



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

Elsa Carlson, Kylee LaPierre, Tarick Mehanna, and Logan Sell



Introduction and Initial Questions



Introduction

- Explain the 'why' behind the scenes of health insurance coverage
- Sufficient access to care: those who do not delay or avoid seeking healthcare services due to cost or location.
- Uninsured: people who don't have any type of health insurance.
- 2019 is the primary year for our data
 - To interpret data from immediately pre-pandemic
- Our model used data from 2015 to 2019



Initial Questions

1. How do uninsurance rates vary among demographics such as race, age, sex, population, income, and educational attainment level?
2. How does access to healthcare vary at a national level and by county?
3. How does access to healthcare vary among Minnesota counties?
4. Do rates of uninsurance vary based on offered coverage types?
5. Does the rate of uninsurance vary for individuals based on the number of hospitals in their county?
6. Can we predict the coverage level for a county based on demographics, income or other factors?
7. For those who are covered, is their coverage sufficient for their health needs?



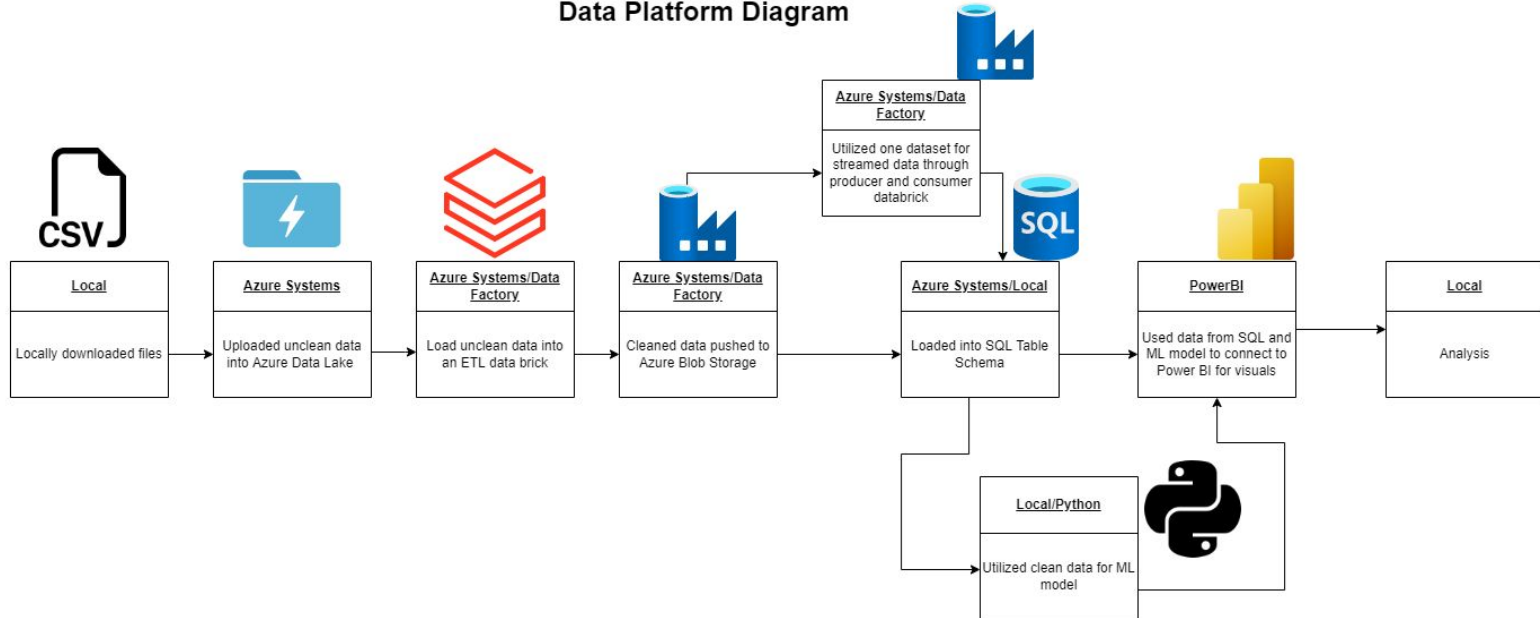
Research Process



Finding & Processing Data

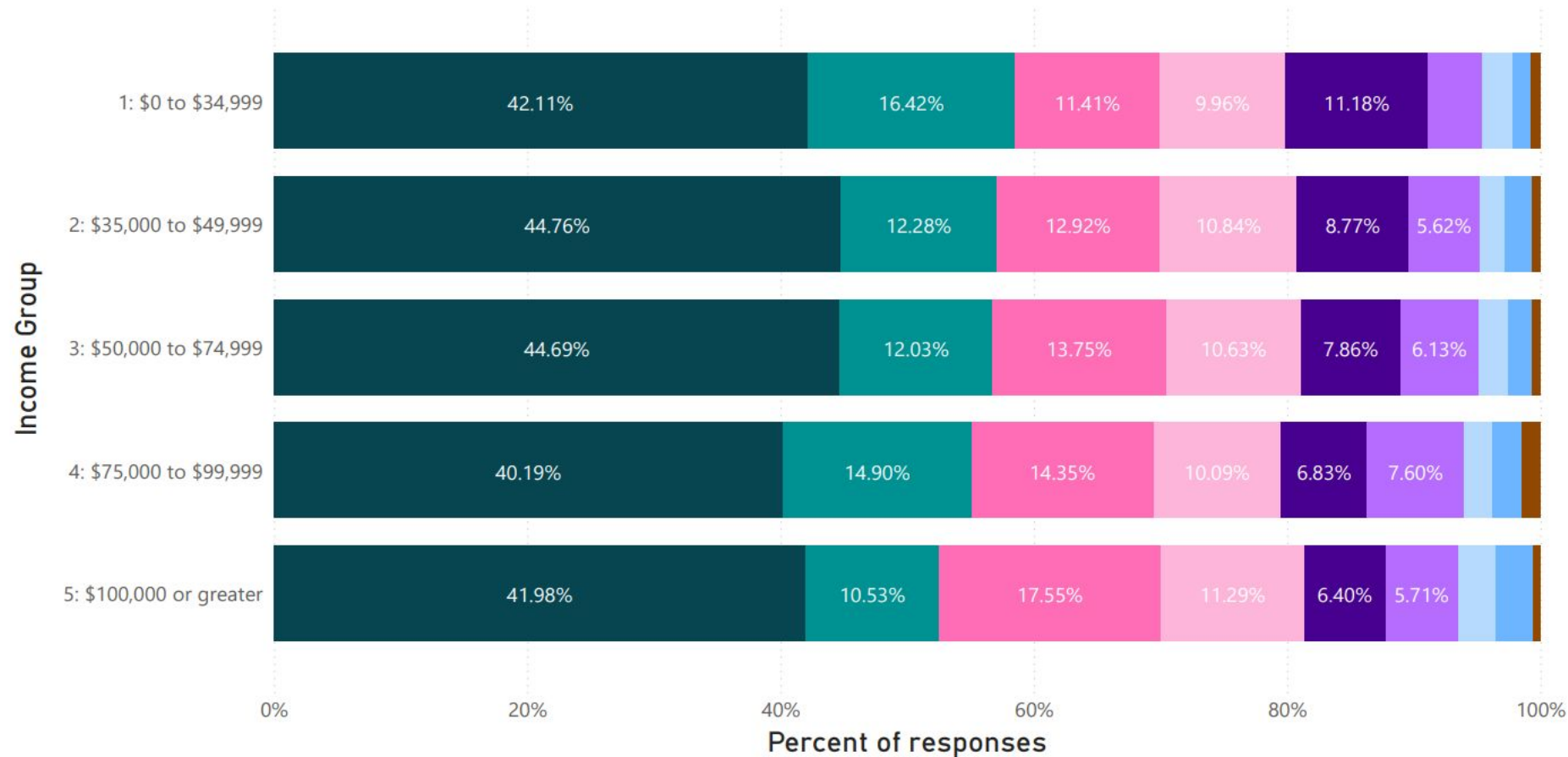
- Used data mainly from the US Census Bureau and the CDC
- Behavioral Risk Factor Surveillance System (BRFSS)
- Data process: extraction → cleaning & transformation → loading to SQL database

