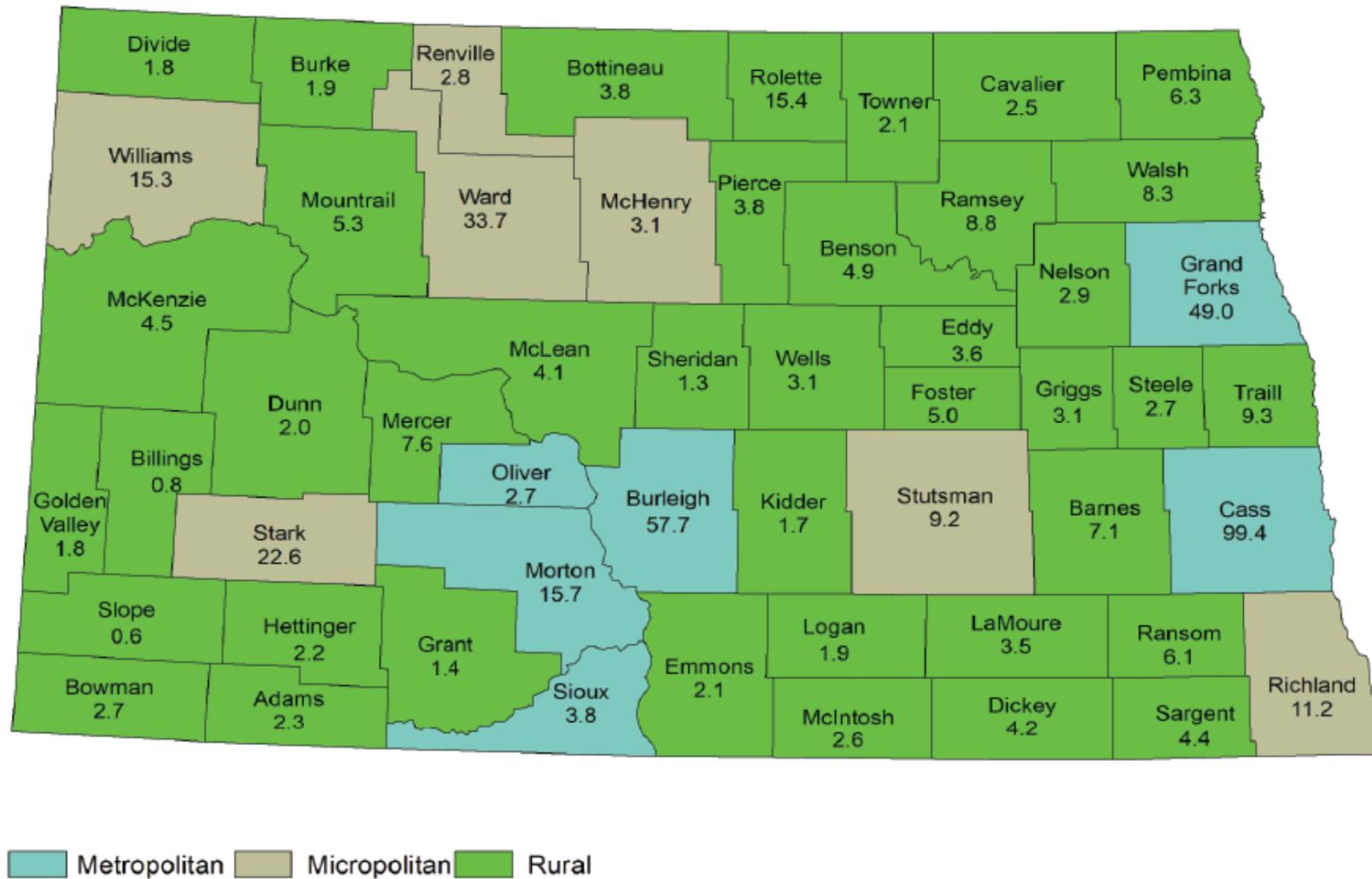


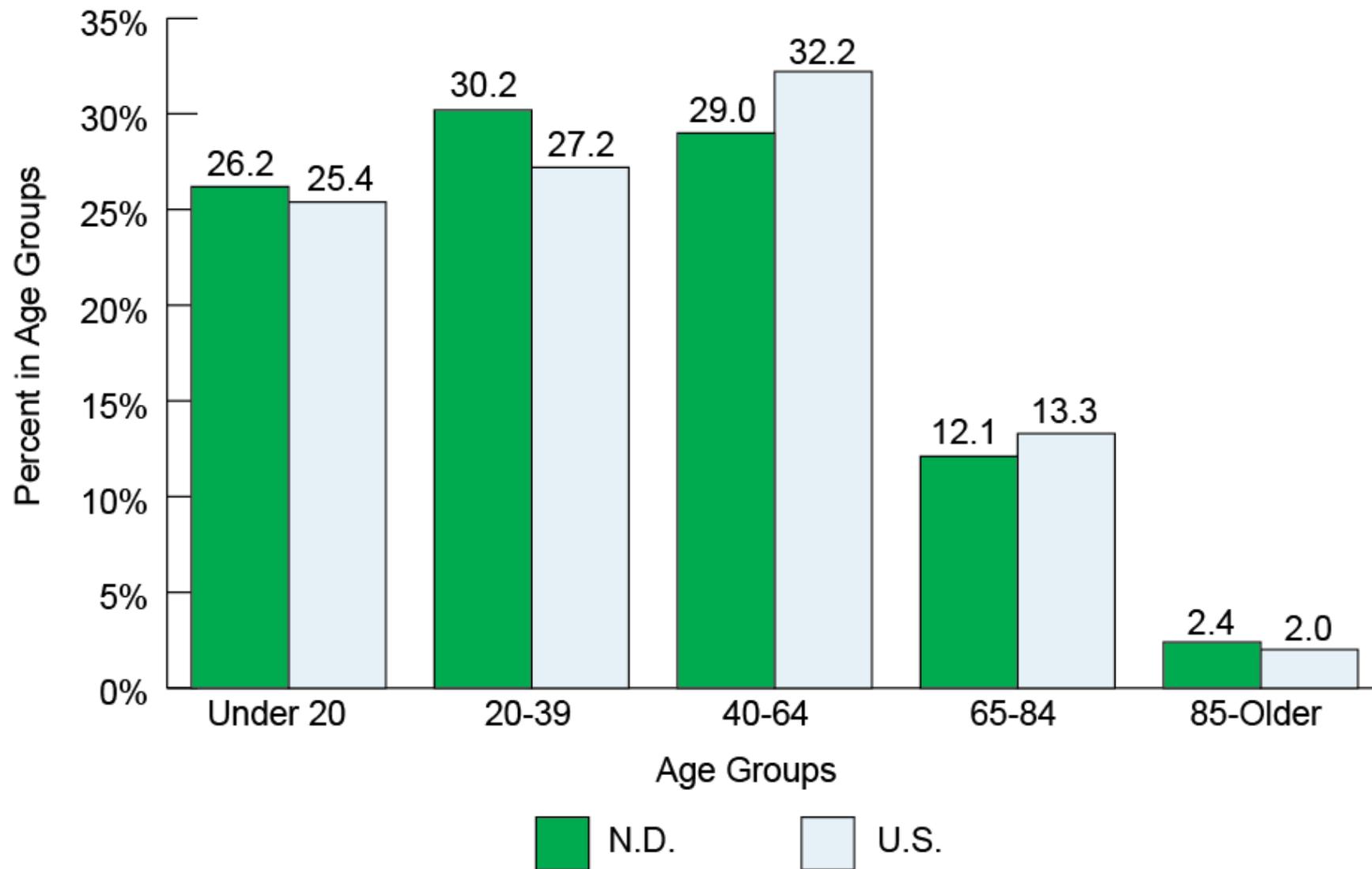
# Chapter 1:

# The Population of North Dakota and Attendant Health Care Needs



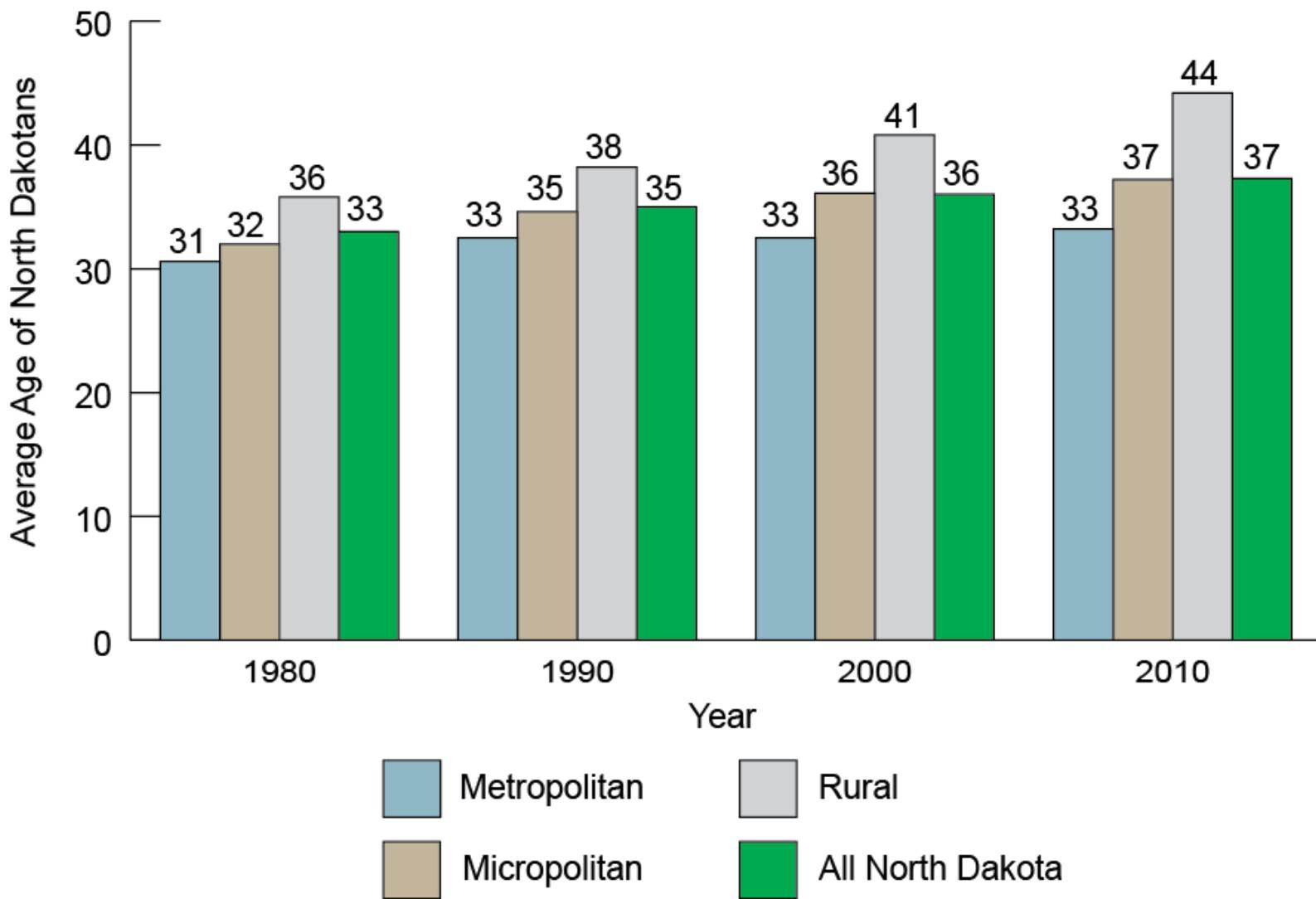
**Figure 1.1. Population densities of metropolitan, micropolitan, and rural counties in North Dakota.**<sup>5,11</sup>

According to the 2017 census estimate, North Dakota is slightly less rural than was determined following the 2010 census. The metropolitan population has increased as has the number of counties so designated. The metropolitan population accounts for 50% of the state's population.



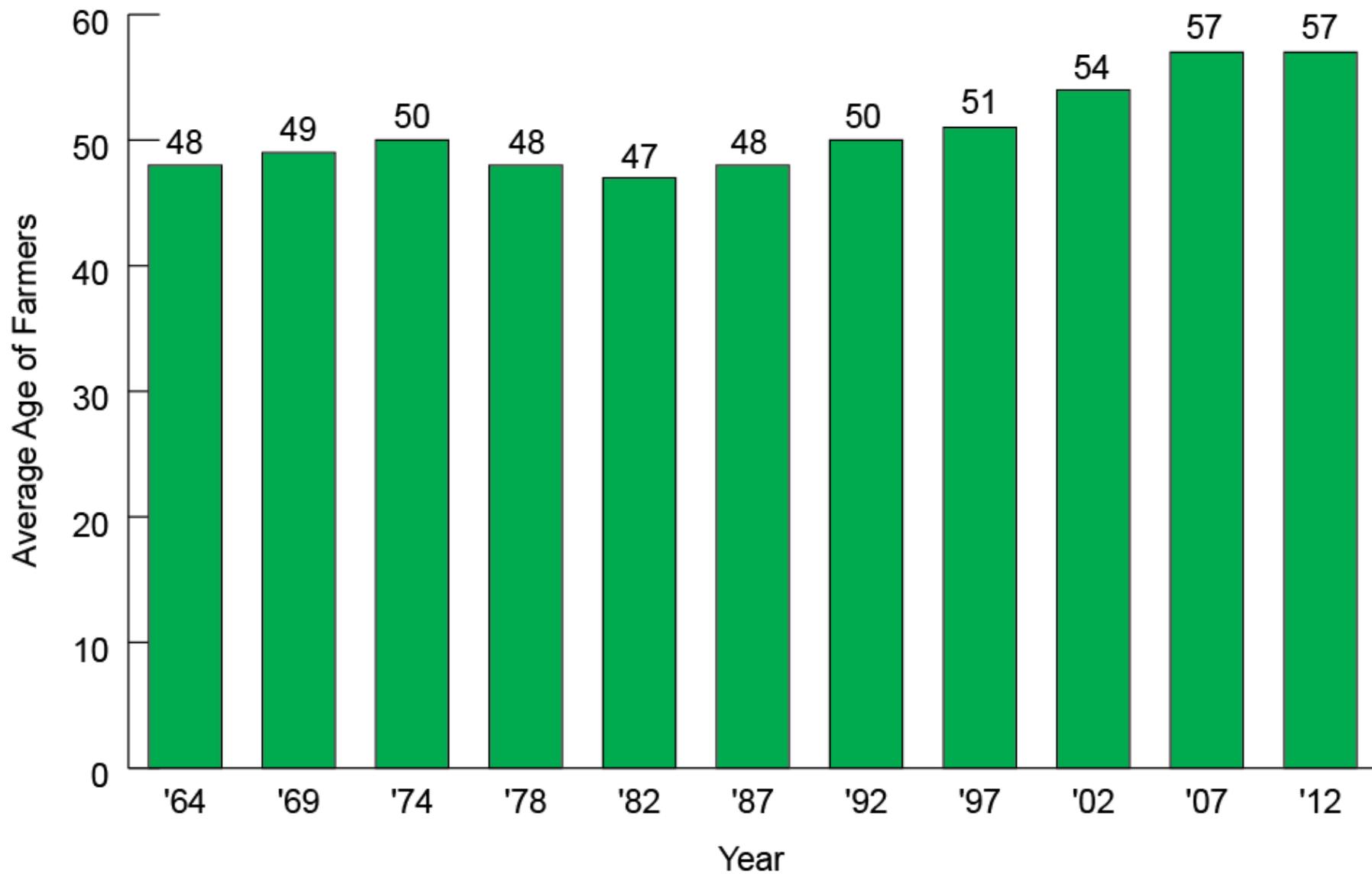
**Figure 1.2. Age of people in North Dakota compared with U.S. in 2016.<sup>10</sup>**

There are more North Dakotans 85 and older compared with the U.S. population. There are fewer North Dakotans between the ages of 40 to 64 and 65 to 84 relative to the U.S. population.



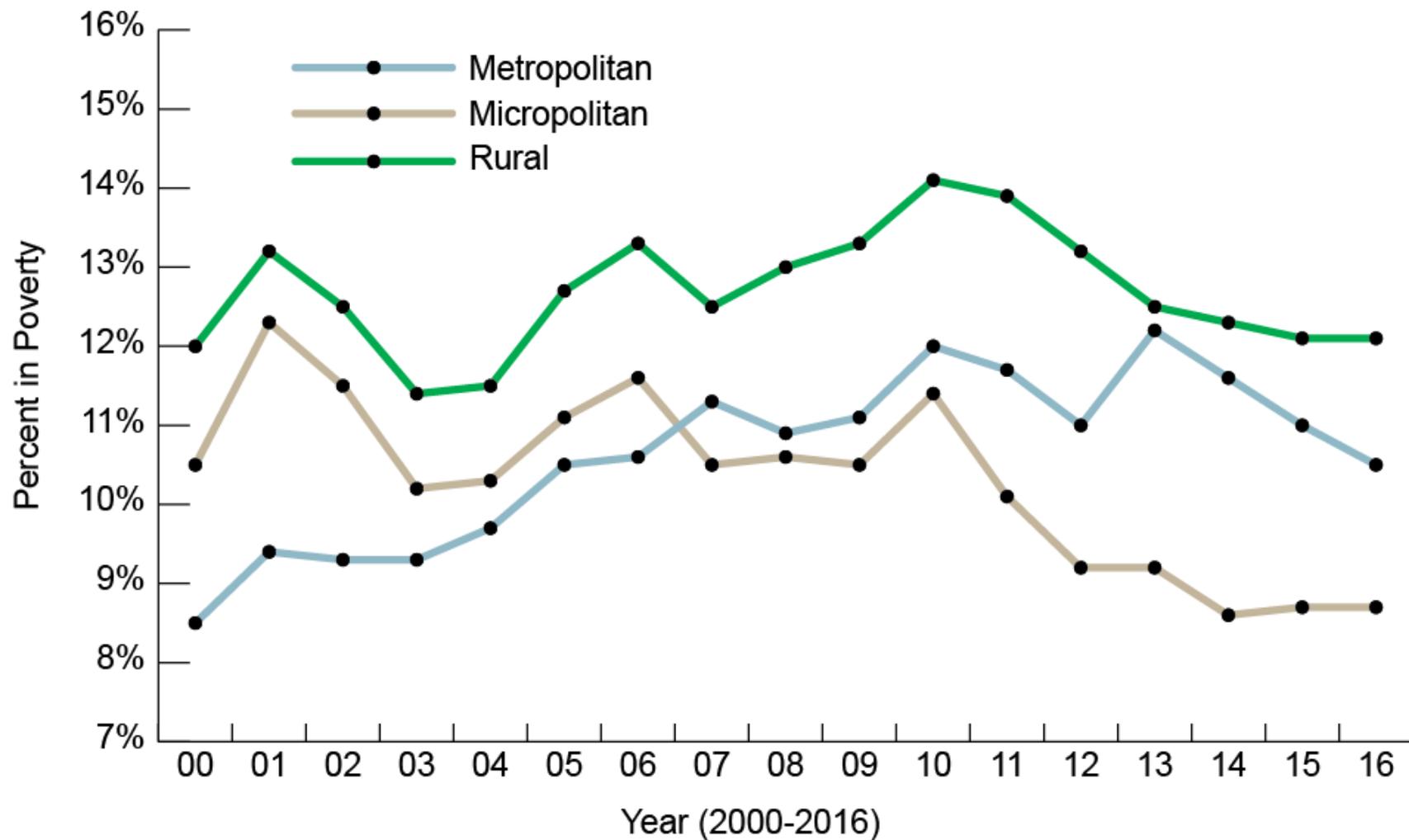
**Figure 1.3. Average age of North Dakota residents from 1980 to 2010 by metropolitan, micropolitan, and rural counties.**<sup>6-9,11</sup>

The average age has increased from 33 years in 1980 to over 37 years in 2010. This trend is projected to increase as the baby boomer population ages. Rural North Dakotans are older than both micropolitan and metropolitan North Dakotans.

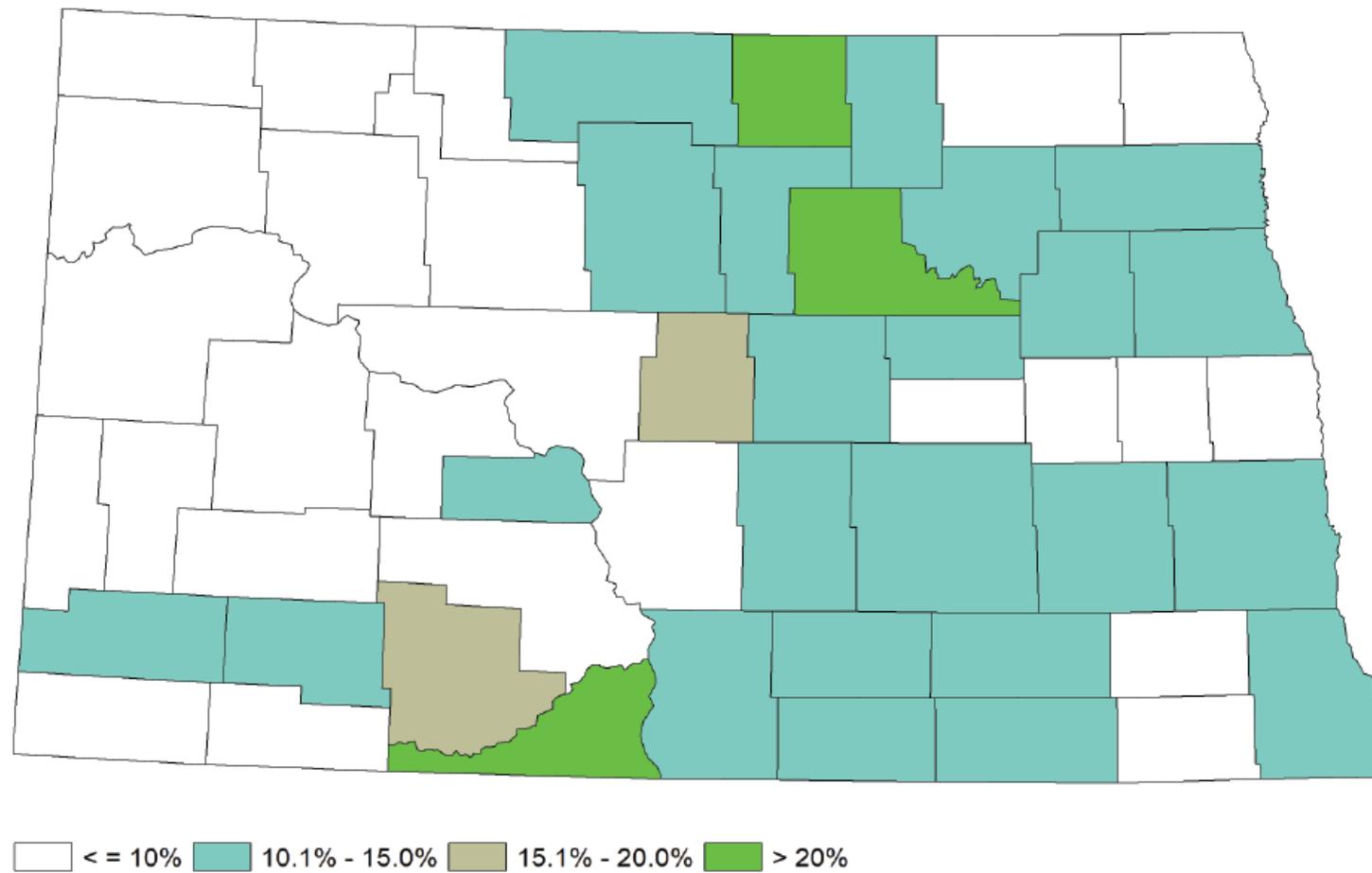


**Figure 1.4. Average age of North Dakota farmers from 1964 to 2012.<sup>13</sup>**

The increase in average age has been especially pronounced in North Dakota farmers, whose average age rose from 47.3 to 57.0 years from 1982 to 2012.

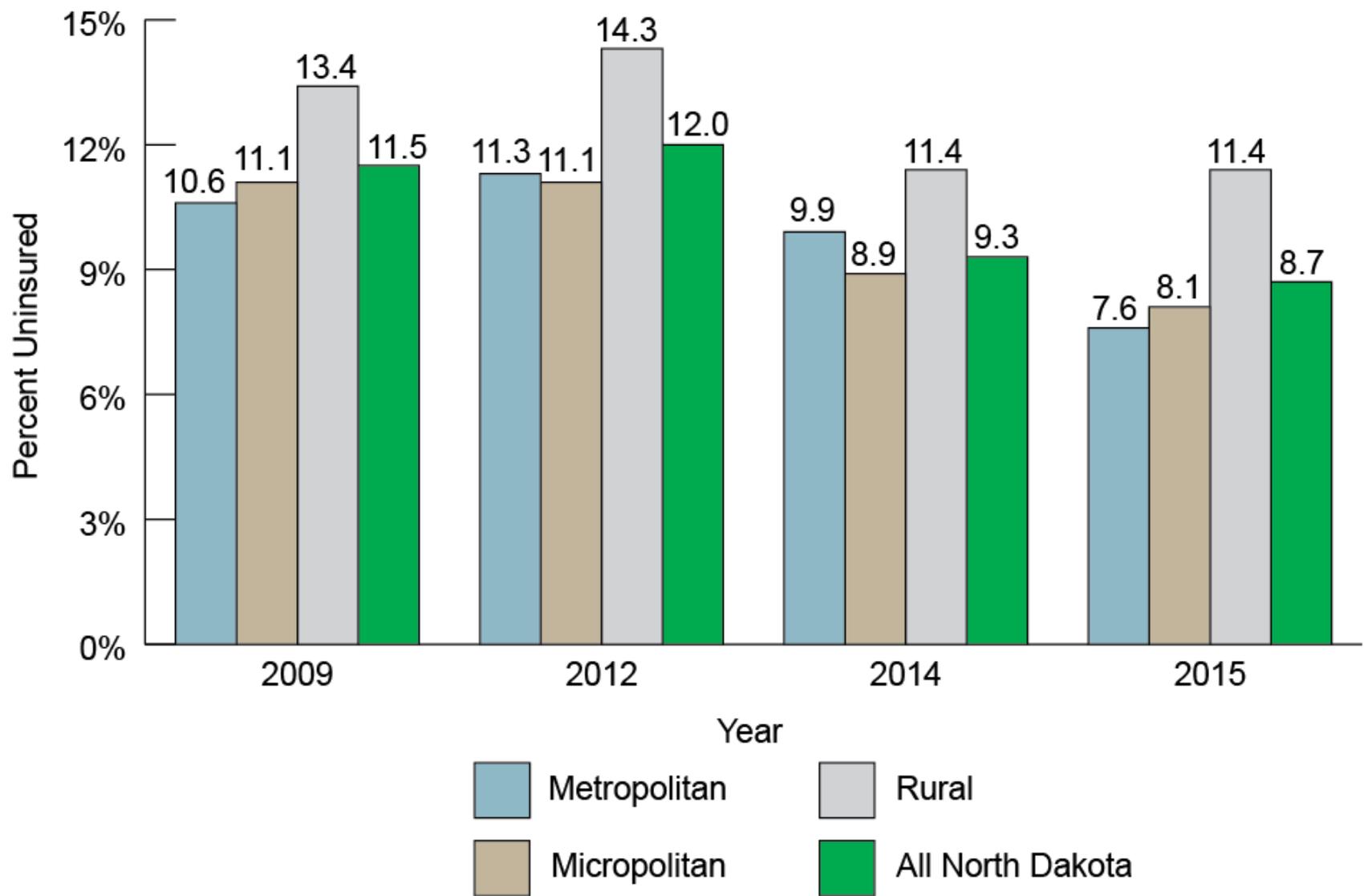


**Figure 1.5. Poverty in North Dakota by rural, micropolitan, and metropolitan areas.**<sup>11,15</sup> In 2016, the federal Office of Management and Budget (OMB) considered the poverty level for a family of two to be \$15,569 and for a family of four it was \$24,339. In 2016, 10.5% of North Dakota residents were in poverty (the U.S. had 14.0% in poverty) and lived in all regions of North Dakota. Poverty rose from 8.5% to 10.5% in metropolitan areas since 2000, and in rural areas it remained about the same, from 12.0% to 12.1%. The poverty rate from 2000 to 2016 was higher in rural North Dakota than other areas.



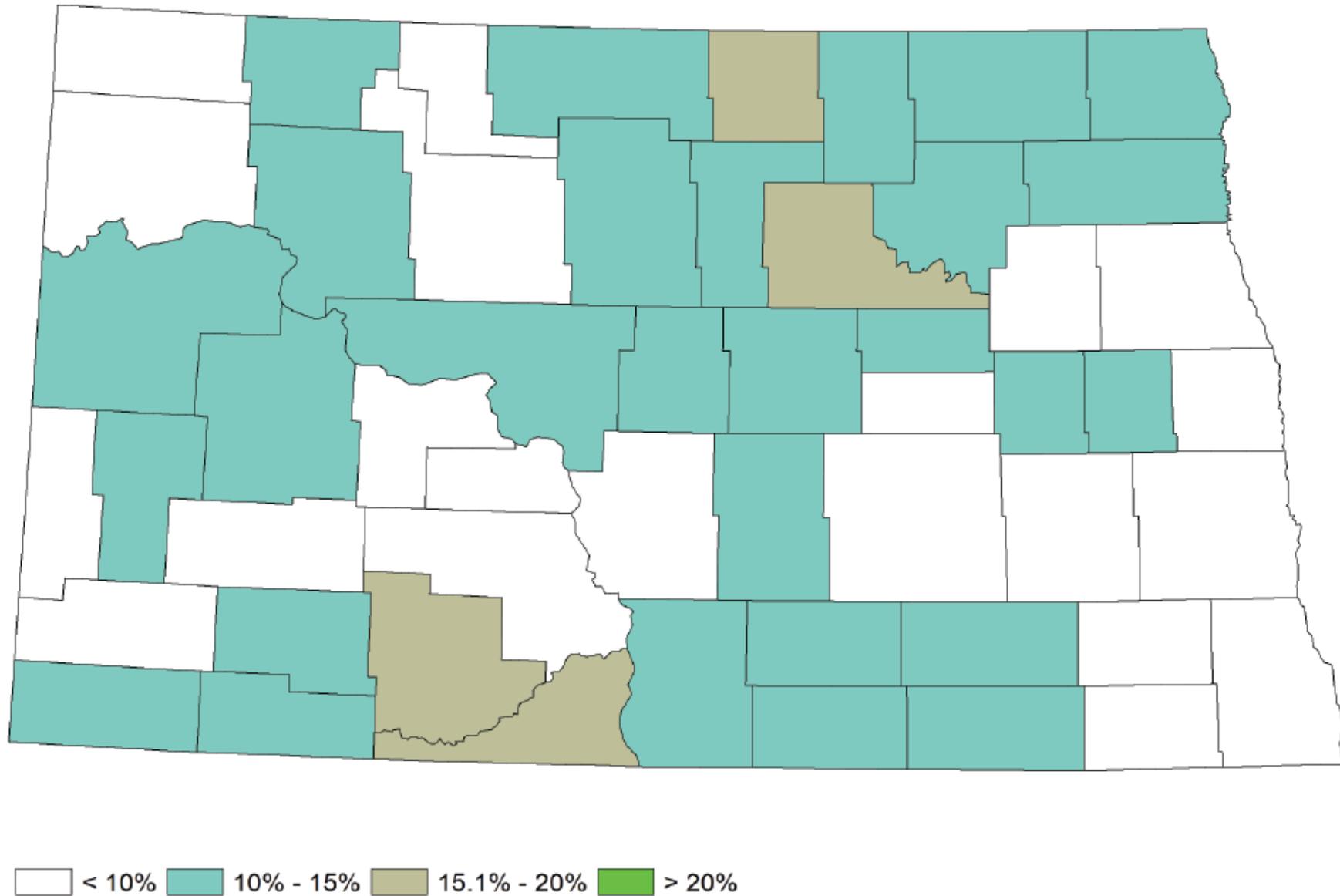
**Figure 1.6. Poverty in North Dakota (2016) by counties.<sup>18</sup>**

Poverty in North Dakota counties ranged from 6.6% to 35.3% from 2000 to 2016. In 2016, three counties had more than 20% of their population in poverty and had been classified under federal guidelines as persistent poverty counties: Rolette County (poverty rate of 26.7%), Benson County (29.4%), and Sioux County (35.3%).<sup>18</sup> These three counties have a significant American Indian population. A persistent poverty county is one in which 20% or more of the population was in poverty three consecutive census periods (currently 1990, 2000, and 2010). Five counties in North Dakota have more than 15% of residents in poverty. In 2016, there were 25 counties with poverty rates equal to or less than 10%. In 2010, there were 14 counties.

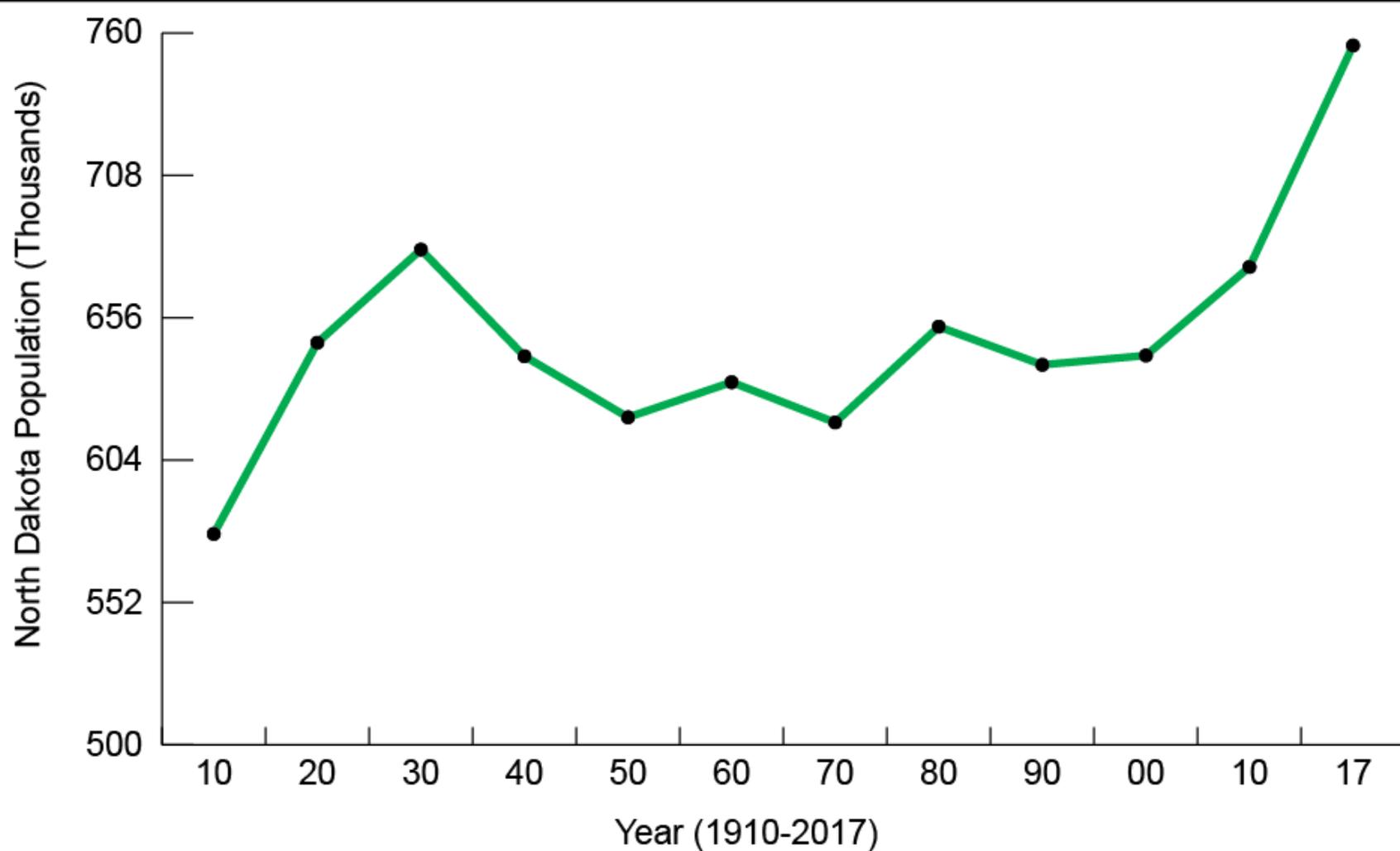


**Figure 1.7. Percentage of North Dakota residents who had no health insurance in 2009, 2012, 2014, and 2015.**<sup>11,22</sup>

In 2015, 8.7% of North Dakotans were uninsured, and 10.9% of the U.S. was uninsured. In 2009 and 2015, the metropolitan rate of uninsured was below the statewide, rural, and micropolitan rates.

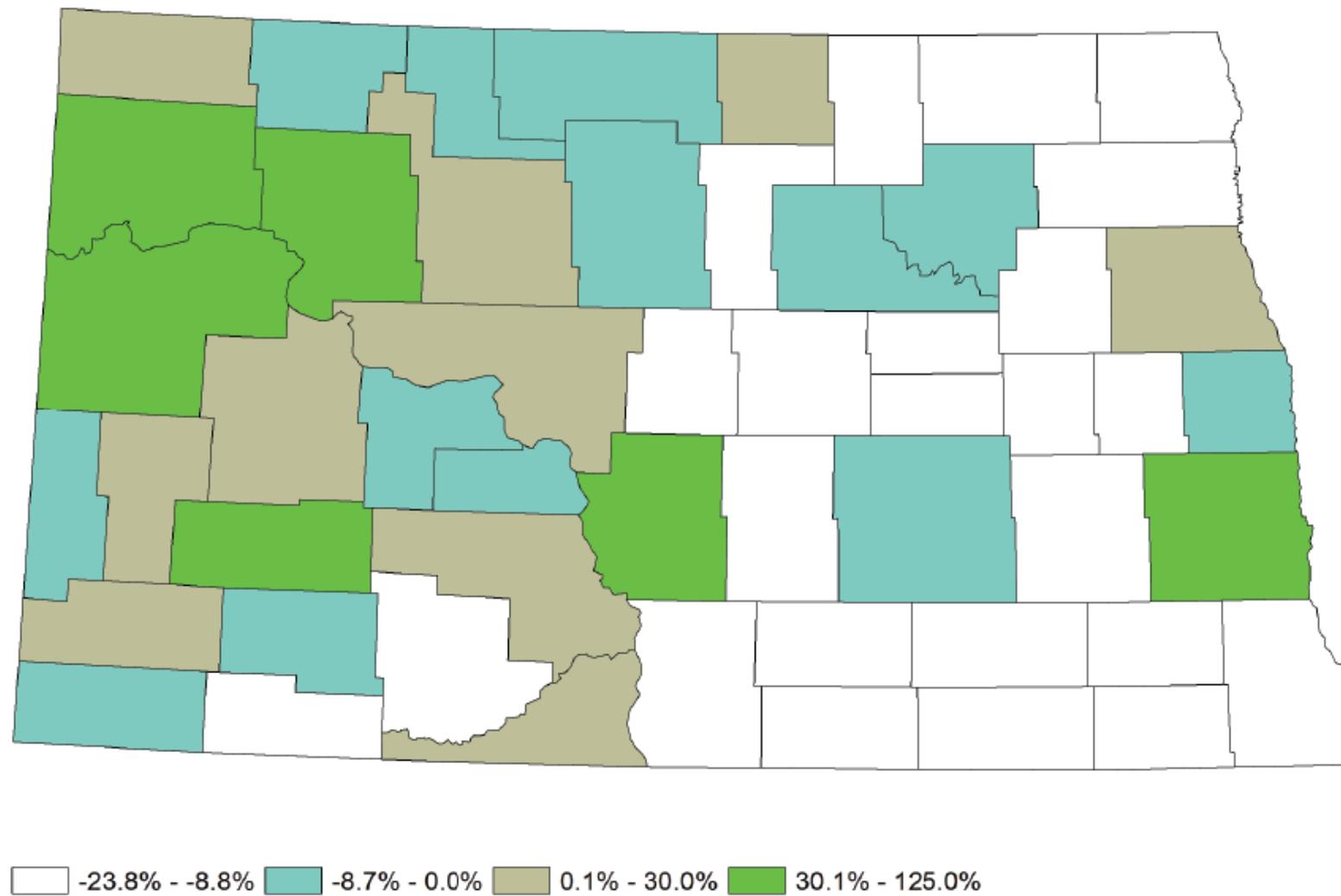


**Figure 1.8. Percentage of uninsured by North Dakota counties.<sup>22</sup>**  
 Twenty-six counties had less than 10% of their population uninsured.



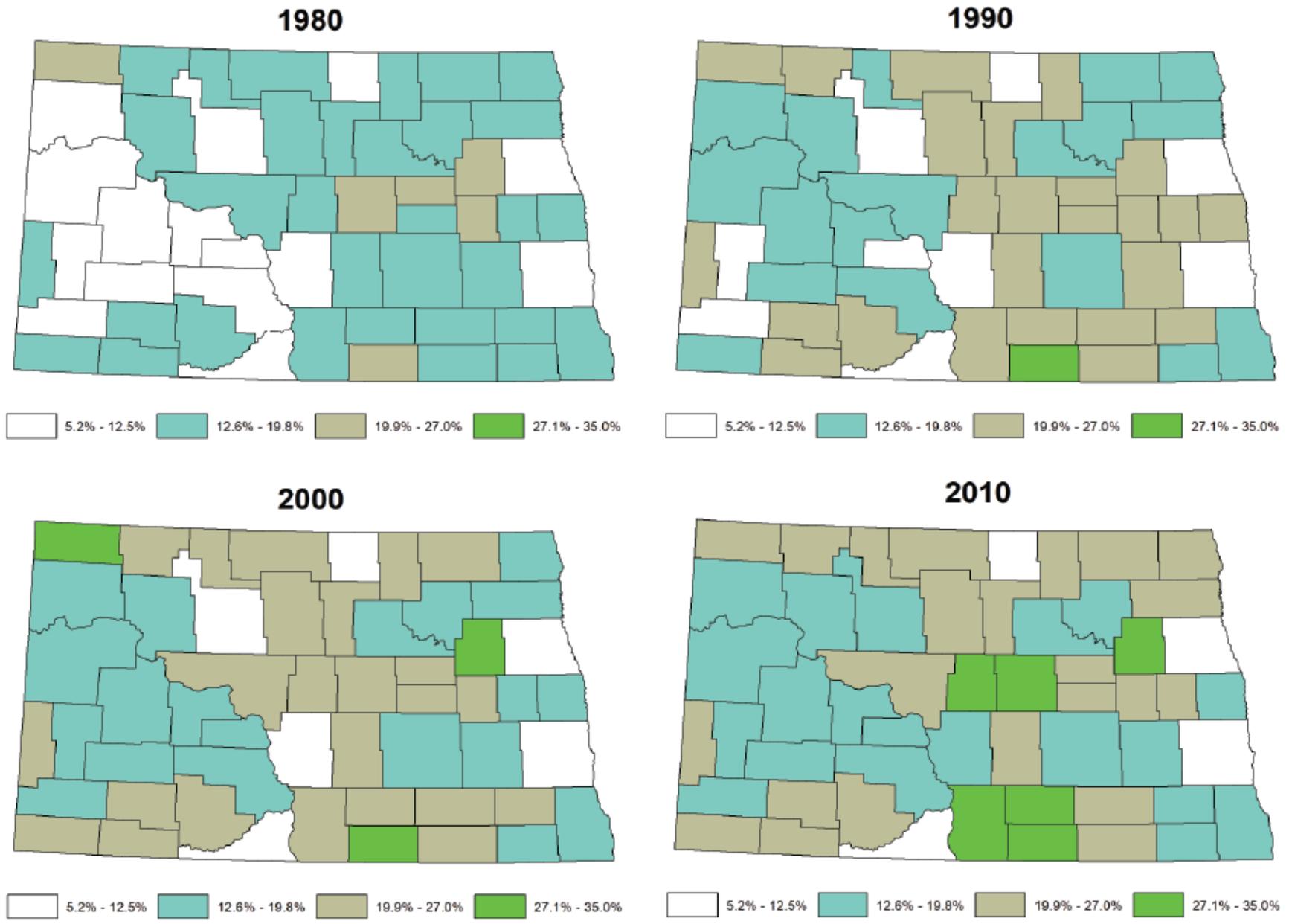
**Figure 1.9. Population of North Dakota from 1910 to 2017.**<sup>5,24</sup>

N.D. population increased from 577,056 in 1910 to 680,845 in 1930, decreased to 617,761 in 1970, and then increased to 674,518 in 2010. North Dakota's highest population was in 1930. In 2017, the U.S. Census Bureau estimated projected population was 755,393. North Dakota has gained more than 100,000 residents since 2000, when the population was 642,200. N.D. gained approximately 80,000 since the 2010 census (increase of 12.0%), compared to the U.S. at 5.5%.<sup>10</sup>

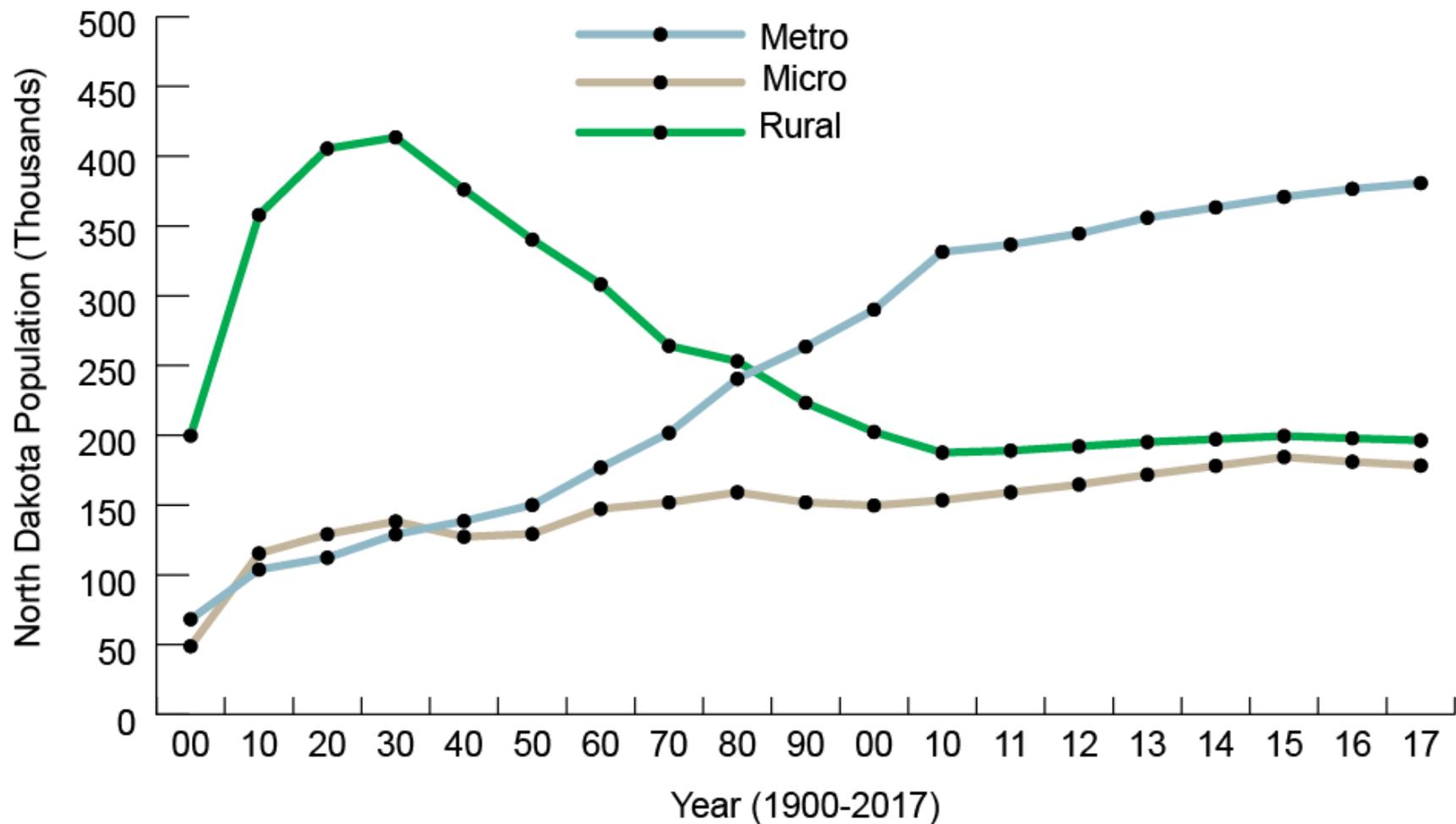


**Figure 1.10. Percentage change in county population from 2000 to 2017.<sup>5,8</sup>**

Nine counties have increased their population by an average of 10% or more from 2000 to 2017. Seven counties had population gains of less than 10%. From 2000 to 2017, 37 counties have lost population. The largest gains seen from 2000 to 2017 were McKenzie, Williams, and Mountrail.

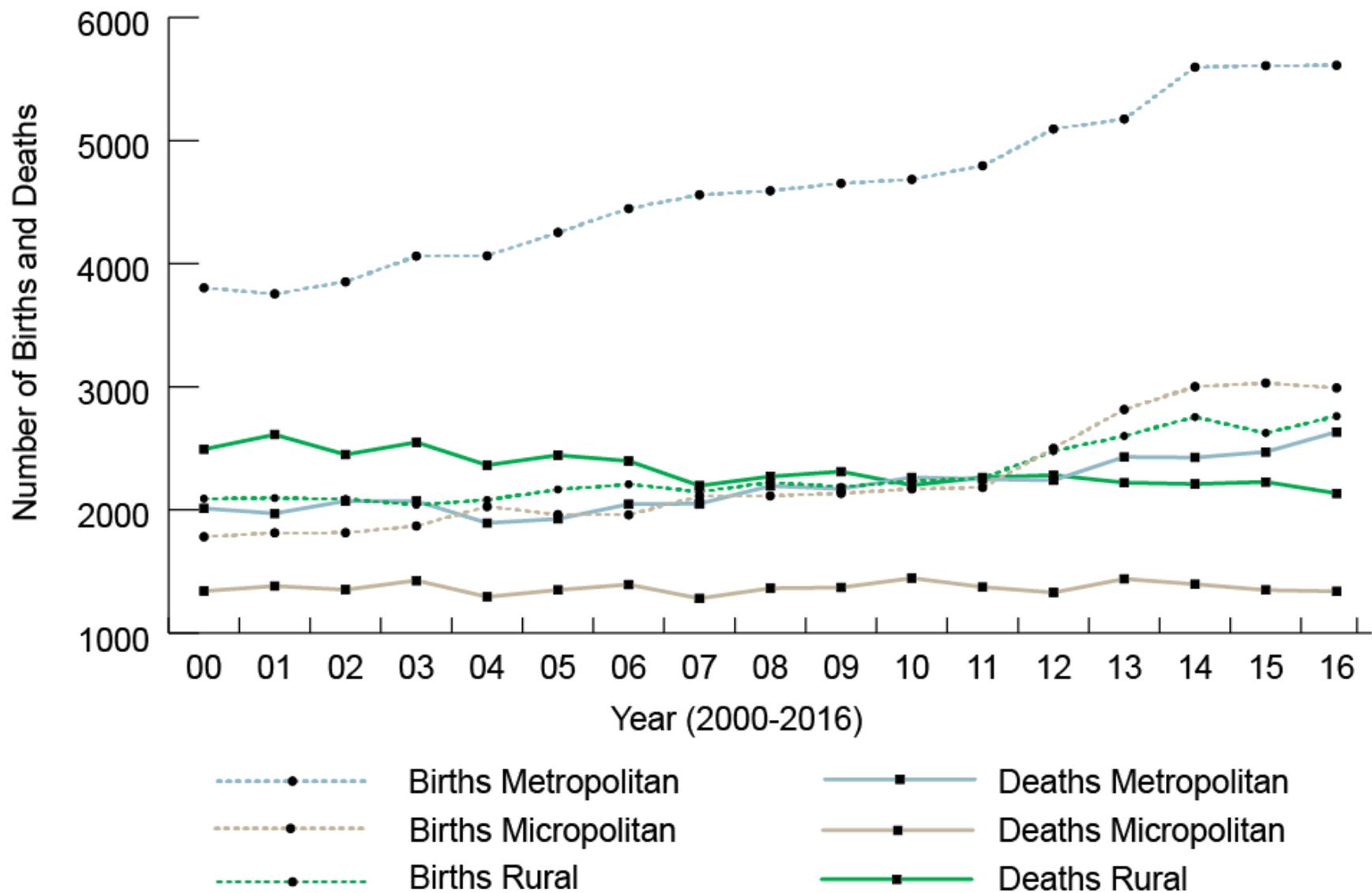


**Figure 1.11. Percent of population age 65 and older, 1980-2010.**<sup>6-9</sup>



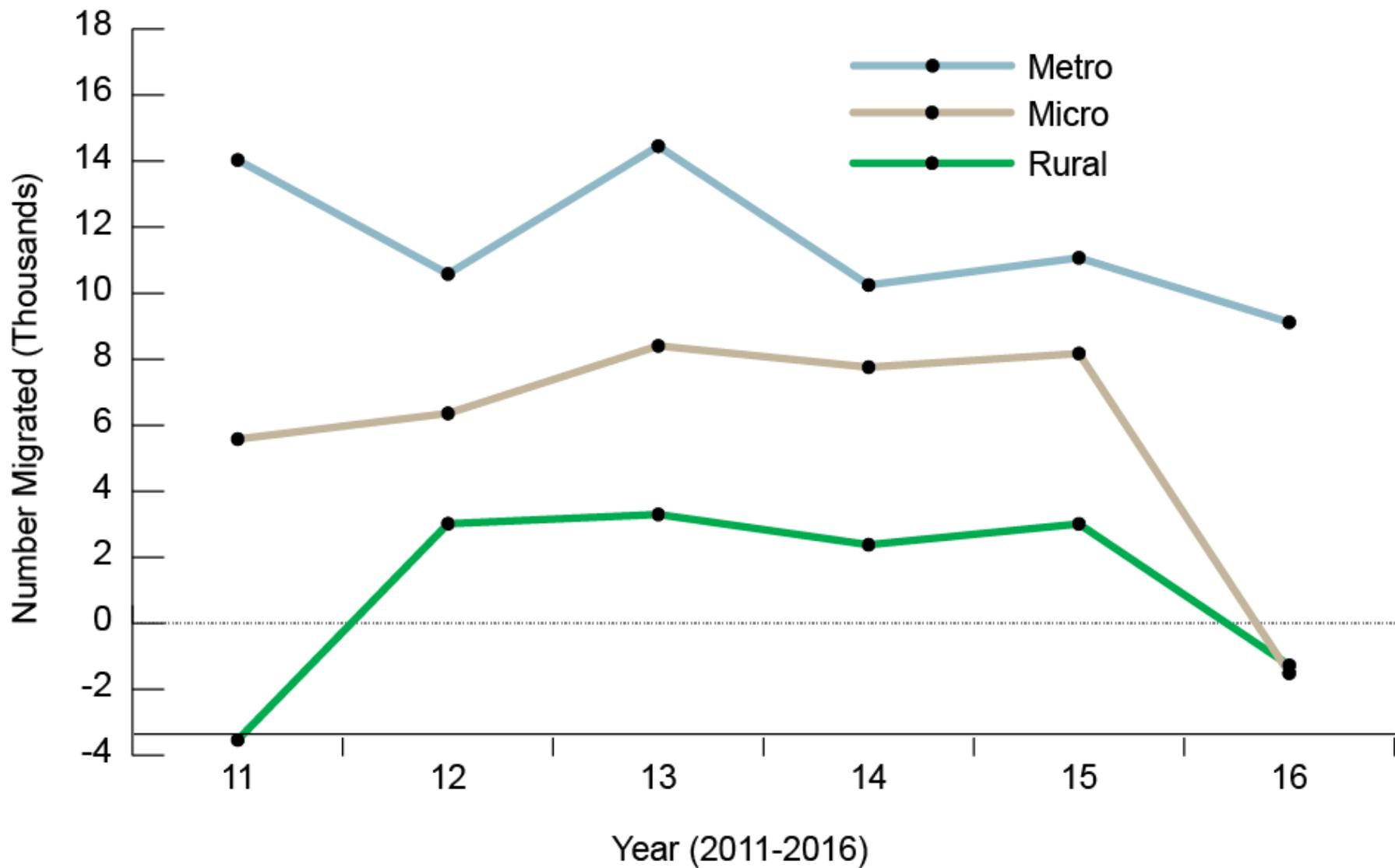
**Figure 1.12. Population in North Dakota from 1900 to 2017 by metropolitan, micropolitan and rural counties.**<sup>5,8,11,24</sup>

Rural population decreased from 1930 to 2010, but has remained stable since then. Since 1990, metropolitan population has been higher than rural population. Population in rural North Dakota counties was up to three times as high as metropolitan or micropolitan populations into the 1930s. Then a sharp increase in metropolitan populations and decrease in rural populations caused the rural counties' populations to become less than the metropolitan counties by the 1980s.



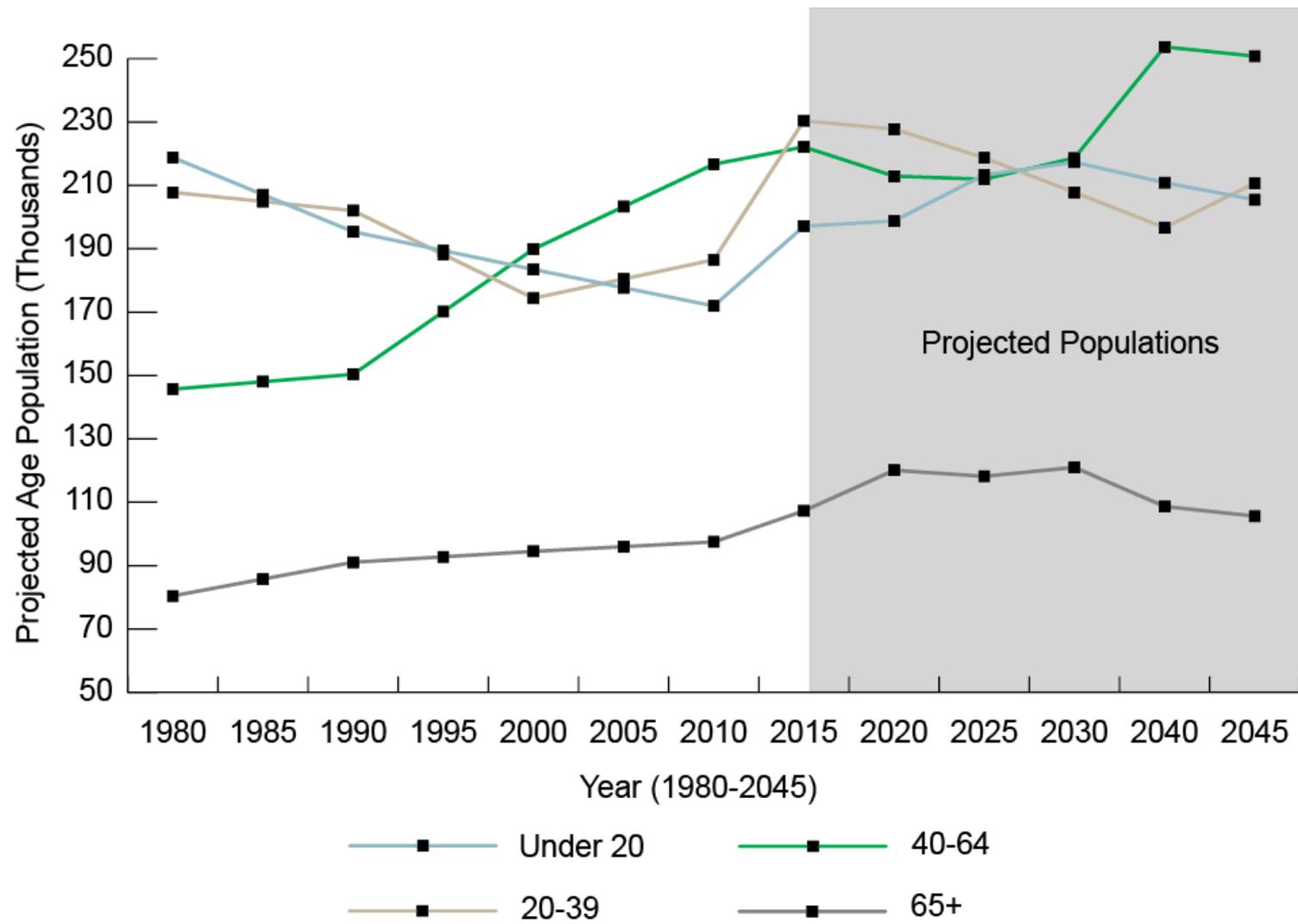
**Figure 1.13. Number of births and deaths in North Dakota from 2000 to 2016 by metropolitan, micropolitan, and rural counties.**<sup>10,11,27,28</sup>

Metropolitan births have been rapidly increasing. Rural births have been increasing slightly. Rural and micropolitan deaths have slightly decreased.



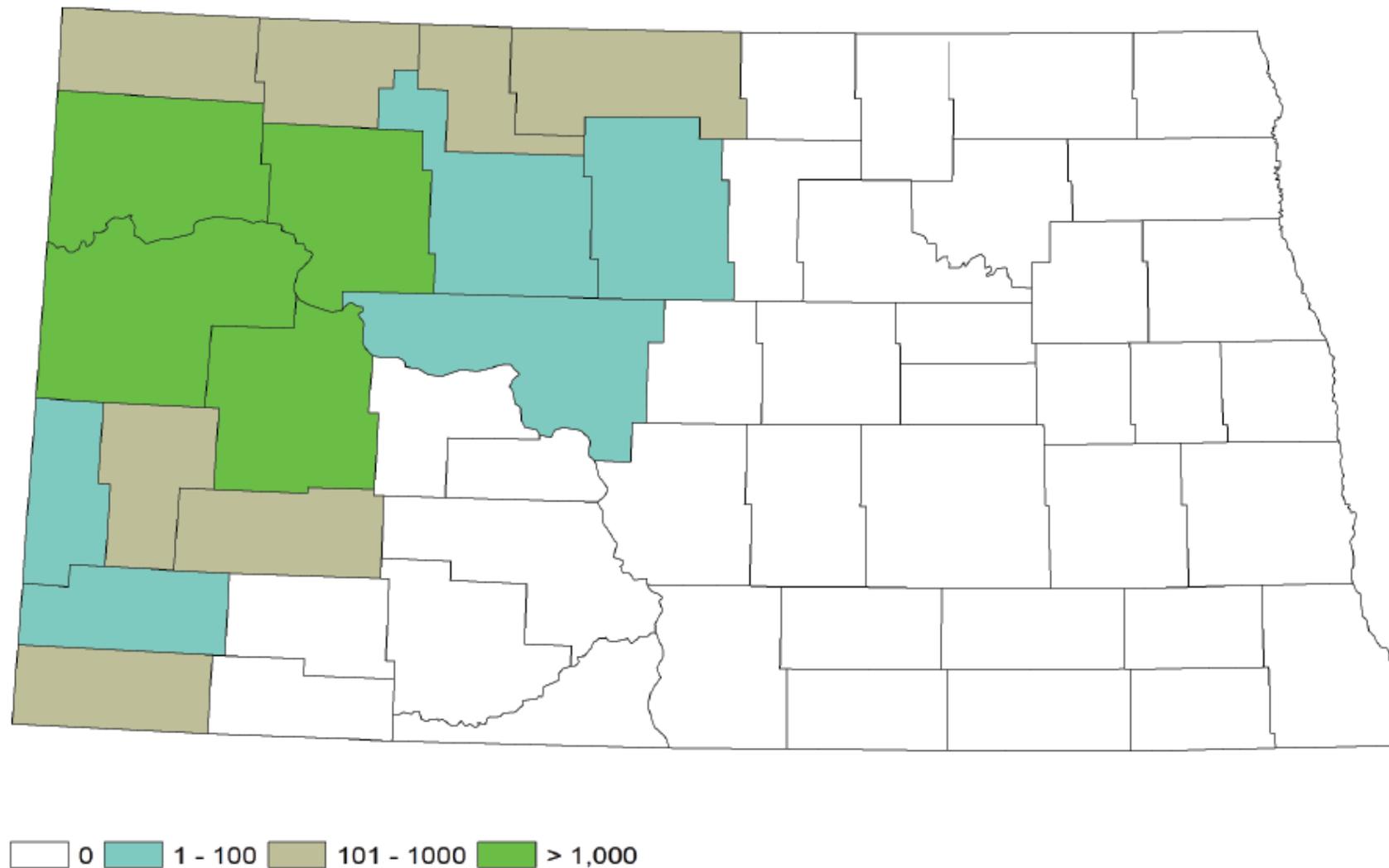
**Figure 1.14.** Net number of in- and out-migrations for metropolitan, micropolitan, and rural North Dakota.<sup>10,11,27,28</sup>

Metropolitan areas have highest in-migration, averaging 11,584 people a year.

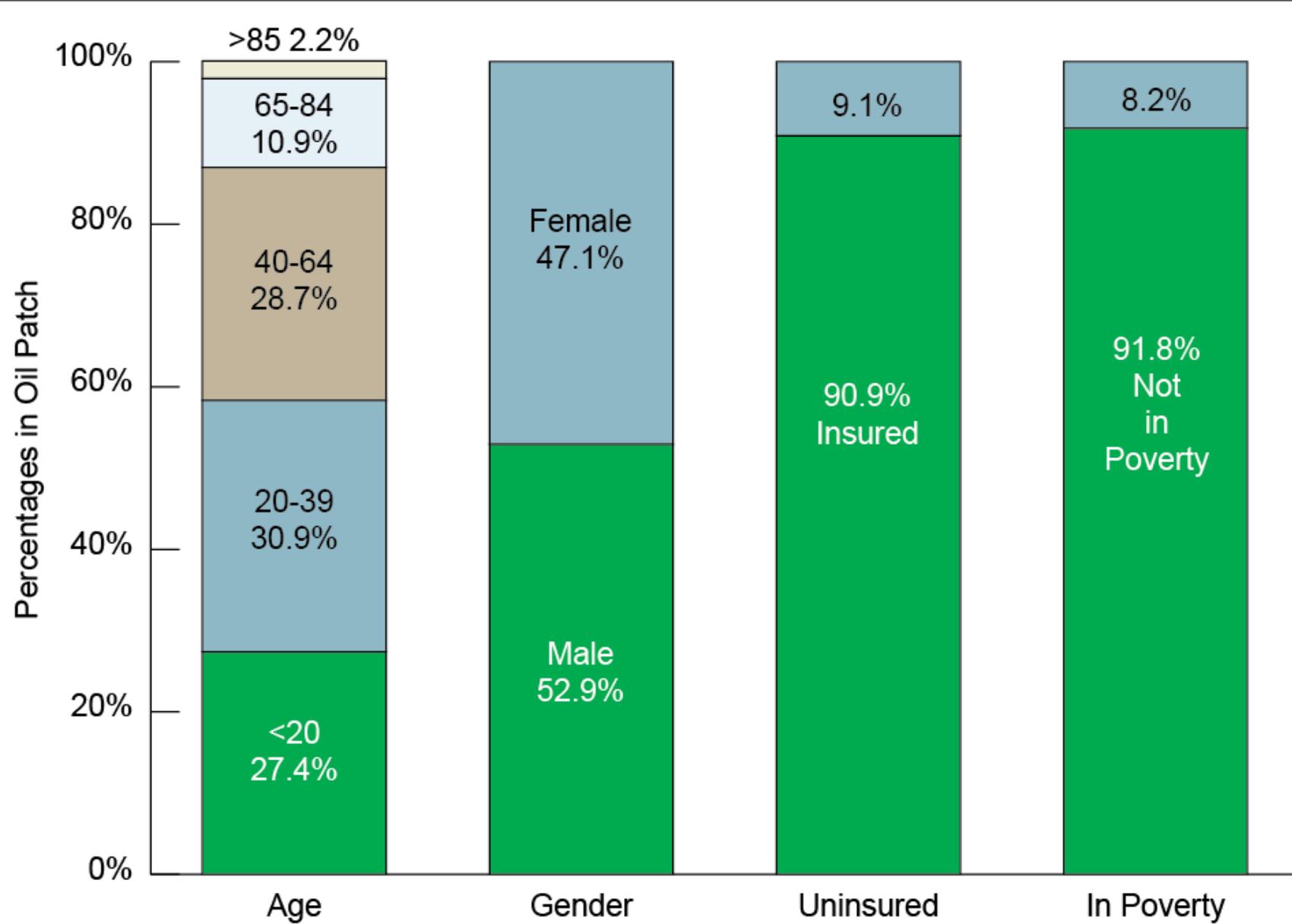


**Figure 1.15. Projected population in North Dakota to 2045 by age groups.**<sup>6-8,10</sup>

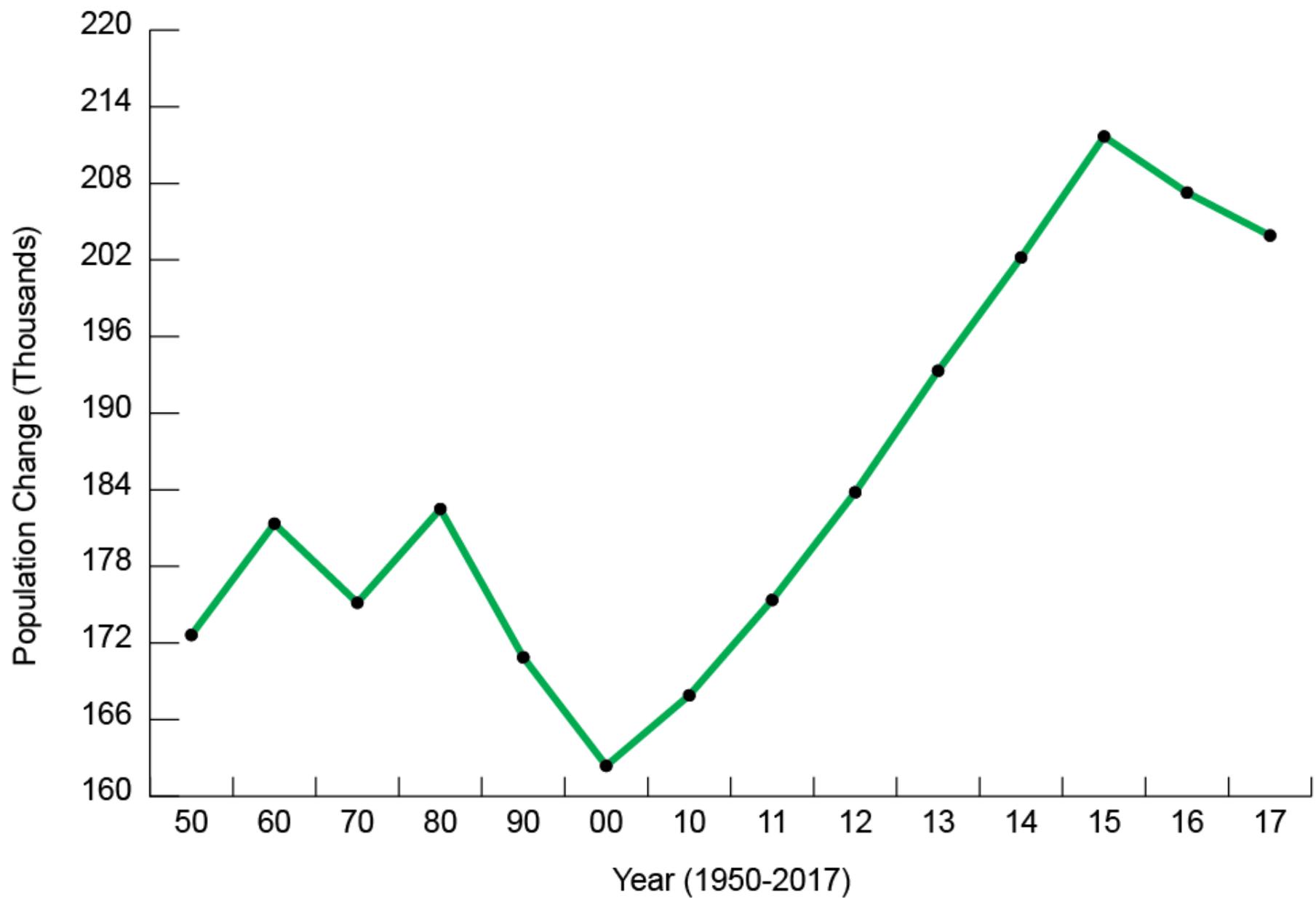
The 40-to-64 age group shows the highest projected increase from 222,136 to 250,784. The decline in the 65-and-older population through 2010 and subsequent increase through 2030 reflects the baby boomer generation reaching retirement age, resulting in the increase in older population from 2010 to 2030. The 20-to-39 age group is projected to continue decreasing, but then increase after 2035.



