OACA Workforce Initiative

Exploring Healthcare Workforce Past and Future Trends for the Wilderness Health Service Area in Minnesota & Wisconsin

A customized report produced by the Office of Academic Clinical Affairs (OACA) and U-Spatial using Human Resource Service Administration (HRSA) data

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OFFICE OF ACADEMIC CLINICAL AFFAIRS

UNIVERSITY OF MINNESOTA
Driven to Discover℠

Executive Summary

The healthcare workforce is composed of numerous professions that work together to support the health of individuals and communities. Workforce composition trends can be useful to healthcare system leaders as they strive to maintain a healthy workforce delivering high quality care along the entire healthcare continuum.

Our team has taken available complex healthcare workforce data and visualized past and future trends by profession for the Wilderness Health Service Area in Minnesota and Wisconsin. Unique factors influencing the Wilderness Health service area workforce are best known by Wilderness Health and might not be reflected in these federally sourced data.

Key findings:

- *Past trend*. From 2010 to 2021, most service area counties demonstrate rate increases over time among some provider groups: nurse practitioners, physician assistants, and dentists.
- *Past trend*. For most counties and professions, these growth trends persist after accounting for total county population; this implies an overall steady growth in provider availability in the Wilderness Health Service Area (which has variability within/across counties).
- *Future trend*. Across both MN and WI, many of the 30 tracked health professions show a projected increase in their workforce from 2023 to 2035 (i.e., supply measured in terms of full-time equivalent (FTE)).
- *Future trend*. Both states project state-wide shortages between 2023 and 2036 of pharmacy technicians, speech-language pathologists, and licensed practical nurses, among others.
    - Minnesota projects additional state-wide shortages among anesthesiologists, general internal medicine physicians, pediatricians, paramedics, and in the short term, respiratory therapists.
    - Wisconsin projects additional state-wide shortages among orthopedic surgeons, obstetricians and gynecologists, psychologists, dentists, mental health counselors, and dieticians.

There appears to be adequate and appropriate growth in the supply of many professionals to keep up with and/or meet the healthcare demands of the Wilderness Health Service Area, if appropriately distributed across the region. However, there are predicted shortages that warrant attention. It is imperative that specific healthcare systems examine their own workforce trends alongside these HRSA-derived county- and state-level data to arrive at actionable and meaningful workforce trend conclusions. We know that while supply might be increasing and deemed “sufficient” for some professions, there are numerous macro-, institutional-, and individual-level factors that influence where healthcare professionals choose to work and stay, which are critical to these conversations.

We welcome exploring ways to collaborate and use data such as these to inform the work we do.

CM Porta

Carolyn Porta, Associate Vice President (OACA)

Len Kne

Len Kne, Director (U-Spatial)

Important caveats: Future trend data include workforce data beginning in 2020, when the COVID-19 pandemic pandemic began. Estimated workforce needed between now and 2036 in MN and WI is projected by HRSA using a complex formula of anticipated need and healthcare worker supply. Statewide projections of health professional supply and demand rely on complex simulation modeling that might not account for other factors influencing professional decision-making to stay or leave one’s profession or workplace.

Contents

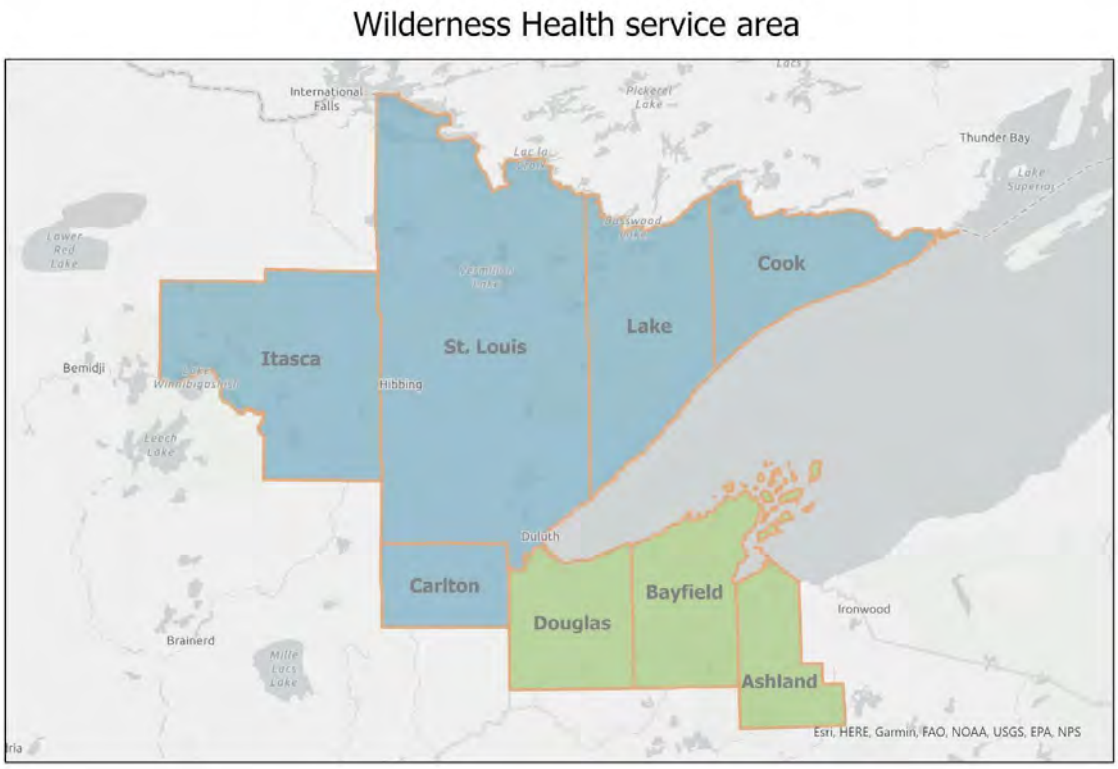
Introduction

In this report, we explore past and future trends in healthcare workforce availability in Minnesota and Wisconsin with a particular focus on the Wilderness Health service area (Figure 1). We rely on the data provided by the Health Resources & Services Administration (HRSA), from which we derive insights into the employment trends (see References). Past and future trends, although complementary, should be analyzed separately as they have some important differences in data collection and analysis.

We examine past trends for a number of professions at a county level for all counties included in the Wilderness Health Service area. Because data availability at a county and substate geographies scale is limited, future trends are presented only at a state level. Therefore, it is important to consider possible bias associated with using different spatial units of analysis. For example, future statewide projections for Minnesota and Wisconsin for certain professions might not reflect the trends in the Wilderness Healthcare service area but are nonetheless helpful in identifying the most in-demand professions, which can have an impact on healthcare workforce availability across both states.

Another important limitation about data compatibility relates to defining and categorizing medical professions. For example, past trends describing the Physicians category include Family Medicine, General Internal Medicine Physicians and other subspecialities. Dataset on the future trends was generated with a more granular approach to distinguish and capture trends for these subspecialities separately.

Figure 1. Area of interest



Past Trends

Figure 2 presents past trends in healthcare availability by profession on a county scale are derived from the Area Health Resources Files (hrsa.gov) (AHRF). The following plots are produced for the counties of interest for selected professions:

- Line plots illustrating the total number of providers per county, as extracted directly from the dataset. Original data sources indicated in AHRF vary by variable, for example, Nurse Practitioner w/NPI data are from the Centers for Medicare and Medicaid Services (CMS) National Provider Identifier (NPI) Downloadable File. Overall, the AHRF data is obtained from more than 50 sources.
- Line plots illustrating rate of providers (number of providers normalized by population, the result is multiplied by 10,000). Population data values for 2010 and 2020 reflect Census Population, and the remaining values are based on the Population Estimates from the Census Bureau. Considering the total population of each county allows us to make a more meaningful comparison.
- Bar charts to contextualize the number of providers and rate of providers for the most recent year available. We compare the median for counties within the Wilderness Health service area to Minnesota and Wisconsin statewide median values.

Key findings:

- Time series for most counties and professions show positive trends even after normalizing by total county population, indicating overall increase in the availability of providers.
- Among the professions examined, the rate of Physicians (Primary Care, Patient Care) and Chiropractors (w/NPI) for most counties did not change substantially during the study period examined.

