

# Mapping Supply of the U.S. Psychiatric Workforce

**October 2018**

## Project Team

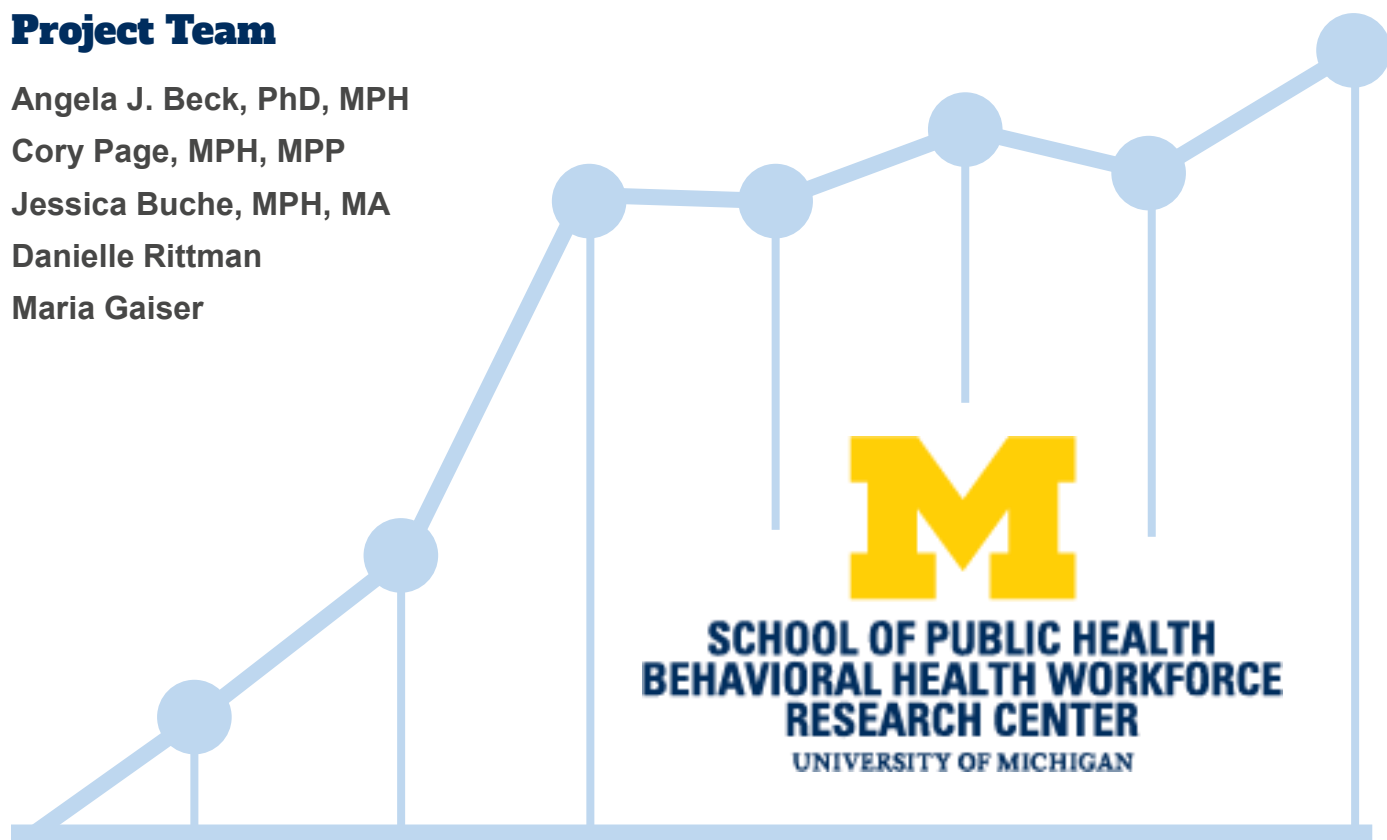
Angela J. Beck, PhD, MPH

Cory Page, MPH, MPP

Jessica Buche, MPH, MA

Danielle Rittman

Maria Gaiser



### **ACKNOWLEDGEMENTS**

This project is supported by the Substance Abuse and Mental Health Services Administration (SAMHSA) and the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under the Cooperative Agreement for Regional Center for Health Workforce Studies #U81HP29300. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by SAMHSA, HRSA, HHS or the U.S. Government

### **SUGGESTED CITATION**

University of Michigan Behavioral Health Workforce Research Center. Mapping Supply of the U.S. Psychiatric Workforce. Ann Arbor, MI: UMSPH; 2018.

# Table of Contents

<b>Key Findings</b> .....	4
<b>Background</b> .....	4
<b>Methods</b> .....	5
Data Sources .....	5
Analysis .....	5
<b>Results</b> .....	5
All Psychiatric Providers .....	5
Psychiatrists.....	7
Advanced Practice Psychiatric Nurses.....	8
Psychiatric Physician Assistants .....	9
Psychiatric Pharmacists .....	10
<b>Conclusions and Policy Considerations</b> .....	11
Study Limitations .....	12
Conclusion .....	12
<b>References</b> .....	12
<b>Appendix A: U.S. Psychiatric Workforce by State</b> .....	14
<b>Appendix B: Ratios of U.S. Psychiatric Workforce by State</b> .....	16

## Key Findings

Reports of provider maldistribution and lack of access to psychiatric services in the United States prompted this study. In 2018, board certification data were gathered for psychiatrists, psychiatric nurse practitioners, psychiatric physician assistants, and psychiatric pharmacists. In total, 47,046 providers were identified and mapped nationwide.

Key findings include:

- Psychiatrists make up the majority of the psychiatric workforce (70.5%) and are most concentrated in the northeast United States
- Psychiatric nurse practitioners make up the next largest segment of the workforce (26.3%) and are most heavily concentrated in the Northeast and Pacific Northwest
- Psychiatric PAs make up 1.7% of the workforce, and were concentrated in the central states
- Psychiatric pharmacists make up 1.5% of the workforce and were concentrated in central and northern states

Building pipelines between residency programs and professional shortages areas, increasing federal incentives for providers to train/practice in shortage areas, and expanding state regulations to allow providers to practice to the full extent of their training could alleviate psychiatric provider maldistribution.

