

Characteristics of Health Insurance and Access to Care in the United States and Minnesota

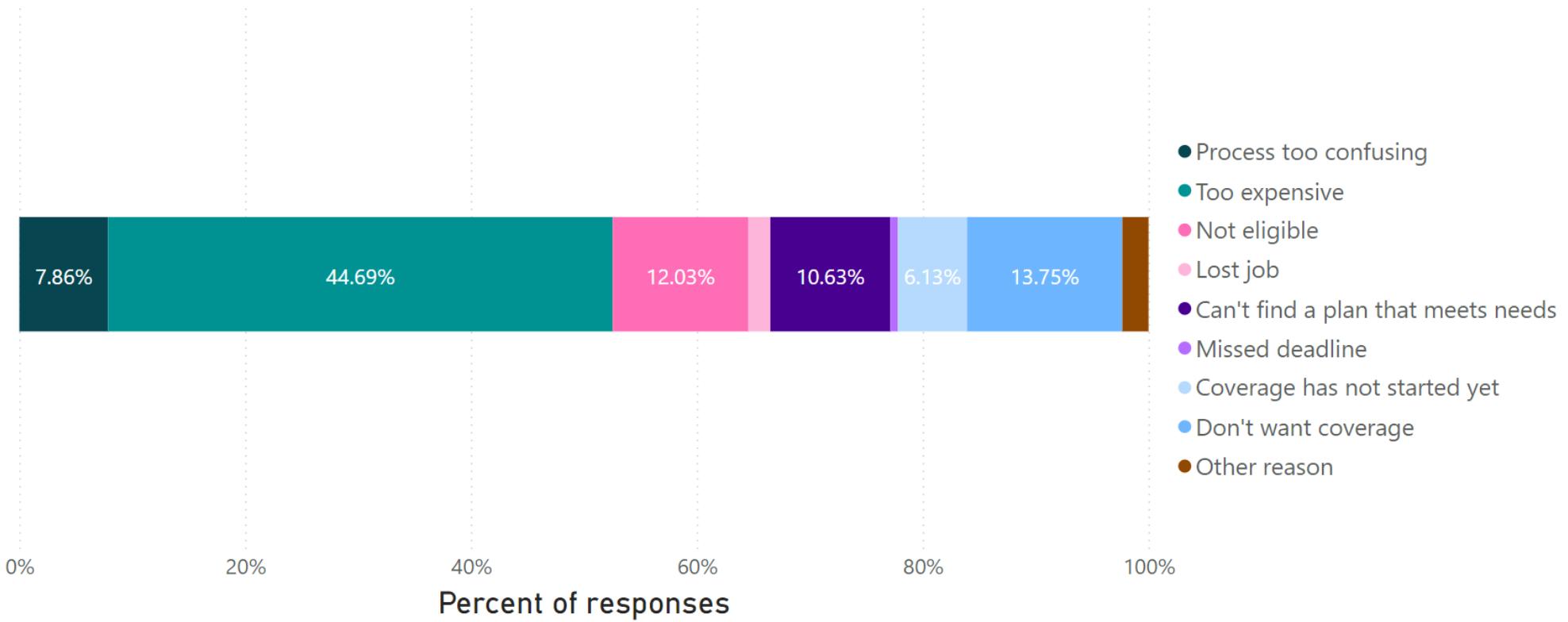
Sufficient access to healthcare as defined for this work includes people who do not delay or avoid seeking healthcare services due to cost or location.

Uninsured as defined for this work includes those who do not have health insurance and insured means people who do have health insurance.

Some questions that we developed include: how do uninsurance rates vary among demographics such as race, age, sex, income, educational attainment, and citizen status? How does access to healthcare vary nationally? Does access to care vary among Minnesota counties? Can we predict which areas will have more or less coverage based on demographics, income, population count, or other factors?

National

Reasons Americans Lack Coverage

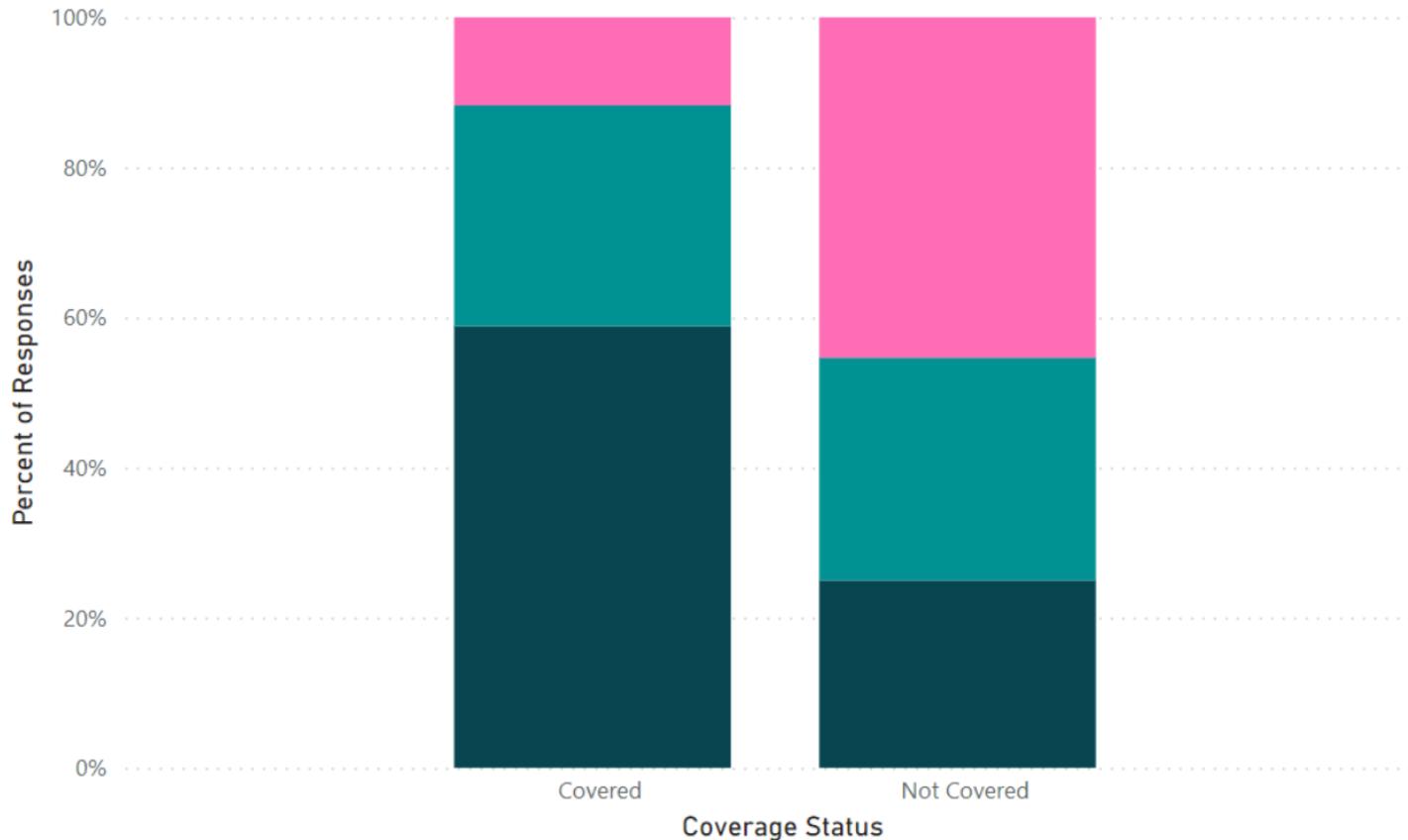


Income Group

1: \$0 to \$34,999	3: \$50,000 to \$74,999	5: \$100,000 or greater
2: \$35,000 to \$49,999	4: \$75,000 to \$99,999	