Data Platform Diagram



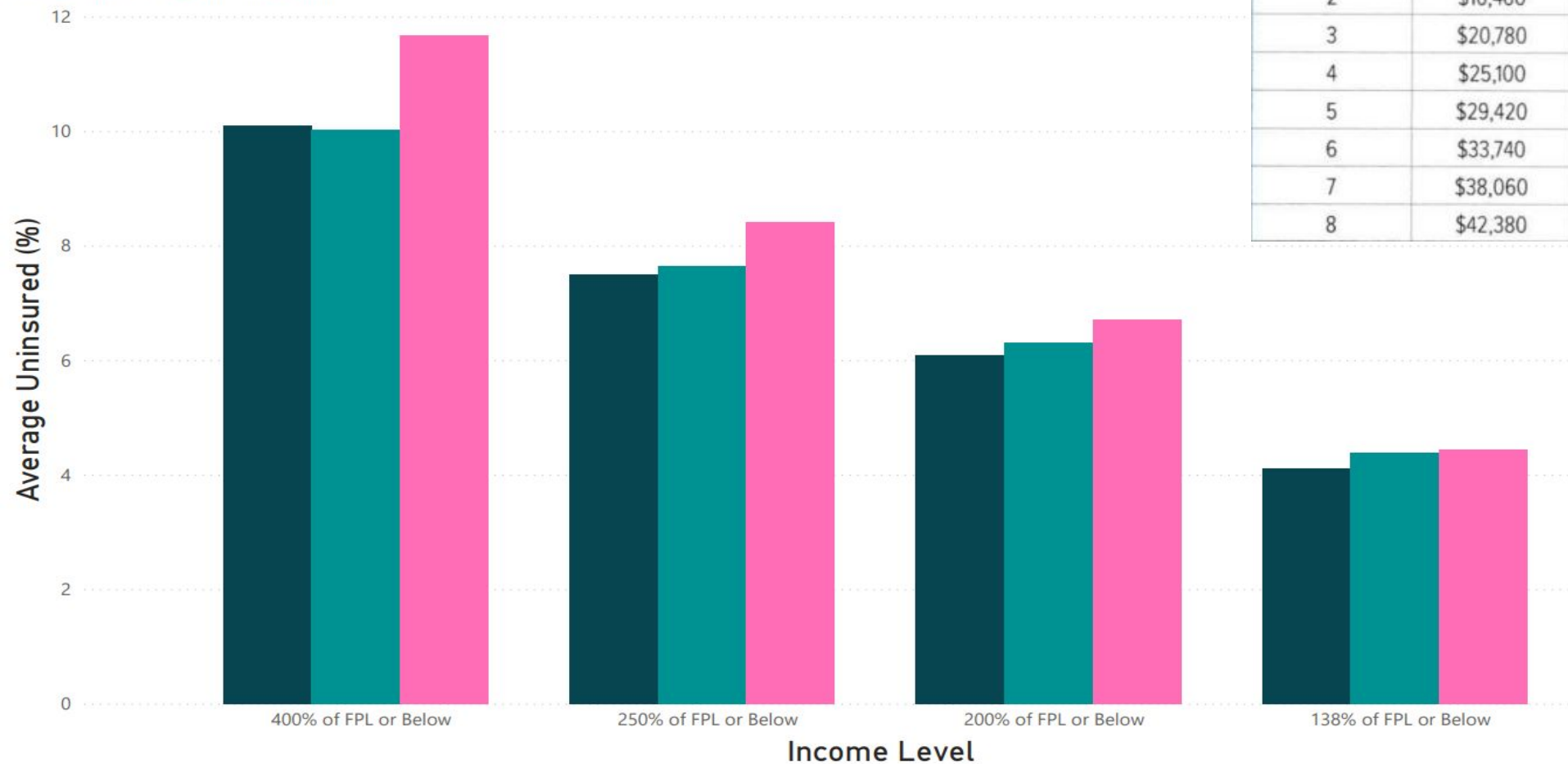
Reasons Americans Lack Coverage

● Too expensive ● Not eligible ● Don't want coverage ● Can't find a plan ... ● Process too c... ● Coverage has ... ● Other reason ● Lost job ● Missed de...



