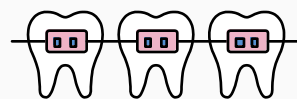
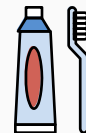
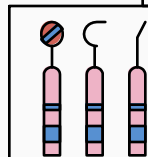
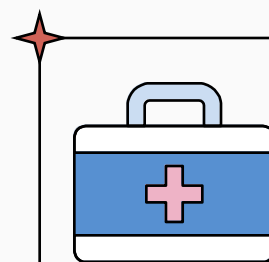
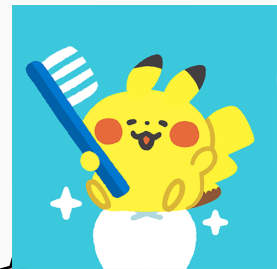
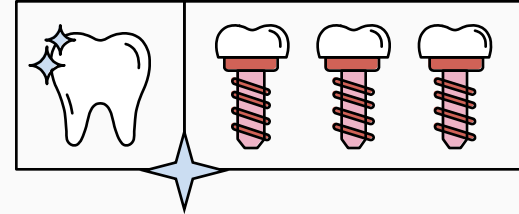
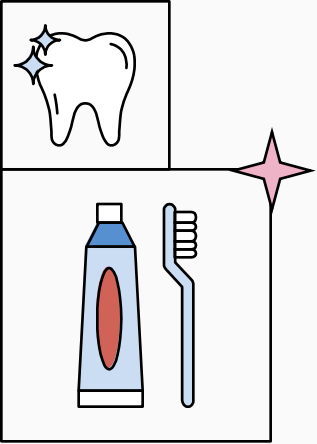


Dental Care in the United States

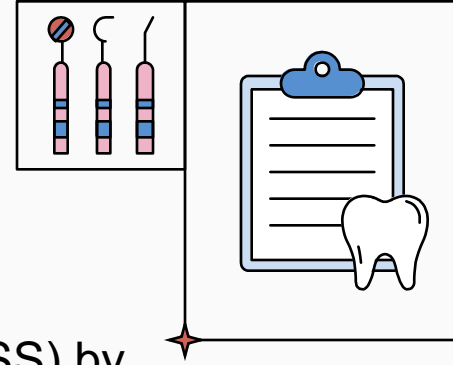
Exploring Factors Influencing Dental Visits

Columbia Data Analytics Bootcamp
Project 1
Breakout Room 5 (Team Pykachu)
December 18, 2023

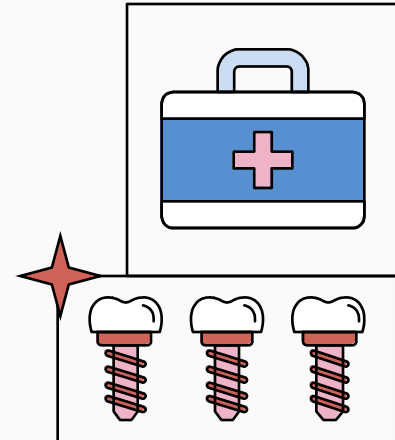
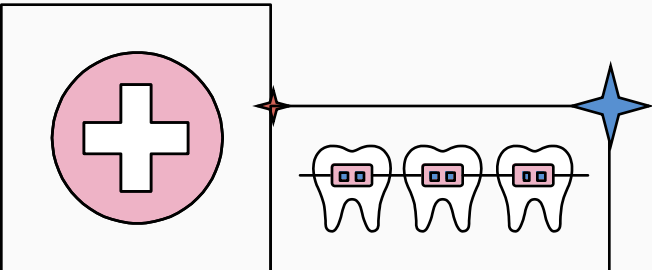




Data Sources



- Behavioral Risk Factor Surveillance System (BRFSS) by CDC collects health-related data via telephone surveys
- American Dental Association (ADA) for dentist population, Medicaid reimbursement, and oral health survey data
- Geoapify for locations of dental offices
- U.S. Census for the population data





% of Adults Who Visited the Dentist in the Past Year (2018)



Most visits

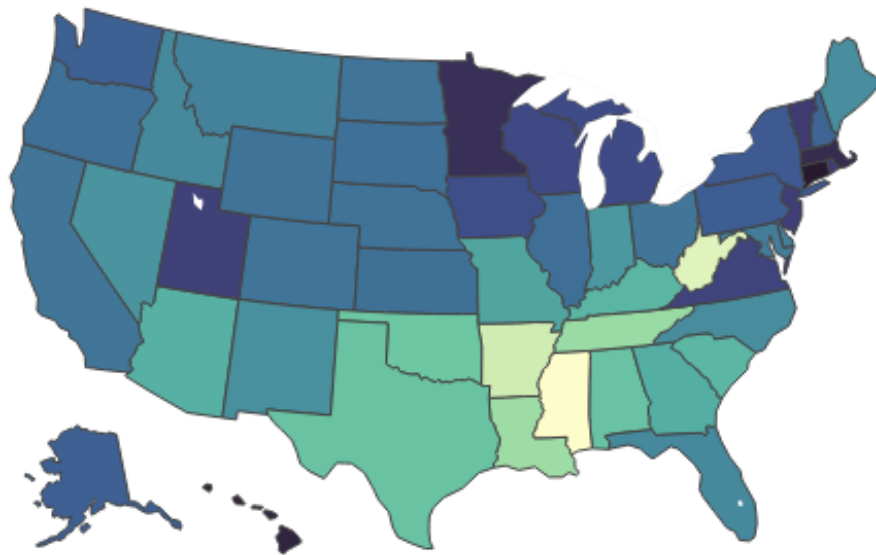
Connecticut (77%)

Hawaii (75%)

Massachusetts (74%)

Minnesota (74%)

Vermont (73%)



color

75

70

65

60

55

Fewest visits

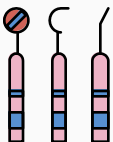
Mississippi (54%)

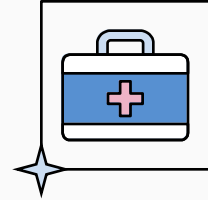
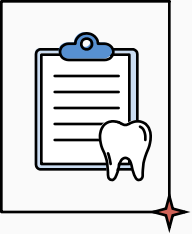
W. Virginia (55%)

Arkansas (56%)

Louisiana (58%)

Tennessee (58%)



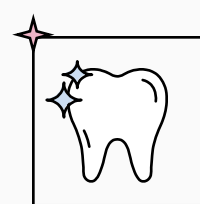
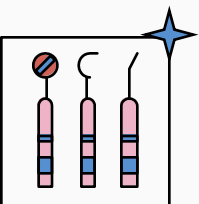


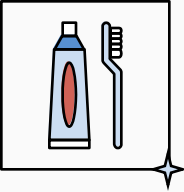
Research Questions

Which factors might explain differences by state in the percentage of the population making dental visits?

