

Factors Affecting Health Insurance Rates

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By Isabella, Vahram, and Nick

Question Summary

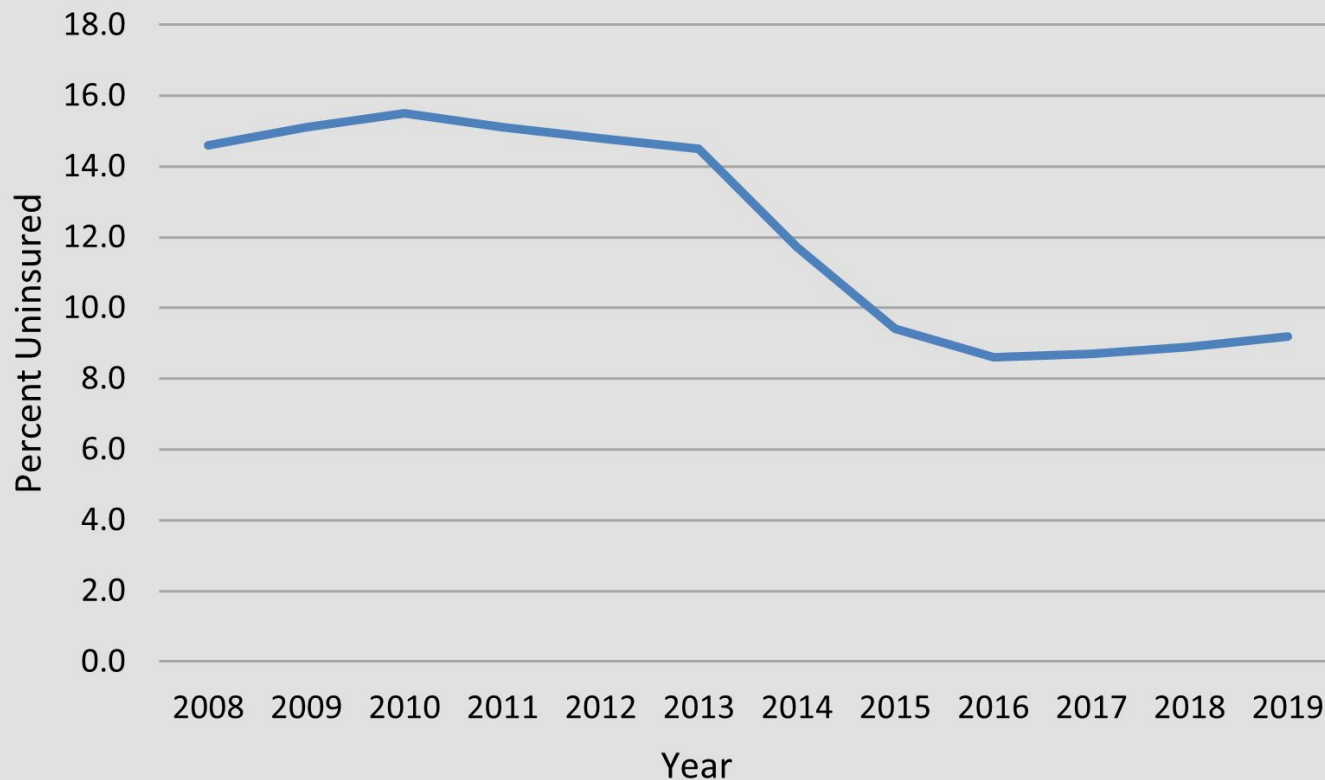
1. Are rates of uninsured people increasing or decreasing?
2. What is the relationship between rates of insurance coverage and income for US and per state (if available)?
3. What is the relationship between rates of insurance coverage and wealth inequality for US and for state (if available)?

Question Summary (cont.)

4. What is the relationship between rates of insurance coverage and race?
5. Is insurance coverage increasing for states with lower income at the same rate as it is for states with higher income?
6. Can we predict if someone is insured based on wealth inequality index of state, their income, and their demographic factors (age, sex, race etc...)?