**Figure 1.16. Oil Patch counties by number of active rigs.<sup>32</sup>** Seventeen counties in North Dakota are considered active in oil production by the North Dakota Department of Mineral Resources. These counties had oil well production in 2017. The highest producing counties are McKenzie and Mountrail with a combined 46% of statewide oil production.

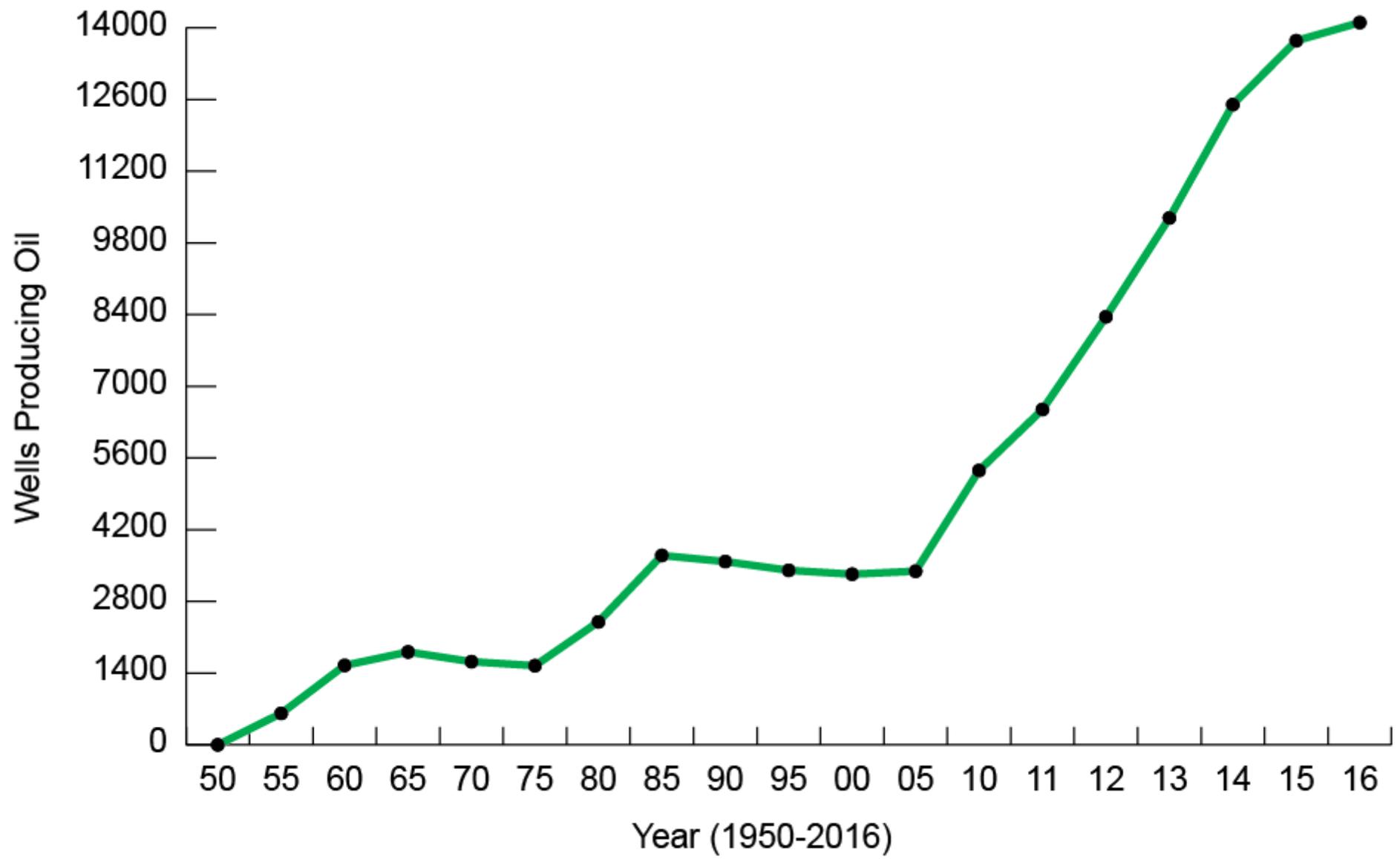


**Figure 1.17. Age, gender, uninsured, and poverty in the Oil Patch.**<sup>10,18,22</sup> Following the most recent oil boom, the Oil Patch is expected to become younger (older adults migrating out, younger workers moving in), more male, and less impoverished.

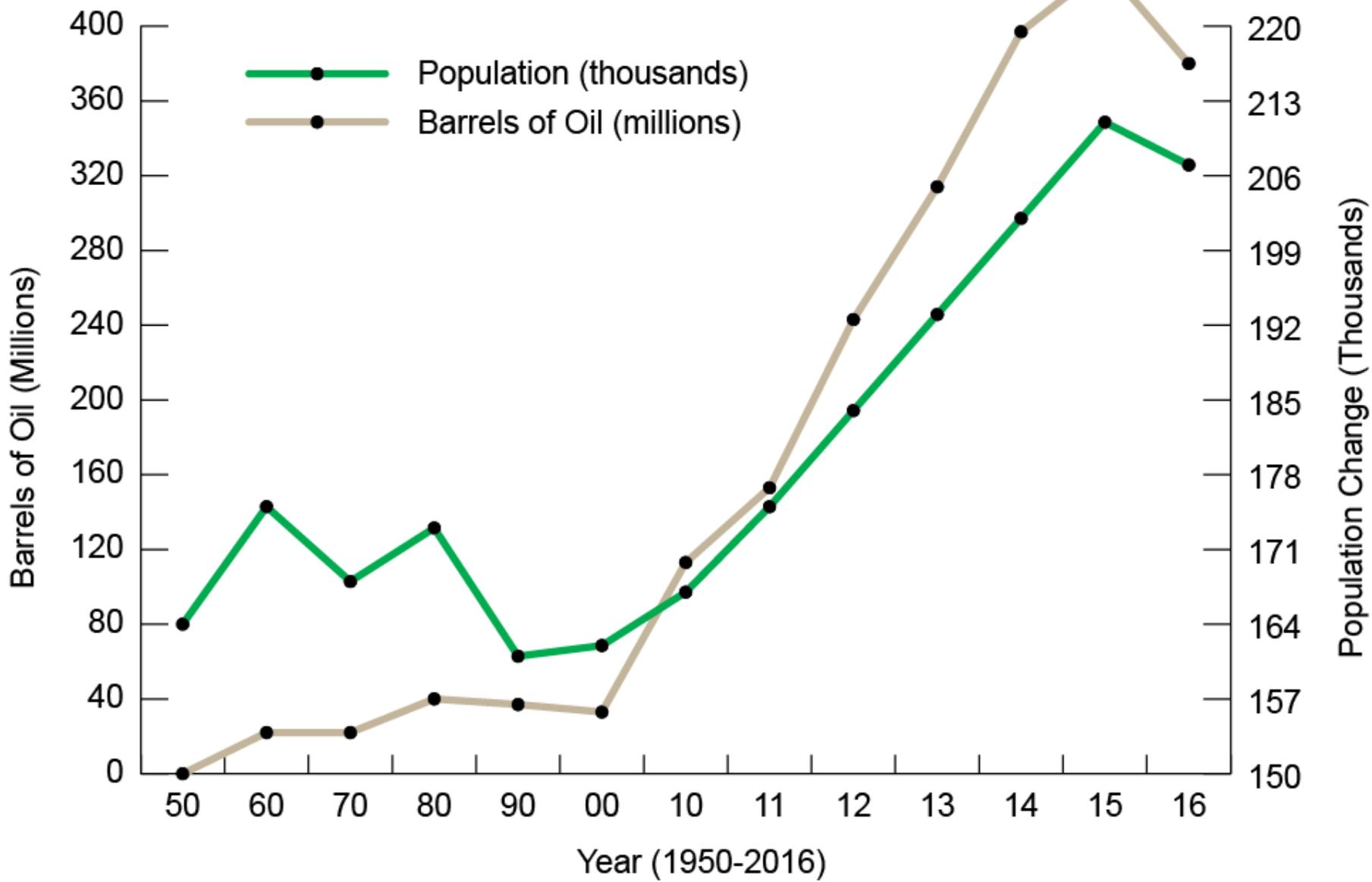


**Figure 1.18. Change in population from 1950 to 2017.** <sup>5-9,33-35</sup>

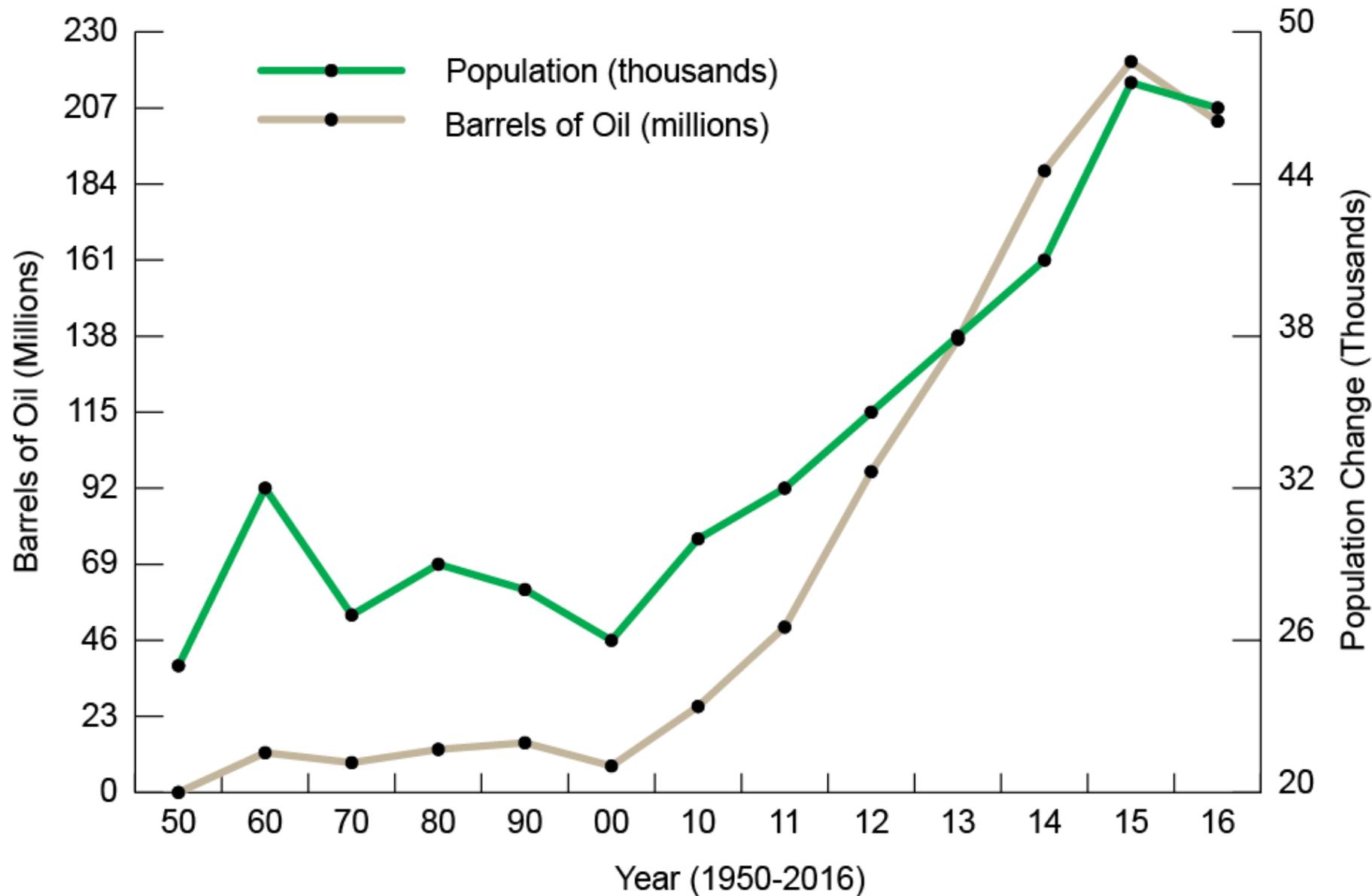
Population in the Oil Patch grew rapidly from 2000-2015, where it saw a slight decline.



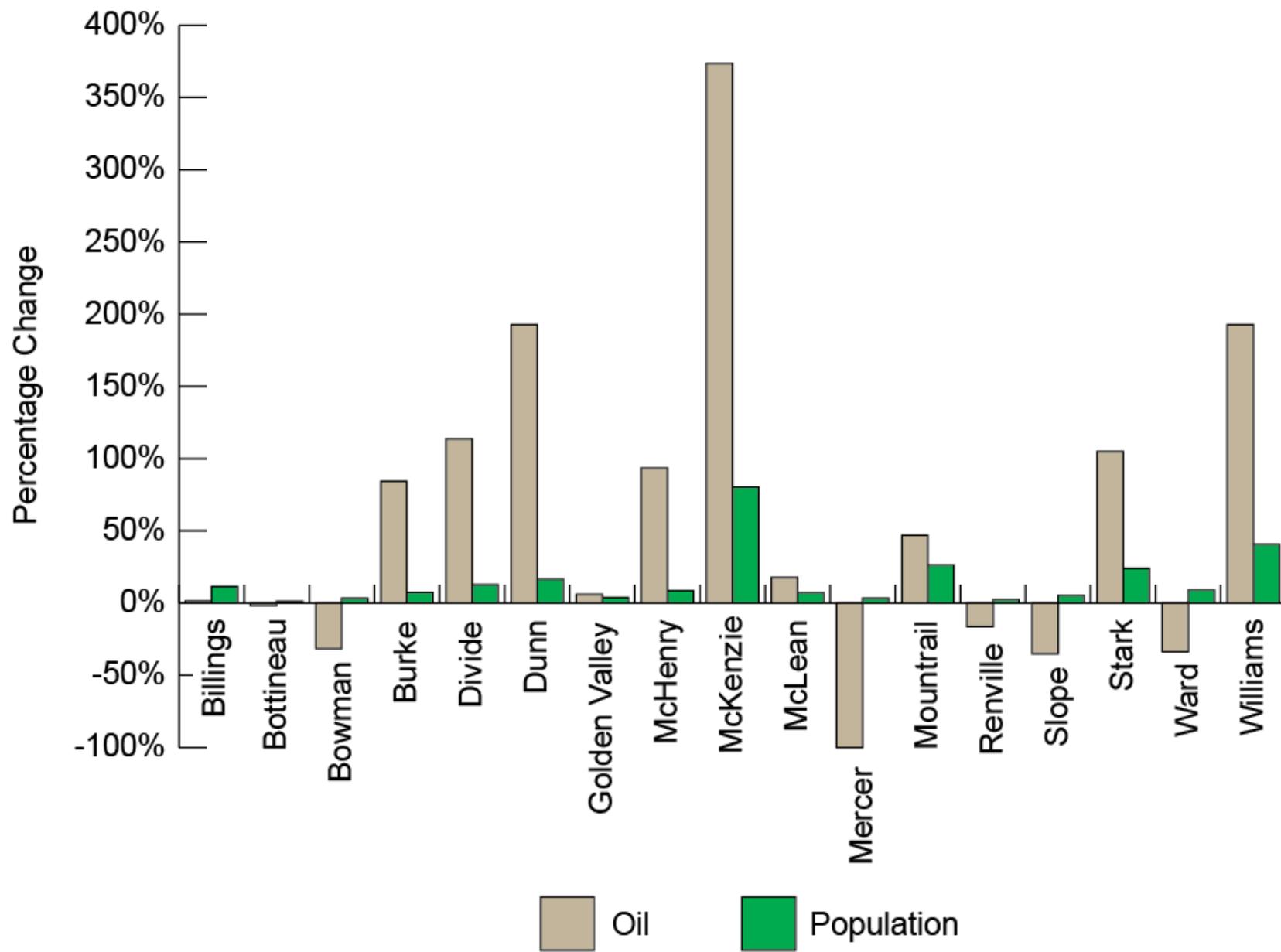
**Figure 1.19. Number of wells producing oil in the Oil Patch since 1950.<sup>30</sup>**  
The number of wells producing oil has nearly quadrupled since 2005.



**Figure 1.20. Barrels of oil produced and population from 1950 to 2016 for all counties in the Oil Patch.** 6-10,30,33-35



**Figure 1.21. Barrels of oil produced and population from 1950 to 2016 for counties with a history of high production of oil (McKenzie and Williams).<sup>6-10,33-36</sup>**



**Figure 1.22. Percentage change in barrels of oil and population from 2011 to 2016 for counties in the Oil Patch.**<sup>10,36</sup>

**Table 1.1**

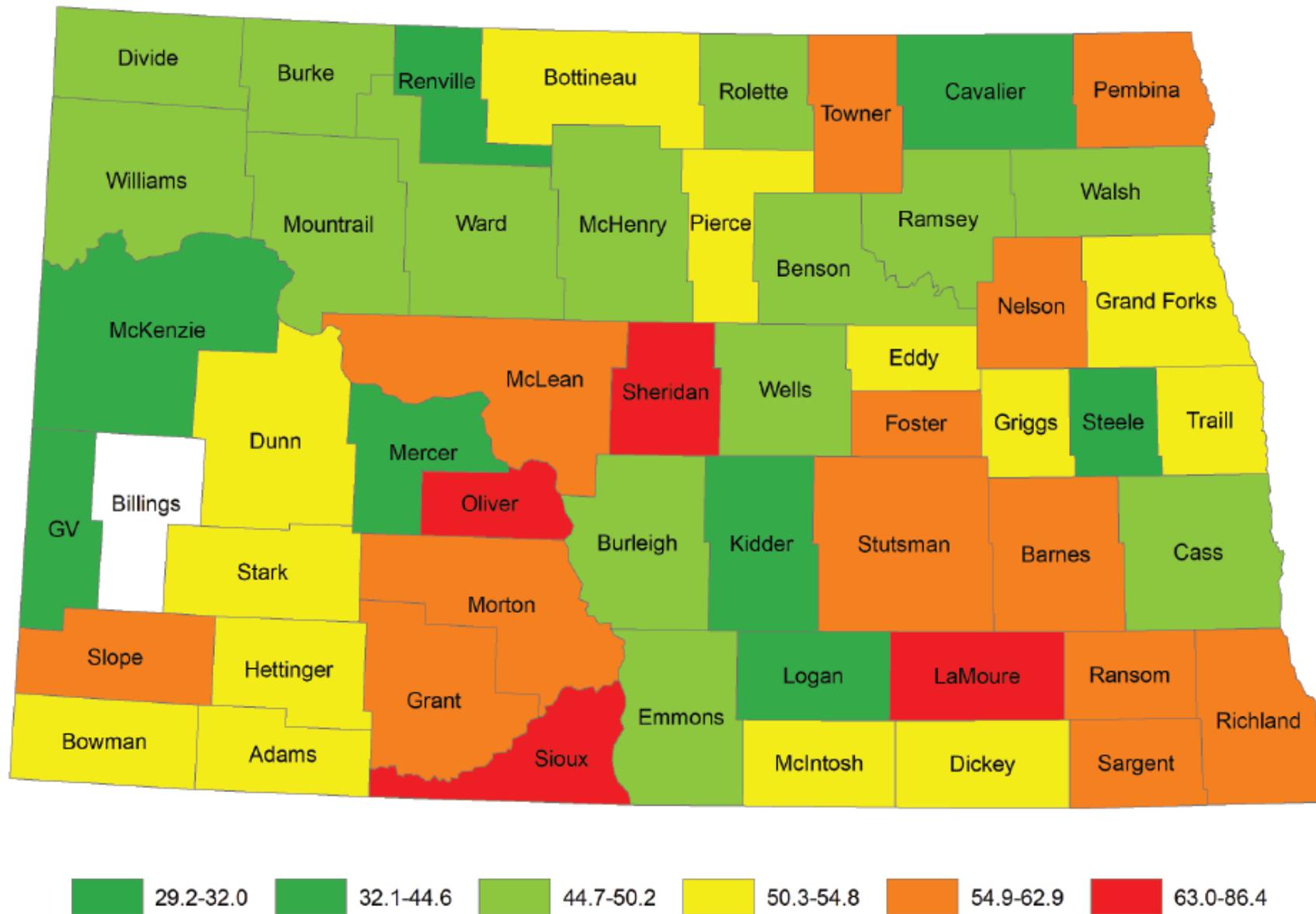
**Summary of demographics in North Dakota's population by metropolitan, micropolitan, and rural areas<sup>10,11,15,22</sup>**

	Metropolitan		Micropolitan		Rural	
	N	%	N	%	N	%
<b>Total - 2016</b>	<b>377,967</b>	<b>50</b>	<b>181,740</b>	<b>24</b>	<b>198,245</b>	<b>26</b>
<b>Gender - 2016</b>						
Male	191,646	51	95,777	53	101,551	51
Female	186,321	49	85,963	47	96,694	49
<b>Age - 2016</b>						
Under 20	97,908	26	49,044	27	51,903	26
20-39	126,772	34	57,955	32	44,344	22
40-64	105,448	28	51,275	28	63,304	32
65-84	40,504	11	19,312	11	32,036	16
85 and Older	7,335	2	4,154	2	6,658	3
<b>In Poverty - 2016</b>						
Yes	38,387	11	15,216	9	23,345	12
No	325,510	90	159,430	91	169,825	88
<b>Uninsured - 2015</b>						
Yes	23,822	8	12,735	8	18,240	11
No	290,394	92	143,638	92	141,896	89

Nationally, rural residents tend to be poorer, older, and have less insurance coverage than those residing in non-rural regions. North Dakota data reflects the national data.

## Chapter 2:

# The Health of North Dakota



**Figure 2.1. Incidence rates of colorectal cancer among North Dakota counties (White non-Hispanics).<sup>32</sup>**

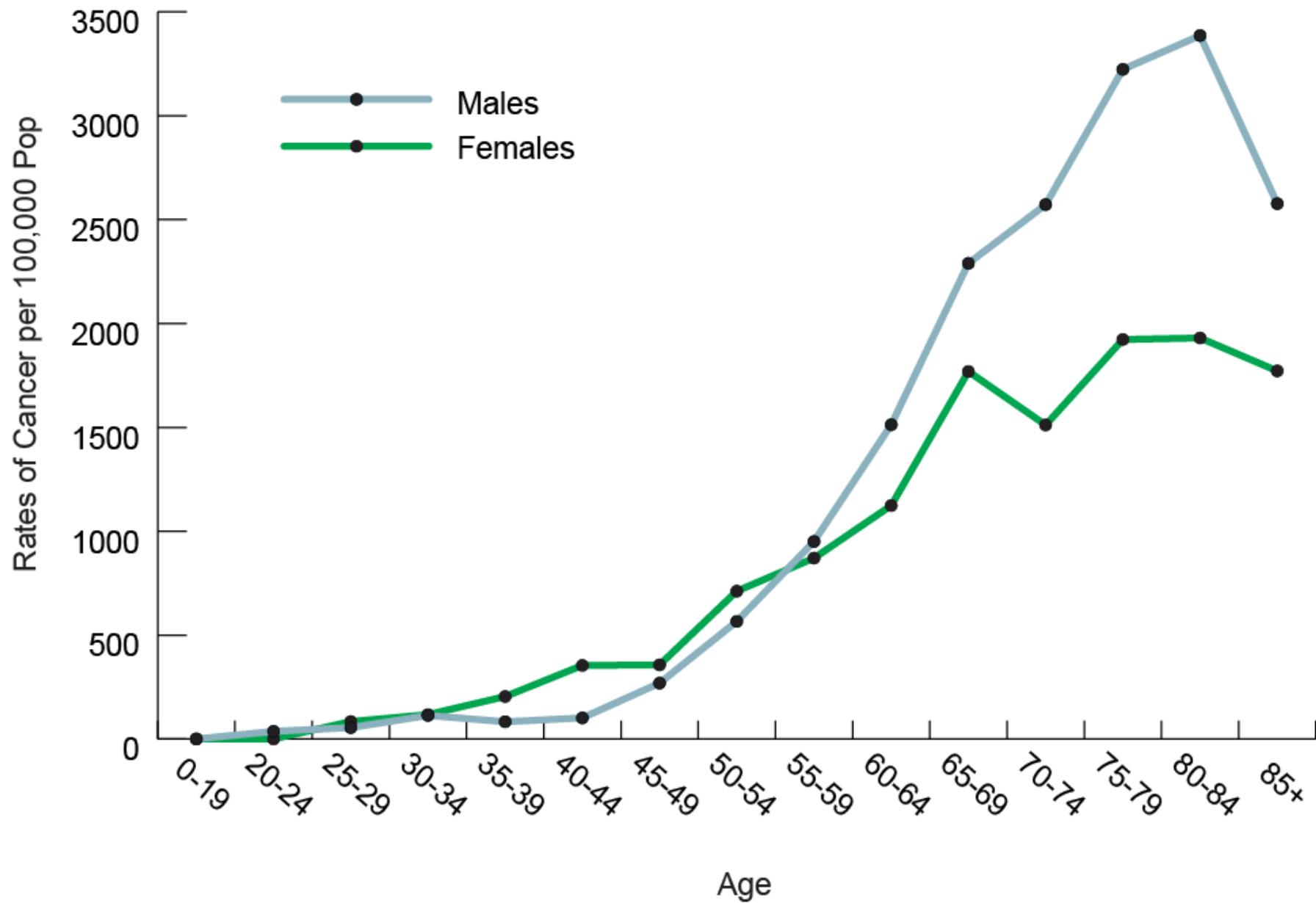
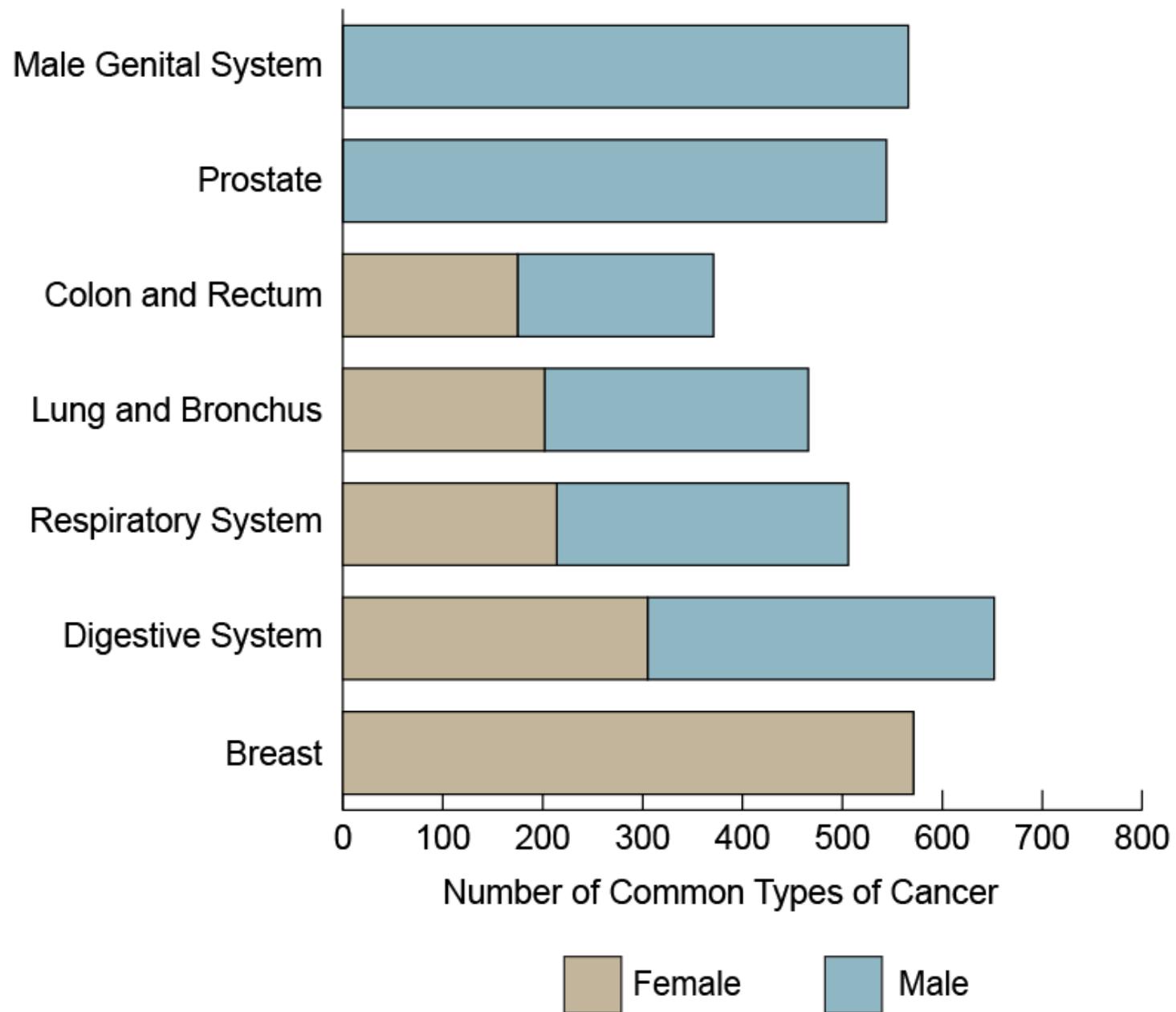
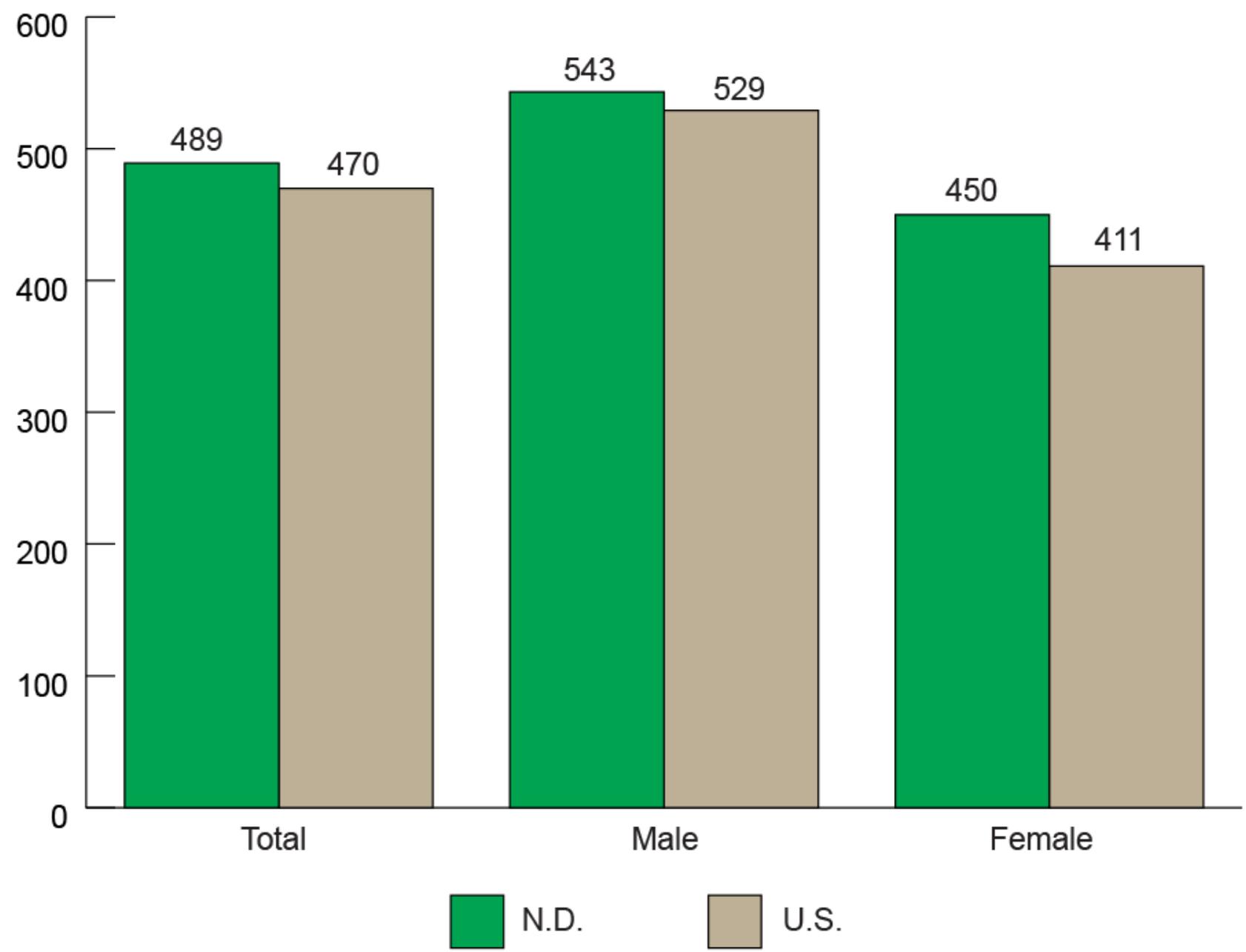


Figure 2.2. Rates of cancer per 100,000 people in North Dakota by age.<sup>33</sup>

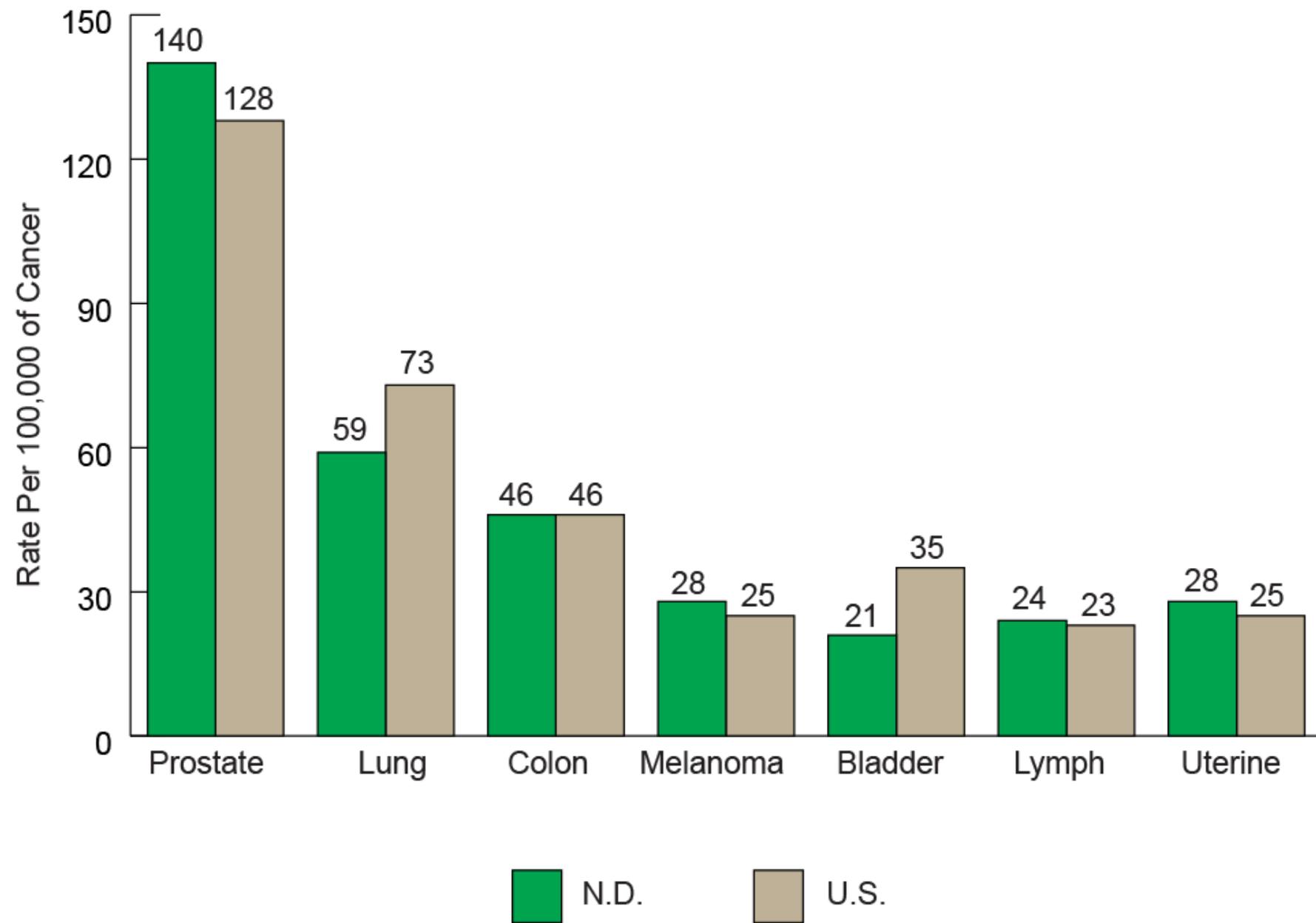


**Figure 2.3.** Incidence of most common types of cancers in North Dakota.<sup>33</sup>

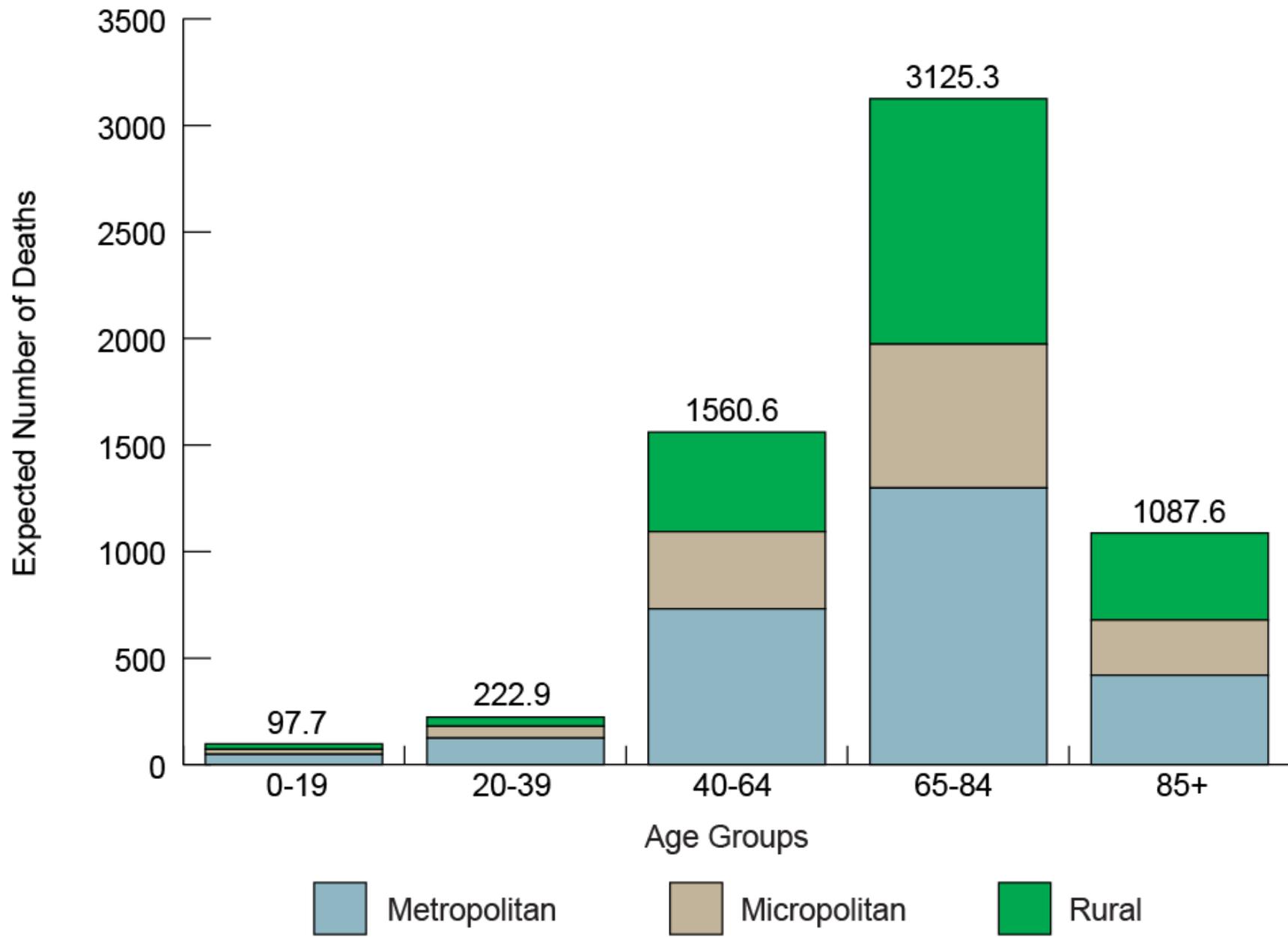
Rate Per 100,000 of Cancer



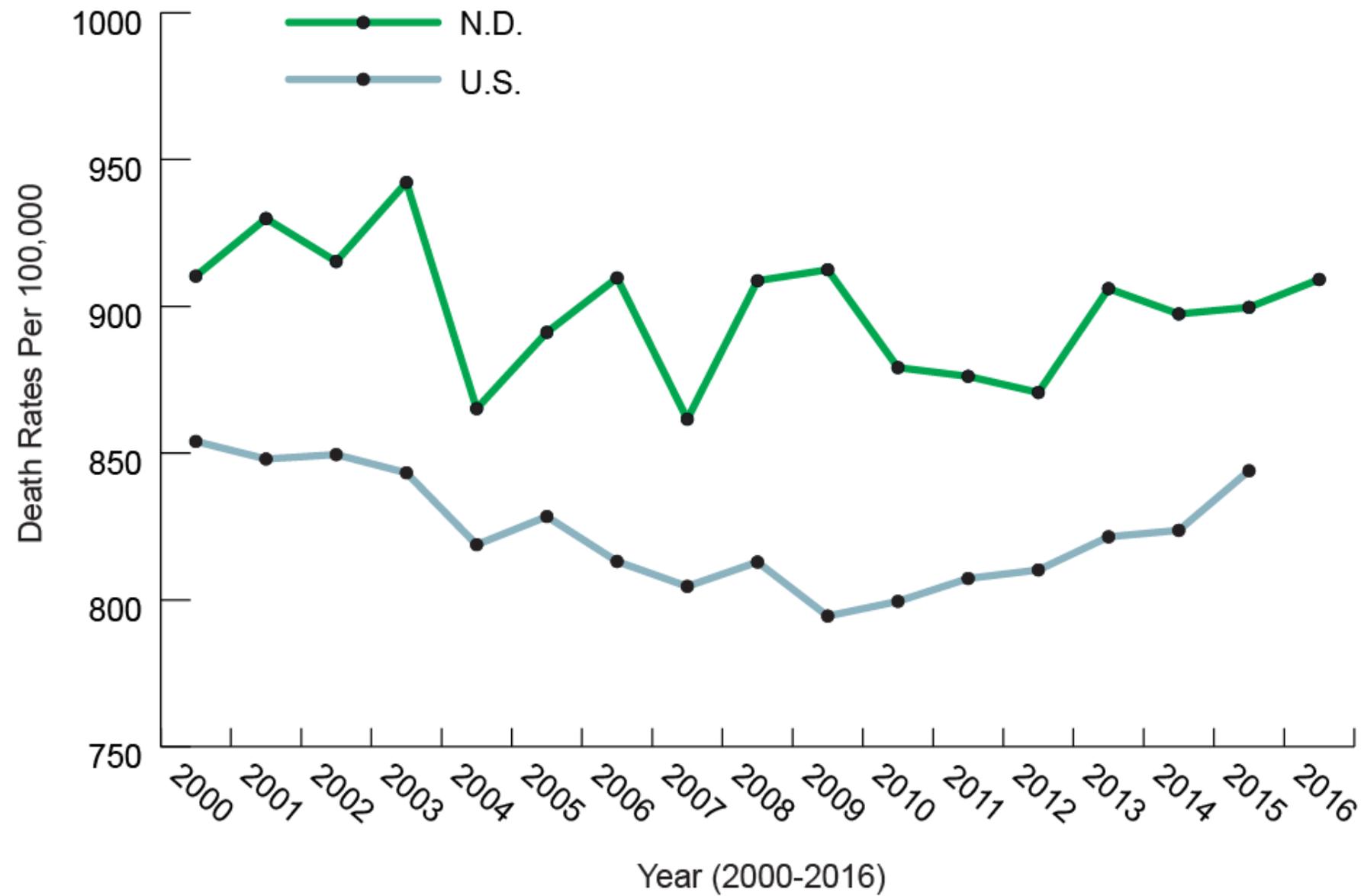
**Figure 2.4. Rates of cancer incidence in North Dakota and the United States by gender.**<sup>33,34,35</sup>



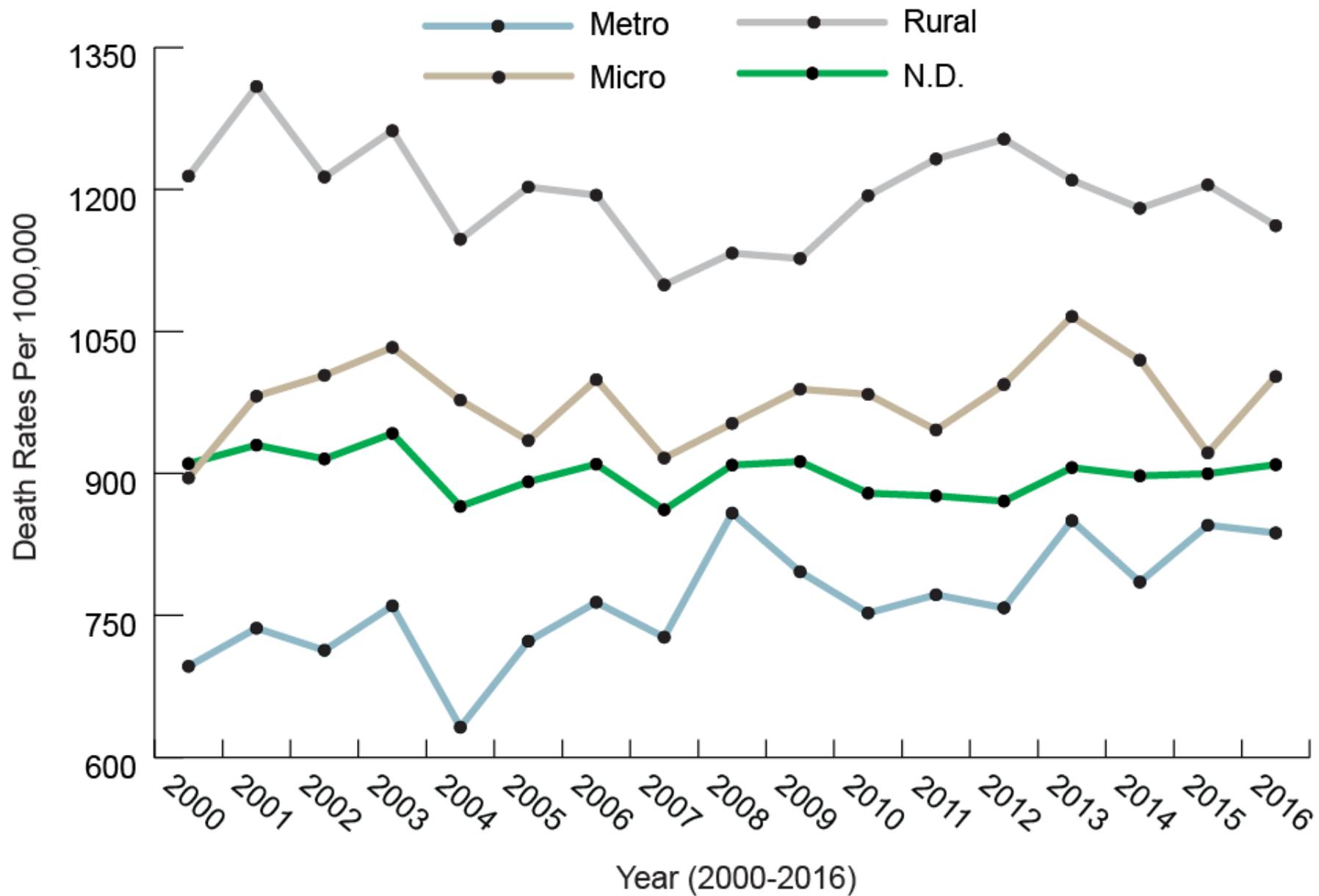
**Figure 2.5. Rates of all cancer incidence in North Dakota by cancer type.**<sup>33,34,35</sup>



**Figure 2.6.** Expected number of deaths in North Dakota per age group after adjusting for demographic factors specific to each region.<sup>19,37</sup>



**Figure 2.7. Changes in North Dakota mortality rates from 2000 to 2016 compared with the United States.**<sup>37,46</sup>



**Figure 2.8. Changes in North Dakota mortality rates from 2000 to 2016 for metropolitan, micropolitan, and rural areas.**<sup>19,37,46</sup>

**Table 2.1*****Percent of adults reporting behaviors<sup>18,19</sup>***

	<b>2011 (518,017)</b>	<b>2012 (540,271)</b>	<b>2013 (558,965)</b>	<b>2014 (583,766)</b>	<b>2015 (590,349)</b>	<b>2016 (591,299)</b>
Smokes	21.7	20.9	20.7	18.8	17.9	18.9
Drinks Alcohol	57.4	59.1	59.0	57.2	57.9	60.2
Binge Drinks	21.7	23.2	22.8	22.3	22.6	23.3
Drinks & Drives		3.2		3.2		3.8
Doesn't Always Wear a Seatbelt	29.5	33.9	28.6	28.4	25.6	26.2
No Physical Activity/Exercise Other Than Job	25.5	23.8	25.8	21.3	24.6	22.1

**Table 2.2*****Percent of adults reporting general health conditions<sup>18,19</sup>***

	<b>2011 (518,017)</b>	<b>2012 (540,271)</b>	<b>2013 (558,965)</b>	<b>2014 (583,766)</b>	<b>2015 (590,349)</b>	<b>2016 (591,299)</b>
Disabled	19.6	16.0	16.5	15.4	16.6	17.0
Overweight/Obese	59.7	62.2	64.3	63.7	61.5	62.8
General Health Fair/Poor	14.6	13.3	14.7	14.0	13.9	14.8
1+ Days Poor Health	18.1	19.0	18.1	16.4	19.4	19.0
1+ Days Poor Phys. Health	33.3	33.6	34.1	31.2	34.8	33.1
1+ Days Poor Mental Health	32.1	31.4	30.4	30.5	33.0	32.5

**Table 2.3*****Percent of adults reporting general health conditions<sup>18,19</sup>***

	<b>2011 (518,017)</b>	<b>2012 (540,271)</b>	<b>2013 (558,965)</b>	<b>2014 (583,766)</b>	<b>2015 (590,349)</b>	<b>2016 (591,299)</b>
High Cholesterol	35.3	NA	36.1	NA	34.8	NA
High Blood Pressure	29.0	NA	29.6	NA	30.3	NA
Arthritis	23.9	24.4	25.9	NA	22.7	23.2
Asthma	11.5	10.5	12.3	12.1	12.7	12.8
Cardiovascular Disease	4.0	4.1	4.0	4.0	3.6	4.1
Diabetes	8.2	8.6	8.9	8.6	8.7	8.6

**Table 2.4**  
***Percent of youth risk behaviors<sup>27</sup>***

	<b>Total (43,385)</b>	<b>Female (21,335)</b>	<b>Male (22,050)</b>
Smokes	15.2	14.4	15.8
Drinks	29.1	31.9	26.4
Drinks & Drives	6.5	4.9	8.1
Doesn't Always Wear a Seat Belt	7.0	2.9	10.6
Doesn't Always Exercise Moderately	48.7	57.1	40.7
Overweight/Obese	28.6	25.2	31.8
Has Long-Term Health Problems	17.1	19.5	14.4

**Table 2.5****Cancer rates per 100,000 people<sup>33</sup>**

Age	All North Dakota		Males		Females	
	Rate	Cases Per Year	Rate	Cases Per Year	Rate	Cases Per Year
0-4	22.1	10	-	-	-	-
5-9	-	-	-	-	-	-
10-14	-	-	-	-	0	0
15-19	29.3	14.0	-	-	-	-
20-24	32.7	20.0	36.7	12.0	-	-
25-29	68.2	35.0	54.6	15.0	83.9	20.0
30-34	115.1	50.0	113.1	26.0	117.4	24.0
35-39	140.9	52.0	83.0	16.0	204.4	36.0
40-44	224.1	86.0	101.3	20.0	354.2	66.0
45-49	362.0	160.0	268.9	60.0	356.8	100.0
50-54	638.3	322.0	566.1	144.0	711.7	178.0
55-59	911.8	435.0	950.6	233.0	870.8	202.0
60-64	1,323.1	507.0	1,512.8	297.0	1,123.8	210.0
65-69	2,026.2	545.0	2,289.8	304.0	1,769.2	241.0
70-74	2,007.0	421.0	2,572.5	252.0	1,511.5	169.0
75-79	2,497.5	456.0	3,223.4	260.0	1,923.1	196.0
80-84	2,521.5	387.0	3,386.3	211.0	1,930.5	176.0
85+	2,039.4	350.0	2,577.1	147.0	1,771.7	203.0
All ND	488.2	3,857.0	543.0	2,019.0	449.9	1,838.0

**Table 2.6*****Most common cancer rates<sup>18,19</sup>***

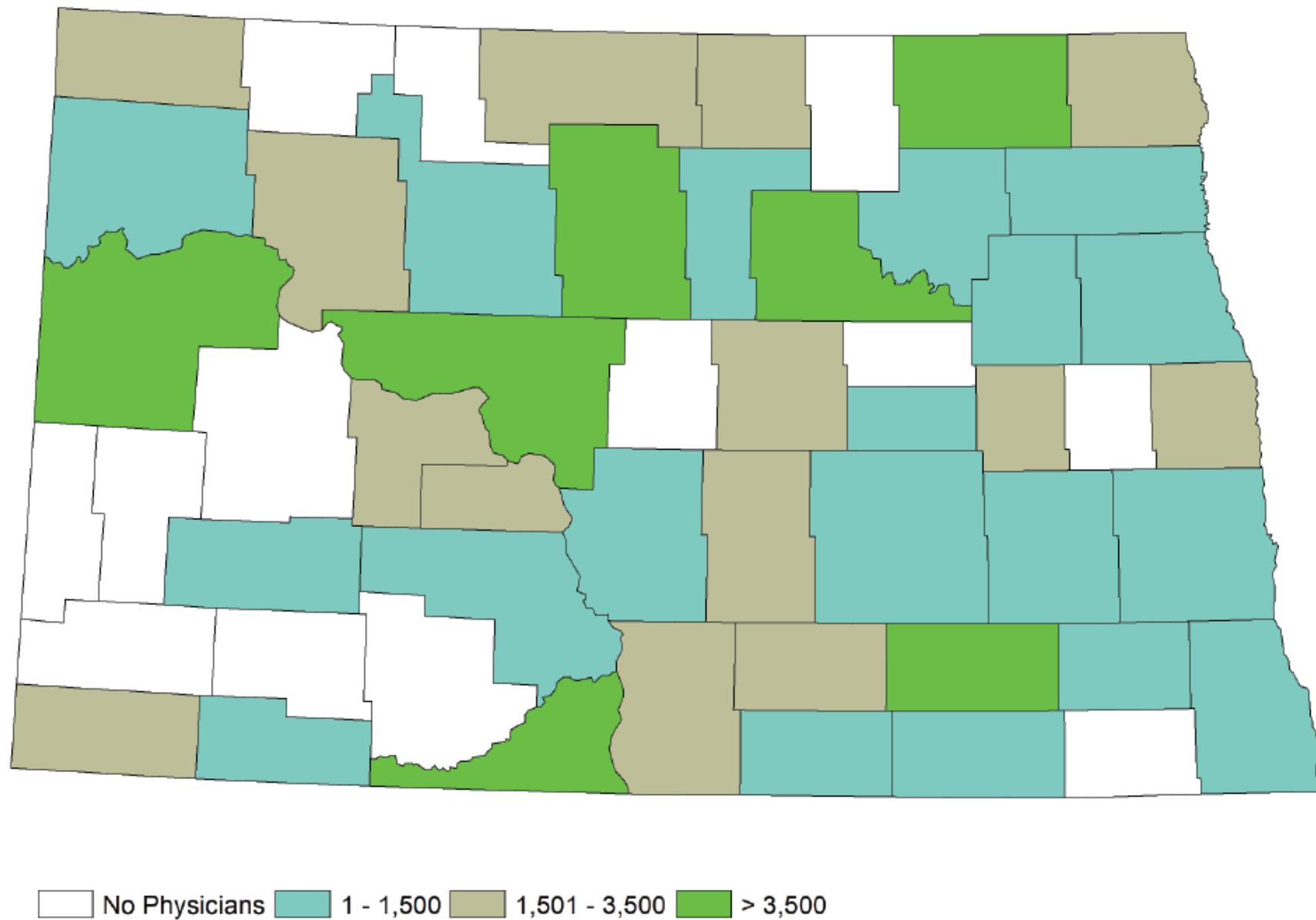
Type	All North Dakota		Males		Females	
	Rate	Cases	Rate	Cases	Rate	Cases
Digestive System	80.2	652	93.4	347	67.6	305
Breast	75.8	579	0.0	0	145.1	571
Male Genital System	69.6	566	146.0	566	0.0	0
Prostate	66.7	544	140.2	544	0.0	0
Respiratory System	63.8	506	80.8	292	50.8	214
Lung Bronchus	58.6	466	73.4	264	47.8	202
Colon Rectum	46.1	371	53.0	196	39.4	175

**Table 2.7**  
**Screenings<sup>18,22</sup>**

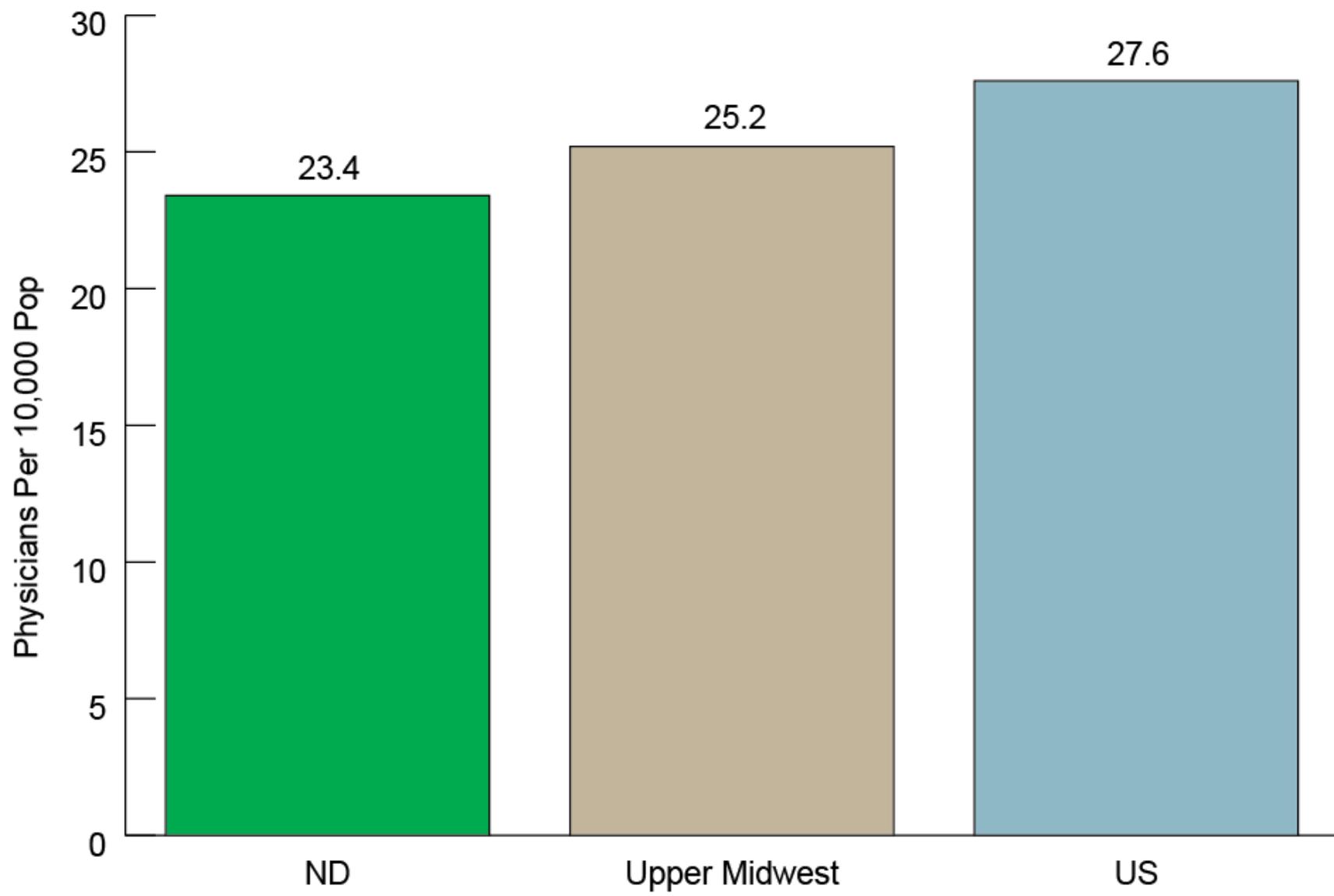
	<b>2011 (518,017)</b>	<b>2012 (540,271)</b>	<b>2013 (558,965)</b>	<b>2014 (583,766)</b>	<b>2015 (590,349)</b>	<b>2016 (591,299)</b>
Cholesterol	67.3	NA	67.8	NA	69.2	NA
PSA	NA	55.9	NA	52.4	NA	52.1
Blood Stool	NA	34.5	NA	32.3	NA	29.3
Sigmoid/Colonoscopy	NA	61.0	NA	64.6	NA	68.4
Mammogram	NA	63.2	NA	62.3	NA	60.7
Pap	NA	91.1	NA	90.3	NA	89.6
Flu	NA	39.5	41.3	40.2	43.6	41.9
Pneumonia	28.0	25.6	28.2	27.5	31.5	32.5

## Chapter 3:

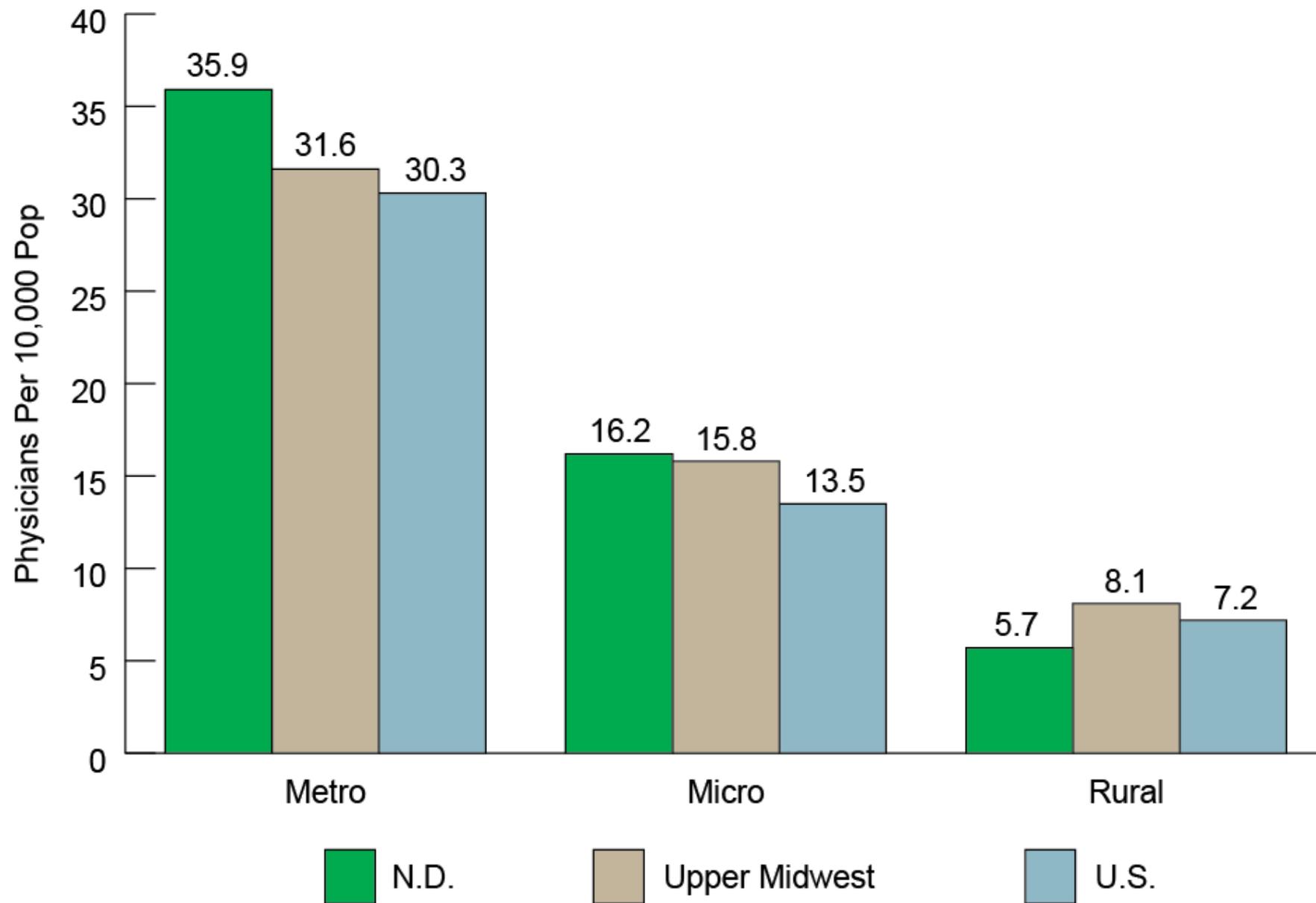
# Physician Workforce in North Dakota



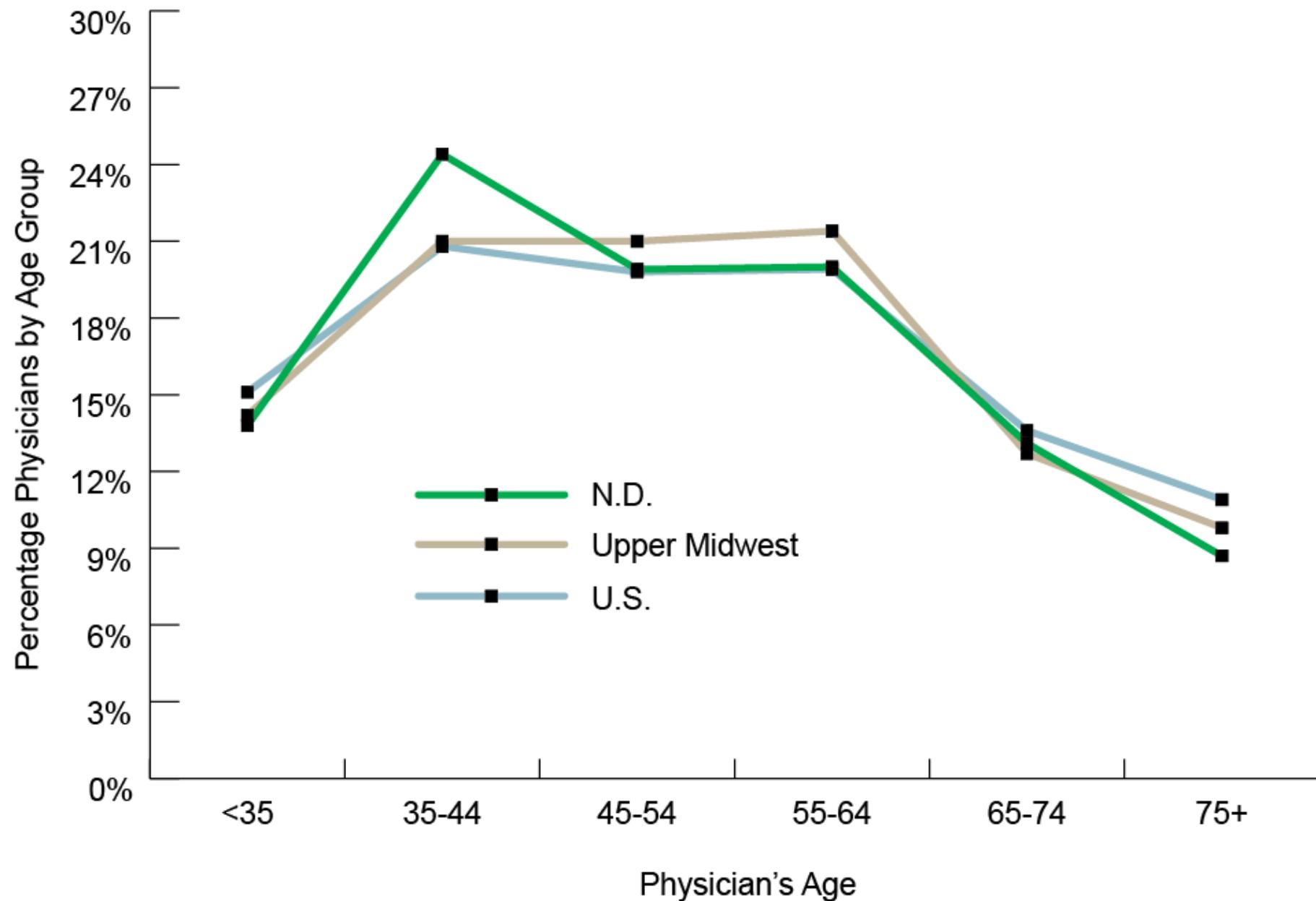
**Figure 3.1. County population per patient-care physician for all specialties in North Dakota.<sup>1,2</sup>**