## Background

Several health professions specialize in providing mental health services that combine psychotherapy with psychotropic drug therapy. Collectively, they comprise the psychiatric workforce. Psychiatrists are qualified to treat patients using psychotherapy, medication prescribing, and psychosocial interventions following completion of medical school, licensure, and psychiatry residency.<sup>1</sup> Physician assistants in psychiatry (psychiatric PAs) offer mental health services such as patient assessment, medication prescription, referrals, and ordering labs under the supervision of a psychiatrist or other doctor.<sup>2</sup> PA training necessitates completion of an accredited PA program and certification exam as well as application for state licensure; there is no PA certification board specific to psychiatry that is heavily utilized within the field. Advanced practice psychiatric nurses (psychiatric nurses) assess, diagnose, and treat patients with psychiatric disorders through administration of psychotherapy and medication. Advanced practice registered nurses who choose to work in psychiatry, typically earn master's or doctoral degrees in psychiatric-mental health nursing and practice as either clinical nurse specialists or nurse practitioners.<sup>3</sup> Psychiatric pharmacists have specialized training that allows them to work collaboratively with physicians, and offer direct, comprehensive medication management services to patients.<sup>4</sup> All board-certified psychiatric pharmacists (BCPPs) earn their certification through the Board of Pharmacy Specialties.<sup>5</sup> Board certification is considered voluntary for psychiatric medicine providers.<sup>6</sup> However, many healthcare systems and insurance companies now require board certification in order to participate in managed-care insurance networks, obtain hospital privilege status, and purchase malpractice insurance.<sup>6,7</sup>

Psychiatric workforce shortage remains a serious issue in the field of behavioral health. At present, there are 5,112 mental health professional shortage areas designated by the Health Resources and Services Administration (HRSA).<sup>8</sup> HRSA estimates 45,580 psychiatrists, 7,670 behavioral health nurse practitioners, and 1,280 behavioral health PAs currently practicing in the U.S.<sup>9</sup> estimates for psychiatric pharmacists are currently unavailable. Demand for psychiatry is projected to exceed the supply by 15,600 (25%) workers in 2025.<sup>10</sup> Seventy-seven percent of U.S. counties reported severe shortages of psychiatrists in 2017, and 55% of counties in the continental U.S. do not currently have any psychiatrists.<sup>10</sup>

The four psychiatric providers listed above manage mental health and substance use disorders through psychoactive drug therapy. If a region has few or no psychiatrists, the other three occupations could potentially fill the care gap. Currently, no studies capture the size of all four psychiatric provider workforces and their distributions across the states. Mapping geographic distribution is a foundational step to addressing nationwide maldistribution of this workforce.

## **Methods**

### **Data Sources**

To map the number of psychiatric professionals available in each state, the Behavioral Health Workforce Research Center obtained workforce estimates for psychiatrists, psychiatric nurses, psychiatric PAs, and psychiatric pharmacists for all 50 states and the District of Columbia in 2018. Given that U.S. Bureau of Labor Statistics (BLS) and other publicly available data sources tend to undercount behavioral health workforce professionals, this study utilized certification data for psychiatrists, psychiatric nurses, and psychiatric pharmacists. Data from the American Academy of Physician Assistants (AAPA) were used for psychiatric PAs. The National Commission on Certification of Physician Assistants (NCCPA) has estimates of the PA workforce, similar to AAPA.

Psychiatrist data were purchased from the American Board of Medical Specialties (ABMS), which houses 24 medical specialty boards, including the American Board of Psychiatry and Neurology, which certifies psychiatrists. Data for psychiatric nurses were obtained from the American Nurses Credentialing Center (ANCC) which, like the ABMS, certifies nurses for a number of specialties. Estimates of ANCC-certified mental health psychiatric nurse practitioners, adult nurse practitioners, child psychiatric clinical nurse specialists, and adult psychiatric clinical nurse specialists were used in the study.

Finally, psychiatric pharmacist data were provided by the College of Psychiatric and Neurologic Pharmacists (CPNP). The CPNP has access to data for the BCPP credential offered by the Board of Pharmacy Specialties, which is similar to specialty certifications offered by the ABMS or ANCC. State population estimates were taken from the U.S. Census Bureau in July 2017.<sup>11</sup>

### **Analysis**

Descriptive statistics were used to calculate state estimates for each occupation, which were then converted to a provider-to-population ratio to analyze density of providers across states. For psychiatrists and psychiatric nurses, a provider-to-population ratio of 1:100,000 was used; however, because the total numbers of psychiatric PAs and psychiatric pharmacists were an order of magnitude fewer than the total number of psychiatrists and psychiatric nurses, PA and BCPP workforce estimates use a ratio of 1:1,000,000.

## **Results**

### **All Psychiatric Providers**

The combined data sources estimate the size of the psychiatric workforce to be 66,740 providers. The workforce estimates for all four occupations per state can be found in Appendix A. The estimated ratios of total psychiatric workers per 100,000 population can be found in Appendix B.

Table 1 provides a list of states with the most/fewest total psychiatric providers, as well as states with the highest/lowest ratios of psychiatrists per 100,000 population.

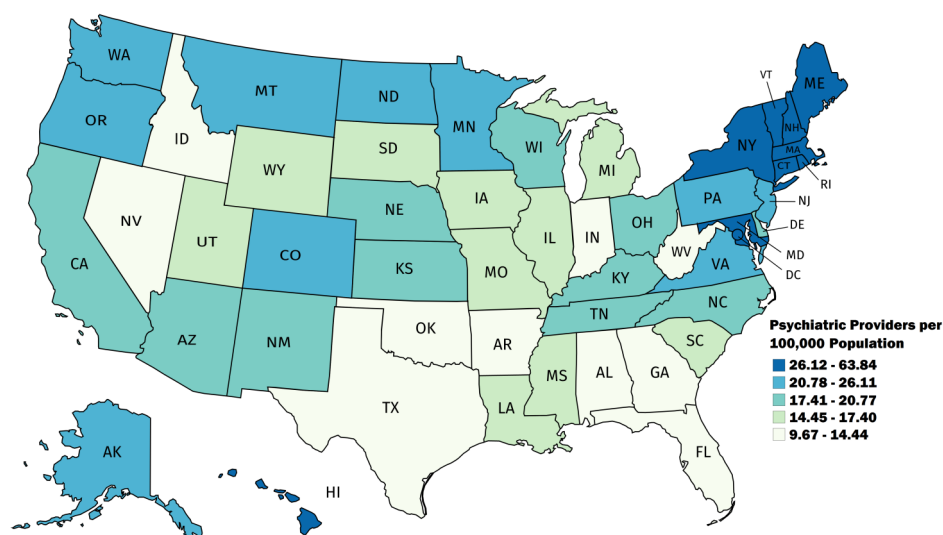
**Table 1:** Highest/Lowest Number of Psychiatric Providers per State