Figure 2.1. Nurse Practitioners

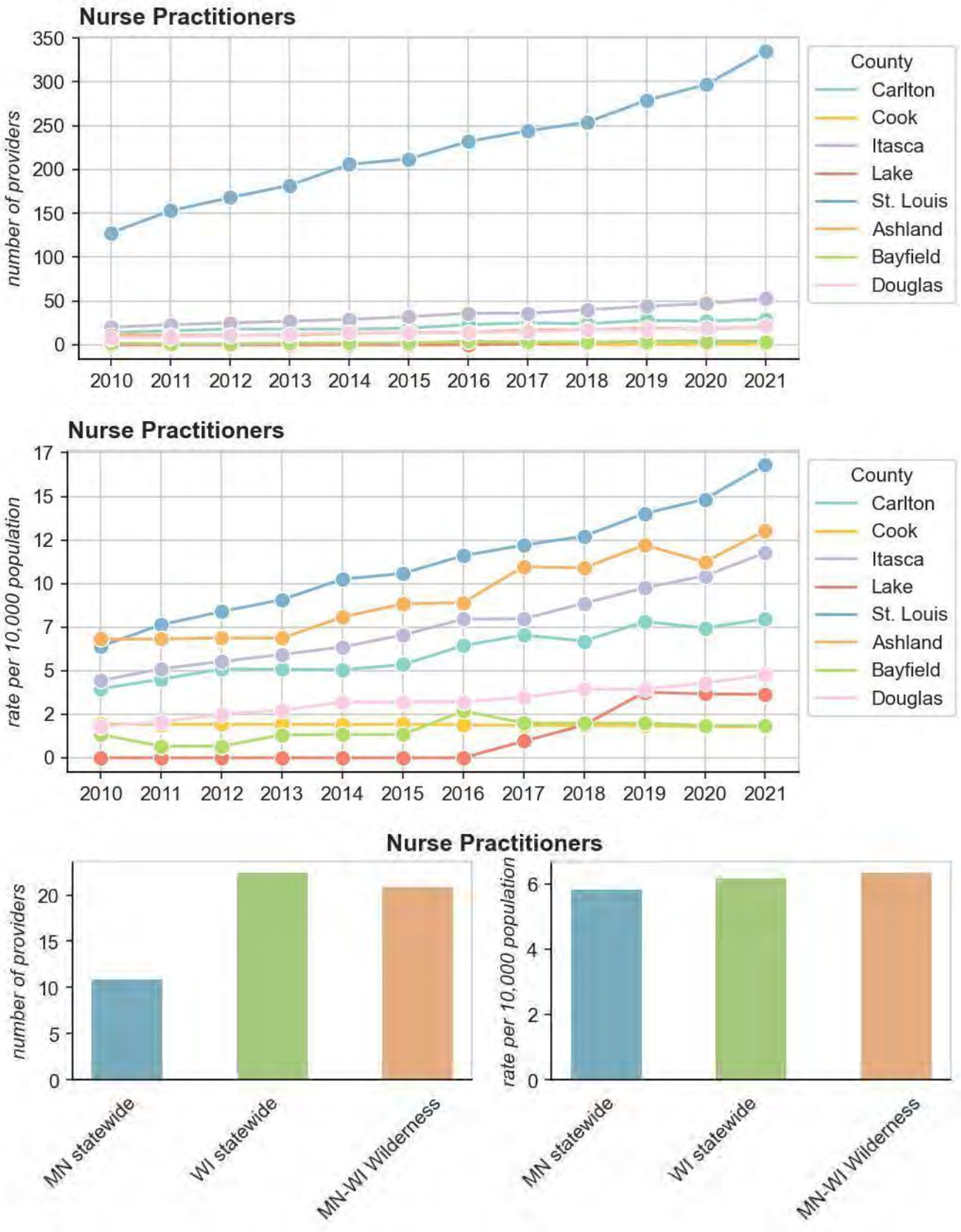


Figure 2.2. Physicians, Primary Care, Patient Care

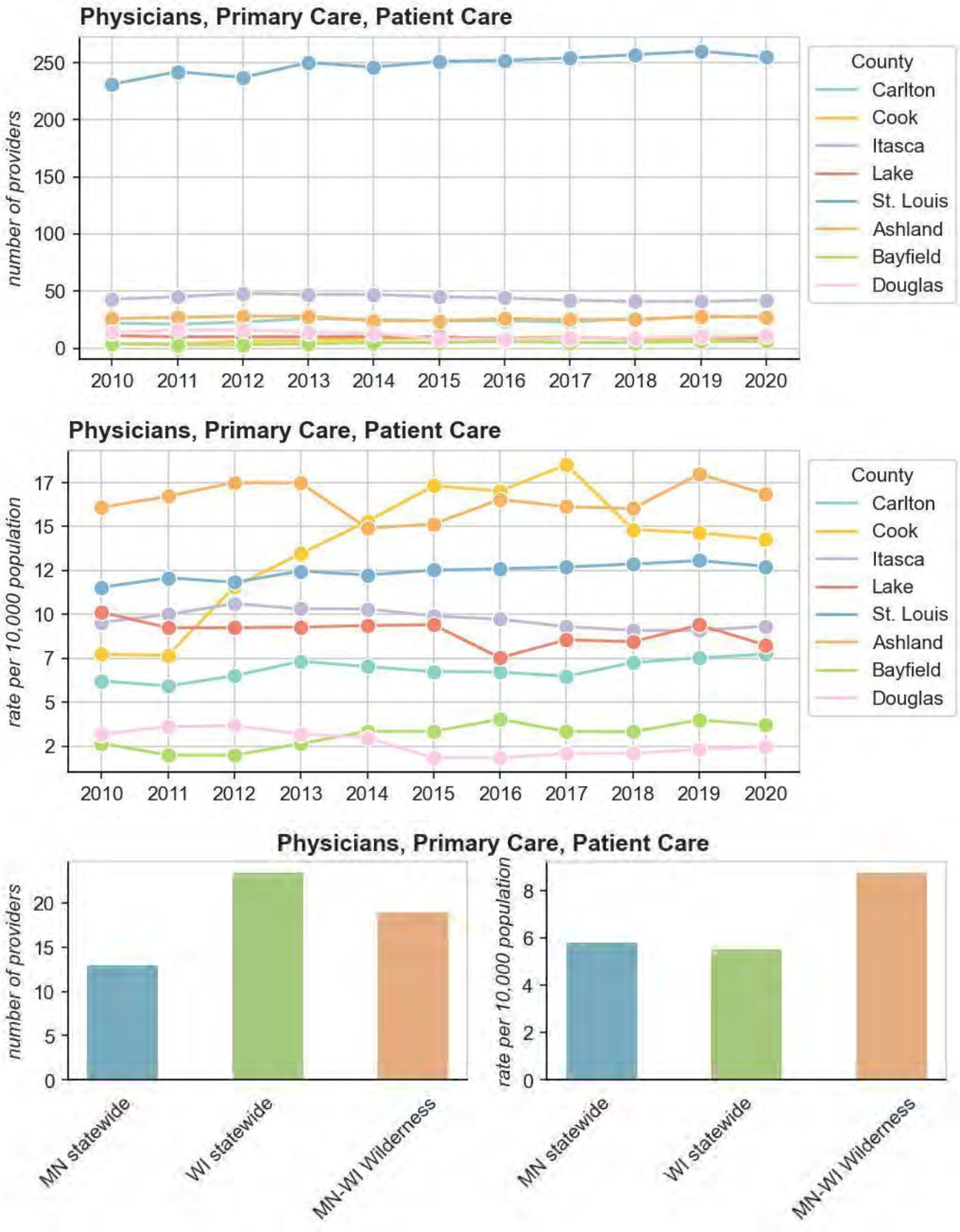