Average Percent Uninsured by Income Level

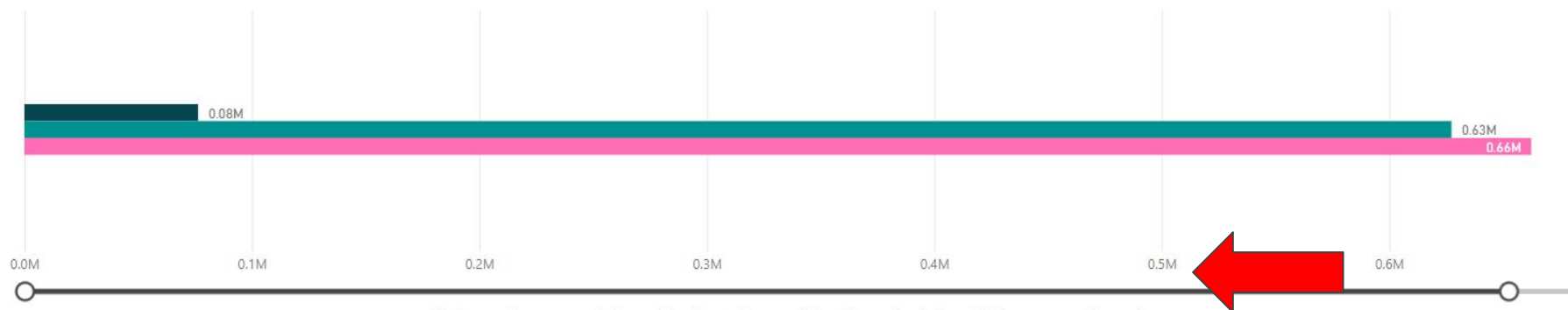
Sex ● Both Sexes ● Female ● Male



# in Household	100% FPL
1	\$12,140
2	\$16,460
3	\$20,780
4	\$25,100
5	\$29,420
6	\$33,740
7	\$38,060
8	\$42,380

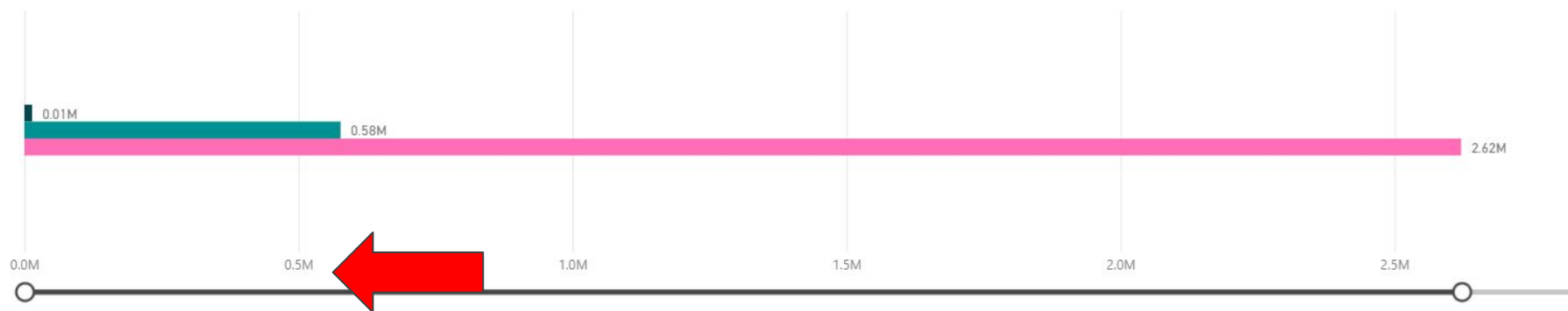
Public Insurance Types by Enrollment Numbers in Select Minnesota Counties