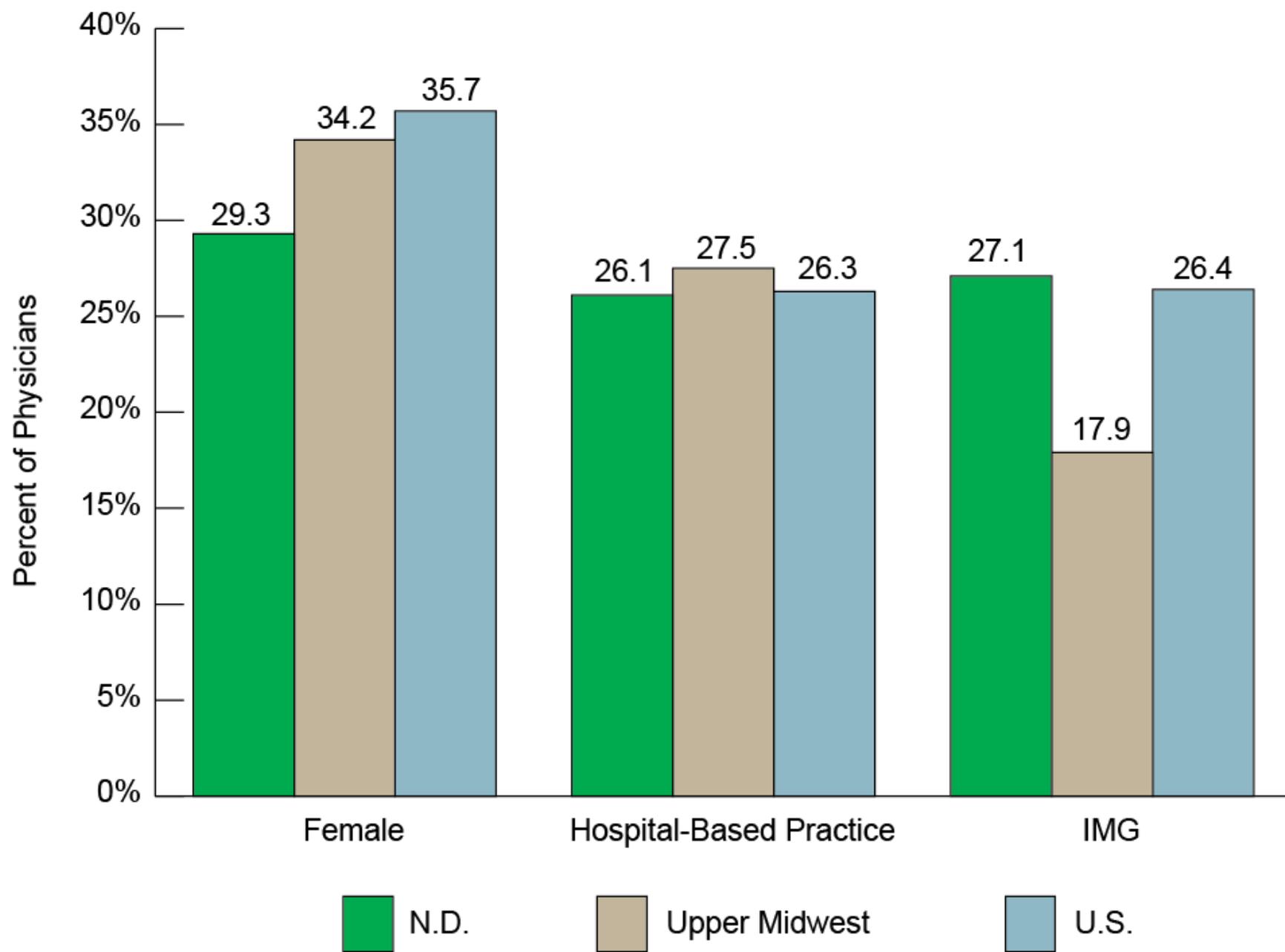
**Figure 3.2.** Number of physicians per 10,000 population for North Dakota, the Upper Midwest, and the United States (excludes resident physicians), 2015.<sup>1,3</sup>



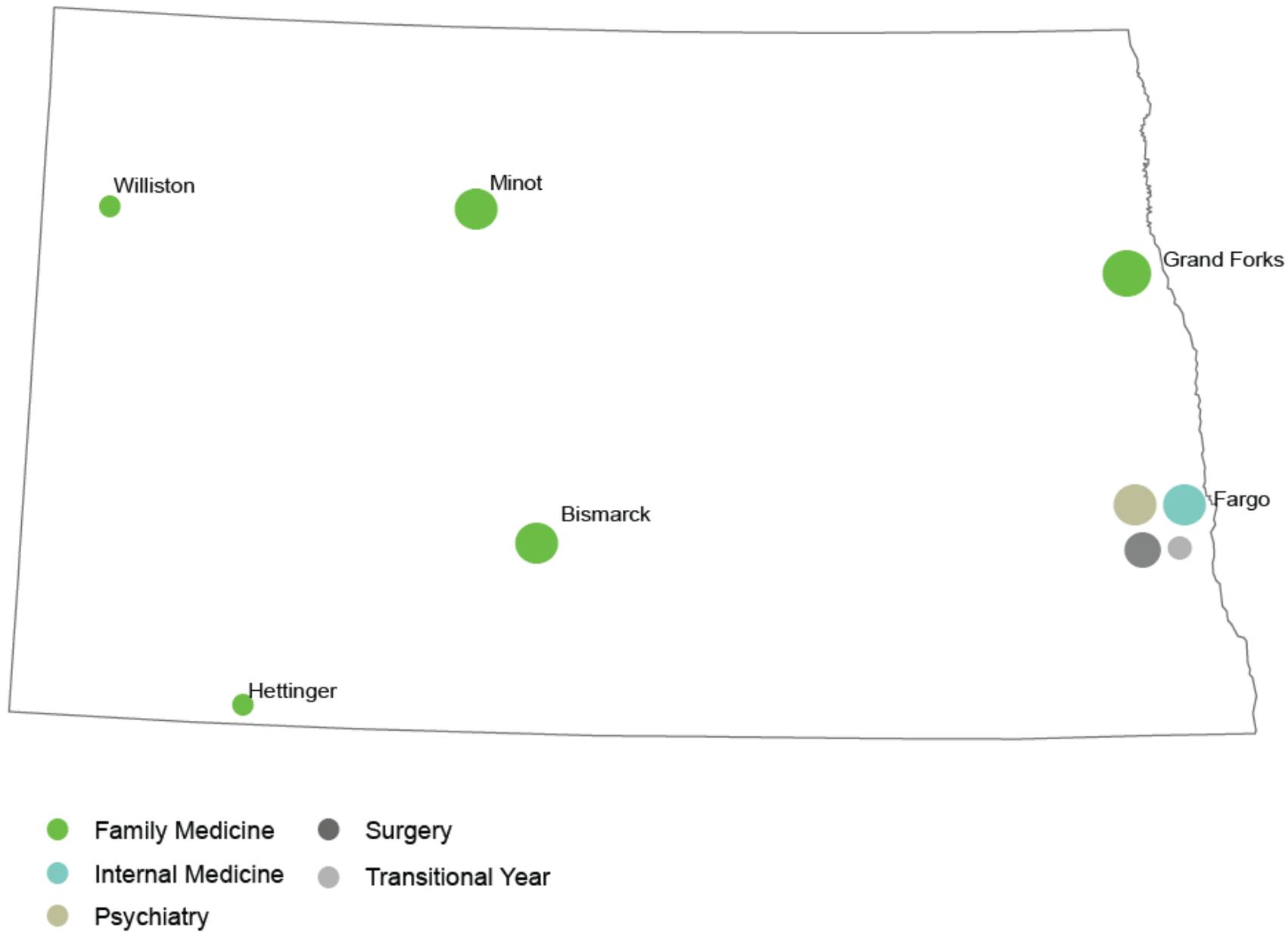
**Figure 3.3. Physicians per 10,000 population for North Dakota with comparisons, 2015.<sup>1,3,6</sup>**



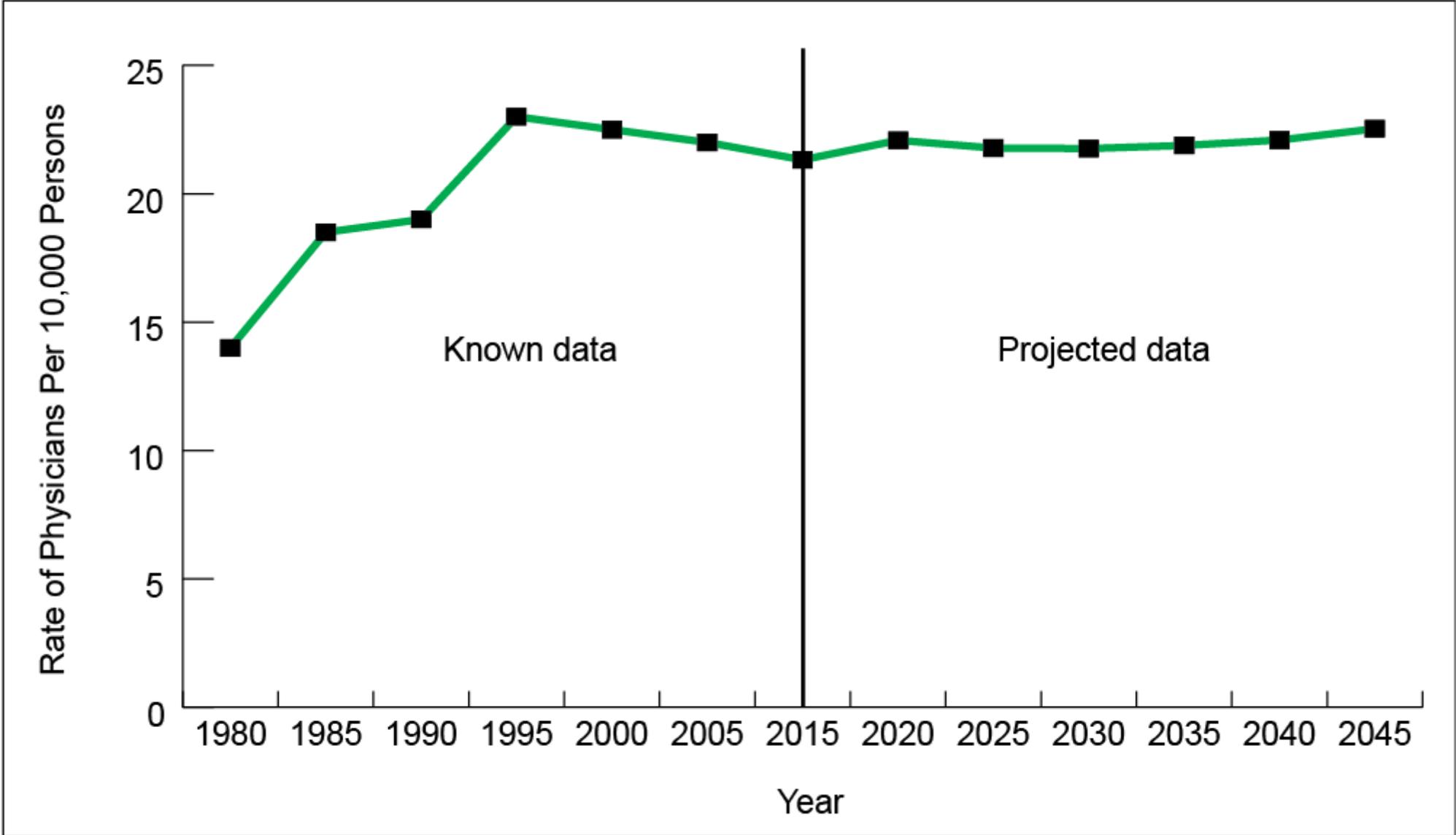
**Figure 3.4. Physician percent by age category with comparisons.<sup>3</sup>**



**Figure 3.5. Select physician characteristics with comparisons, 2015.<sup>3</sup>**



**Figure 3.6. Number of residents per year in North Dakota by location and type of residency.<sup>7</sup>**



**Figure 3.7. Projection of rate of physicians per 10,000 population.**<sup>1,2,5,10-12</sup>

**Table 3.1**

*All medical doctors (MDs) per 10,000 population in North Dakota and the United States by year<sup>1,3-5</sup>*

	<b>N.D.</b>	<b>U.S.</b>	<b>% ND of U.S.</b>
<b>1985</b>	<b>17.6</b>	<b>22.8</b>	<b>77.2</b>
1990	19.5	24.2	80.6
<b>1995</b>	<b>23.0</b>	<b>27.0</b>	<b>85.2</b>
2000	25.0	28.4	88.0
<b>2012</b>	<b>28.4</b>	<b>32.3</b>	<b>87.9</b>
2015	23.4	28.0	83.6

**Table 3.2*****Gender of physicians per 10,000 population in North Dakota with comparisons, 2015<sup>1,3,6</sup>***

	<b>N.D.</b>	<b>Upper Midwest</b>	<b>U.S.</b>
<b>Women</b>	<b>6.8</b>	<b>8.6</b>	<b>9.9</b>
Metropolitan	10.5	11.1	11.0
Micropolitan	4.9	4.5	3.6
Rural	1.5	2.4	2.0
<b>Men</b>	<b>16.5</b>	<b>16.6</b>	<b>17.7</b>
Metropolitan	25.4	20.5	19.3
Micropolitan	11.3	11.4	9.9
Rural	4.2	5.7	5.2

**Table 3.3**

*Physician primary practice per 10,000 population in North Dakota with comparisons, 2015<sup>1,3,6</sup>*

	<b>N.D.</b>	<b>Upper Midwest</b>	<b>% diff</b>	<b>U.S.</b>	<b>% diff</b>
<b>Office</b>	<b>15.0</b>	<b>16.8</b>	<b>-11.3</b>	<b>18.2</b>	<b>-19.3</b>
Metropolitan	22.7	20.3	11.2	19.8	13.6
Micropolitan	10.8	12.4	-13.8	10.4	3.8
Rural	4.1	6.3	-42.3	4.6	-11.5
<b>Hospital</b>	<b>6.7</b>	<b>6.4</b>	<b>4.6</b>	<b>6.5</b>	<b>3.0</b>
Metropolitan	10.7	8.4	24.1	7.2	39.1
Micropolitan	4.4	2.7	47.9	2.4	58.8
Rural	1.2	1.5	-22.2	1.1	8.7

Negative numbers indicate that the N.D. rate is below that of the Midwest or U.S. rate. Positive numbers indicate that the N.D. rate is above the Midwest or U.S. rate.

**Table 3.4*****Physician age groups per 10,000 population with comparisons, 2015<sup>1,3,6</sup>***

	<b>N.D.</b>	<b>Upper Midwest</b>	<b>U.S.</b>
<b>&lt;35</b>	<b>3.7</b>	<b>4.2</b>	<b>4.9</b>
Metropolitan	6.0	5.8	5.5
Micropolitan	2.5	1.3	1.1
Rural	0.5	0.6	0.5
<b>35 - 44</b>	<b>6.6</b>	<b>6.3</b>	<b>6.7</b>
Metropolitan	10.8	8.1	7.5
Micropolitan	3.8	3.5	2.6
Rural	1.0	1.5	1.3
<b>45 - 54</b>	<b>5.4</b>	<b>6.3</b>	<b>6.4</b>
Metropolitan	8.6	7.8	7.0
Micropolitan	3.3	4.3	3.5
Rural	1.1	2.2	1.7
<b>55 - 64</b>	<b>5.4</b>	<b>6.4</b>	<b>6.4</b>
Metropolitan	7.7	7.6	6.9
Micropolitan	4.8	5.1	4.4
Rural	1.6	2.8	2.5
<b>65 - 74</b>	<b>3.6</b>	<b>3.8</b>	<b>4.4</b>
Metropolitan	4.8	4.3	4.7
Micropolitan	3.0	3.5	3.2
Rural	1.6	2.1	2.0
<b>75+</b>	<b>2.4</b>	<b>2.9</b>	<b>3.5</b>
Metropolitan	2.8	3.3	3.8
Micropolitan	2.2	2.4	2.3
Rural	1.8	1.8	1.7

**Table 3.5**

***Percent of ND physicians who graduated from medical school in different states and where physicians who graduated medical school in ND currently practice, 2017<sup>2</sup>***

Region/State	Medical Schools that ND DPC Physicians Graduated From		Where UND SMHS Graduates are Currently Practicing		Net ND Migration Balance
	N	%	N	%	
ND	545	47	545	34	--
MN	92	8	338	21	-246
WI	16	1	86	5	-70
IA	48	4	33	2	+15
MO	57	5	18	1	+39
CA	31	3	42	3	-11
SD	28	2	42	3	-14
MI	23	2	40	2	-17
Other Midwest	106	9	87	5	+19
Other West	45	4	245	15	-200
Northeast	64	5	27	2	+37
Other South	111	10	120	7	-9
<b>Total</b>	<b>1,166</b>	<b>100</b>	<b>1,623</b>	<b>100</b>	<b>-457</b>

**Table 3.6**

*Percent of ND physicians who graduated from residencies in different states and where physicians who completed a residency in ND currently practice, 2017<sup>2</sup>*

Region/State	Where ND Practicing Physicians Completed Their Most Recent Residency		Where Physicians Who Completed At Least One Residency in ND Currently Practice		Migration into ND
	N	%	N	%	
ND	337	22	433	33	--
MN	184	12	209	16	-25
MI	112	7	14	1	+98
CA	54	4	70	5	-16
WI	74	5	41	3	+33
TX	57	4	49	4	+8
NY	92	6	10	1	+82
OH	68	5	16	1	+52
Other Midwest	224	15	126	10	+98
Other West	89	6	185	14	-96
Other Northeast	94	6	33	3	+61
Other South	143	9	110	9	+33
Missing	0	0	2	0	-2
<b>Total</b>	<b>1,528</b>	<b>100</b>	<b>1,298</b>	<b>100</b>	<b>230</b>

**Table 3.7**

*Percent of North Dakota specialty physicians who graduated from the UND SMHS and/or completed at least one residency in North Dakota as of 2017<sup>2</sup>*

<b>Residency</b>	<b>Percent</b>
Family Medicine	72
Internal Medicine	50
Obstetrics & Gynecology	64
Pediatrics	42
Psychiatry	46

**Table 3.8*****Number of current North Dakota residency slots by type of residency program as of 2017'***

<b>Residency</b>	<b>Number in Residency in 2016 – 2017</b>	<b>Duration Years</b>	<b>Number who completed training in 2016 – 2017</b>
Family Medicine	65	3 Years	19
Internal Medicine	24	3 Years	8
Psychiatry	16	4 Years	3
Preliminary Surgery	3	1 or 2 Years	3
Categorical Surgery	25	5 Years	5
Transitional Year	8	1 Year	8
Total	141		46

**Table 3.9*****Rate of IMGs and USMGs with comparisons, 2017<sup>1,3,6</sup>***

	<b>N.D.</b>	<b>Upper Midwest</b>	<b>U.S.</b>
<b>IMG</b>	<b>6.0</b>	<b>4.1</b>	<b>6.5</b>
Metropolitan	9.0	5.2	7.2
Micropolitan	4.8	2.5	2.6
Rural	1.4	1.0	1.3
<b>USMG</b>	<b>16.2</b>	<b>18.8</b>	<b>18.0</b>
Metropolitan	25.0	23.2	19.7
Micropolitan	10.6	12.4	10.0
Rural	4.3	6.8	5.4

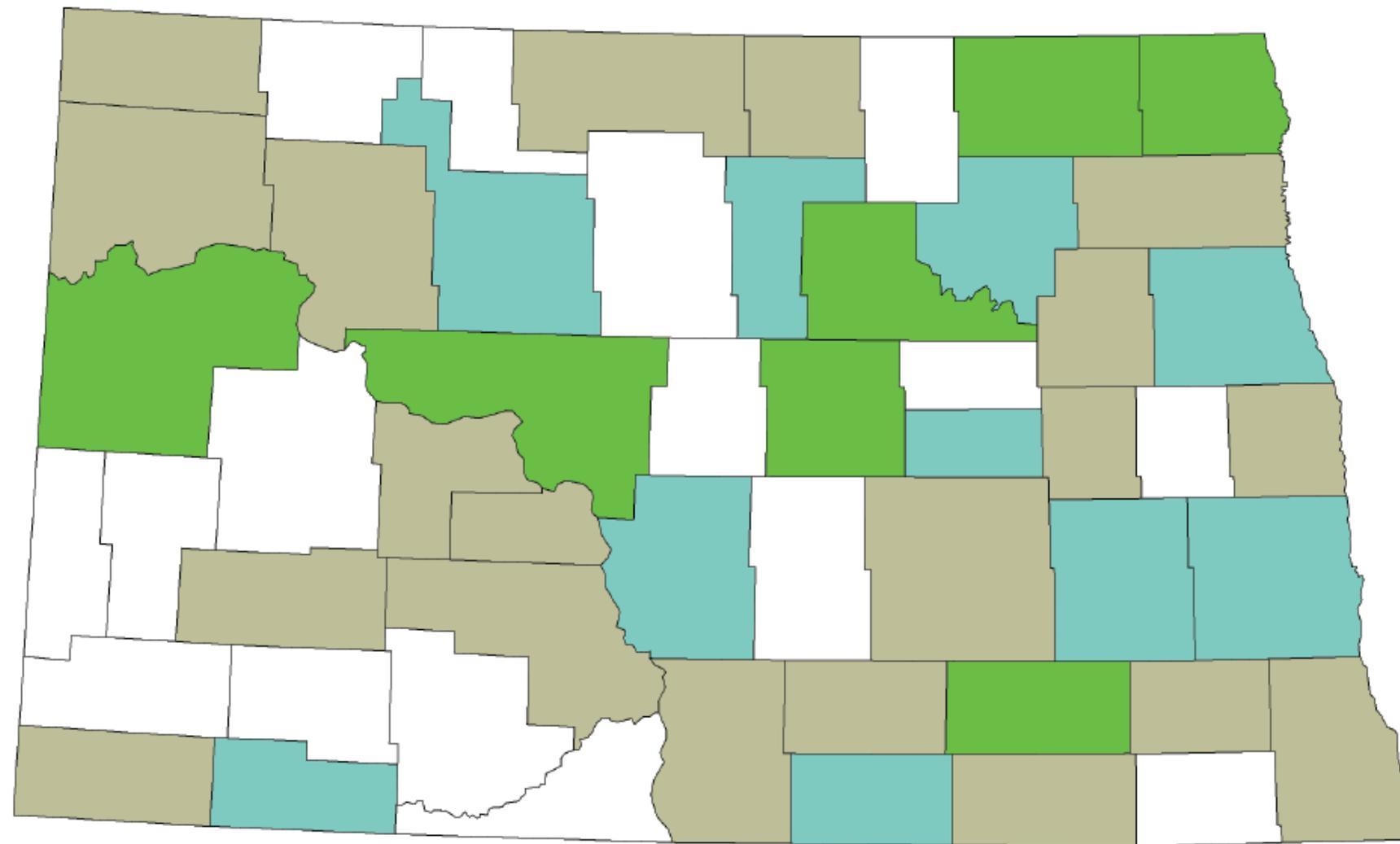
**Table 3.10**

**Country of origin of IMG physicians practicing in North Dakota for regions with greater than 10 physicians, 2017<sup>2</sup>**

Region	Country	Total Number	Per Country
<b>Southern Asia</b>		<b>152</b>	
	India		107
	Pakistan		25
	Nepal		11
	Bangladesh		7
	Iran		2
<b>Caribbean</b>		<b>50</b>	
	Dominica (West Indies)		15
	Grenada (West Indies)		10
	Montserrat (West Indies)		9
	Netherlands Antilles		7
	Nevis		4
	Jamaica		2
	Antigua and Barbuda		1
	Aruba		1
	Dominican Republic		1
<b>Southeastern Asia</b>		<b>41</b>	
	Philippines		29
	Thailand		7
	Indonesia		1
	Malaysia		1
	Myanmar		1
	Taiwan		1
	Vietnam		1
<b>Western Asia</b>		<b>32</b>	
	Syria		10
	Jordan		9
	Lebanon		7
	Turkey		3
	Israel		2
	United Arab Emirates		1
<b>Eastern Europe</b>		<b>31</b>	
	Romania		11
	Russia		7
	Poland		6
	Bulgaria		4
	Hungary		2
	Czechoslovakia		1
<b>Western Africa</b>		<b>17</b>	
	Nigeria		14
	Ghana		3
<b>South America</b>		<b>14</b>	
	Brazil		6
	Argentina		4
	Peru		4
<b>Central America</b>		<b>11</b>	
	Mexico		11

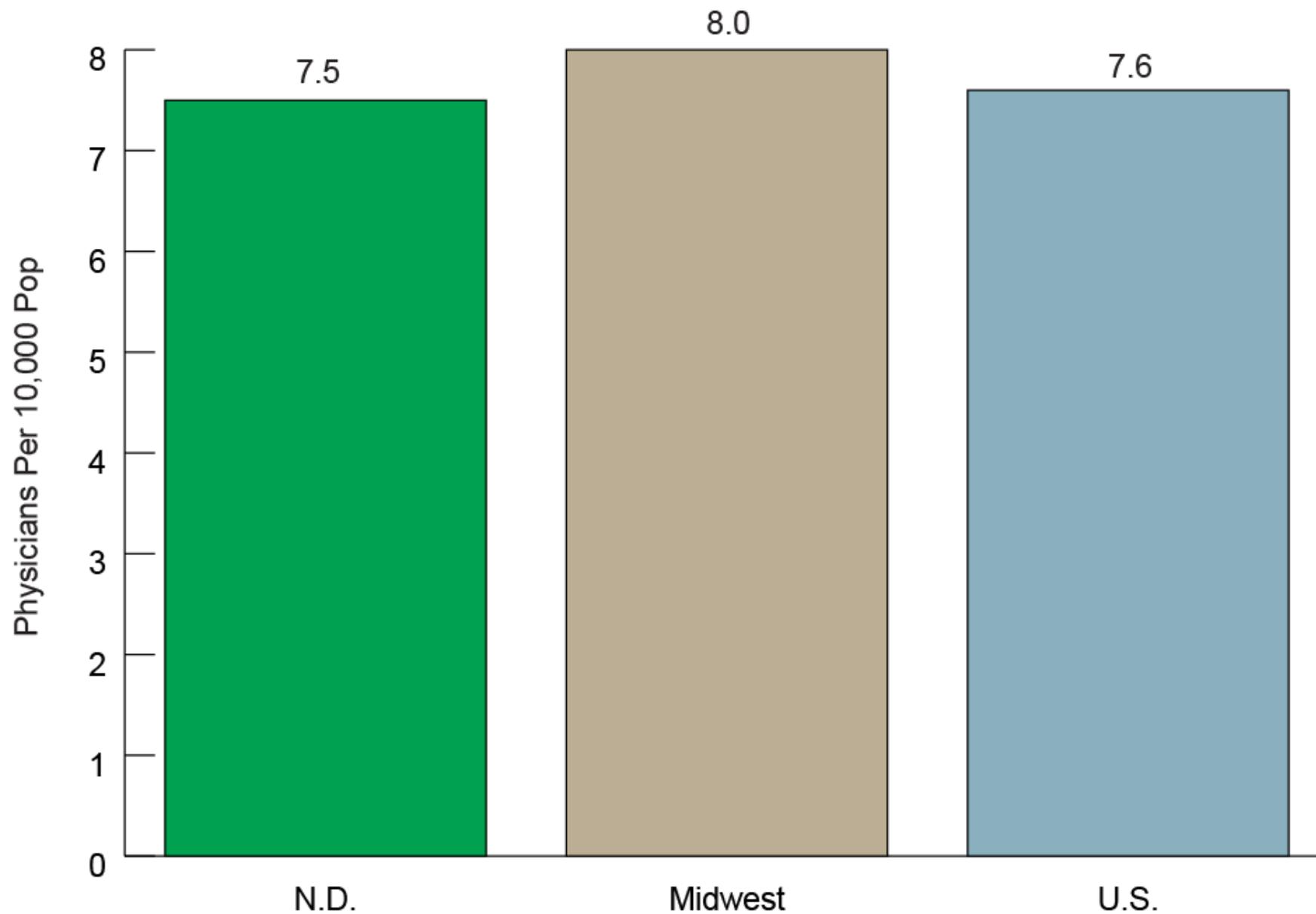
## Chapter 4:

# Primary Care and Specialty Physician Workforce in North Dakota

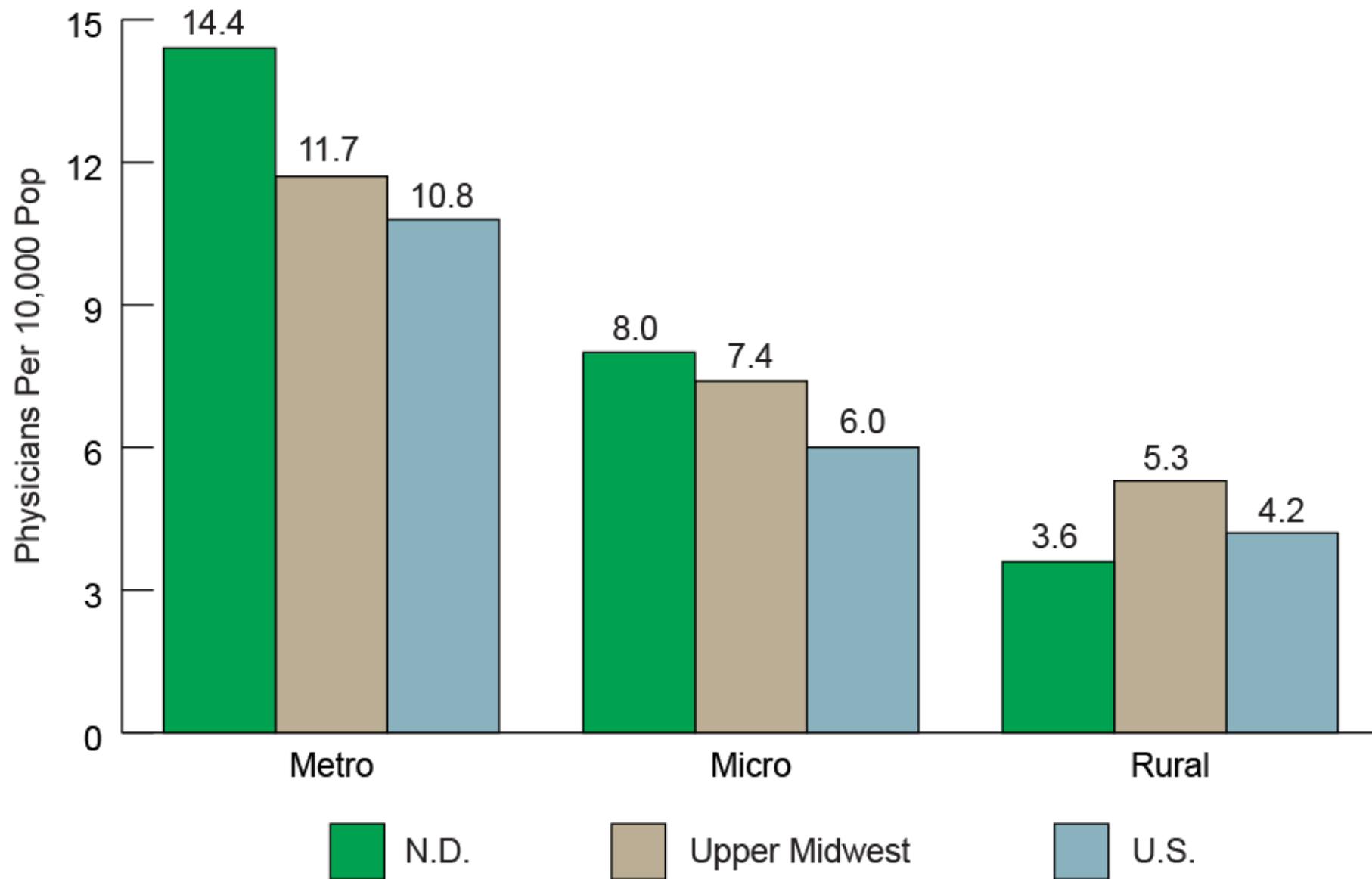


Legend:   
 [White Box] No Physicians   
 [Teal Box] 1 - 1,500   
 [Tan Box] 1,501 - 3,500   
 [Green Box] > 3,500

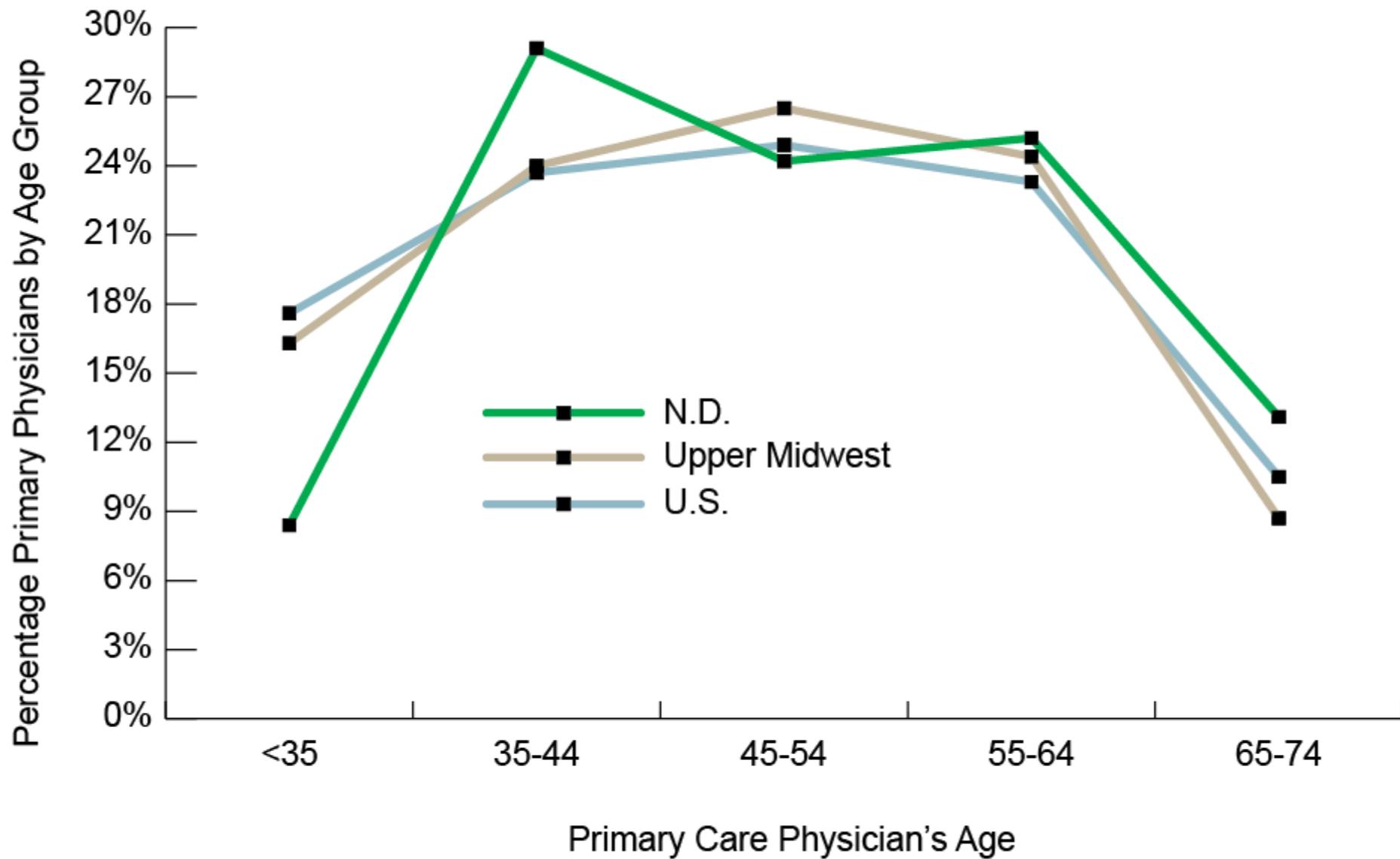
**Figure 4.1. Population per primary care physician in North Dakota, 2017.<sup>1,2</sup>**



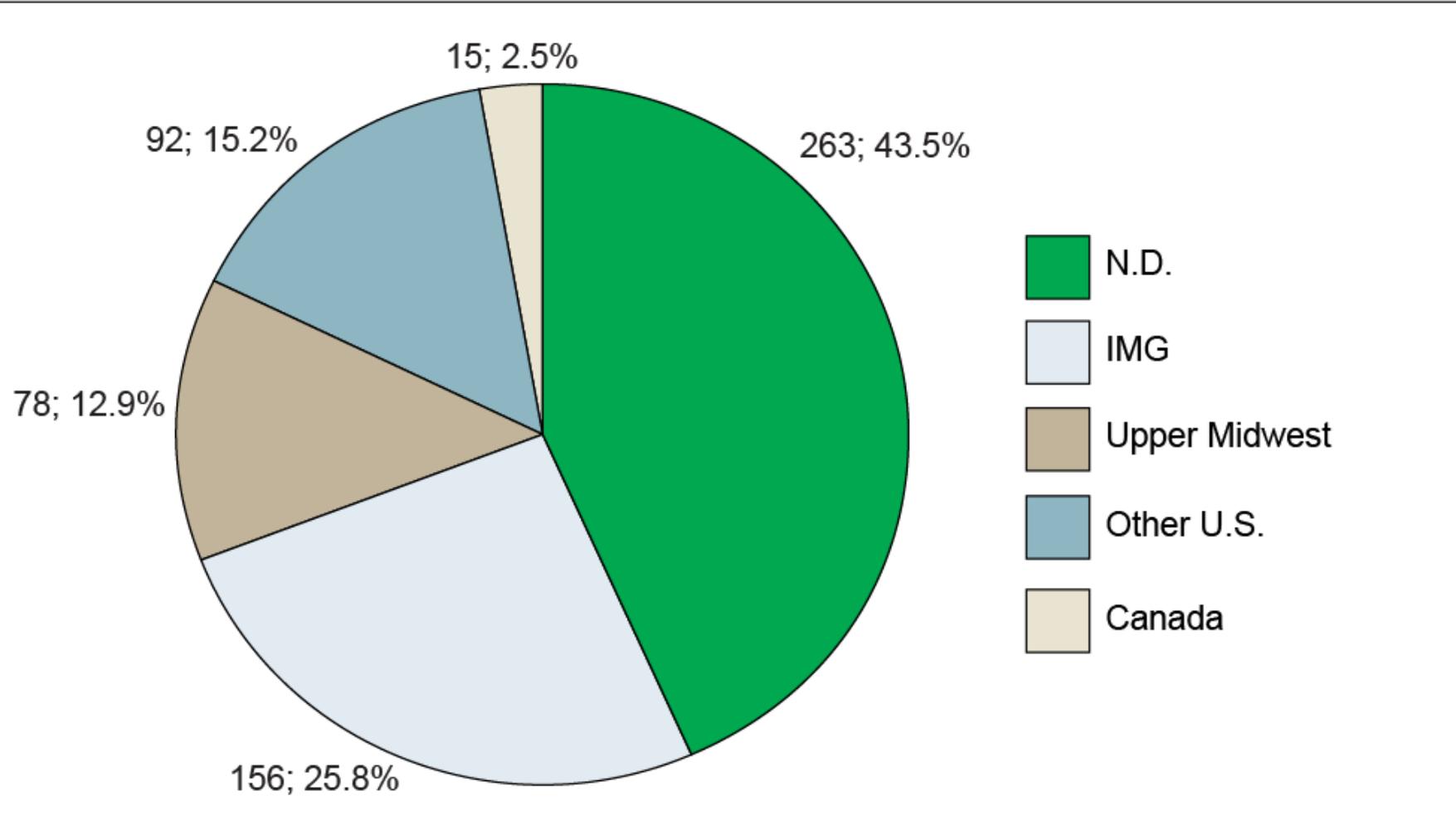
**Figure 4.2. Primary care physicians per 10,000 population in North Dakota, the Upper Midwest, and the United States, 2015.<sup>2,3</sup>**



**Figure 4.3. Primary care physicians per 10,000 population in North Dakota, with comparisons.<sup>2,3,4</sup>**

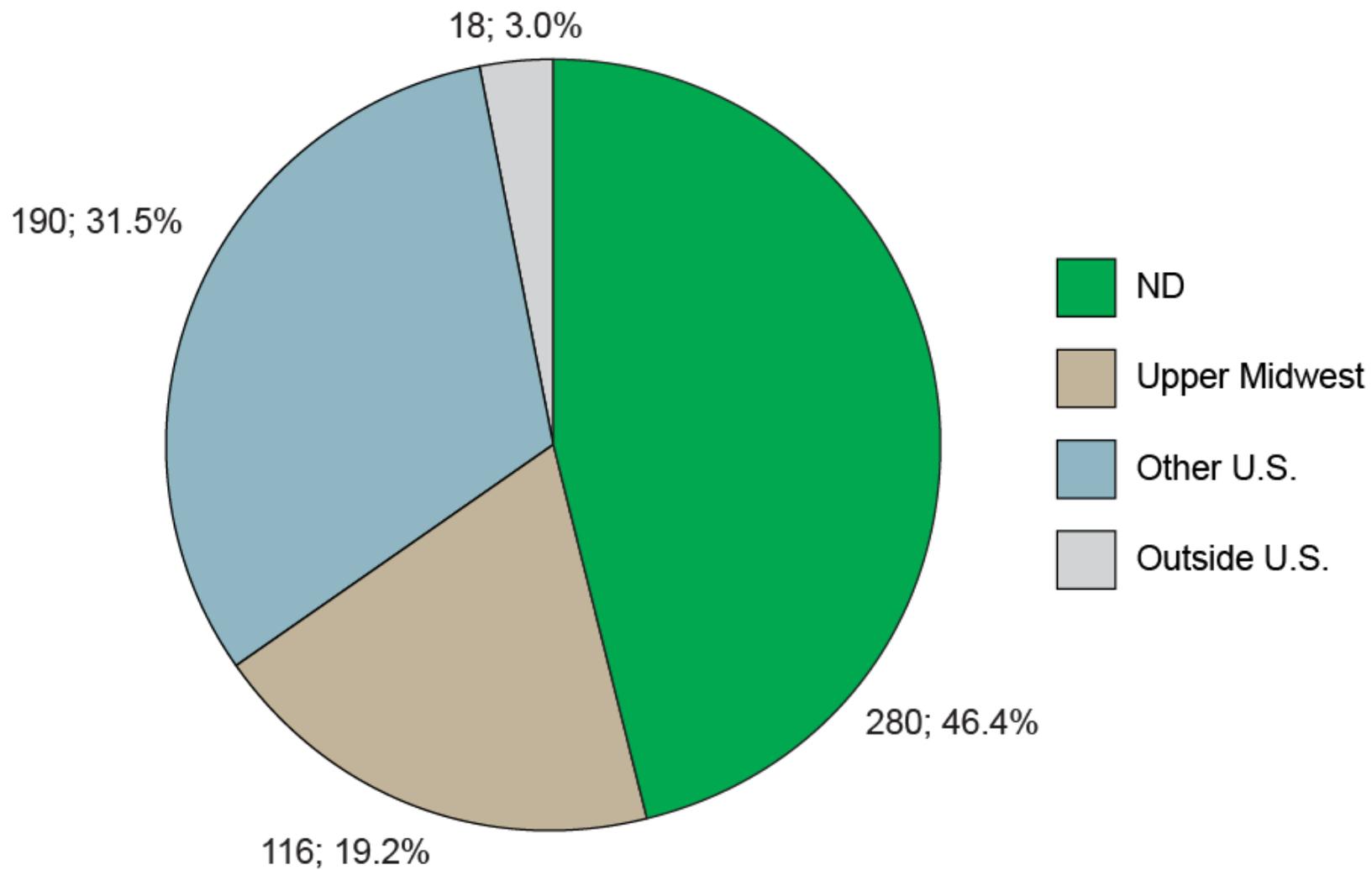


**Figure 4.4. Percent of primary care physicians by age for North Dakota, with comparisons.<sup>1,3,4</sup>**



**Figure 4.5. Locations where North Dakota primary care physicians graduated from medical school, 2017.<sup>1</sup>**

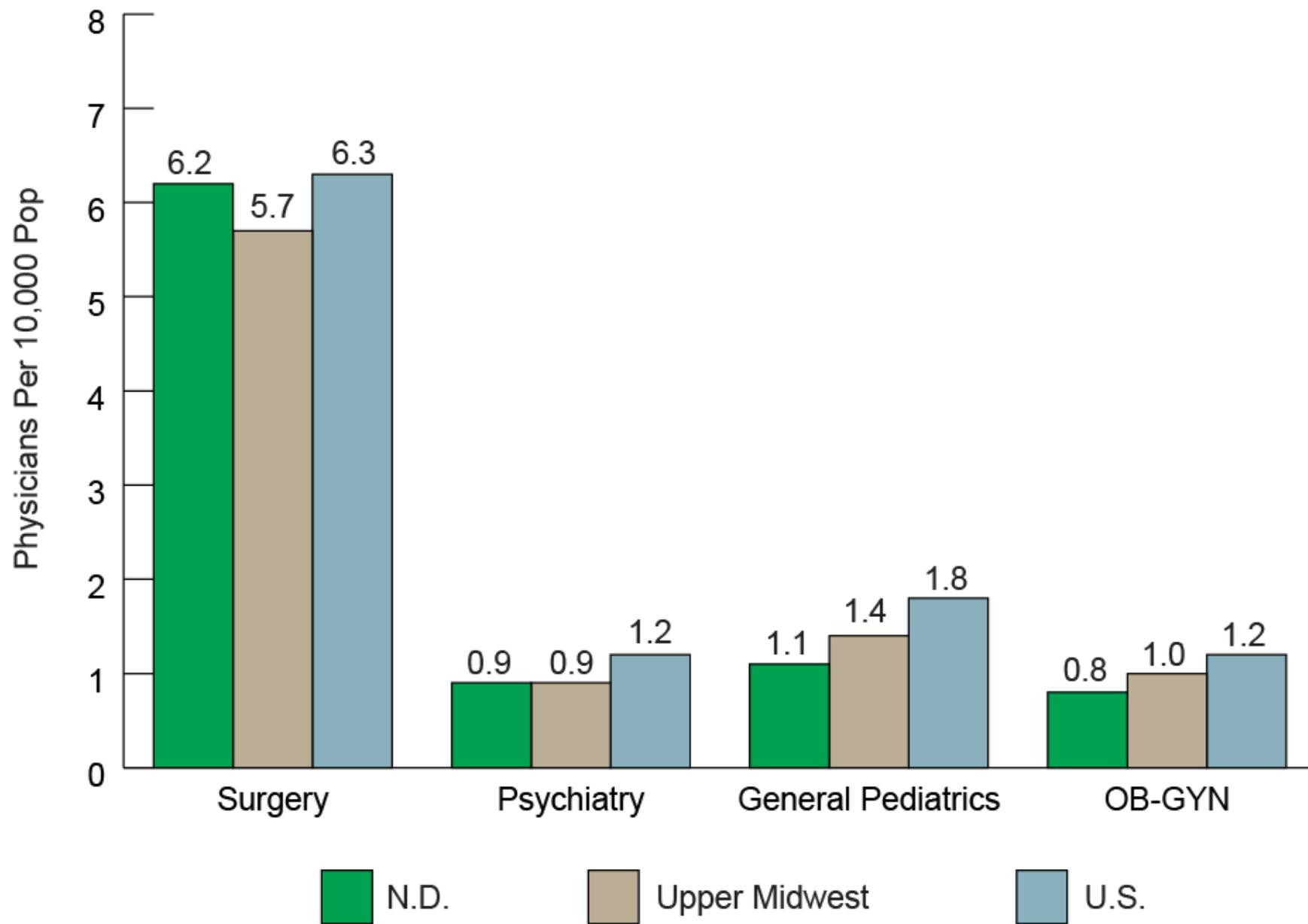
North Dakota's primary care physicians graduated from medical schools from all over the United States and the world. UND SMHS graduates account for 43.5% of practicing primary care physicians in North Dakota. IMGs account for 25.8% and Canadian medical school graduates account for 2.5% (combined 28.3%) of North Dakota's practicing primary care physicians. The rest of the Upper Midwest states account for 12.9% while the rest of the United States accounts for 15.2% (combined 28%) of North Dakota's primary care physicians.



**Figure 4.6. Locations where North Dakota primary care physicians completed their residency, 2017.<sup>1</sup>**

Nearly half (46%) of North Dakota's currently practicing primary care physicians completed their residency training in North Dakota. Primary care physicians who graduated from residency programs outside of North Dakota came from the Midwest (19.2%), other United States (31.5%), and Canada and other foreign (3.0%).





**Figure 4.8. Surgeons, general pediatricians, and OB-GYNs per 10,000 population in North Dakota with comparisons.<sup>2,3,4</sup>**

**Table 4.1**

*Percent of primary care physicians in North Dakota who are female, have hospital-based practices, and are IMGs, 2017<sup>1,4</sup>*

	<b>N</b>	<b>Percent in Each Area</b>	<b>Female (%)</b>	<b>Hospital Based Practice (%)</b>	<b>IMG (%)</b>
Metropolitan	411	68.0	39.4	17.5	26.5
Micropolitan	107	17.7	36.4	16.8	24.3
Rural	86	14.2	33.7	19.8	24.4
<b>Total</b>	<b>604</b>		<b>38.0</b>	<b>17.7</b>	<b>25.8</b>

**Table 4.2*****Percent of primary care physicians in North Dakota by age and area, 2017<sup>1,4</sup>***

	<b>N</b>	<b>&lt;35</b>	<b>35-44</b>	<b>45-54</b>	<b>55-64</b>	<b>65-74</b>
<b>Total</b>	<b>604</b>	<b>8.4</b>	<b>29.1</b>	<b>24.1</b>	<b>25.1</b>	<b>13.0</b>
Metropolitan	411	9.0	33.1	25.8	22.1	10.0
Micropolitan	107	10.3	23.4	19.6	32.7	14.0
Rural	86	3.5	17.4	22.1	30.2	26.7

**Table 4.3****Age and area of primary care physicians per 10,000 population in North Dakota with comparisons, 2015<sup>2,3,4</sup>**

	N.D.	Upper Midwest	U.S.
<b>&lt;35</b>	<b>2.0</b>	<b>1.6</b>	<b>1.7</b>
Metropolitan	2.8	2.1	1.9
Micropolitan	2.0	0.7	0.5
Rural	0.3	0.4	0.3
<b>35 - 44</b>	<b>2.8</b>	<b>2.4</b>	<b>2.3</b>
Metropolitan	4.5	2.8	2.5
Micropolitan	1.6	1.6	1.2
Rural	0.9	1.1	0.8
<b>45 - 54</b>	<b>2.3</b>	<b>2.6</b>	<b>2.5</b>
Metropolitan	3.5	3.0	2.6
Micropolitan	1.5	2.0	1.6
Rural	0.8	1.5	1.1
<b>55 - 64</b>	<b>2.0</b>	<b>2.4</b>	<b>2.3</b>
Metropolitan	2.5	2.6	2.4
Micropolitan	2.2	2.1	1.8
Rural	1.1	1.6	1.3
<b>65 - 74</b>	<b>0.8</b>	<b>0.9</b>	<b>1.0</b>
Metropolitan	1.1	0.9	1.1
Micropolitan	0.6	0.8	0.8
Rural	0.5	0.6	0.6
<b>75+</b>	<b>0.1</b>	<b>0.1</b>	<b>0.2</b>
Metropolitan	0.1	0.1	0.2
Micropolitan	0.1	0.1	0.1
Rural	0.1	0.0	0.1

**Table 4.4**

*Practice base and area of primary care physicians per 10,000 population in North Dakota with comparisons, 2015<sup>2,3,4</sup>*

	<b>N.D.</b>	<b>Upper Midwest</b>	<b>U.S.</b>
<b>Office</b>	<b>7.0</b>	<b>7.2</b>	<b>7.3</b>
Metropolitan	9.9	8.2	7.8
Micropolitan	5.6	5.9	4.9
Rural	2.7	4.4	3.5
<b>Hospital</b>	<b>1.5</b>	<b>1.2</b>	<b>0.9</b>
Metropolitan	2.3	1.3	1.0
Micropolitan	0.8	1.0	0.7
Rural	0.7	0.8	0.5

**Table 4.5**

*Percent of ND primary care physicians who graduated from medical school in different states and where primary care physicians who graduated medical school in ND currently practice, 2017<sup>1</sup>*

Region/State	Medical Schools that ND Primary Care Physicians Graduated From		Where Primary Care UND SMHS Graduates are Currently Practicing		Net ND Migration Balance
	N	%	N	%	
ND	263	61	263	41	--
MN	36	8	124	19	-88
WI	4	1	31	5	-27
SD	9	2	19	3	-10
IA	19	4	8	1	+11
MT	0	0	24	4	-24
CA	7	2	15	2	-8
MO	17	4	4	1	+13
Other Midwest	30	7	29	5	+1
Other West	7	2	76	12	-69
Northeast	15	3	4	1	+11
South	26	6	42	7	-16
<b>Total</b>	<b>433</b>	<b>100</b>	<b>639</b>	<b>100</b>	<b>-206</b>

**Table 4.6**

***Residency locations for ND primary care physicians and current practice state for physicians who completed a ND residency, 2017<sup>1</sup>***

Region/State	Where ND Practicing Physicians Completed Their Most Recent Residency		Where Physicians Who Completed At Least One Residency in ND Currently Practice		Migration into ND
	N	%	N	%	
ND	280	48	292	40	-12
MN	53	9	120	17	-67
WI	25	4	22	3	+3
CA	11	2	35	5	-24
NY	29	5	3	0	+26
SD	7	1	20	3	-13
MI	22	4	4	1	+18
TX	6	1	20	3	-14
Other Midwest	64	11	43	6	+21
Other West	25	4	102	14	-77
Other Northeast	24	4	12	2	+12
Other South	39	7	51	7	-12
Missing	0	0	2	0	-2
<b>Total</b>	<b>585</b>	<b>100</b>	<b>726</b>	<b>100</b>	<b>-141</b>

**Table 4.7**

*Percent of specialist physicians in North Dakota who are female, have hospital-based practices, and are IMGs, 2017<sup>1,4</sup>*

	N	Female	% Hospital Based Practice	% IMG
<b>General Surgery</b>	<b>110</b>	<b>10.9</b>	<b>29.1</b>	<b>10.0</b>
Metropolitan	81	11.1	28.4	9.9
Micropolitan	21	9.5	23.8	4.8
Rural	8	12.5	50.0	25.0
<b>Psychiatry</b>	<b>76</b>	<b>47.4</b>	<b>26.3</b>	<b>32.9</b>
Metropolitan	59	47.5	25.4	32.2
Micropolitan	14	50.0	35.7	42.9
Rural	3	33.3	0.0	0.0
<b>Gen Peds</b>	<b>78</b>	<b>57.7</b>	<b>24.4</b>	<b>14.1</b>
Metropolitan	59	57.6	27.1	11.9
Micropolitan	17	52.9	11.8	23.5
Rural	2	100.0	50.0	0.0
<b>OB-GYN</b>	<b>63</b>	<b>61.9</b>	<b>23.8</b>	<b>4.8</b>
Metropolitan	47	61.7	25.5	0.0
Micropolitan	14	64.3	21.4	7.1
Rural	2	50.0	0.0	100.0

**Table 4.8*****Percent of specialists in North Dakota by age and area, 2017<sup>1,4</sup>***

	<b>N</b>	<b>&lt;35</b>	<b>35-44</b>	<b>45-54</b>	<b>55-64</b>	<b>65-74</b>
<b>General Surgery</b>	<b>110</b>	<b>5.5</b>	<b>23.6</b>	<b>28.2</b>	<b>29.1</b>	<b>13.6</b>
Metropolitan	81	4.9	25.9	29.6	28.4	811.1
Micropolitan	21	9.5	23.8	19.0	33.3	14.3
Rural	8	0.0	0.0	37.5	25.0	37.5
<b>Psychiatry</b>	<b>76</b>	<b>11.8</b>	<b>15.8</b>	<b>31.6</b>	<b>26.3</b>	<b>14.5</b>
Metropolitan	59	15.3	16.9	28.8	27.1	11.9
Micropolitan	14	0.0	14.3	42.9	14.3	28.6
Rural	3	0.0	0.0	33.3	66.7	0.0
<b>Gen Peds</b>	<b>78</b>	<b>6.4</b>	<b>34.6</b>	<b>28.2</b>	<b>17.9</b>	<b>12.8</b>
Metropolitan	59	6.8	40.7	27.1	10.2	15.3
Micropolitan	17	5.9	11.8	35.3	41.2	5.9
Rural	2	0.0	50.0	0.0	50.0	0.0
<b>OB-GYN</b>	<b>63</b>	<b>7.9</b>	<b>36.5</b>	<b>23.8</b>	<b>17.5</b>	<b>14.3</b>
Metropolitan	47	8.5	36.2	27.7	19.1	8.5
Micropolitan	14	7.1	35.7	14.3	14.3	28.6
Rural	2	0.0	50.0	0.0	0.0	50.0

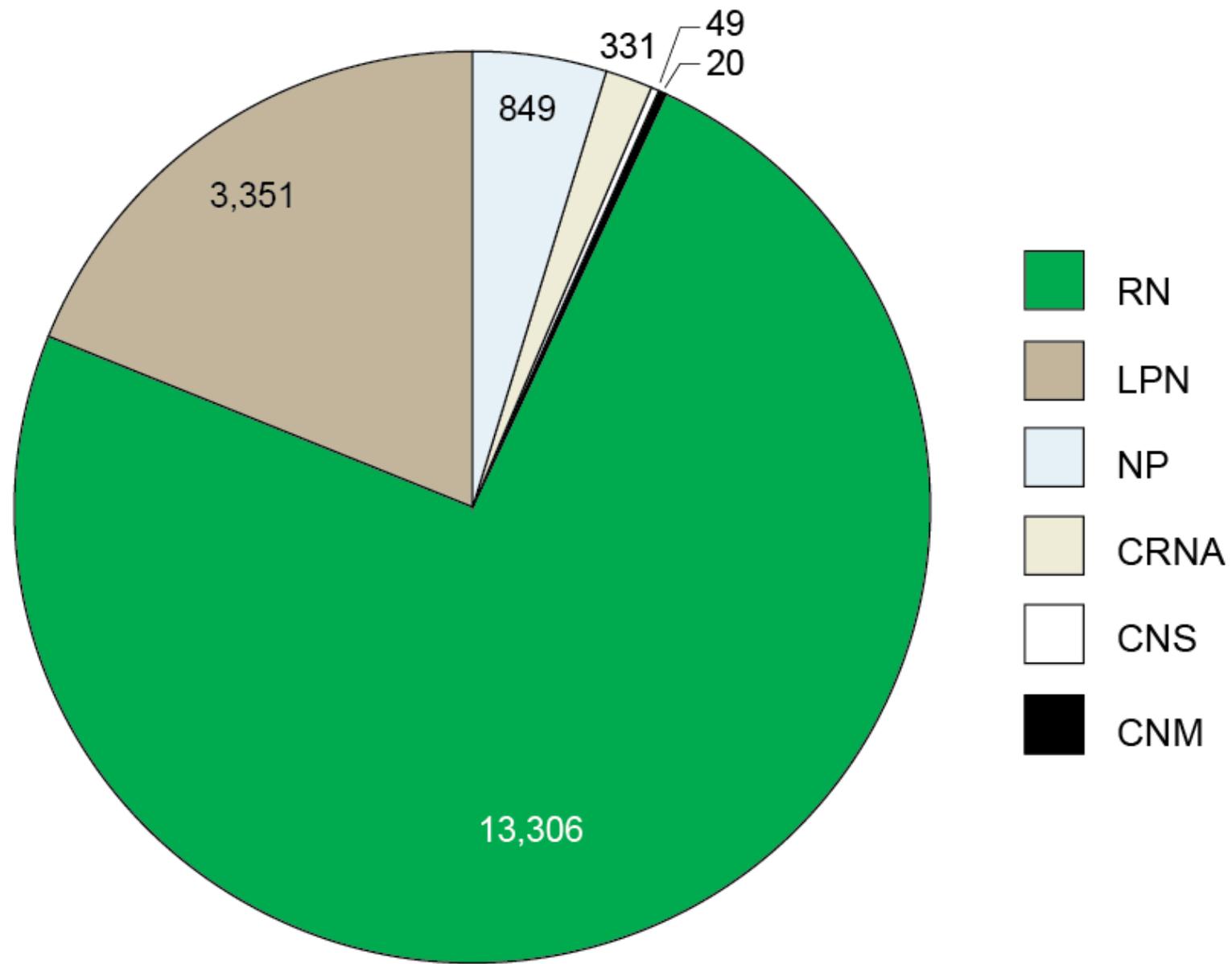
**Table 4.9**

***Specialty physicians per 10,000 population in North Dakota by area with comparisons, 2015<sup>2,3,4</sup>***

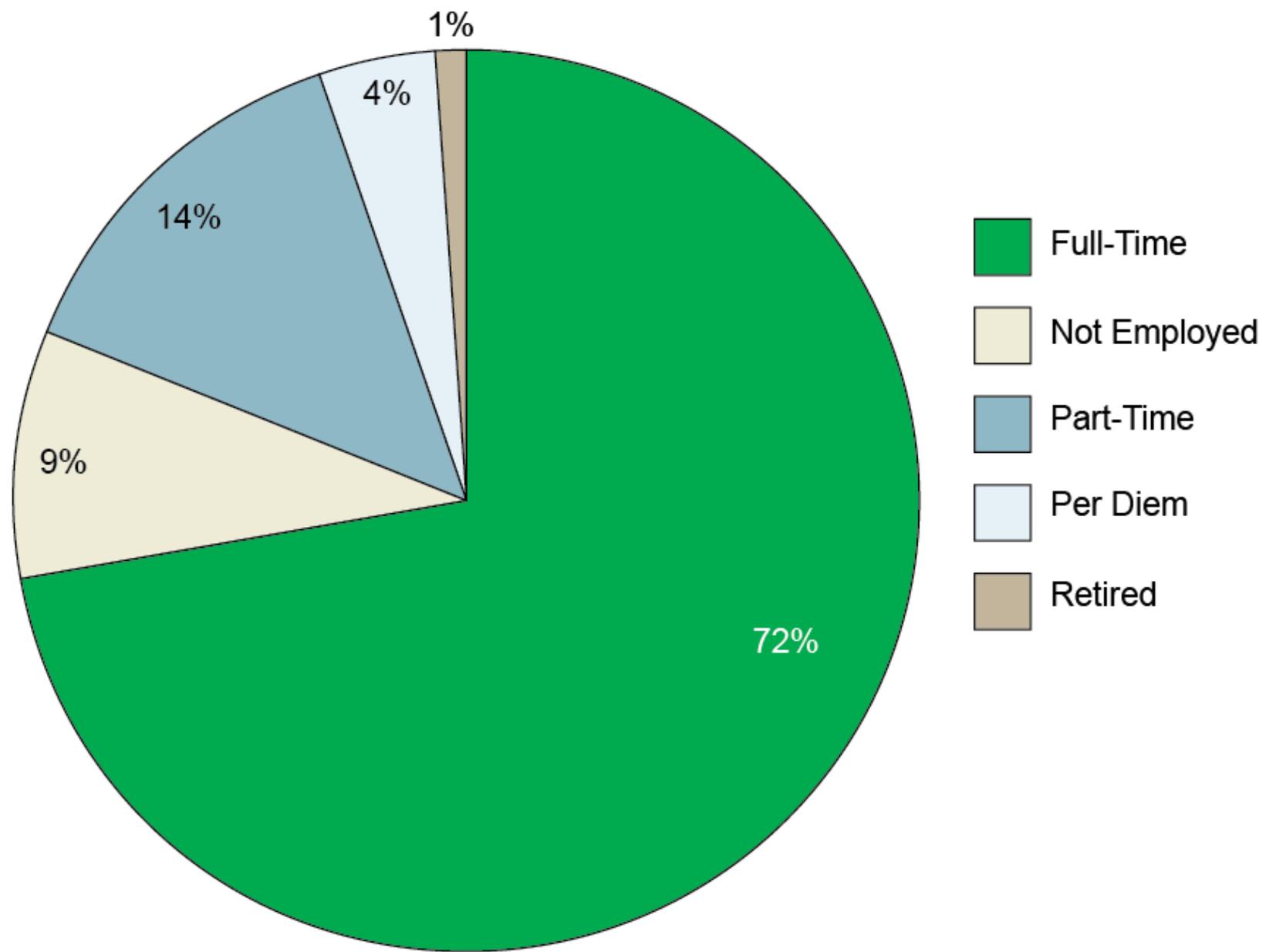
	<b>N.D.</b>	<b>Upper Midwest</b>	<b>U.S.</b>
<b>Surgery</b>	<b>6.2</b>	<b>5.7</b>	<b>6.3</b>
Metropolitan	9.7	7.0	6.8
Micropolitan	4.2	4.5	3.7
Rural	1.3	1.7	1.6
<b>Psychiatry</b>	<b>0.9</b>	<b>0.9</b>	<b>1.2</b>
Metropolitan	1.5	1.1	1.3
Micropolitan	0.6	0.5	0.4
Rural	0.1	0.2	0.2
<b>Gen Peds</b>	<b>1.1</b>	<b>1.4</b>	<b>1.8</b>
Metropolitan	1.5	1.8	2.0
Micropolitan	1.1	0.8	0.9
Rural	0.1	0.2	0.4
<b>OB - GYN</b>	<b>0.8</b>	<b>1.0</b>	<b>1.2</b>
Metropolitan	1.1	1.2	1.3
Micropolitan	0.8	0.8	0.7
Rural	0.1	0.2	0.3