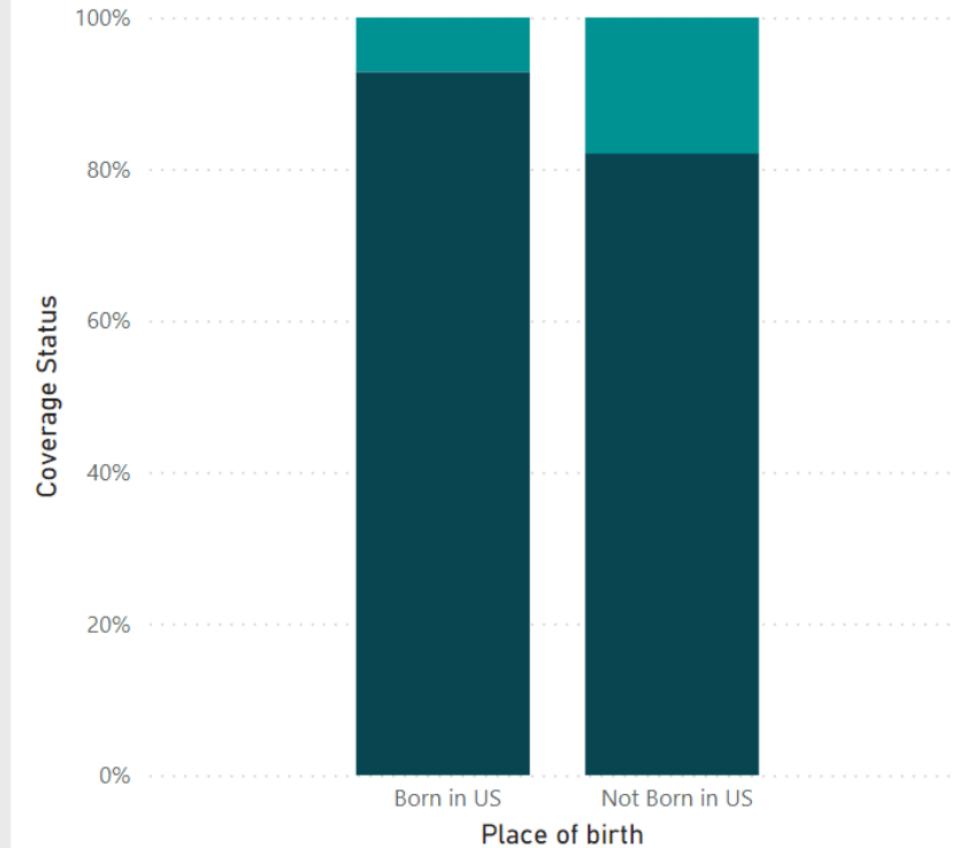
Worry over healthcare cost by coverage status

Worry over healthcare cost ● Not worried ● Somewhat worried ● Very worried



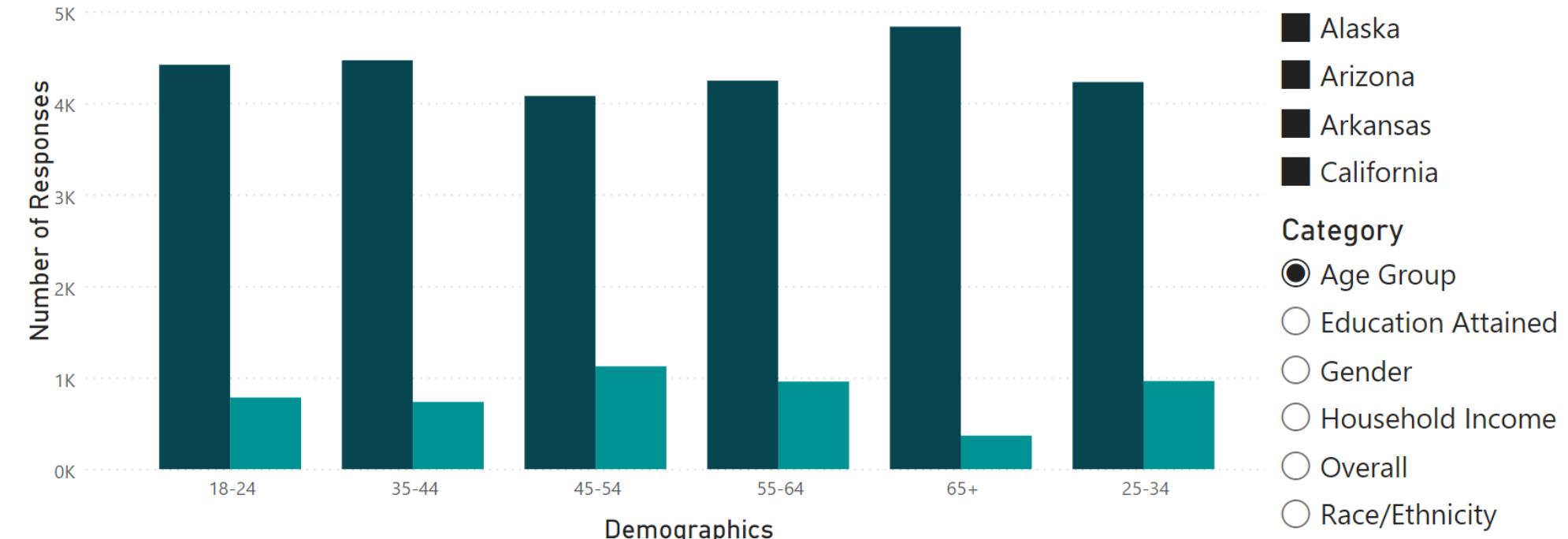
Coverage status by respondent's place of birth

Coverage Status ● Covered ● Not Covered



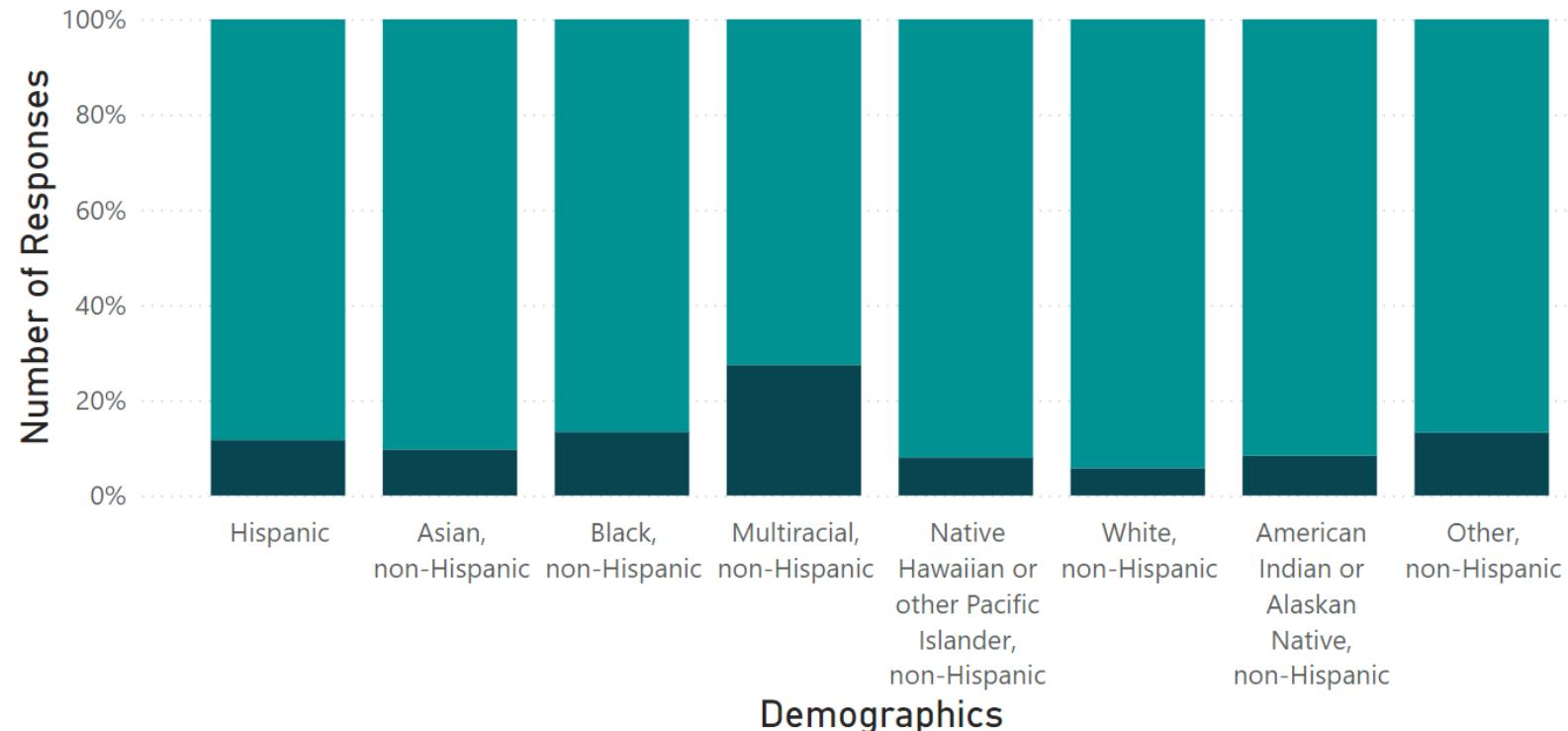
Has cost prevented you from seeking medical care anytime in the last 12 months?