We examined:

- Availability of dentists by state
- Availability of dentists by city size
- Policy differences and affordability (e.g. Medicaid reimbursements)
- Description of populations that are making or foregoing dental visits





Hypotheses

01

Dentist Population

Number of active dentists by state

02

Dental Deserts

Areas with limited access to dental offices.

03

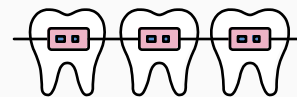
Policy/Cost Issues

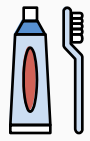
Affordable Care Act,
Medicaid policies

04

Breakout Categories

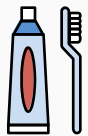
Income, Race, Education, Gender,
Age



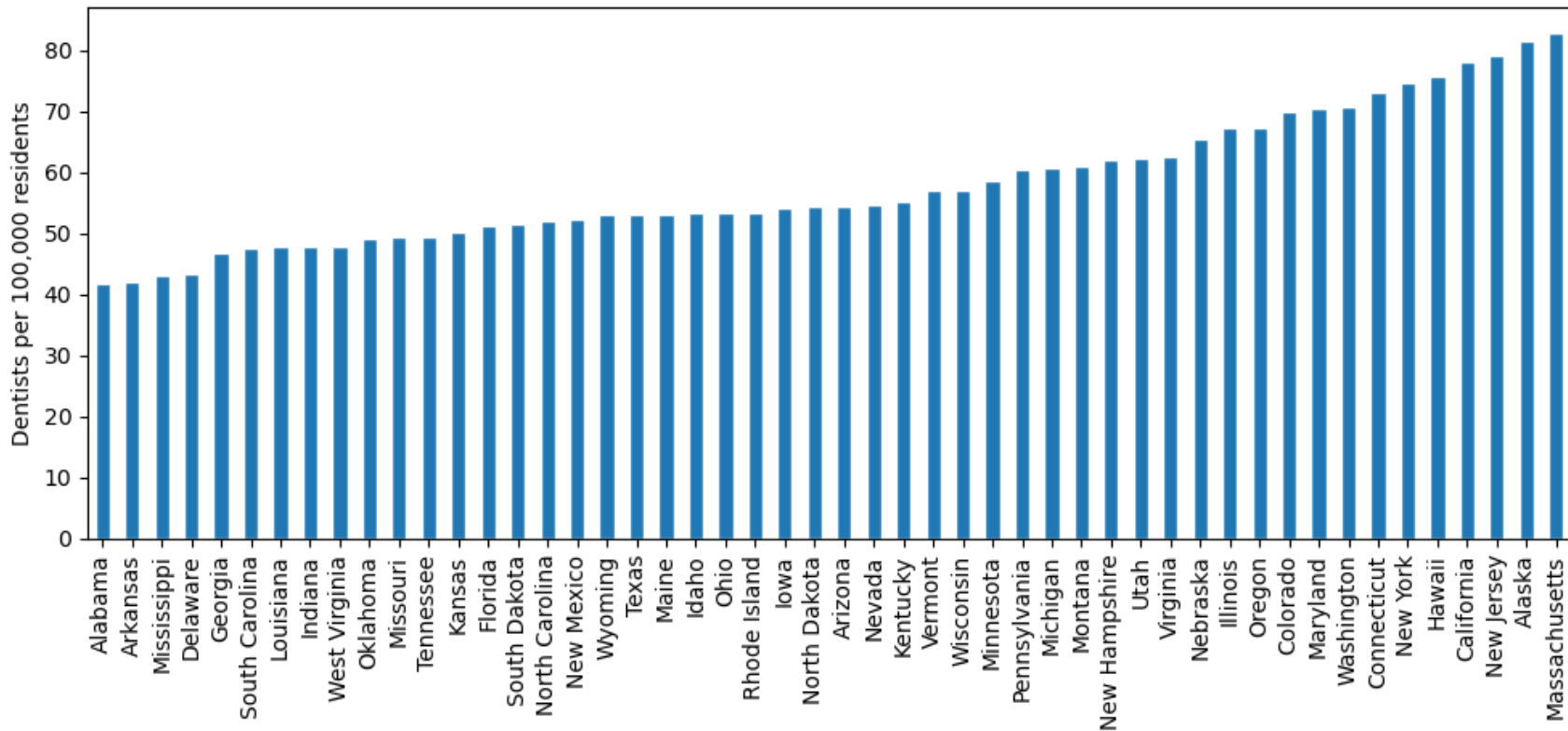


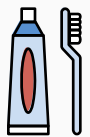
How many dentists are there in
each state?

Are people not going to the dentist
because there are no dentists in the
area they live?