# Chapter 5:

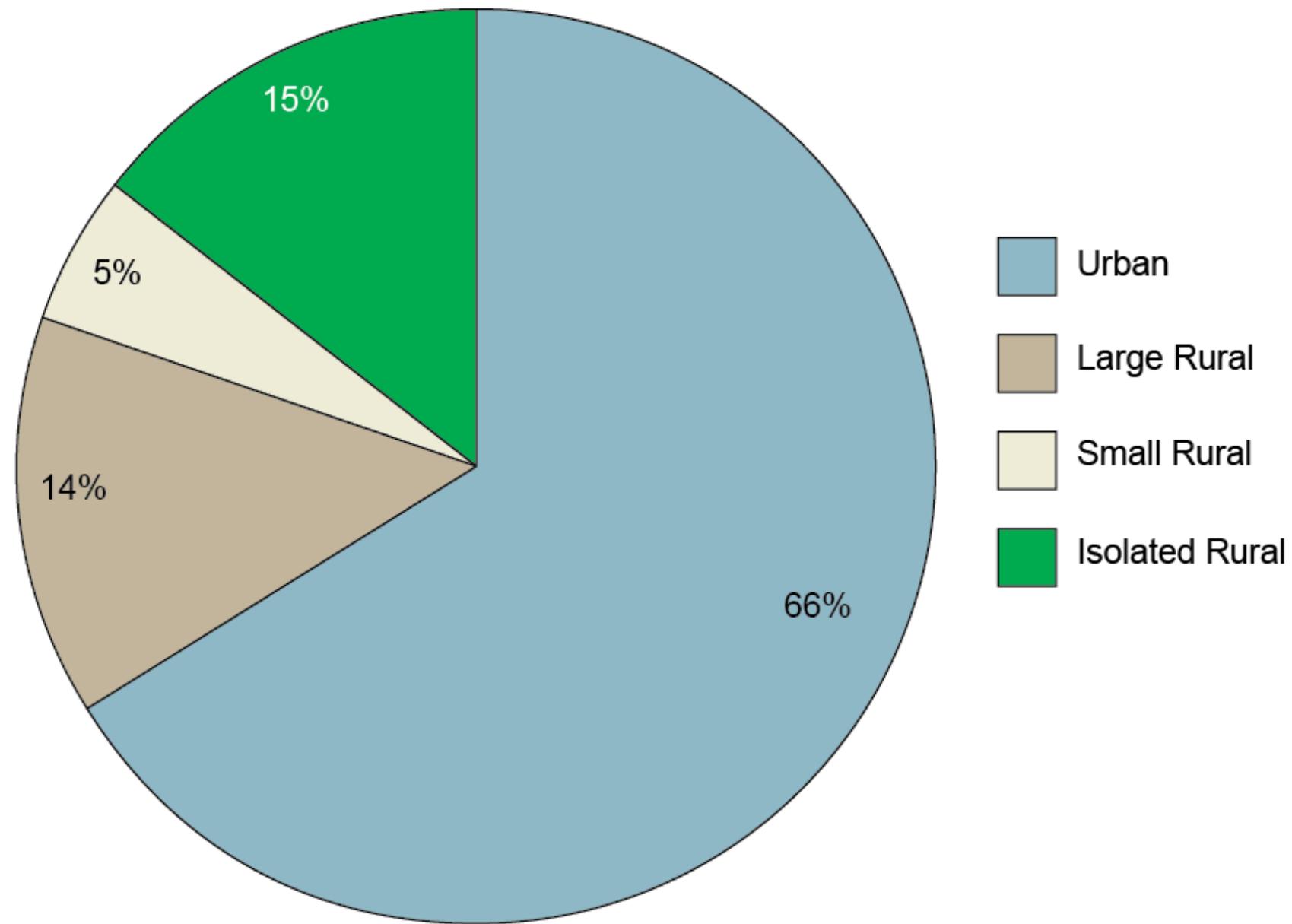
## Nursing Workforce in North Dakota



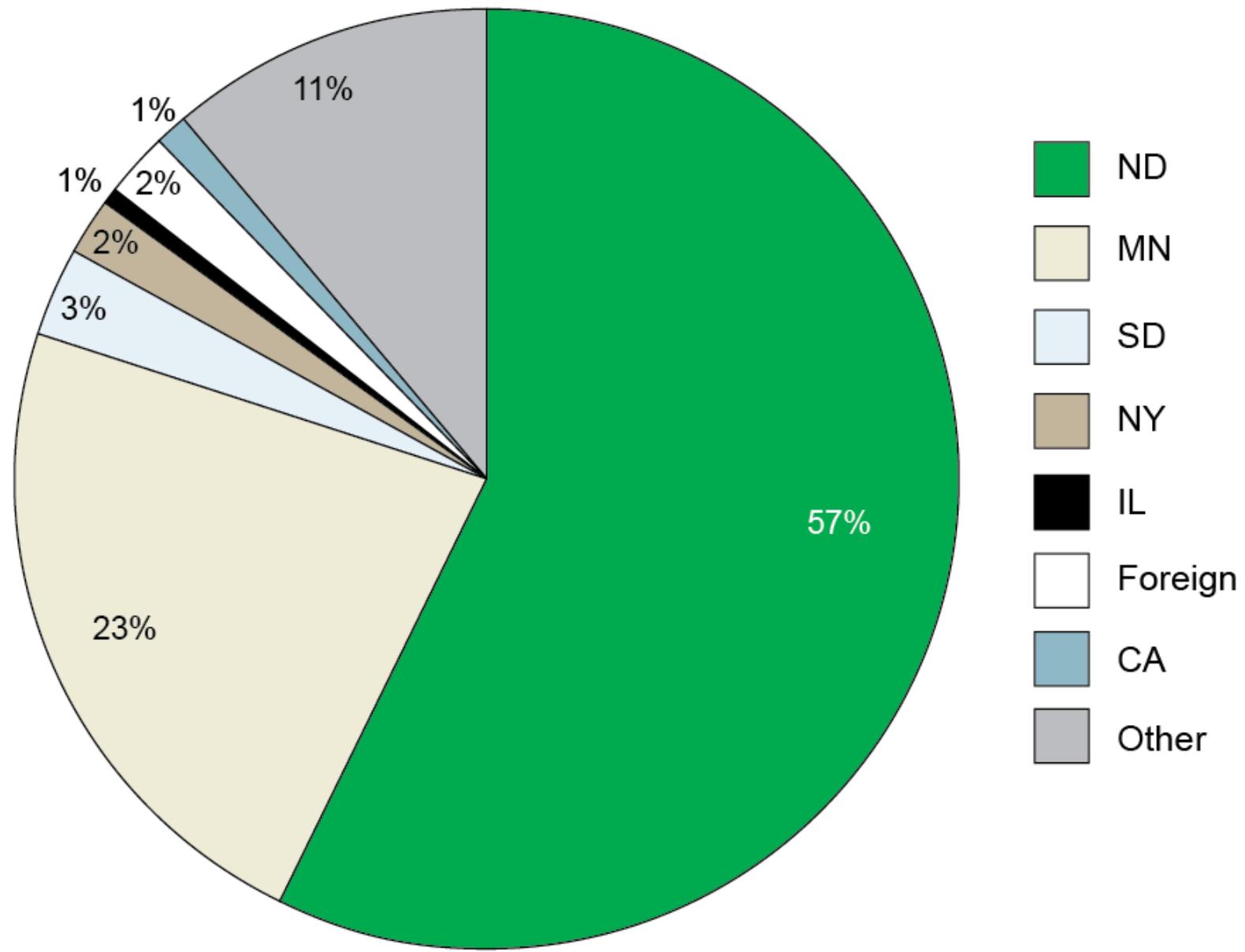
**Figure 5.1. Total numbers of licensed nurses in North Dakota by role.<sup>2</sup>**



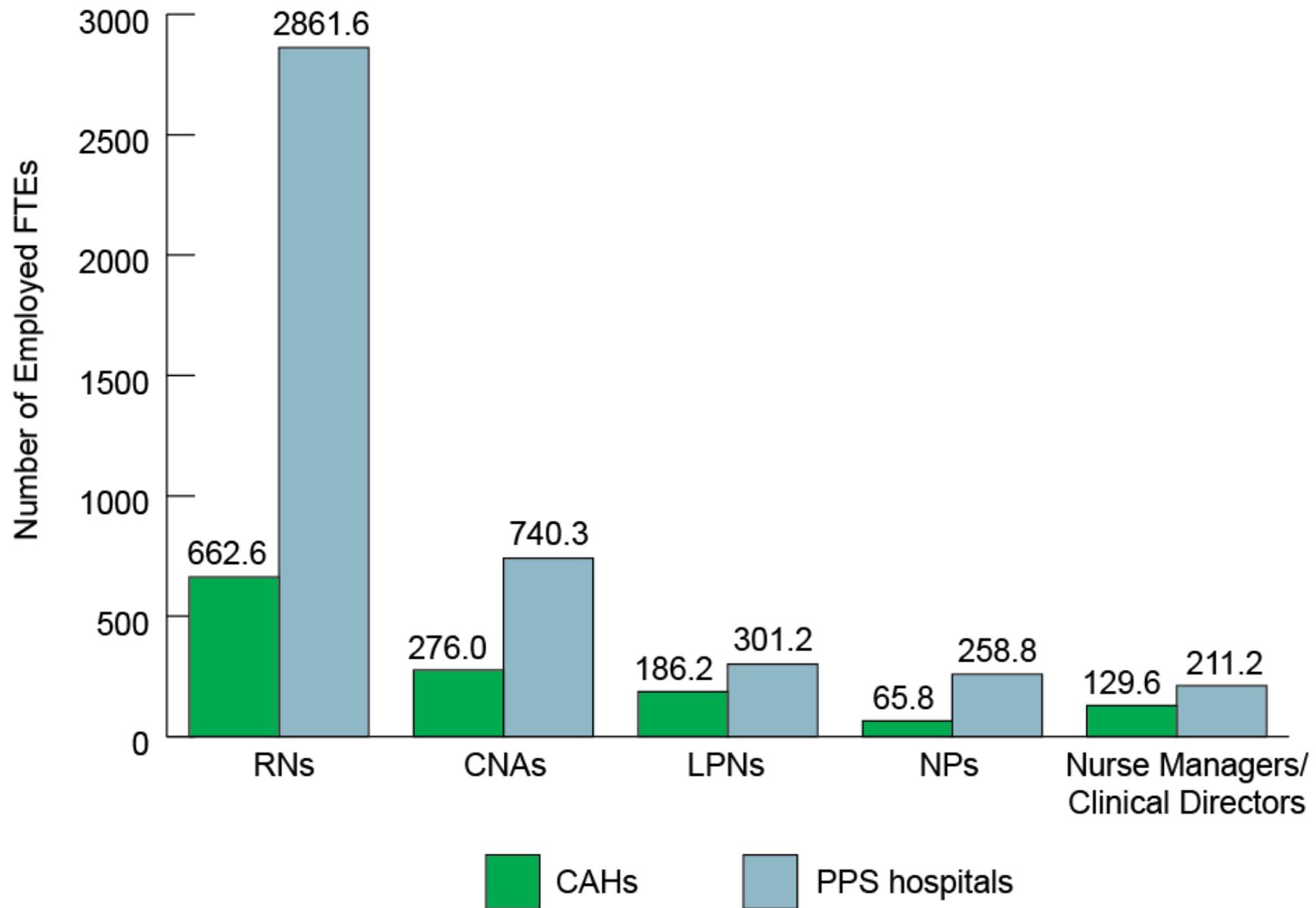
**Figure 5.2. Employment status totals for all nursing roles.<sup>2</sup>**



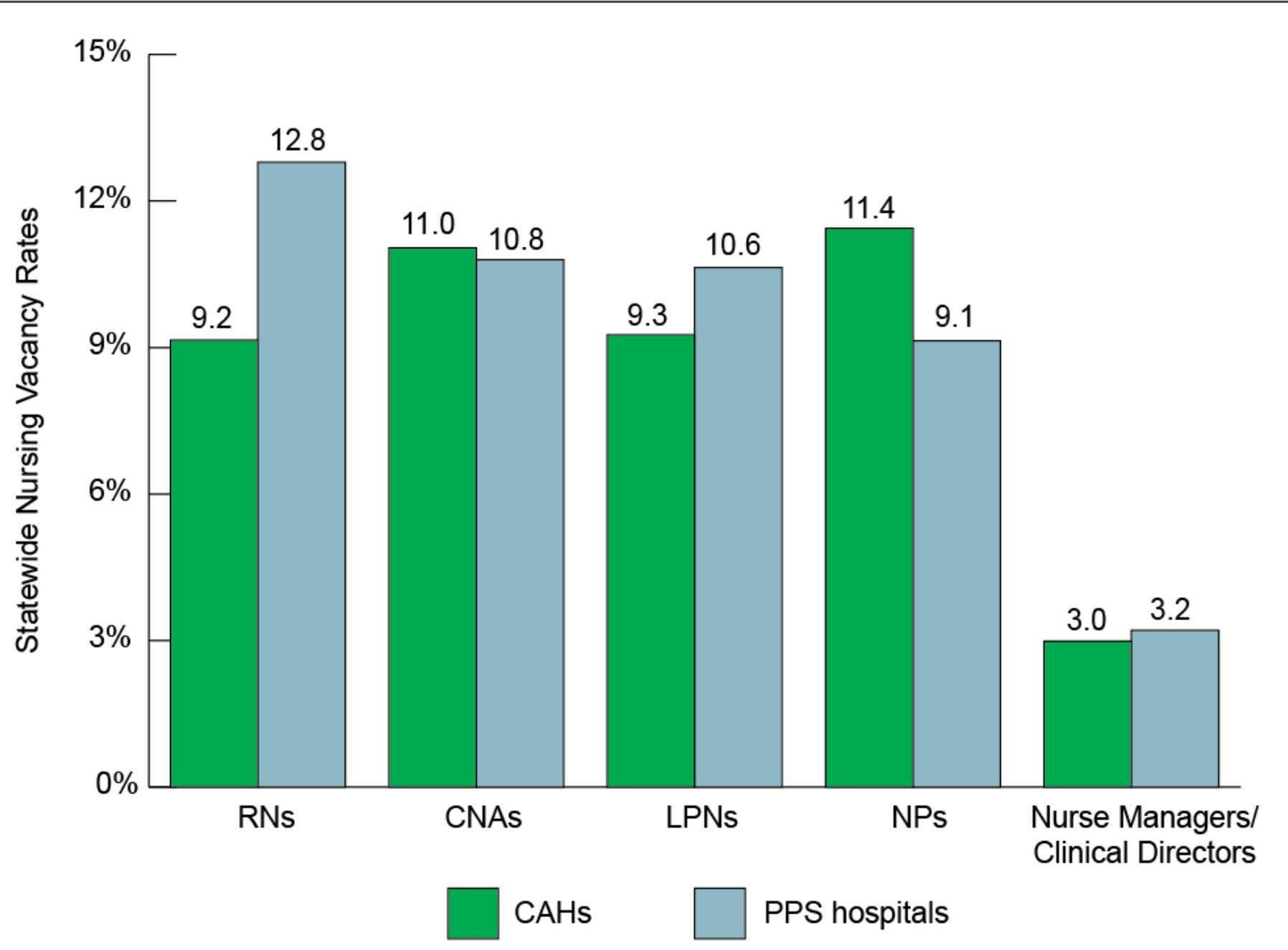
**Figure 5.3. Nursing employer location by rural designation.<sup>2</sup>**



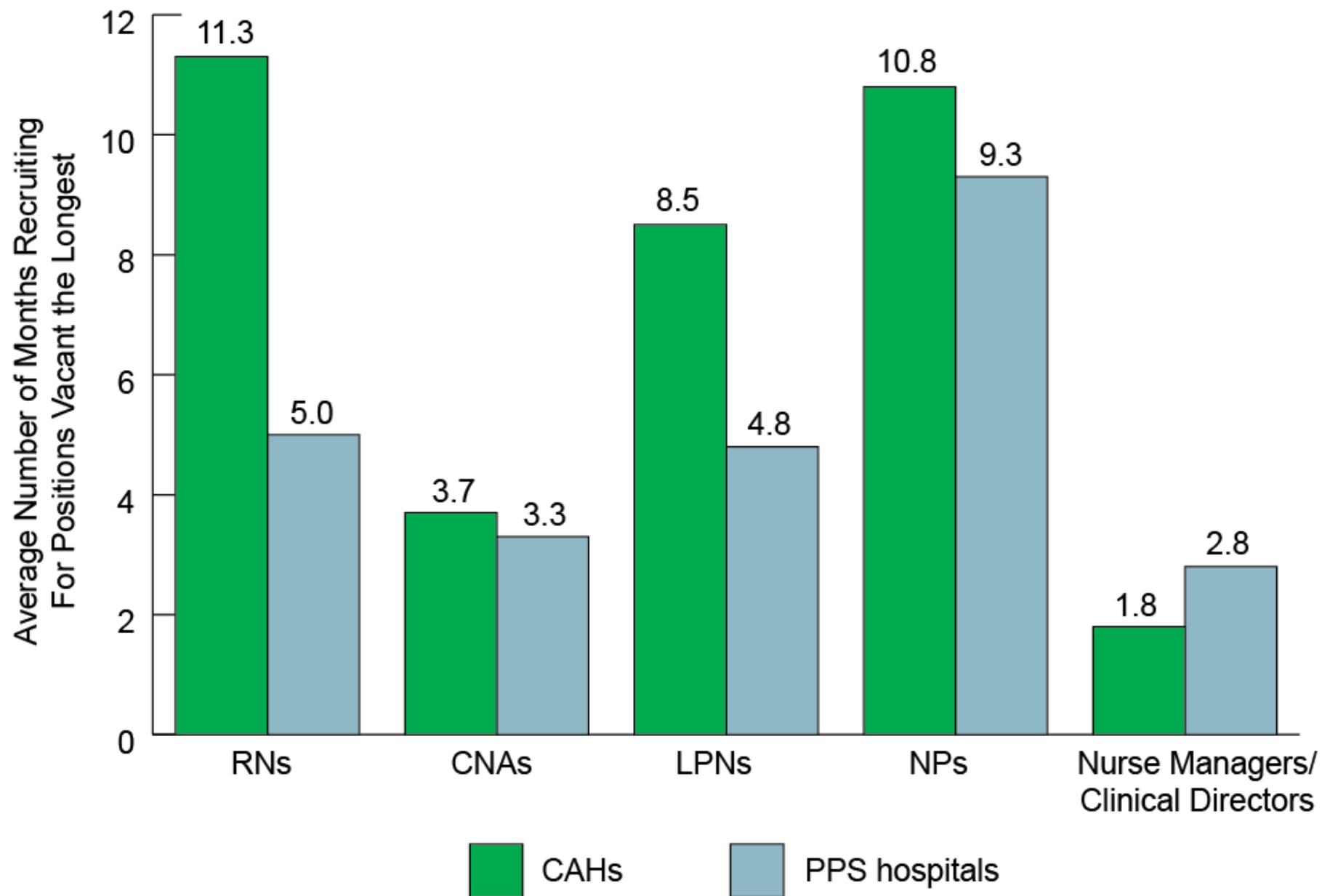
**Figure 5.4. Nurses licensed in ND and their state of educational preparation (Other = states with n<185).<sup>2</sup>**



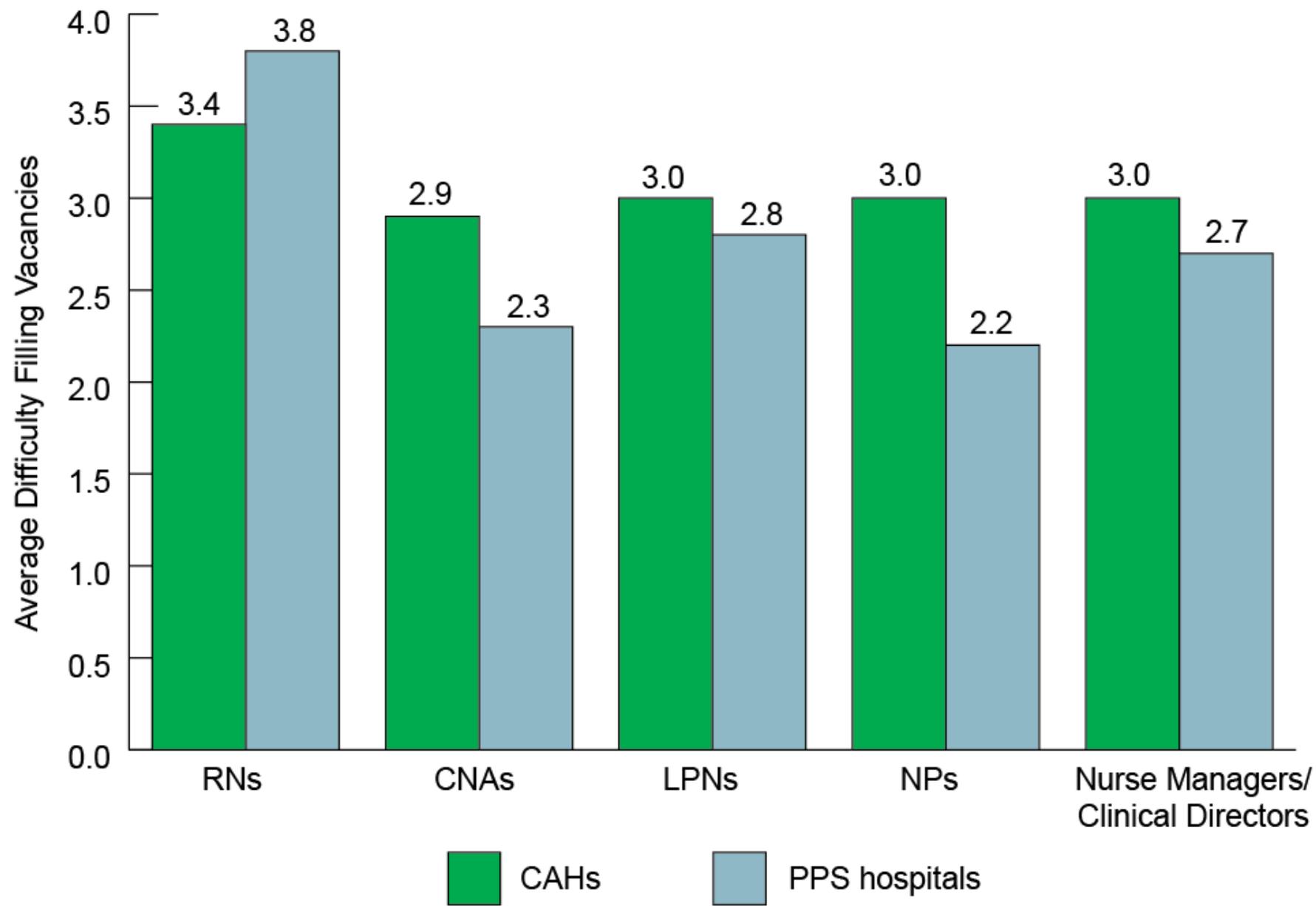
**Figure 5.5. CAH and PPS hospital workforce FTE internal and contract employees by nursing position type.<sup>3</sup>**



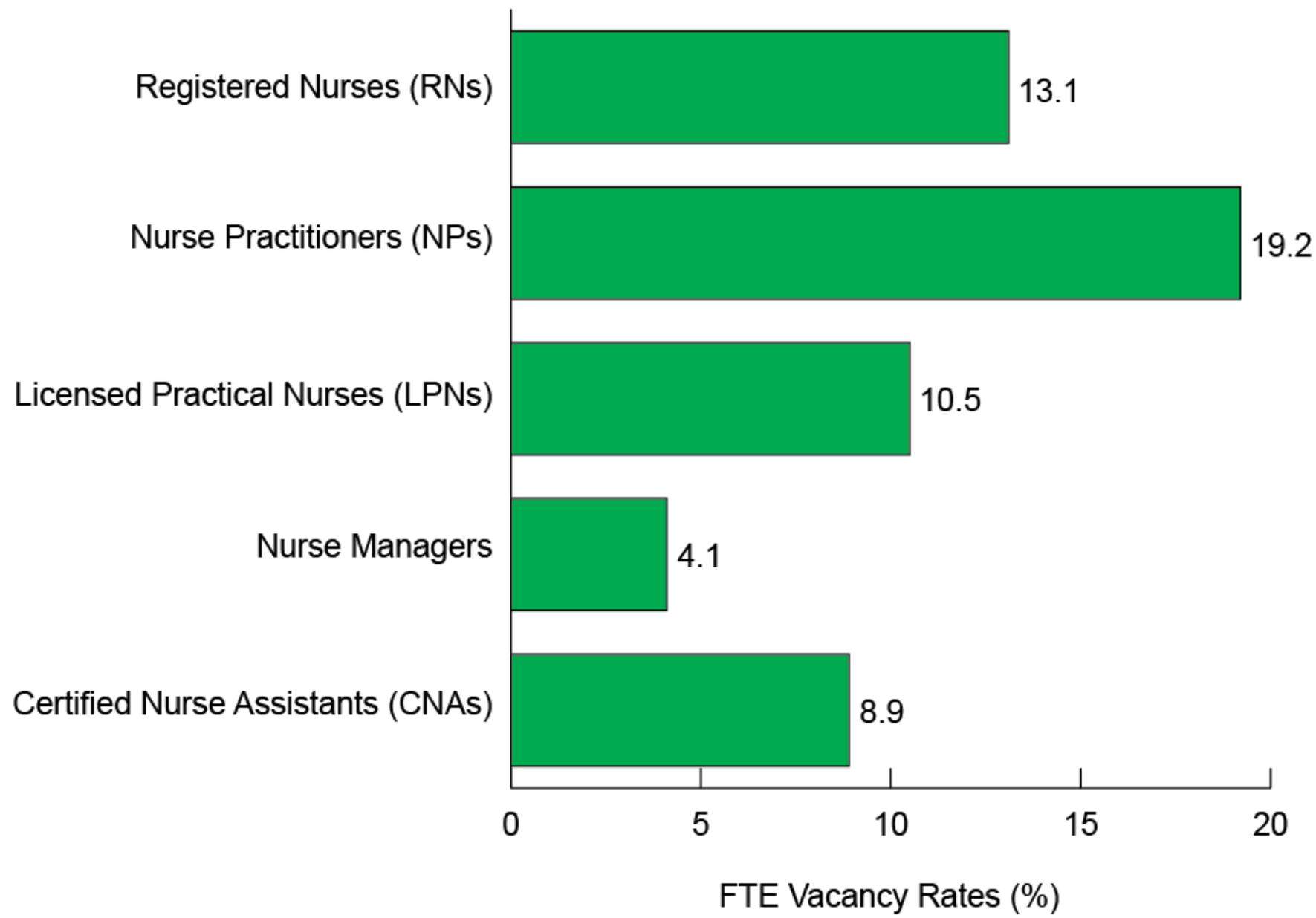
**Figure 5.6. Statewide CAH and PPS hospital nursing workforce vacancy rates.<sup>3</sup>**



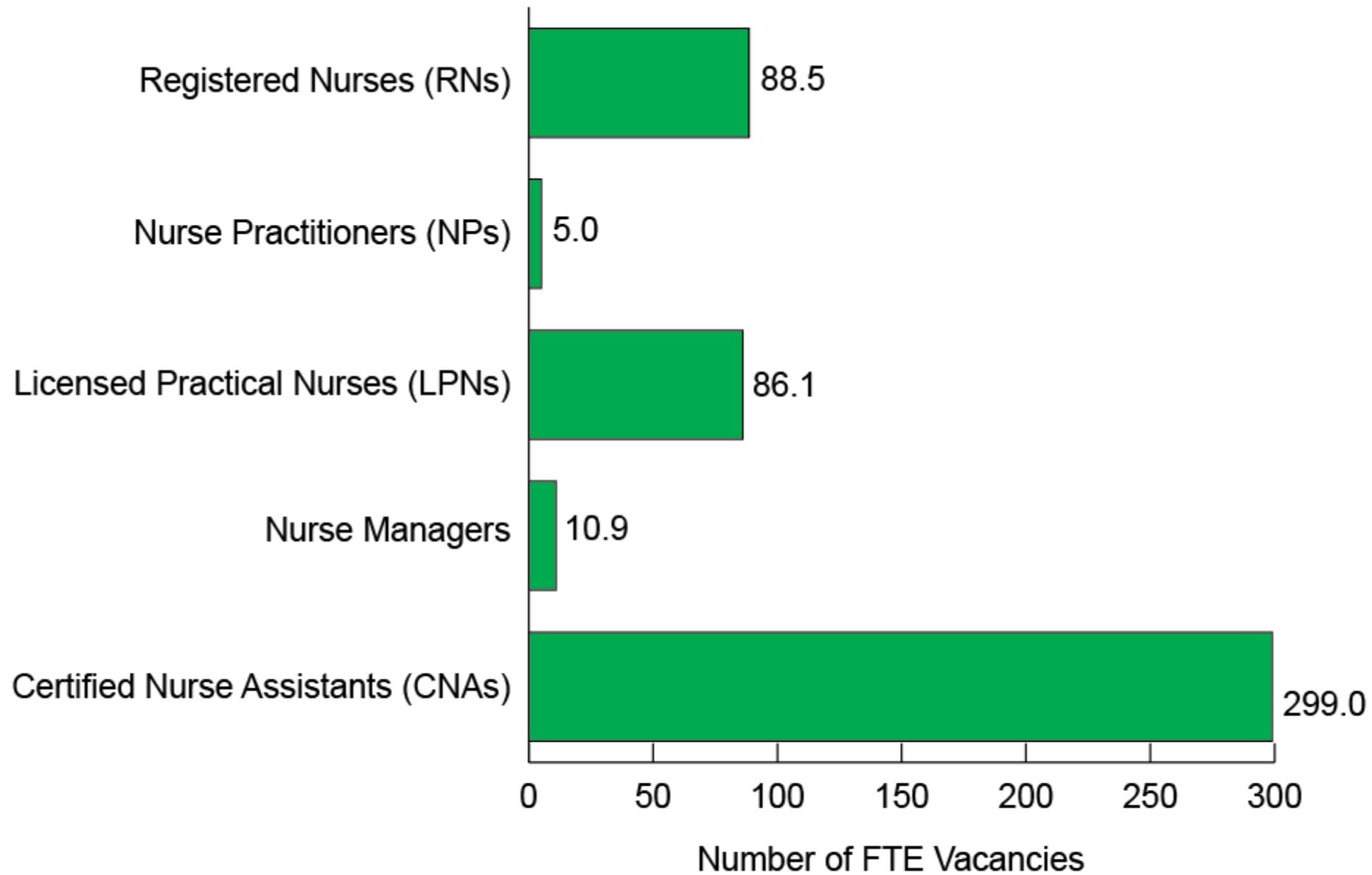
**Figure 5.7. Number of months vacant positions existed in CAHs and PPS hospitals.<sup>3</sup>**



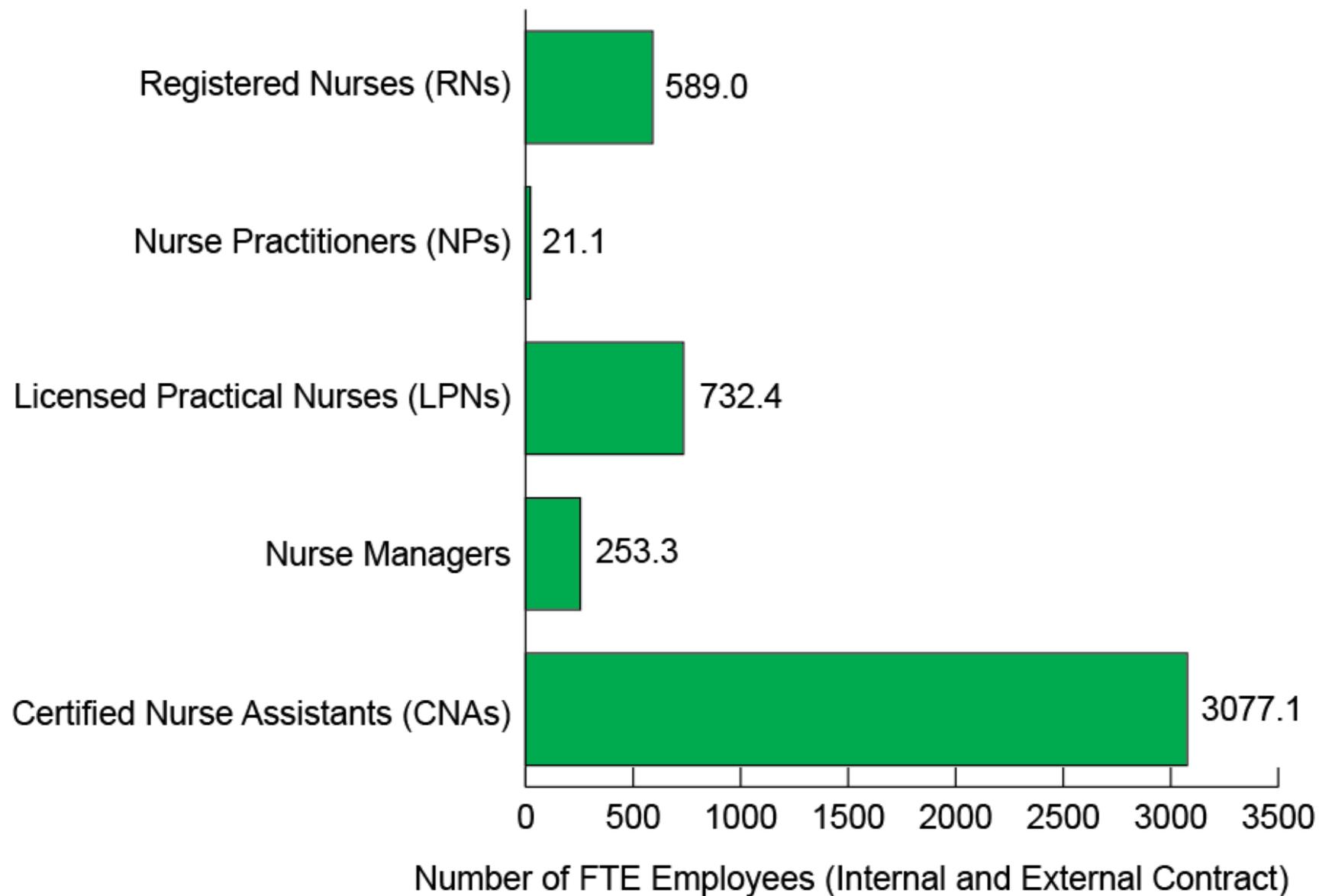
**Figure 5.8. CAH and PPS hospital CEO ratings of difficulty recruiting by nurse position type.<sup>3</sup>**



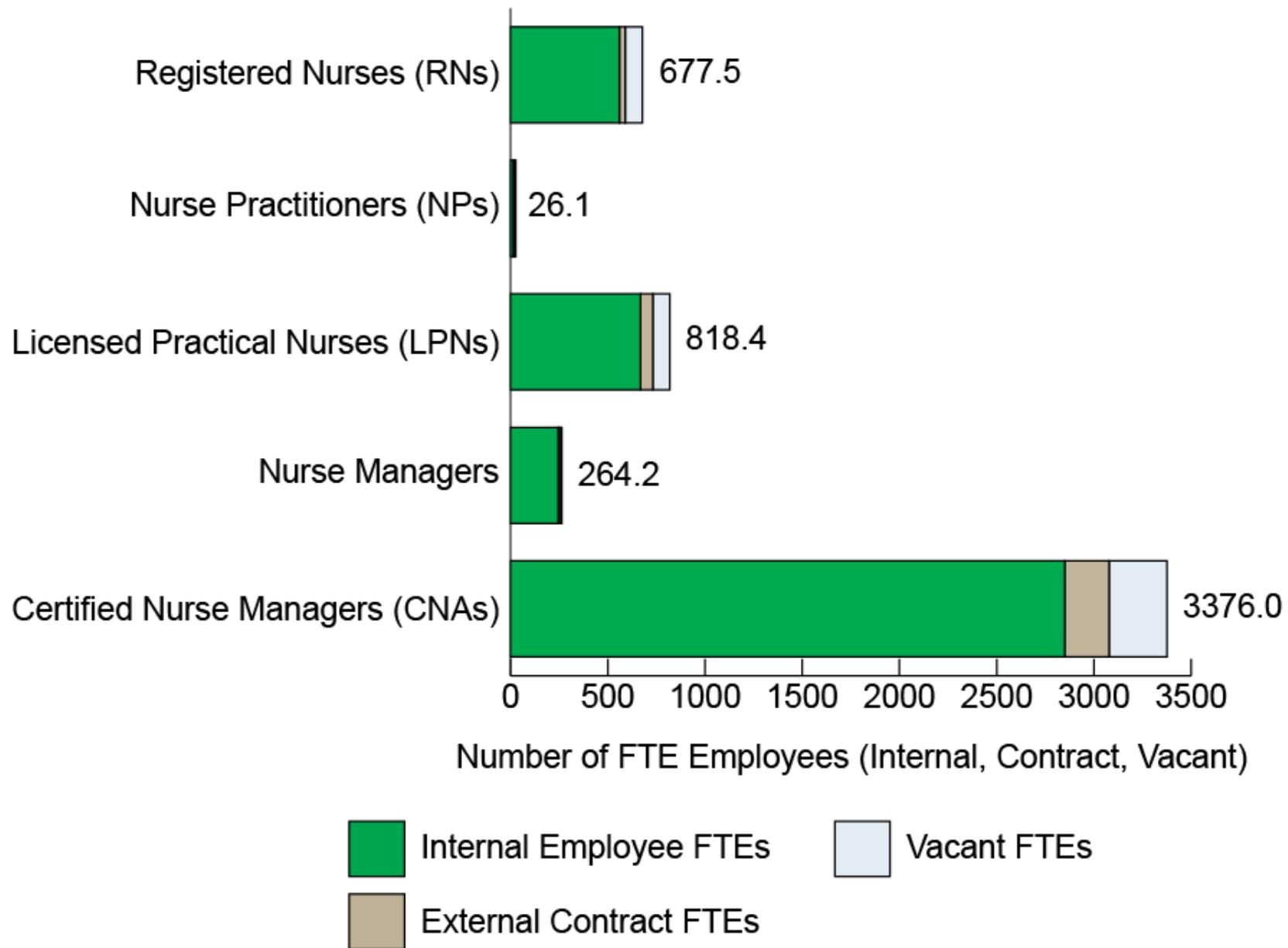
**Figure 5.9. Statewide nursing facility workforce vacancy rates.<sup>5</sup>**



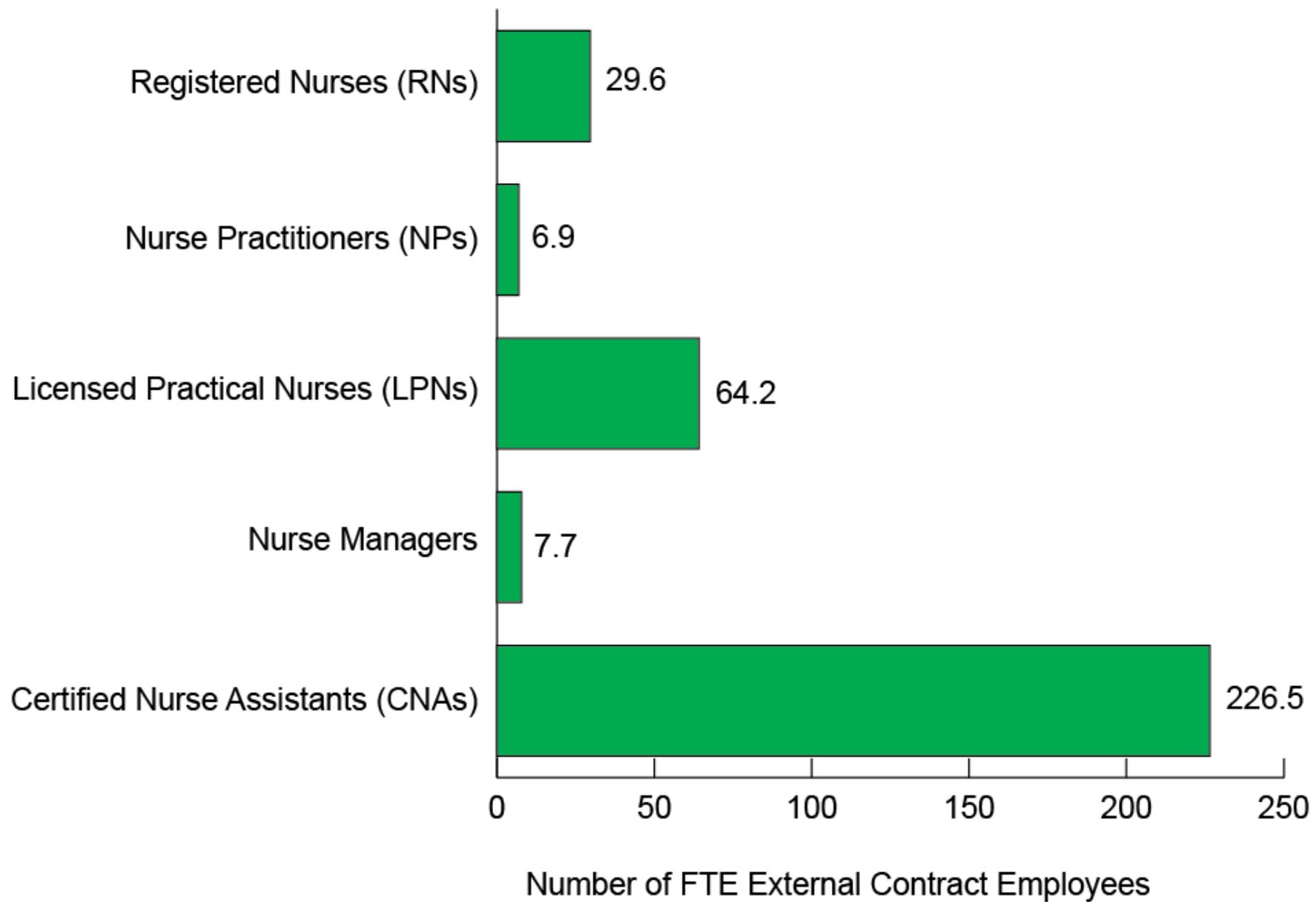
**Figure 5.10. Statewide nursing facility workforce FTE vacancies by nursing position type.<sup>5</sup>**



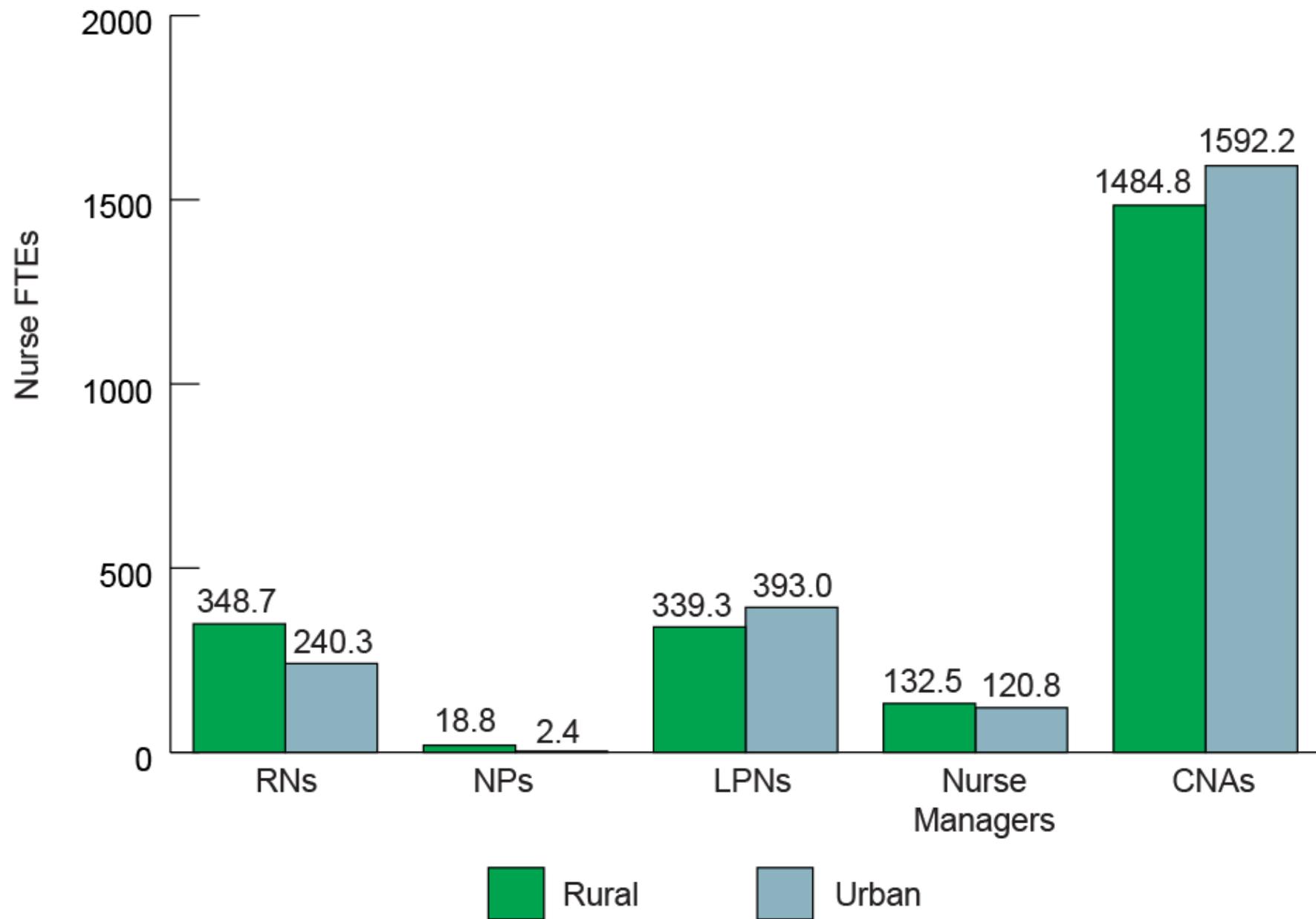
**Figure 5.11. Nursing facility workforce FTE internal and contract employees by nursing position type.<sup>5</sup>**



**Figure 5.12. Nursing facility workforce FTE internal/contract employees/vacancies to nursing position type.<sup>5</sup>**



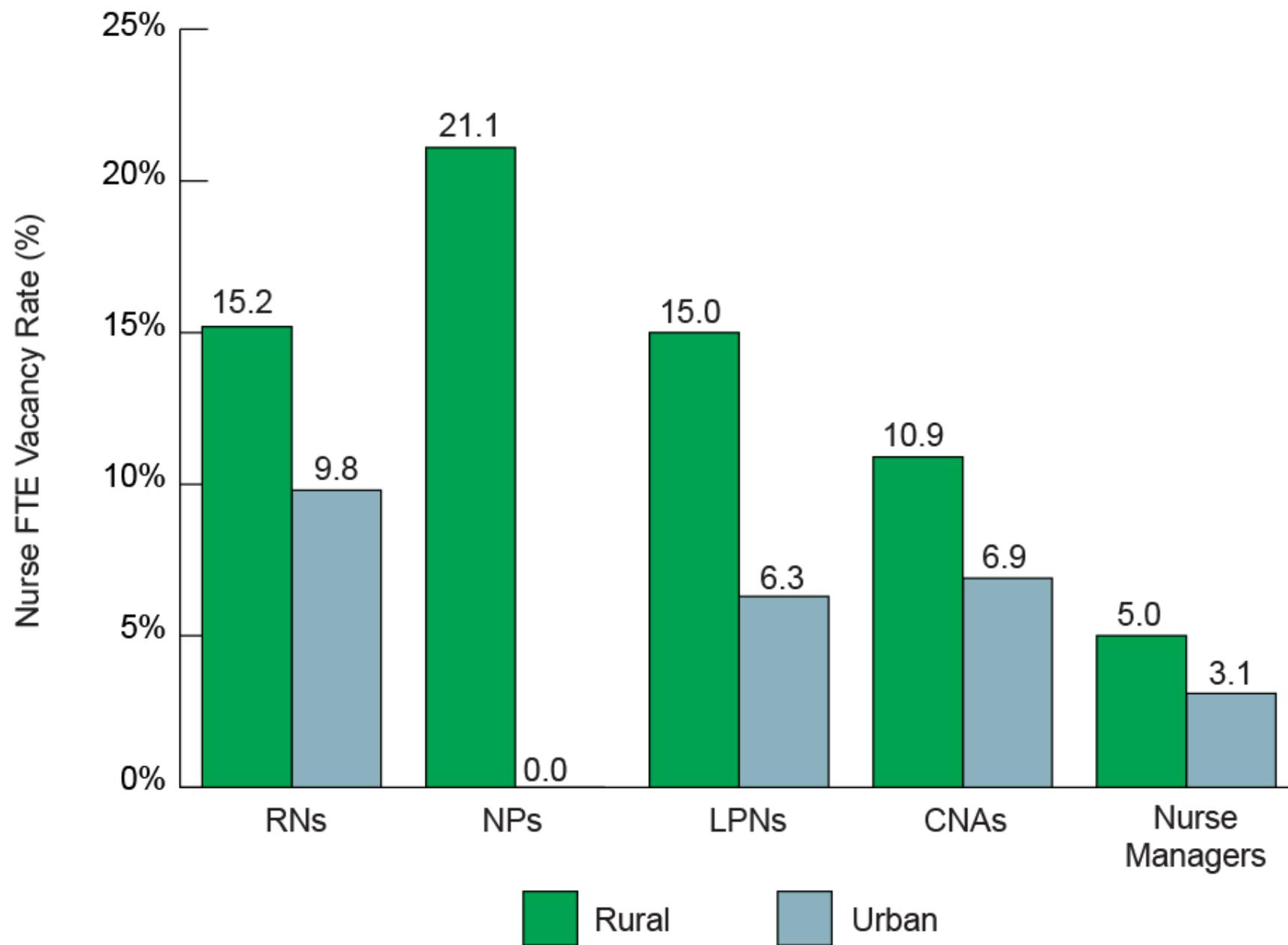
**Figure 5.13. Statewide nursing facility workforce FTE contract employees by nursing position type.<sup>5</sup>**



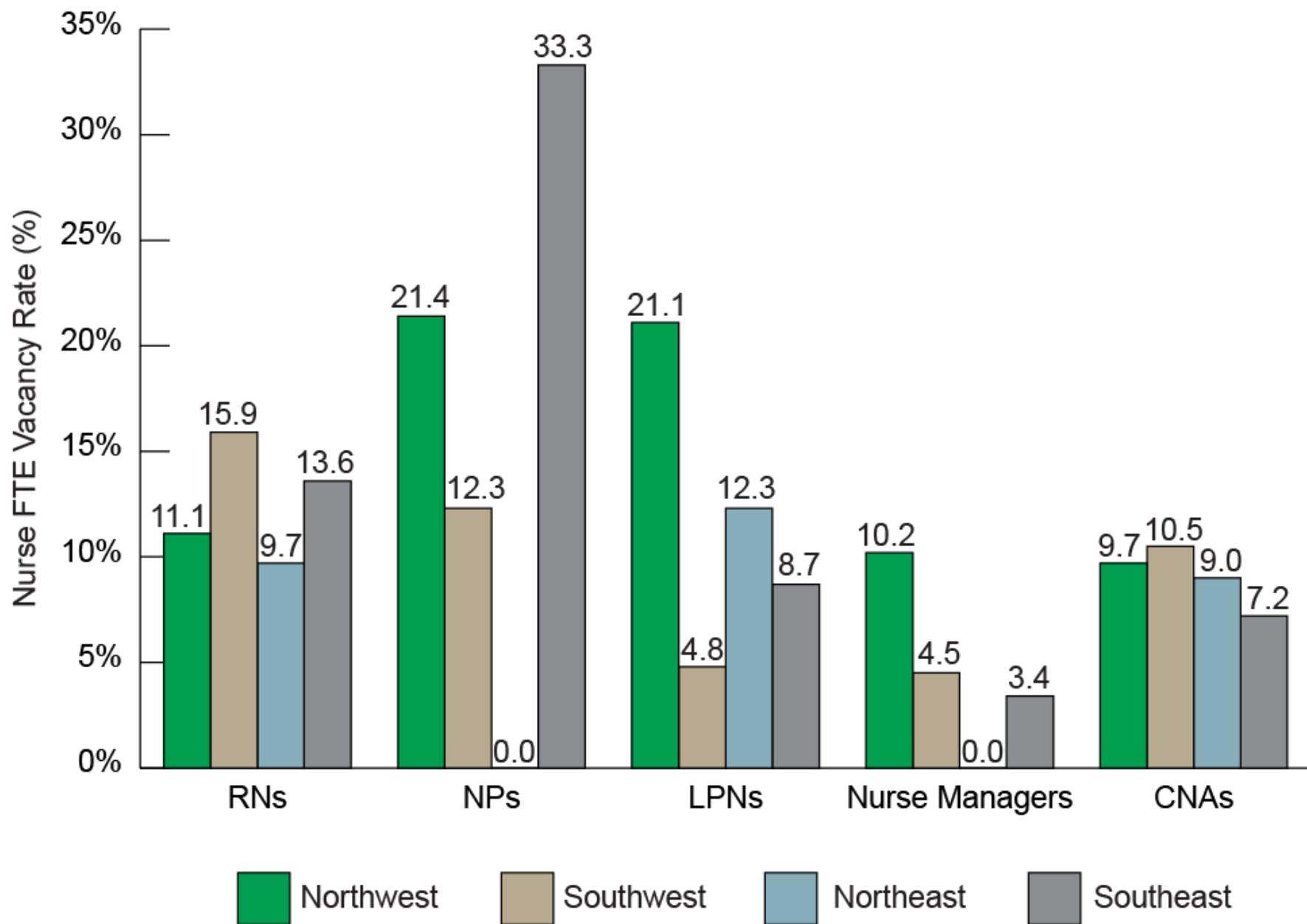
**Figure 5.14. Statewide number of nurse FTEs employed by type.<sup>5</sup>**



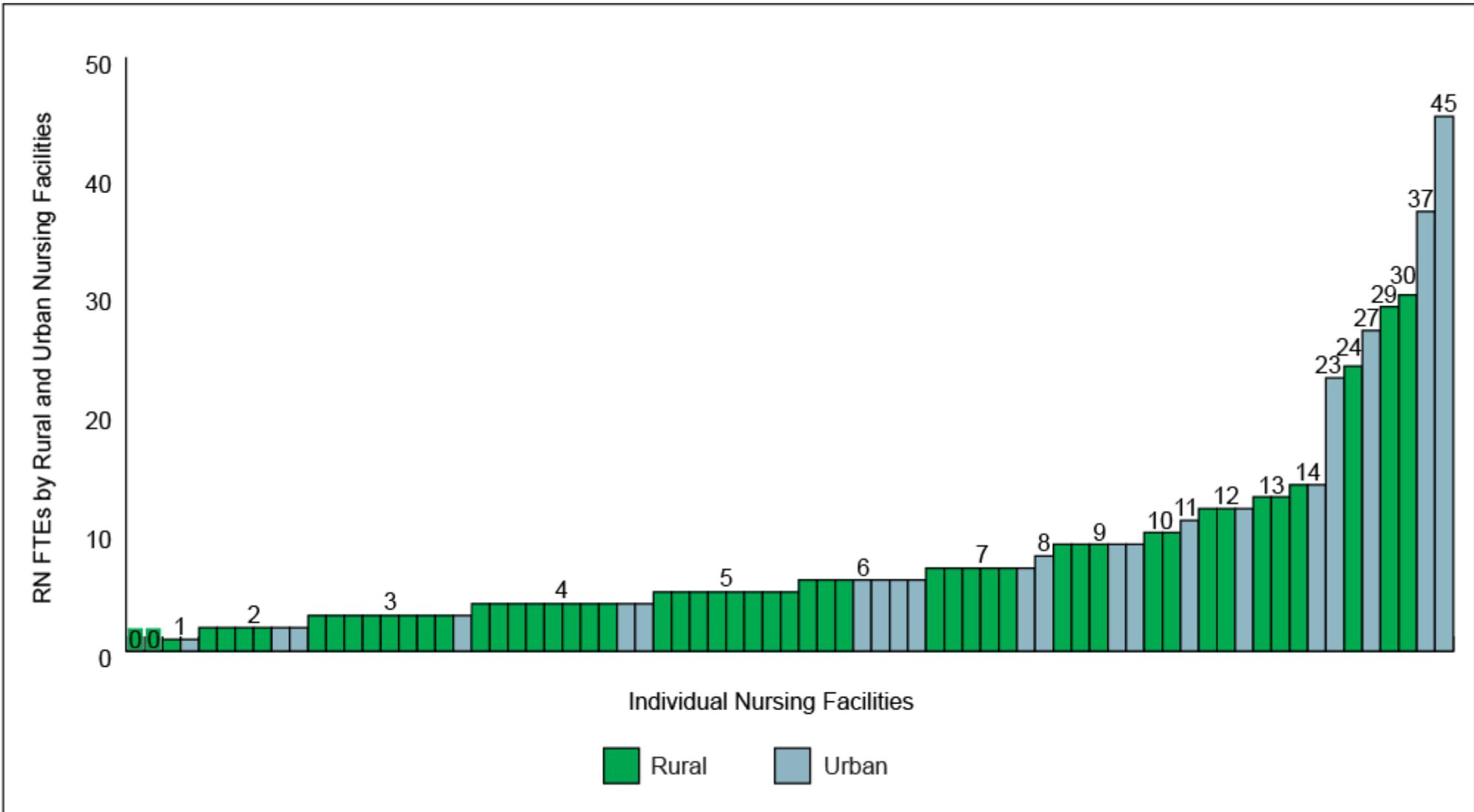
**Figure 5.15. Statewide number of nurse FTE vacancies by type.<sup>5</sup>**



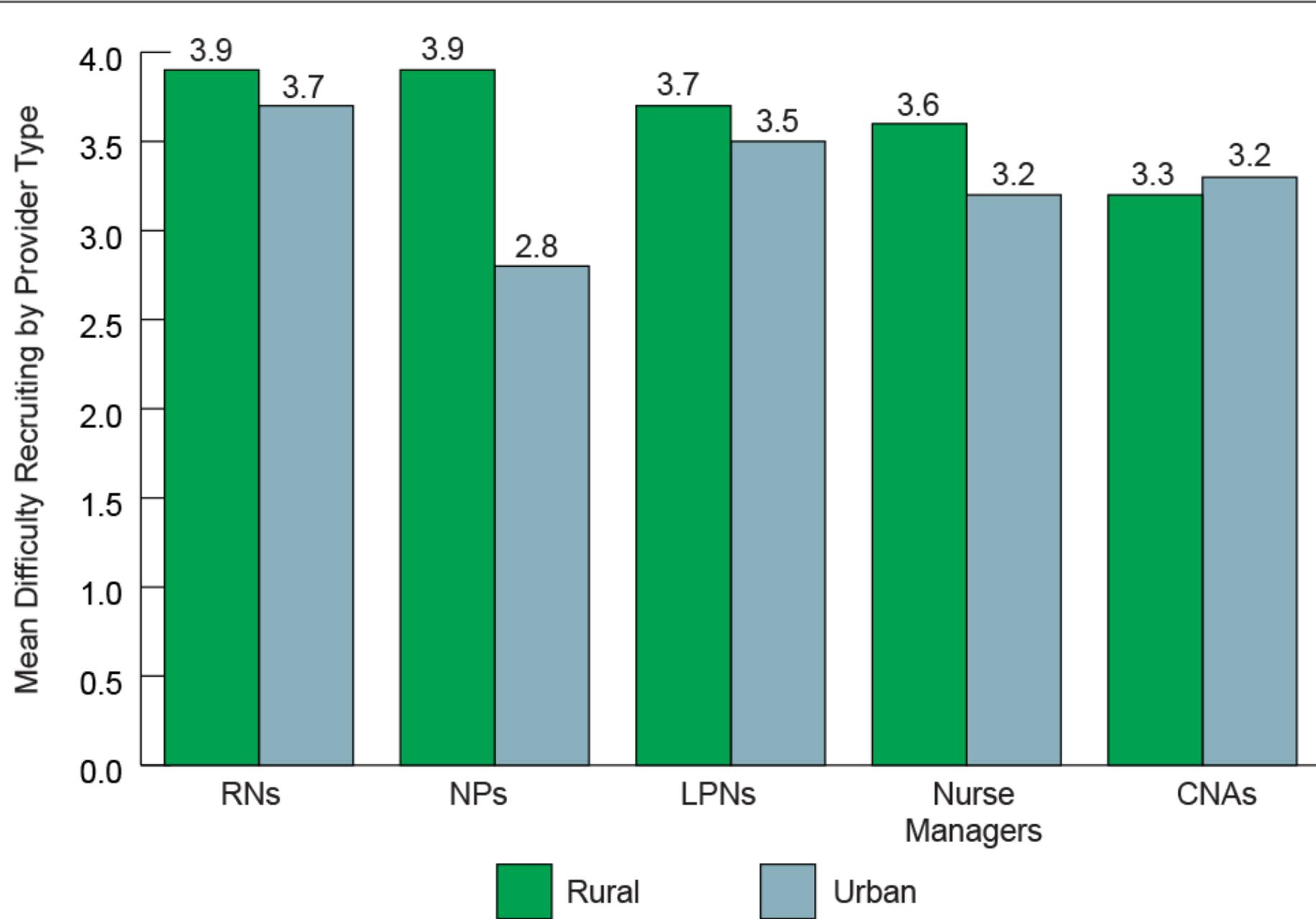
**Figure 5.16. Statewide nurse FTE vacancy rates by type.<sup>5</sup>**



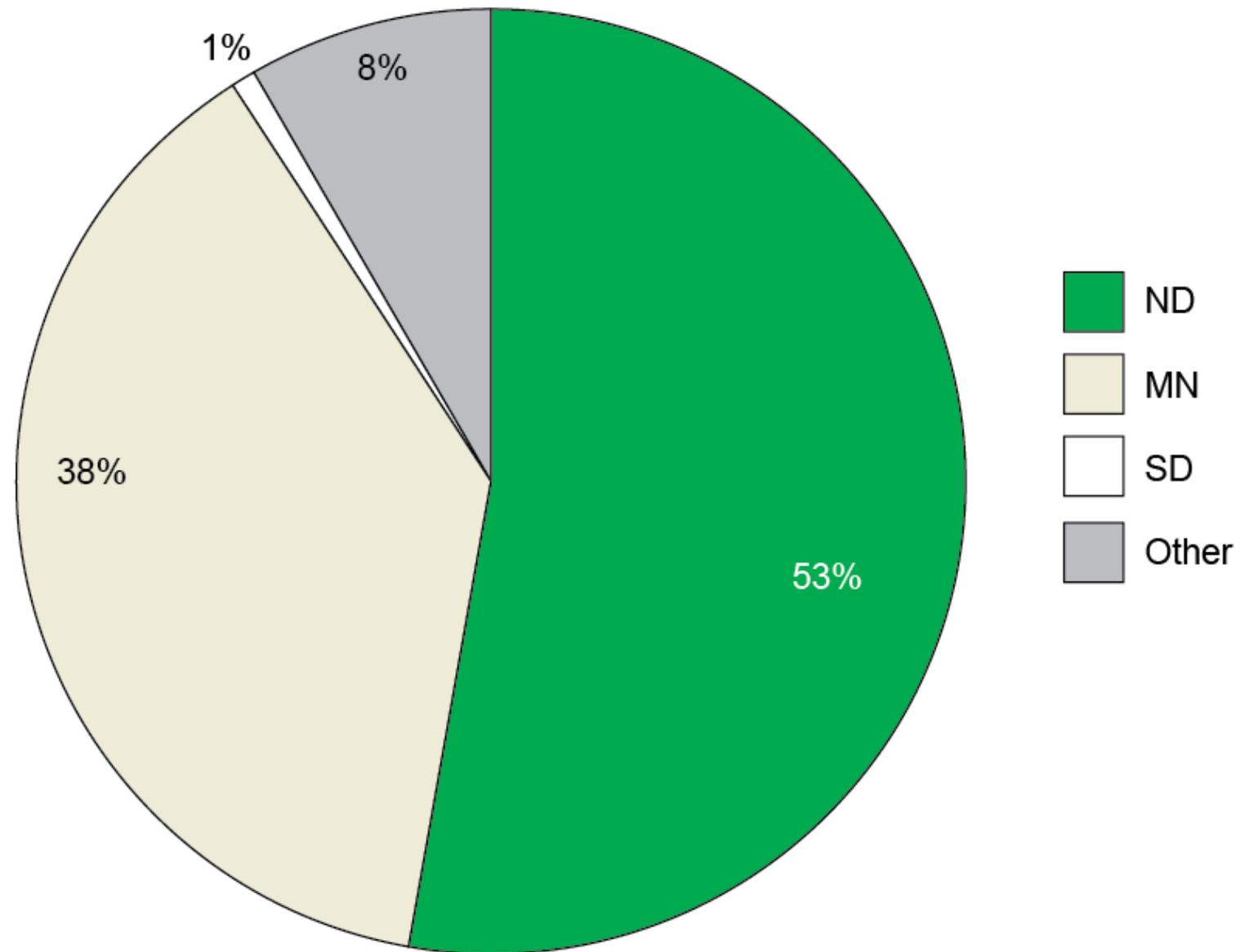
**Figure 5.17. Statewide nurse FTE vacancy rates by type.<sup>5</sup>**



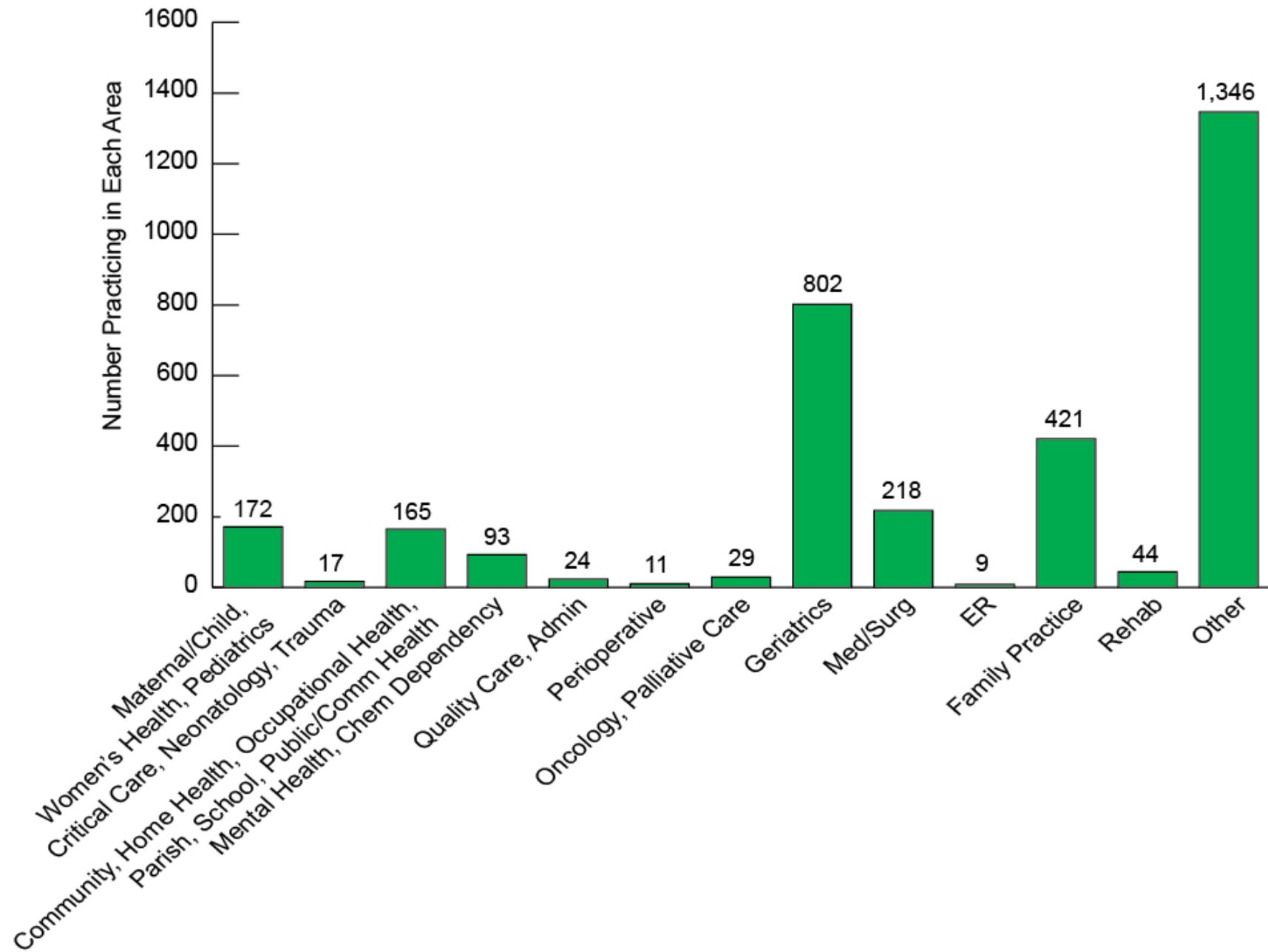
**Figure 5.18. FTE internal employee and external contract employee RNs by nursing facilities.<sup>5</sup>**



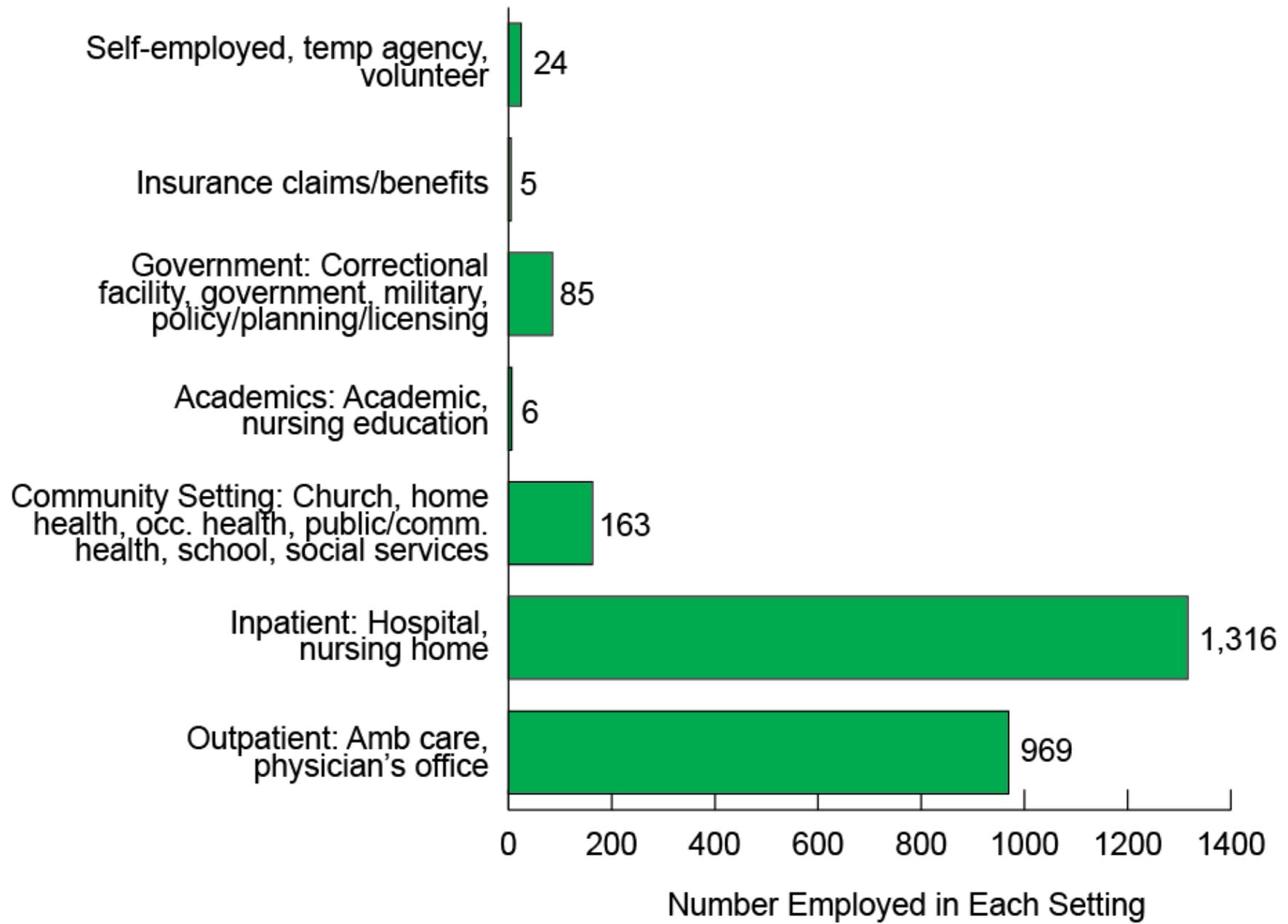
**Figure 5.19. Nursing facility CEO ratings of difficulty recruiting by nurse position type.<sup>5</sup>**