Response ● No ● Yes



Do you have any kind of health care coverage?

Response • No • Yes



StateName

Select all

Alabama

Alaska

Arizona

Arkansas

California

Category

Age Group

Education Attained

Gender

Household Income

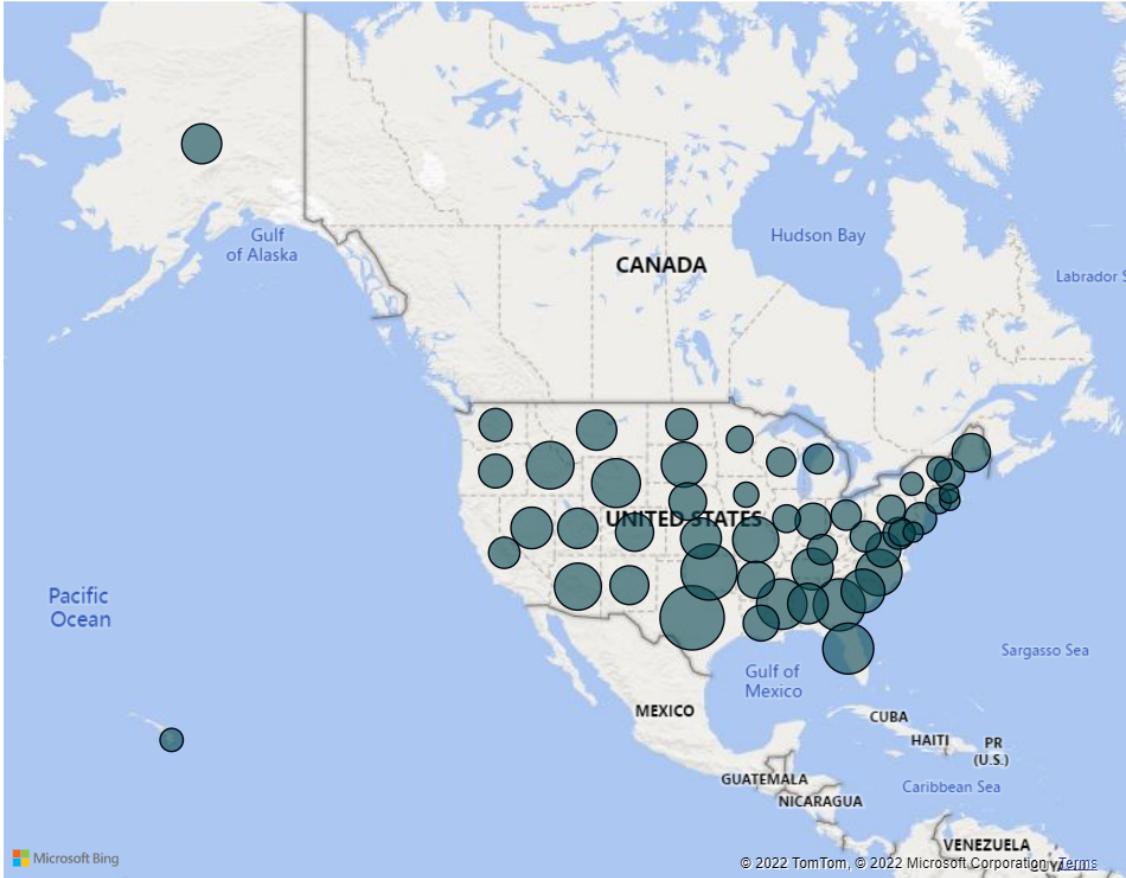
Overall

Race/Ethnicity

State Name

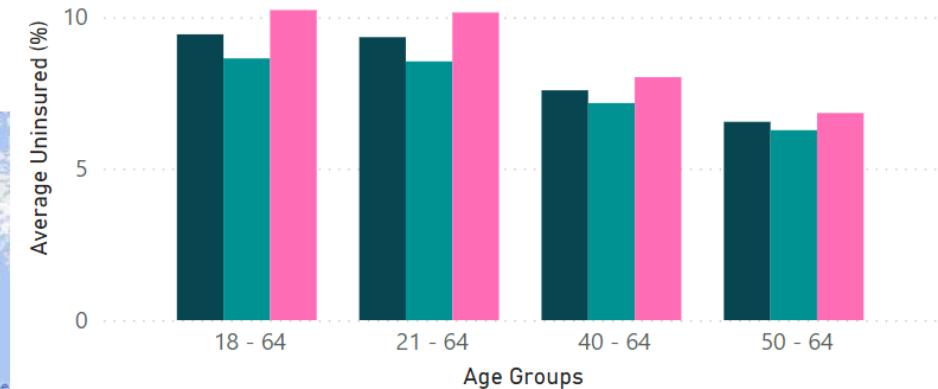
- Select all
- Alabama
- Alaska

Average Percent Uninsured by State



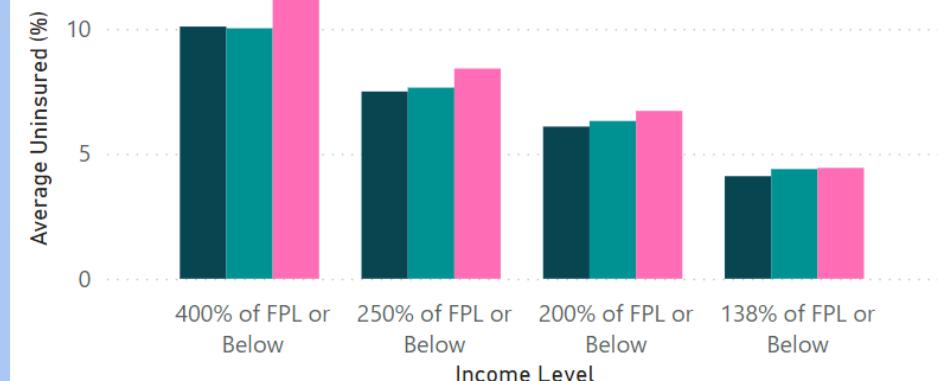
Average Percent Uninsured by Age Group

Sex • Both Sexes ● Female ● Male



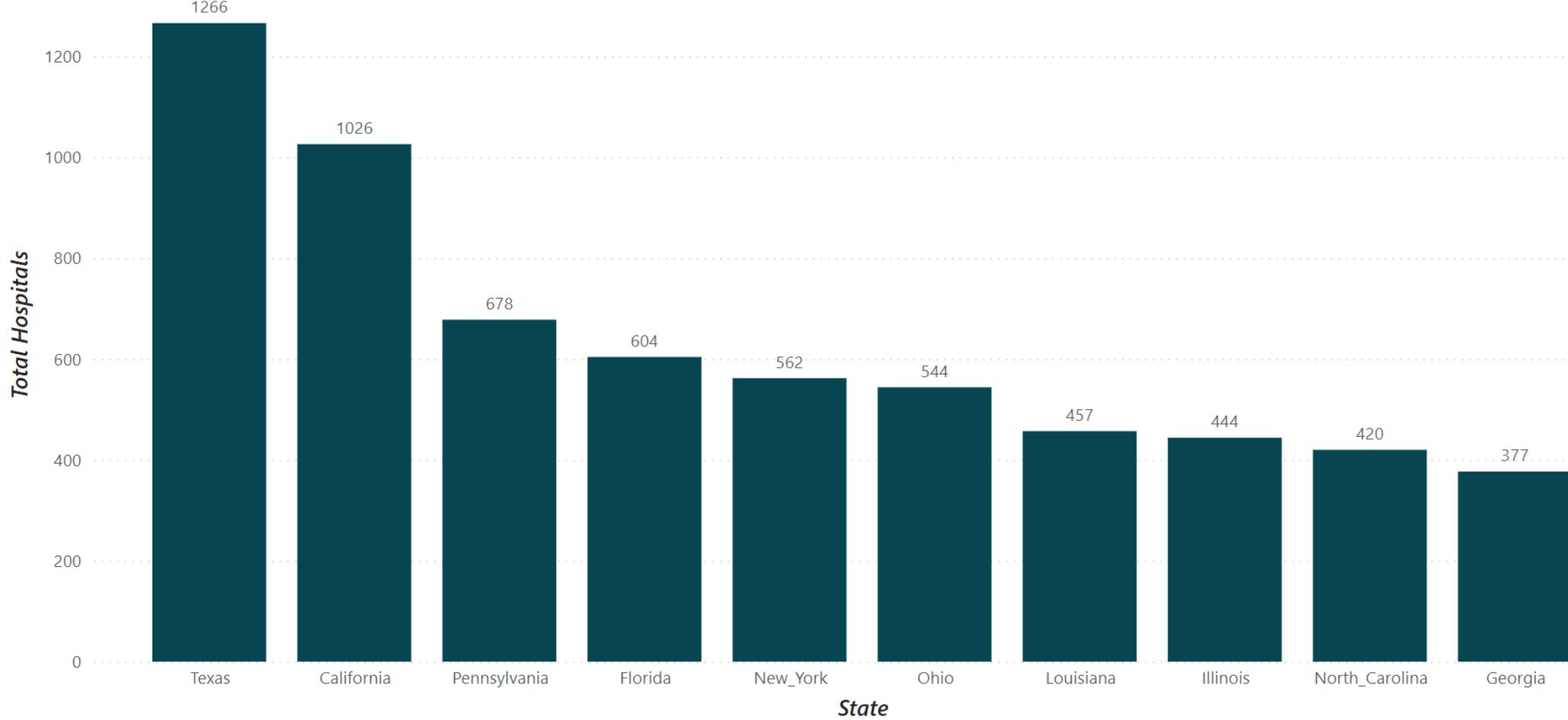
Average Percent Uninsured by Income Level