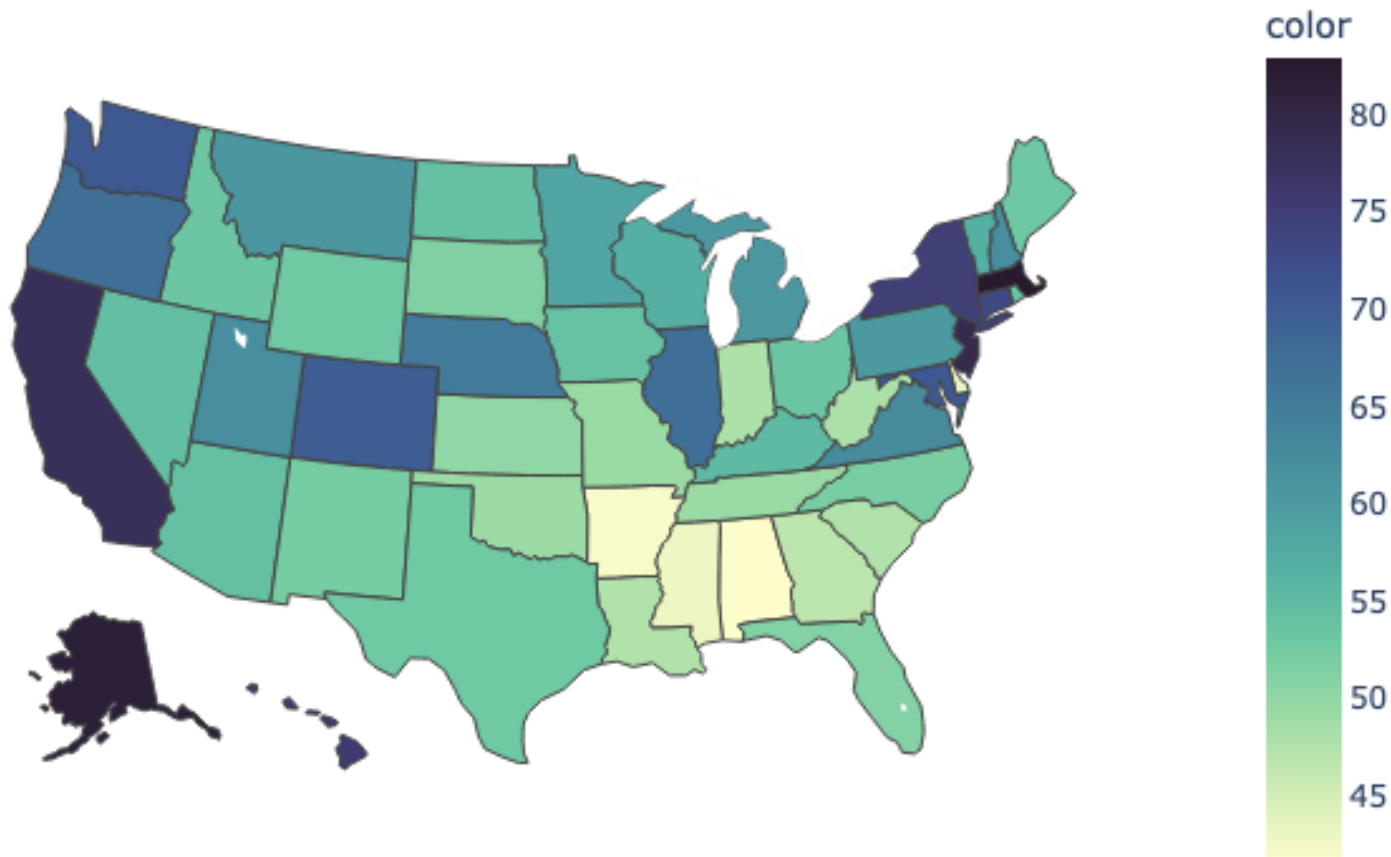


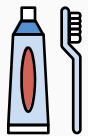
Dentist Population per 100,000 by State





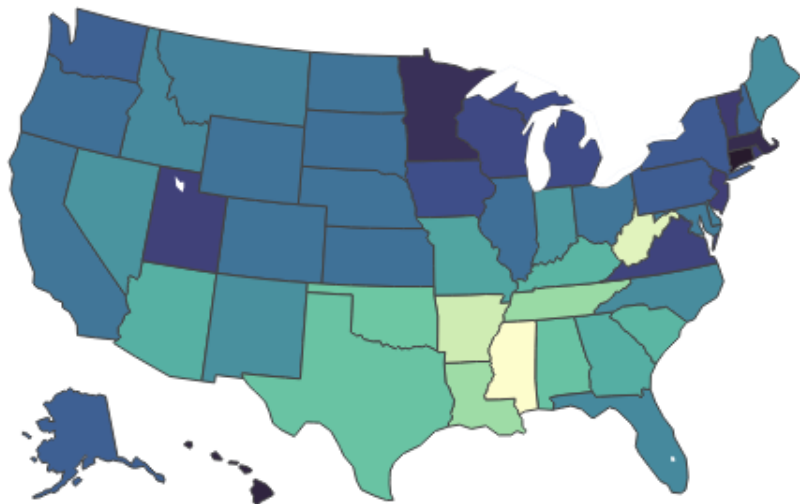
Dentist Population per 100,000



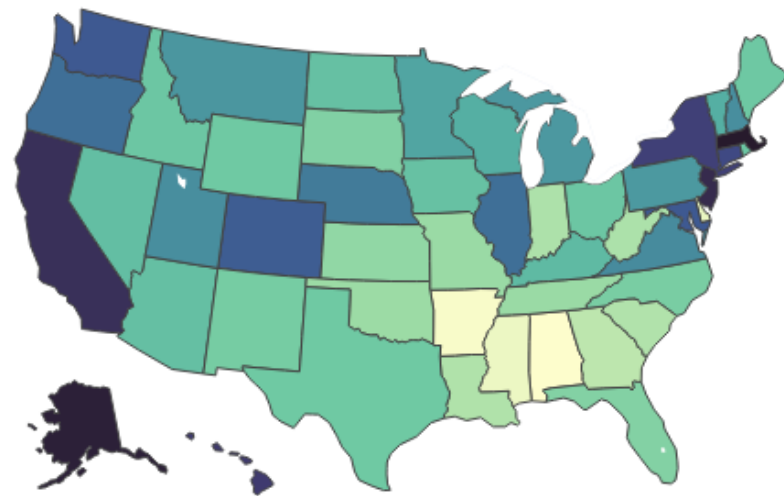


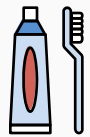
Dental Visit Percentages vs. Dentist Population per 100,000