Most Psychiatric Providers, Total	Fewest Psychiatric Providers, Total	Highest Ratio of Psychiatric Providers (per 100,000 Population)	Lowest Ratio of Psychiatric Providers (per 100,000 Population)
California (7,619)	Alaska (174)	District of Columbia (63.84)	Alabama (12.64)
New York (7,322)	Delaware (169)	Massachusetts (54.14)	Indiana (12.61)
Massachusetts (3,714)	North Dakota (163)	Connecticut (48.91)	Idaho (12.17)
Texas (3,630)	South Dakota (140)	Rhode Island (47.66)	Oklahoma (9.77)
Florida (2,910)	Wyoming (85)	Vermont (46.66)	Nevada (9.67)

The majority of the psychiatric workforce was psychiatrists, numbering 47,046 in total and accounting for 70.5% of the workforce. The next largest segment was psychiatric nurses, numbering 17,534 in total and accounting for 26.3% of the workforce. Psychiatric PAs totaled 1,164 and made up 1.7% of the psychiatric workforce. Psychiatric pharmacists totaled 996 and made up 1.5% of the psychiatric workforce.

Psychiatric providers seem most densely concentrated in the northeast region of the U.S. (Figure 1). A dearth of providers seems most pronounced within the Midwest and southern states. Hawaii has a surprisingly high concentration of psychiatric providers, but access to these providers could be limited depending on their distribution along the archipelago.

**Figure 1.** Map of U.S. Psychiatric Workforce per 100,000 Population



Credited with mapchart.net ©

## Psychiatrists

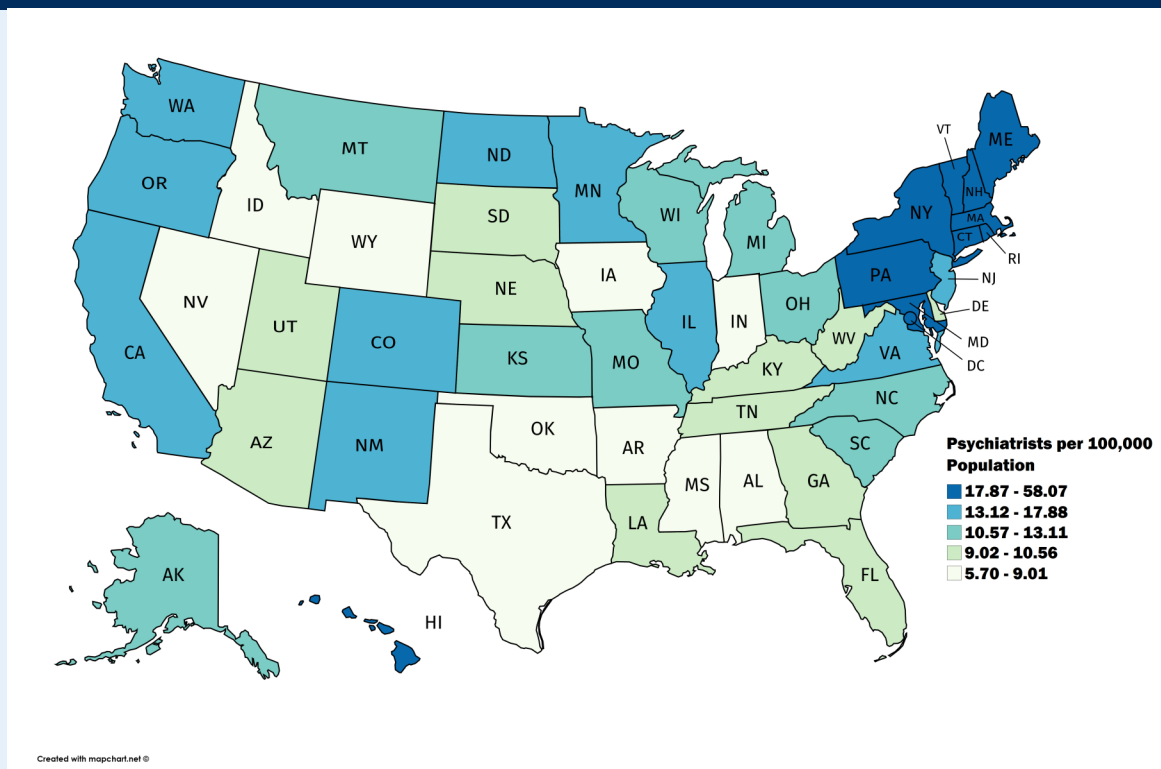
There are 47,046 board-certified psychiatrists across the U.S., according to ABMS data. Table 2 lists the states with the most/fewest total psychiatrists, as well as highest/lowest ratios of psychiatrists per 100,000 population. The average concentration was 14.83 psychiatrists per 100,000 population.

**Table 2:** Highest/Lowest Number of Psychiatrists per State

Most Psychiatrists, Total	Fewest Psychiatrists, Total	Highest Ratio of Psychiatrists (per 100,000 Population)	Lowest Ratio of Psychiatrists (per 100,000 Population)
California (6,585)	Idaho/North Dakota (101)	District of Columbia (58.79)	Oklahoma (7.48)
New York (5,844)	Delaware (100)	Massachusetts (35.98)	Nevada (6.40)
Texas (2,543)	Alaska (90)	Connecticut (32.02)	Mississippi (6.27)
Massachusetts (2,468)	South Dakota (85)	Vermont (30.63)	Idaho (5.88)
Pennsylvania (2,288)	Wyoming (33)	Rhode Island (29.92)	Wyoming (5.70)

Psychiatrists are most highly concentrated in the northeast region of the U.S., particularly around the New England area (Figure 2). Hawaii also has a notably higher-than-average concentration of psychiatrists in its state.