Sex • Both Sexes ● Female ● Male



Note: FPL refers to [Federal Poverty Line](#)

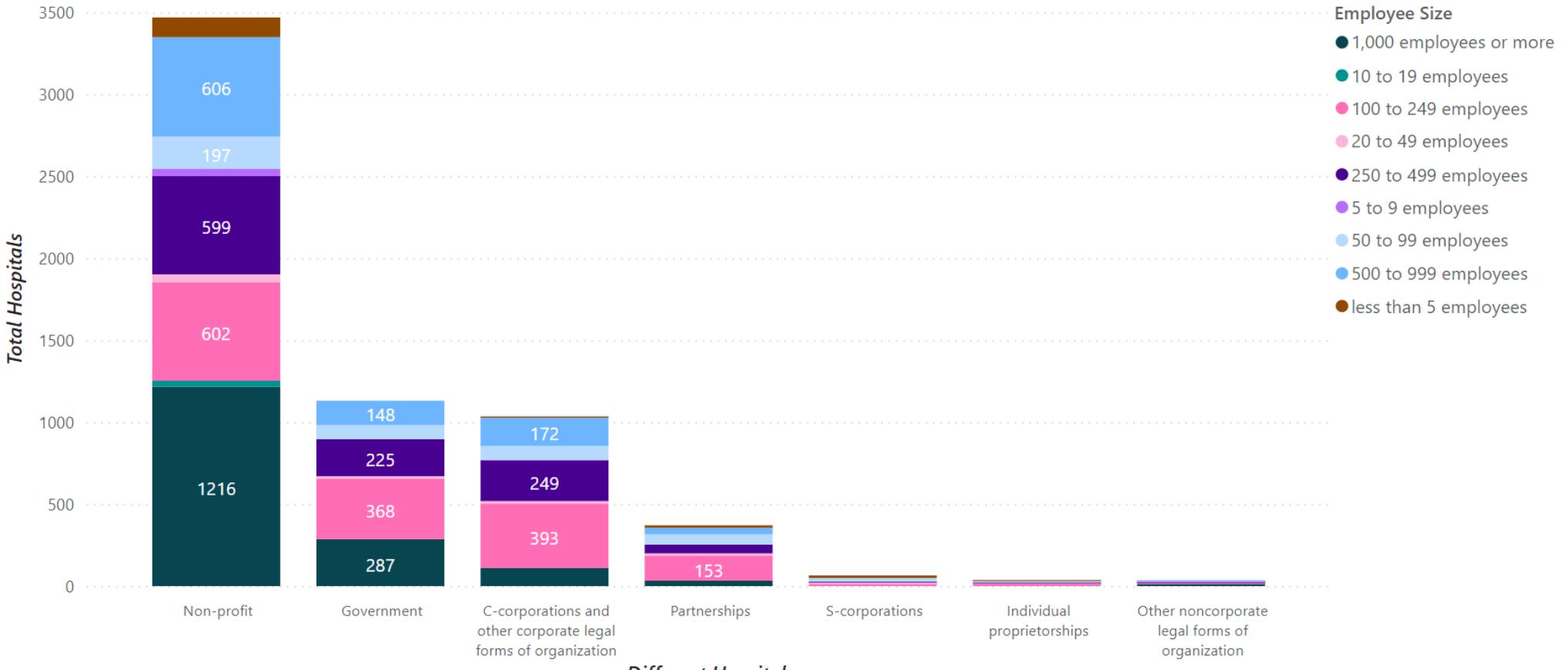
Top 10 States by Total Hospitals and Type of Hospital



Different Hospital Types

All establishments	C-corporations and other corporate legal	Government	Individual proprietorships	Non-profit	Other noncorporate legal forms of	Partnerships	S-corporations
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Total Hospitals by Hospital Type and Employee Size



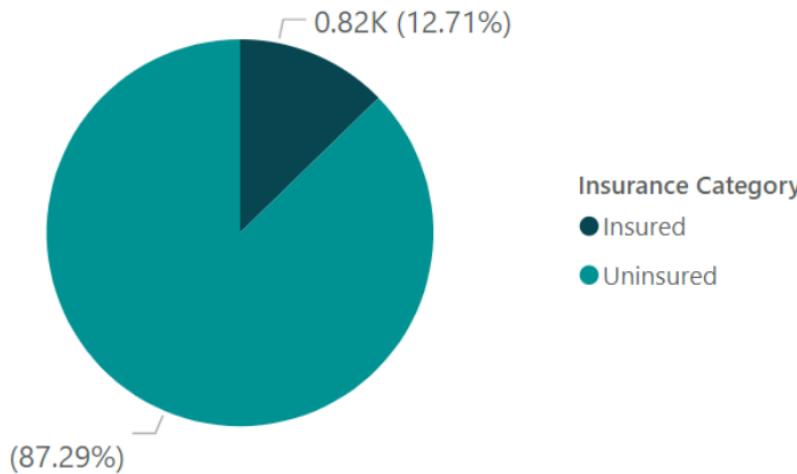
Different Hospitals

Different Hospital Types

C-corporations and other corporate legal forms of organization	Government	Individual proprietorships	Non-profit	Other noncorporate legal forms of organization	Partnerships	S-corporations
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Machine Learning

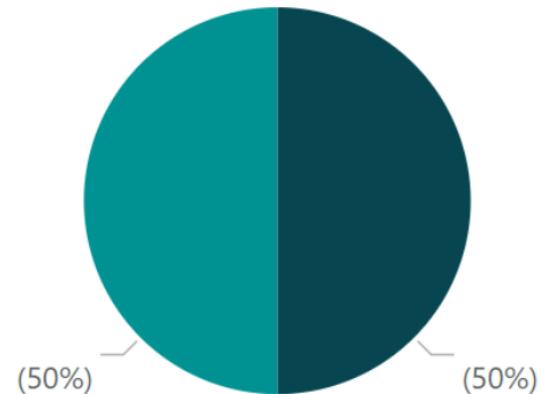
Predicted Insurance Category from ML Model