Percent visiting dentist

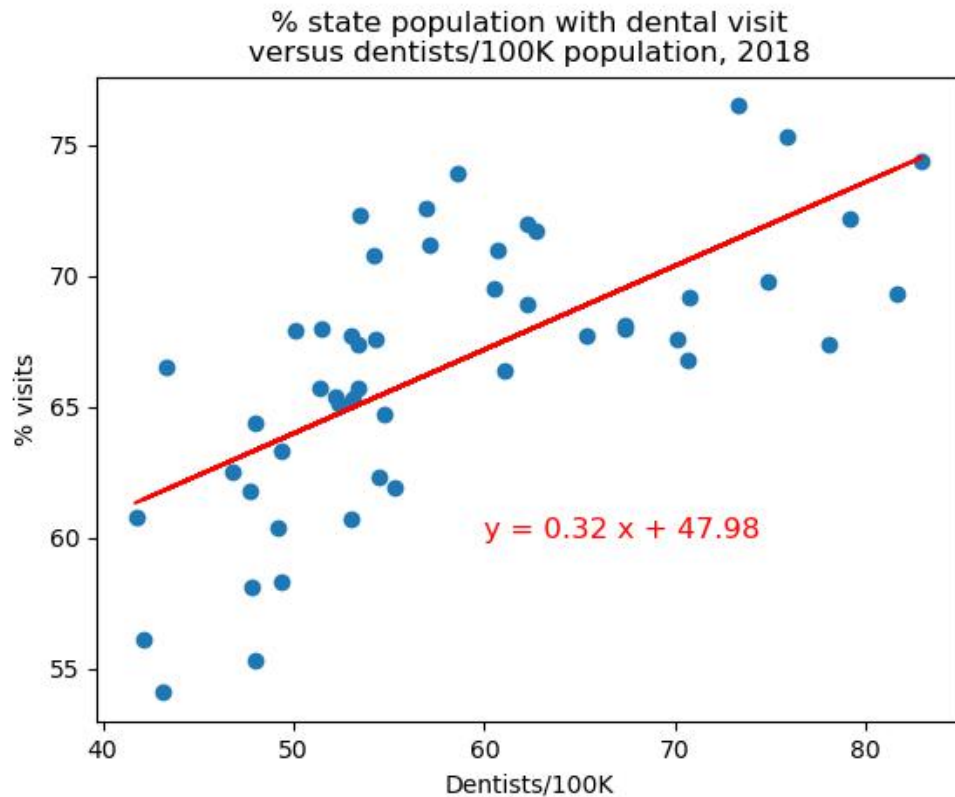


Dentists per 100,000 residents



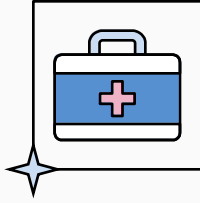


Dental Visit Percentages vs. Dentist Population per 100,000



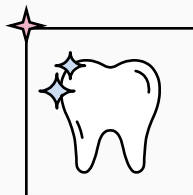
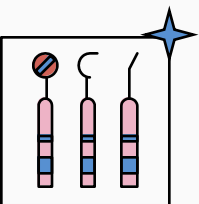


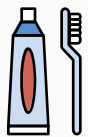
Are there 'Dentist Deserts' in the United States?



Restricting factors when trying to visit the dentist:

- How far do you need to travel to see the dentist?
- How many dentists are within a certain radius of you?
- Are there enough dentists to handle the population density of a city?