1)

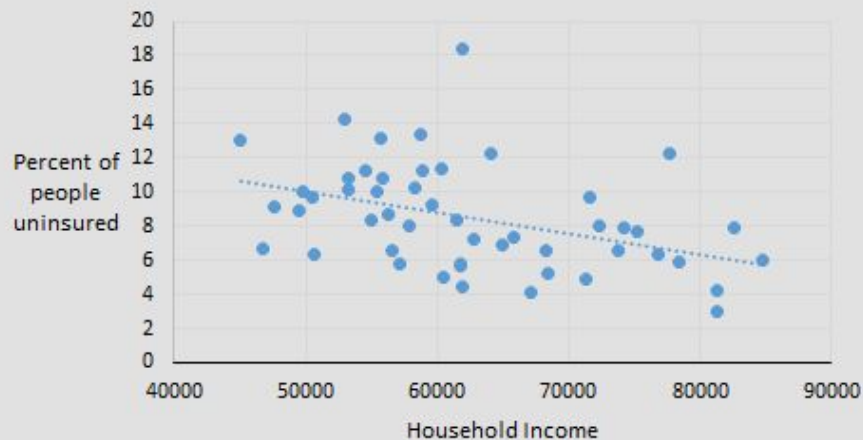
Number of uninsured people over time



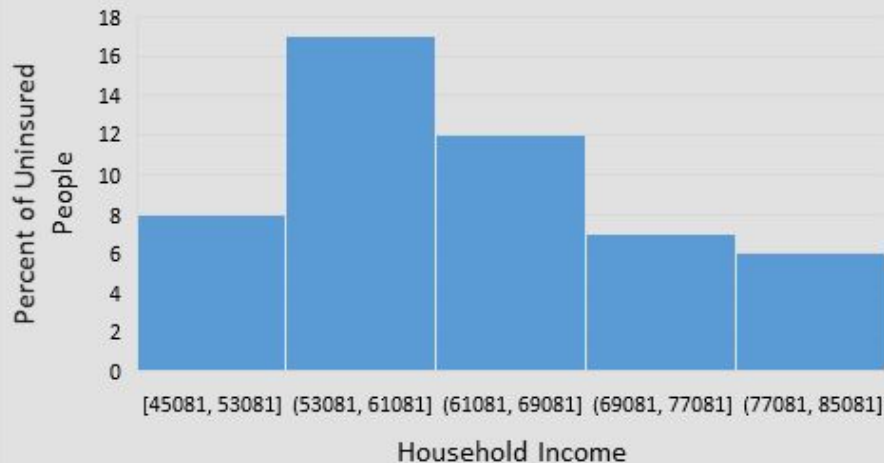
2)

Relationship Between Rates of Insurance Coverage and Income for US and Per State

Uninsured people vs Income by States



Histogram of Income level and percent of uninsured



Moderate correlation (absolute value of 0.41) between percent of uninsured people and household income (state by state)

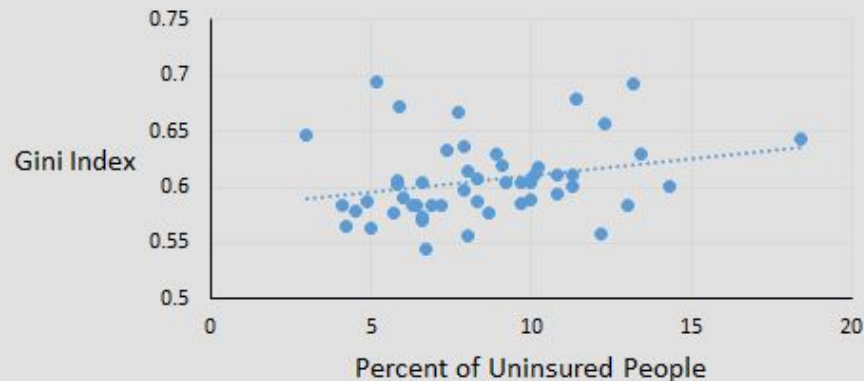
3)