Figure 2.3. Physician Assistants

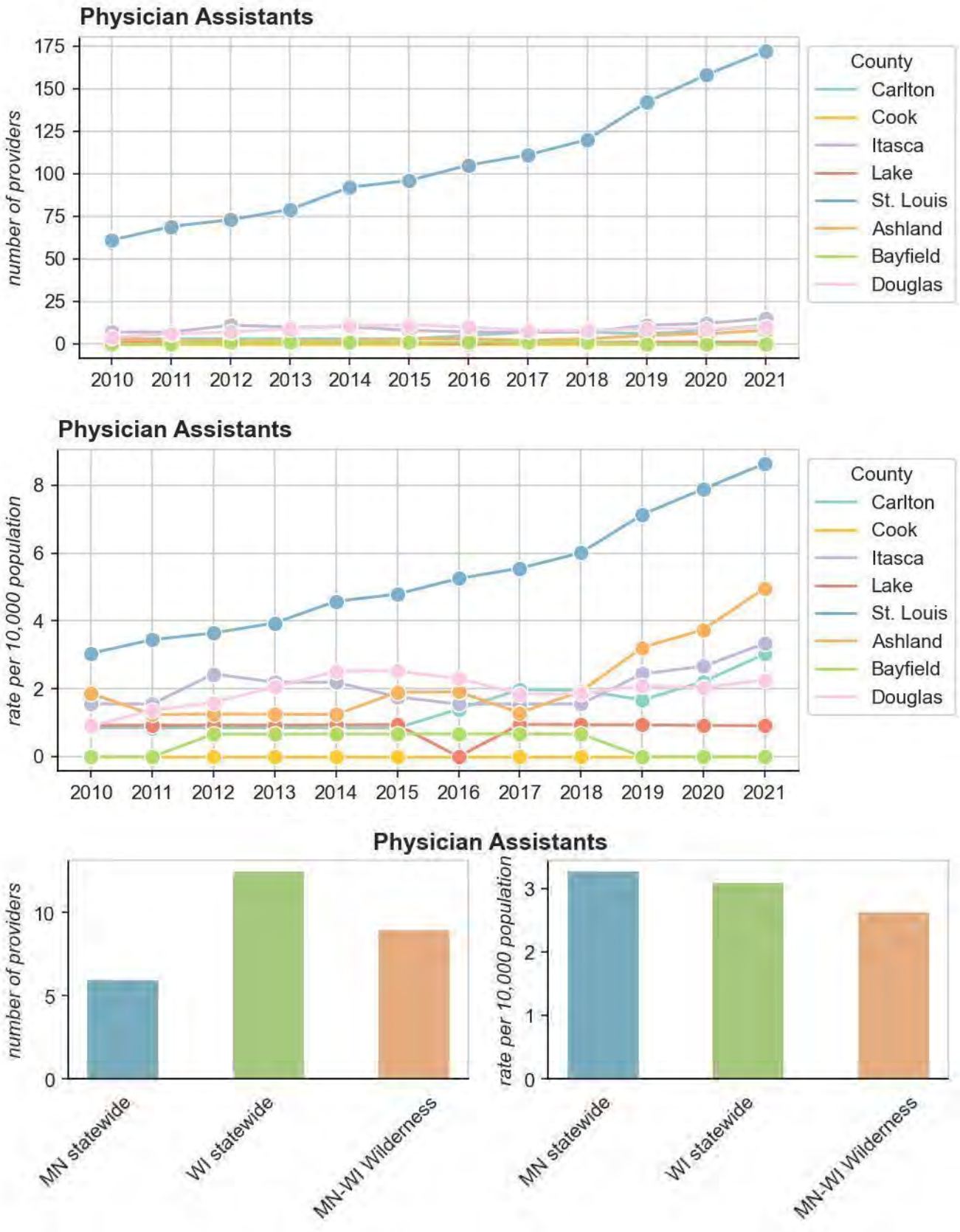
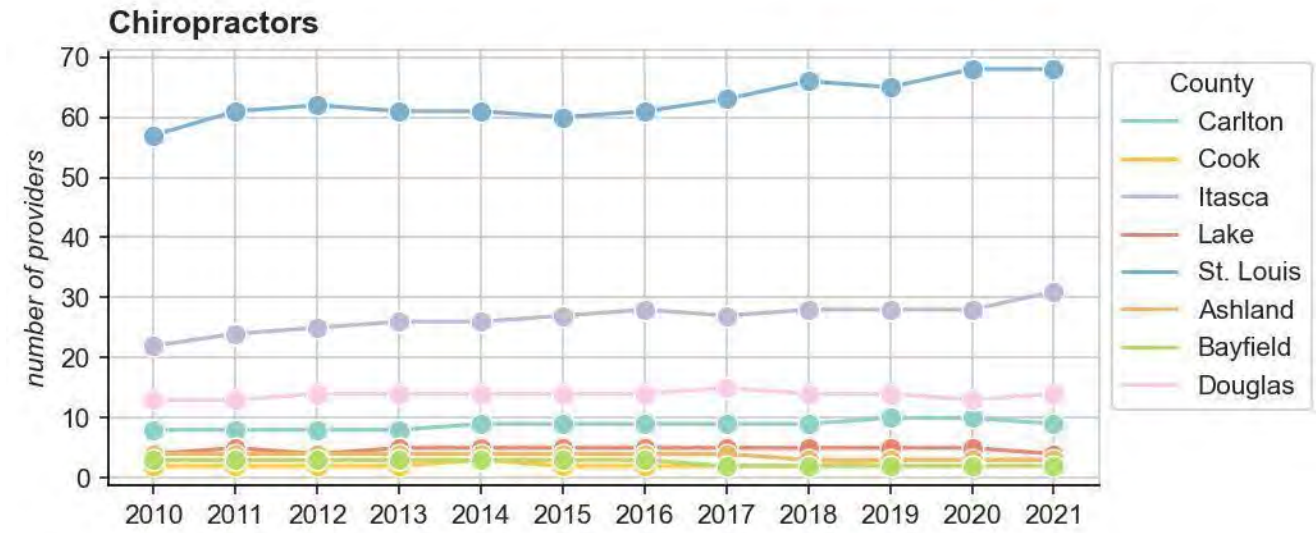
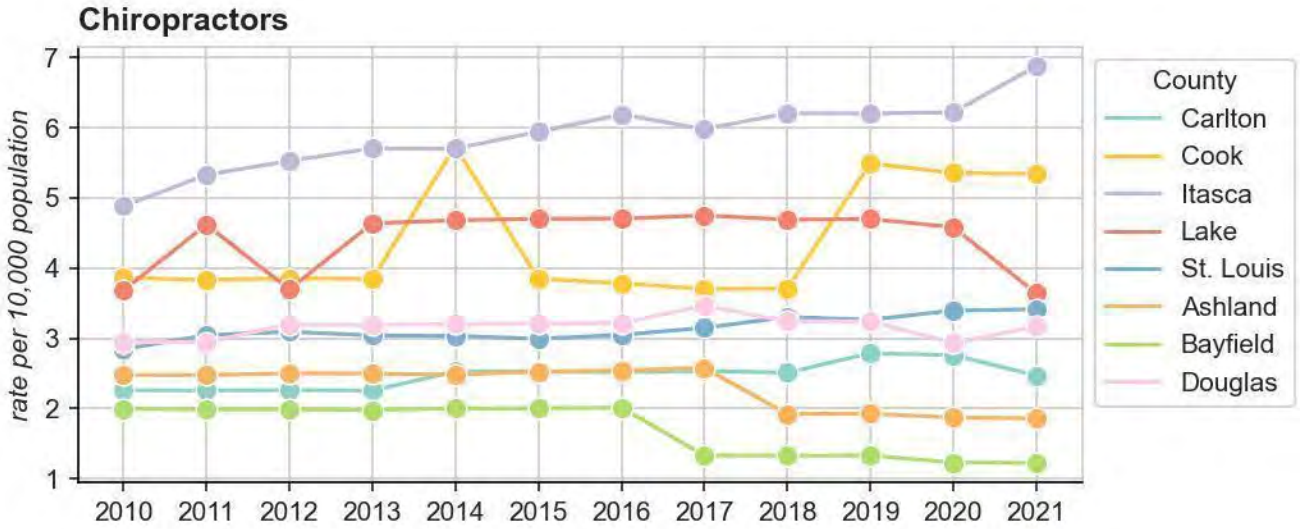