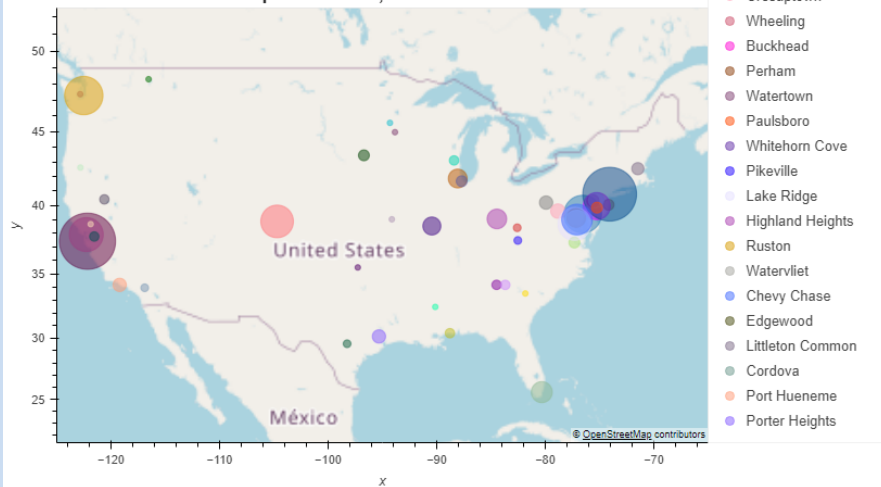




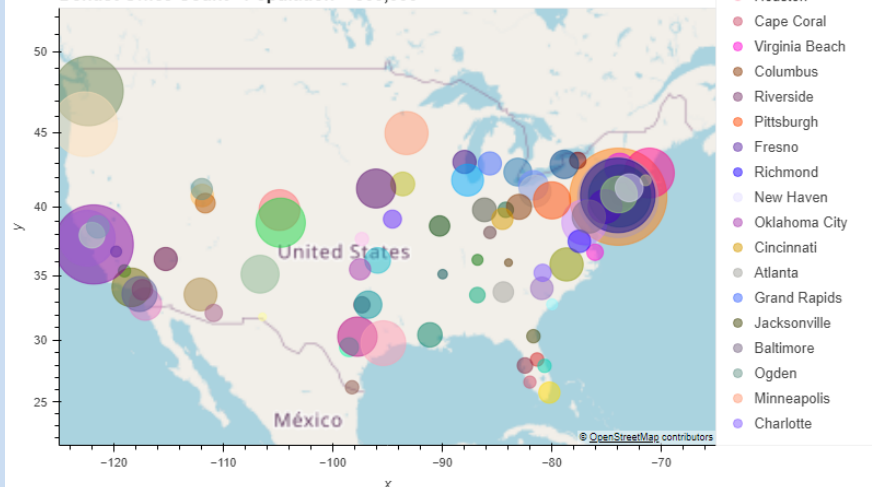
Dentist Office Count

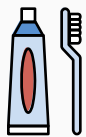


Dentist Office Count - Population < 100,000



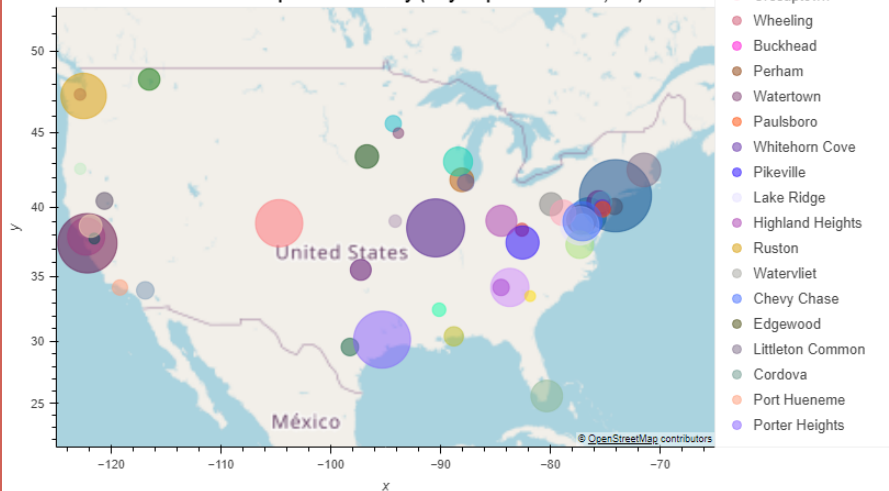
Dentist Office Count - Population > 500,000



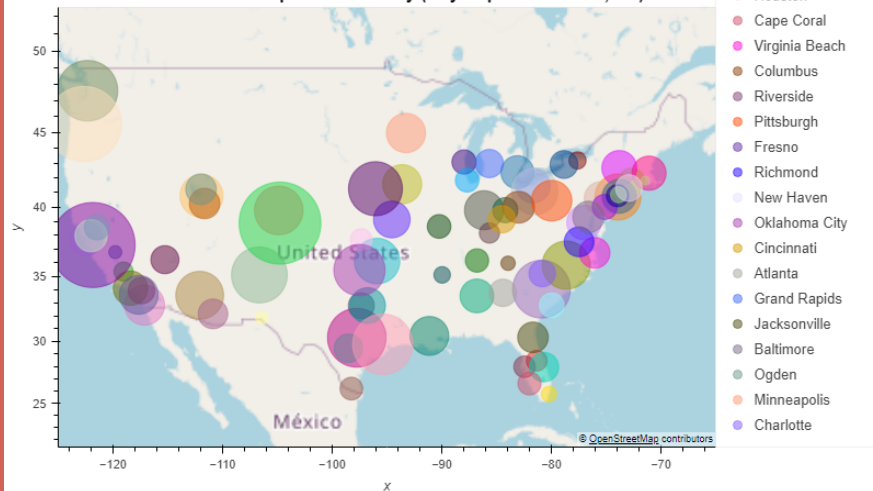


Dentist Office Count vs. Population Density

Dentist Office Count vs Population Density (City Population < 100,000)

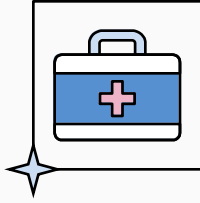


Dentist Office Count vs Population Density (City Population > 500,000)

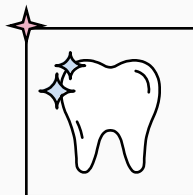
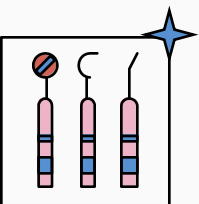


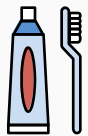


Which states have Medicaid reimbursement for dental care?



Is cost a contributing factor to not visiting the dentist?