Relationship Between Rates of Insurance Coverage and Wealth Inequality for US and for State

Uninsured People and RmeanDev Over Time



Gini Coefficient vs Percent of Uninsured People



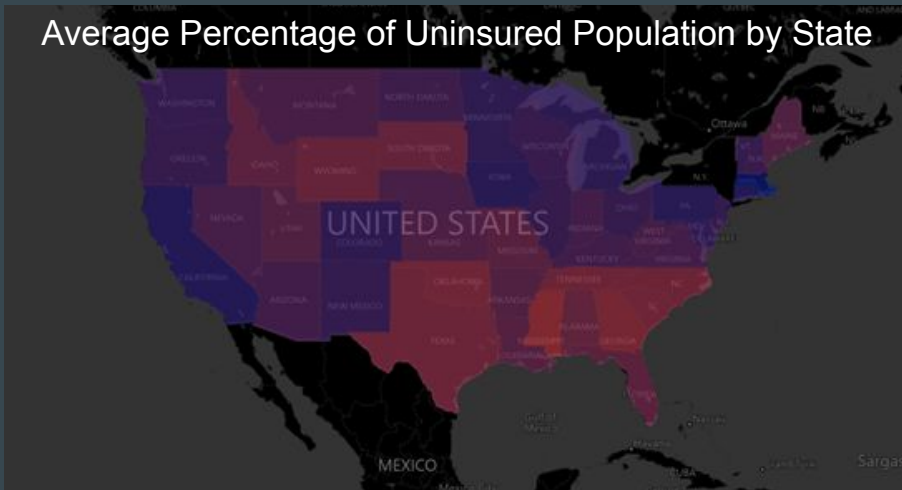
Weak correlation (absolute value of 0.26) between percent of uninsured people and income inequality (state by state and historical)

4)

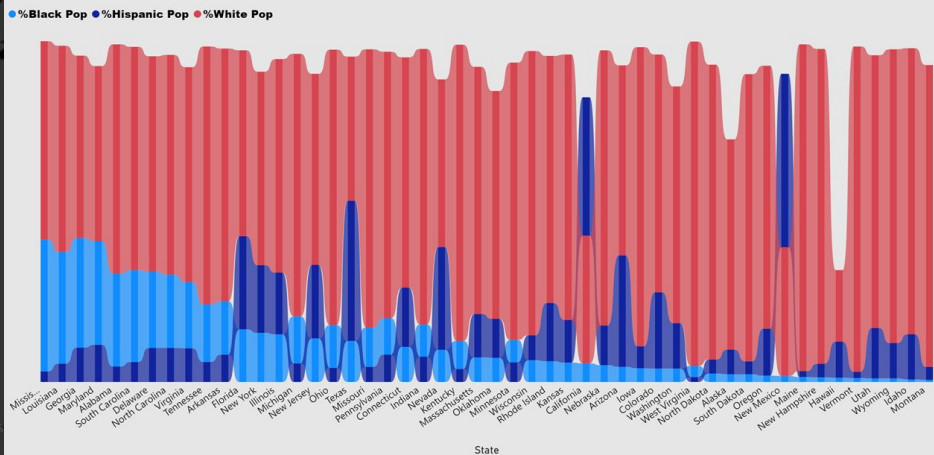
Relationship Between Rates of Insurance Coverage and Race

The relationship between rates of insurance coverage and race was analyzed by taking into consideration the proportion of each race that makes up a state's population.