ANOVA Test

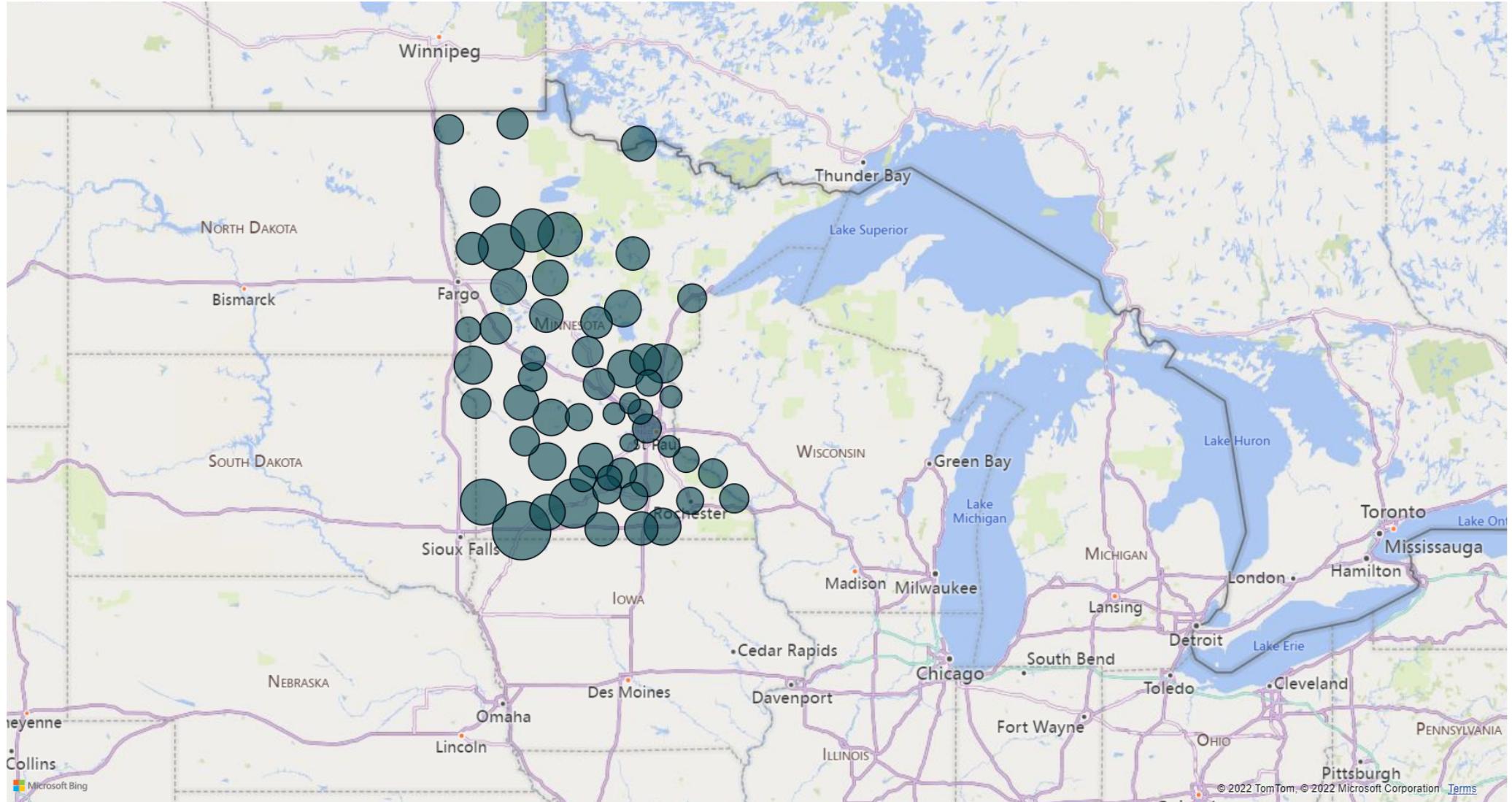
ANOVA test was done to see the statistical significant of demographics (age, race, educational attainment, citizen status, and salary) compared to insurance status. Each p-value for all ANOVA tests across 5 years were all lower than 0.05 which is the significance level we chose. Thus, each column had a statistically significant effect on insurance status for the years from 2015 to 2019 for the training data.

Actual Insurance Category

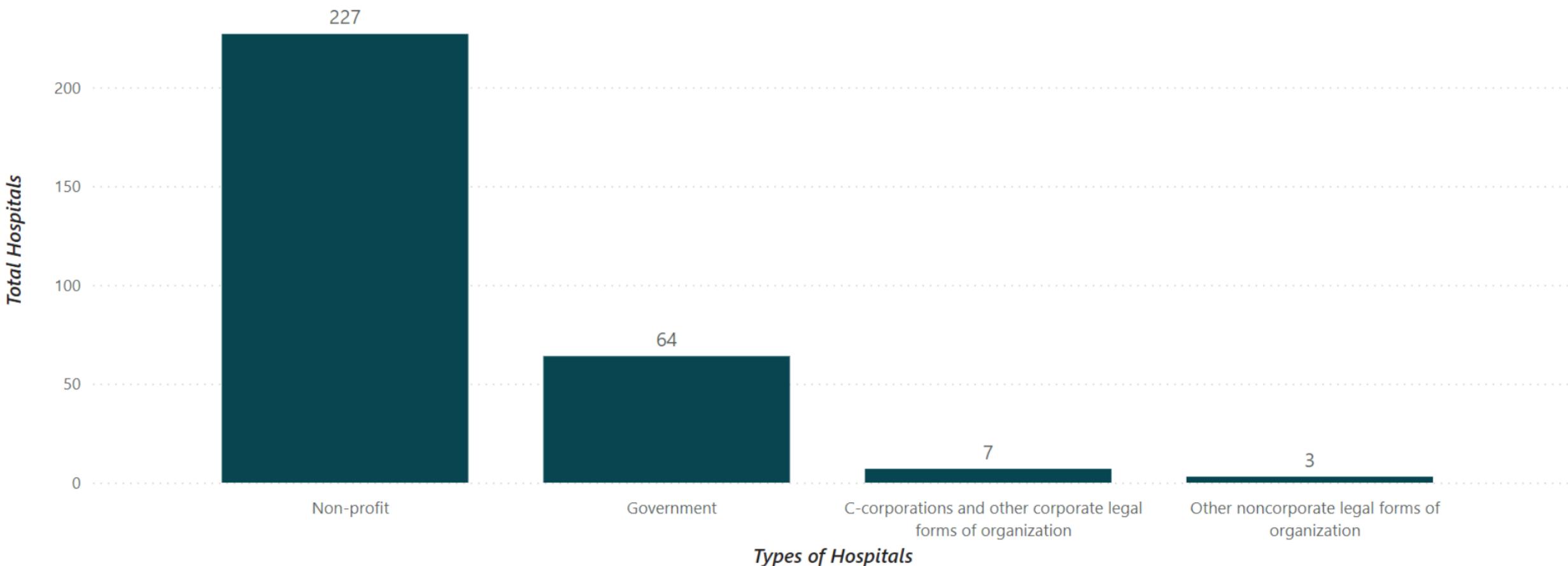


Minnesota

Average Percent Uninsured by County in Minnesota



Total Minnesota Hospitals by Type



Responses to Insurance-Related Questions in Minnesotan Metropolitan Statistical Areas (in Percentages), 2019



Question

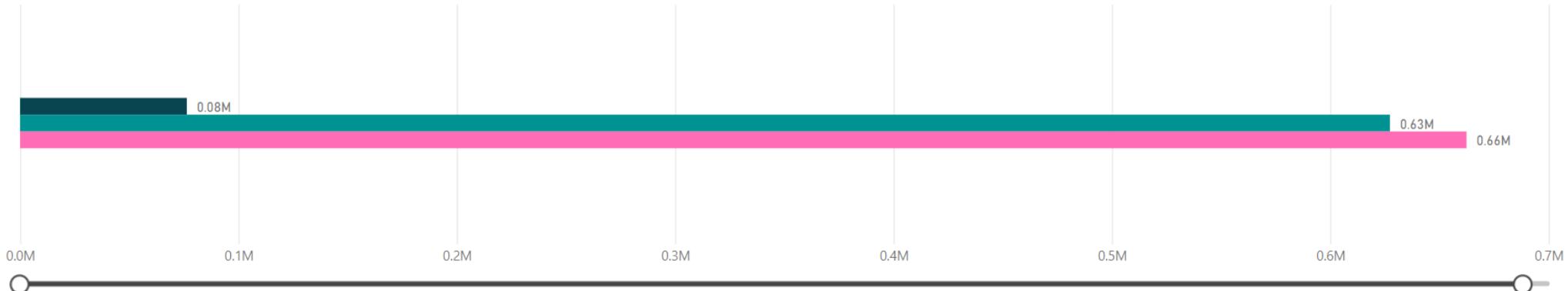
- About how long has it been since you last visited a doctor for a routine checkup?
- Adults aged 18-64 who have any kind of health care coverage (variable calculated from one or more BRFSS questions)
- Do you have any kind of health care coverage?
- Do you have one person you think of as your personal doctor or health care provider?
- Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?