● VA Coverage ● Medicare Coverage ● Medicaid/Mean-Based Coverage



Private Insurance Types by Enrollment Numbers in Select Minnesota Counties

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

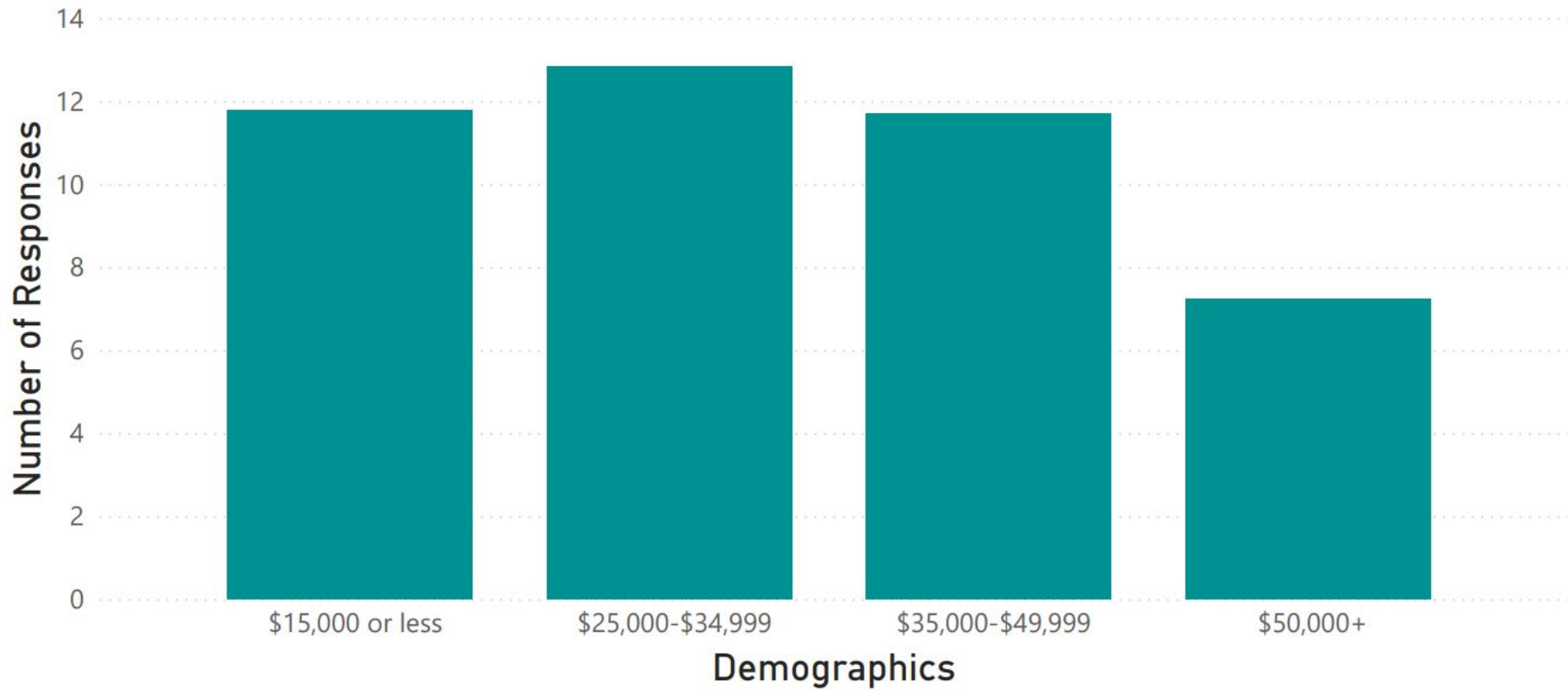


Note: These measures include people with more than one type of coverage.