Figure 2.4. Chiropractors





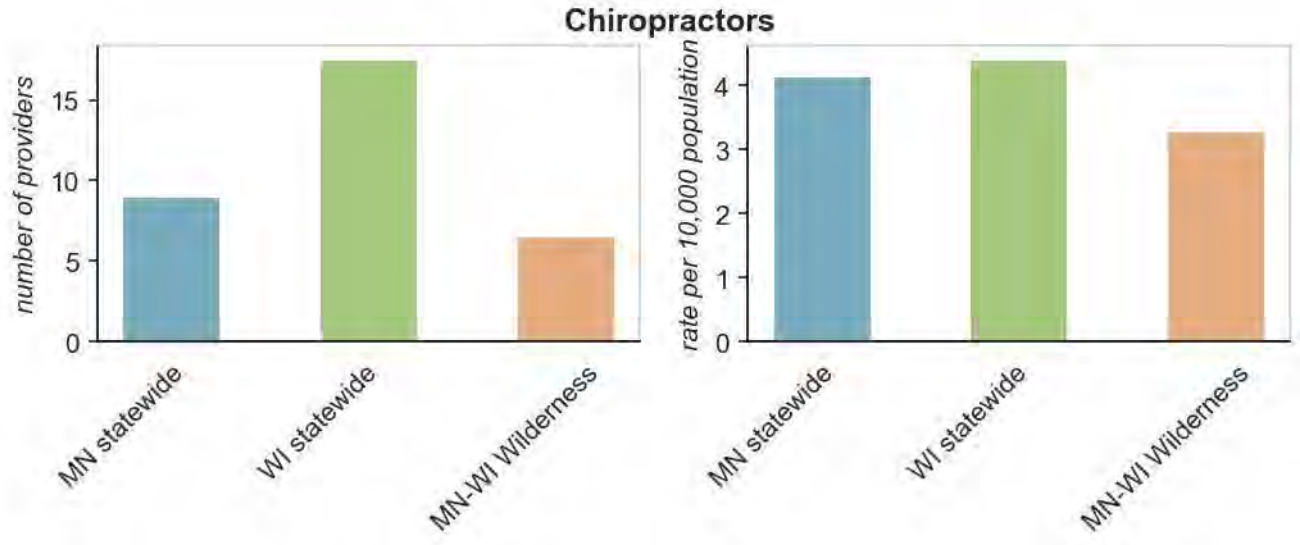
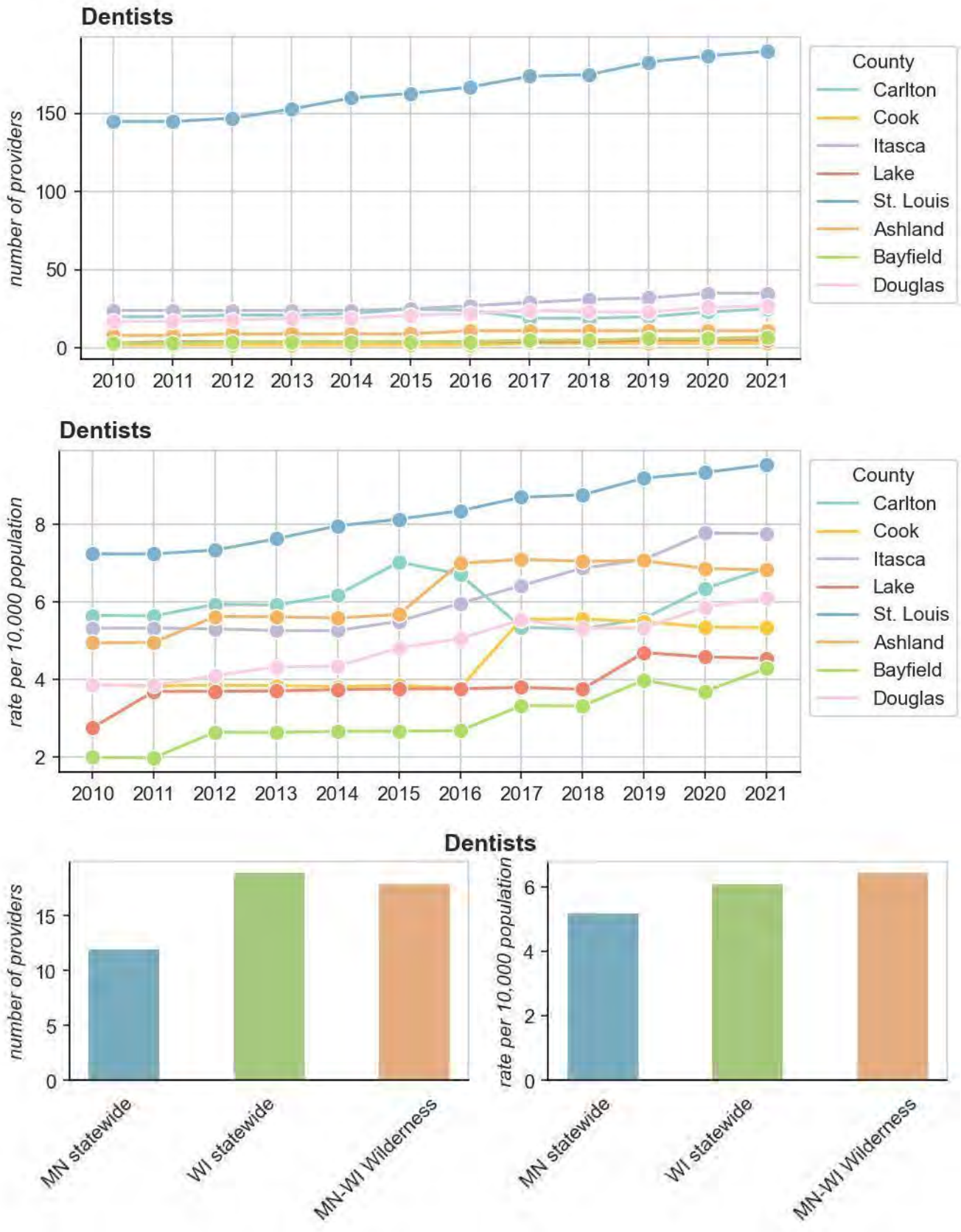


Figure 2.5. Dentists



Future Trends

Future workforce trends at a state level for Minnesota and Wisconsin are derived from the Workforce Projections (hrsa.gov), produced with the Health Workforce Simulation Model (HWSM). Line plots presented on Figure 3 show estimates of Supply and Demand measured in full-time equivalents (FTEs). For a detailed description of all healthcare professions included in the analysis, see References.

Demand values used by the model reflect patient-seeking behaviors. To explore demand baseline thresholds normalized by population, we used population estimates from the American Community Survey in 2020 (census population was approximately 5,600,166 and 5,806,975 in Minnesota and Wisconsin, respectively). Results are provided in Table 1, Supplementary Information. Although these values do not necessarily reflect optimal provider to population ratio, they can describe present patient-seeking behavior and provide reference thresholds to categorize shortages. Both Minnesota and Wisconsin have similar values by profession type.