Metropolitan Statistical Area

- Duluth MN-WI MSA
- Fargo ND-MN MSA
- Minneapolis-St. Paul-Bloomington MN-WI MSA
- Rochester MN MSA
- St. Cloud MN MSA

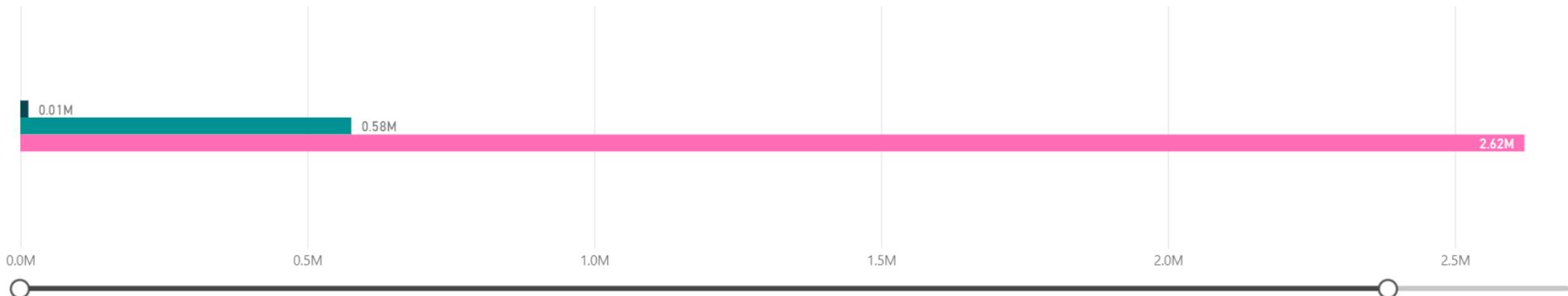
Public Insurance Types by Enrollment Numbers in Select Minnesota Counties

- VA Coverage
- Medicare Coverage
- Medicaid/Means-Based Coverage



Private Insurance Types by Enrollment Numbers in Select Minnesota Counties

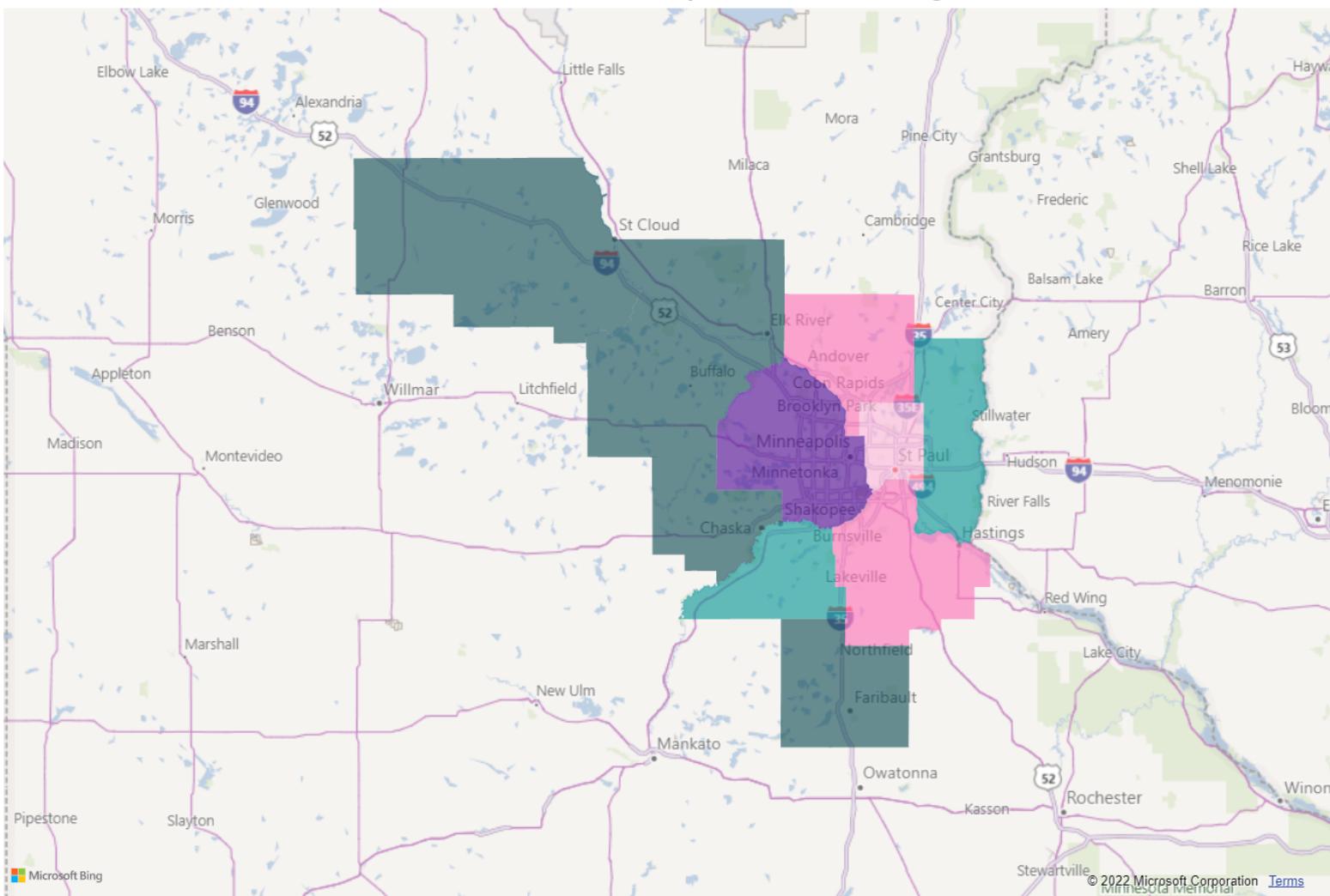
- Military Coverage
- Direct Purchase Coverage
- Employer-Based Coverage



Note: These measures include people with more than one type of coverage.

The select counties consist of Anoka, Blue Earth, Carver, Crow Wing, Dakota, Hennepin, Olmsted, Ramsey, Rice, Scott, Sherburne, St. Louis, Stearns, Washington, and Wright Counties.

Private Insurance Enrollment Alone in Select Counties, Minneapolis-St. Paul-Bloomington Combined Statistical Area, 2019

