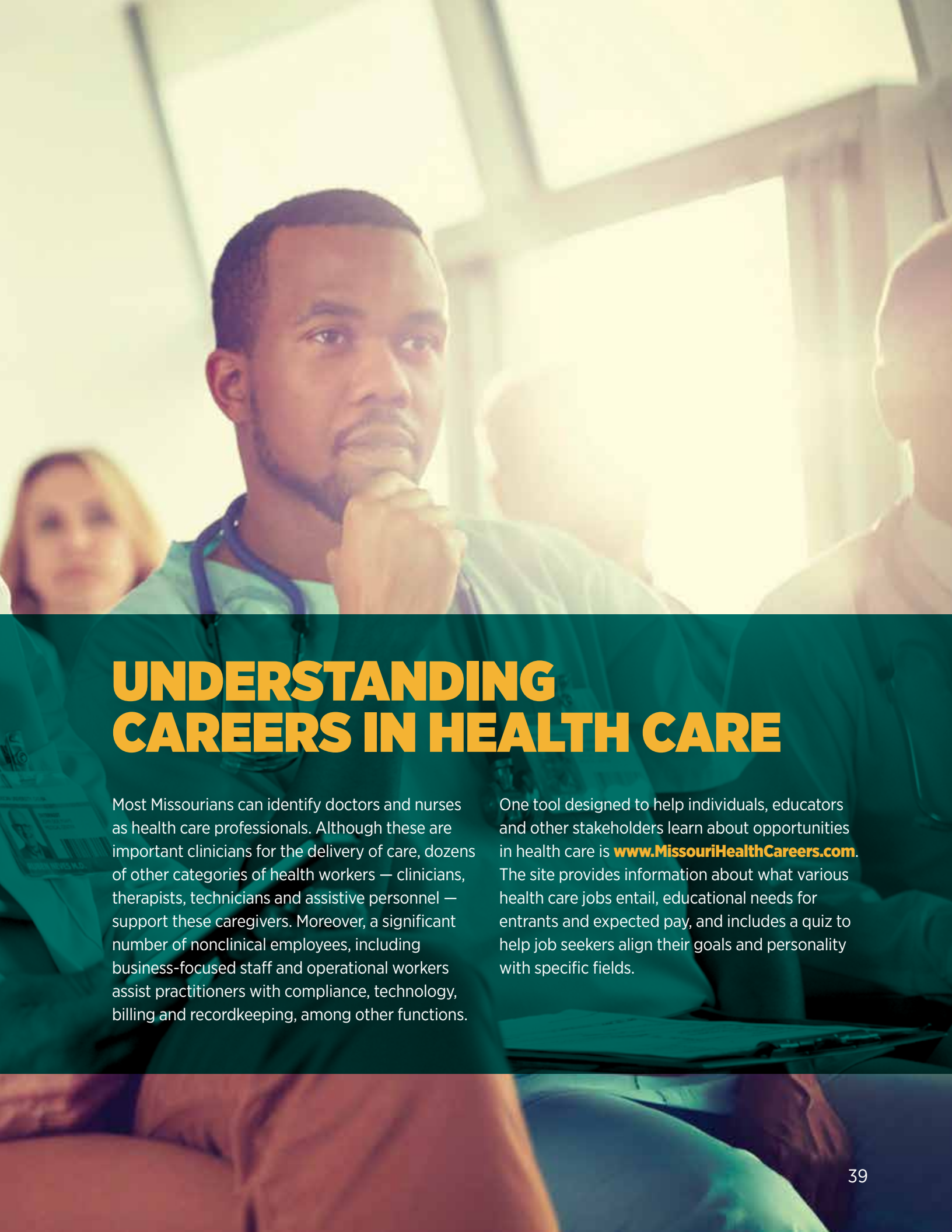
Focused public policy in health care workforce development could improve the supply and demand alignment to the benefit of workers who have invested in their training and the communities they serve. Examples of innovative programs are included in Appendix A.

BUILDING THE HEALTH CARE WORKFORCE

Demand for health care workers is high and career opportunities in care-related and support positions are plentiful. Many health professions are recession- and outsource-resistant. These jobs provide opportunities for a stable career and advancement.

Increased workforce vacancy and turnover can negatively affect quality of care, patient safety, health care spending, patient satisfaction and employee engagement. Recruitment and retention aren't exclusively local challenges or problems with immediate solutions.

The road to build the health care workforce requires continuous investments, and regular targeted and timely recalibration. Further, meeting workforce demands requires innovation and collaboration at all levels — local, state and federal — with a focus on strategic investments to recruit and retain staff in the present and for the future.