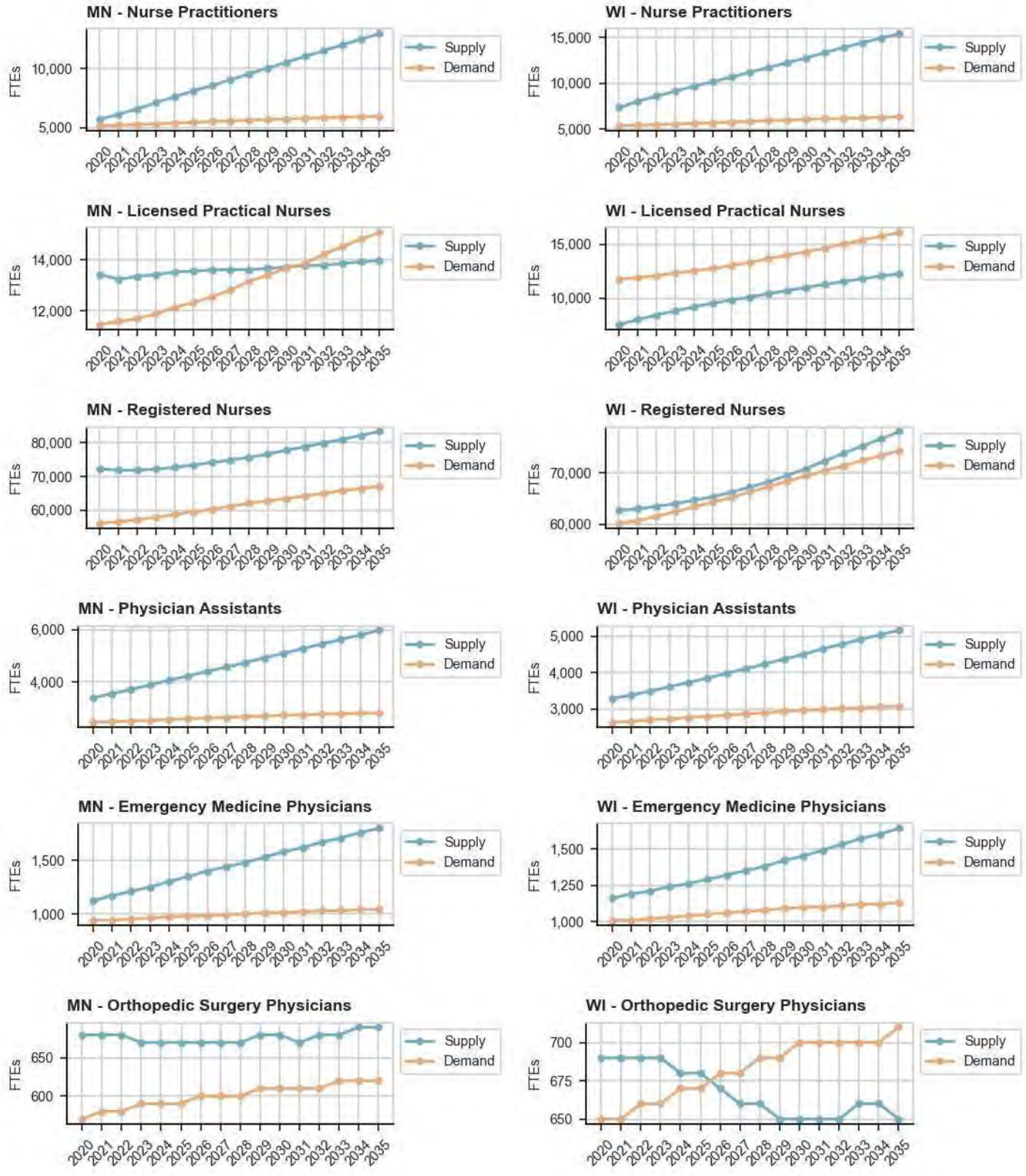
There are some important data limitations to note. For example, the impact of COVID-19 is only partially considered because many implications, for example, long-COVID-19 symptoms, are not yet well understood. The possibility of care migration is not incorporated into the model although it is possible that some people may receive care outside of their residence area. Additionally, the model is largely based on projecting current health care use and delivery patterns, but changing technology, market forces, and many other factors can disrupt these patterns. Note that high Supply at a state level does not account for potential disparity in provider distribution at smaller geographic scales. It is also possible that when Supply exceeds Demand, it could lead to under-employment of health care workers. To draw meaningful conclusions from the visualizations presented in this report, we recommend getting familiar with the methodology behind the HWSM (see References).

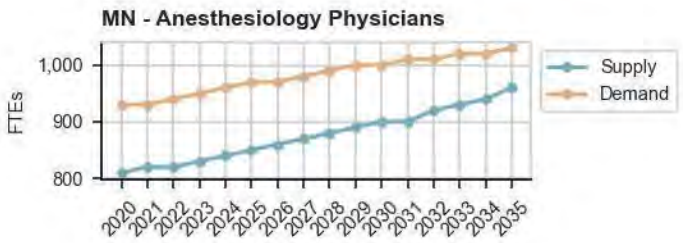
Key findings:

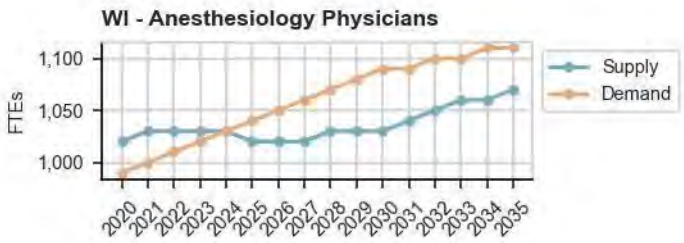
- Similar to past trends, statewide projections for Minnesota and Wisconsin for most professions show an increase in availability of providers (Supply). At the same time Demand also generally exhibits a positive trend.
- Some exceptions include projections for Licensed Practical Nurses and General Internal Medicine Physicians.

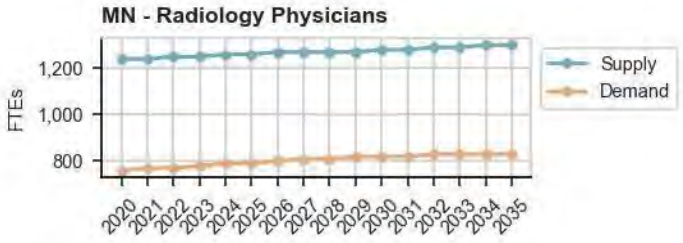
Figure 3. Future Projections for Minnesota & Wisconsin