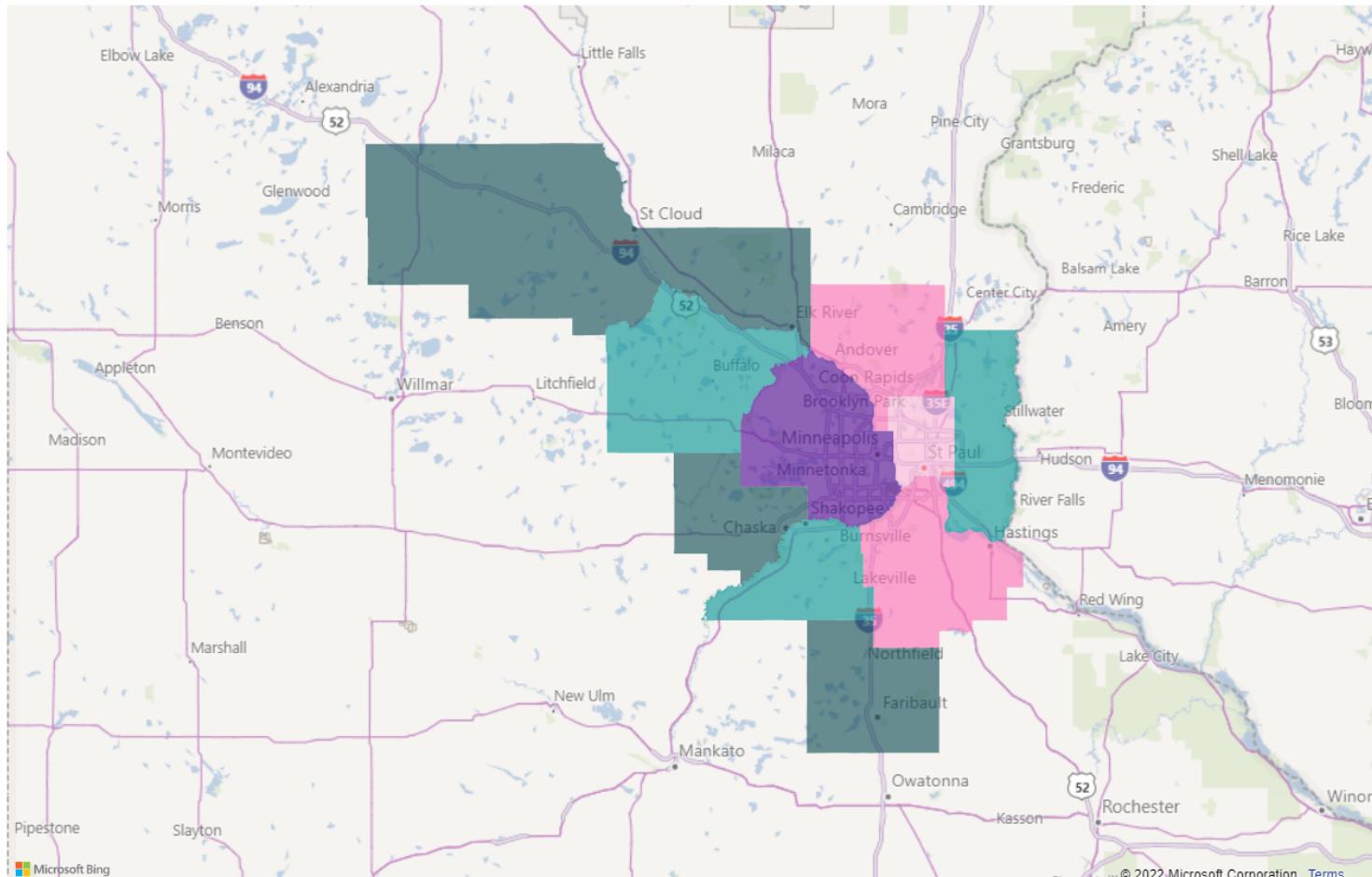


Private Insurance Enrollment

County	Number of People
Hennepin County, MN	796546
Ramsey County, MN	304149
Dakota County, MN	278582
Anoka County, MN	227590
Washington County, MN	176138
Scott County, MN	108380
Wright County, MN	98204
Stearns County, MN	96329
Carver County, MN	76351
Sherburne County, MN	65026
Rice County, MN	39138
Total	2266433

Note: Stearns County is also considered part of the St. Cloud Metropolitan Statistical Area.

Employer-Based Insurance Alone or in Combination in Select Counties, Minneapolis-St. Paul-Bloomington Combined Statistical Area, 2019



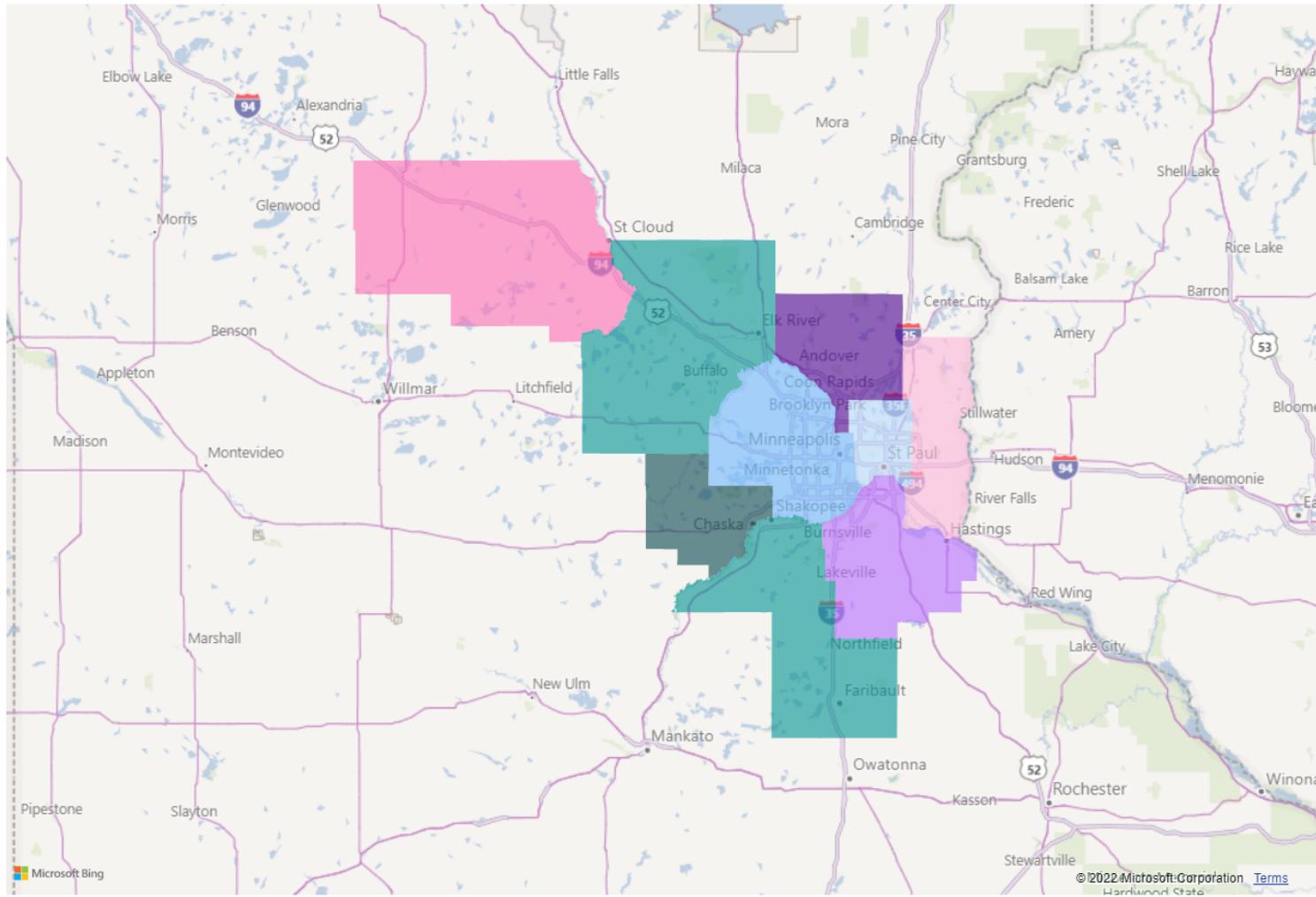
Number of People ● 0 - 99,999 ● 100,000 - 199,999 ● 200,000 - 299,999 ● Over 300,000 ● Over 800,000

Employer-Based Insurance Enrollment

County	Number of People
Anoka County, MN	234417
Carver County, MN	76914
Dakota County, MN	292971
Hennepin County, MN	803114
Ramsey County, MN	317378
Rice County, MN	39775
Scott County, MN	108173
Sherburne County, MN	65254
Stearns County, MN	97914
Washington County, MN	178932
Wright County, MN	101207
Total	2316049

Note: Stearns County is also considered part of the St. Cloud Metropolitan Statistical Area.

Public Insurance Enrollment Alone in Select Counties, Minneapolis-St. Paul-Bloomington Combined Statistical Area, 2019



Public Insurance Enrollment

County	Number of People
Hennepin County, MN	220046
Ramsey County, MN	126574
Dakota County, MN	64786
Anoka County, MN	59826
Washington County, MN	32529
Stearns County, MN	28232
Sherburne County, MN	14275
Scott County, MN	14044
Wright County, MN	13078
Rice County, MN	10610
Carver County, MN	9972
Total	593972