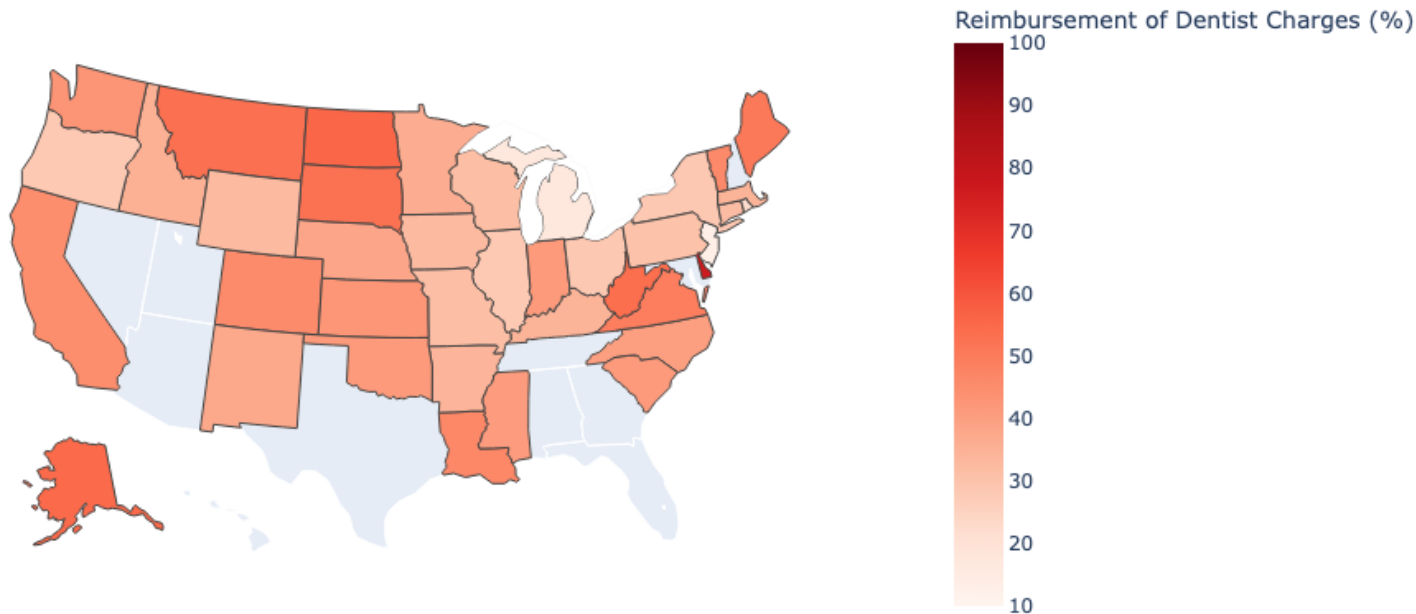


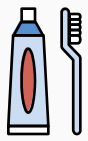


Medicaid Reimbursement Map



Medicaid Fee-For-Service Reimbursement as a Percentage of Dentist Charges for Adult Dental Services, 2022





Medicaid Reimbursement Ranking

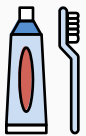


Adult Dental Care Services

State	
Delaware	76.9%
North Dakota	55.7%
Alaska	55.0%
West Virginia	53.8%
Montana	53.2%
South Dakota	52.8%
Maine	50.8%
Virginia	49.3%
Louisiana	46.6%
Vermont	46.2%

Adult Dental Care Services

State	
Wisconsin	31.7%
Missouri	31.6%
Pennsylvania	30.5%
Ohio	28.6%
New York	28.6%
Oregon	28.3%
Illinois	28.3%
Rhode Island	22.4%
Michigan	17.0%
New Jersey	13.3%

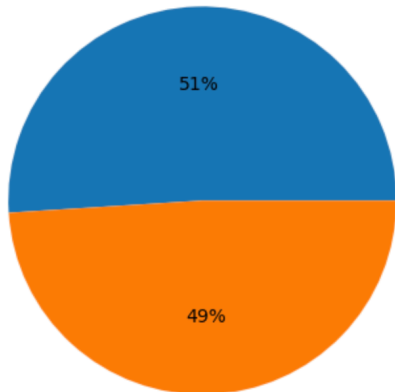


Dental Benefits Utilization



Distribution of Who Visited the Dentist Among Private Insurance Group

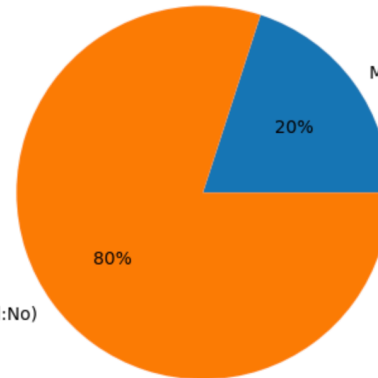
Private Insurance (Visited:Yes)



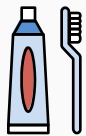
Private Insurance (Visited:No)

Distribution of Who Visited the Dentist the Last Year Among Medicaid Group

Medicaid (Visited:Yes)



Medicaid (Visited:No)

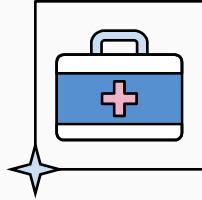


Reasons for Not Visiting the Dentist



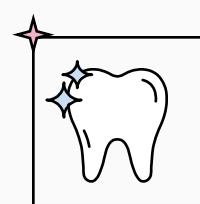
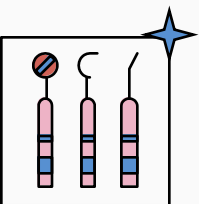
Reasons for Not Visiting the Dentist More Frequently	All Income Levels	Low Income	Middle Income	High Income
Cost	59%	65%	61%	47%
Afraid of Dentist	22%	20%	23%	23%
Inconvenient Location or Time	19%	21%	18%	20%
Trouble Finding a Dentist	15%	22%	10%	16%
No Original Teeth	12%	10%	13%	11%
No Perceived Need	10%	6%	10%	19%
No Reason	9%	8%	7%	14%
Other	10%	10%	11%	9%

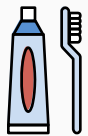
Reasons for Not Visiting the Dentist More Frequently	Private Insurance	Medicaid	Other	No Dental Coverage
Cost	47%	50%	43%	70%
Afraid of Dentist	28%	35%	24%	18%
Inconvenient Location or Time	28%	33%	32%	12%
Trouble Finding a Dentist	14%	41%	30%	13%
No Original Teeth	7%	20%	14%	14%
No Perceived Need	16%	21%	16%	8%
No Reason	12%	8%	13%	6%
Other	9%	9%	13%	10%



Which states have the highest percentage of older adults who have lost at least six teeth?