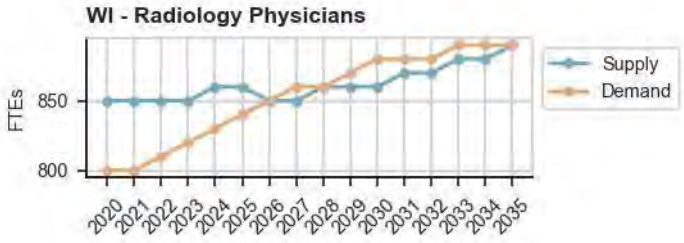
All Health Workforce



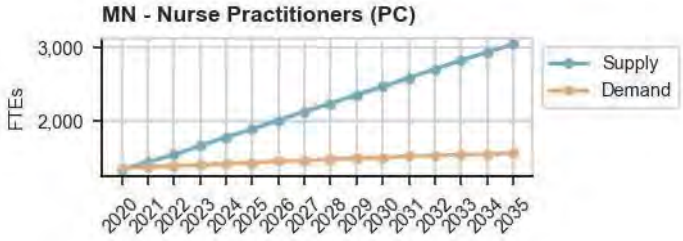


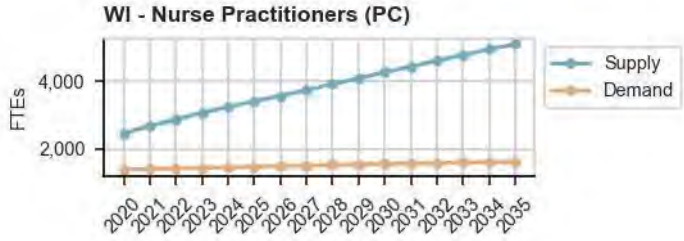


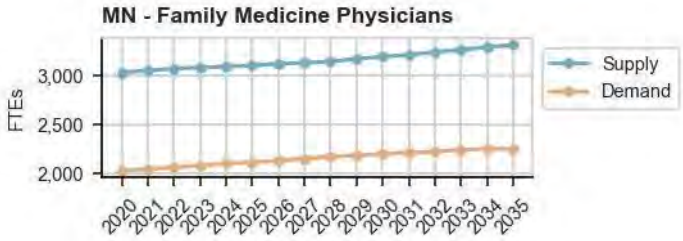


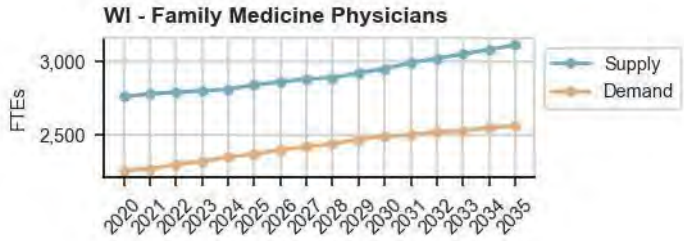


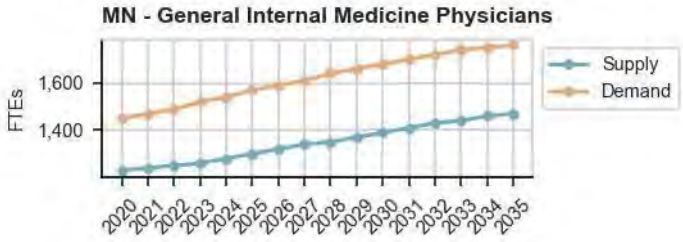
Primary Care

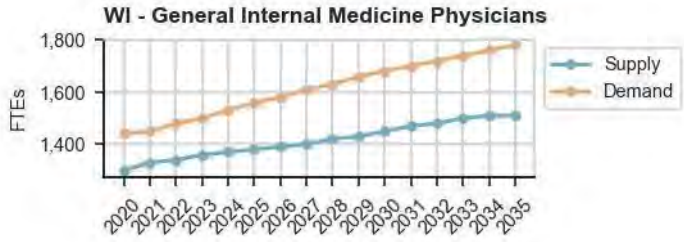


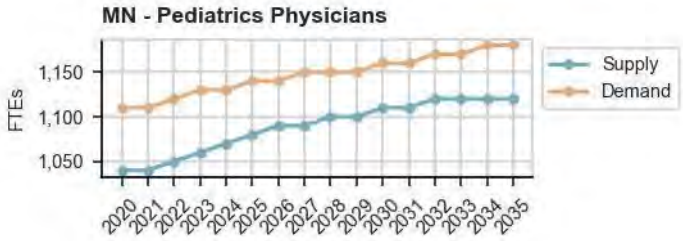


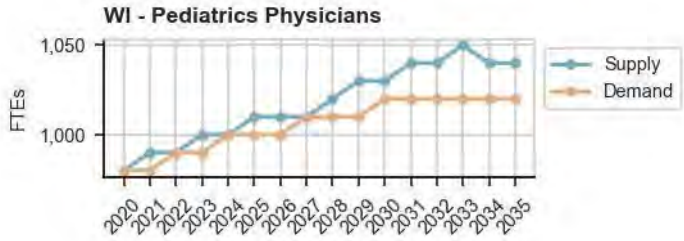


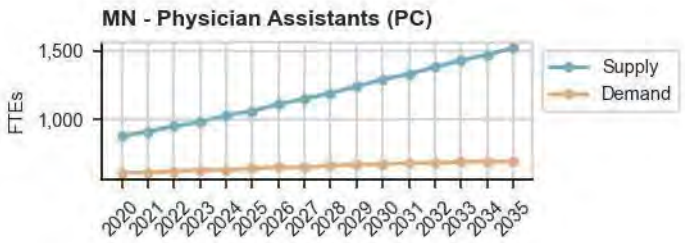


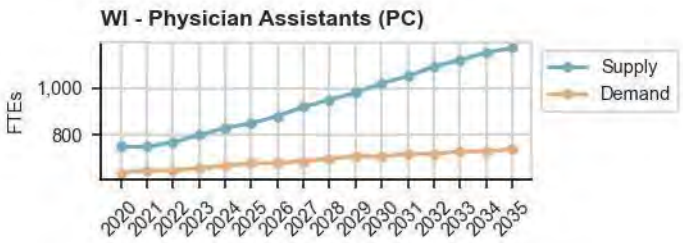




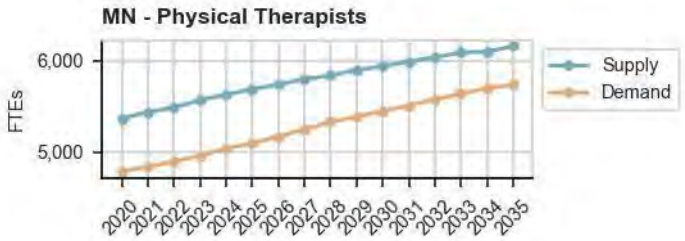


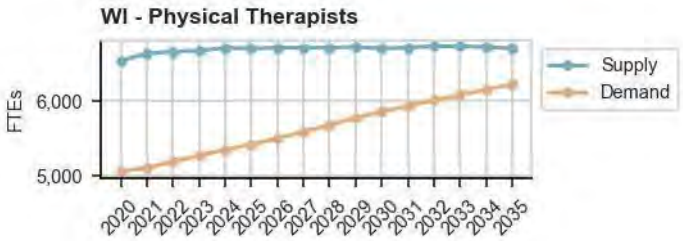


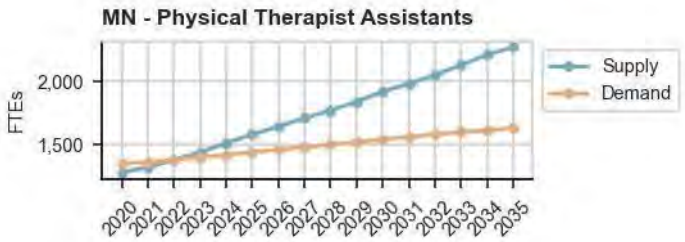


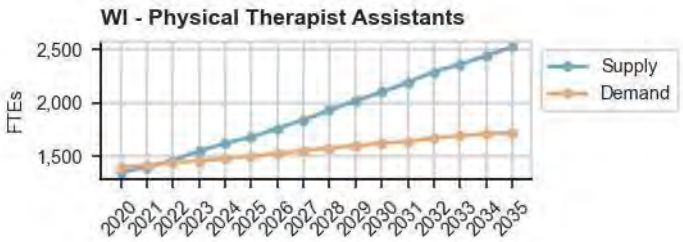


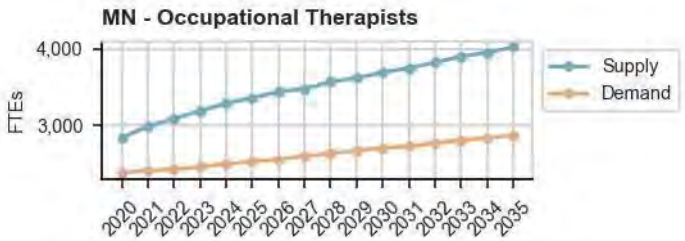
Allied Health

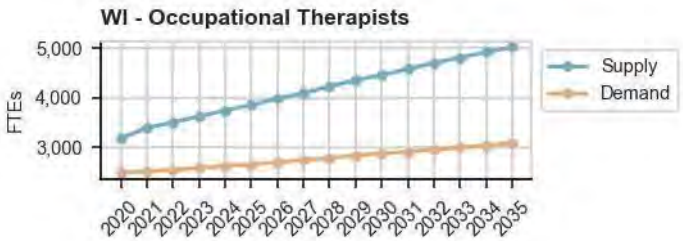


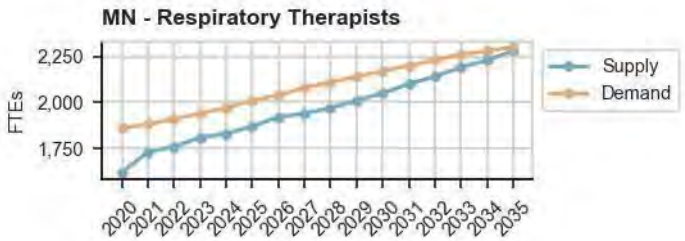


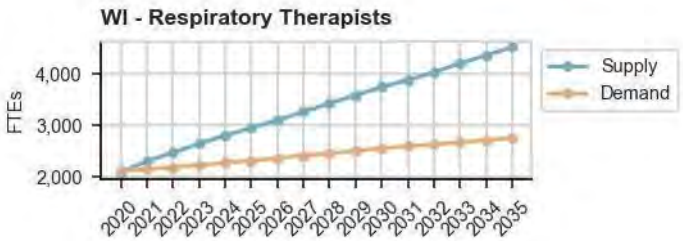


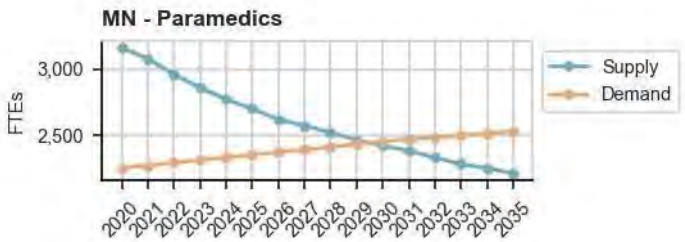


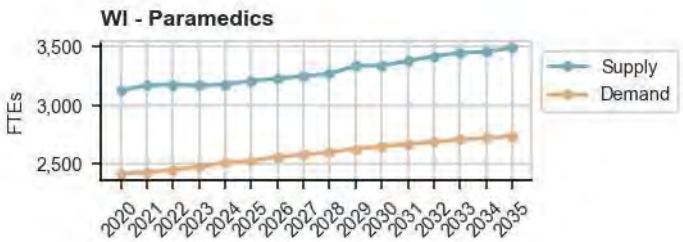


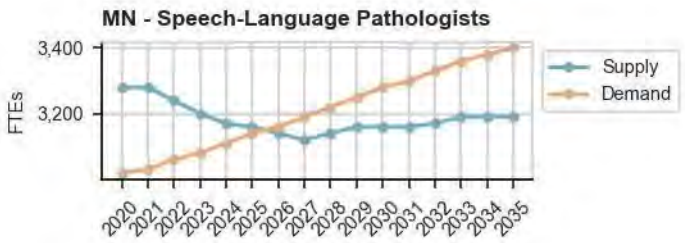


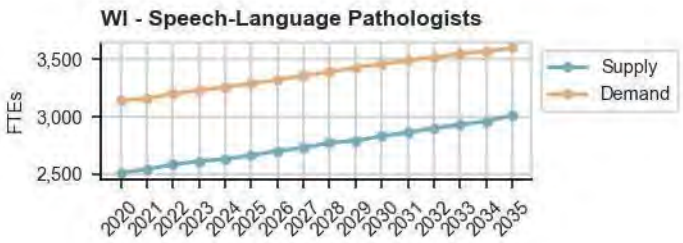


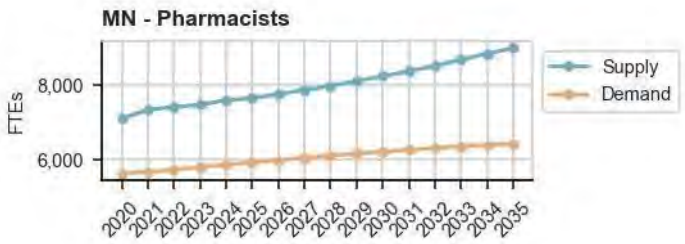


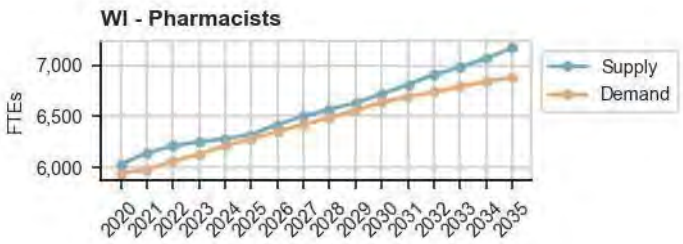


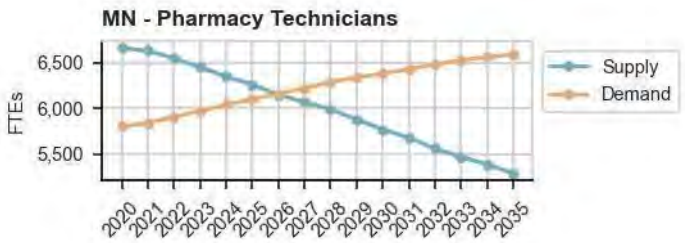


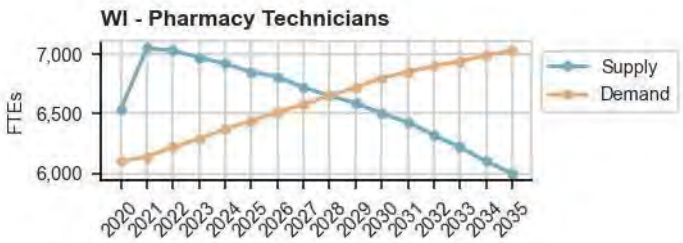