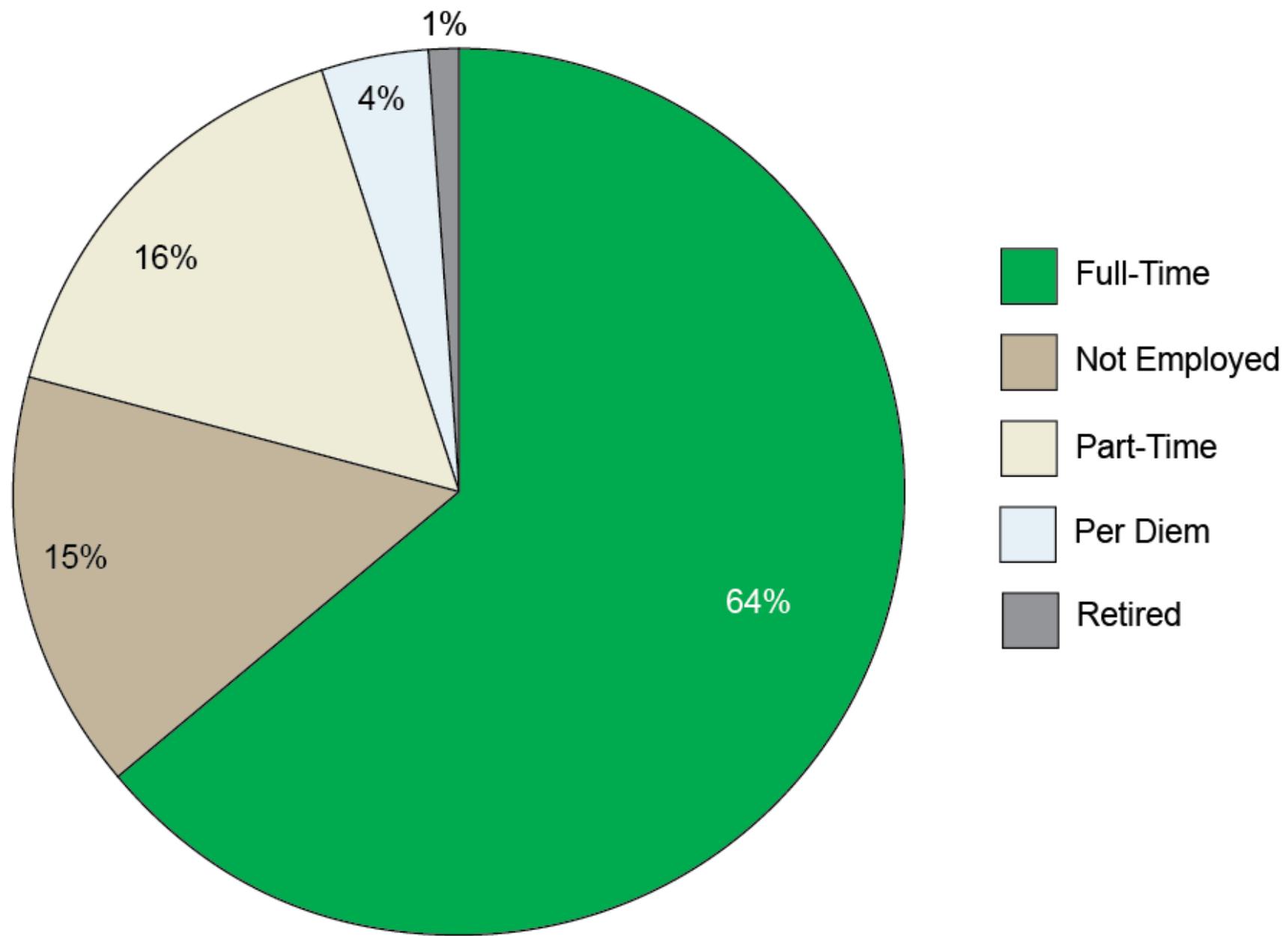
**Figure 5.20.** Location where LPNs received their initial education (Other = n<17).<sup>2</sup>



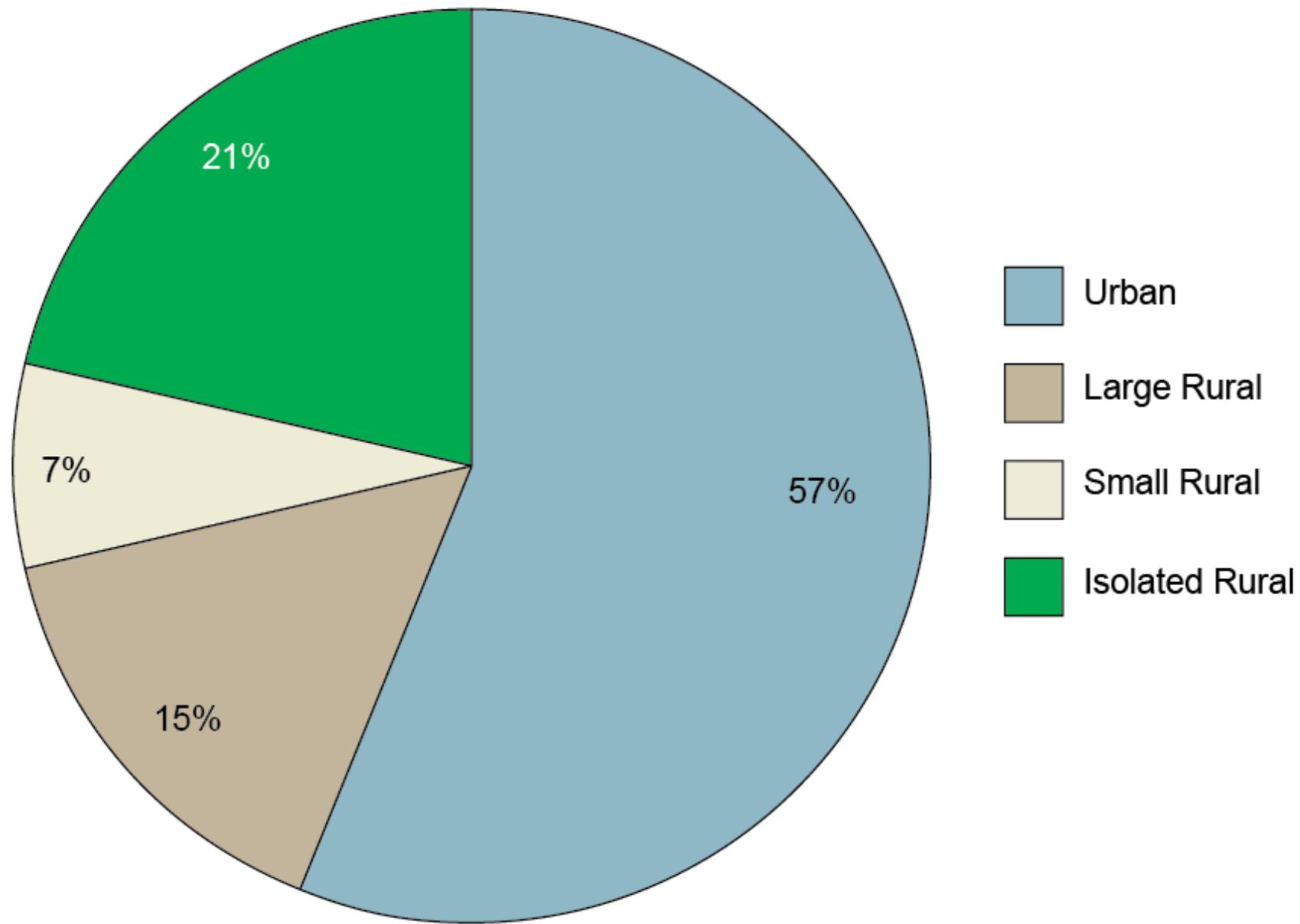
**Figure 5.21. LPNs' current practice area.<sup>2</sup>**



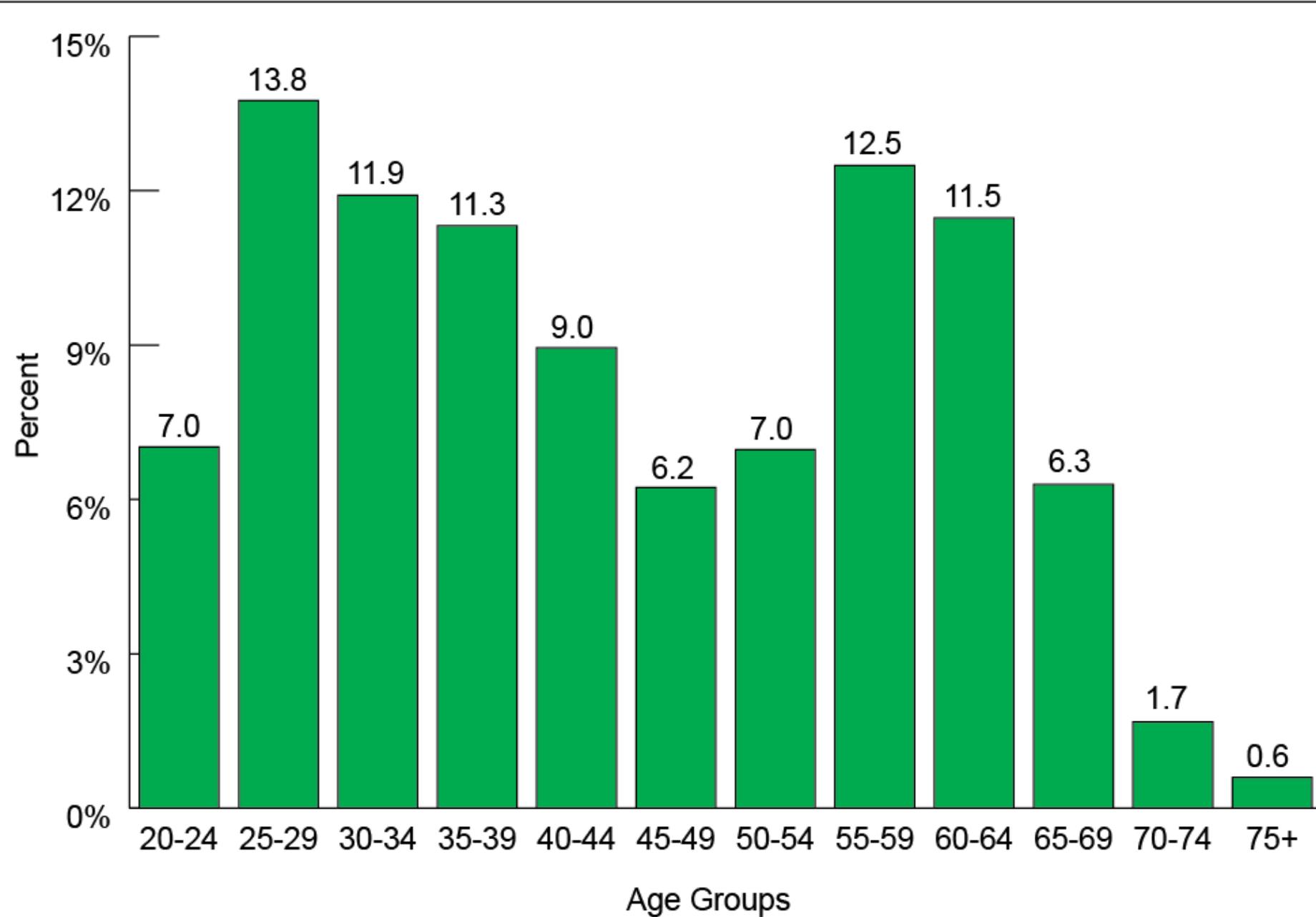
**Figure 5.22. LPNs' employment settings.<sup>2</sup>**



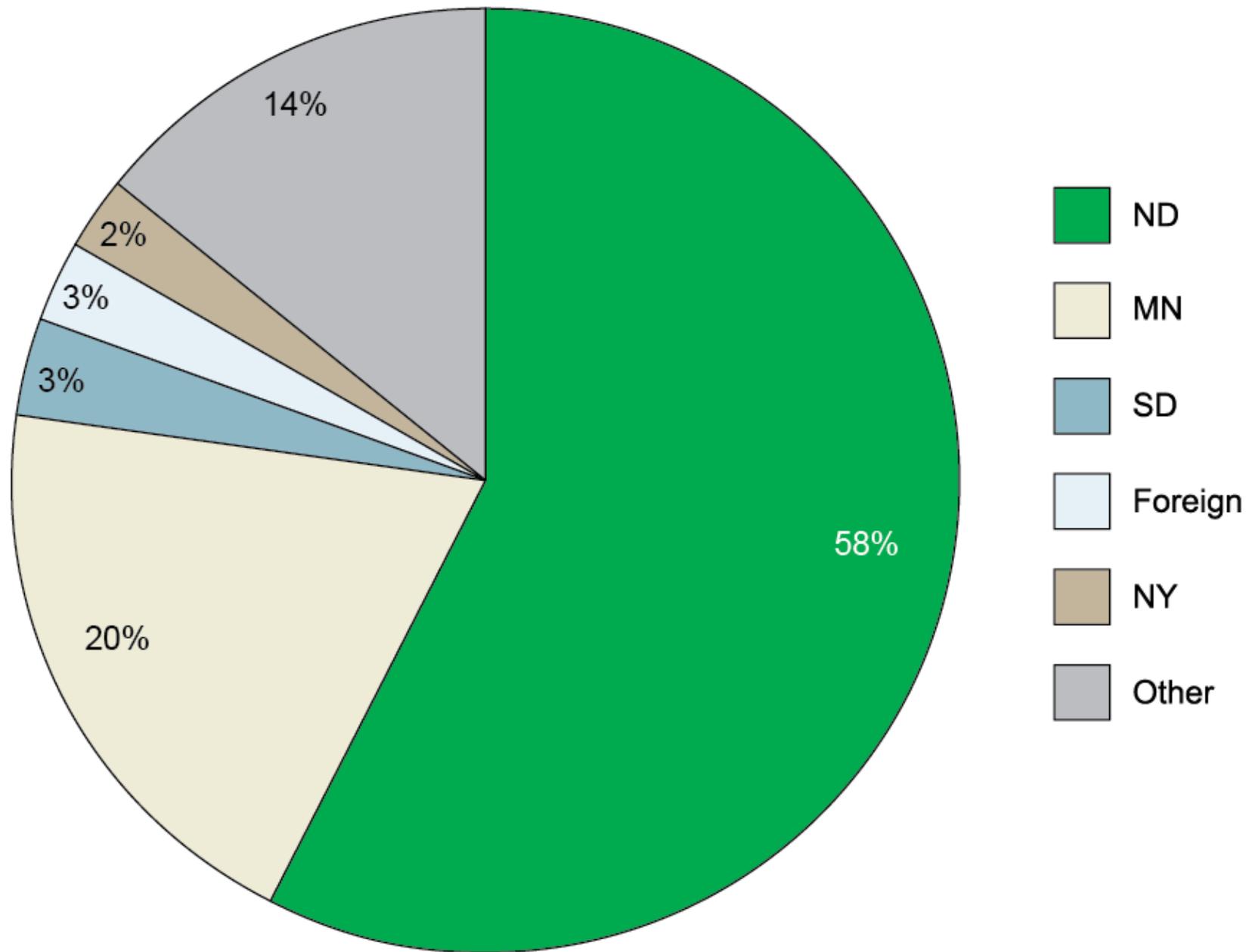
**Figure 5.23. LPNs' employment status.<sup>2</sup>**



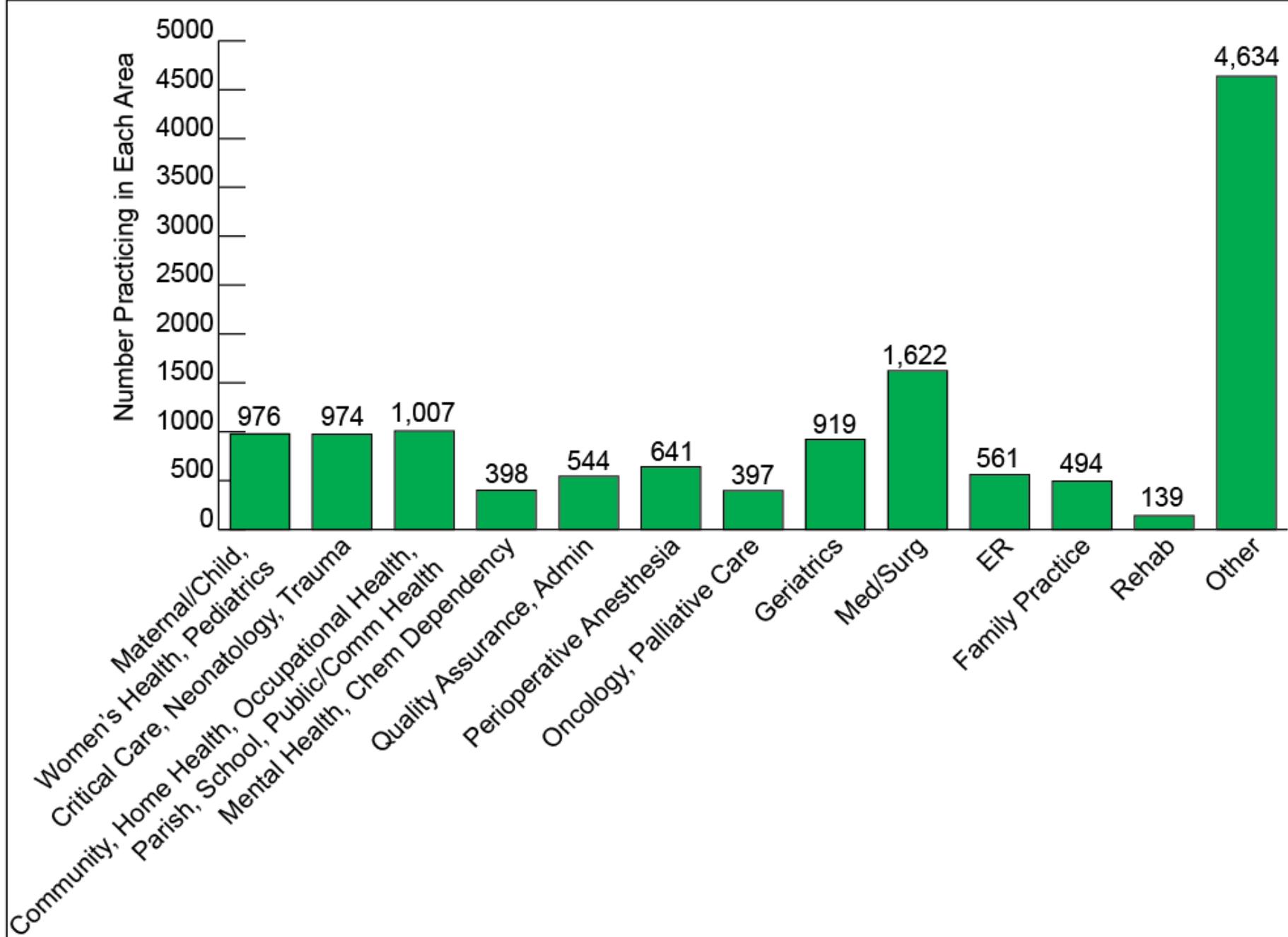
**Figure 5.24.** LPNs' employment based on RUCA code.<sup>2</sup>



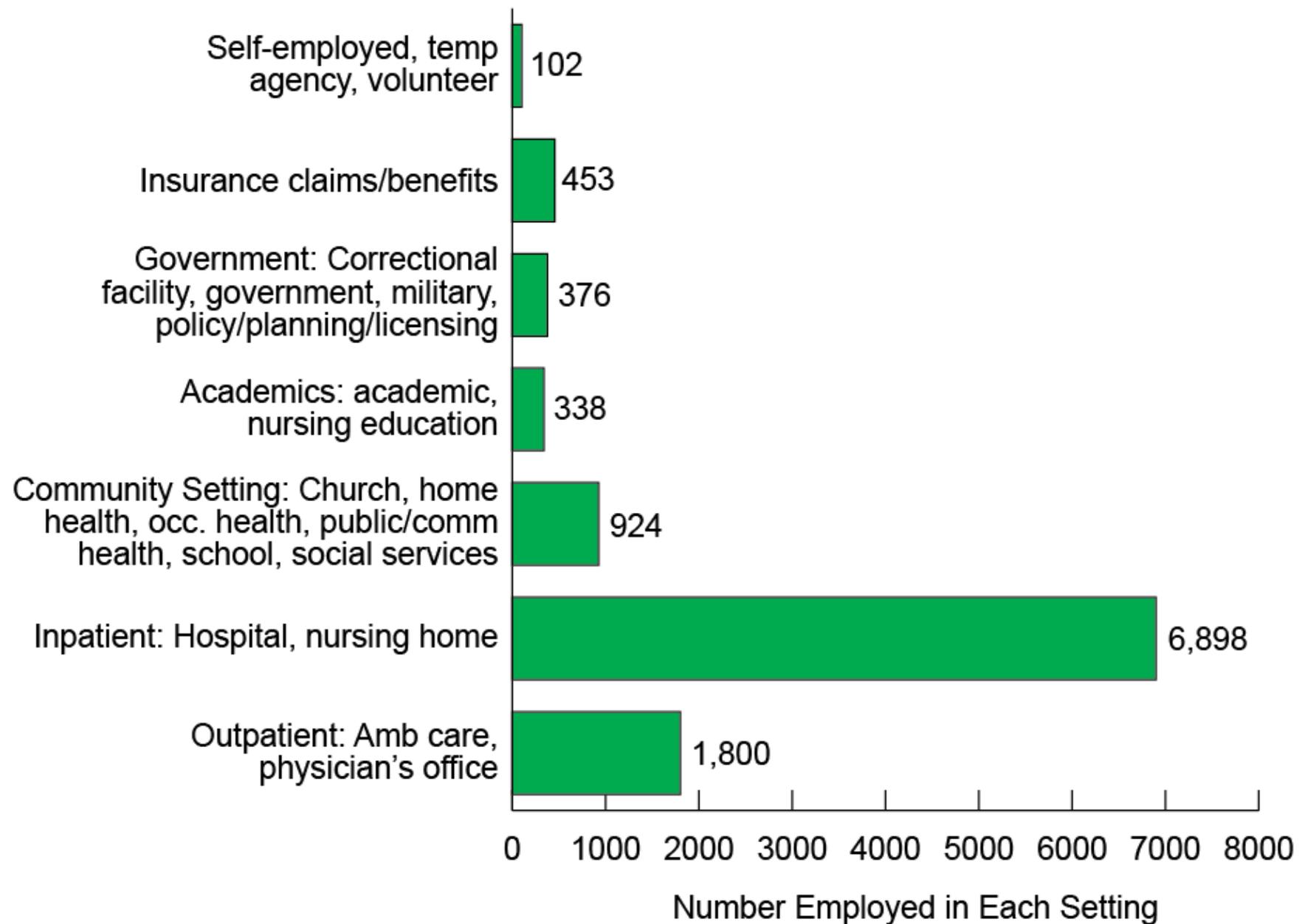
**Figure 5.25. Age ranges for LPNs.<sup>2</sup>**



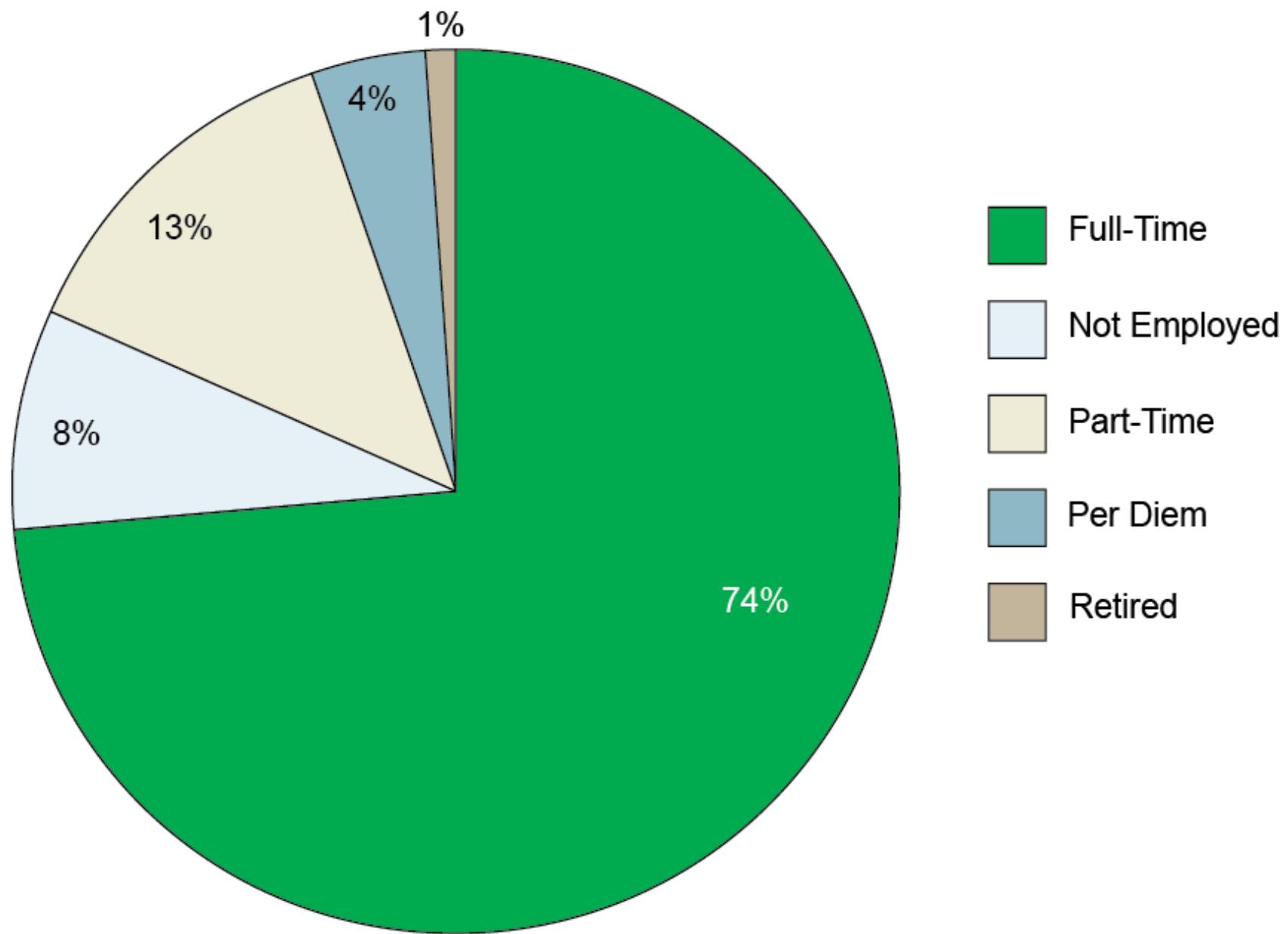
**Figure 5.26.** Locations where RNs received their initial education (Other = n<170 each).<sup>2</sup>



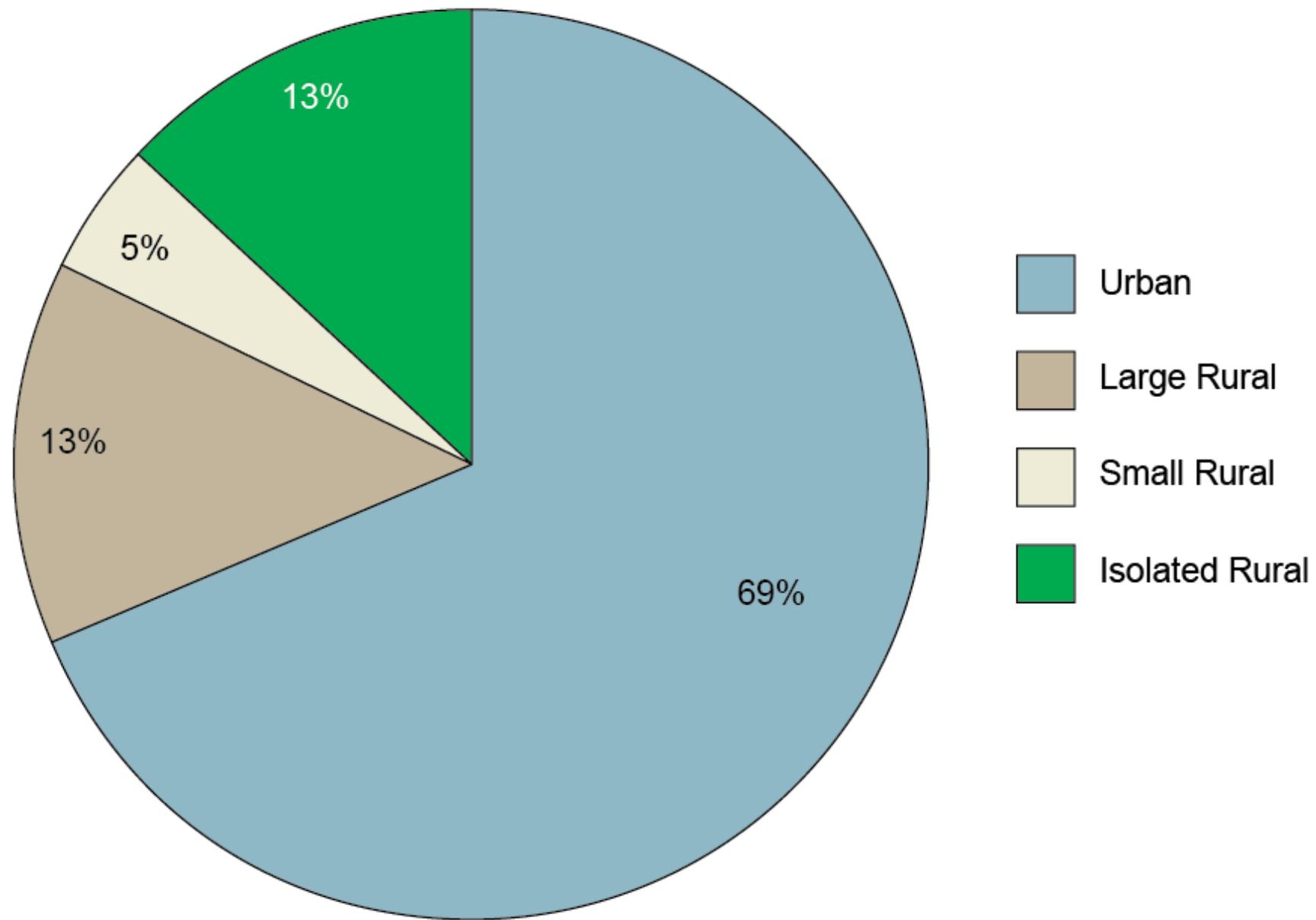
**Figure 5.27. RNs' current practice area.<sup>2</sup>**



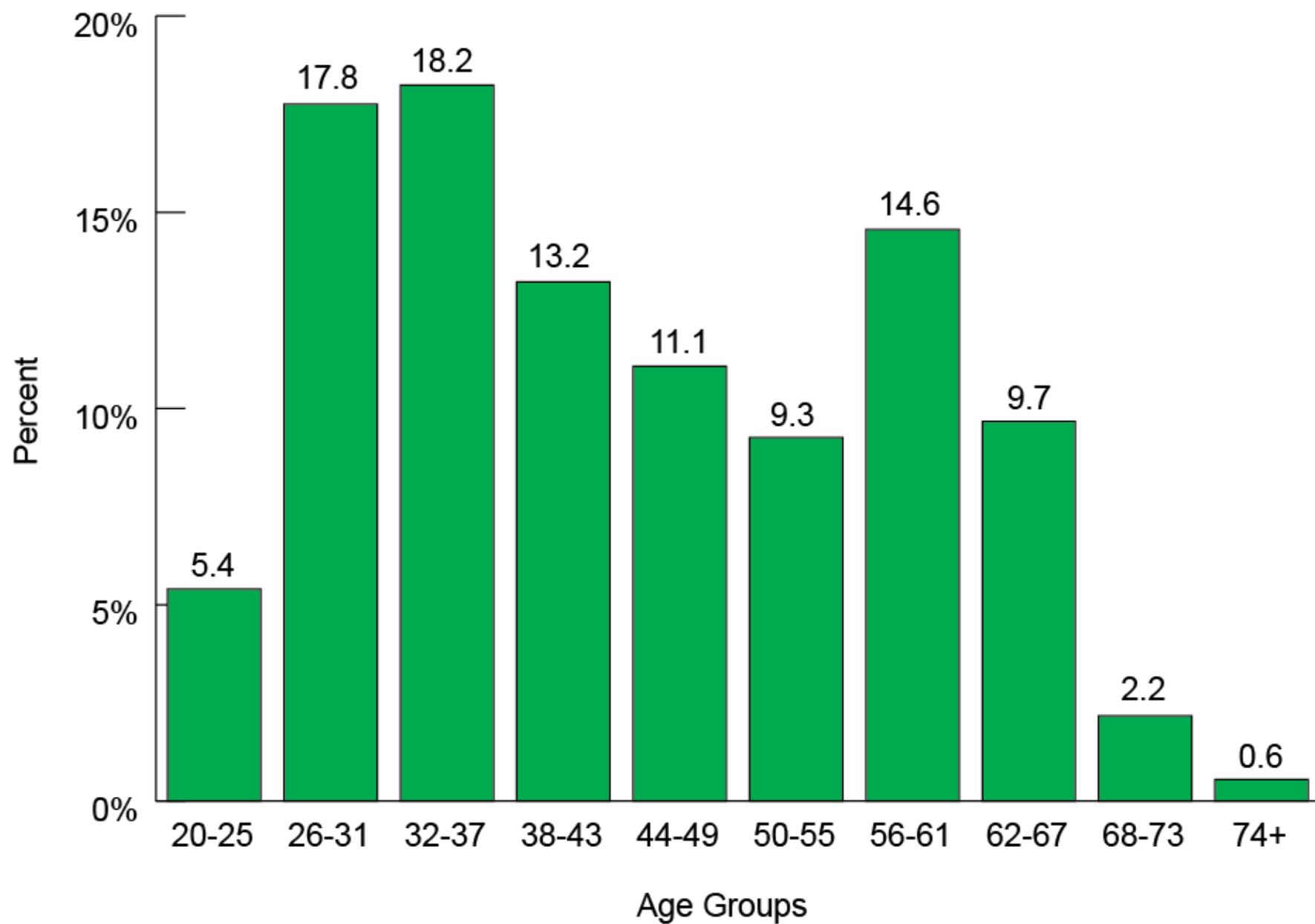
**Figure 5.28. RNs' employment settings.<sup>2</sup>**



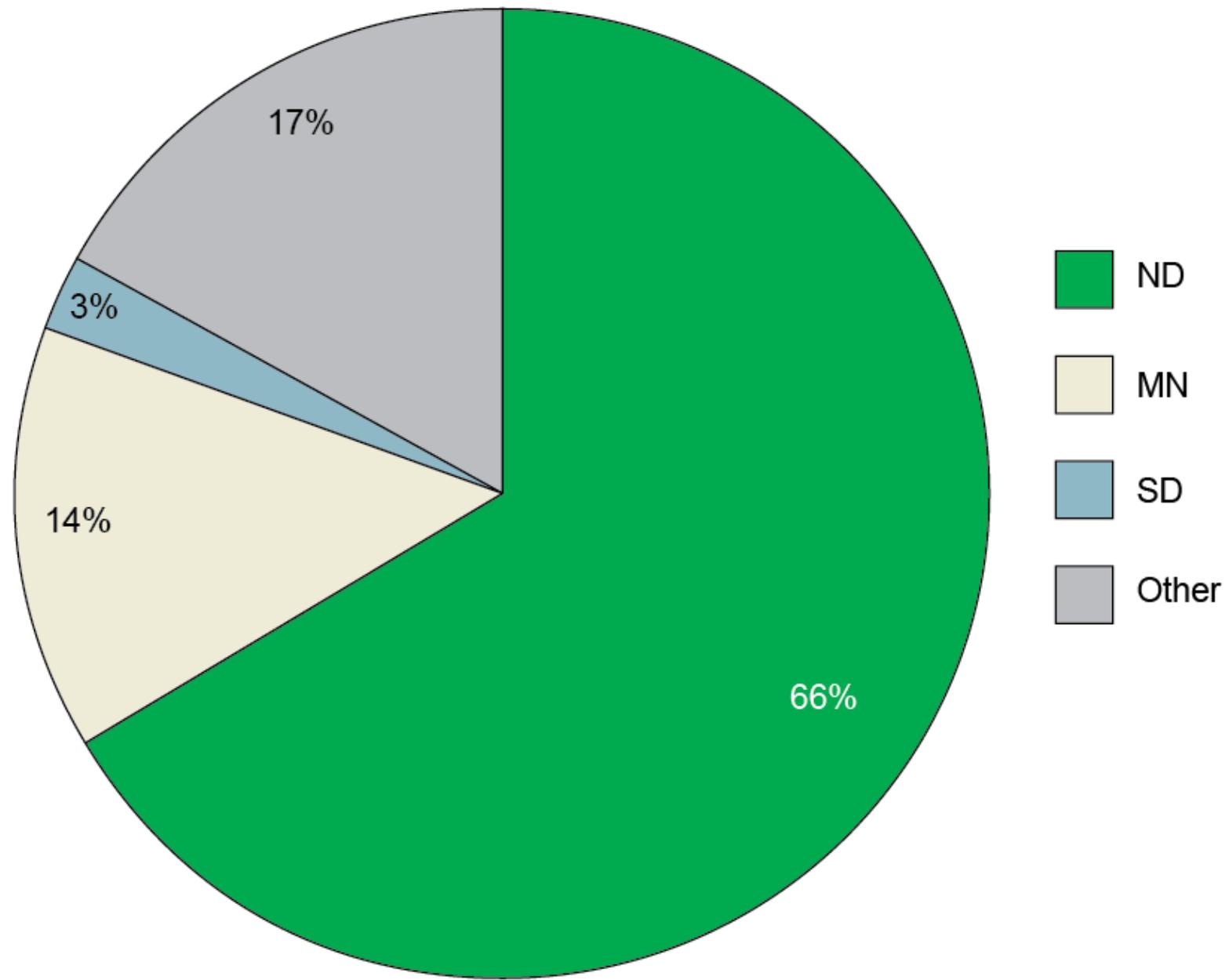
**Figure 5.29. RNs' employment status.<sup>2</sup>**



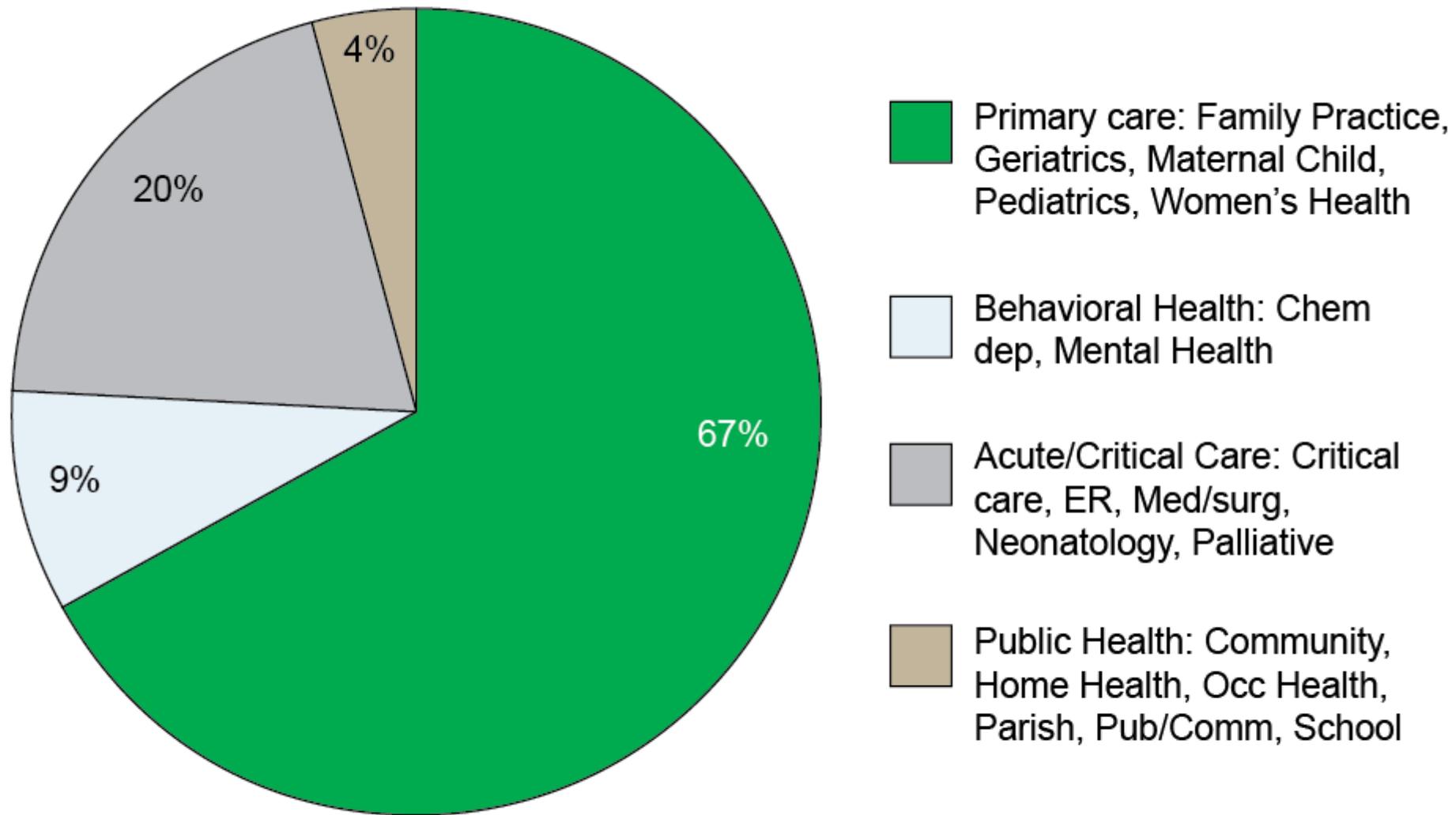
**Figure 5.30. RNs' employment based on RUCA code.<sup>2</sup>**



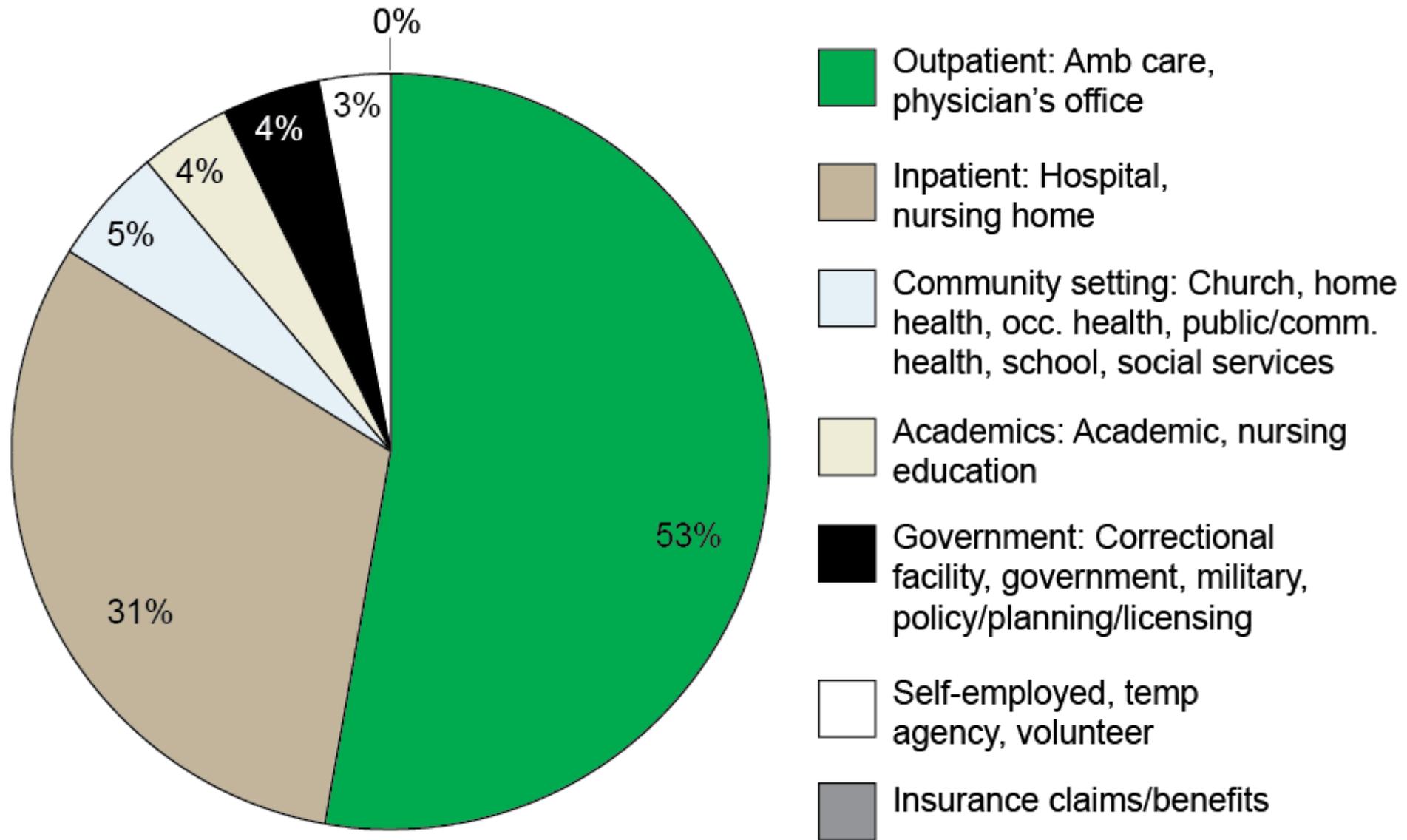
**Figure 5.31. Age ranges for RNs.<sup>2</sup>**



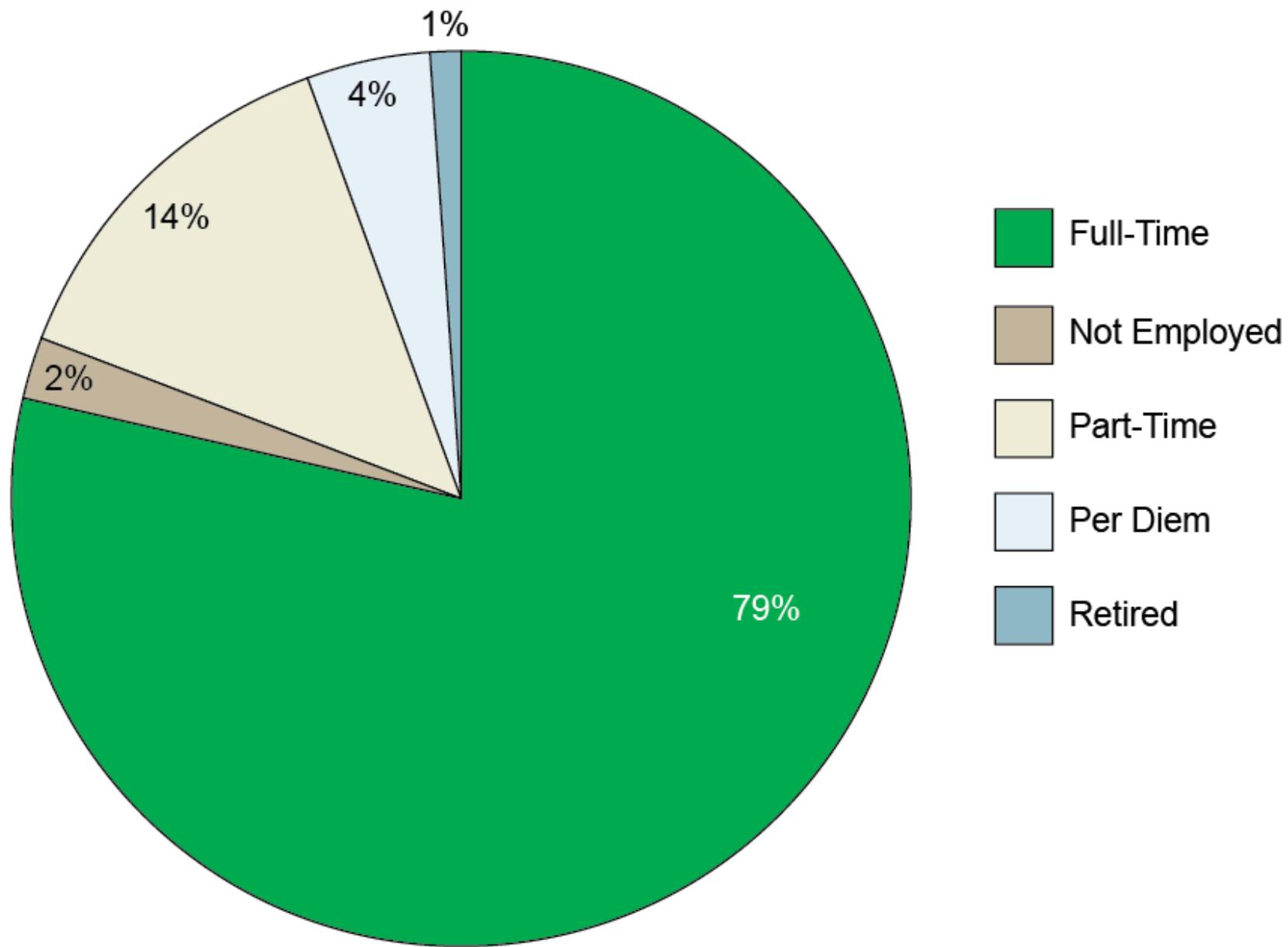
**Figure 5.32. States where NPs were educated (Other = n<10).<sup>2</sup>**



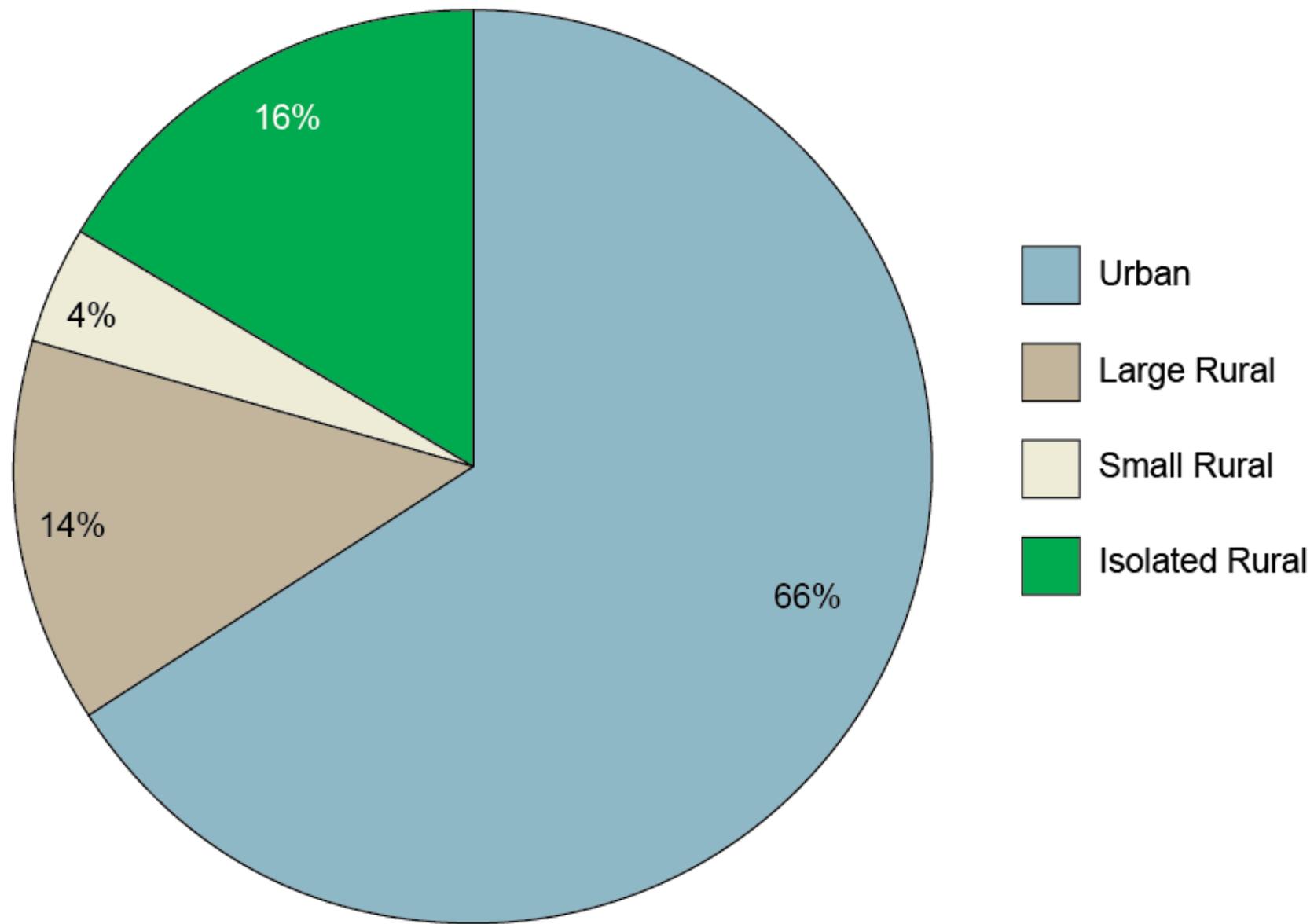
**Figure 5.33. NPs' employer practice area.<sup>2</sup>**



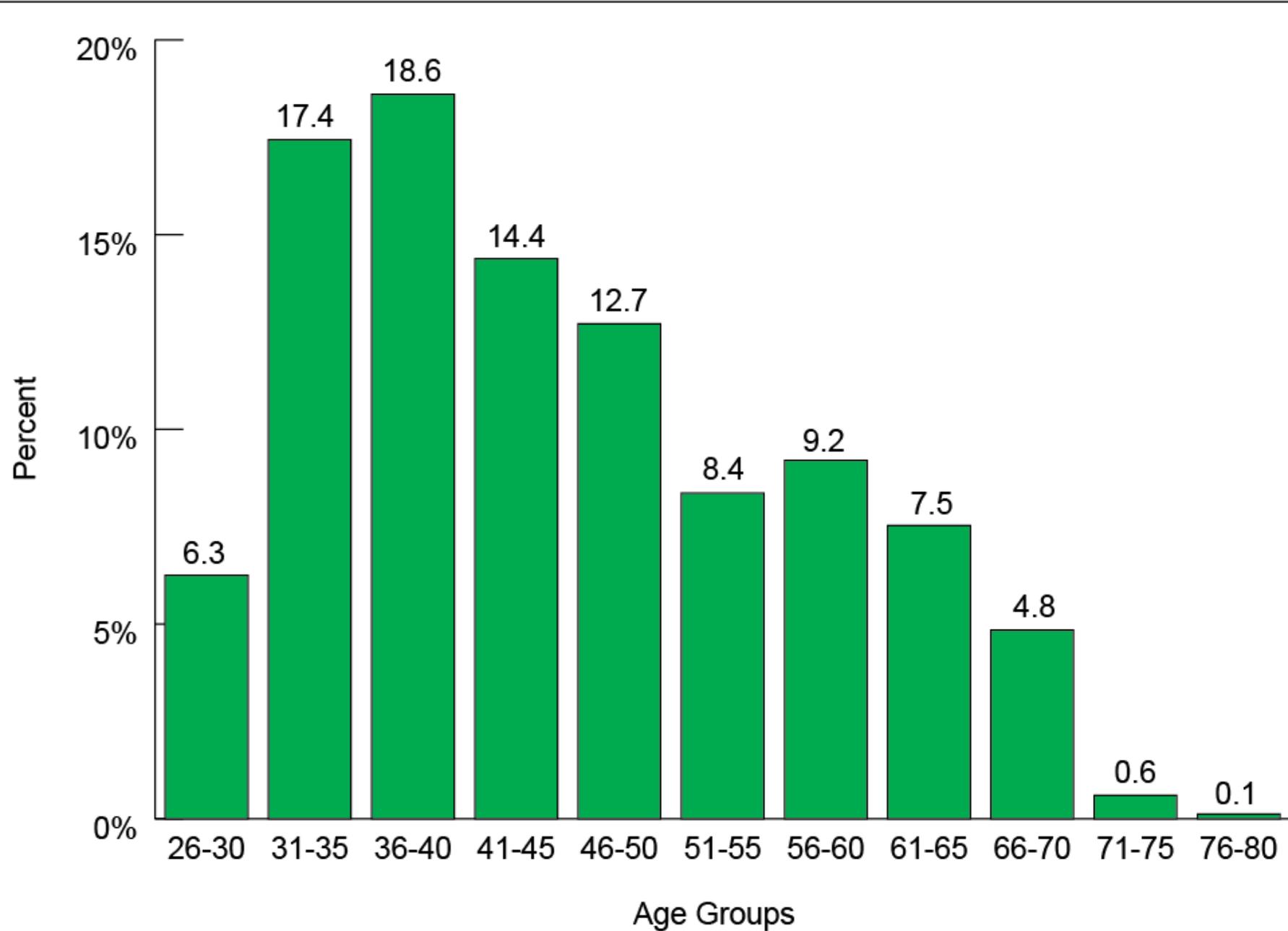
**Figure 5.34. NPs' employment settings.<sup>2</sup>**



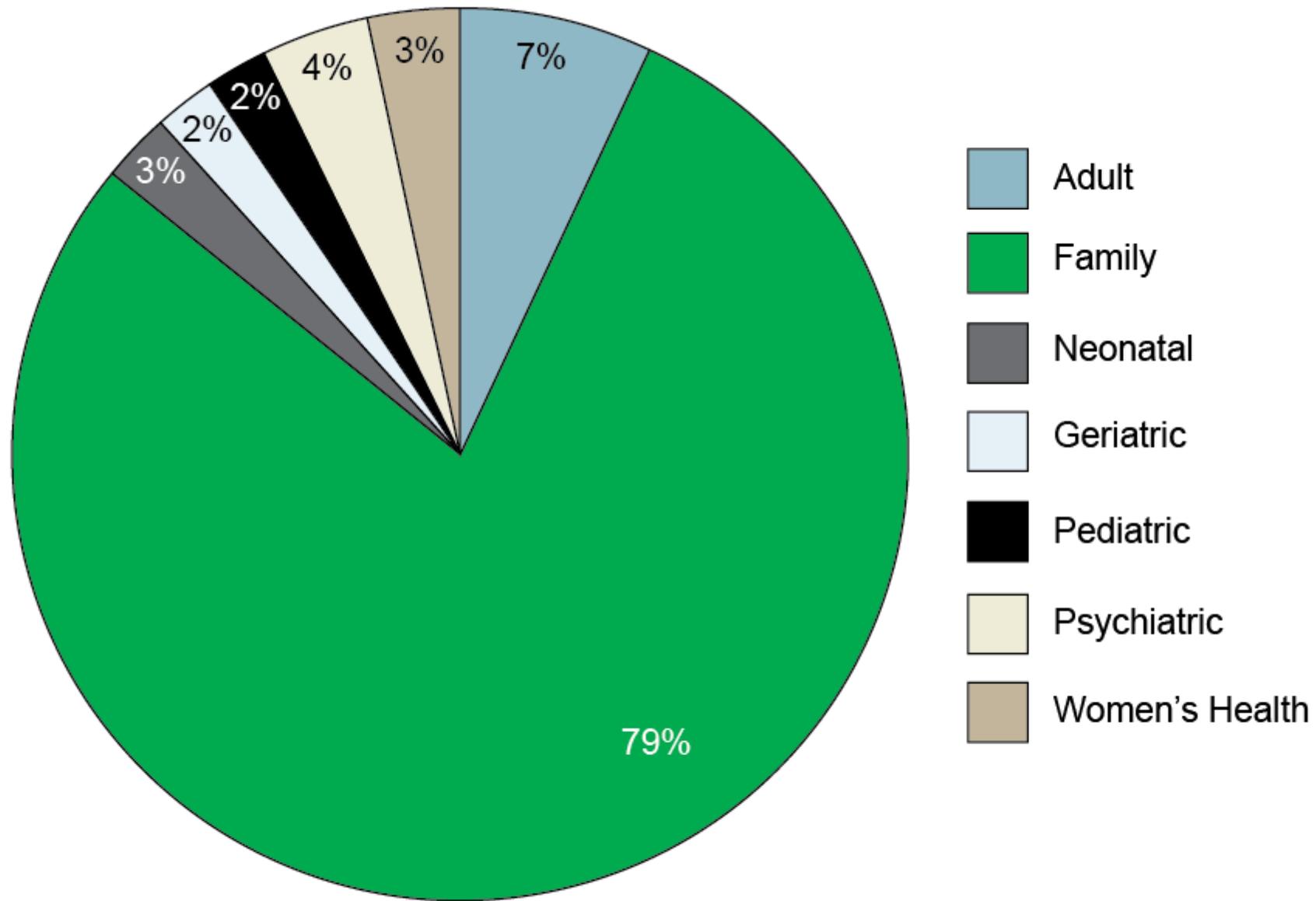
**Figure 5.35. NPs' employment status.<sup>2</sup>**



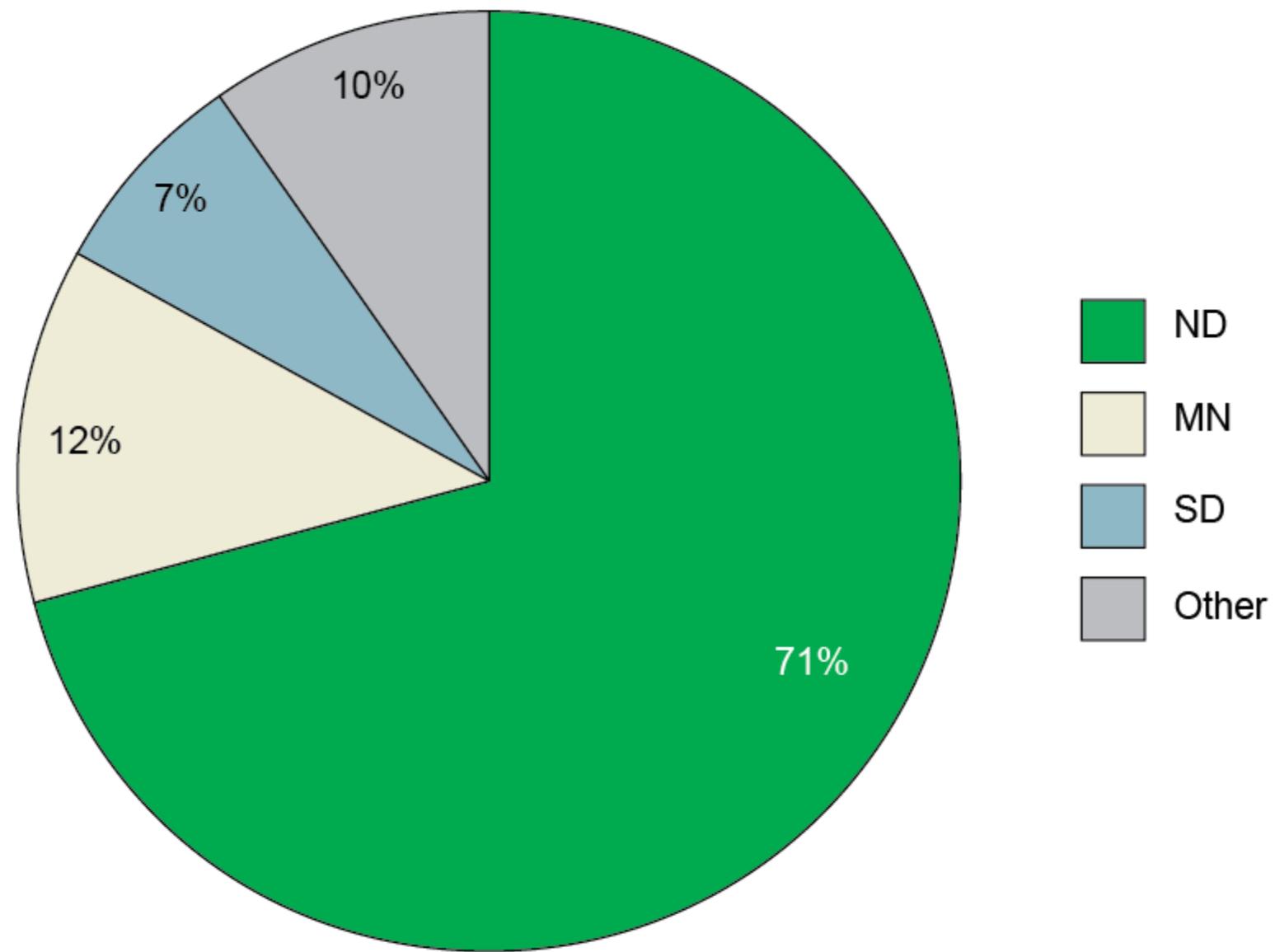
**Figure 5.36. NPs' employer location by RUCA.<sup>2</sup>**



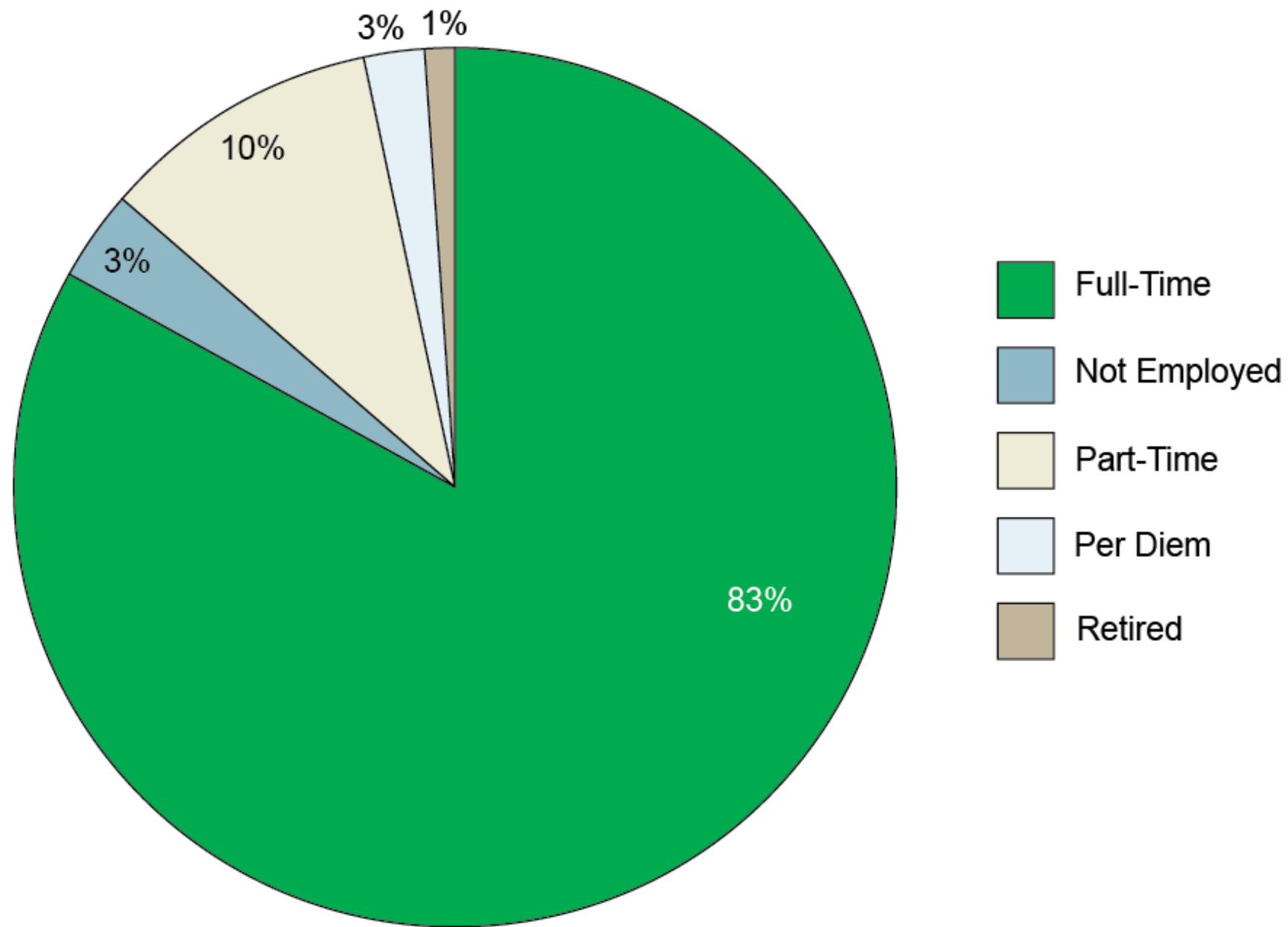
**Figure 5.37. Age ranges for NPs.<sup>2</sup>**