**Figure 2.** Map of U.S. Psychiatrists per 100,000 State Population



## Advanced Practice Psychiatric Nurses

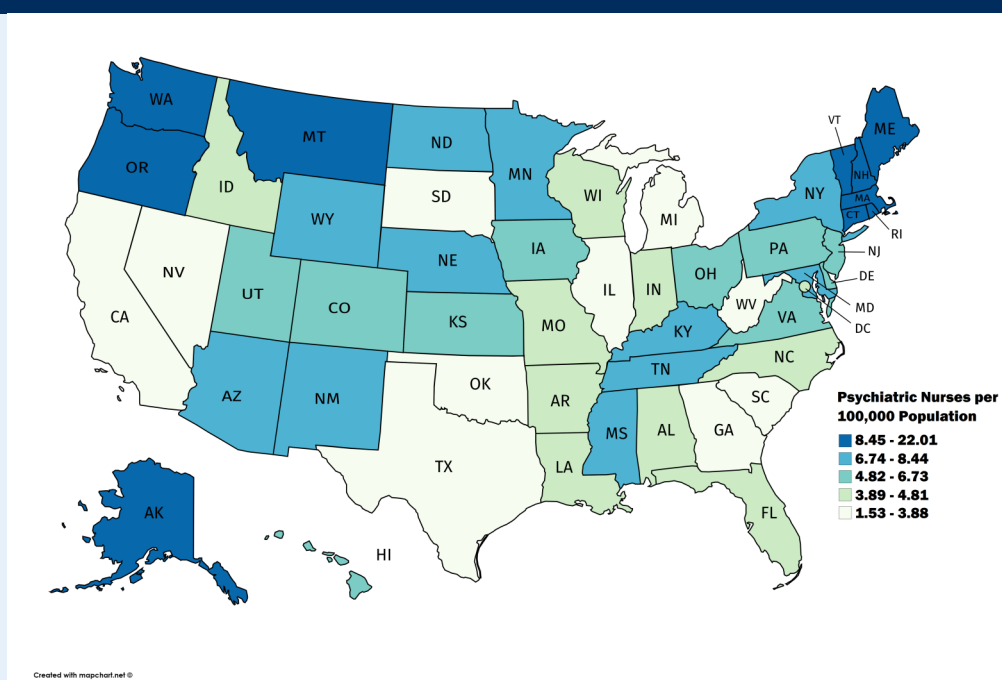
Data from the ANCC revealed 17,534 board-certified advanced practice psychiatric nurses across the U.S. Table 3 lists the states with the most/fewest total advanced practice psychiatric nurses, as well as highest/lowest ratios of advanced practice psychiatric nurses per 100,000 population. The average concentration of advanced practice psychiatric nurses was 6.98 nurses per 100,000 population.

**Table 3:** Highest/Lowest Amount of Advanced Practice Psychiatric Nurses per State

Most Advanced Practice Psychiatric Nurses, Total	Fewest Advanced Practice Psychiatric Nurses, Total	Highest Ratio of Advanced Practice Psychiatric Nurses (per 100,000 Population)	Lowest Ratio of Advanced Practice Psychiatric Nurses (per 100,000 Population)
New York (1,376)	North Dakota (52)	Maine (22.01)	Illinois (2.79)
Massachusetts (1,208)	Wyoming (47)	Massachusetts (17.61)	Nevada (2.77)
Texas (892)	West Virginia (45)	Rhode Island (16.61)	West Virginia (2.48)
California (852)	South Dakota (33)	Connecticut (16.22)	California (2.15)
Florida (817)	District of Columbia (32)	Vermont (14.91)	Oklahoma (1.53)

Psychiatric nurses are most highly concentrated in the northeast region of the U.S., particularly around the New England area (Figure 3). Alaska and states within the Pacific Northwest also have notably higher-than-average concentrations of advanced practice psychiatric nurses in their states.

**Figure 3.** Map of U.S. Advanced Practice Psychiatric Nurses per 100,000 Population





## Psychiatric Physician Assistants

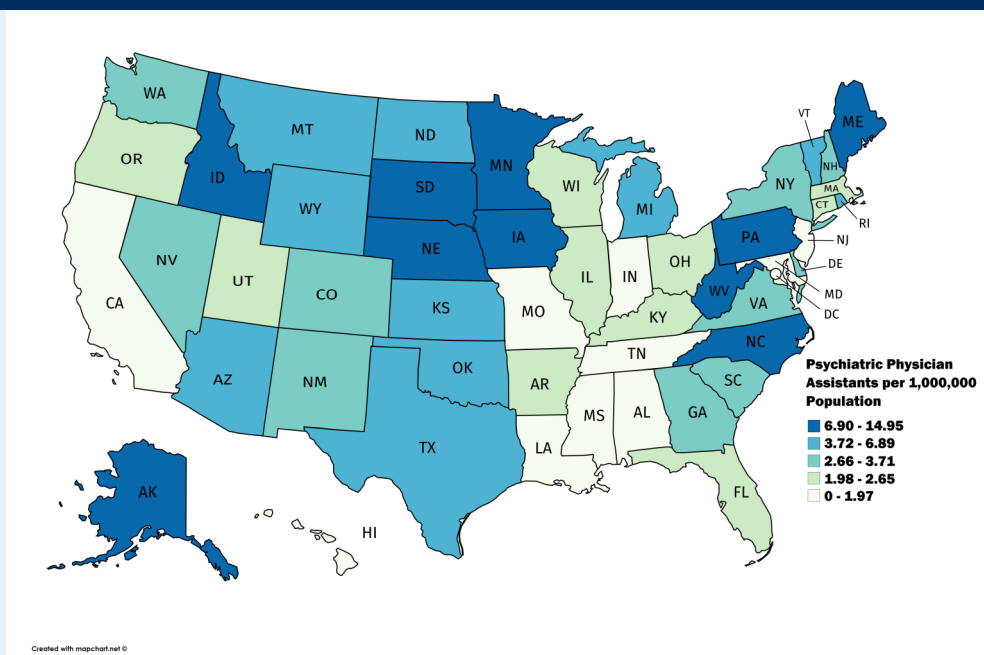
Data from the AAPA enumerated 1,164 psychiatric PAs across the U.S. Table 4 provides a list of states with the most/fewest total psychiatric PAs, as well as states with the highest/lowest ratios of psychiatric PAs per 1,000,000 population. The average concentration of PAs was 4.55 PAs per 1,000,000 population.