MN - Speech-Language Pathologists
FTEs
3,400
3,200
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

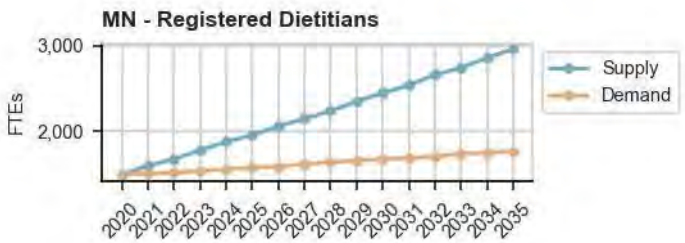

WI - Speech-Language Pathologists
FTEs
3,500
3,000
2,500
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

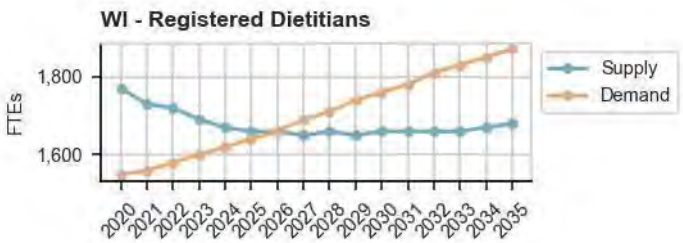

MN - Pharmacists
FTEs
8,000
6,000
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035


WI - Pharmacists
FTEs
7,000
6,500
6,000
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

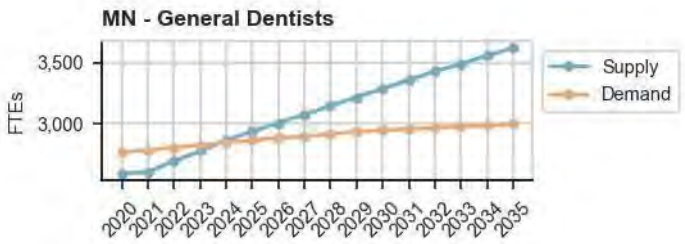

MN - Pharmacy Technicians
FTEs
6,500
6,000
5,500
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

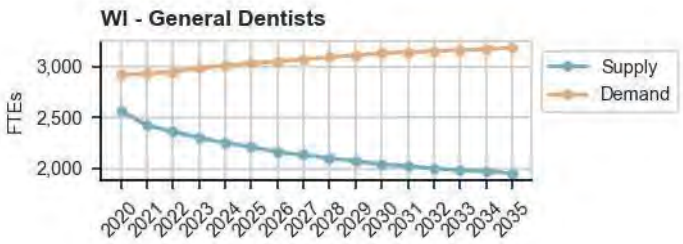

WI - Pharmacy Technicians
FTEs
7,000
6,500
6,000
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

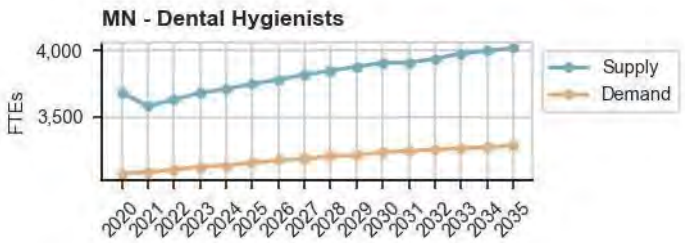

MN - Registered Dietitians
FTEs
3,000
2,000
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

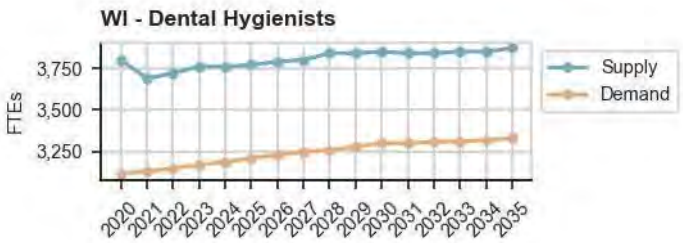

WI - Registered Dietitians
FTEs
1,800
1,600
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

Oral Health

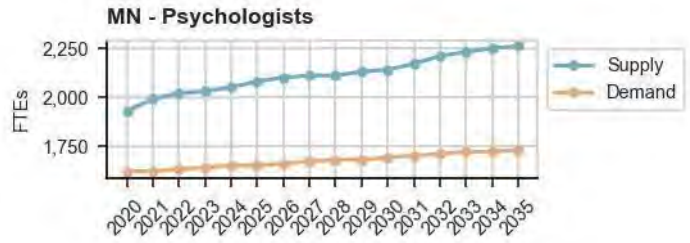

MN - General Dentists
FTEs
3,500
3,000
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