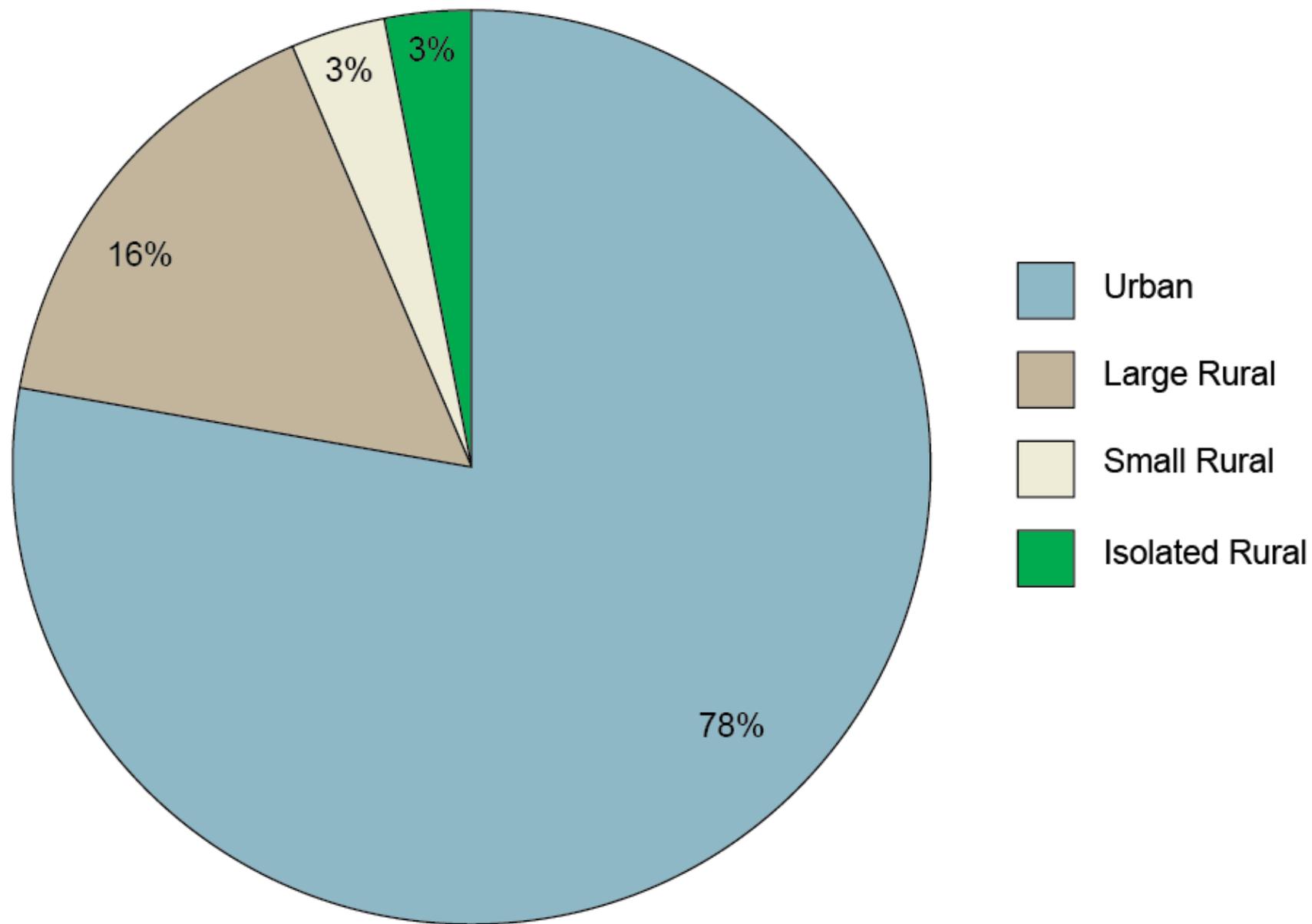
**Figure 5.38. NPs' certification types.<sup>2</sup>**



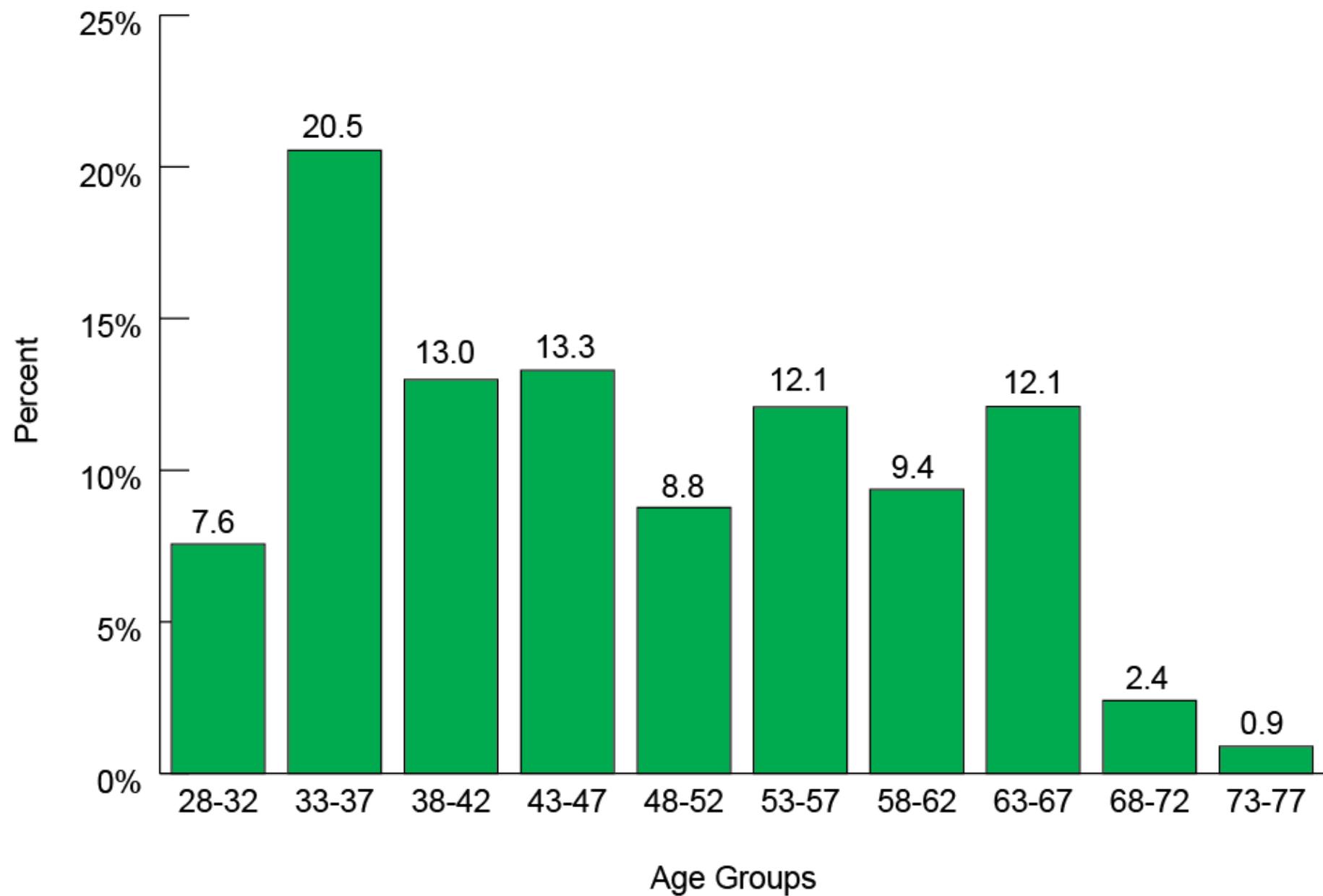
**Figure 5.39. States where CNRAs were educated (Other = n<3).<sup>2</sup>**



**Figure 5.40. CRNAs' employment status.<sup>2</sup>**



**Figure 5.41. CRNAs' employer by RUCA.<sup>2</sup>**



**Figure 5.42. Age ranges for CRNAs.<sup>2</sup>**

**Table 5.1*****North Dakota's practical nurse program 5 year trends<sup>8</sup>***

<b>Practical Nursing Program Trends</b>	<b>FY 2012 - 2013</b>	<b>FY 2013 - 2014</b>	<b>FY 2014 - 2015</b>	<b>FY 2015 - 2016</b>	<b>FY 2016 - 2017</b>
Program Admissions	241	266	223	267	275
Total Enrollment	339	354	348	358	379
Graduate Certificate Program Graduates	109	93	97	91	92
Associate Degree Program Graduates	97	82	78	79	55
Total Graduates	206	175	175	170	147

*Information provided is from the 2016-2017 NDBON Nursing Education Annual Report*

**Table 5.2***Number of states in which LPNs are licensed<sup>2</sup>*

<b>n = LPNs</b>	<b>Number of States Licensed</b>	<b>Percent</b>
3,072	1	91.67
243	2	7.25
20	3	0.60
13	4	0.39
1	8	0.03
1	20	0.03
1	35	0.03

**Table 5.3*****North Dakota's registered nurse program 5 year trends<sup>10</sup>***

<b>Registered Nurse Program Trends</b>	<b>FY 2012 - 2013</b>	<b>FY 2013 - 2014</b>	<b>FY 2014 - 2015</b>	<b>FY 2015 - 2016</b>	<b>FY 2016 - 2017</b>
Associate Degree Program Admissions	115	123	122	114	122
Baccalaureate Degree Program Admissions	503	540	587	590	639
Total Enrollment	1363	1411	1628	1564	1584
Associate Degree Program Graduates	125	112	106	100	103
Baccalaureate (BSN) Program Graduates	479*	499*	471*	489*	488*
Total Graduates	604	611	577	589	591

*Information provided is from the 2017 NDBON Nursing Education Annual Report*

*\*Note total includes Basic BSN, LPN to BSN, Diploma to BSN, and ADN to BSN.*

**Table 5.4*****Number of states in which RNs are licensed<sup>2</sup>***

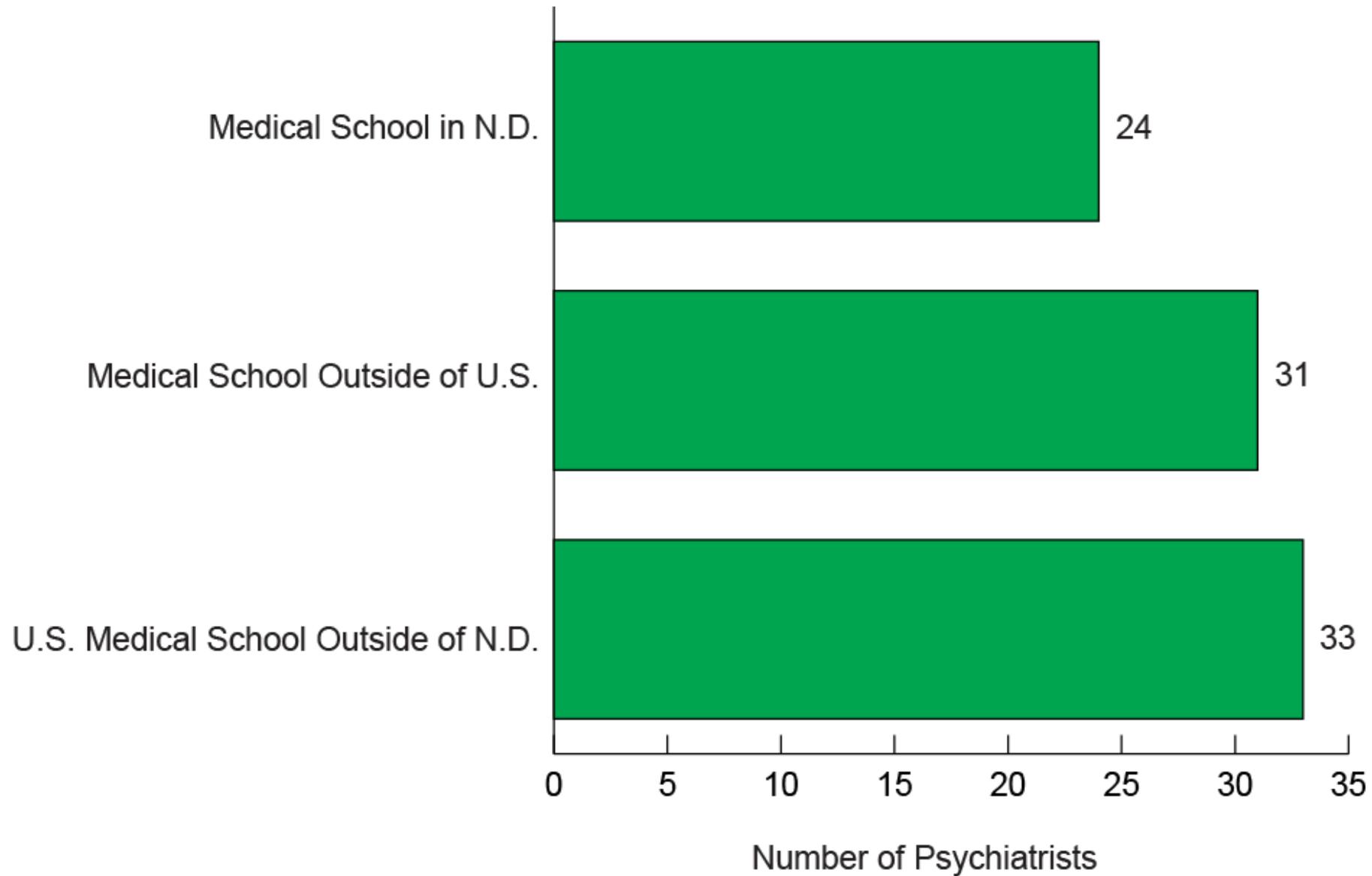
<b>n = RNs</b>	<b>Number of States Licensed</b>	<b>Percent</b>
10,686	1	80.31
1,604	2	12.05
302	3	2.27
84	4	0.63
630	5 or more	4.73

**Table 5.5**  
***NP graduates from ND programs<sup>2</sup>***

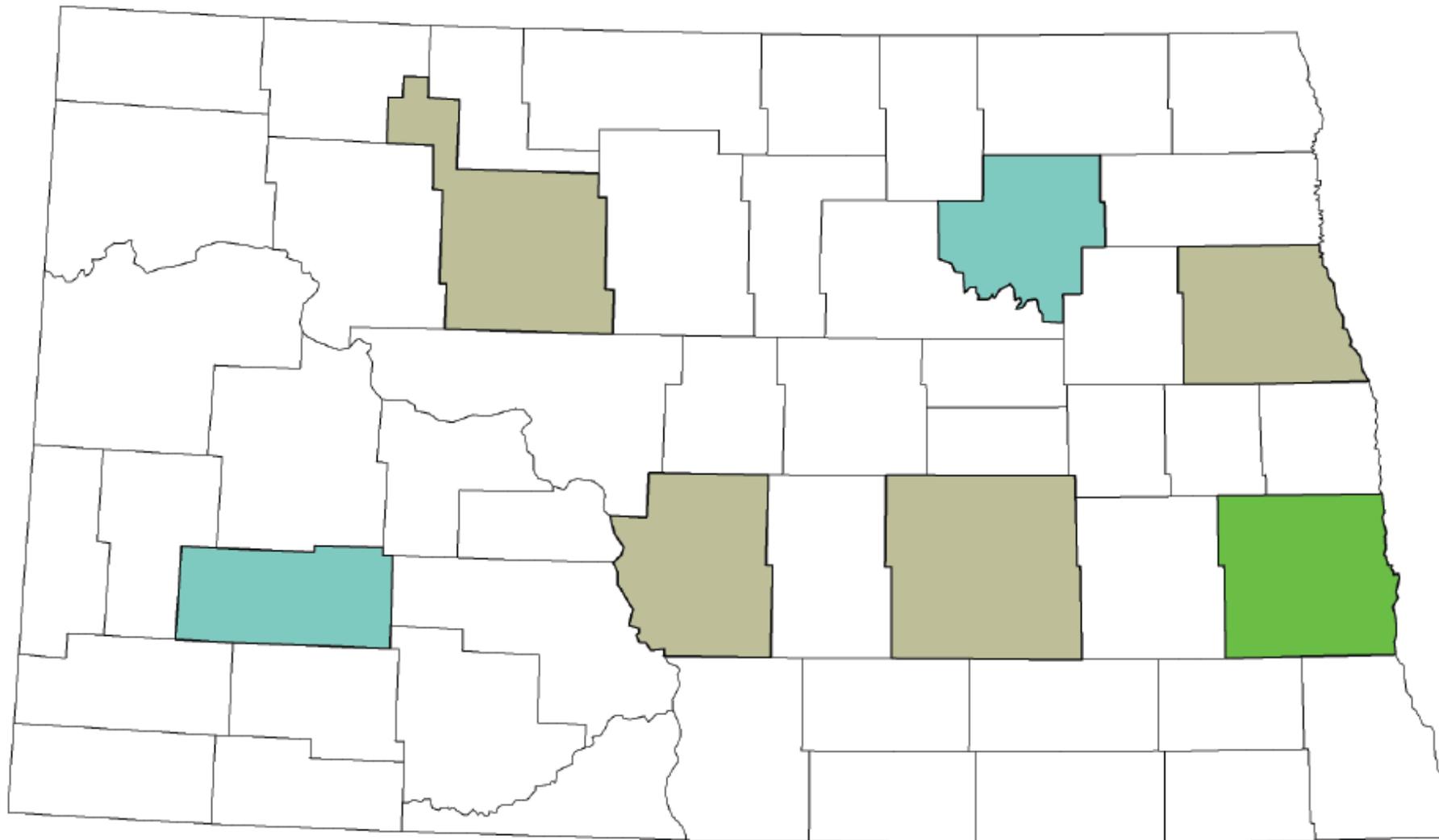
University	Degree	Program	2016	2017
North Dakota State University	Doctor of Nursing Practice	Family Nurse Practitioner	11	11
University of Mary	Doctor of Nursing Practice	Family Nurse Practitioner	8	26
University of North Dakota	Master of Science	Family Nurse Practitioner	26	29
		Adult-Geriatric Primary Care Nurse Practitioner	13	8
		Psychiatric & Mental Health Nurse Practitioner	8	10
Total			66	84

## Chapter 6:

# Psychiatrists, Behavioral Health, and Non-Physician Healthcare Workforce

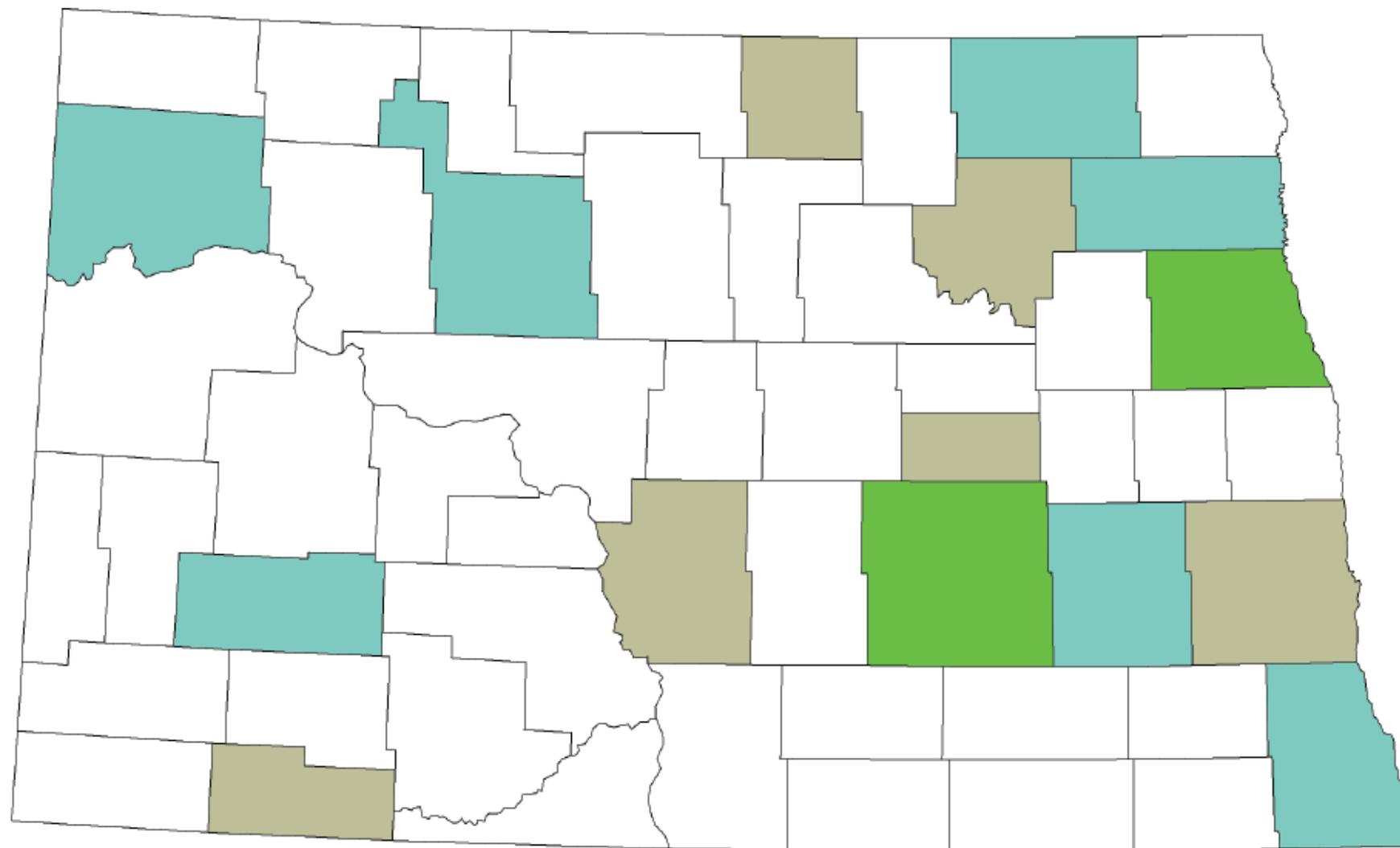


**Figure 6.1.** Locations of schools attended by psychiatrists in North Dakota.<sup>1</sup>



**Rate of psychiatrists per 10,000 residents**  
0.0 0.1 - 1.0 1.1 - 2.0 2.1 - 3.0

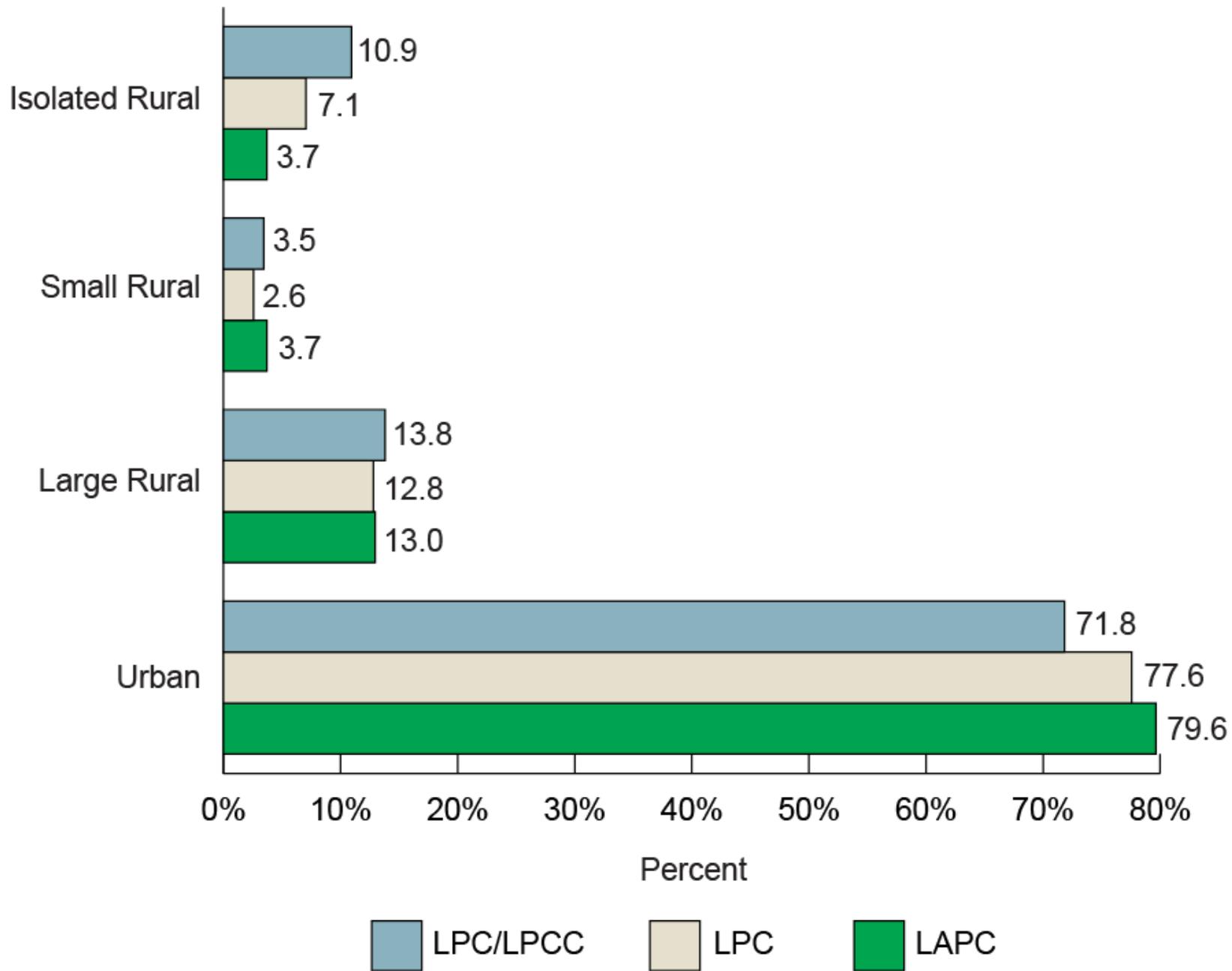
**Figure 6.2. Rate of psychiatrists per North Dakota county.<sup>1</sup>**



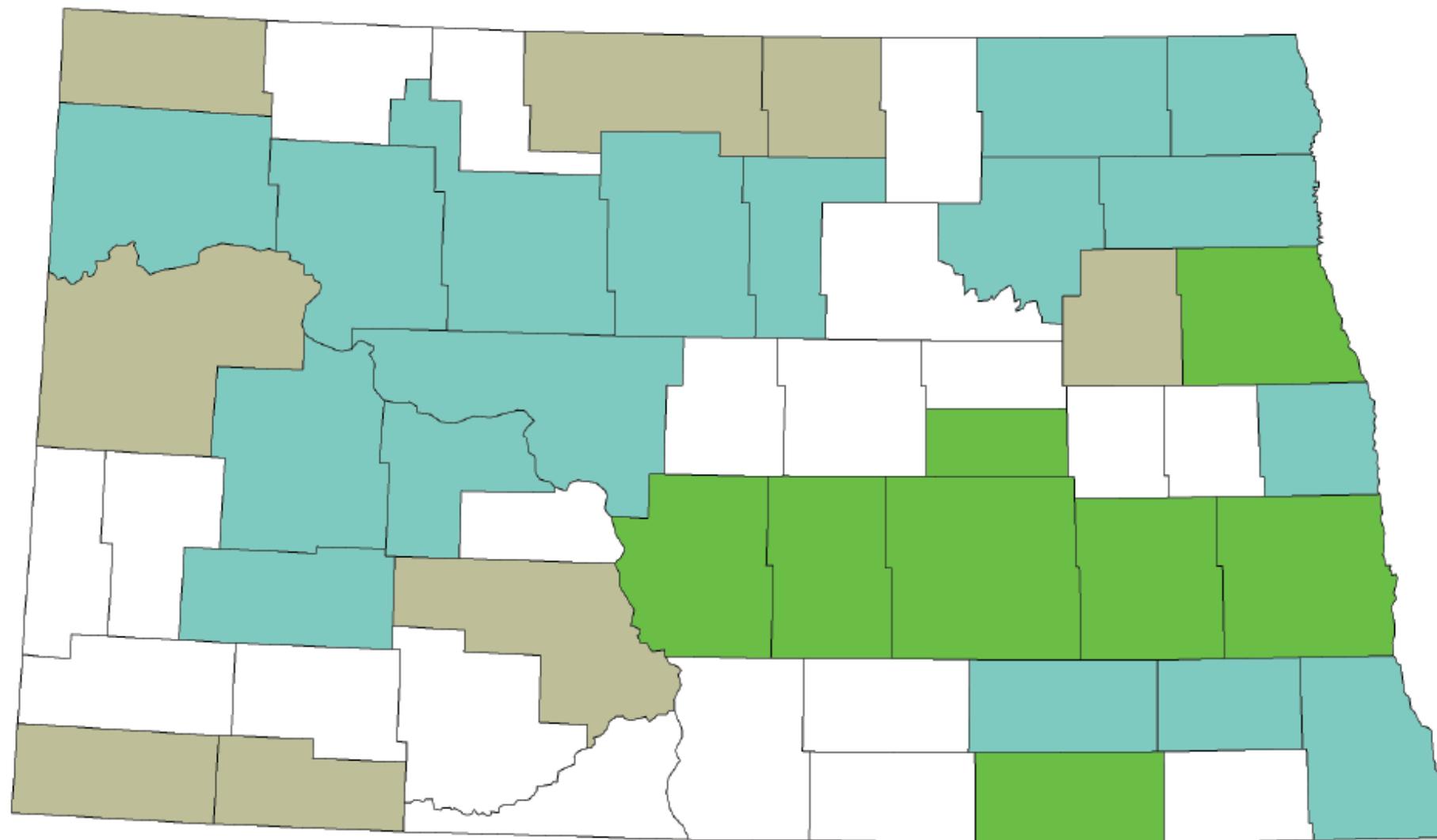
**Rate of psychologists per 10,000 residents**

0.0
  0.1 - 3.0
  3.1 - 5.0
  5.1 - 7.0

**Figure 6.3. Rate of psychologists per North Dakota county.<sup>2</sup>**



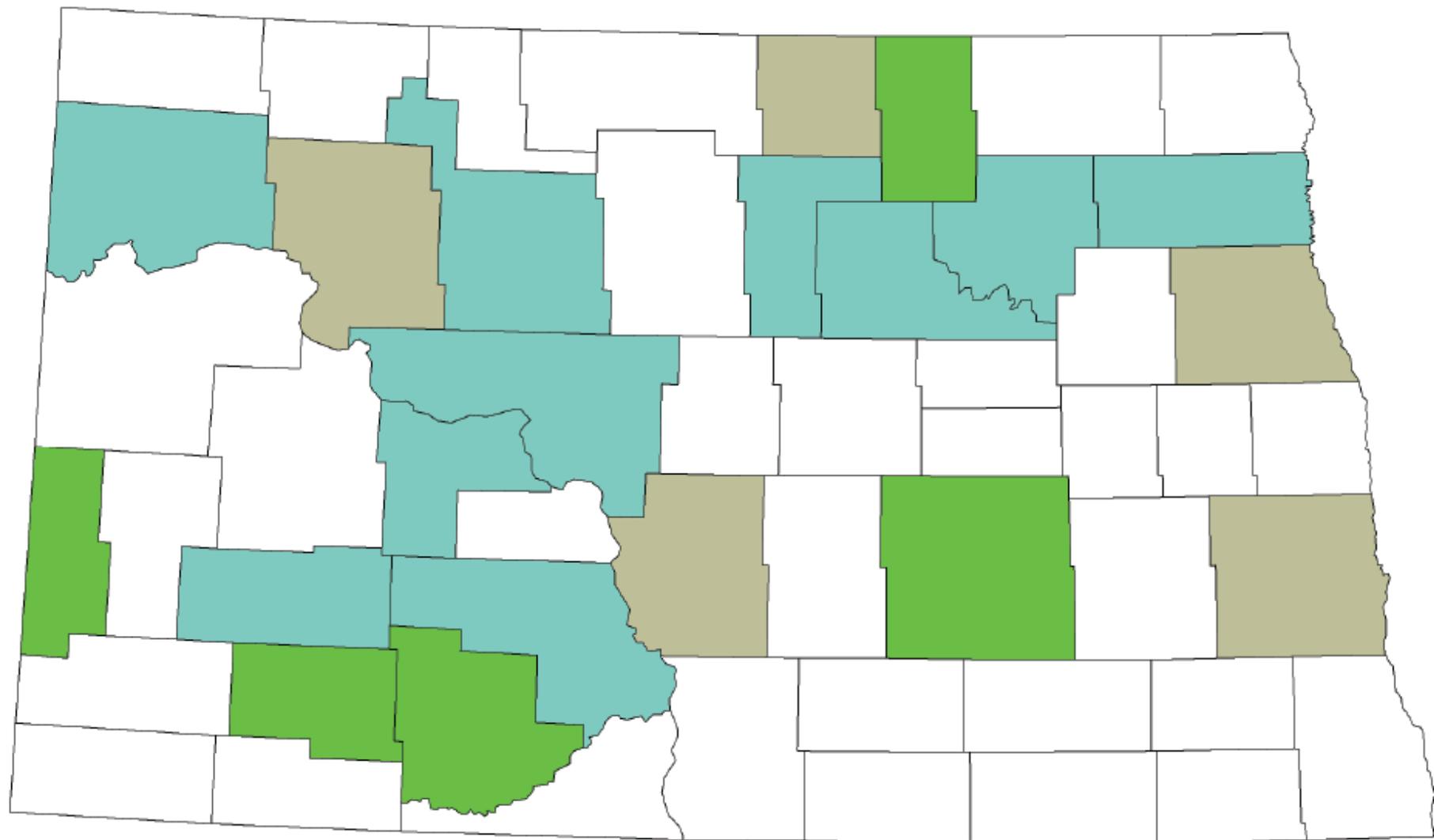
**Figure 6.4. Rural-urban designation for counselors in North Dakota.<sup>3</sup>**



**Rate of counselors per 10,000 residents**

0.0
  0.1 - 3.0
  3.1 - 6.0
  6.1 - 9.0

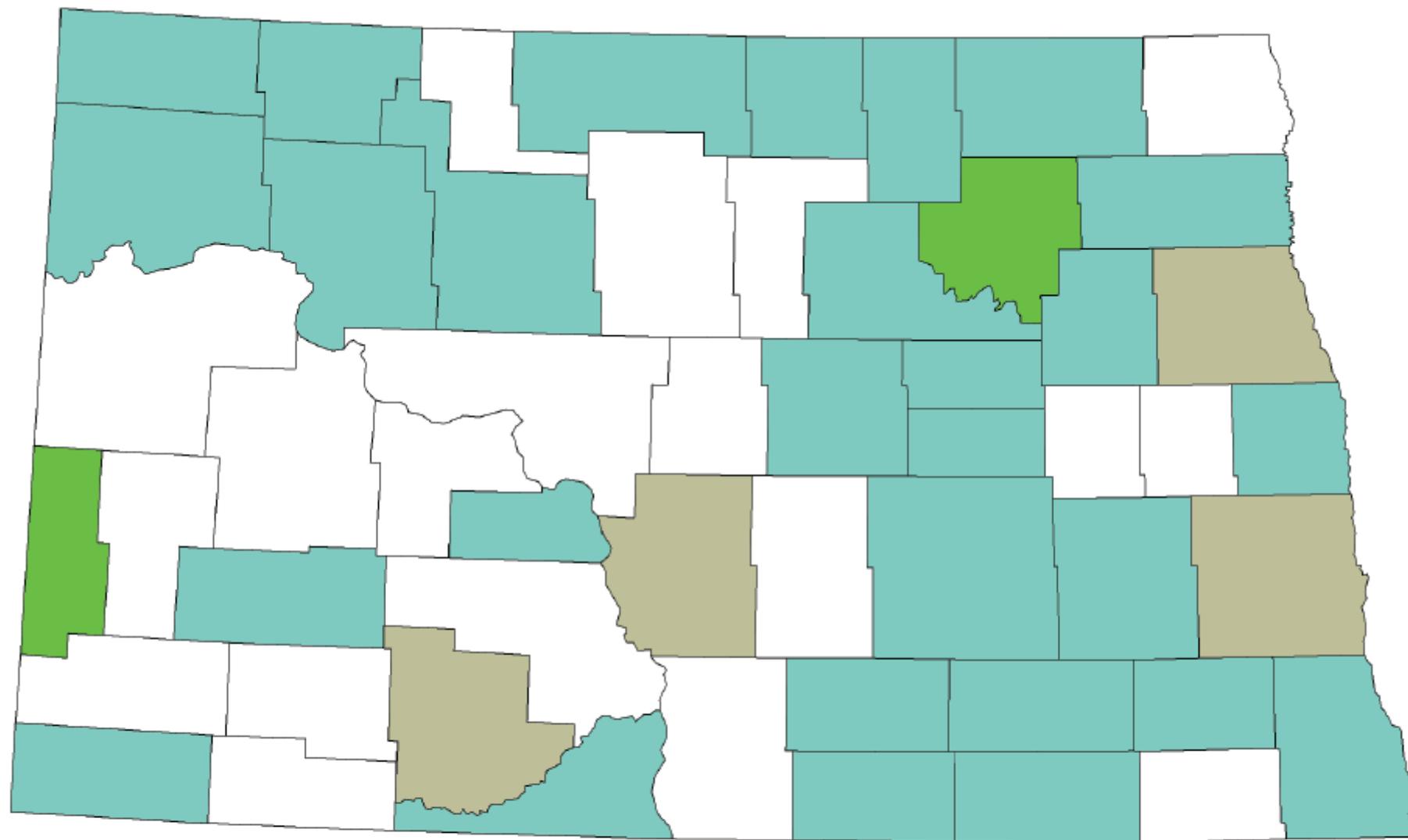
**Figure 6.5. Rate of counselors per North Dakota county.<sup>3</sup>**



**Rate of licensed addiction counselors per 10,000 residents**

0.0
  0.1 - 4.0
  4.1 - 8.0
  8.1 - 13.0

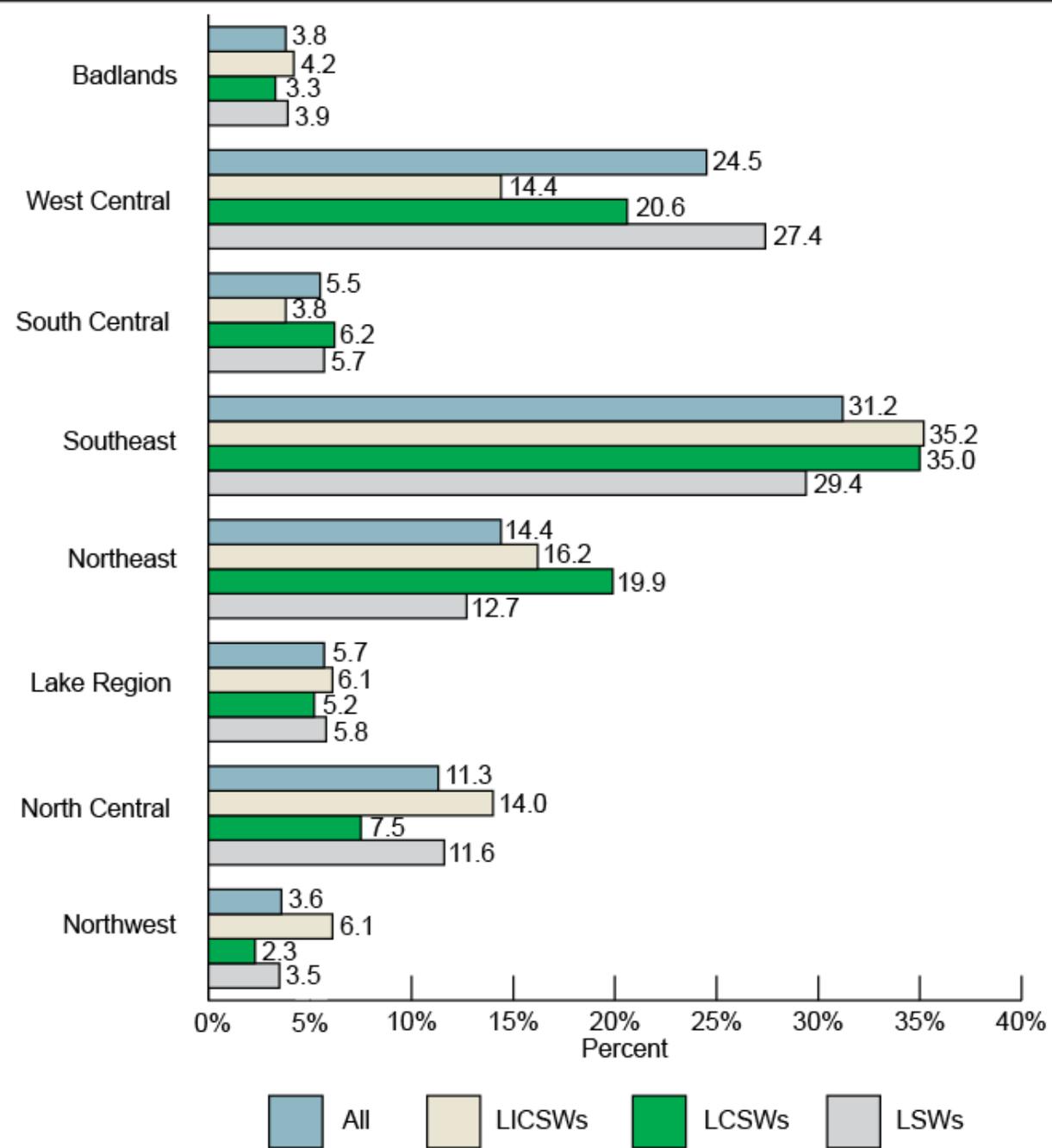
**Figure 6.6. Rate of licensed addiction counselors per North Dakota county.<sup>4</sup>**



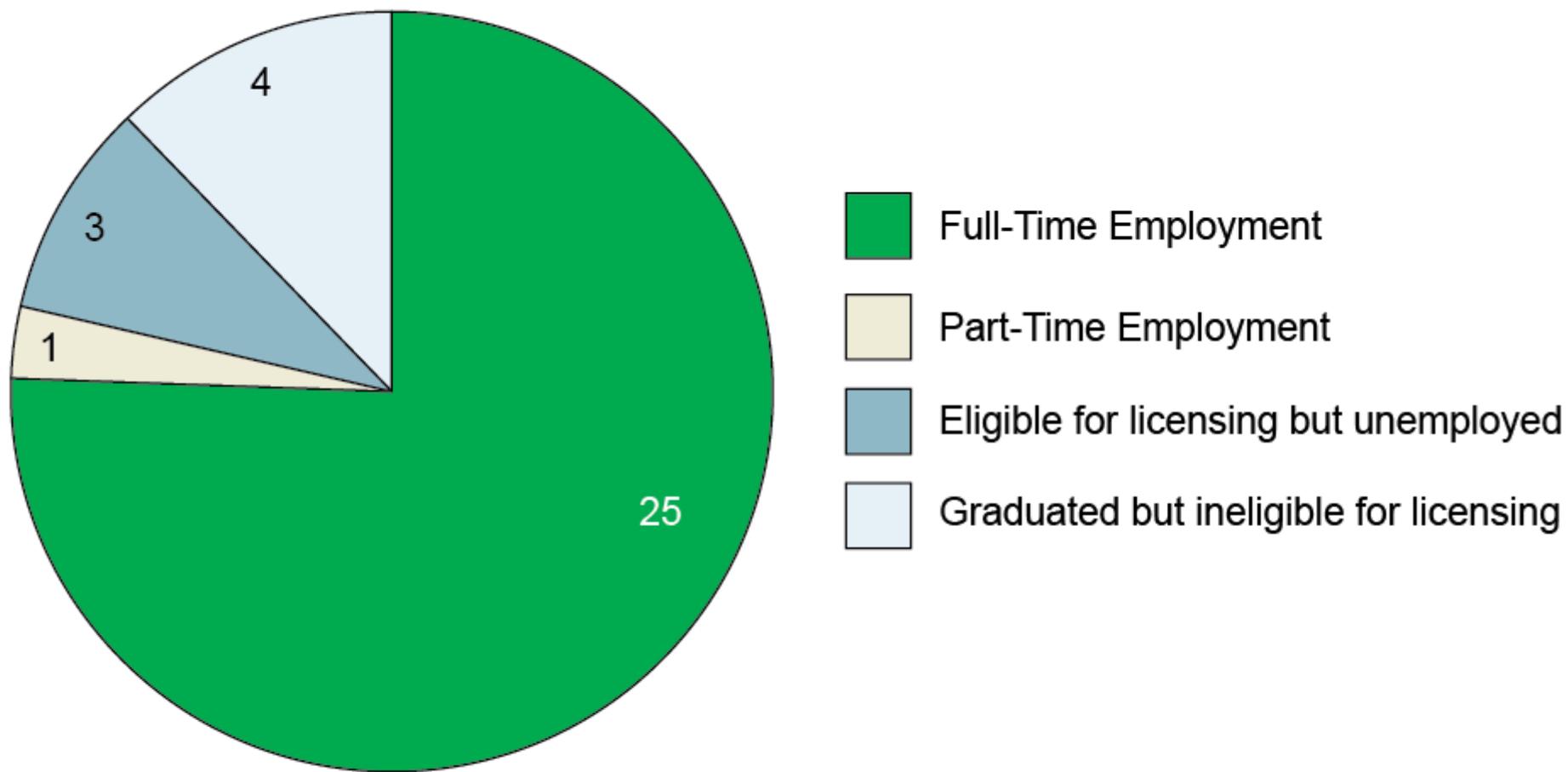
**Rate of social workers per 10,000 residents**

4.1 - 13.0
  13.1 - 27.0
  27.1 - 41.0
  41.1 - 56.0

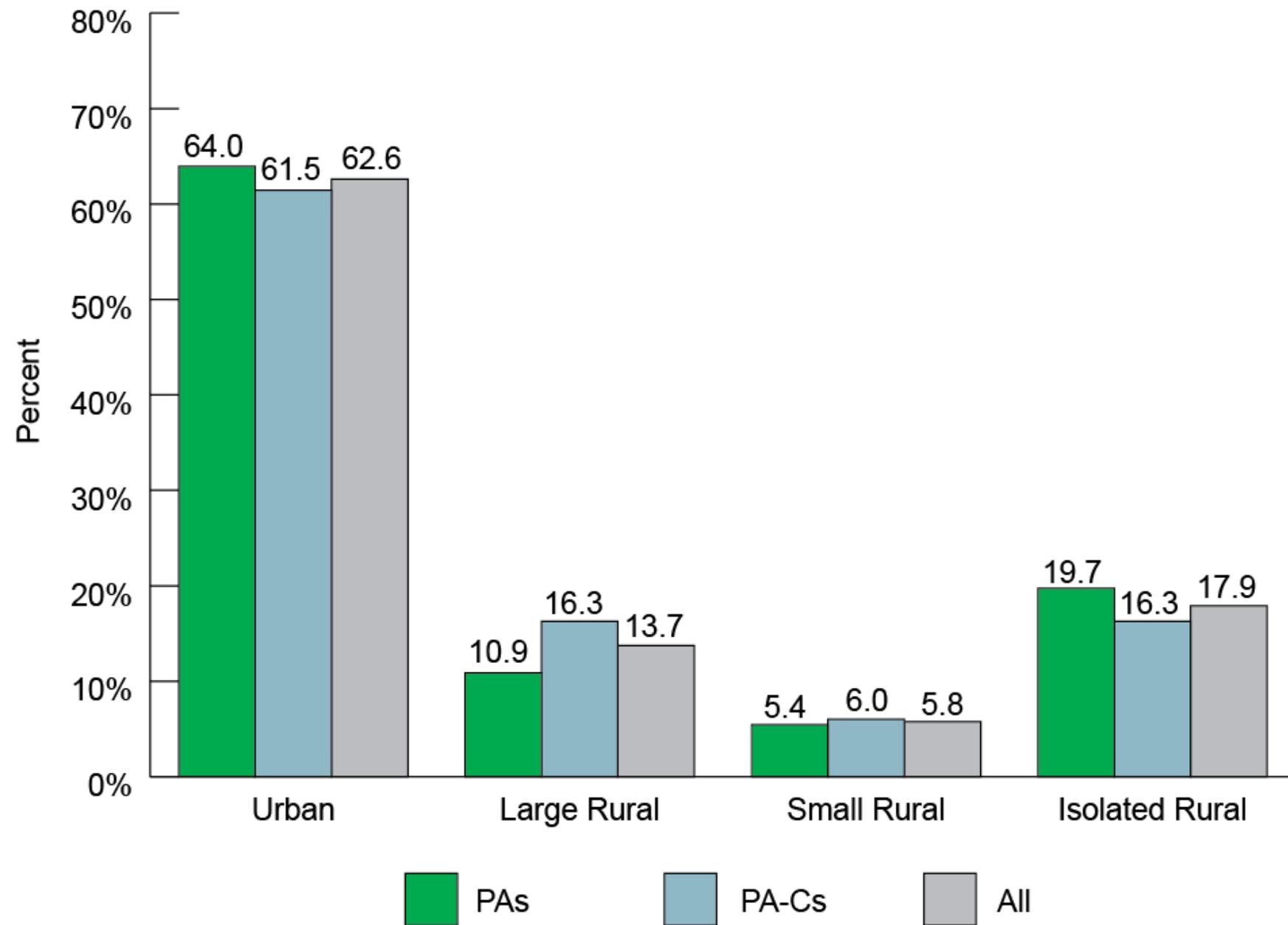
**Figure 6.7. Rate of social workers per 10,000 residents.<sup>5</sup>**



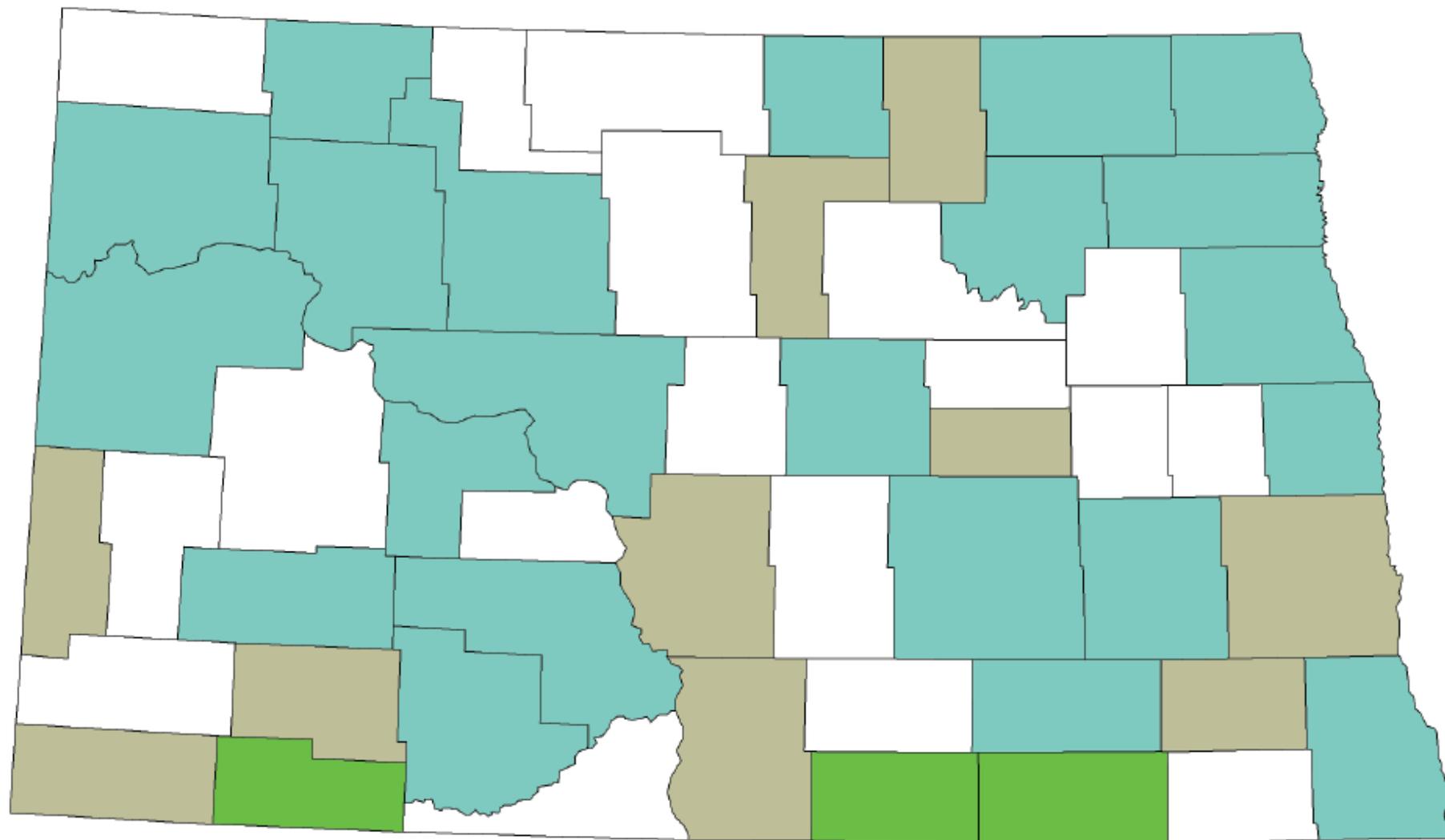
**Figure 6.8. Regions of primary workplace for social work professions in North Dakota.<sup>5</sup>**



**Figure 6.9. Employment status of physician assistant graduates.<sup>6</sup>**



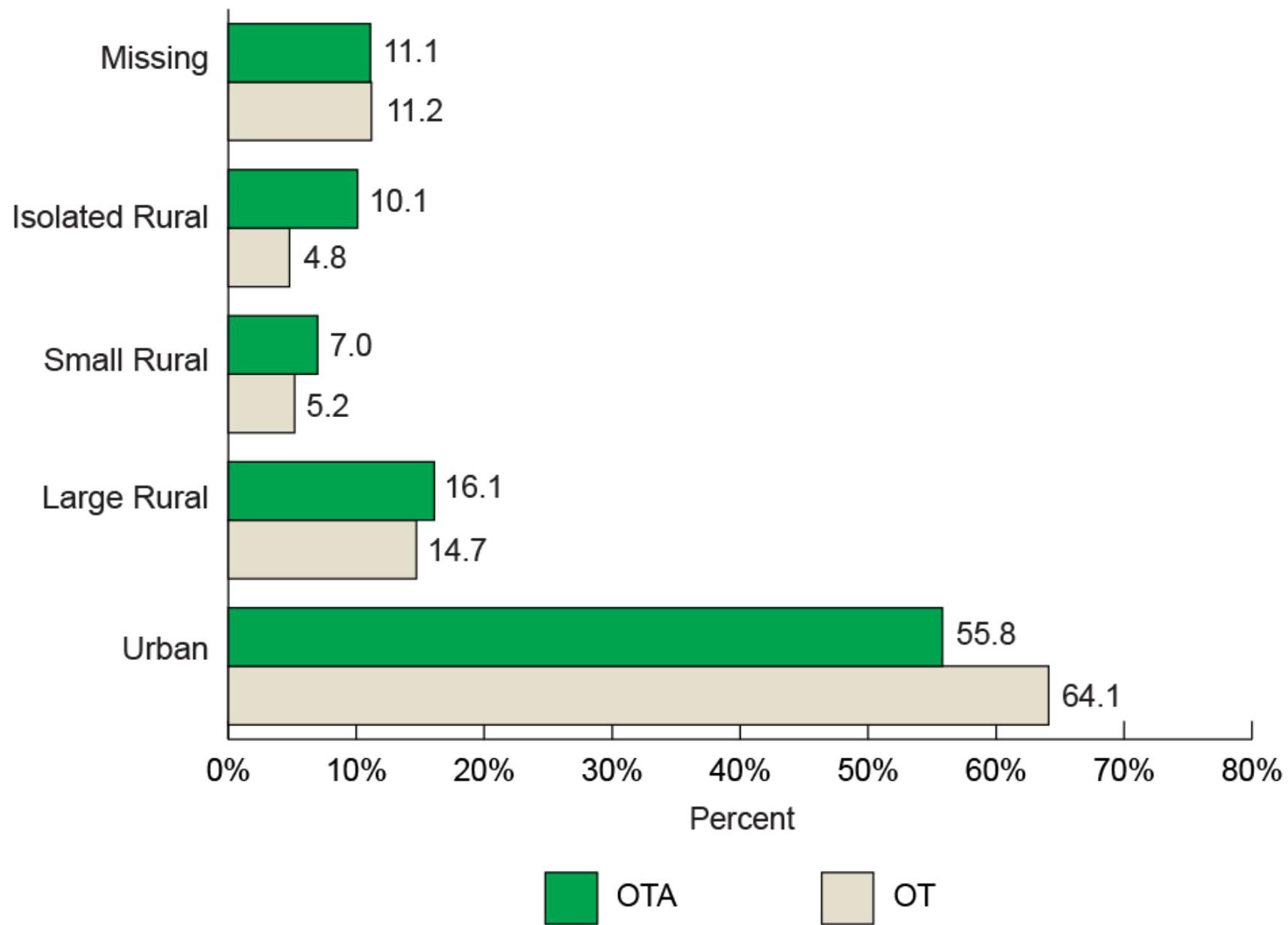
**Figure 6.10. Rural-urban designations for PAs and PA-Cs in North Dakota.<sup>1</sup>**



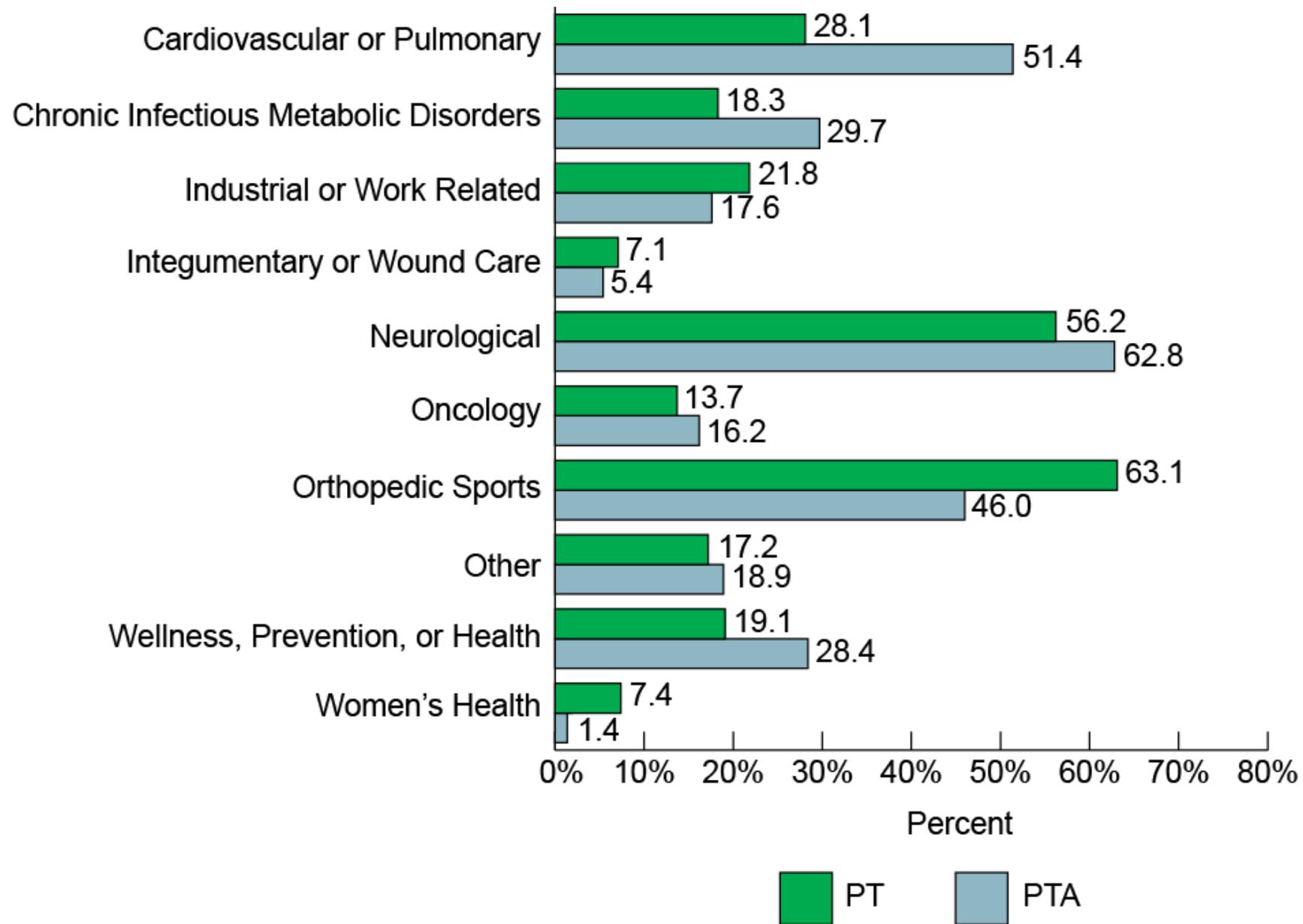
Rate of physician assistants per 10,000 residents

0.0 0.1 - 6.0 6.1 - 13.0 13.1 - 19.0

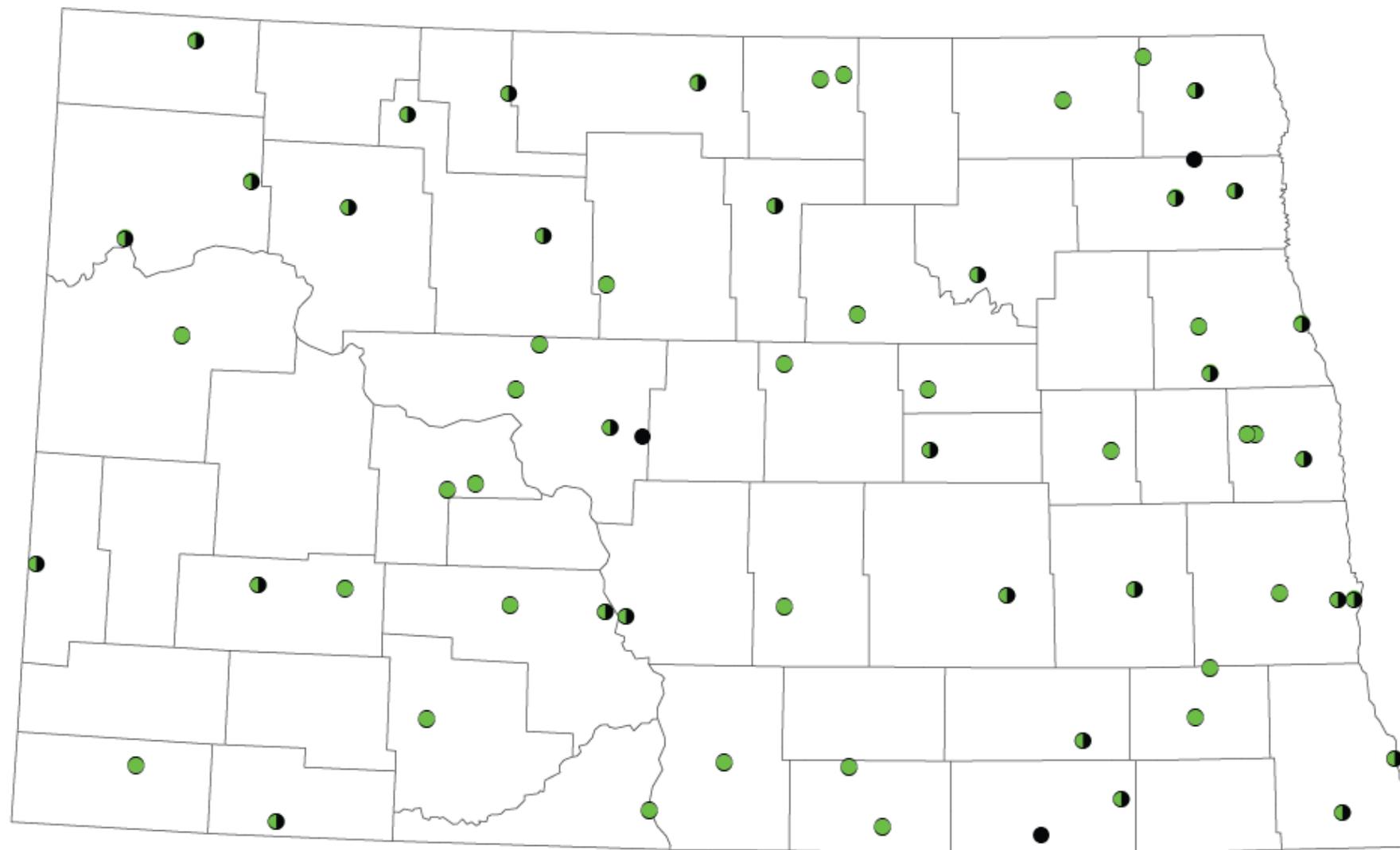
Figure 6.11. Rate of PAs and PA-Cs per North Dakota county.<sup>1</sup>



**Figure 6.12. Rural-urban designation for occupational therapy professionals in North Dakota.<sup>7</sup>**



**Figure 6.13. Primary injuries or conditions for North Dakota physical therapists and physical therapist assistants.<sup>8</sup>**

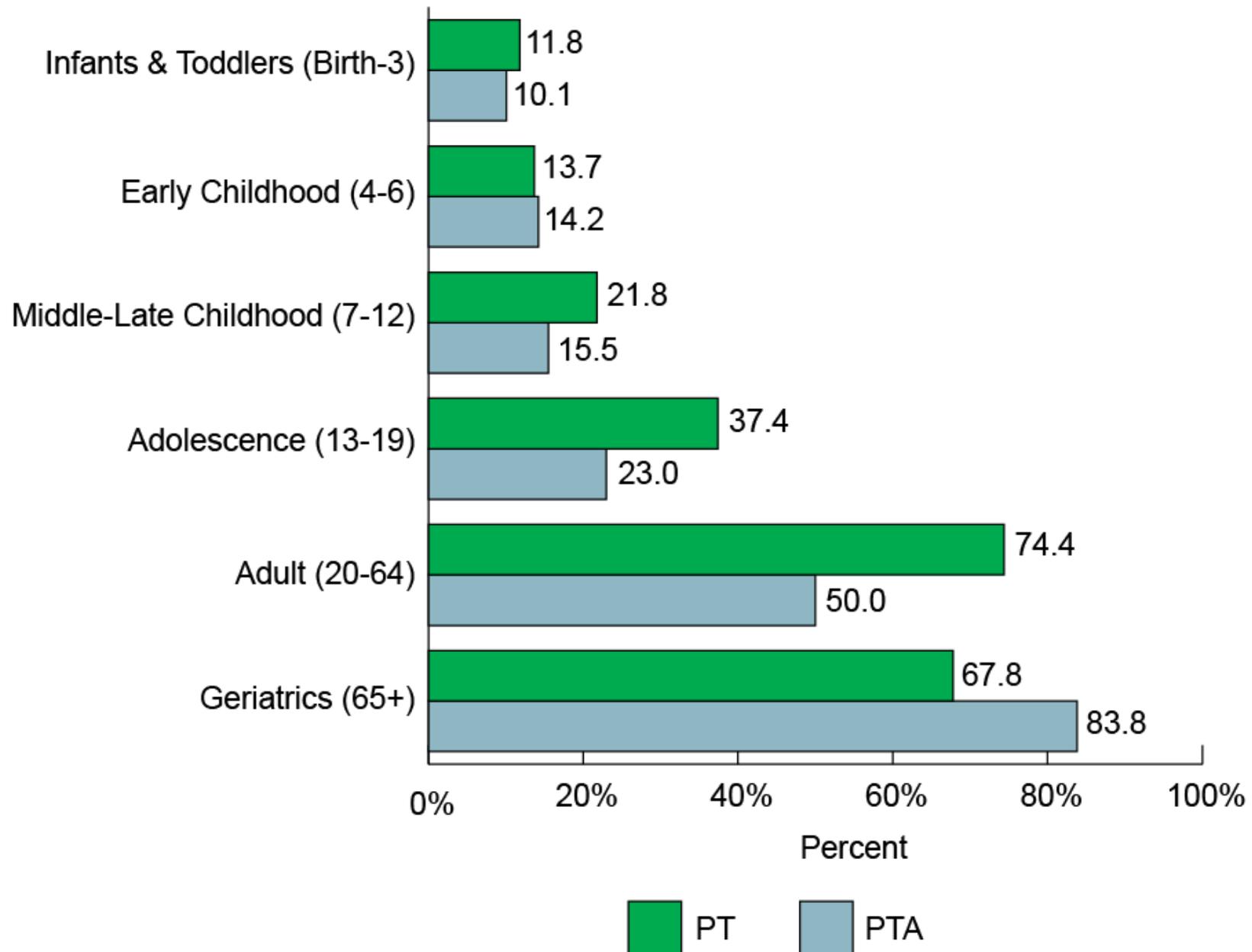


● PT Only

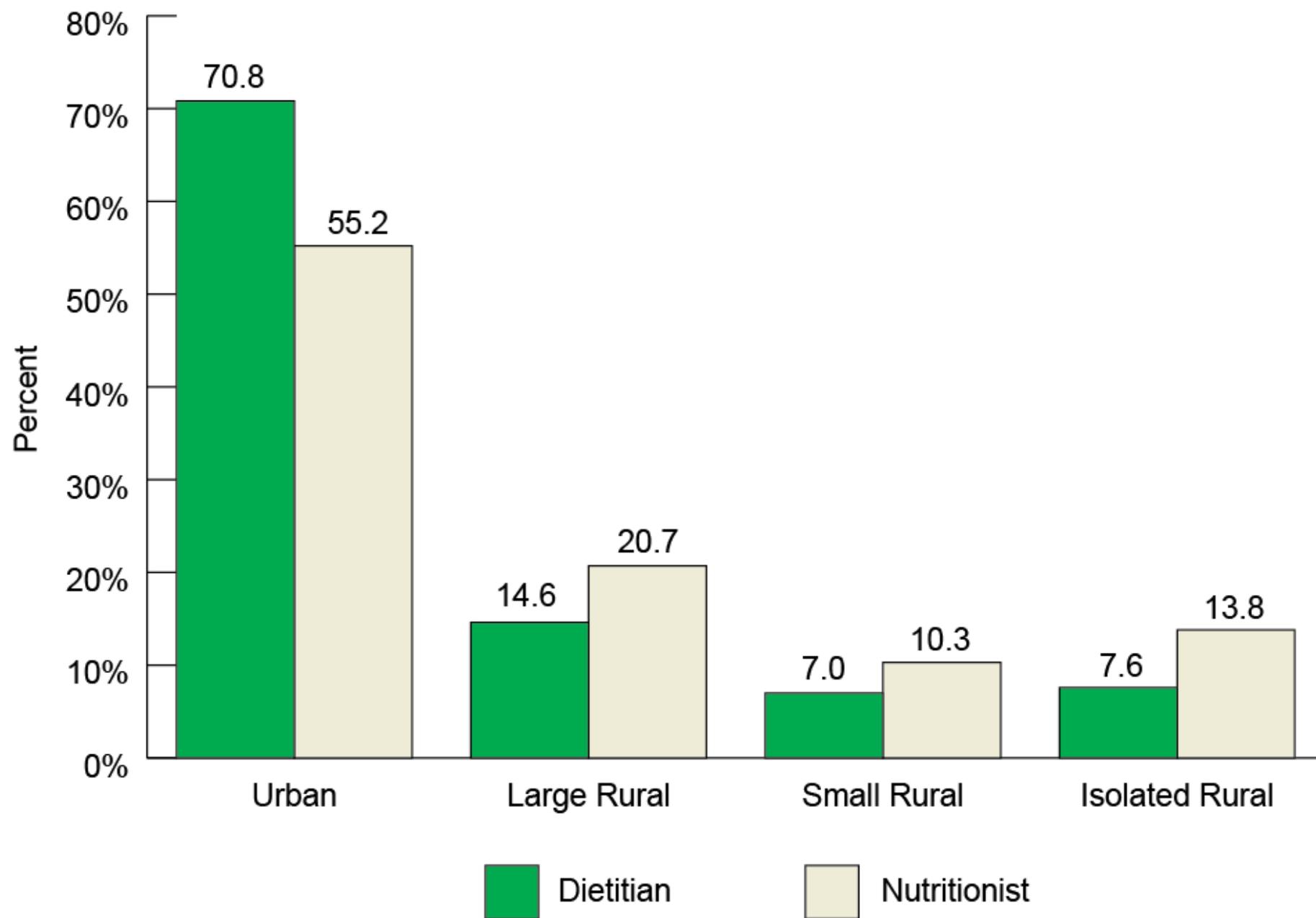
● PTA Only

● PTA and PTA

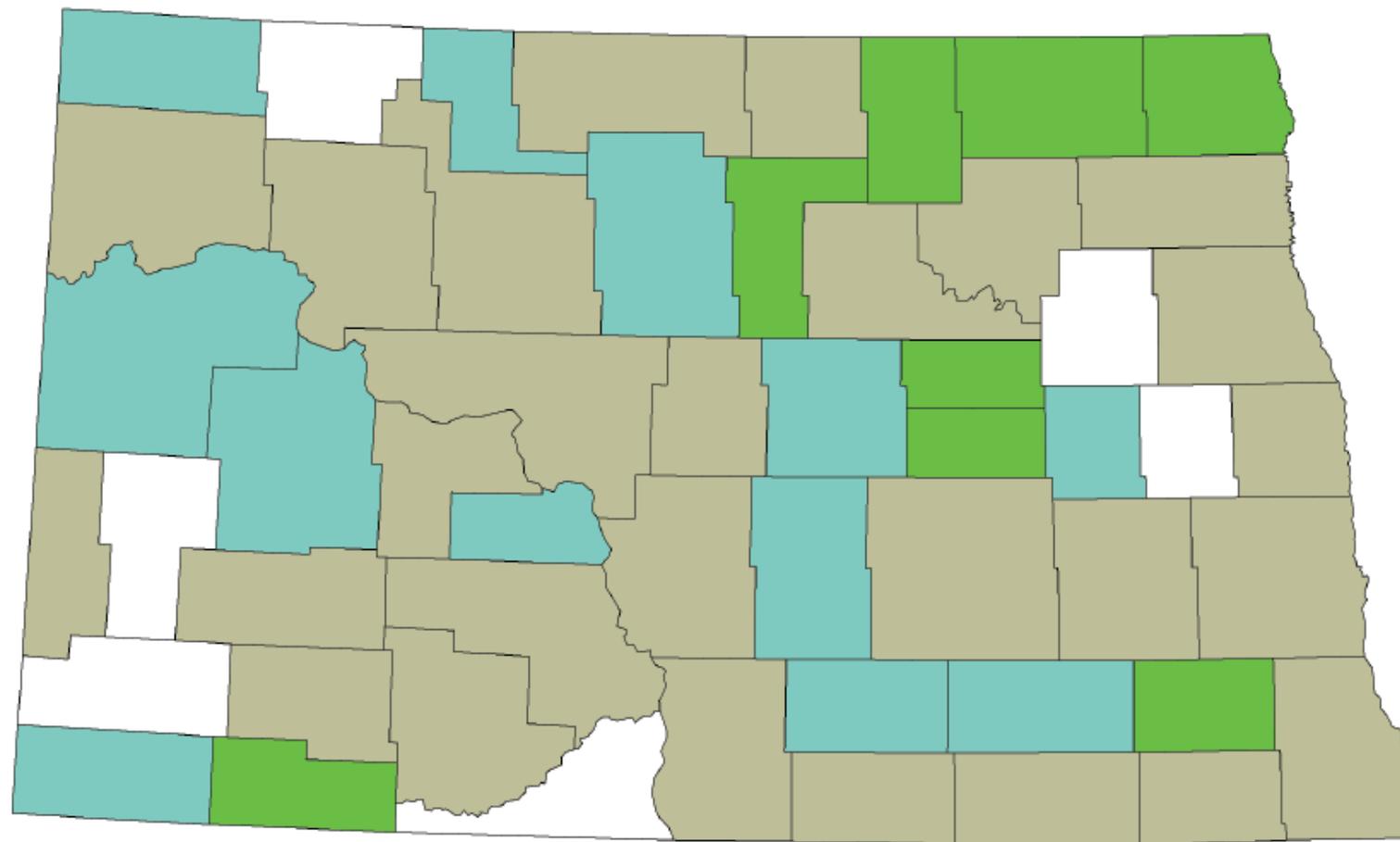
**Figure 6.14. Primary workplace city for North Dakota physical therapists and physical therapist assistants.<sup>8</sup>**



**Figure 6.15. Primary patient ages for North Dakota physical therapists and physical therapy assistants.<sup>8</sup>**



**Figure 6.16. Rural-urban designation for dietitians and nutritionists in North Dakota.<sup>9</sup>**

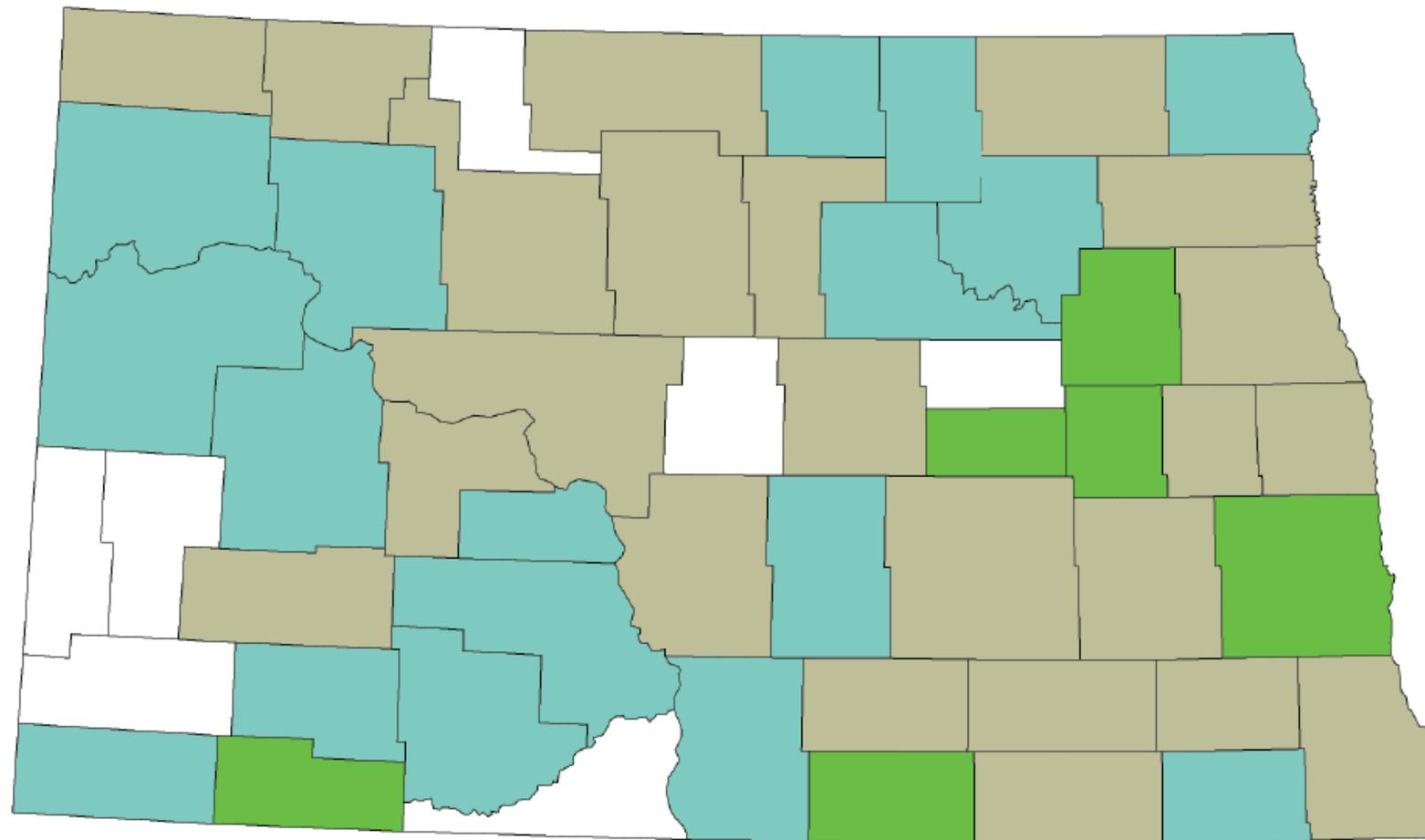


**Rate of pharmacy technicians per 10,000 residents**

0.0
  0.1 - 8.0
  8.1 - 17.0
  17.1 - 27.0

**Figure 6.17. Rates of pharmacy technicians in North Dakota per 10,000 residents.<sup>10</sup>**

The map above illustrates which counties have the highest and lowest concentrations of pharmacy technicians working in North Dakota. There are six counties in which there are currently no pharmacy technicians working. Those counties include Burke, Billings, Nelson, Sioux, Slope, and Steele.