Descriptive analysis of our population:
Income, Race, Education, Gender, Age

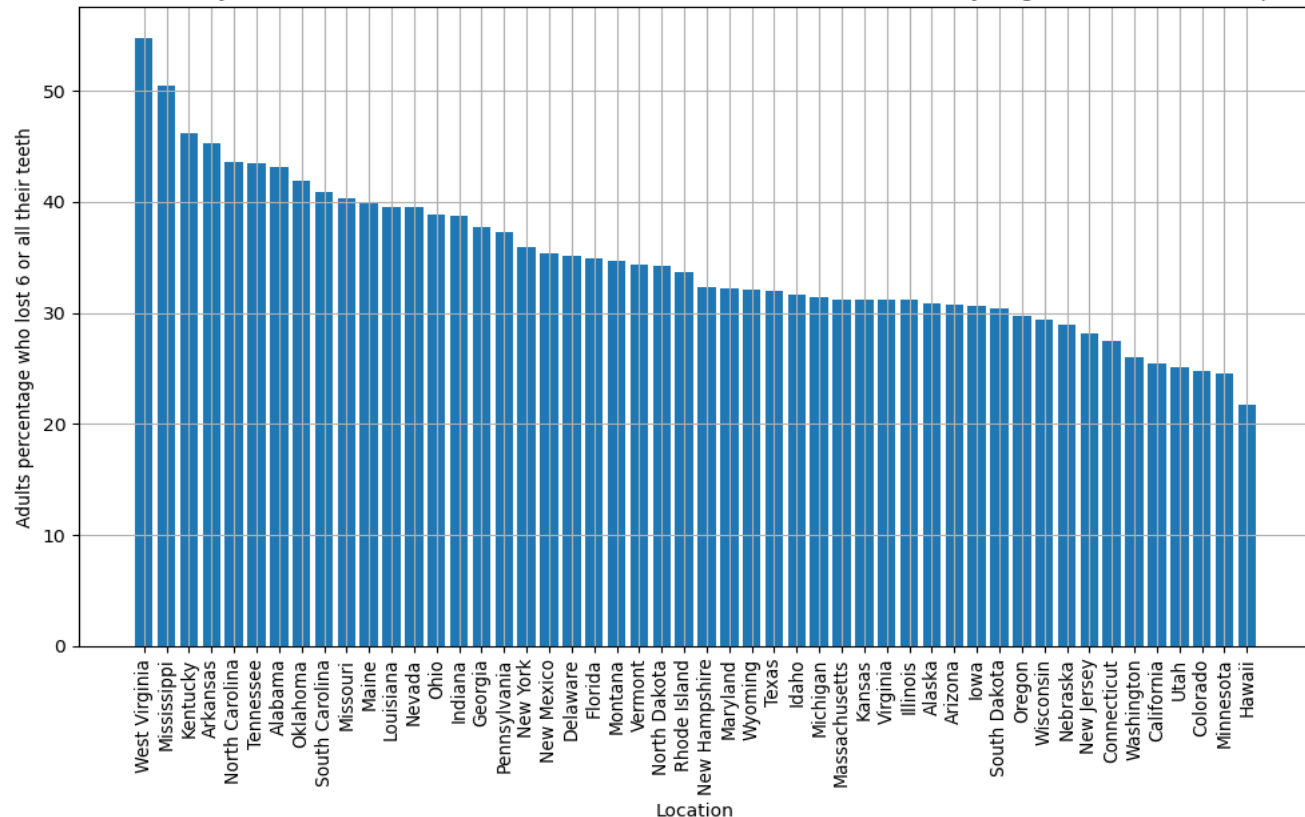




Adults 65+ Who Lost Teeth



% Adults of 65+ years who have lost 6 or all of their natural teeth due to tooth decay or gum disease in 2018 per state



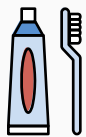
5 Top Locations:

West Virginia	54.8 %
Mississippi	50.5 %
Kentucky	46.2 %
Arkansas	45.3 %
North Carolina	43.6 %

Important Note:

The following states are also among the five states with the lowest percentage of the population reporting dental visits in 2018:

- West Virginia
- Mississippi
- Arkansas

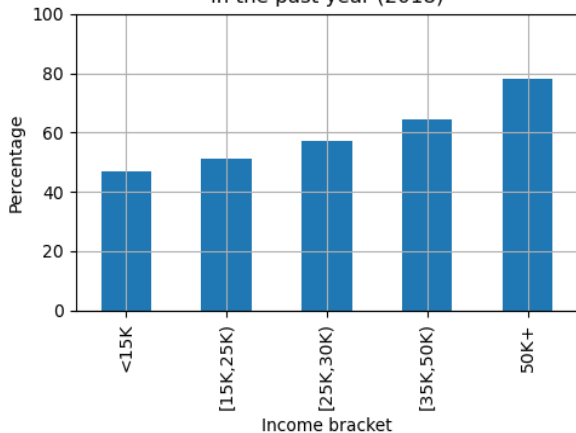


Adult Dentist Visits in 2018 by Income, Race, Education, Gender & Age

Income

\$50,000+	78.1 %
\$35,000-\$49,999	64.3 %
\$25,000-\$34,999	57.3 %
\$15,000-\$24,999	51.2 %
Less than \$15,000	46.8 %

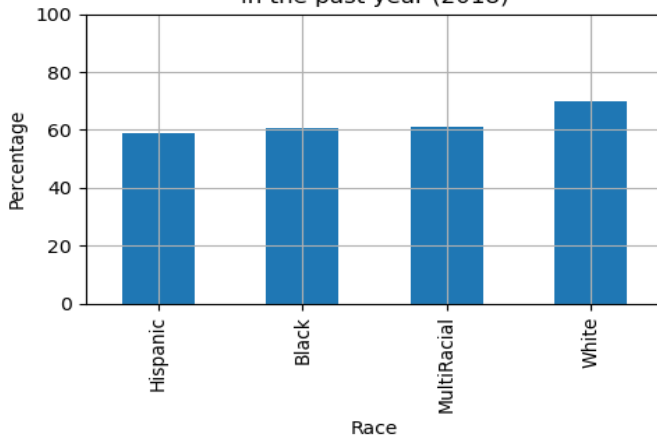
Percent of US adults visiting the dentist
in the past year (2018)



Race

White	69.7 %
Multiracial	61.3 %
Black	60.5 %
Hispanic	59.1 %

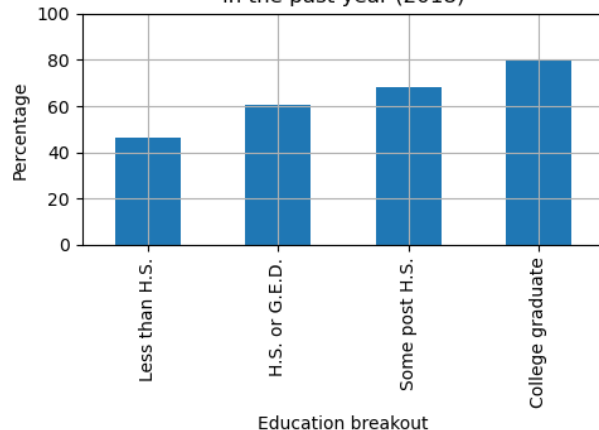
Percent of US adults visiting the dentist
in the past year (2018)