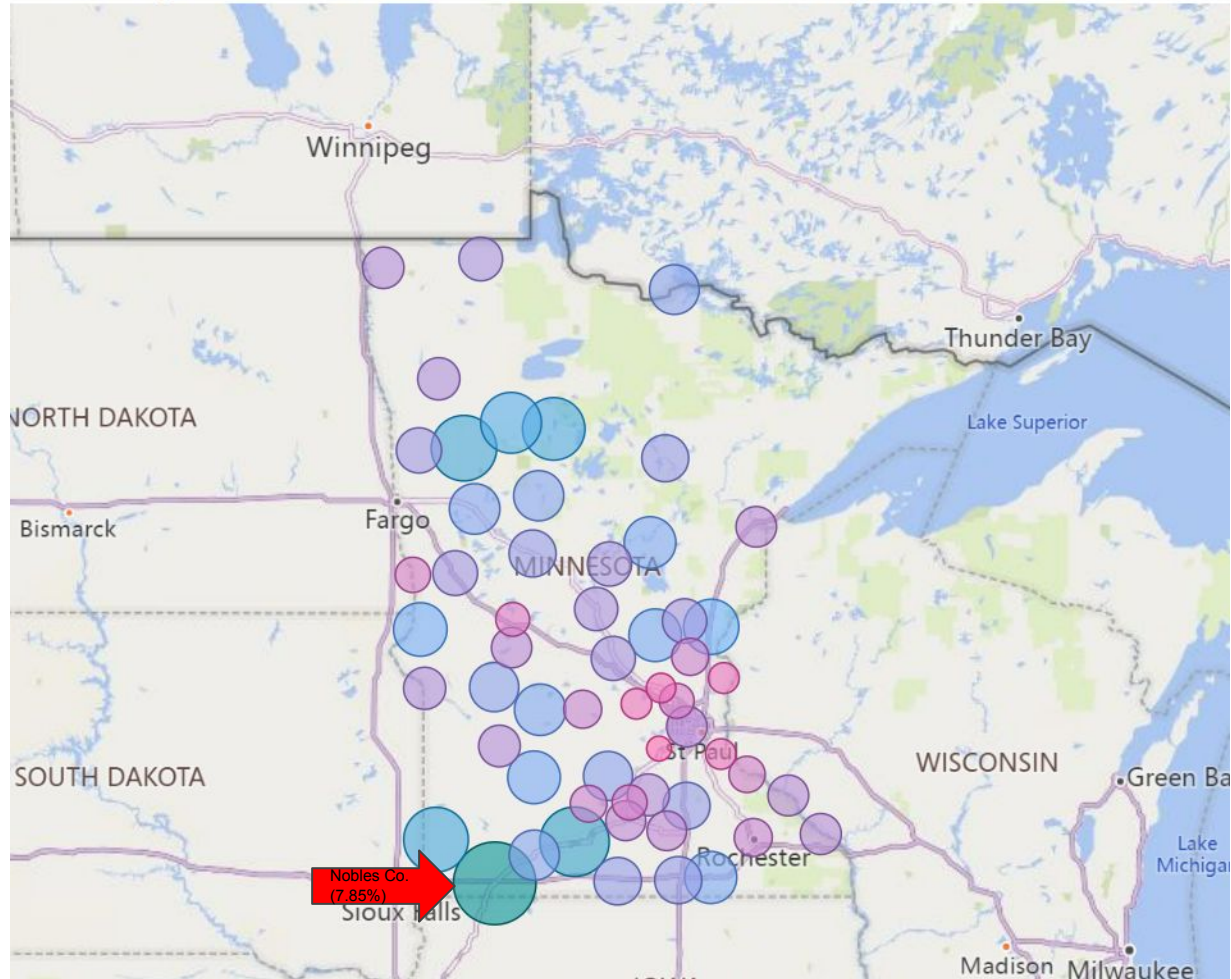
The select counties consist of Anoka, Blue Earth, Carver, Crow Wing, Dakota, Hennepin, Olmsted, Ramsey, Rice, Scott, Sherburne, St. Louis, Stearns, Washington, and Wright Counties.