**Table 4:** Highest/Lowest Number of Psychiatric Physician Assistants per State

Most Psychiatric Physician Assistants, Total	Fewest Psychiatric Physician Assistants, Total	Highest Ratio of Psychiatric Physician Assistants (per 1,000,000 Population)	Lowest Ratio of Psychiatric Physician Assistants (per 1,000,000 Population)
Texas (116)	Alabama (3)	South Dakota (14.95)	Indiana (1.20)
North Carolina (112)	Delaware (3)	Maine (14.22)	Tennessee (1.19)
Pennsylvania (91)	North Dakota (3)	Idaho (13.40)	Hawaii (0.70)
New York (64)	Hawaii (1)	West Virginia (13.22)	Alabama (0.62)
California (61)	District of Columbia (0)	North Carolina (10.90)	District of Columbia (0.00)

Psychiatric PAs are not concentrated in any one particular geographic region of the U.S., although higher-than-average concentrations can be seen in the middle of the country (Figure 4). Alaska, Maine, North Carolina, Pennsylvania, and West Virginia also have notably higher-than-average concentrations of psychiatric PAs in their states.

**Figure 4.** Map of U.S. Psychiatric Physician Assistants per 1,000,000 Population



## Psychiatric Pharmacists

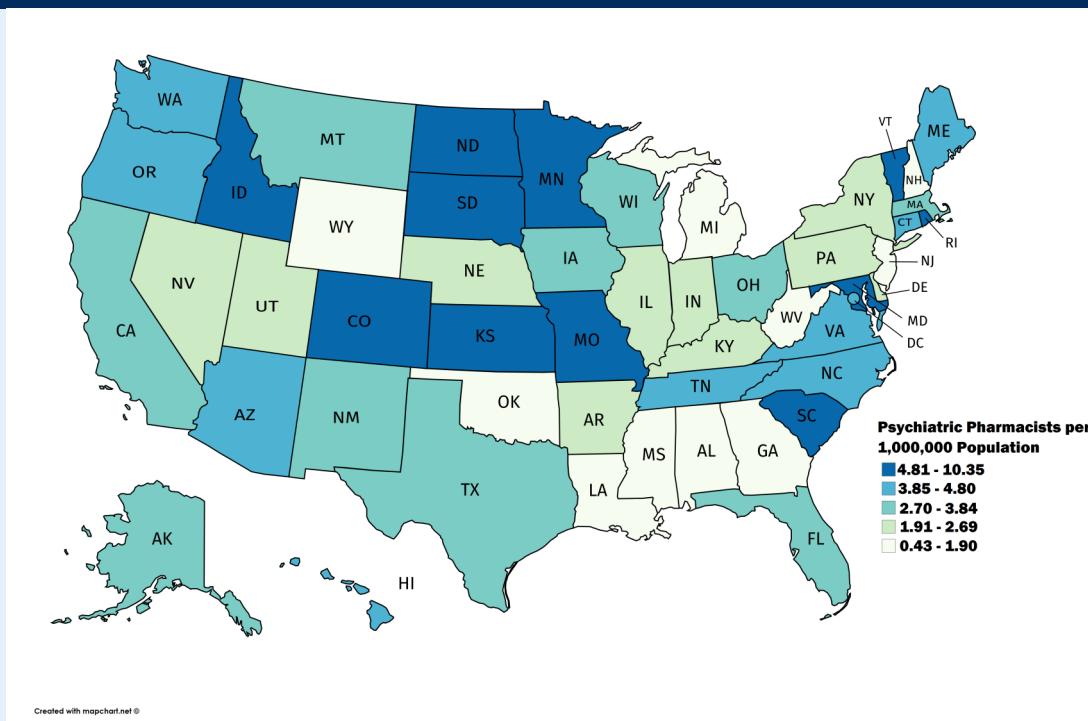
Data from the CPNP revealed 996 board-certified psychiatric pharmacists across the U.S. Table 5 lists the states with the most/fewest total BCPPs, as well as states with the highest/lowest ratios of BCPPs per 1,000,000 population. The average concentration of psychiatric pharmacists was 3.51 BCPPs per 1,000,000 population.

**Table 5:** Highest/Lowest Number of Psychiatric Pharmacists per State

Most Psychiatric Pharmacists, Total	Fewest Psychiatric Pharmacists, Total	Highest Ratio of Psychiatric Pharmacists (per 1,000,000 Population)	Lowest Ratio of Psychiatric Pharmacists (per 1,000,000 Population)
California (121)	Louisiana (2)	South Dakota (10.35)	Georgia (1.34)
Texas (79)	Mississippi (2)	North Dakota (9.27)	Oklahoma (0.76)
Florida (59)	New Hampshire (2)	Rhode Island (7.55)	Mississippi (0.67)
Minnesota (42)	West Virginia (1)	Minnesota (7.53)	West Virginia (0.55)
North Carolina (40)	Wyoming (1)	South Carolina (5.77)	Louisiana (0.43)

Psychiatric pharmacists are not concentrated in any one particular geographic region of the U.S., although higher-than-average concentrations can be seen to the north and center of the country (Figure 5).

**Figure 5.** Map of U.S. Psychiatric Pharmacists per 1,000,000 Population



## Conclusions and Policy Considerations

Compared with previous HRSA estimates, this study found about the same number of psychiatrists (47,046 vs. HRSA's 45,580), more advanced practice psychiatric nurses (17,534 advanced practice psychiatric nurses vs. HRSA's 7,670 behavioral health nurse practitioners), and fewer psychiatric PAs (1,164 PAs vs. HRSA's 1,280 behavioral health PAs).<sup>9</sup> The difference in advanced practice psychiatric nurses can be explained by this study's inclusion criteria, which included clinical nurse specialists as part of the total number of psychiatric nurses. This is appropriate, as psychiatric clinical nurse specialists have almost identical practice competencies as psychiatric nurse practitioners.<sup>12</sup> This study also includes estimates for psychiatric pharmacists, which were excluded from HRSA's previous study.