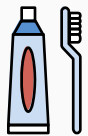


Education

College graduate	80.0 %
Some post H.S.	68.0 %
H.S. or G.E.D.	60.8 %
Less than H.S.	46.1 %

Percent of US adults visiting the dentist
in the past year (2018)

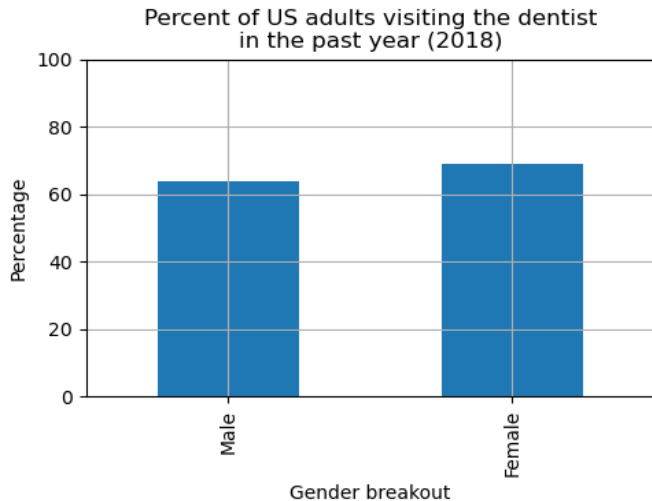




Visits by Income, Race, Education, Gender & Age (cont.)

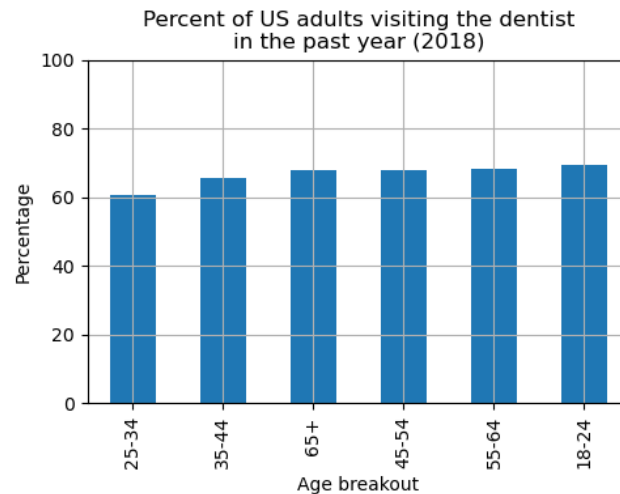
Gender

Female	69.1 %
Male	63.8 %



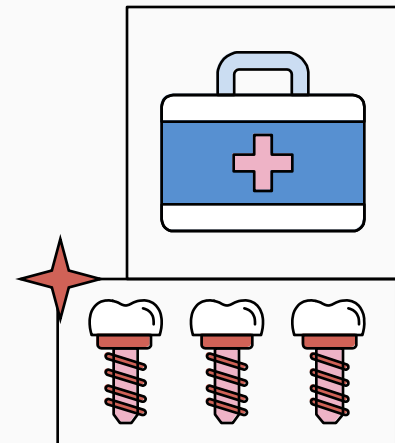
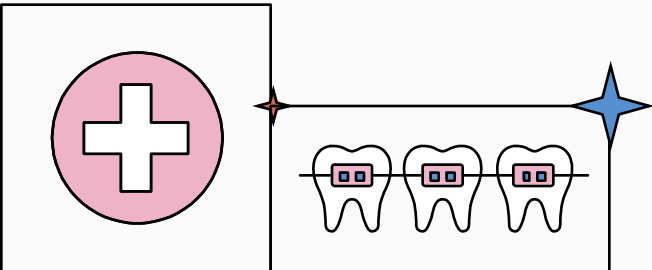
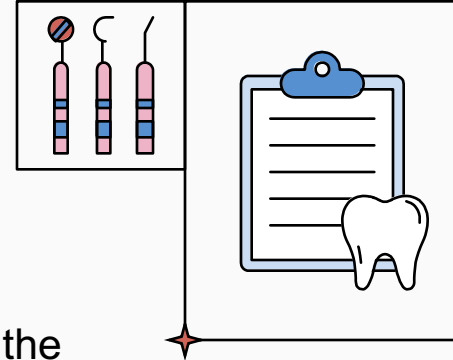
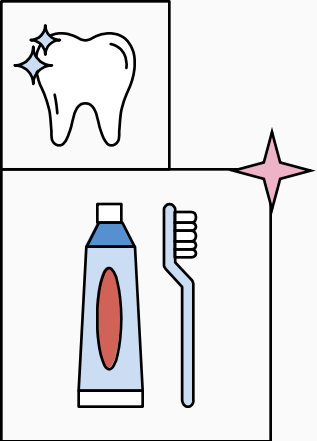
Age

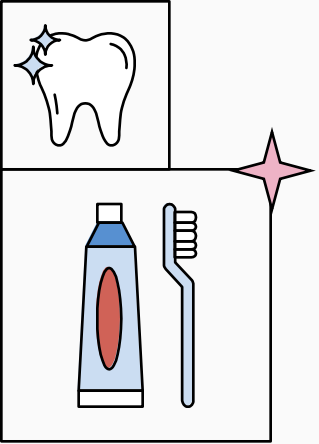
18-24	69.3 %
55-64	68.3 %
45-54	68.1 %
65+	67.8 %
35-44	65.5 %
25-34	60.8 %



Major Findings & Implications

- Some correlation between dentists per 100,000 and % of the population visiting the dentist
- More populated areas tend to have a higher concentration of dental offices
- Variability in the states participating in the Medicaid reimbursement program for dental services
- High dental costs as a main concern for Americans





Limitations

- Inconsistent years of the data analyzed (BRFSS 2018, Medicaid 2022, API calls 2023)
- Assumptions made about oral health behaviors and policies stayed constant from 2018-2023

Future Directions

- ACA expanded dental coverage and one would expect it improved oral health. This could not be explored at this time due to unavailable data.