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

Response ● Yes

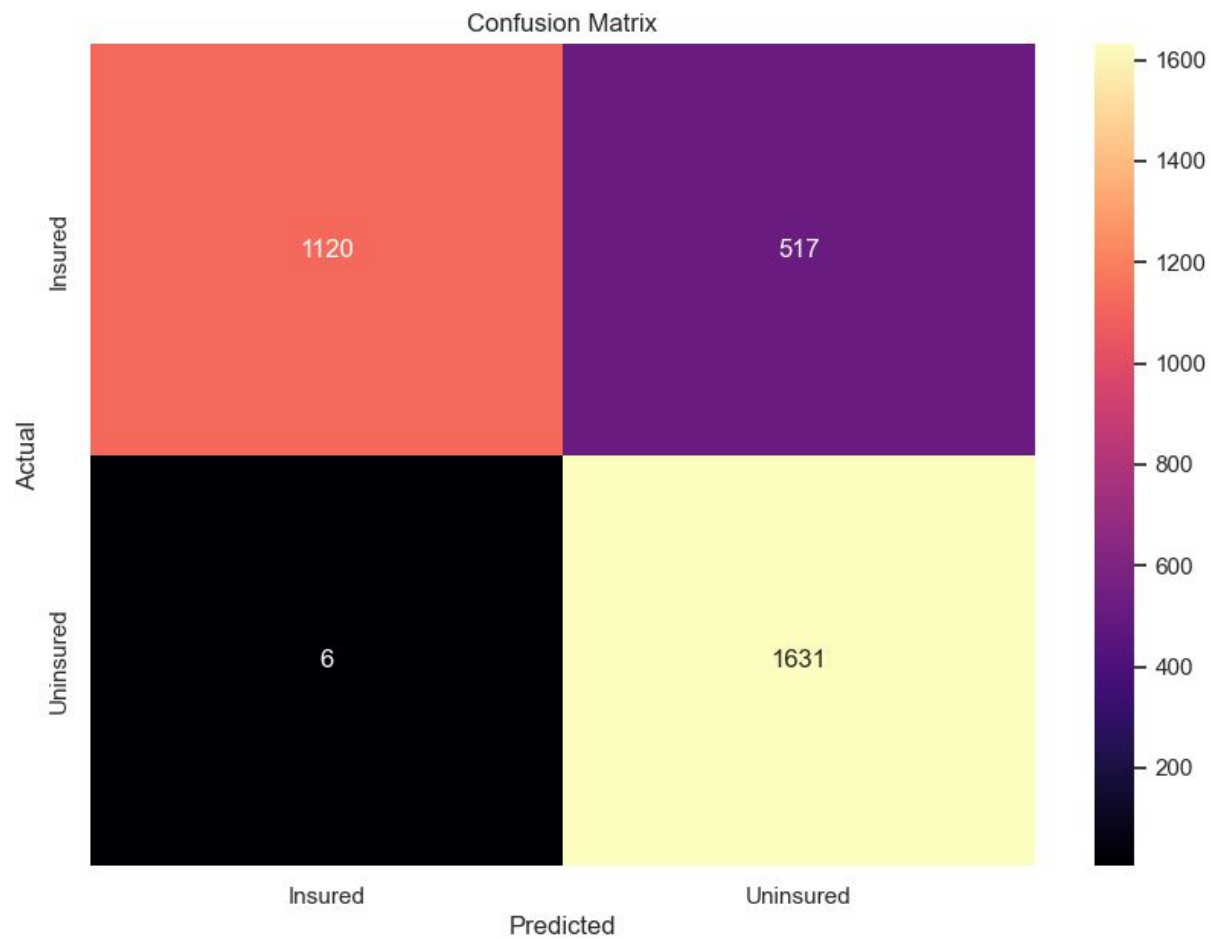


Average Percent Uninsured by County in Minnesota





Machine Learning





Recommendations





Recommendations for Future Data Collection & Research

- Increase data collection in rural and lower-population counties
- Track reasons for lacking insurance by demographics other than income level
- Study intersection of demographics in relation to avoidance of medical care & access to coverage (including location, race/ethnicity, income, etc)
- Classify public insurance enrollees who work full-time by whether or not their employers offer employer-based insurance
- Track tobacco usage in relation to insurance affordability
- Investigate strategies to increase insurance affordability



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
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>
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
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>
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>



Sources

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-acs.html>
Only used the year 2019 from this website.
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>
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
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>
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