UNDERSTANDING CAREERS IN HEALTH CARE

Most Missourians can identify doctors and nurses as health care professionals. Although these are important clinicians for the delivery of care, dozens of other categories of health workers — clinicians, therapists, technicians and assistive personnel — support these caregivers. Moreover, a significant number of nonclinical employees, including business-focused staff and operational workers assist practitioners with compliance, technology, billing and recordkeeping, among other functions.

One tool designed to help individuals, educators and other stakeholders learn about opportunities in health care is **www.MissouriHealthCareers.com**. The site provides information about what various health care jobs entail, educational needs for entrants and expected pay, and includes a quiz to help job seekers align their goals and personality with specific fields.

EDUCATING THE WORKFORCE

A strong workforce begins with individual and communitywide investment in education programs that help future workers prepare for careers in health care and supporting professions. Missouri has several programs in place to support the health care workforce and several new programs will provide additional opportunity when implemented.

One of Missouri Governor Mike Parson's top priorities has been workforce development. Parson's proposals include several new workforce development initiatives and involves moving the Division of Workforce Development under the Department of Higher Education. In addition, Parson has recommended strategic investment in the workforce. His proposals include MO Excels, a grant of one-time finds for colleges and universities to expand high-demand programs, and Fast Track, a financial aid program for adults studying for jobs in high-demand fields. These initiatives unite stakeholder efforts among state government, businesses and the education community.

The Missouri Department of Social Services, through regional partner organizations, has implemented a federal Health Profession Opportunity Grant program. The grant provides low-income Missourians in the St. Louis, Kansas City and central Missouri regions with job training in health-related fields that are expected to either experience a labor shortage or be in high demand. HPOG, coordinated in central Missouri by the Missouri Hospital Association, is an example of stakeholders at the federal, state and local level working together to increase health care workforce opportunities across the state of Missouri.

The Health Careers Pathways Initiative strives to align and build health care workforce planning efforts through collaborative partnerships in each region of Missouri. Coordinated by the Missouri Hospital Association, stakeholders are brought together to share resources and discuss best practices to address the gap between workforce supply and demand.

The goal of this network is to prioritize workforce needs, leverage resources, and deliver services and programs that prepare a pipeline of qualified health care workers. Successful outcomes as a result of this initiative include shared resources and best practices, local education and training based on hospital employment needs, joint hiring events, internships, work-based learning, teacher externships, apprenticeships and more.

Multiple organizations, including MHA and numerous hospitals across the state, are collaboratively working to educate, recruit and train individuals along defined health profession pathways.

Employers and potential employees aren't always well connected within workforce, education and economic development programs. Through better collaboration, Missouri has opportunities to close gaps between the health care workforce supply and demand. Missouri Job Centers work with the underemployed, the unemployed and incumbent workers. Building stronger partnerships can produce a steady supply of qualified workers for our hospitals.

Missouri Job Centers are one-stops for job seekers and workers that provide high-quality career services, education and training, and other services individuals need to get good jobs and stay employed. At the same time, they help businesses find skilled workers and access other services, including education and training for their existing workforce.

EXPANDING OPPORTUNITIES

The Missouri Board of Nursing has approved the U.S. Air Force's practical nurse education program, creating a pathway for qualified enlisted medical personnel to use their military training to become licensed nurses in Missouri. Service members' training often does not immediately transfer to civilian licensing. For these trained health care workers, obtaining a professional certification can lead to meaningful civilian employment in health care. The board's program will assist transitioning service members and veterans to civilian health care careers.

Opportunities exist to collaborate with other branches of the military to expand veteran-to-civilian health career opportunities.

Missouri law limits the scope of practice of certain health care professionals. Allowing these professionals to expand the scope of practice to the extent of their training could help mitigate physician shortages while limiting the advanced-practice physician-extender brain drain Missouri loses to other states that have less restrictive limits on these health professionals.

Methodology

PART ONE

A total of 135 Missouri hospitals participated in this year's survey. The survey requested data on 28 hospital health care positions and four clinic and physician practice positions. Responses are collected by Missouri Hospital Association. Data are reported as of Dec. 31, 2018. A comprehensive collection of workforce data, trends, and color-coded vacancy and turnover maps, are available at www.mhanet.com.

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Report prepared by

Jill Williams
Vice President of Workforce Initiatives
Missouri Hospital Association, May 2019

Dr. David M. Mitchell
Professor of Economics, Missouri State University,
Director, Bureau of Economic Research, November 2018

CONTACT INFORMATION:
Jill Williams | Vice President of Workforce Initiatives | Missouri Hospital Association | Jefferson City, Missouri, 65109 | jwilliams@mhanet.com
David M. Mitchell | Department of Economics | Missouri State University | Springfield, Missouri, 65897 | DavidMitchell@Missouristate.edu

MISSOURI HOSPITAL ASSOCIATION

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