Average Percentage of Uninsured Population by State

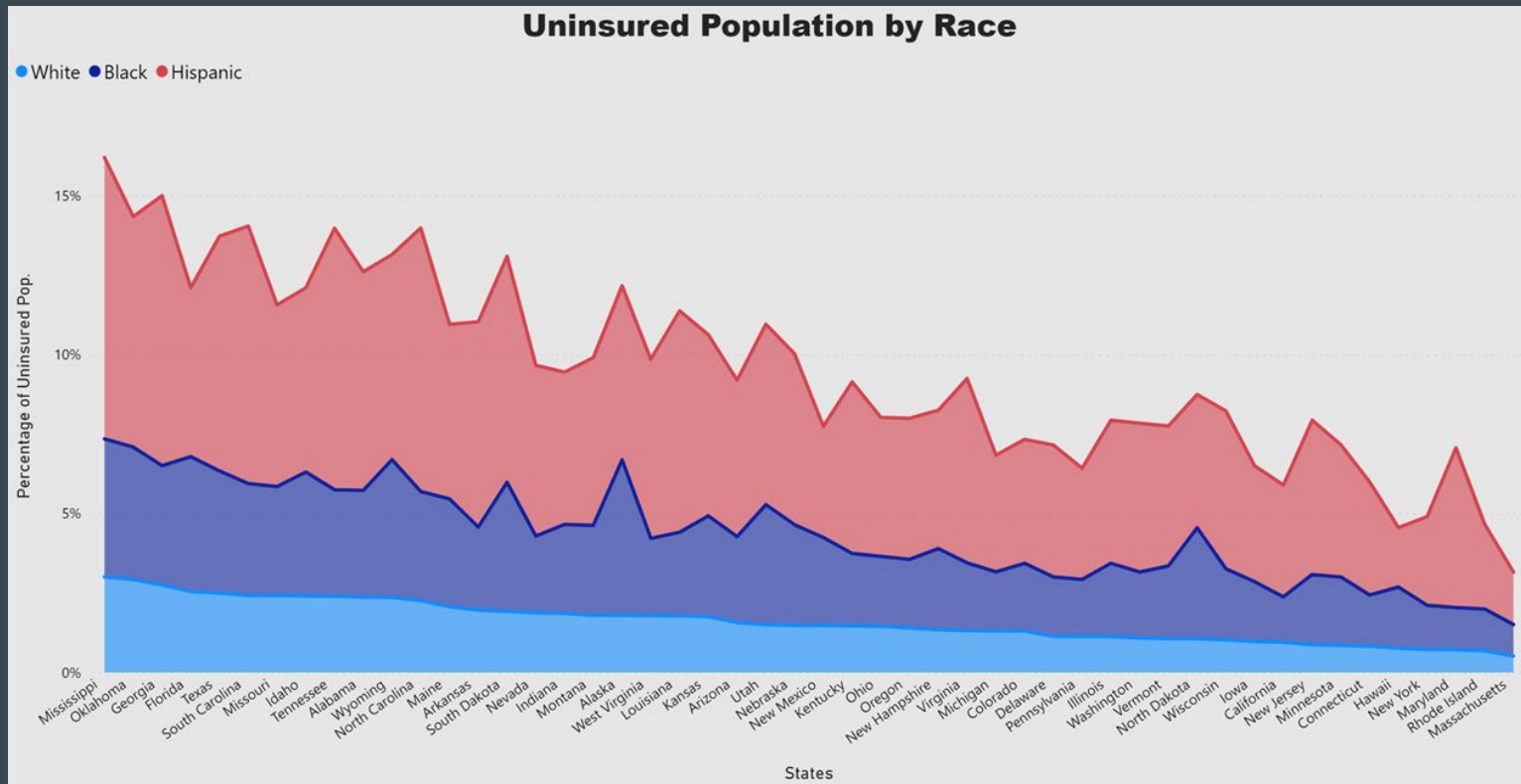


Percentage of Population by Race



4)

Overall trends across states show that Hispanic is the racial category with the highest percentage of its population uninsured, followed by black and white.