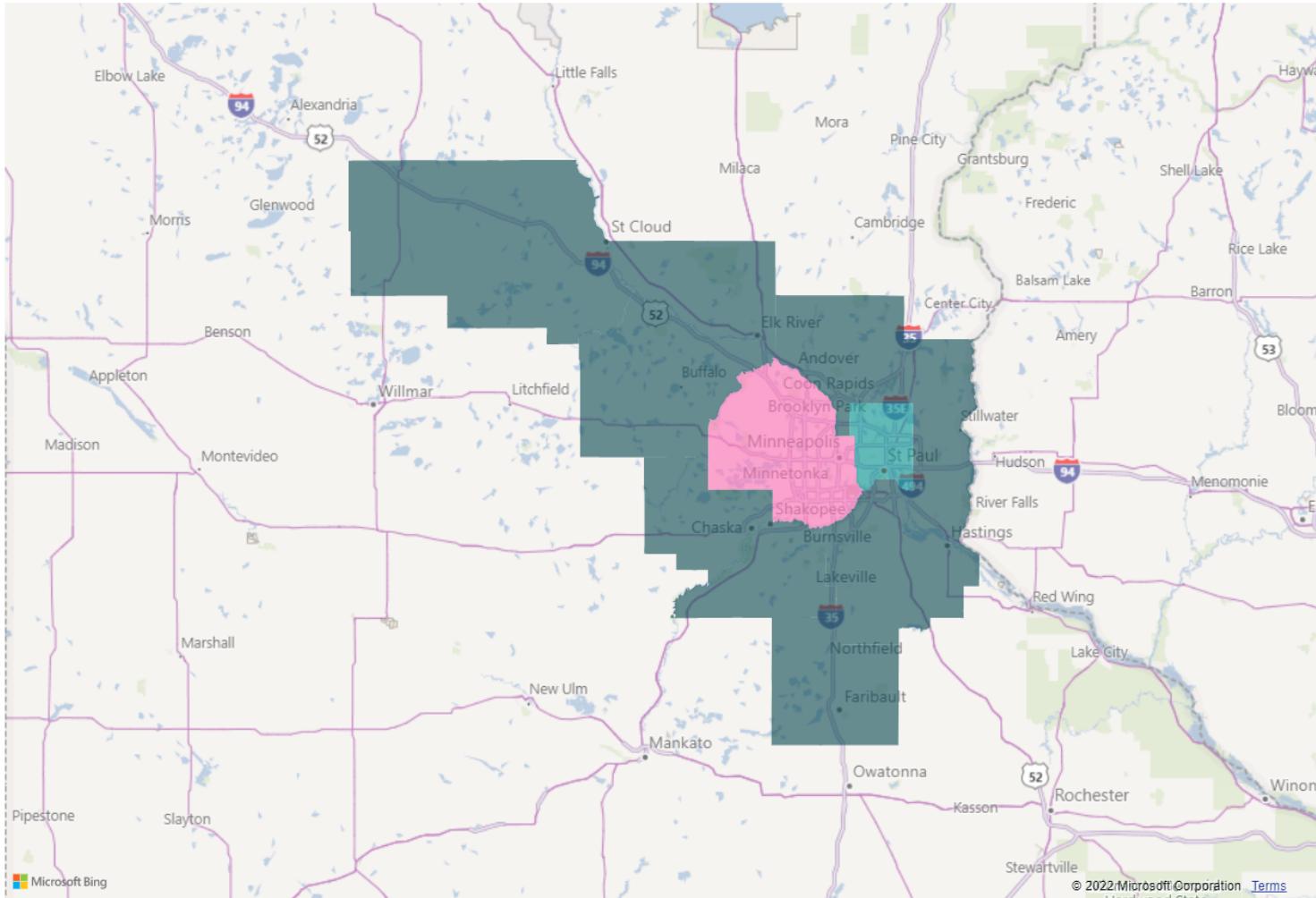
Note: Stearns County is also considered part of the St. Cloud Metropolitan Statistical Area.

Number of People ● 0 - 9,999 ● 10,000 - 19,999 ● 20,000 - 29,999 ● 30,000 - 39,999 ● 50,000 - 59,999 ● 60,000 - 69,999 ● Over 100,000 ● Over 200,000

Microsoft Bing

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Public Insurance Enrollees Who Worked Fulltime over the Past Year in Select Counties, Minneapolis-St. Paul-Bloomington Combined Statistical Area, 2019



Fulltime Workers with Public Insurance

County	Number of People
Hennepin County, MN	30662
Ramsey County, MN	16856
Dakota County, MN	9231
Anoka County, MN	9076
Stearns County, MN	5558
Washington County, MN	4322
Wright County, MN	2505
Sherburne County, MN	2387
Scott County, MN	1986
Rice County, MN	1249
Carver County, MN	1104
Total	84936

Note 1: Stearns County is also considered part of the St. Cloud Metropolitan Statistical Area.

Note 2: Data on whether or not these workers had access to employer-based healthcare was not available.

Sources

- 1) Bureau, U. S. C. (2019). *CB1900CBP: All Sectors: County Business Patterns by Legal Form of Organization and Employment Size Class for U.S., States, and Selected Geographies: 2019*. Explore census data. Retrieved September 21, 2022, from https://data.census.gov/cedsci/table?q=hospital+cb&g=0100000US%240400000_0400000US27&tid=CBP2019.CB1900CBP
- The above source contains all hospital counts by state in the US for the year of 2019. As well as employee size, establishment type, and establishment count.
- 2) Bureau, U. S. C. (2019). *DP05: ACS Demographic and Housing Estimates*. Explore census data. Retrieved September 21, 2022, from <https://data.census.gov/cedsci/table?q=DP05&g=0100000US%240400000&tid=ACSDP1Y2019.DP05>
- This source contains the demographic information for all 50 states plus DC and Puerto Rico. The demographic information is broken up by age, sex, and race.
 - We used the year of 2020 from this source to test our dataset and see how likely someone would be uninsured based on demographics.
- 3) Bureau, U. S. C. (2019). *S2701: Selected Characteristics of Health Insurance Coverage in the United States*. Explore census data. Retrieved September 21, 2022, from https://data.census.gov/cedsci/table?q=health+insurance&g=0100000US%240500000_0400000US27&tid=ACSST1Y2019.S2701&moe=false
- This source contains the demographic information for insured and uninsured (not having health insurance) for the year of 2019 and for all 50 states plus DC and Puerto Rico. The demographics include age, sex, race, education status, annual salary, educational attainment, and if you were native (born in the US) or foreign born (born out of the US).
 - We also used this source for our data for our Machine Learning model for the years of 2015 to 2019 to test our model.
- 4) Bureau, U. S. C. (2019). *S2703: Private Health Insurance Coverage by Type and Selected Characteristics*. Explore census data. Retrieved September 21, 2022, from <https://data.census.gov/cedsci/table?q=health+insurance&g=0400000US27%2C27%240500000&tid=ACSST1Y2019.S2703>
- This source contains the private health insurance information for some counties within Minnesota in the year 2019. The private health insurance includes employer-based, direct-purchase, and military along with poverty level, full-time worker, and if they have private health insurance alone.
- 5) Bureau, U. S. C. (2019). *S2704: Public Health Insurance Coverage by Type and Selected Characteristics*. Explore census data. Retrieved September 21, 2022, from <https://data.census.gov/cedsci/table?q=health+insurance&g=0400000US27%2C27%240500000&tid=ACSST1Y2019.S2704>
- This source contains the public health insurance information for some counties within Minnesota in the year 2019. The public health insurance includes medicare, medicaid, and veterans assistance along with poverty level, full-time worker, and if they have public health insurance alone.
- 6) Bureau, U. S. C. (2022, August 10). *2008 - 2020 small area health insurance estimates (SAHIE) using the American Community Survey (ACS)*. Census.gov. Retrieved September 21, 2022, from <https://www.census.gov/data/datasets/time-series/demo/sahie/estimates-acss.html> Only used the year 2019 from this website.
- This source breaks down the insured and uninsured populations by demographic factors such as age, race, sex, and income. These are also broken up by county as well as state totals, allowing us to geographically analyze insurance vs. uninsurance.
- 7) CDC. (2021, April 5). *NHIS - 2019 NHIS*. Centers for Disease Control and Prevention. Retrieved September 21, 2022, from <https://www.cdc.gov/nchs/nhis/2019nhis.htm>
- This source's data comes from a plethora of survey questions, containing very thorough and specific insurance details including a variety of demographic details of the insured / uninsured, as well as reasons for not being insured.

8) CDC. (2021, December 16). *Behavioral risk factors: Selected metropolitan area risk trends (SMART) MMSA prevalence data (2011 to present)*. Centers for Disease Control and Prevention. Retrieved September 21, 2022, from https://chronicdata.cdc.gov/Behavioral-Risk-Factors/Behavioral-Risk-Factors-Selected-Metropolitan-Area/j32a-sa6u?category=Behavioral-Risk-Factors&view_name=Behavioral-Risk-Factors-Selected-Metropolitan-Area

- This source contains information for the major metropolitan areas in Minnesota for the year of 2019. It is broken down into different questions and responses as well as topics that relate to health coverage, which is what we looked at.

9) CDC. (2021, September 14). *BRFSS: Table of health care access/coverage*. Centers for Disease Control and Prevention. Retrieved September 21, 2022, from <https://chronicdata.cdc.gov/Behavioral-Risk-Factors/BRFSS-Table-of-Health-Care-Access-Coverage/f7a2-7inb>

- We utilized this source through an API call and it covers all 50 states with questions and categories related to health coverage. We filtered out the data to only the year 2019.

10) Prescott, R. (2016, June 22). *USA-cities-and-states/US_CITIES_STATES_COUNTIES.CSV at master · Grammakov/USA-Cities-and-States*. GitHub. Retrieved September 26, 2022, from https://github.com/grammakov/USA-cities-and-states/blob/master/us_cities_states_counties.csv

- This source was utilized for the SAHIE dataset for a list of all counties in the United States.