The majority of the psychiatric workforce was psychiatrists, accounting for 70.5%. Psychiatrists were most heavily concentrated in the northeast region of the U.S. The next largest segment of the psychiatric workforce was psychiatric nurses, accounting for 26.3%. Psychiatric nurses were most heavily concentrated in the northeast region and the Pacific Northwest of the U.S. Psychiatric PAs made up 1.7% of the psychiatric workforce, and were more evenly spaced around the country, including states in the center of the continental U.S. Psychiatric pharmacists made up 1.5% of the psychiatric workforce, and were similarly diffused, though a larger concentrations existed in the center and northern continental states.

Overall, the states with the highest concentration of psychiatric providers per 100,000 residents were the District of Columbia, Massachusetts, Connecticut, Rhode Island, and Vermont. The states with the lowest concentration of psychiatric providers per 100,000 residents were Nevada, Oklahoma, Idaho, Indiana, and Alabama.

The maldistribution of psychiatrists could be linked to graduate programs and residencies. Currently, six of the top ten graduate psychiatry programs are located in Connecticut, Massachusetts, New York, and Pennsylvania—all located within the northeast region, and all within the top 20th percentile of “psychiatrists per 100,000 population” rates.<sup>13</sup> This geographic area also ranks highly among the 15 measures that make up Mental Health America's “State of Mental Health” rankings.<sup>14</sup> The Association of American Medical Colleges reports that more than half of the individuals who completed residency training between 2007 and 2016 are practicing in the state where they did their residency training.<sup>15</sup> Graduate psychiatry programs in states with a high density of psychiatrists could try to build stronger connections with provider sites in states with a low density of psychiatrists, building a pipeline of psychiatrists into underserved areas.

Like psychiatrists, PAs appear to have a higher likelihood of practicing in an area where they served their residency during their graduate education.<sup>16</sup> Advanced practice psychiatric nurse distribution does not seem as linked to graduate programs as psychiatrist distribution, as the top ten psychiatric nurse programs are spread across nine states,<sup>17</sup> not localized to any one geographic area, and, with the exception of Washington and Connecticut, do not reside in states that are within the top 20th percentile of “advanced practice psychiatric nurses per 100,000 population” rates. Strategies for prompting better workforce distribution include incentive programs for practice in underserved areas, such as the NURSE Corps program, which offers full tuition, cost of supplies, and a monthly stipend for nurses who agree to serve in Health Professional Shortage Areas (HPSAs), including Mental Health HPSAs.<sup>18,19</sup> Another option includes the National Health Service Corps,<sup>20</sup> which offers financial aid for primary care providers, including PAs, to serve in medically underserved areas/rural areas.<sup>21</sup> Investing in these types of incentive programs may help spur more equitable distribution of providers to places in need of services.

Psychiatric pharmacists are trained to offer comprehensive medication management services to patients,<sup>4</sup> but without corresponding scope of practice allowances, these pharmacists may be discouraged from residing in the state. At least 49 states currently offer pharmacists prescriptive authority in some fashion.<sup>22</sup> Whether it is the autonomous authority to prescribe and administer influenza vaccines and oral

contraceptives, or the collaborative authority to manage a patient's pharmacotherapy with their physician, pharmacists can have a more active role with patients than simply dispensing prescriptions. For example, New Mexico allows pharmacists to prescribe and dispense naloxone,<sup>23</sup> a drug for reversing opioid overdose,<sup>24</sup> without needing standing orders or a collaborative arrangement with a physician. After putting this policy into effect, New Mexico saw a several-fold increase in the amount of Naloxone claims made by outpatient pharmacies,<sup>25</sup> making the life-saving drug more available to counter the opioid epidemic. Aligning scope of practice laws to pharmacists' education, and authorizing specially certified pharmacists to perform more extensive medication management services, could attract more psychiatric pharmacists to the field.

## Study Limitations

The sizes of the psychiatric occupations studied for this report were estimated through specialty board certifications, with the exception of PAs who did not have a compatible certification. This may have resulted in undercounting the workforce. An active certification does not necessarily correlate with an actively practicing psychiatric professional. Providers could retire or pass away and their certification would still remain active until its renewal date. Providers also may not necessarily require a certification before specializing their practice, meaning some specialists may have not been counted. These estimates also did not include healthcare providers who may offer psychiatric services to their patients, but who are not specialized in psychiatry. This is particularly common among primary care physicians, who are the sole form of healthcare providers for more than one-third of patients with a behavioral health disorder.<sup>26</sup> The AAPA also estimates that anywhere between 50-70% of physician assistants who do not identify as a psychiatric specialty are providing behavioral health care for patients in primary care practice settings, including writing prescriptions for mental health disorders such as anxiety, depression, and ADHD. However, given that specialty certification is becoming increasingly mandatory for hospital privileges and malpractice insurance, these certification data should make for fairly reliable estimates.

## Conclusion

Understanding the causes of maldistribution of the psychiatric workforce is key to addressing the supply shortage. Future studies could look into variances in state-regulated scopes of practice and Medicaid reimbursement as potential factors.