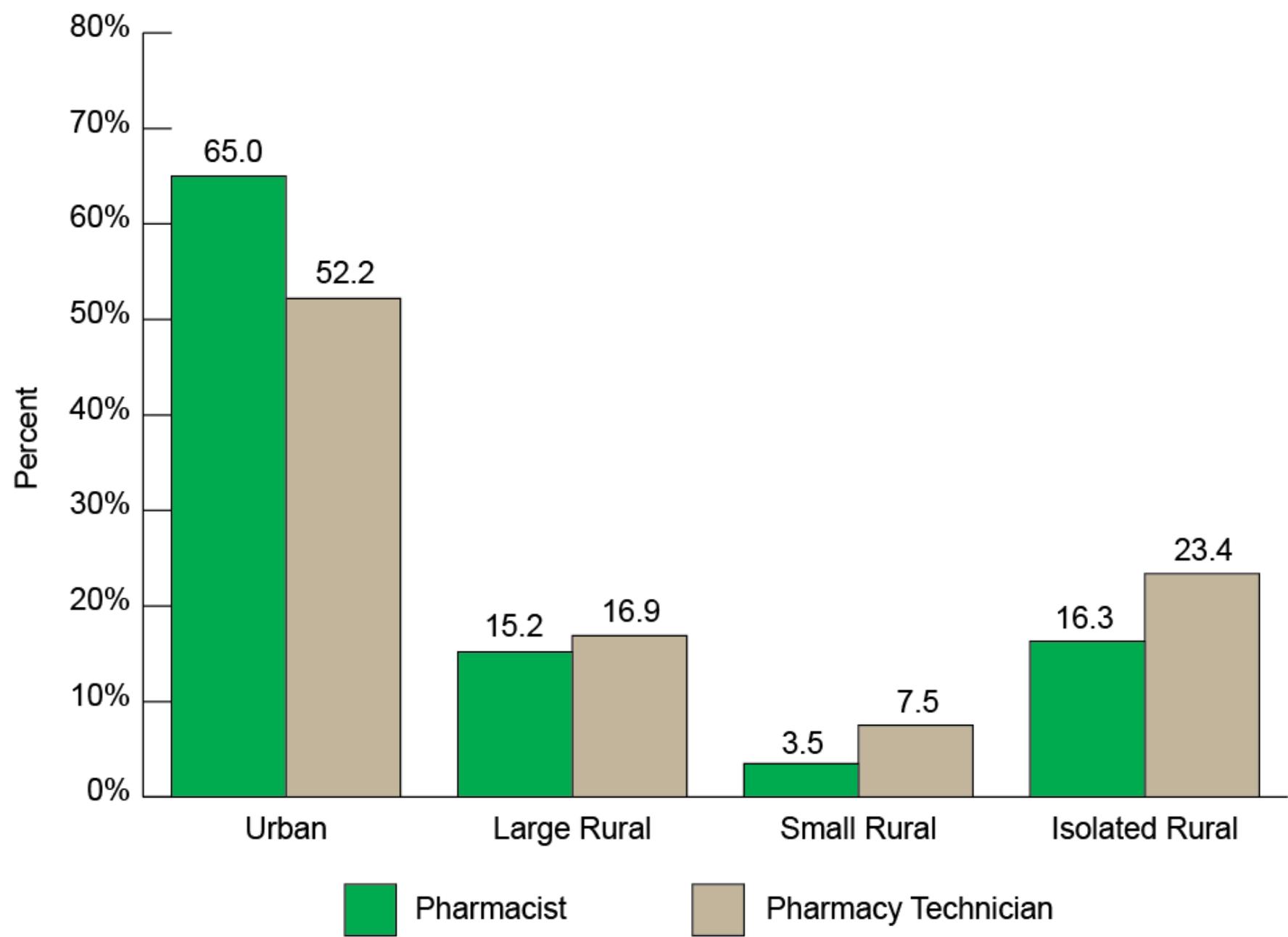


**Rate of pharmacists per 10,000 residents**

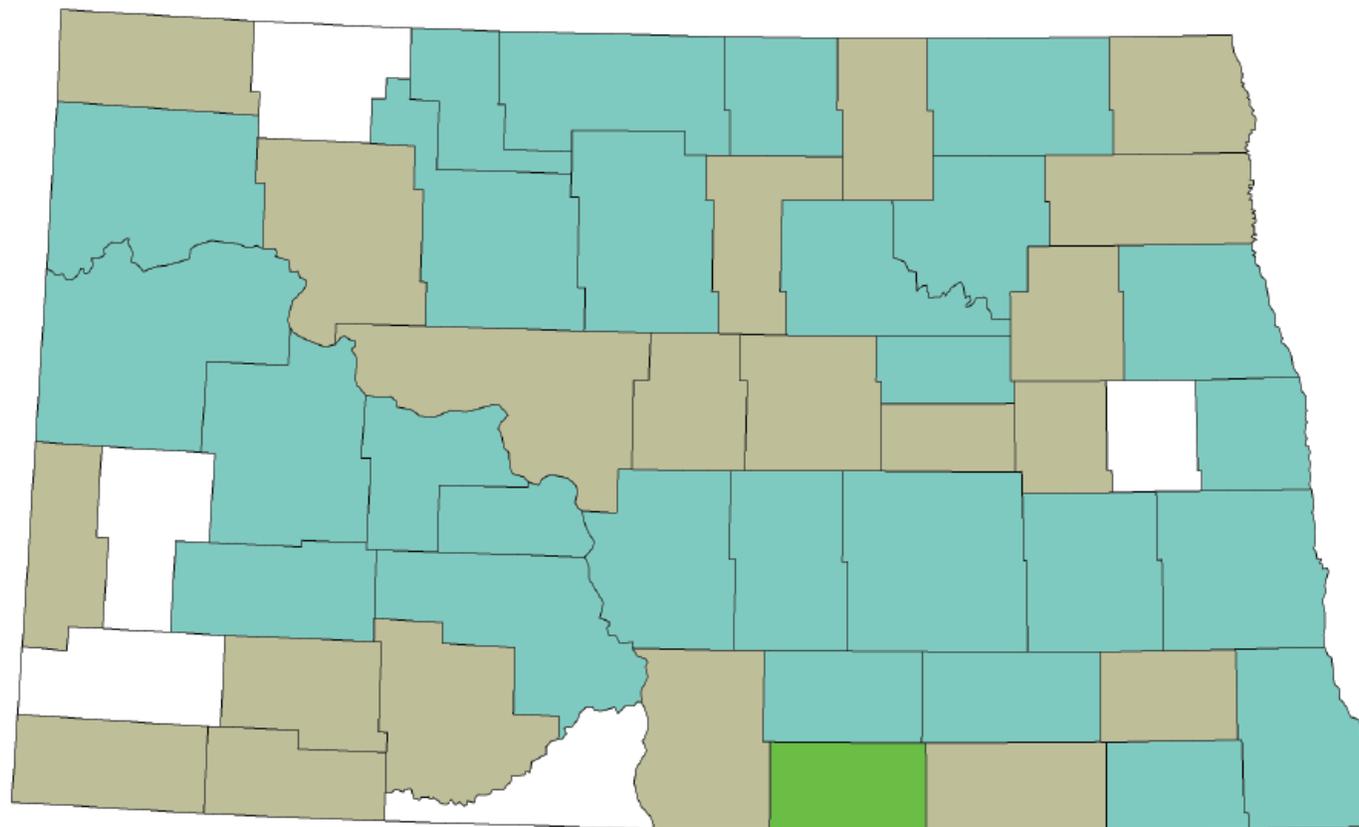
0.0 0.1 - 8.0 8.1 - 17.0 17.1 - 26.0

**Figure 6.18. Rates of pharmacists in North Dakota by county.<sup>10</sup>**

The map above illustrates the concentration of pharmacists in North Dakota by county. There are 7 counties where no pharmacist works, including Billings, Eddy, Golden Valley, Renville, Sheridan, Sioux, and Slope. Three of these counties - Billings, Sioux, and Slope - also have no pharmacy technicians.



**Figure 6.19. Rural-urban designation for pharmacy professionals in North Dakota.<sup>10</sup>**

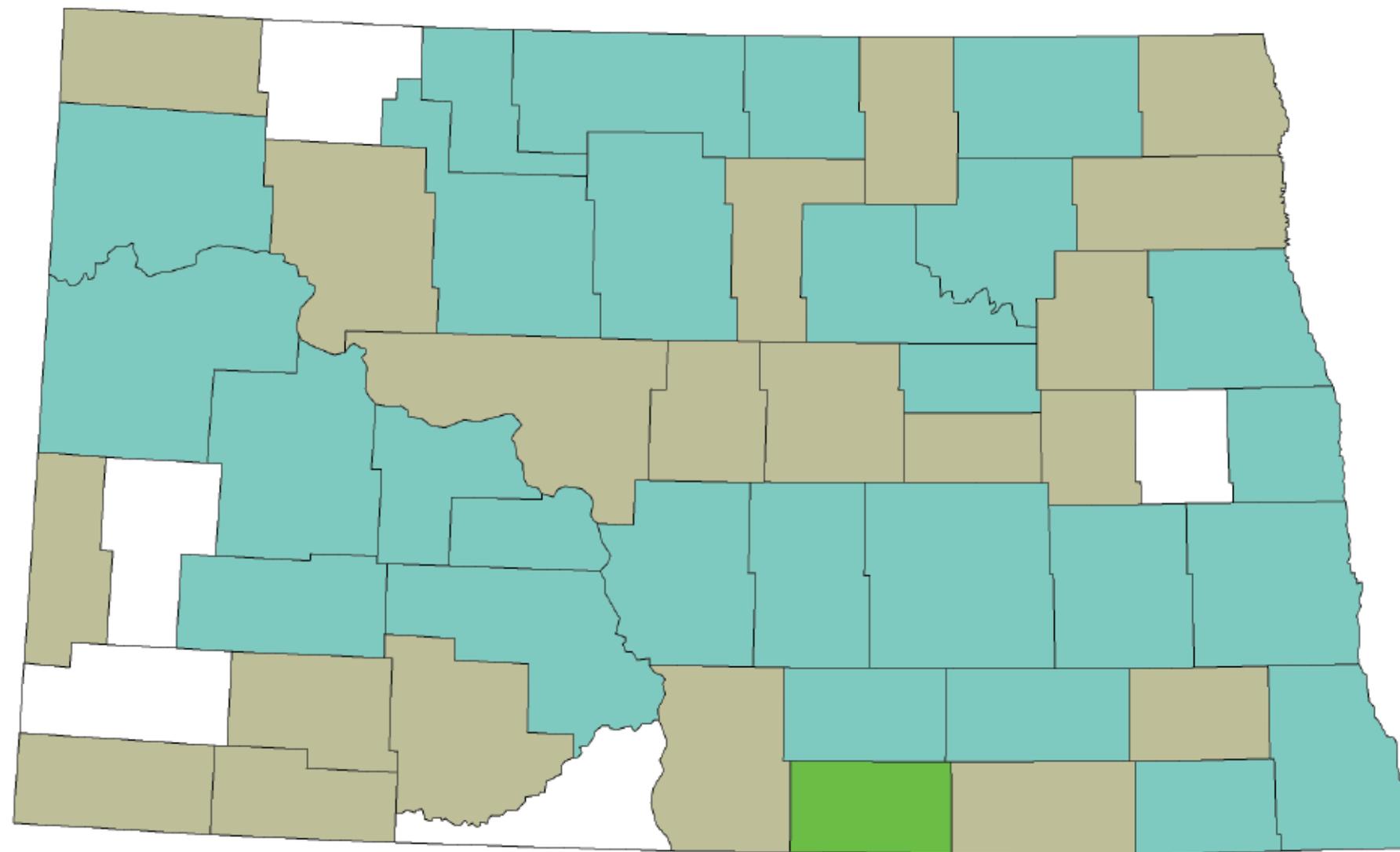


**Rate of pharmacies per 10,000 residents**

0.0
  0.1 - 5.5
  5.6 - 10.5
  10.6 - 15.5

**Figure 6.20. Rate of pharmacy locations in North Dakota by county.<sup>10</sup>**

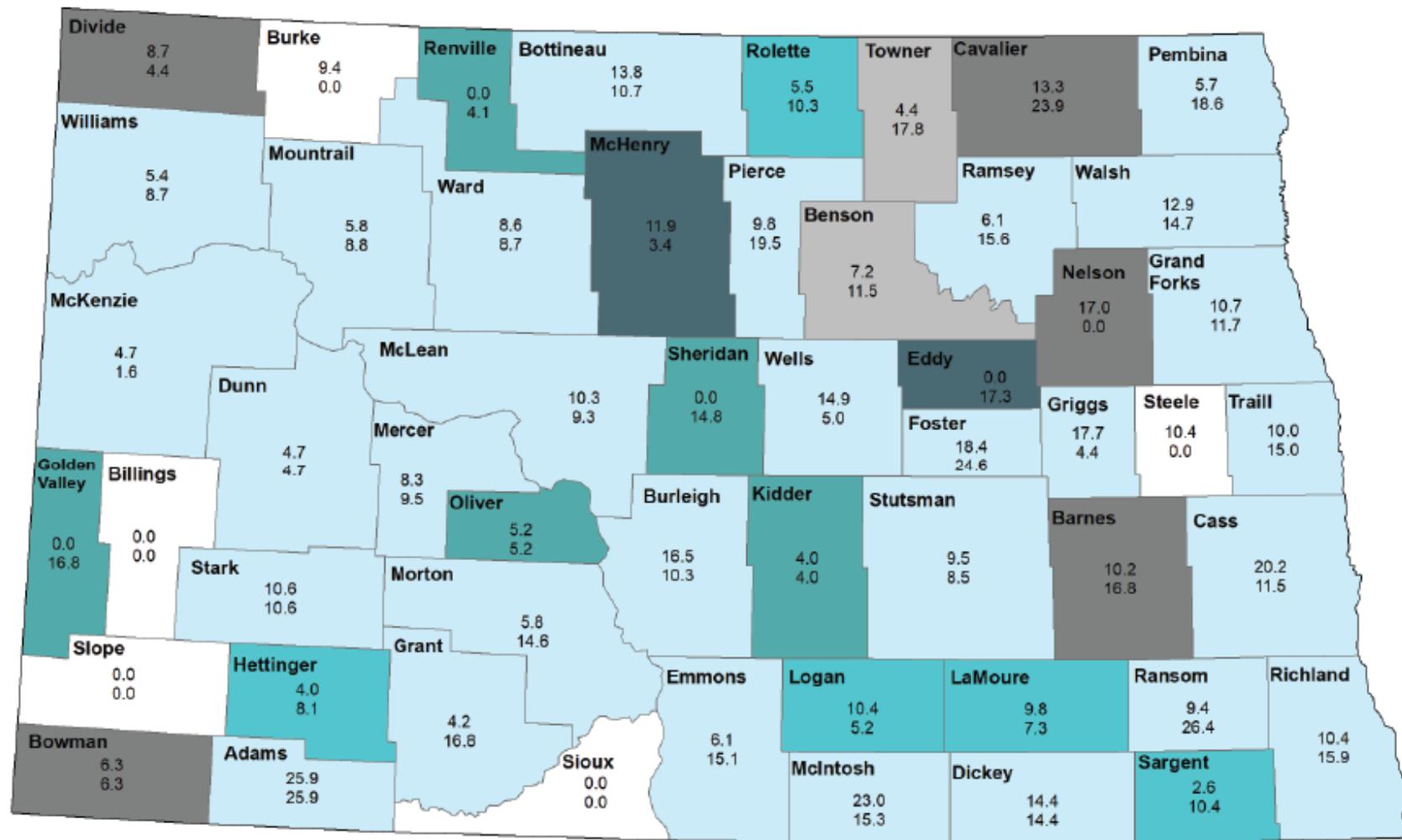
The map above illustrates where pharmacies are located in North Dakota by county. This map demonstrates that there are five counties in which there are no pharmacies. These counties include Billings, Burke, Sioux, Slope, and Steele. Three of these counties - Billings, Sioux, and Slope - also have no pharmacist and no pharmacy technician. The county with the highest concentration of pharmacy locations - Cass County - holds one of the largest cities in the state, Fargo. This county also holds the state's largest pharmacy education program at North Dakota State University in Fargo.



**Rate of pharmacies per 10,000 residents**



**Figure 6.21. Pharmacy location rates per 10,000 North Dakota residents.<sup>10</sup>**

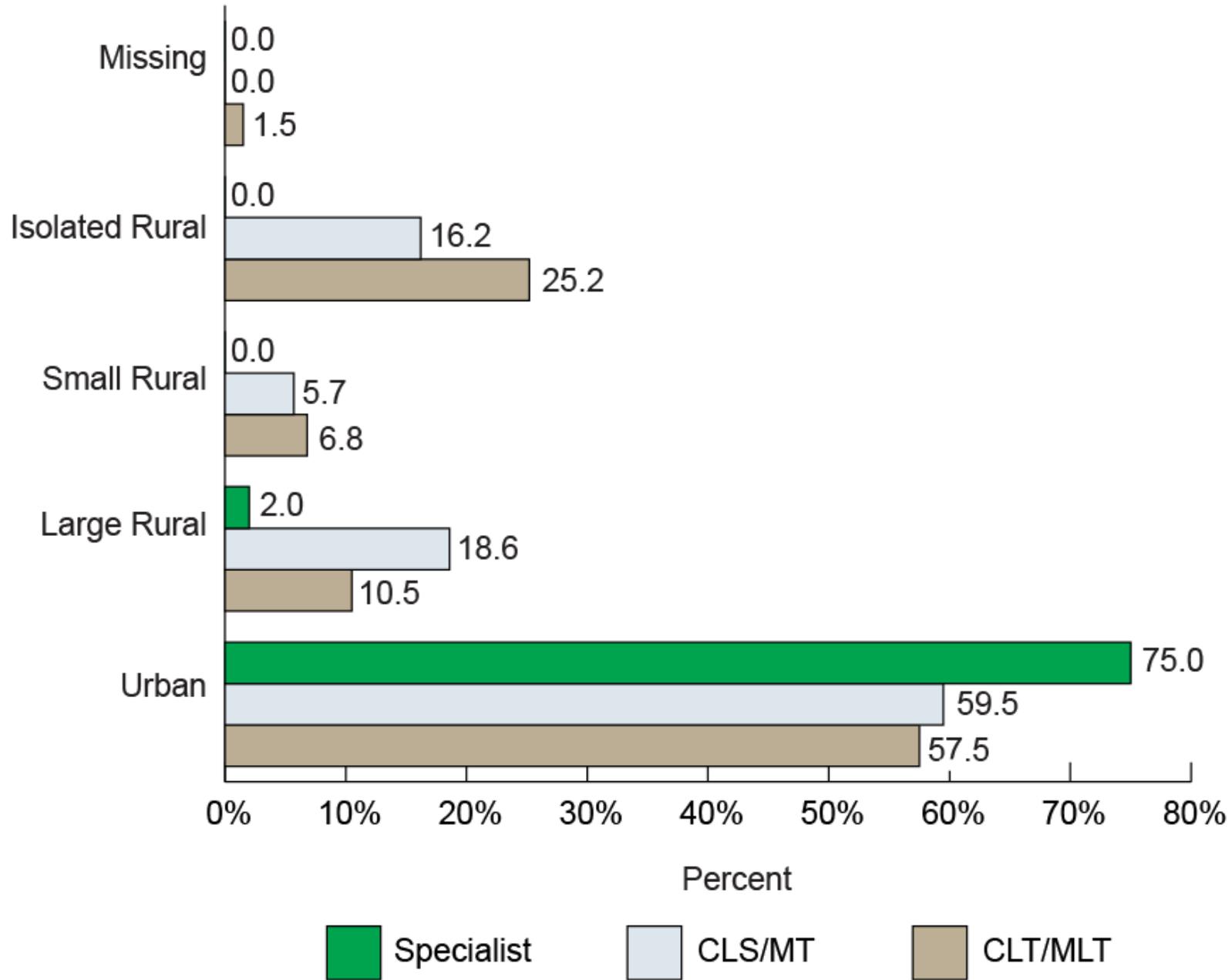


Pharmacy Type per County

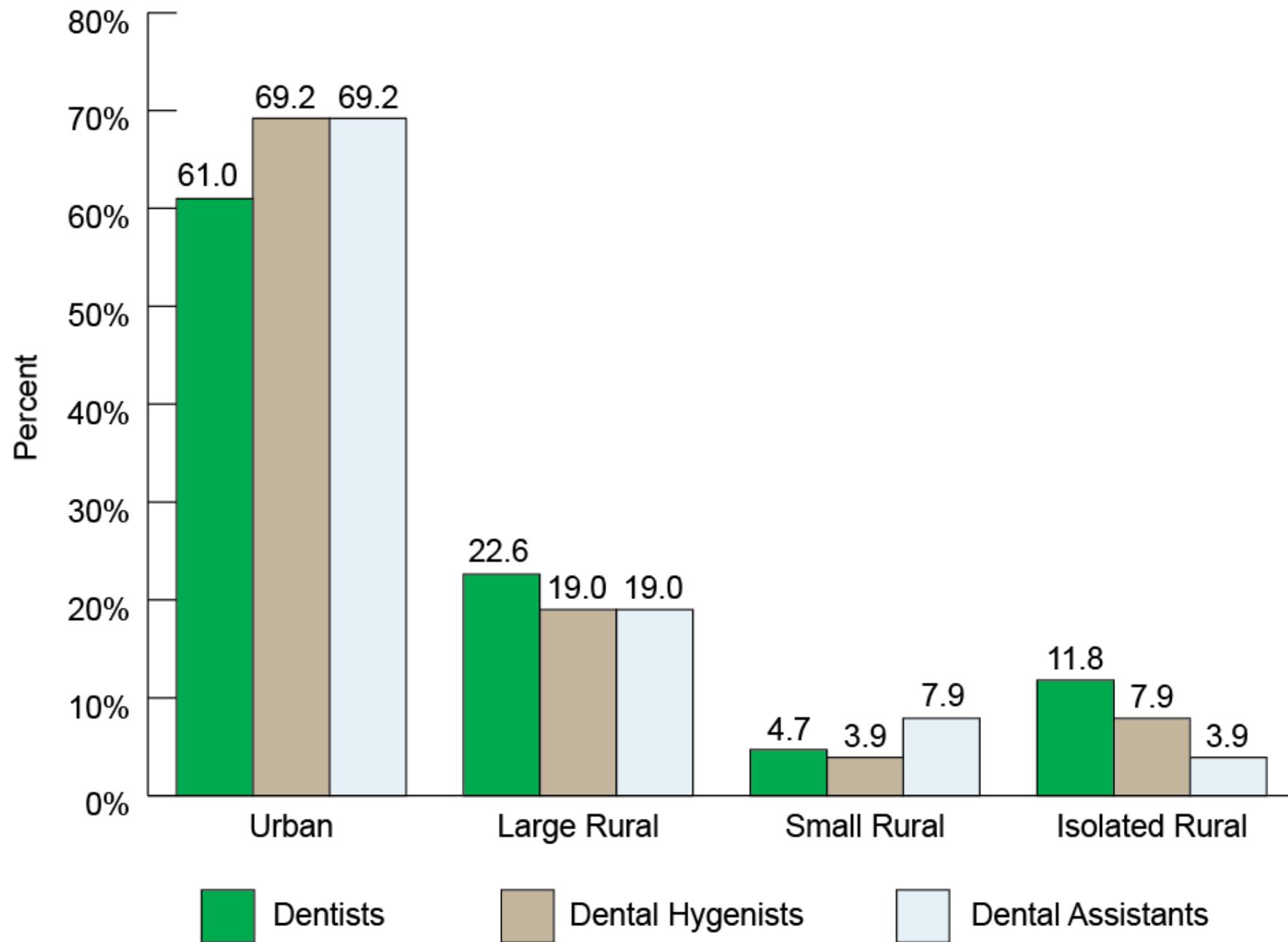
- Retail, Location Based, and Telepharmacies
- Retail and Telepharmacies
- Location Based and Telepharmacies
- Retail Pharmacies Only
- Telepharmacies Only
- No Pharmacies

Pharmacists per 10,000 Persons  
Pharmacy Techs per 10,000 Persons

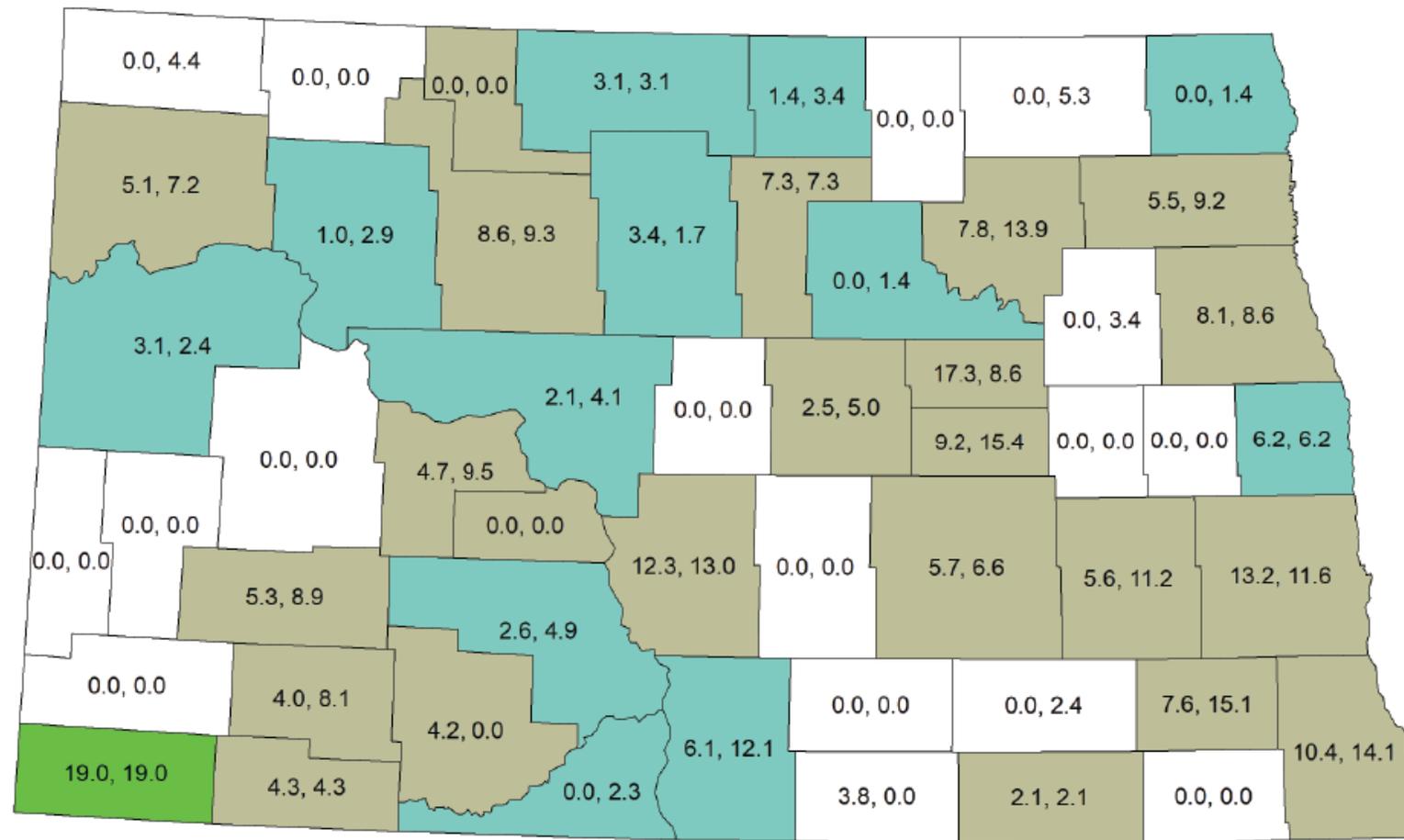
**Figure 6.22. Pharmacy classification per North Dakota county.<sup>10</sup>**



**Figure 6.23. Rural-urban designation for clinical laboratory professionals in North Dakota.<sup>11</sup>**



**Figure 6.24. Rural-urban designation for dental professionals in North Dakota.<sup>12</sup>**



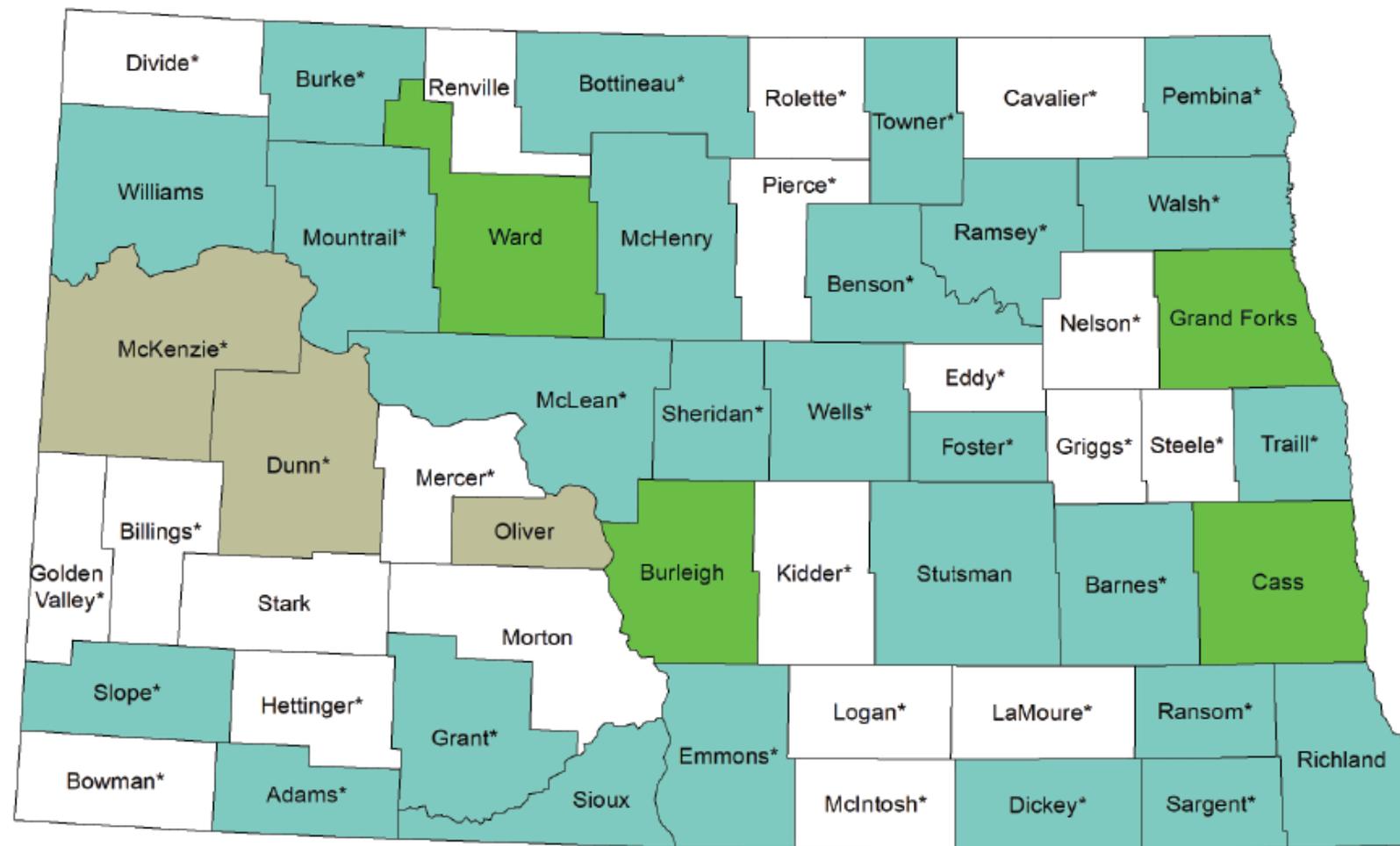
**Rate of dentists per 10,000 residents**



**Rate of dental assistants per 10,000 residents**

**Rate of dental hygienists per 10,000 residents**

**Figure 6.25. Rate of dental professionals per 10,000 North Dakota residents.**<sup>12</sup>  
 The map above shows the rates per 10,000 of various dental professionals in North Dakota. Seventeen of the 53 North Dakota counties have no dentist working in those counties. Of these 17, there are 16 counties that do not have a dental assistant and 13 that have no dental hygienist. There are 12 counties that have no dental professional working in that county.



\* Indicates Rural County

**Number of Doctors of Dental Surgery per county**



**Figure 6.26. Number of doctors of dental surgery per North Dakota county.<sup>12</sup>**

**Table 6.1*****Rural-urban designation for counselors in North Dakota<sup>3</sup>***

<b>License Level</b>	<b>RUCA Four</b>	<b>N</b>	<b>%</b>
LAPC	Urban	43	79.63
	Large Rural	7	12.96
	Small Rural	2	3.70
	Isolated Rural	2	3.70
LPC	Urban	121	77.56
	Large Rural	20	12.82
	Small Rural	4	2.56
	Isolated Rural	11	7.05
LPC/LPCC	Urban	125	71.84
	Large Rural	24	13.79
	Small Rural	6	3.45
	Isolated Rural	19	10.92

**Table 6.2*****Region of primary workplace for social work professionals in North Dakota<sup>5</sup>***

	LSWs		LCSWs		LICSWs		All	
Region	N	%	N	%	N	%	N	%
Northwest	45	3.5	7	2.3	16	6.1	68	3.6
North Central	150	11.6	23	7.5	37	14.0	210	11.3
Lake Region	75	5.8	16	5.2	16	6.1	107	5.7
Northeast	164	12.7	61	19.9	42	16.2	267	14.4
Southeast	381	29.4	107	35.0	92	35.2	580	31.2
South Central	73	5.7	19	6.2	10	3.8	102	5.5
West Central	354	27.4	63	20.6	37	14.4	454	24.5
Badlands	50	3.9	10	3.3	11	4.2	71	3.8

**Table 6.3*****Rural-urban designation for social work professionals in North Dakota<sup>5</sup>***

<b>License Level</b>	<b>Urban</b>	<b>Large Rural</b>	<b>Small Rural</b>	<b>Isolated Rural</b>	<b>Total</b>
Licensed Social Worker	822	248	59	164	1293
Licensed Certified Social Worker	221	45	13	27	306
Licensed Independent Clinical Social Worker	168	61	16	17	262
<b>Total</b>	<b>1211</b>	<b>354</b>	<b>88</b>	<b>208</b>	<b>1861</b>

**Table 6.4*****State of primary workplace for PAs licensed in North Dakota<sup>1</sup>***

<b>State</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
Florida	1	0.63	1	0.63
Minnesota	6	3.77	7	4.40
North Dakota	147	92.45	154	96.86
South Dakota	5	3.14	159	100.00

**Table 6.5*****State of primary workplace for PA-Cs licensed in North Dakota<sup>1</sup>***

<b>State</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
Alaska	1	0.50	1	0.50
Arizona	1	0.50	2	0.99
California	2	0.99	4	1.98
Iowa	1	0.50	5	2.48
Michigan	1	0.50	6	2.97
Minnesota	10	4.95	16	7.92
Missouri	2	0.99	18	8.91
Montana	2	0.99	20	9.90
North Dakota	166	82.18	186	92.08
South Dakota	13	6.44	199	98.51
Utah	2	0.99	201	99.50
Washington	1	0.50	202	100.00

**Table 6.6*****Educational attainment for North Dakota physical therapists and physical therapy assistants<sup>8</sup>***

	PT		PTA		Total	
Degree	N	%	N	%	N	%
Associate's	0	0.0	144	97.3	144	15.1
Bachelor's	150	18.7	2	1.4	152	16.0
Certificate	8	1.0	2	1.4	10	1.1
Master's	205	25.5	0	0.0	205	21.6
Doctor of Physical Therapy	440	54.8	0	0.0	440	46.3
<b>All</b>	<b>803</b>	<b>100.0</b>	<b>148</b>	<b>100.0</b>	<b>951</b>	<b>100.0</b>

**Table 6.7*****Primary workplace for North Dakota physical therapists and physical therapist assistants<sup>8</sup>***

Primary Workplace	PT		PTA		Total	
	N	%	N	%	N	%
Academic Institution (post secondary)	36	4.5	0	0.0	36	3.8
Acute Care Hospital	78	9.7	12	8.1	90	9.5
Home Care	49	6.1	7	4.7	56	5.9
Inpatient Rehabilitation Facility	11	1.4	9	6.1	20	2.1
Industry	1	0.1	0	0.0	1	0.1
Non-patient care or non-clinical environment related to physical therapy	10	1.2	0	0.0	10	1.1
Outpatient clinic affiliated with a hospital, health system, military or other government agency	267	33.3	28	18.9	295	31.0
Outpatient clinic not affiliated with a hospital, health system, military or other government agency	174	21.7	14	9.5	188	19.8
Pediatric clinic (non-school based)	25	3.1	4	2.7	29	3.0
Skilled Nursing Facility, Long Term Care Facility, Assistive Living Facility or Group Home	86	10.7	60	40.5	146	15.4
School System	27	3.4	9	6.1	36	3.8
Other	39	4.9	5	3.4	44	4.6
<b>All</b>	<b>803</b>	<b>100.0</b>	<b>148</b>	<b>100.0</b>	<b>951</b>	<b>100.0</b>

**Table 6.8**

*Rural-urban status of primary workplace for North Dakota physical therapists and physical therapist assistants<sup>8</sup>*

	PT		PTA		Total	
Rural-Urban Status	N	%	N	%	N	%
Urban	519	65.2	7	49.3	592	62.3
Large/Small/Isolated Rural	277	34.8	75	50.7	352	37.0
<b>All</b>	<b>796</b>	<b>100.0</b>	<b>148</b>	<b>100.0</b>	<b>951</b>	<b>100.0</b>

**Table 6.9*****Future plans for North Dakota physical therapists and physical therapist assistants<sup>8</sup>***

	PT		PTA		Total	
Future Plans	N	%	N	%	N	%
Decrease my hours in the field of physical therapy	17	2.1	3	2.0	20	2.1
Decrease my hours of direct patient care	16	2.0	1	0.7	17	1.8
Increase my hours in the field of physical therapy	31	3.9	10	6.8	41	4.3
Increase my hours of direct patient care	11	1.4	4	2.7	15	1.6
No planned change	725	90.5	129	87.8	854	90.1
Stop working in the field of physical therapy	1	0.1	0	0.0	1	0.1
<b>All</b>	<b>801</b>	<b>100.0</b>	<b>147</b>	<b>100.0</b>	<b>948</b>	<b>100.0</b>

**Table 6.10*****State of primary workplace of licensed pharmacy technicians in North Dakota<sup>10</sup>***

<b>State</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
Florida	1	0.10	1	0.10
Iowa	1	0.10	2	0.21
Minnesota	65	6.78	67	6.99
Montana	2	0.21	69	7.19
North Dakota	882	91.97	951	99.17
Oregon	1	0.10	952	99.27
South Dakota	4	0.42	956	99.69
Texas	2	0.21	958	99.90
Washington	1	0.10	959	100.00

**Table 6.11*****State of primary workplace for pharmacists licensed in North Dakota<sup>10</sup>***

State	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Alaska	1	0.08	1	0.08
Arizona	7	0.55	8	0.63
California	6	0.48	14	1.11
Colorado	5	0.40	19	1.50
Connecticut	1	0.08	20	1.58
Florida	5	0.40	25	1.98
Iowa	1	0.08	26	2.06
Idaho	1	0.08	27	2.14
Illinois	52	4.12	79	6.25
Indiana	3	0.24	82	6.49
Kansas	1	0.08	83	6.57
Michigan	2	0.16	85	6.73
Minnesota	133	10.53	218	17.26
Missouri	5	0.40	223	17.66
Montana	10	0.79	233	18.45
North Carolina	1	0.08	234	18.53
North Dakota	981	77.67	1215	96.20
Nebraska	2	0.16	1217	96.36
Nevada	1	0.08	1218	96.44
New York	3	0.24	1221	96.67
Ohio	2	0.16	1223	96.83
Pennsylvania	4	0.32	1227	97.15
Rhode Island	1	0.08	1228	97.23
South Dakota	30	2.38	1258	99.60
Texas	4	0.32	1262	99.92
Virginia	1	0.08	1263	100.00

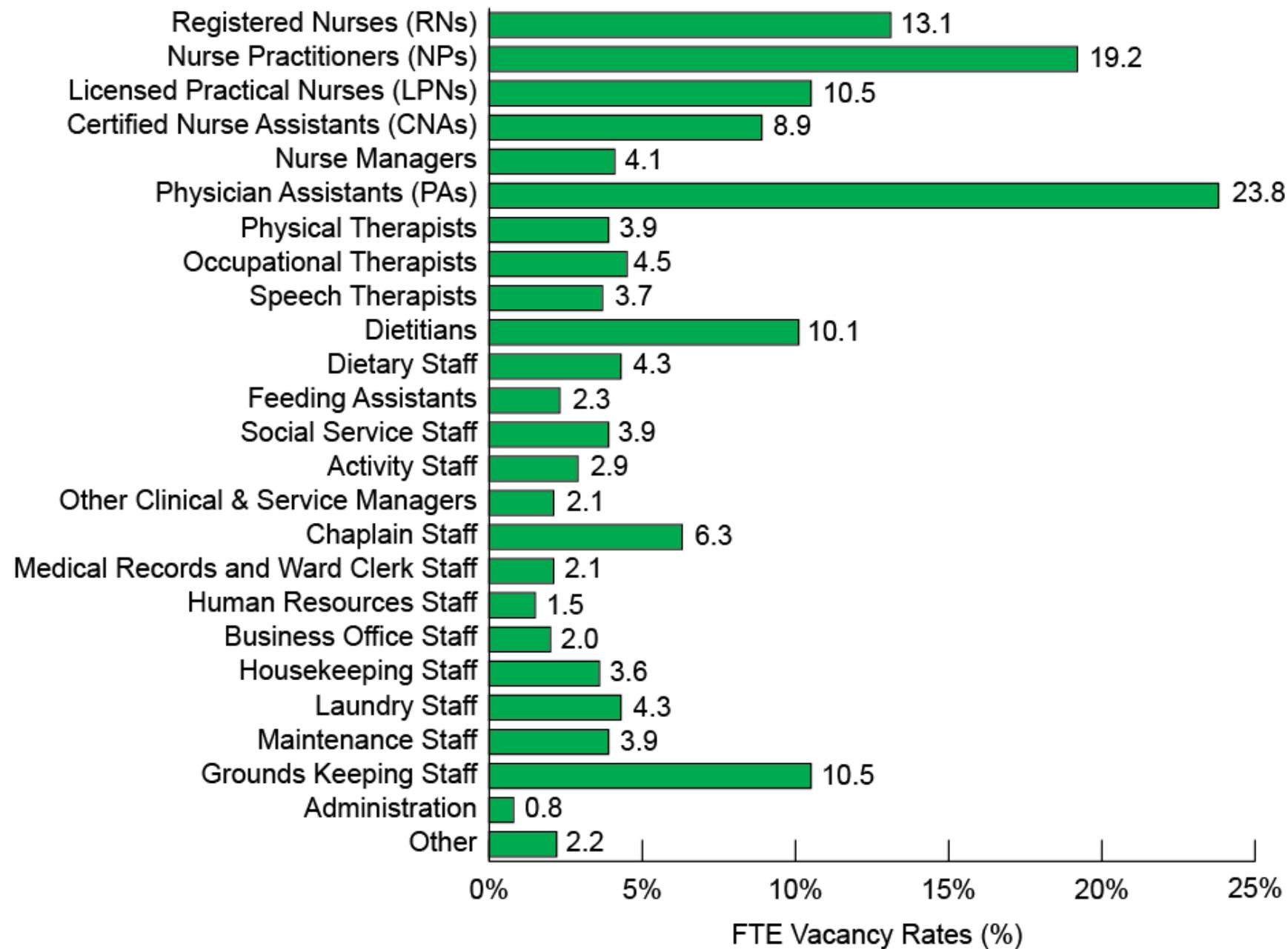
**Table 6.12*****Specialty areas for dentists in North Dakota<sup>12</sup>***

<b>Specialty ADA</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
Endodontics	12	5.56	12	5.56
Forensic Odontology	1	0.46	13	6.02
General Dentistry	142	65.74	155	71.76
Oral and Maxillofacial Surgery	18	8.33	173	80.09
Orthodontics	18	8.33	191	88.43
Pediatric Dentistry	15	6.94	206	95.37
Periodontics	6	2.78	212	98.15
Prosthodontics	4	1.85	216	100.00

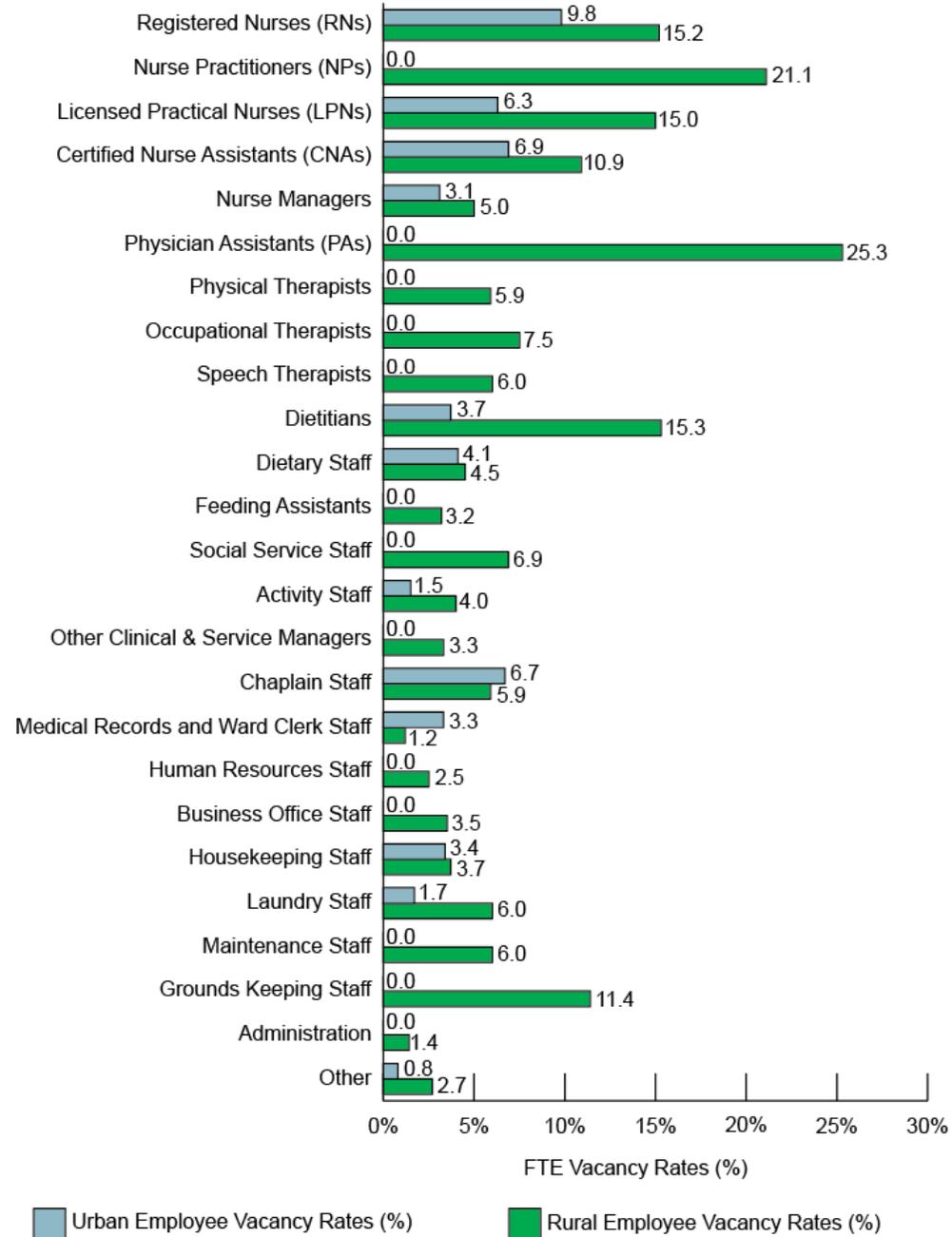
*Frequency Missing = 192*

## Chapter 7:

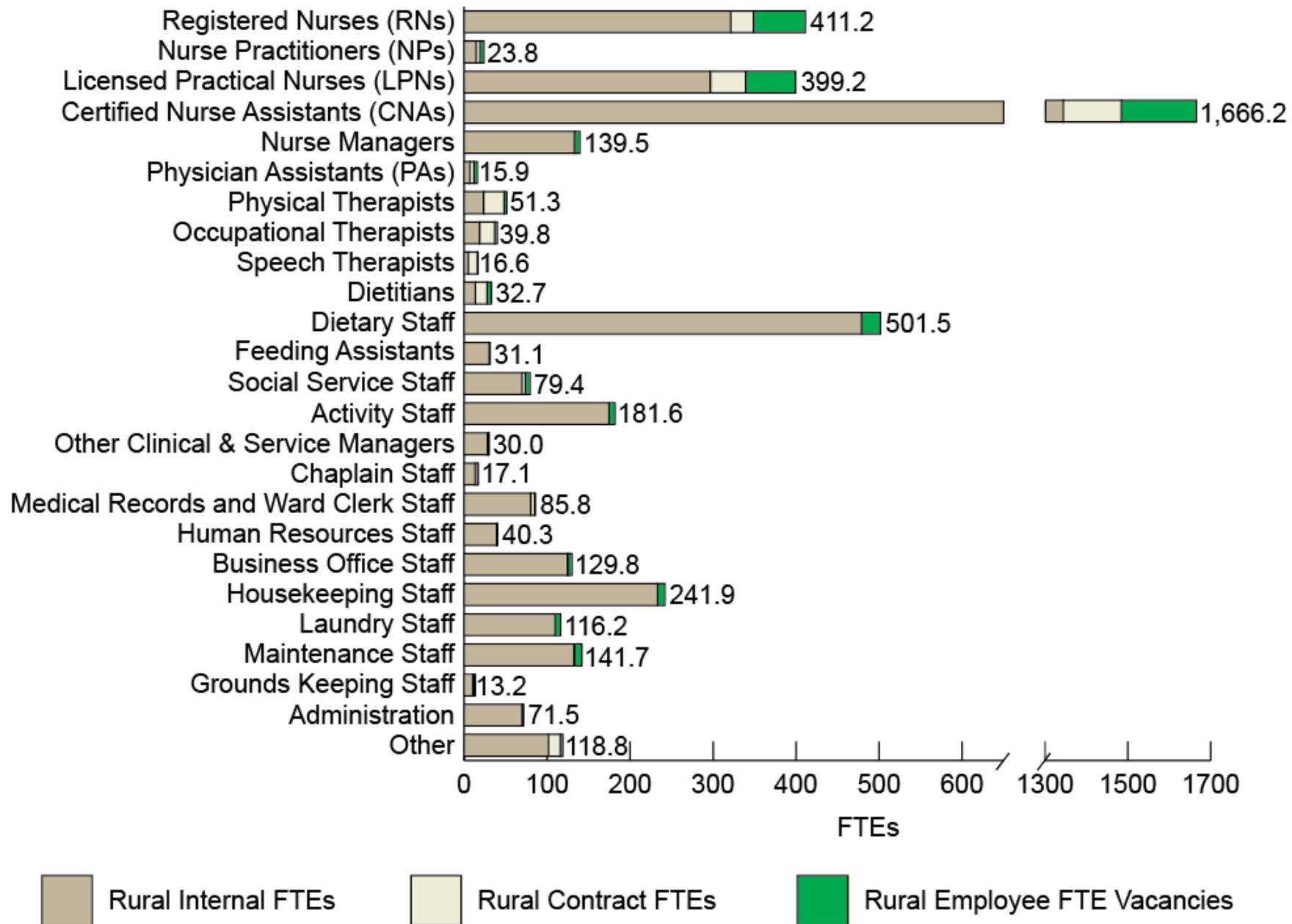
# Healthcare Facility Workforce in North Dakota



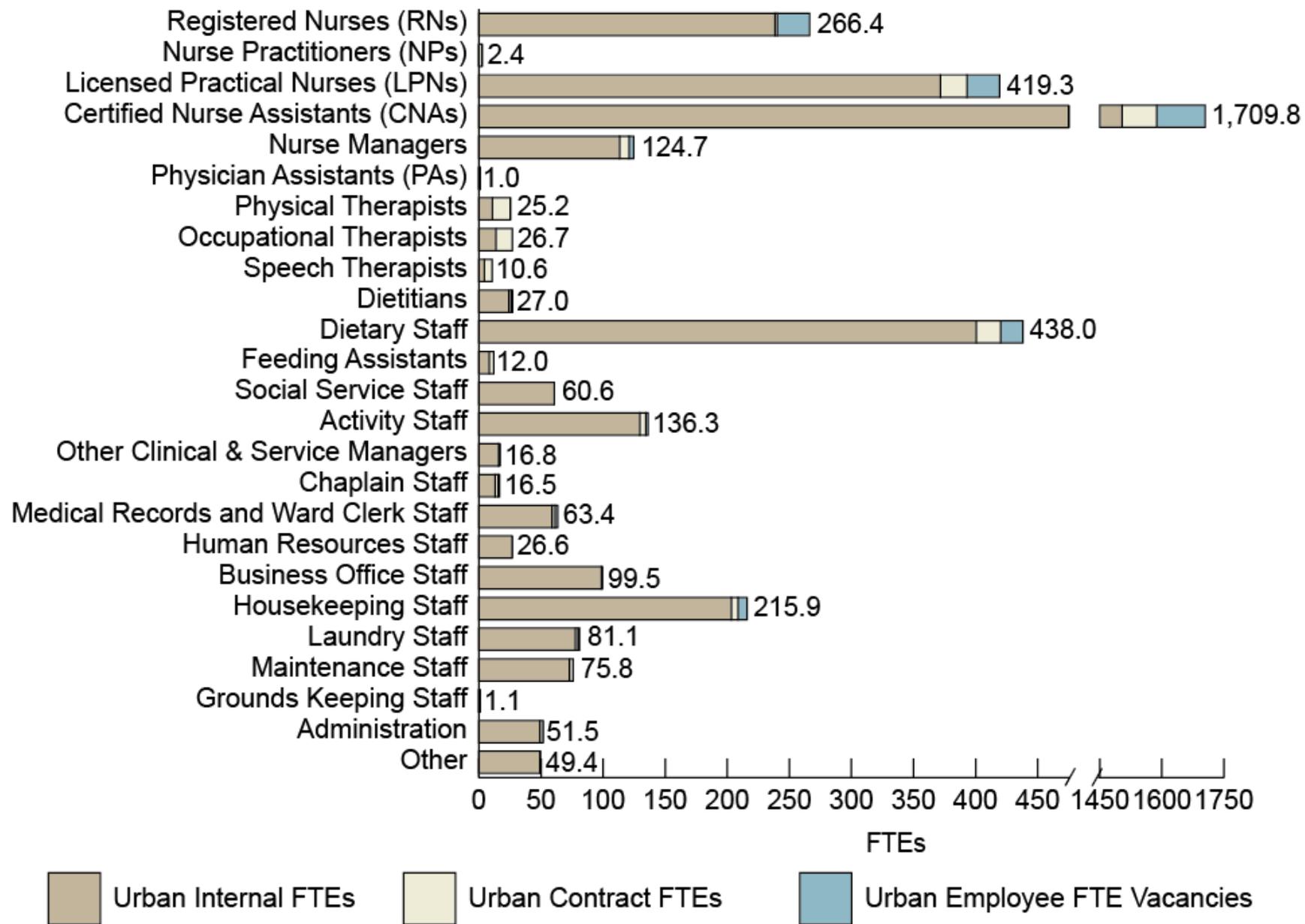
**Figure 7.1. Aggregate statewide nursing facility workforce FTE vacancy rates.<sup>3</sup>**



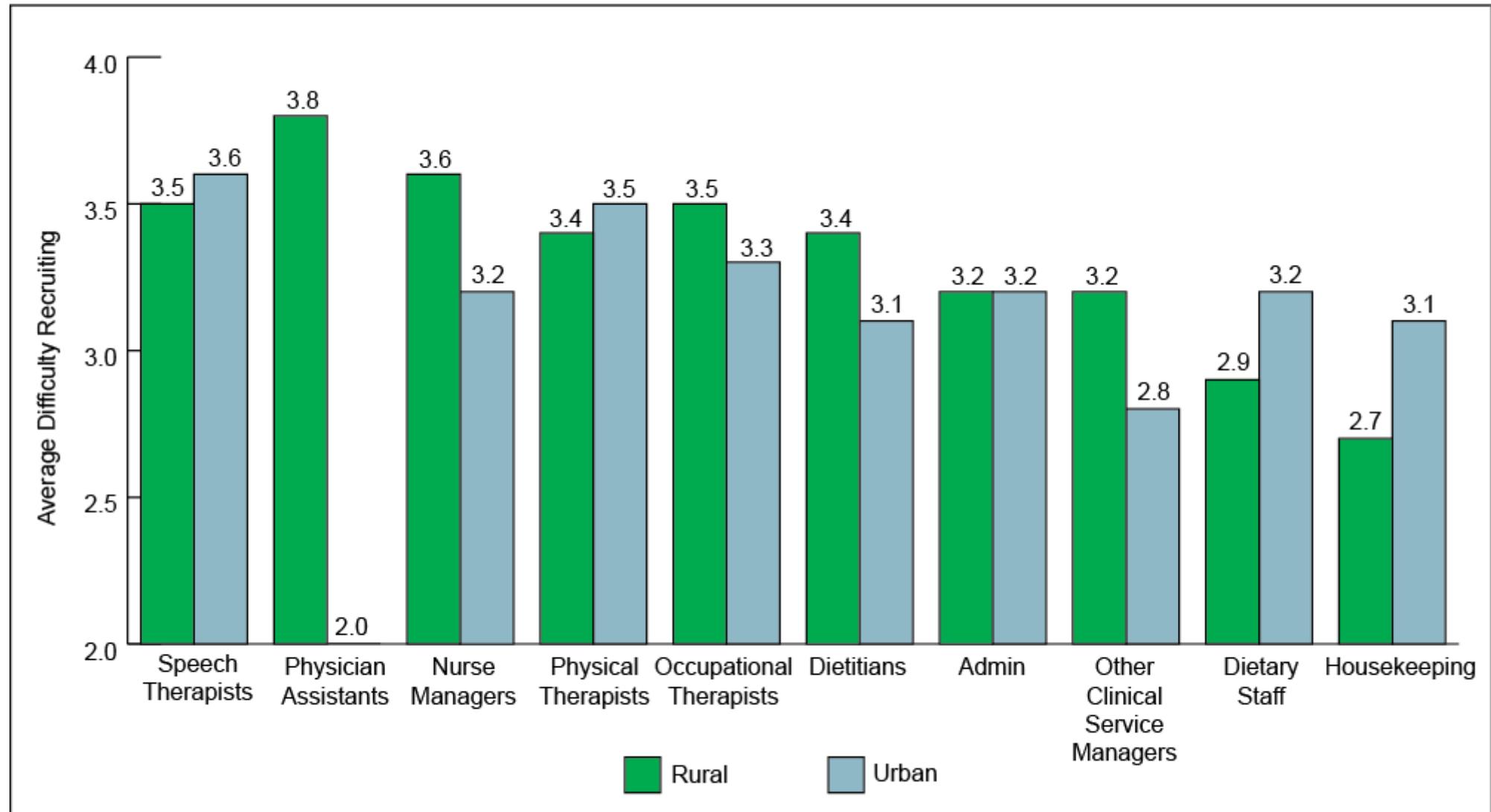
**Figure 7.2. Aggregate statewide nursing facility workforce FTE vacancy rates by rural and urban.<sup>3</sup>**