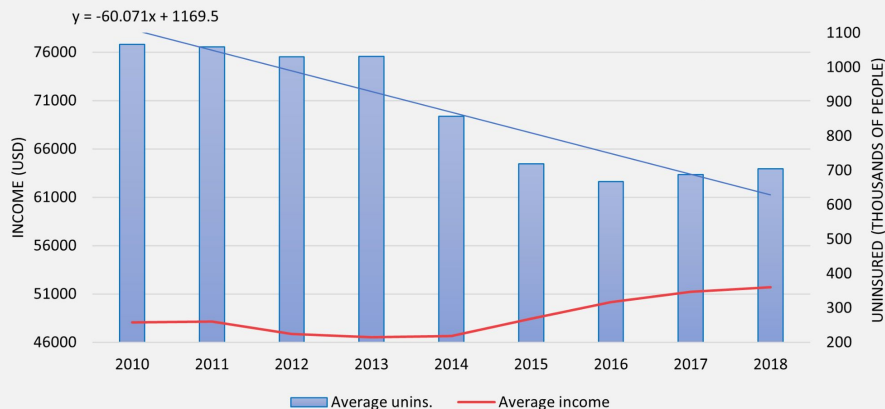


5)

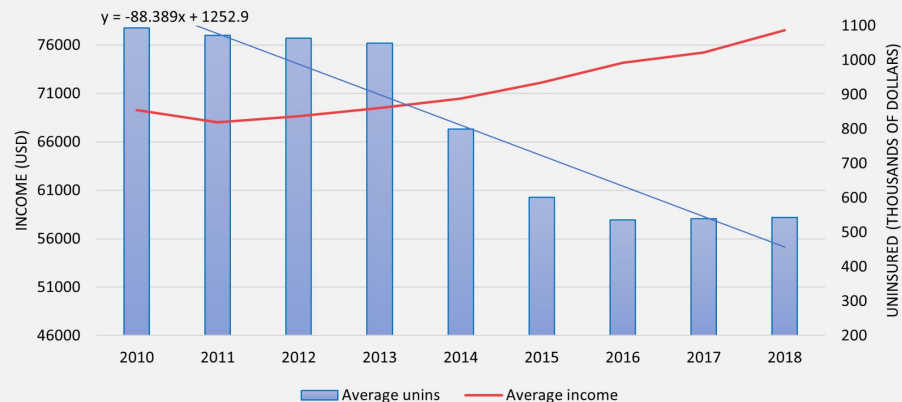
Insurance Coverage by Income Quartiles

- States were grouped into income quartiles in order to compare rates of uninsured people by median income over time
- The states in the highest and lowest quartiles have the steepest decrease in the number of uninsured people over time

Uninsured Rates Over Time for First Income Quartile



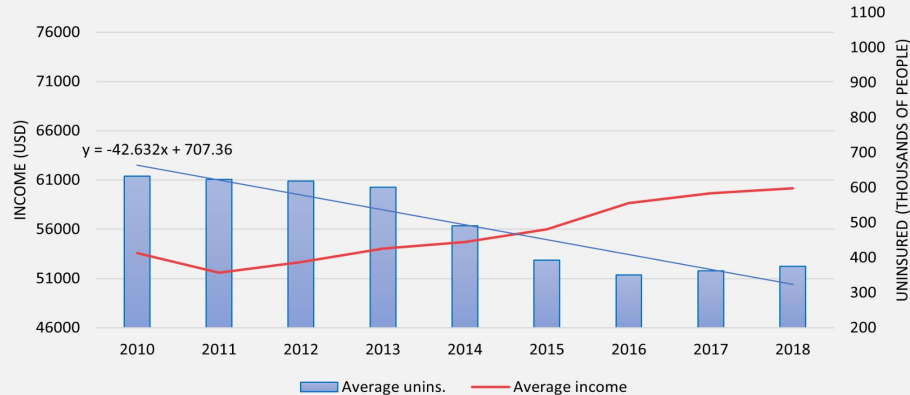
Uninsured Rate Over Time for Fourth Income Quartile