## References

1. American Psychiatric Association. What is psychiatry? <https://www.psychiatry.org/patients-families/what-is-psychiatry>. Published 2018. Accessed June 4, 2018.
2. American Academy of Physician Assistants. Physician assistants in psychiatry. *Specialty Practice: PAs in Psychiatry*. [https://www.aapa.org/wp-content/uploads/2016/12/SP\\_PAs\\_Psychiatry.pdf](https://www.aapa.org/wp-content/uploads/2016/12/SP_PAs_Psychiatry.pdf). Published 2010. Accessed June 4, 2018.
3. American Psychiatric Nurses Association. Psychiatric-Mental Health Nurses. <https://www.apna.org/4a/pages/index.cfm?pageid=3292>. Published 2018. Accessed June 4, 2018.
4. Goldstone LW, et al. Improving medication-related outcomes for patients with psychiatric and neurologic disorders: value of psychiatric pharmacists as part of the health care team. *The Mental Health Clinician*. 2015;5(1):1-28. <http://mhc.cnp.org/doi/full/10.9740/mhc.2015.01.001>. Accessed June 4, 2018.
5. Psychiatric Pharmacy. Board of Pharmacy Specialties. <https://www.bpsweb.org/bps-specialties/psychiatric-pharmacy/>. Published 2018. Accessed June 4, 2018.
6. Cox E. Board certification for doctors: what does it really mean? *U.S. News and World Report*. <https://health.usnews.com/health-care/for-better/articles/2017-04-26/board-certification-for-doctors-what-does-it-really-mean>. Published April 26, 2017. Accessed June 4, 2018.
7. Wallace A, McFarland BH, Selvam N, Sahota G. Quality of care provided by board-certified versus non-board certified psychiatrists and neurologists. *Acad Med*. 2017;92(1):108-115. DOI: 10.1097/ACM.0000000000001233. Accessed June 4, 2018.
8. Health Resources & Services Administration. Shortage areas. *HRSA Data Warehouse*. <https://datawarehouse.hrsa.gov/topics/shortageareas.aspx>. Published 2018. Accessed June 4, 2018.
9. Health Resources and Services Administration/National Center for Health Workforce Analysis; Substance Abuse and Mental Health services Administration/Office of Policy, Planning, and Innovation. National projections of the supply and demand for behavioral health practitioners, 2013-2025. <https://bhwh.hrsa.gov/sites/default/files/bhwh/health-workforce-analysis/research/projections/behavioral-health2013-2025.pdf>. Published 2015. Accessed June 4, 2018.
10. National Council for Behavioral Health's Medical Director Institute. The psychiatric shortage: causes and solutions. [https://www.thenationalcouncil.org/wp-content/uploads/2017/03/Psychiatric-Shortage\\_National-Council-.pdf](https://www.thenationalcouncil.org/wp-content/uploads/2017/03/Psychiatric-Shortage_National-Council-.pdf). Published 2017. Accessed June 4, 2018.

11. American FactFinder. Annual estimates of the resident populations: April 1, 2010 to July 1, 2017. United States Census Bureau. [https://factfinder.census.gov/faces/tableservices/sf/pages/productview.xhtml?pid=PEP\\_2017\\_PEPANNRES&src=pt](https://factfinder.census.gov/faces/tableservices/sf/pages/productview.xhtml?pid=PEP_2017_PEPANNRES&src=pt). Published May 2018. Accessed June 4, 2018.
12. APNA Board of Directors. Position statement: psychiatric mental health advanced practice nurses. American Psychiatric Nurses Association. [https://www.apna.org/files/public/PMH\\_Advanced\\_Practice\\_Nurses\\_Position\\_Statement.pdf](https://www.apna.org/files/public/PMH_Advanced_Practice_Nurses_Position_Statement.pdf). Published October 13, 2010. Accessed June 4, 2018.
13. Education Rankings. Global universities search. U.S. News & World Report Education. <https://www.usnews.com/education/best-global-universities/search?region=&country=united-states&subject=psychiatry-psychology&name=>. Published 2018. Accessed June 4, 2018.
14. Ranking the states. Mental Health America. <http://www.mentalhealthamerica.net/issues/ranking-states>. Published 2018. Accessed June 4, 2018.
15. Report on residents, executive summary. Association of American Medical Colleges. <https://www.aamc.org/download/484936/data/report-on-residents-executive-summary.pdf>. Published December 2017. Accessed June 4, 2018.
16. Frisch M. Physician assistants in rural America. Multibriefs. 2013. [http://www.multibriefs.com/briefs/exclusive/pas\\_rural\\_america.html#WyfhtqpKiUk](http://www.multibriefs.com/briefs/exclusive/pas_rural_america.html#WyfhtqpKiUk). Accessed June 4, 2018.
17. 10 top psychiatric nurse practitioner programs – 2018. Nurse.org. <https://nurse.org/articles/top-psychiatric-nurse-practitioner-programs/>. Published February 14, 2018. Accessed June 4, 2018.
18. NURSE corps scholarship program. Health Resources & Services Administration. <https://bhwh.hrsa.gov/loansscholarships/nursecorps/scholarship>. Published 2018. Accessed June 4, 2018.
19. Types of designations. Health Resources & Services Administration. <https://bhwh.hrsa.gov/shortage-designation/types>. Published 2018. Accessed June 4, 2018.
20. Workforce series: physician assistants. National Rural Health Association. <https://www.ruralhealthweb.org/getattachment/Advocate/Policy-Documents/WorkforcePhysicAssist.pdf.aspx?lang=en-US>. Published October 2008. Accessed June 4, 2018.
21. Scholarships. National Health Service Corps. <https://www.nhsc.hrsa.gov/scholarships/index.html/>. Published 2018. Accessed June 4, 2018.
22. Adams AJ, Weaver KK. The continuum of pharmacist prescriptive authority. *Ann Pharmacother*. J2016;50(9):778-784. <http://journals.sagepub.com/doi/full/10.1177/1060028016653608#articleCitationDownloadContainer>. Accessed June 4, 2018.
23. Pharmacist prescriptive authority for naloxone. New Mexico Board of Pharmacy Regulation. <https://www.nmpharmacy.org/Resources/Documents/rx%20authority/naloxone%20protocol.pdf>. Published 2014. Accessed June 4, 2018.
24. Opioid overdose reversal with naloxone (Narcan, Evzio). National Institute on Drug Abuse. <https://www.drugabuse.gov/related-topics/opioid-overdose-reversal-naloxone-narcan-evzio>. Published April 2018. Accessed June 4, 2018.
25. Morton KJ, et al. Pharmacy-based statewide naloxone distribution: A novel “top-down, bottom-up” approach. *J Am Pharm Assoc*. 2017;57:S99-S106. [https://www.japha.org/article/S1544-3191\(17\)30018-3/pdf](https://www.japha.org/article/S1544-3191(17)30018-3/pdf). Accessed June 4, 2018.
26. Russell L. Mental health care services in primary care. Center for American Progress. <https://www.americanprogress.org/wp-content/uploads/issues/2010/10/pdf/mentalhealth.pdf>. Published October 2010. Accessed June 4, 2018.