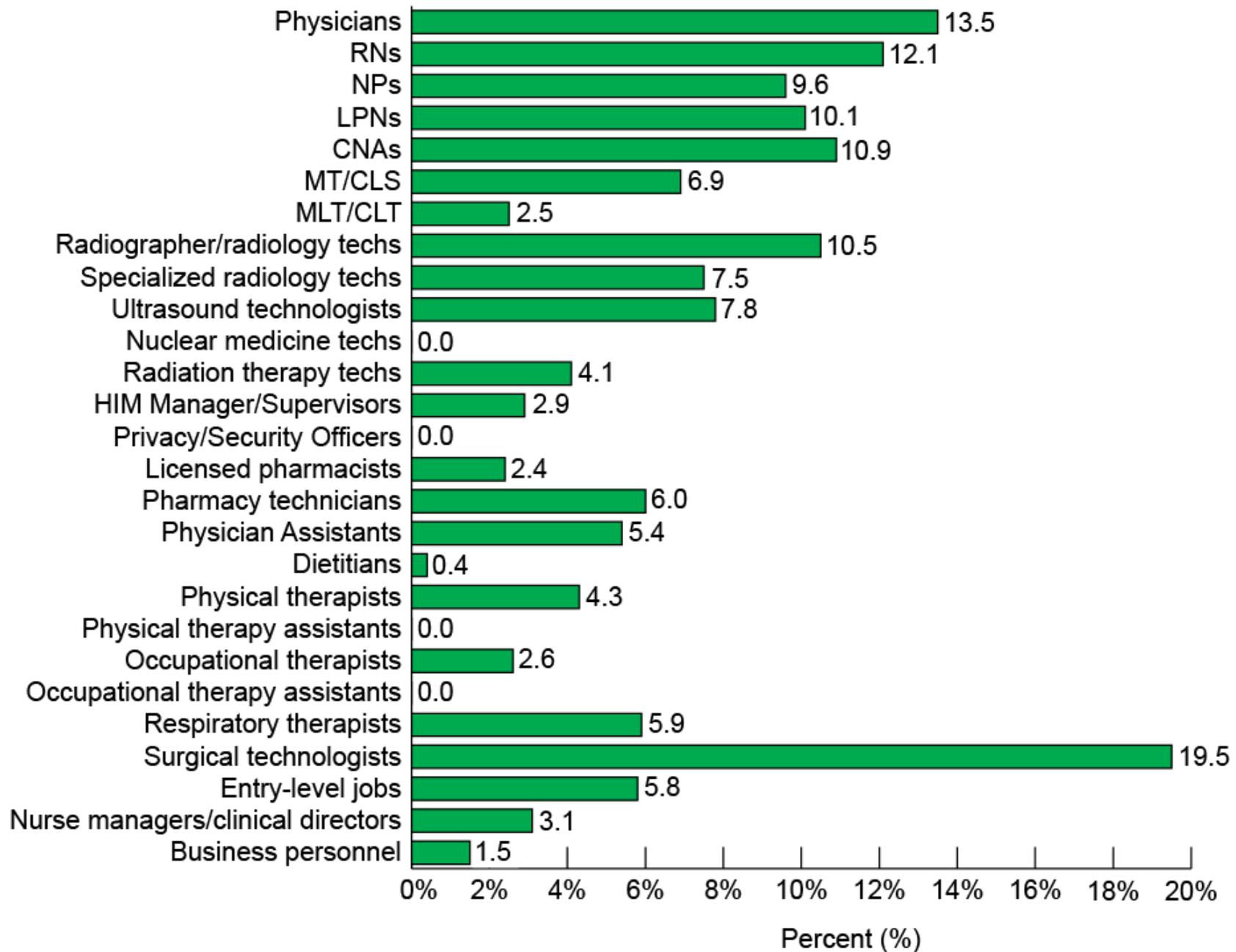
**Figure 7.3. Nursing facility workforce FTEs for internal, contract, and vacancy positions in rural areas.<sup>3</sup>**



**Figure 7.4. Nursing facility workforce FTEs for internal, contract, and vacancy positions in urban areas.<sup>3</sup>**



**Figure 7.5. Nursing facility CEO ratings of difficulty recruiting by provider type.<sup>3</sup>**



**Figure 7.6. Statewide aggregate hospital workforce vacancy rates.<sup>2</sup>**

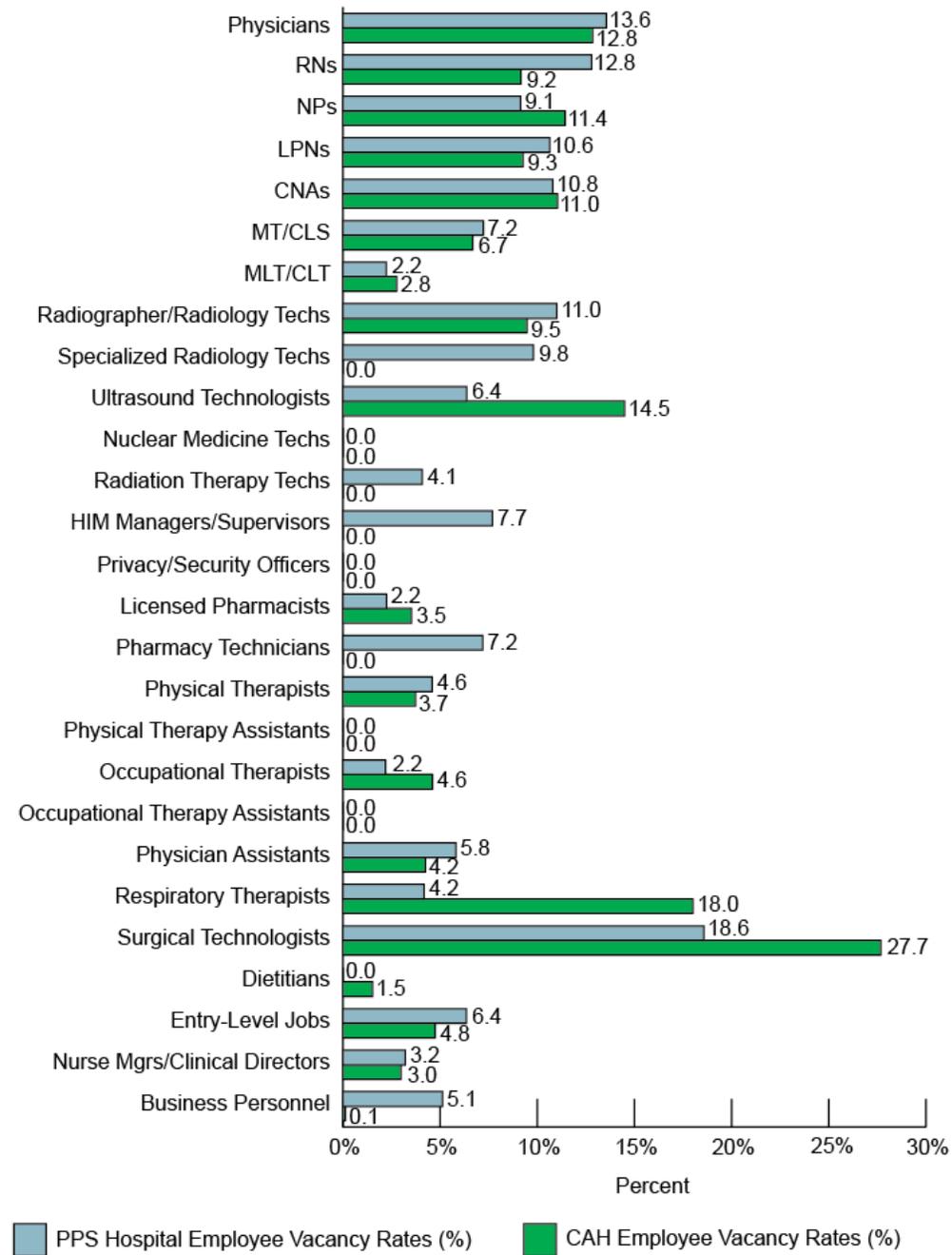


Figure 7.7. Statewide hospital workforce vacancy rates by CAH and PPS hospitals.<sup>2</sup>

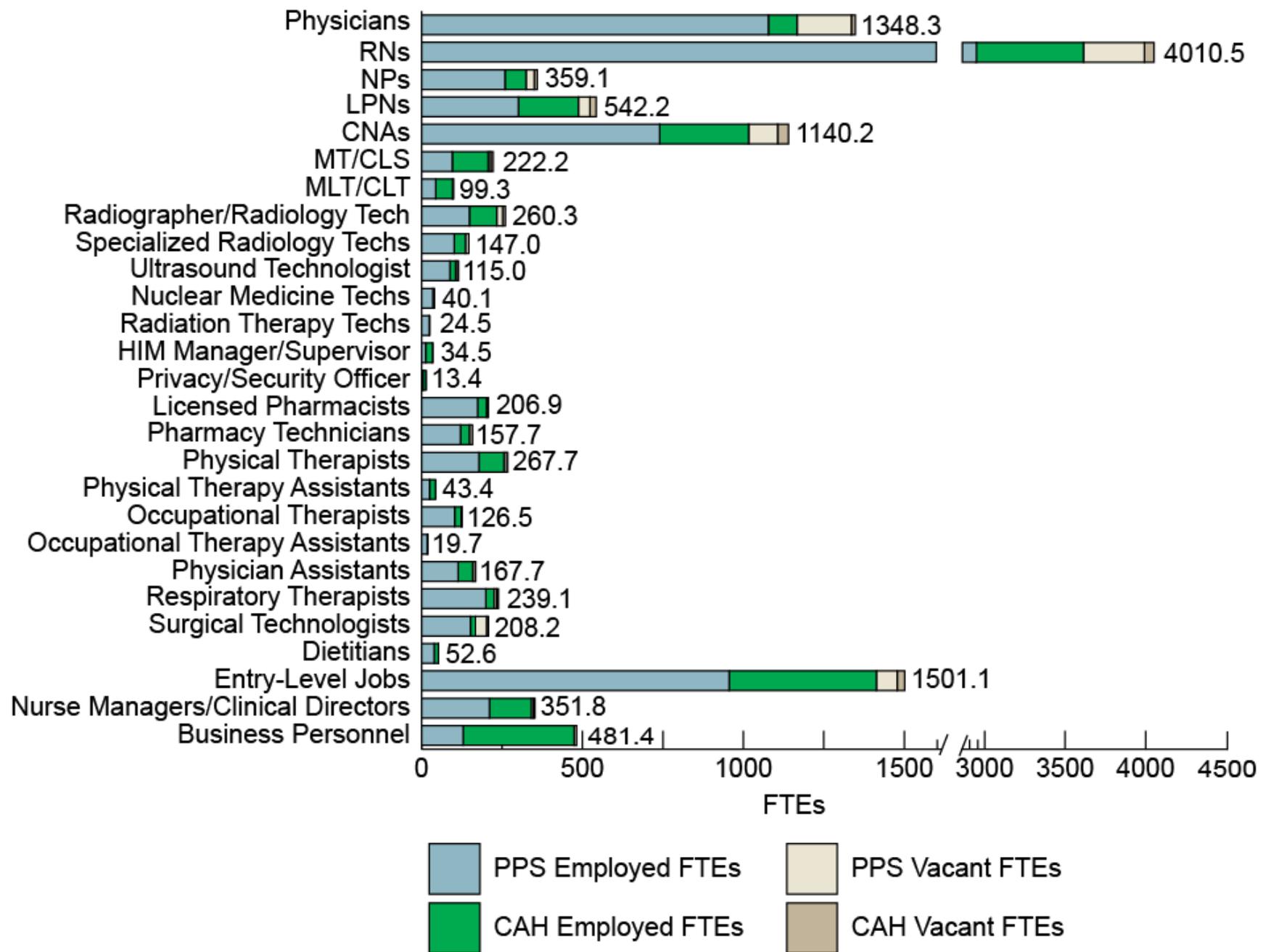
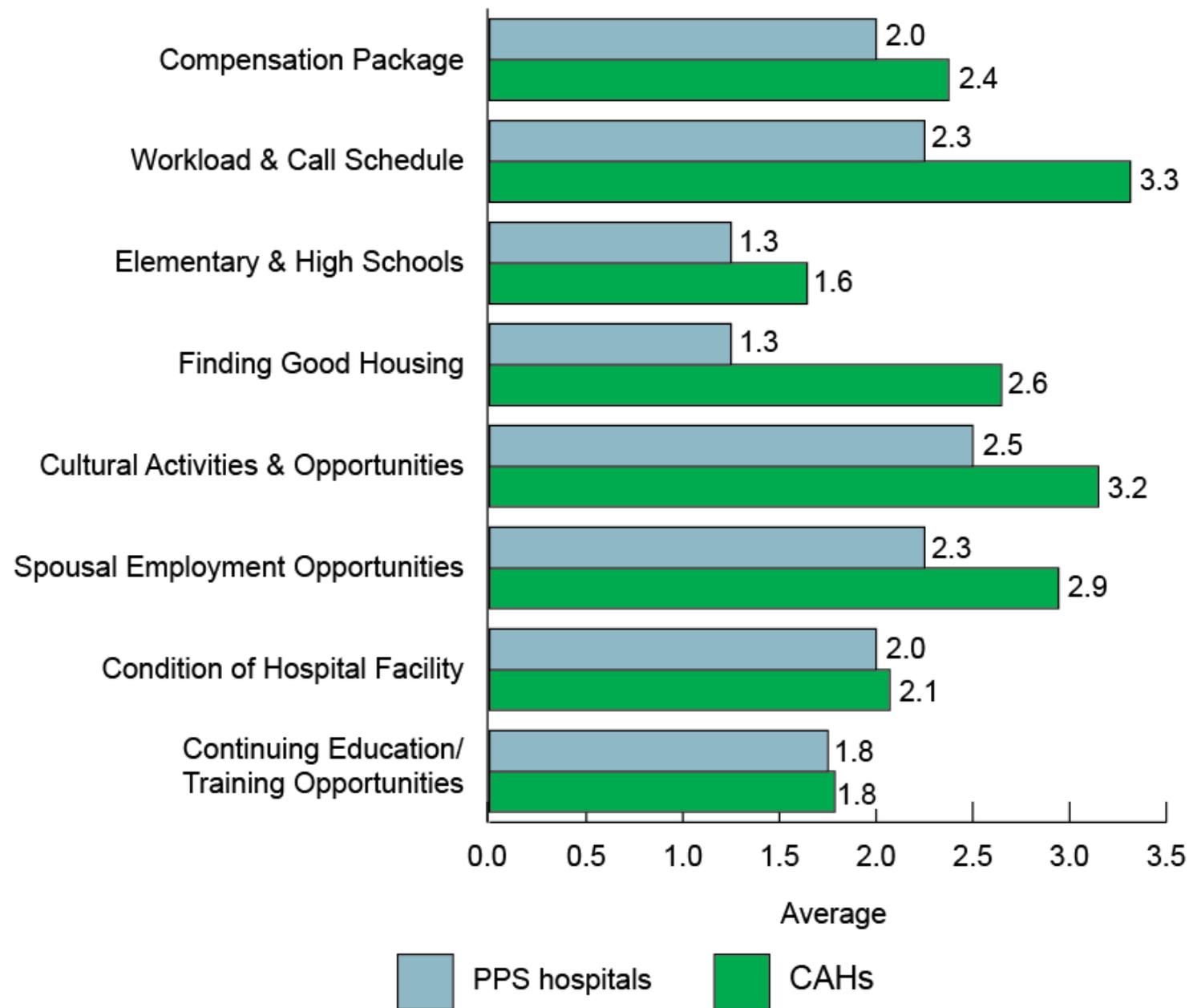


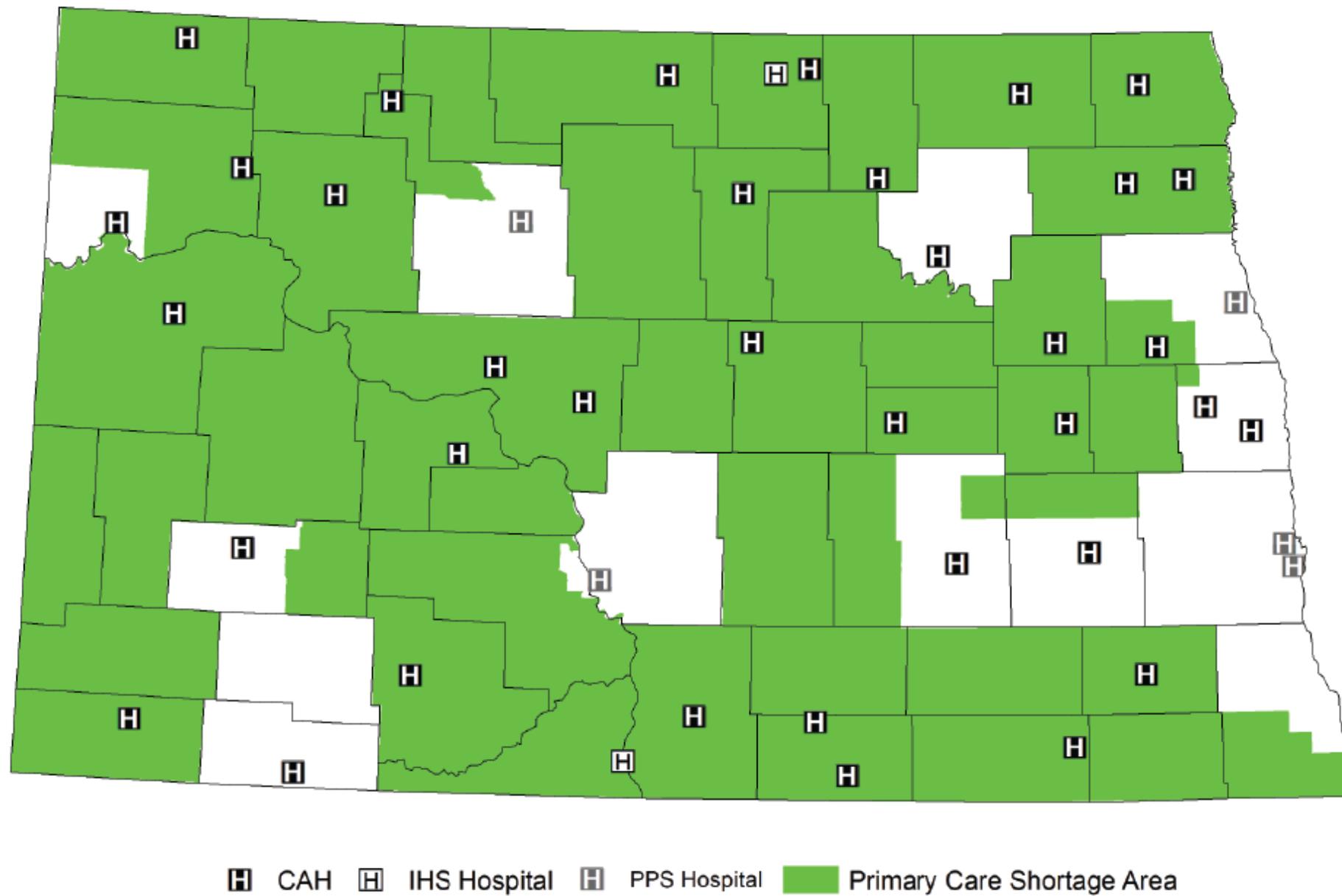
Figure 7.8. Employed and vacant FTEs among CAH and PPS hospitals.<sup>2</sup>



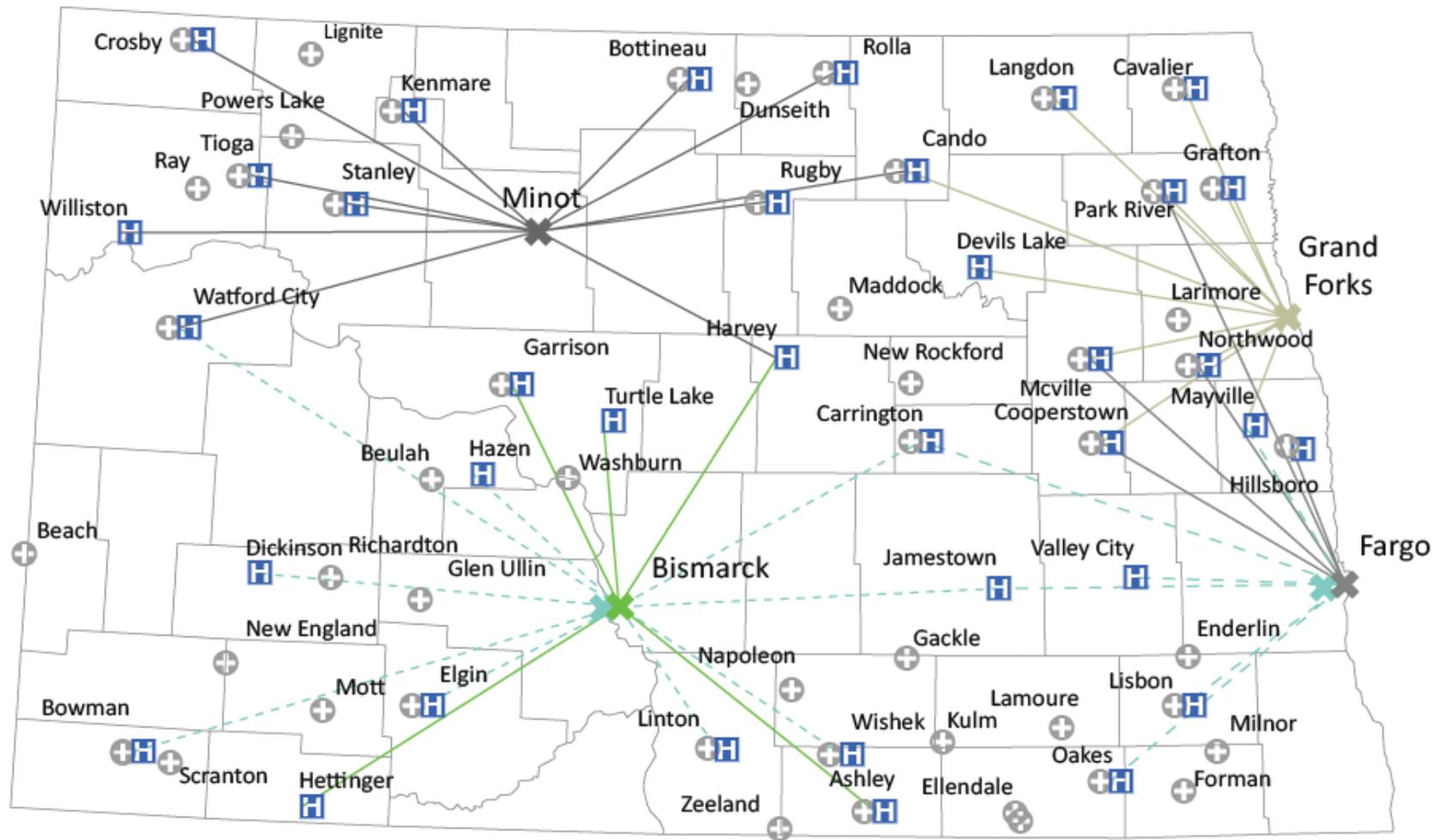
**Figure 7.9. Rating of factors that contribute to problems recruiting physicians to CAHs/ PPS hospitals.<sup>2</sup>**

## Chapter 8:

# Healthcare Organization and Infrastructure in North Dakota



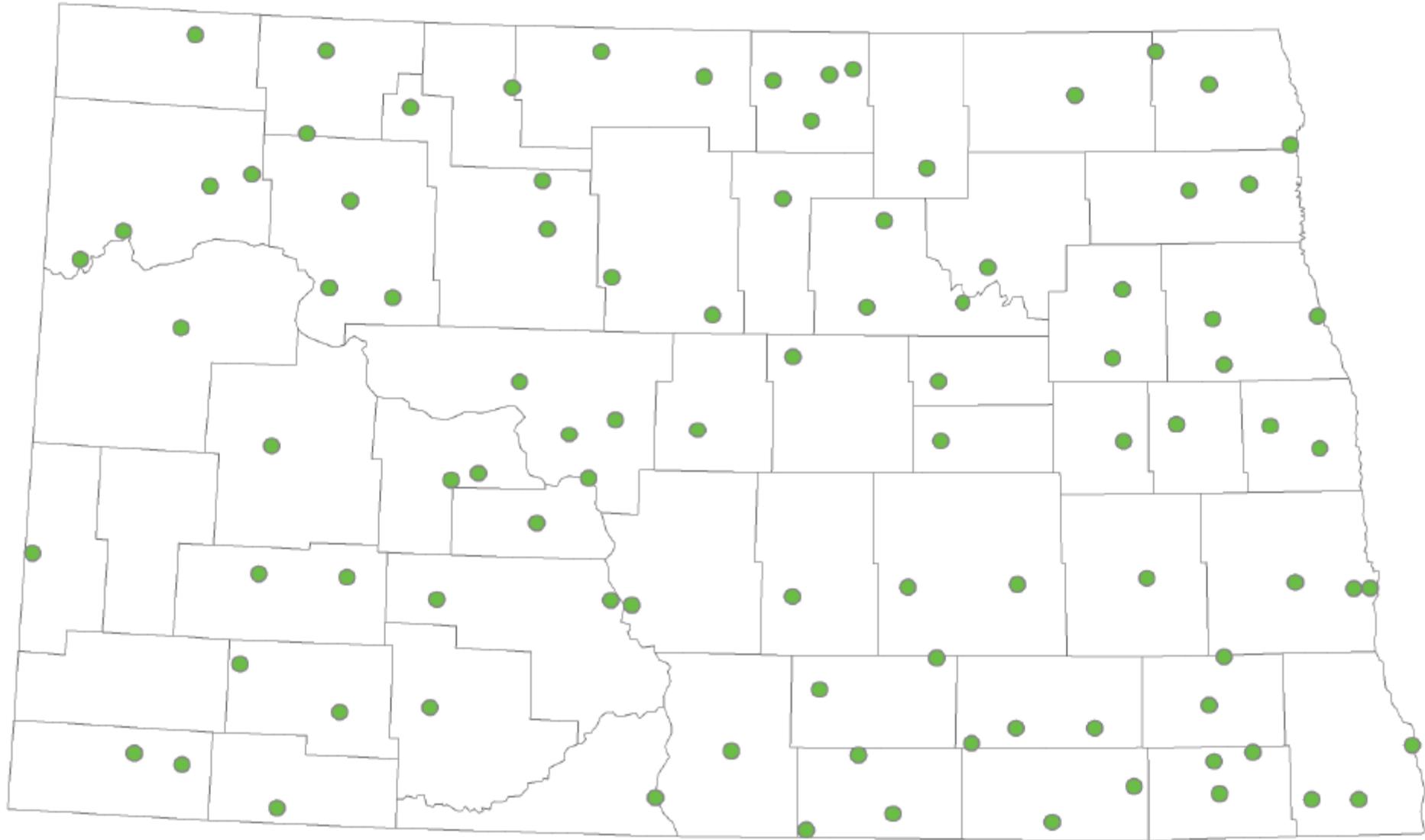
**Figure 8.1. Hospitals in North Dakota.<sup>1</sup>**



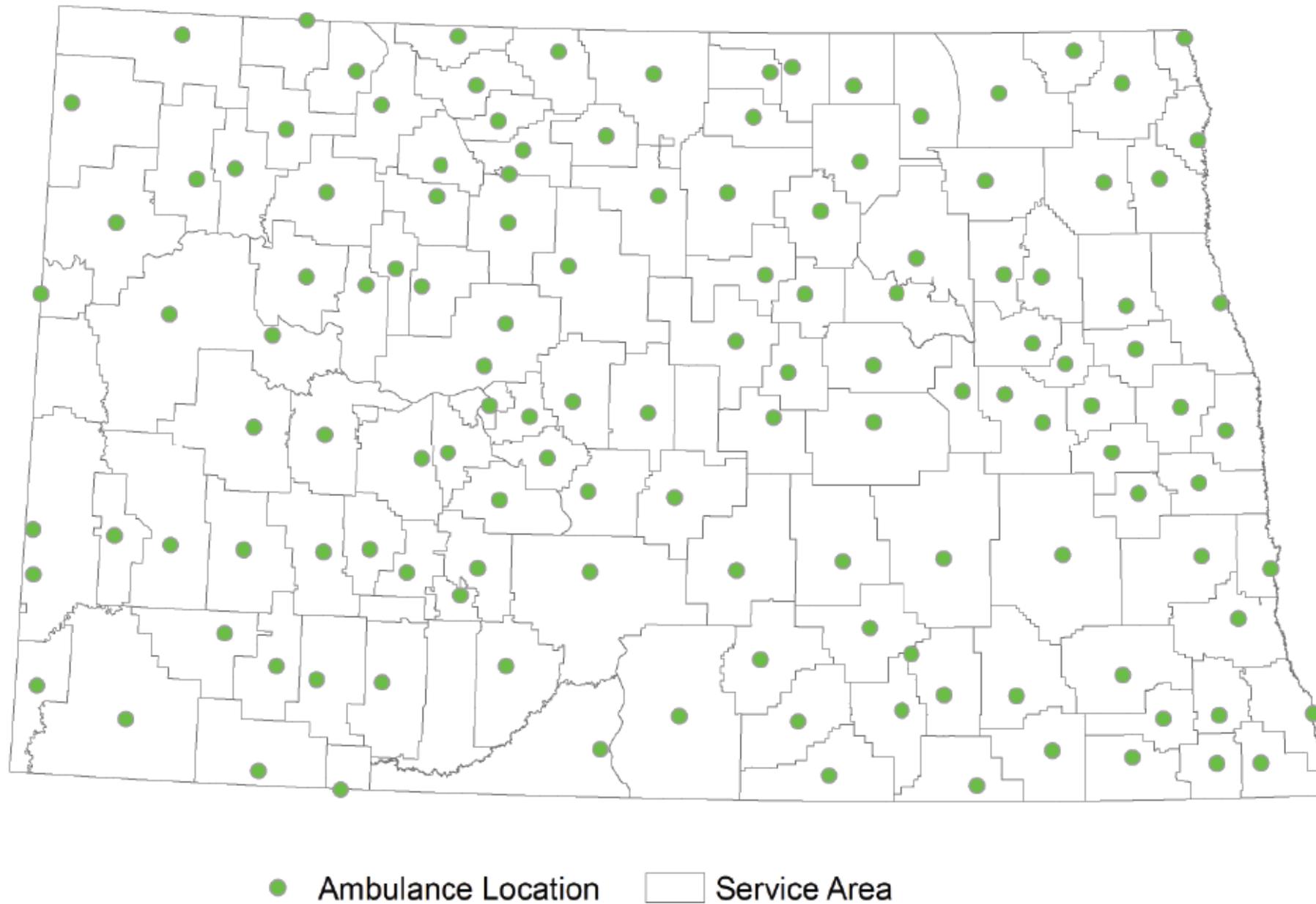
**Referral Centers**

- |  |  |                            |
|--|--|----------------------------|
| — Altru Health System Grand Forks                | — Sanford Health Fargo                         | ✕ Referral Center          |
| — CHI St. Alexis Bismarck                        | - - - Sanford Health and Essentia Health Fargo | Ⓜ Critical Access Hospital |
| - - - Sanford Health and CHI St. Alexis Bismarck | — Trinity Hospital Minot                       | ⊕ Rural Health Clinic      |

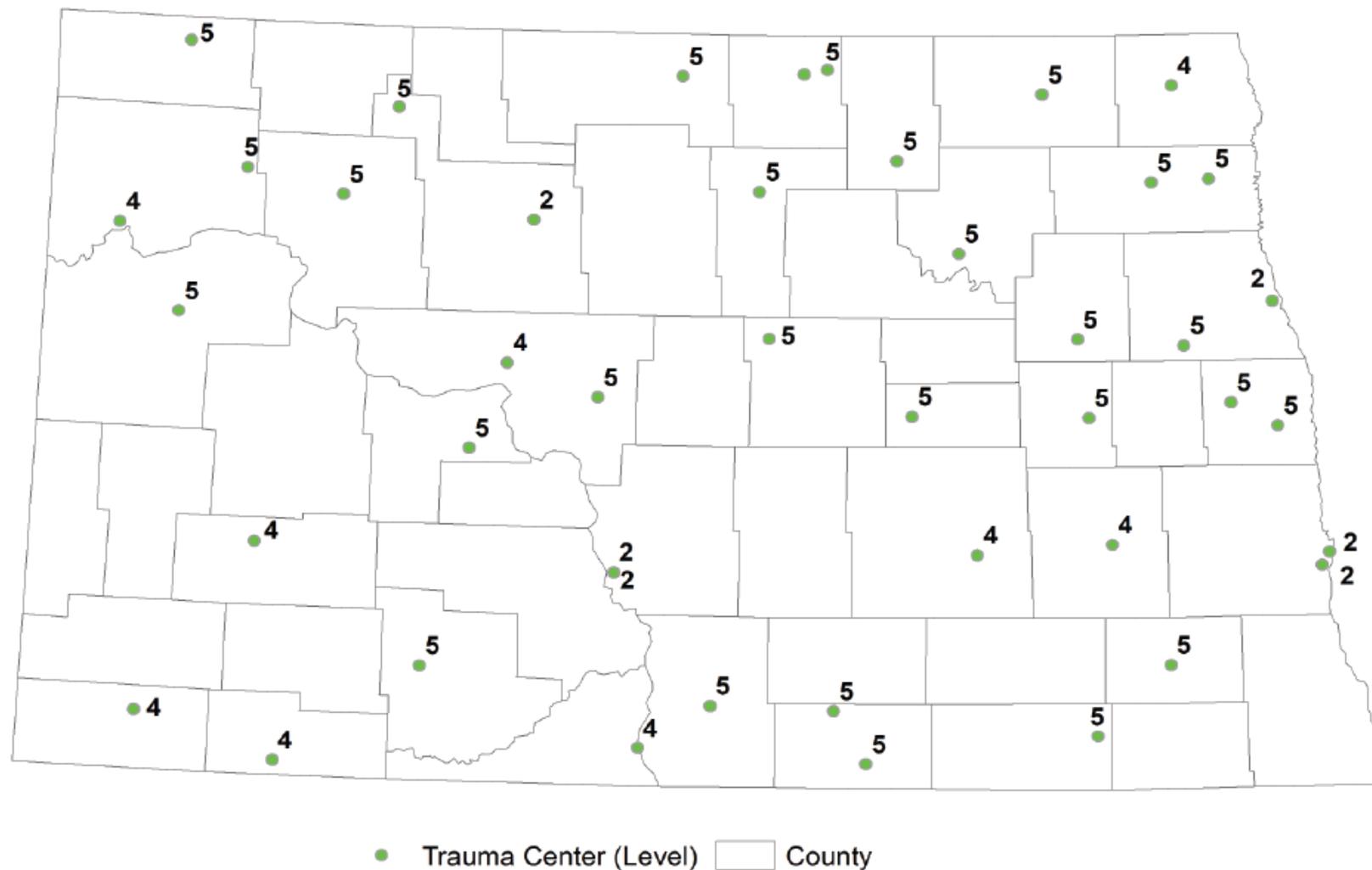
**Figure 8.2. Critical access and tertiary network service areas.<sup>1</sup>**



**Figure 8.3. Cities with a clinic in North Dakota.<sup>24</sup>**

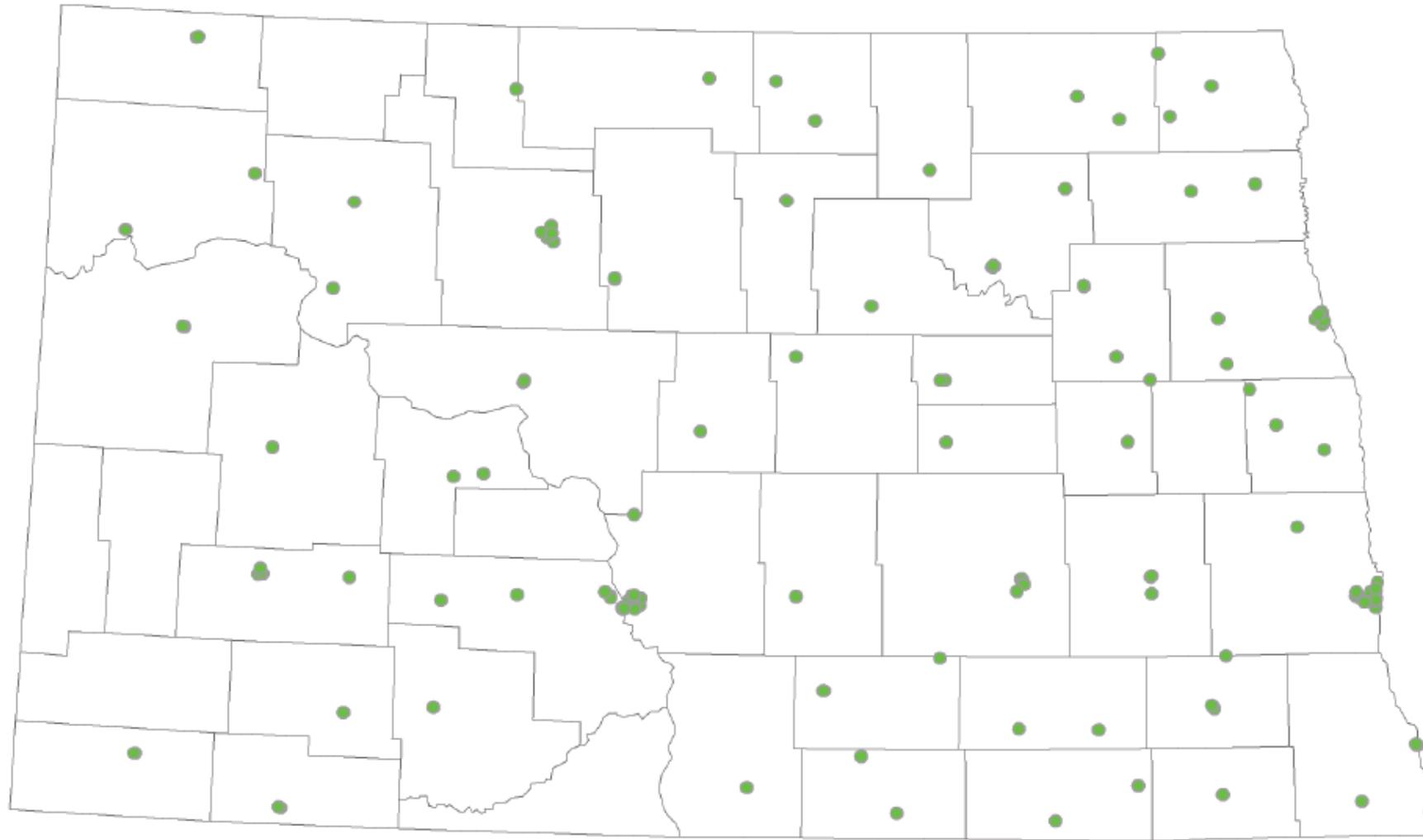


**Figure 8.4. EMS networks and ambulance locations in North Dakota.<sup>40</sup>**



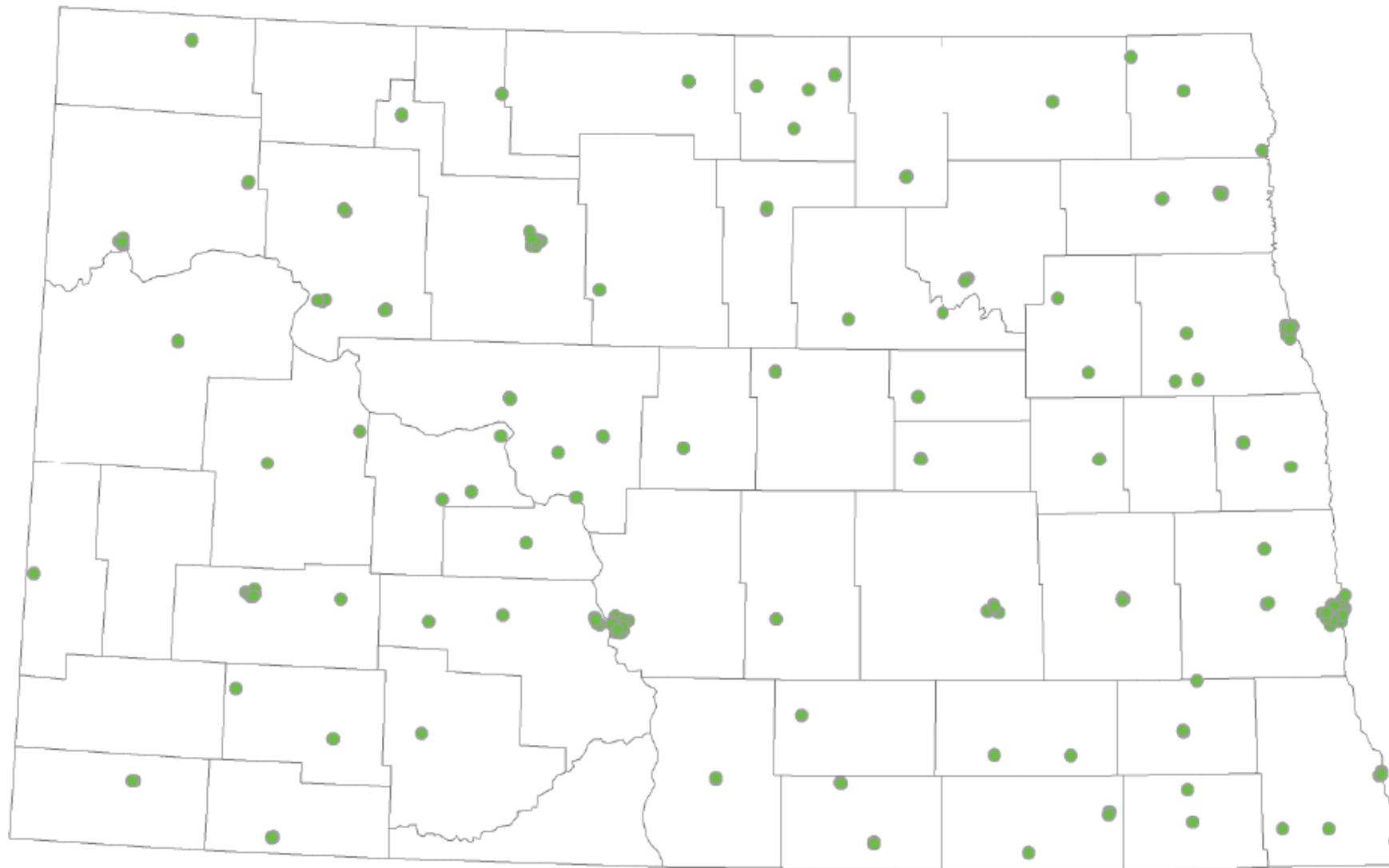
**Figure 8.5. Trauma centers and designated levels in North Dakota.<sup>61</sup>**

The average EMS area is 560 square miles (range 14 to 2,420). The average population served by a trauma center is 16,214 people (range 1,464 to 154,499). Seventy-four percent of trauma centers serve fewer than 10,000 people but cover an average of 1,427 square miles. The average trauma center is 1,643 square miles. The average travel distance to a trauma center is 22.6 miles.



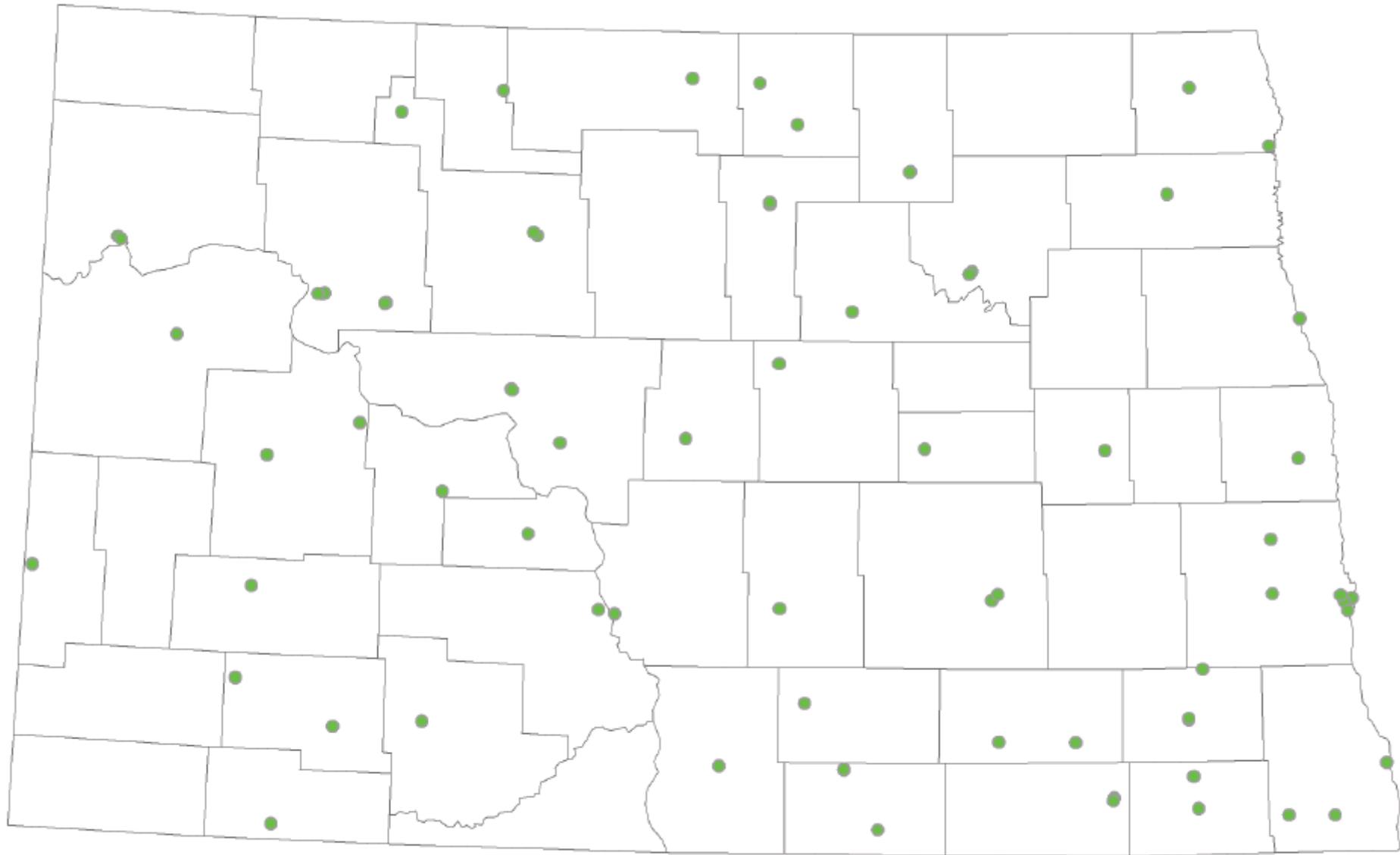
**Figure 8.6. Long-term care (LTC) facilities in North Dakota.<sup>77</sup>**

Fifty-nine cities have at least one LTC facility (35 of these cities also have an assisted living facility). Thirty-two LTC facilities are located in areas with fewer than five people per square mile. Only four locations have 40 or more people per square mile, from Bismarck (41.5) to Fargo (232). The average distance to travel to an LTC is 20.3 miles.



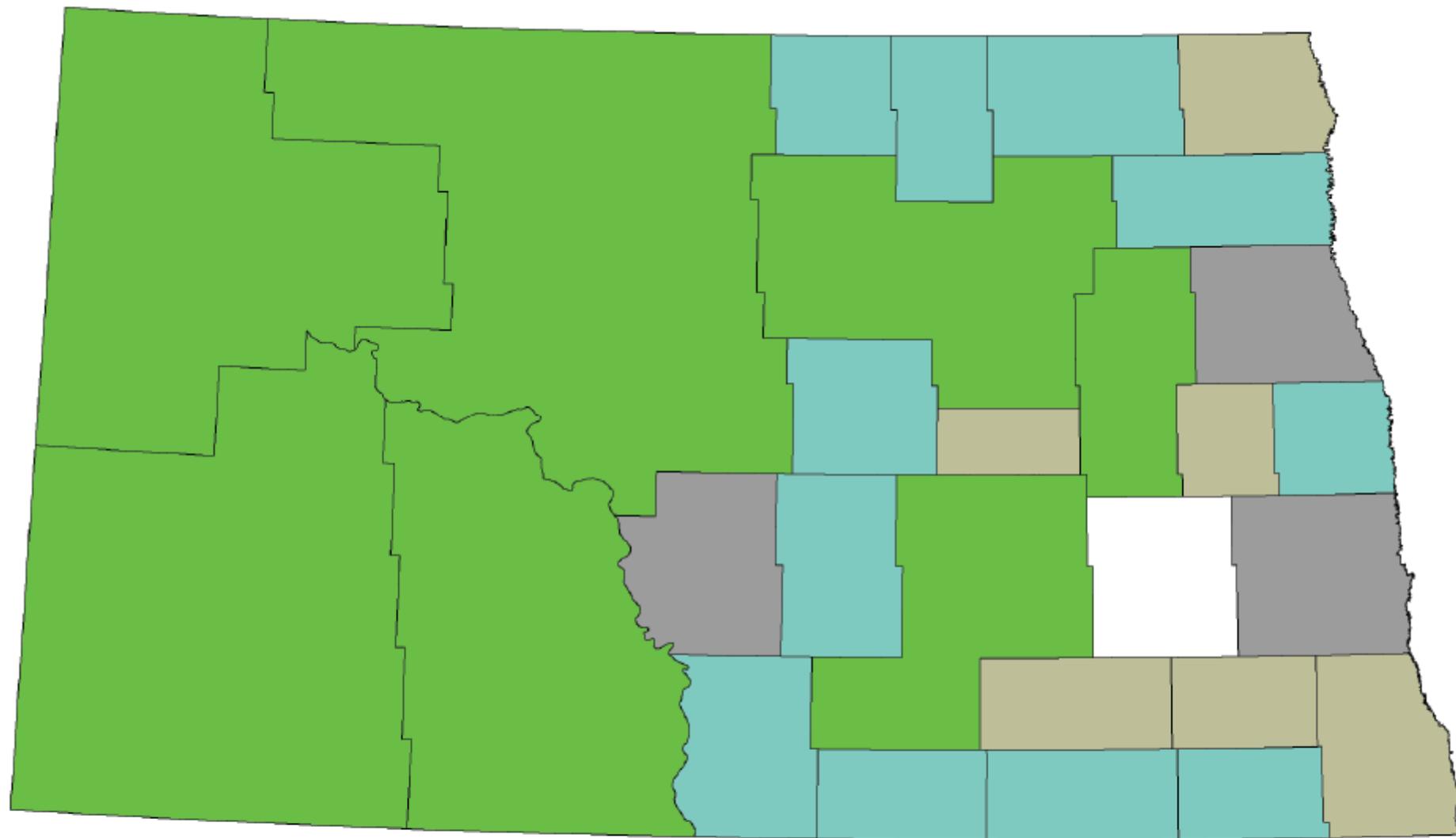
**Figure 8.7. Pharmacy locations in North Dakota.<sup>82</sup>**

North Dakota currently has 233 pharmacies, 150 of which (64%) are rural or located outside of metropolitan areas. There are 79 towns with at least one pharmacy. Five rural counties have no pharmacies.



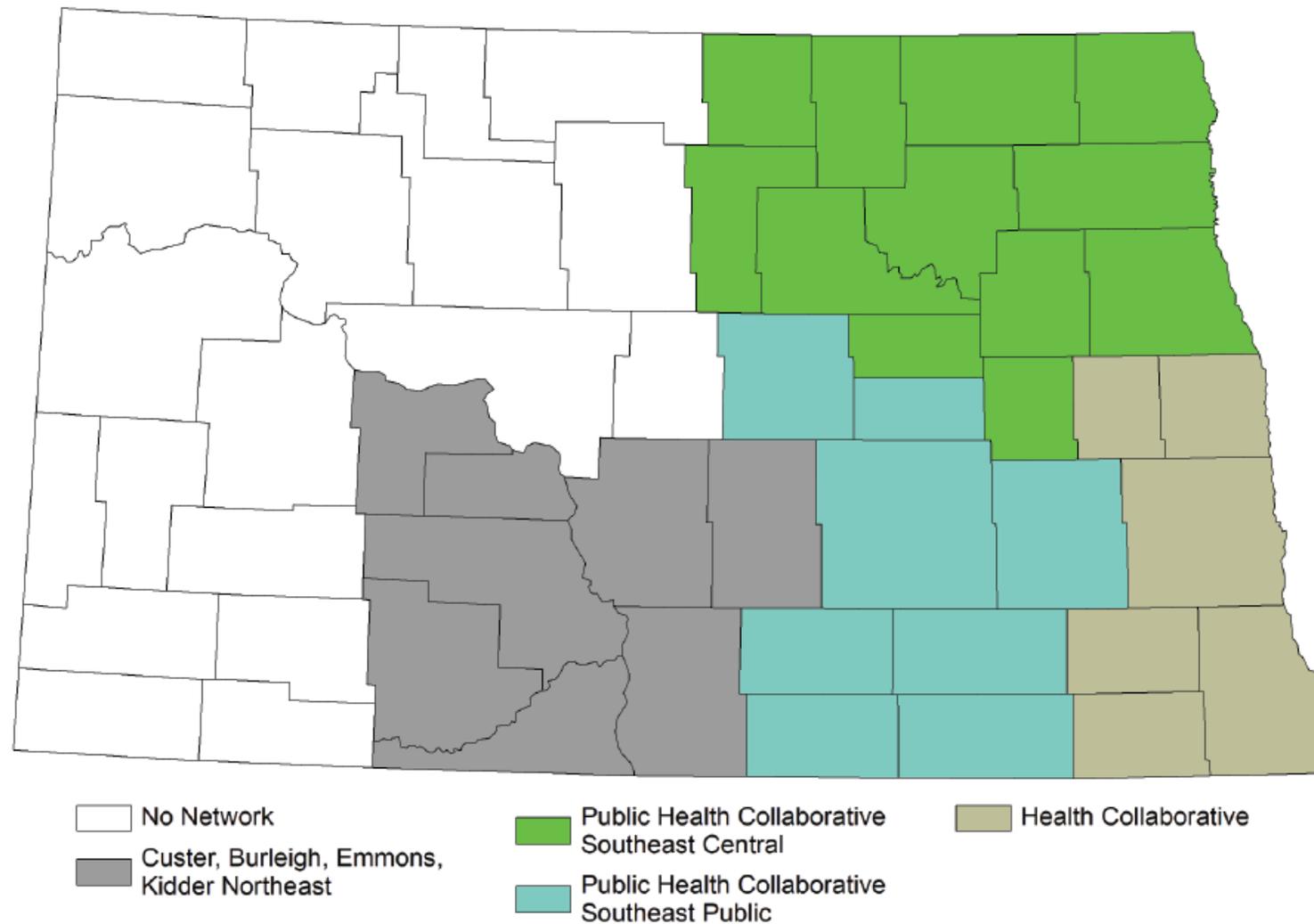
**Figure 8.8. Telepharmacies in North Dakota.**<sup>82</sup>

North Dakota currently has 98 telepharmacies. Eight counties have no telepharmacies.



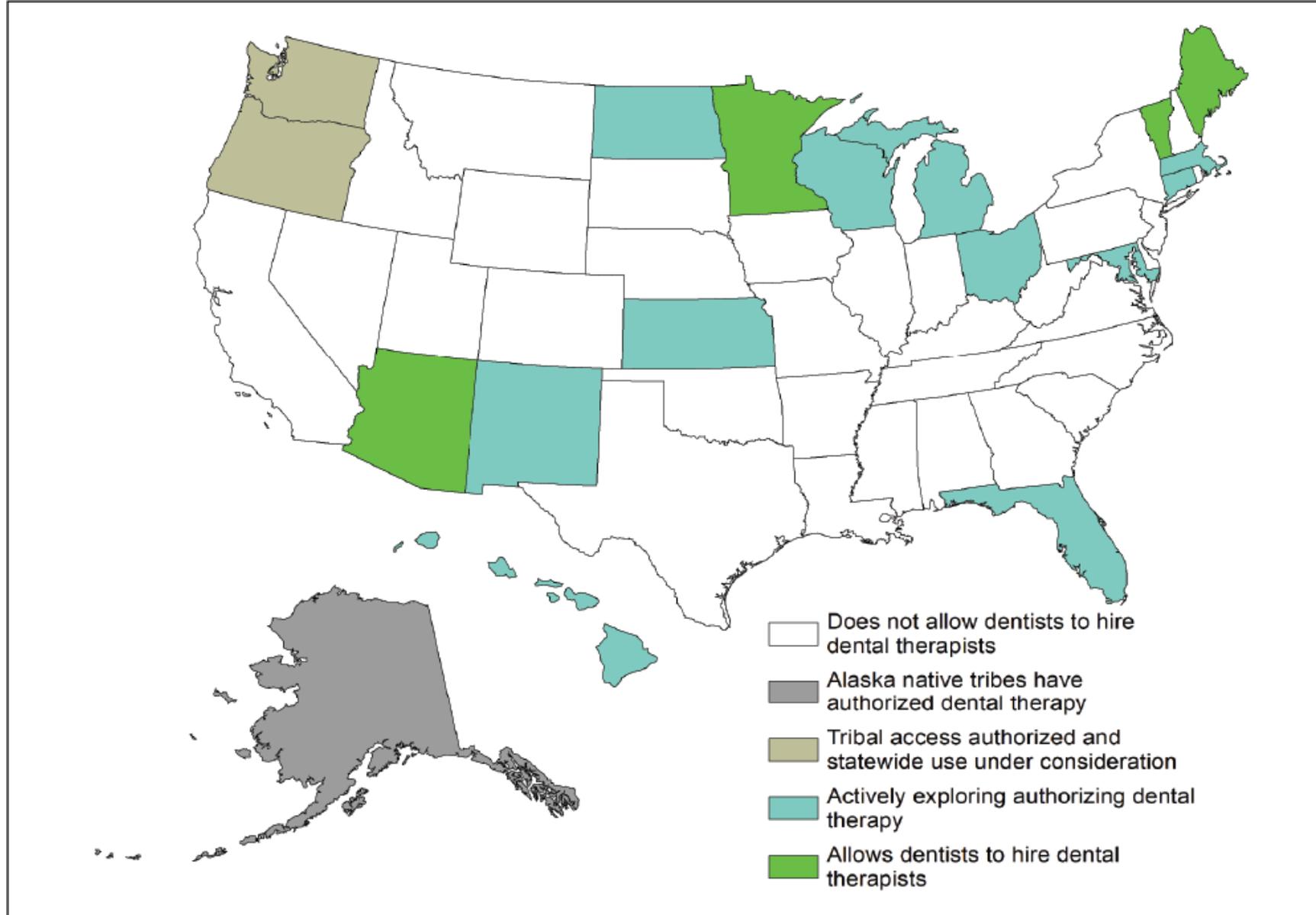
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<span style="color: tan;">■</span> Single County Health Department	<span style="color: grey;">■</span> City/County Health Department	

**Figure 8.9. Local public health unit classifications in North Dakota.**<sup>104</sup>



**Figure 8.10. Public health units by regional network.**<sup>106</sup>

There are 28 public health units in North Dakota, with 22 in the eastern half of the state. Twenty-one units cover a single county, and seven cover multiple counties. The average area covered by a unit is 5,525 square miles. Only three (Bismarck, Grand Forks, and Fargo) have a population density of more than 40 people per square mile. The average age of population for 18 public health units is more than 40.



**Figure 8.11. Number of states that have, or are considering, dental therapy (July 2016).**<sup>133</sup>

Nineteen states have either passed or were exploring new workforce models for oral health. Three states have given authority for dentists to hire dental mid-levels. An additional three states have tribes that are authorized to utilize dental mid-levels.

**Table 8.1*****Tertiary hospital geographic regions related to critical access hospitals<sup>1</sup>***

<b>Tertiary Hospital</b>	<b>Square Miles</b>	<b>People per Sq. Mi.</b>	<b>Number of CAHs</b>	<b>Average Distance</b>
<b>Bismarck</b>	<b>26,815</b>	<b>7.3</b>	<b>10</b>	<b>110.5</b>
Fargo	12,492	18.2	5	95.8
<b>Grand Forks</b>	<b>10,955</b>	<b>11.1</b>	<b>10</b>	<b>66.6</b>
Minot	20,419	7.5	11	84.5

Minot and Bismarck hospitals serve the largest areas, although Grand Forks and Fargo have the highest concentrations of people. The Fargo region has the fewest CAHs. The distances between the CAHs and the tertiaries are greatest for Bismarck. The CAH closest to a tertiary hospital is only 36 miles away, while the CAH farthest from a tertiary hospital is 182 miles away.

**Table 8.2*****Tertiary hospital cities and CAH demographics<sup>1</sup>***

<b>Tertiary Hospital</b>	<b>Tertiary Beds</b>	<b>CAH Beds</b>	<b>Tertiary Average Age</b>	<b>CAH Average Age</b>	<b>Tertiary % Male</b>	<b>CAH % Male</b>
<b>Bismarck</b>	<b>510</b>	<b>230</b>	<b>38.2</b>	<b>42.1</b>	<b>49.4</b>	<b>50.5</b>
Fargo	687	120	35.5	38.5	50.6	50.6
<b>Grand Forks</b>	<b>277</b>	<b>187</b>	<b>34.7</b>	<b>41.9</b>	<b>41.4</b>	<b>50.4</b>
Minot	416	233	36.4	50.5	50.7	51.3

Hospitals in the Fargo region have the most beds (807 total); Bismarck has 740, Minot has 649, and Grand Forks has 464. For all regions, the average age of people in the CAH territories is older than those in the four main cities. This places a greater burden on the CAHs for certain types of care.

**Table 8.3***Number and type of EMS units in North Dakota<sup>40</sup>*

	Air	Ground	Substation	Total
Advanced Life Support	6		-	22
Basic Life Support	0	86	14	100
Critical Care	2	-	-	2



**Table 8.5*****Public health units by type and number of counties<sup>104</sup>***

Type	Counties
City/County Health Department	3
City/County Health District	1
Multicounty Health District	32
Single County Health Department	6
Single County Health District	11

# Chapter 9: Quality and Value of Healthcare

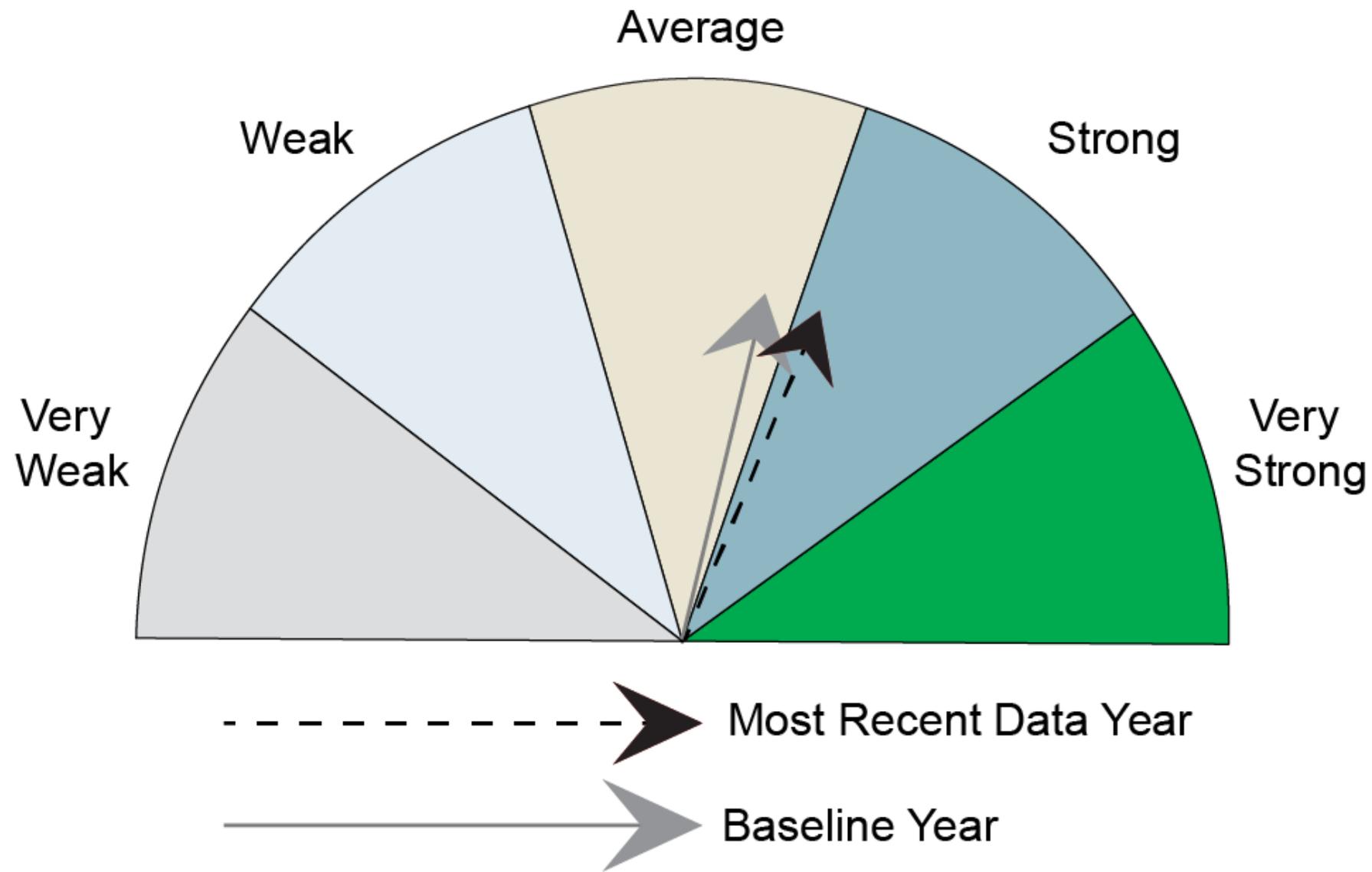
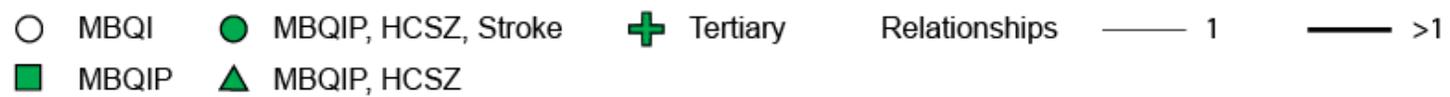
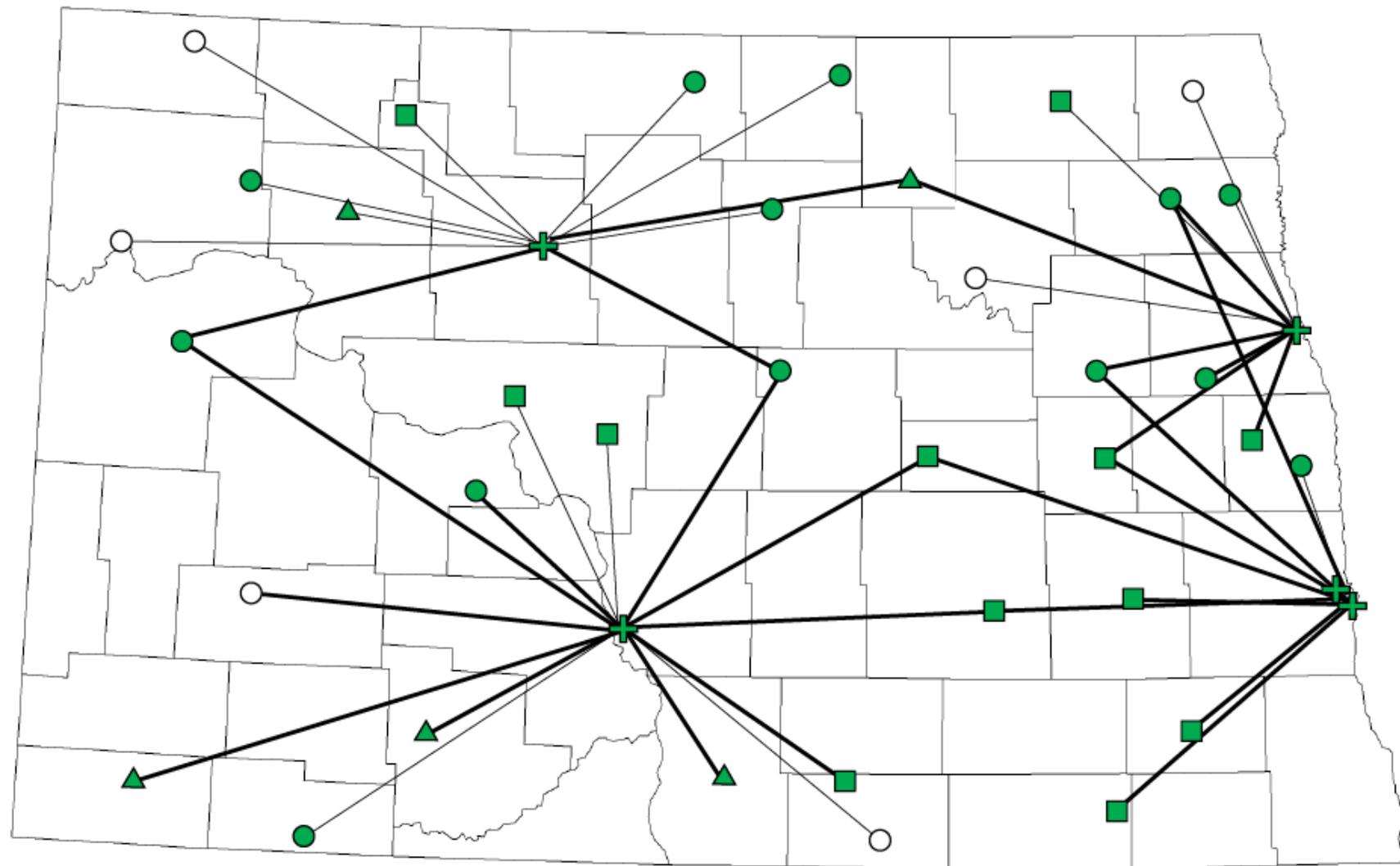


Figure 9.1. NHQR quality measures.<sup>9</sup>



**Figure 9.2. Quality initiatives and network referrals.<sup>24</sup>**

**Table 9.1*****North Dakota rankings associated with Commonwealth Fund State Scorecard, 2015<sup>14</sup>***

<b>Category</b>	<b>2014</b>	<b>2015</b>	<b>2018</b>
<b>Access</b>	<b>9<sup>th</sup></b>	<b>25<sup>th</sup></b>	<b>24<sup>th</sup></b>
Prevention and treatment	17 <sup>th</sup>	19 <sup>th</sup>	23 <sup>rd</sup>
<b>Avoidable hospital use and costs</b>	<b>1<sup>st</sup></b>	<b>22<sup>nd</sup></b>	<b>9<sup>th</sup></b>
Equity	18 <sup>th</sup>	36 <sup>th</sup>	27 <sup>th</sup>
<b>Healthy lives</b>	<b>29<sup>th</sup></b>	<b>27<sup>th</sup></b>	<b>26<sup>th</sup></b>