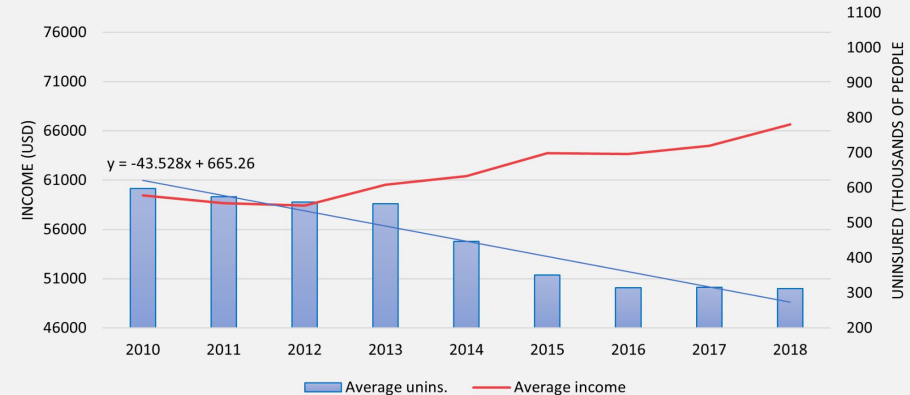
5)

States in the middle-income quartiles have lower rates of decrease in the number of uninsured people over time

Uninsured Rate Over Time for Second Income Quartile



Uninsured Rates Over Time for Third Income Quartile



6)

Insurance Prediction Based on Demographics

Analysis done by regression

NIPR = Total number in group

NUI = Number uninsured

1	numberundf.head()					
	agecat	racecat	sexcat	iprcat	NIPR	NUI
0	0	0	0	0	3946002	457718
1	0	0	0	1	1409975	266516
2	0	0	0	2	1749910	315689
3	0	0	0	3	942752	187507
4	0	0	0	4	2634493	398542

Because the amount of input data presented is so small (50 rows), the r^2 value was taken multiple times and averaged to reduce variance of taking a single regression

6)

Insurance Prediction Based on Demographics

Individual variable measurements alone aren't enough to draw a conclusion but they can give us a hint of where to look in the multivariate regression

$r^2 = 0.65351$ when income $\leq 250\%$ of poverty, age 40-64, black, male

$r^2 = 0.78585$ when income between 138%-400% of poverty, age < 65 , black, male

$r^2 = 0.36954$ when income $\leq 250\%$ of poverty, age 50-64, white, female

There certainly is a correlation that can be drawn between the demographics and uninsured rates but it is complicated

Conclusion

To understand this information can help people make more informed decisions when it comes to attitudes towards insurance. Be they in position of authority or a normal citizen, the data shows them that there are disparities when it comes to insurance coverage between certain portions of the population. It can help us as a country construct better policies to remedy the current situation by producing more, well-priced, opportunities for these people to insure themselves.

A black and tan beagle dog is captured in a side profile, running through a field of tall, green grass. The dog's tail is raised and slightly curved, showing a white tip. Its ears are large and floppy, and its mouth is open with its pink tongue visible. The word "Questions" is written in a large, white, sans-serif font across the dog's back. The background is a dense field of green grass and some small, light-colored flowers.

Questions

Sources

2020 Census Apportionment Results

<https://www.census.gov/data/tables/2020/dec/2020-apportionment-data.html>

Small Area Health Insurance Estimates (SAHIE) Program

<https://www.census.gov/programs-surveys/sahie.html>

SAHIE File Layout Overview: 2008 to 2019

<https://www2.census.gov/programs-surveys/sahie/technical-documentation/file-layouts/sahie-file-layout-2008-2019.pdf>

Sources

Health Insurance Historical Tables

<https://www.census.gov/data/tables/time-series/demo/health-insurance/historical-series/hic.html>

Historical Income Tables

<https://www.census.gov/topics/income-poverty/income/data/tables.html>

Gini Index

https://www.shsu.edu/eco_mwf/Frank_Gini_2018.xls

Median household income, by state: Selected years, 1990 through 2017

https://nces.ed.gov/programs/digest/d18/tables/dt18_102.30.asp