## Appendix A

**Table 6.** U.S. Psychiatric Workforce by State

	Psychiatrists	Psychiatric Nurses	Psychiatric Physician Assistants	Psychiatric Pharmacists	TOTAL
Alabama	390	215	3	8	616
Alaska	90	75	7	2	174
Arizona	717	473	39	27	1,256
Arkansas	258	120	8	7	393
California	6,585	852	61	121	7,619
Colorado	833	349	19	28	1,229
Connecticut	1,149	582	9	15	1,755
Delaware	100	64	3	2	169
District of Columbia	408	32	0	3	443
Florida	1,991	817	43	59	2,910
Georgia	1,032	326	35	14	1,407
Hawaii	311	84	1	6	402
Idaho	101	76	23	9	209
Illinois	1,710	357	27	25	2,119
Indiana	515	303	8	15	841
Iowa	267	210	31	12	520
Kansas	335	180	12	16	543
Kentucky	406	353	10	12	781
Louisiana	471	196	8	2	677
Maine	275	294	19	6	594
Maryland	1,587	504	12	33	2,136
Massachusetts	2,468	1,208	16	22	3,714
Michigan	1,180	318	60	15	1,573
Minnesota	762	431	41	42	1,276
Mississippi	187	252	4	2	445
Missouri	699	250	8	31	988
Montana	116	100	5	4	225

Nebraska	197	139	18	4	358
Nevada	192	83	8	7	290
New Hampshire	254	176	5	2	437
New Jersey	1,507	605	11	13	2,136
New Mexico	274	147	7	6	434
New York	5,844	1,376	64	38	7,322
North Carolina	1,303	479	112	40	1,934
North Dakota	101	52	3	7	163
Ohio	1,377	704	30	37	2,148
Oklahoma	294	60	27	3	384
Oregon	649	403	11	19	1,082
Pennsylvania	2,288	617	91	32	3,028
Rhode Island	317	176	4	8	505
South Carolina	552	148	15	29	744
South Dakota	85	33	13	9	140
Tennessee	606	566	8	30	1,210
Texas	2,543	892	116	79	3,630
Utah	297	190	8	7	502
Vermont	191	93	4	3	291
Virginia	1,247	487	30	33	1,797
Washington	1,010	766	27	32	1,835
West Virginia	192	45	24	1	262
Wisconsin	750	229	12	18	1,009
Wyoming	33	47	4	1	85
TOTAL	47,046	17,534	1,164	996	66,740

## Appendix B.

**Table 7.** Ratios of U.S. Psychiatric Workforce by State

	State Population <sup>15</sup>	Psychiatrists per 100,000 Residents	Psychiatric Nurses per 100,000 Residents	Psychiatric Physician Assistants per 1,000,000 Residents	Psychiatric Pharmacists per 1,000,000 Residents	Psychiatric Workers per 100,000 Residents
Alabama	4,874,747	8.00	4.41	0.62	1.64	12.64
Alaska	739,795	12.17	10.14	9.46	2.70	23.52
Arizona	7,016,270	10.22	6.74	5.56	3.85	17.90
Arkansas	3,004,279	8.59	3.99	2.66	2.33	13.08
California	39,536,653	16.66	2.15	1.54	3.06	19.27
Colorado	5,607,154	14.86	6.22	3.39	4.99	21.92
Connecticut	3,588,184	32.02	16.22	2.51	4.18	48.91
Delaware	961,939	10.40	6.65	3.12	2.08	17.57
District of Columbia	693,972	58.79	4.61	0.00	4.32	63.84
Florida	20,984,400	9.49	3.89	2.05	2.81	13.87
Georgia	10,429,379	9.90	3.13	3.36	1.34	13.49
Hawaii	1,427,538	21.79	5.88	0.70	4.20	28.16
Idaho	1,716,943	5.88	4.43	13.40	5.24	12.17
Illinois	12,802,023	13.36	2.79	2.11	1.95	16.55
Indiana	6,666,818	7.72	4.54	1.20	2.25	12.61
Iowa	3,145,711	8.49	6.68	9.85	3.81	16.53
Kansas	2,913,123	11.50	6.18	4.12	5.49	18.64
Kentucky	4,454,189	9.12	7.93	2.25	2.69	17.53
Louisiana	4,684,333	10.05	4.18	1.71	0.43	14.45
Maine	1,335,907	20.59	22.01	14.22	4.49	44.46
Maryland	6,052,177	26.22	8.33	1.98	5.45	35.29
Massachusetts	6,859,819	35.98	17.61	2.33	3.21	54.14
Michigan	9,962,311	11.84	3.19	6.02	1.51	15.79



Minnesota	5,576,606	13.66	7.73	7.35	7.53	22.88
Mississippi	2,984,100	6.27	8.44	1.34	0.67	14.91
Missouri	6,113,532	11.43	4.09	1.31	5.07	16.16
Montana	1,050,493	11.04	9.52	4.76	3.81	21.42
Nebraska	1,920,076	10.26	7.24	9.37	2.08	18.65
Nevada	2,998,039	6.40	2.77	2.67	2.33	9.67
New Hampshire	1,342,795	18.92	13.11	3.72	1.49	32.54
New Jersey	9,005,644	16.73	6.72	1.22	1.44	23.72
New Mexico	2,088,070	13.12	7.04	3.35	2.87	20.78
New York	19,849,399	29.44	6.93	3.22	1.91	36.89
North Carolina	10,273,419	12.68	4.66	10.90	3.89	18.83
North Dakota	755,393	13.37	6.88	3.97	9.27	21.58
Ohio	11,658,609	11.81	6.04	2.57	3.17	18.42
Oklahoma	3,930,864	7.48	1.53	6.87	0.76	9.77
Oregon	4,142,776	15.67	9.73	2.66	4.59	26.12
Pennsylvania	12,805,537	17.87	4.82	7.11	2.50	23.65
Rhode Island	1,059,639	29.92	16.61	3.77	7.55	47.66
South Carolina	5,024,369	10.99	2.95	2.99	5.77	14.81
South Dakota	869,666	9.77	3.79	14.95	10.35	16.10
Tennessee	6,715,984	9.02	8.43	1.19	4.47	18.02
Texas	28,304,596	8.98	3.15	4.10	2.79	12.82
Utah	3,101,833	9.57	6.13	2.58	2.26	16.18
Vermont	623,657	30.63	14.91	6.41	4.81	46.66
Virginia	8,470,020	14.72	5.75	3.54	3.90	21.22
Washington	7,405,743	13.64	10.34	3.65	4.32	24.78
West Virginia	1,815,857	10.57	2.48	13.22	0.55	14.43
Wisconsin	5,795,483	12.94	3.95	2.07	3.11	17.41
Wyoming	579,315	5.70	8.11	6.90	1.73	14.67
AVERAGE	N/A	14.83	6.98	4.55	3.51	22.61