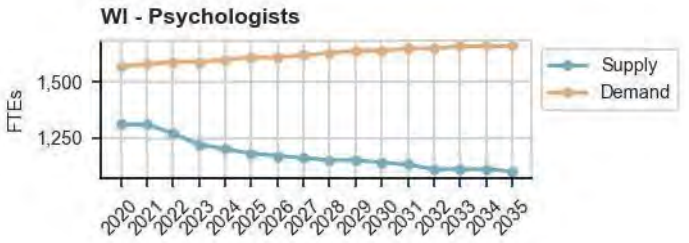

WI - General Dentists
FTEs
3,000
2,500
2,000
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

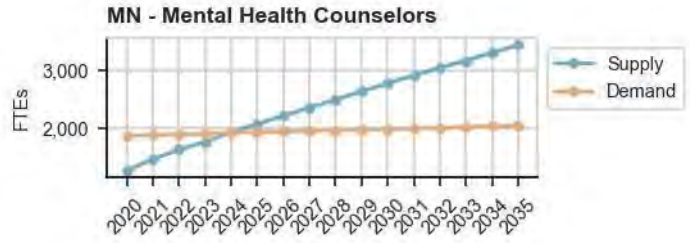

MN - Dental Hygienists
FTEs
4,000
3,500
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

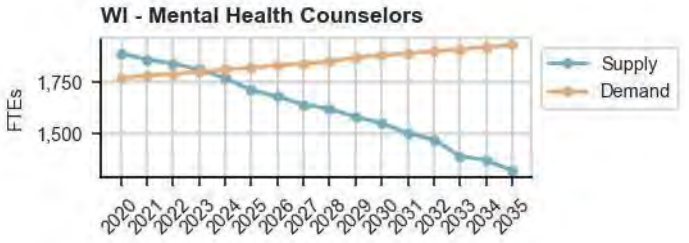

WI - Dental Hygienists
FTEs
3,750
3,500
3,250
Supply
Demand
2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035

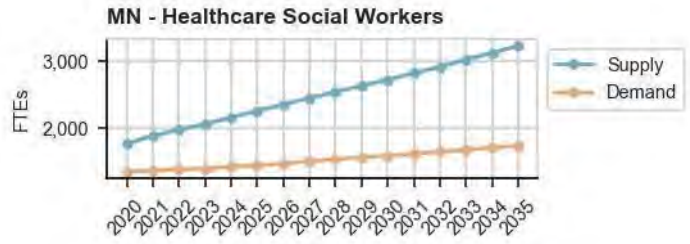
Behavioral Health

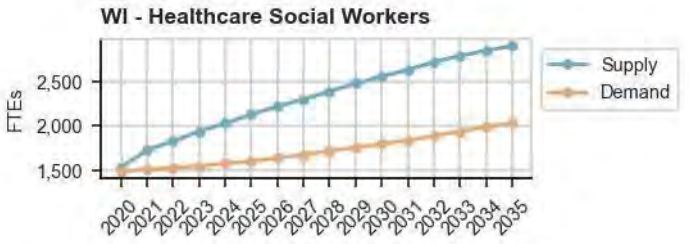


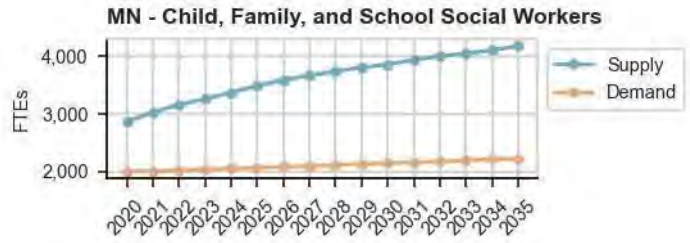


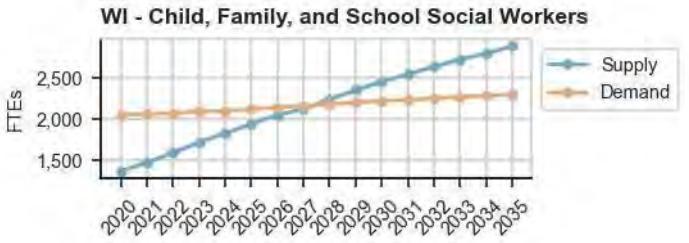


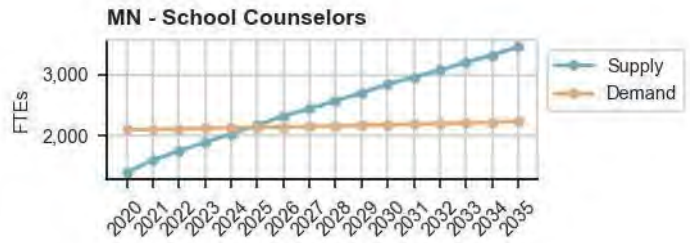


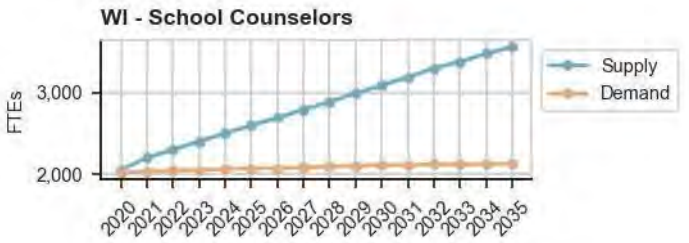












Women's Health

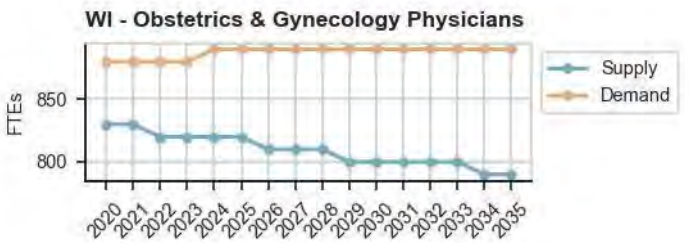


Table 1. Healthcare workforce demand by profession and state in 2020 (HRSA modeling baseline year)

Profession	Demand, MN (FTE)	Demand, WI (FTE)	Rate, MN (FTE per 10,000)	Rate, WI (FTE per 10,000)
All Health Workforce				
Nurse Practitioners	5,160	5,380	9.21	9.26
Licensed Practical Nurses	11,470	11,750	20.48	20.23
Registered Nurses	56,120	60,170	100.21	103.62
Physician Assistants	2,490	2,640	4.45	4.55
Emergency Medicine Physicians	940	1,010	1.68	1.74
Orthopedic Surgery Physicians	570	650	1.02	1.12
Anesthesiology Physicians	930	990	1.66	1.70
Radiology Physicians	760	800	1.36	1.38
Primary Care				
Nurse Practitioners (PC)	1,360	1,390	2.43	2.39
Family Medicine Physicians	2,030	2,260	3.62	3.89
General Internal Medicine Physicians	1,450	1,440	2.59	2.48
Pediatrics Physicians	1,110	980	1.98	1.69
Physician Assistants (PC)	610	640	1.09	1.10
Allied Health				
Physical Therapists	4,790	5,060	8.55	8.71
Physical Therapist Assistants	1,350	1,400	2.41	2.41
Occupational Therapists	2,390	2,490	4.27	4.29
Respiratory Therapists	1,860	2,110	3.32	3.63
Paramedics	2,250	2,420	4.02	4.17
Speech-Language Pathologists	3,020	3,140	5.39	5.41
Pharmacists	5,640	5,940	10.07	10.23
Pharmacy Technicians	5,800	6,100	10.36	10.50
Registered Dietitians	1,500	1,550	2.68	2.67
Oral Health				
General Dentists	2,770	2,920	4.95	5.03
Dental Hygienists	3,070	3,120	5.48	5.37
Behavioral Health				
Psychologists	1,620	1,570	2.89	2.70
Mental Health Counselors	1,880	1,770	3.36	3.05
Healthcare Social Workers	1,360	1,490	2.43	2.57
Child, Family, and School Social Workers	2,000	2,050	3.57	3.53
School Counselors	2,100	2,020	3.75	3.48
Women's Health				
Obstetrics & Gynecology Physicians	870	880	1.55	1.52

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Health Workforce Projections, 2021. Produced by the Department of Health and Human Services, Health Resources and Services Administration. https://data.hrsa.gov/topics/health-workforce/workforce-projections.

Health Workforce Simulation Model Professions. https://drive.google.com/file/d/1qoYvoays9wBP6ZOwyQIvgzhhp7hPSOB1/view?usp=drive_link

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