COVID Vaccination: Red, Life and Blue Matter

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Takeaways

- The COVID vaccination level has spread unevenly across different neighborhoods in Nueces County. Residents are less likely to be vaccinated if they do not own a vehicle or if they live in a rural area outside the city of Corpus Christi.
- Communities with lower socioeconomic status or less educated residents also show higher vaccine hesitancy.
- Political views and mistrust in government also affect vaccine acceptance. The vaccination rate was substantially higher among neighborhoods with more residents voting for Biden as opposed to Trump in the 2020 presidential election. This explains the higher vaccine acceptance

among Hispanics conditional on their socioeconomic status.

The COVID-19 pandemic has hit economically disadvantaged and other minority groups especially hard. Those socially vulnerable people are more likely to work in close-contact industries, like hotels and restaurants, which are exposed to high infection risk.

But those underserved populations are also less likely to have received COVID vaccines, according to a recent study at TAMUCC that studies records of vaccinations in Nueces County.

Local Vaccination Program

The Corpus Christi Nueces County Public Health District began administering COVID-19 in late December 2020. The Pfizer-BioNTech and Moderna vaccines require two doses with the second dose about three weeks after the first. The Johnson and Johnson vaccine was first available in March, and it requires one dose instead of two.

The Public Health District began its COVID-19 vaccination service to the public at the county's Richard M. Borchard Regional Fairgrounds. Online preregistration was required for the drive-thru vaccination service at that site and seniors were given a priority. Moderna vaccines were the only option before the Pfizer vaccines became available in early February.

Throughout 2021, the public vaccination service expanded with additional locations across the county, including a major

drive-thru facility at the American Bank Center in Corpus Christi downtown. By October, the Health District had operated 18 sites, including walk-thru sites like the one in the area's largest shopping mall, La Palmera. Including pharmacies, health clinics and hospitals, the number of vaccination sites across the county had grown to 104.

Before the booster shots became available to the public in late 2021, about 65 percent of the local population age 12 and older had been fully vaccinated.

Fully Vaccinated Nueces County Population, Age 12 and Older
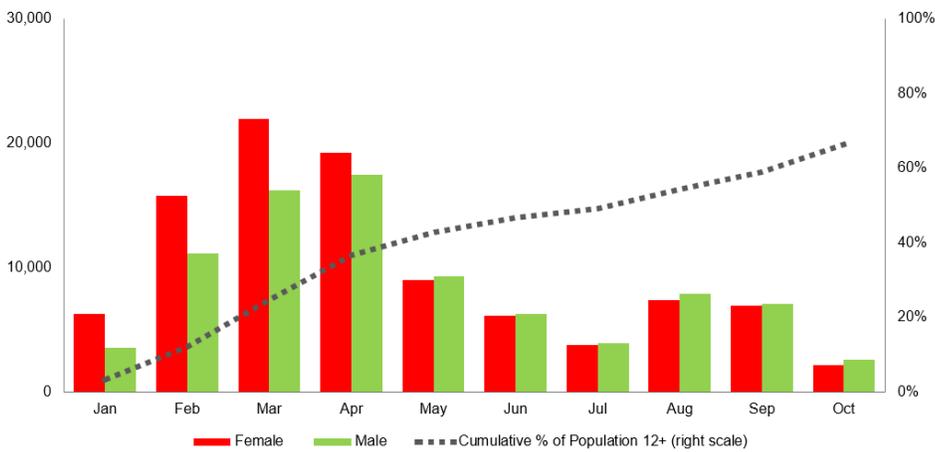
Sources: Corpus Christi Nueces County Public Health District, and author's calculations.

After reaching a peak in March, the number of fully vaccinated people within a given month has fallen over time except for a surge in August, when the Food and Drug Administration (FDA) approved the Pfizer vaccine.

Females, as opposed to males, dominated much of the growth in vaccination during the early months. Their different vaccination rates are interesting since their population sizes are about the same.

The vaccination rate was also uneven across different neighborhoods. By October, more than 95% of residents in a

new division of the South Side were vaccinated. In the Hillcrest-Washington Codes neighborhood, the vaccination rate was merely 35%, leaving more than two out of three residents there vulnerable to the coronavirus infection going ahead.
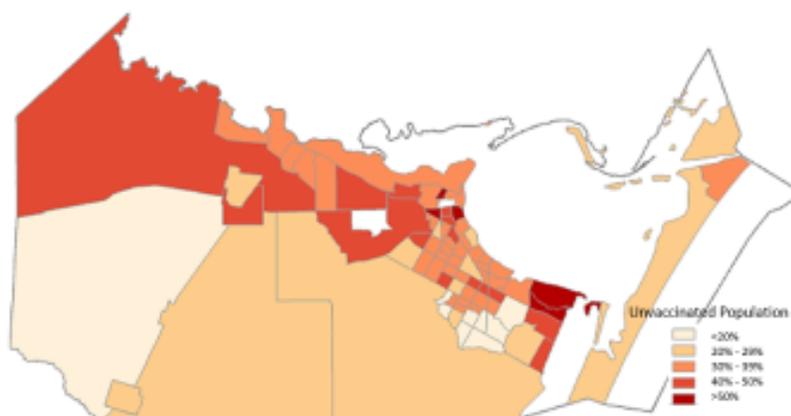
Sources: Corpus Christi Nueces County Public Health District, and authors' calculations.

Socioeconomic Divide

To find out why people have not taken the COVID vaccine shots, the researchers of the TAMUCC study looked into a large number of social vulnerability characteristics developed by the Centers for Disease Control and Prevention (CDC). Those factors include measures of socioeconomic status, such as income, educational attainment, minority status, vehicle ownership, and English proficiency. These social vulnerability measures are naturally tied together.

Socioeconomic disparities are striking across census tracts in Nueces County. For instance, the average income level ranges from $11,384 to more than five times at $60,802, according to the 2018 Census data. Likewise, more than half of the population had not finished high school in one census tract in the Westside community next to downtown Corpus Christi,

while nearly none in another district on North Padre Island at the other end of the city.

To find out which communities fell behind in vaccination, local vaccination records at the end of 2021 were organized by census tracts. An application of those data to statistical models shows that the vaccinated population share tended to be lower among census tracts with a less educated population, which is associated with a lower average income level and a higher poverty rate. This reflects higher vaccine hesitancy for economically disadvantaged people.

Vaccine hesitancy is the lack of acceptance or refusal of the vaccine service. The study's results capture people's behaviors because the models also control for people's ability to access local vaccination sites by vehicle and whether they live in rural areas that are further away from the vaccination sites that are located mostly in the city of Corpus Christi.

Despite striking disparities across different neighborhoods, the challenge of getting all eligible residents vaccinated seemed to prevail over time. To understand this, we compare the vaccination records in October with those in April. Across the county, 28% more residents became fully vaccinated between May and October, and the full vaccination rate increased in tandem across census tracts (see scatter plot below). This means little catchup over time from census tracts with relatively fewer vaccinations.

Unvaccinated Population Shares by Census Tracts, April vs. October 2021
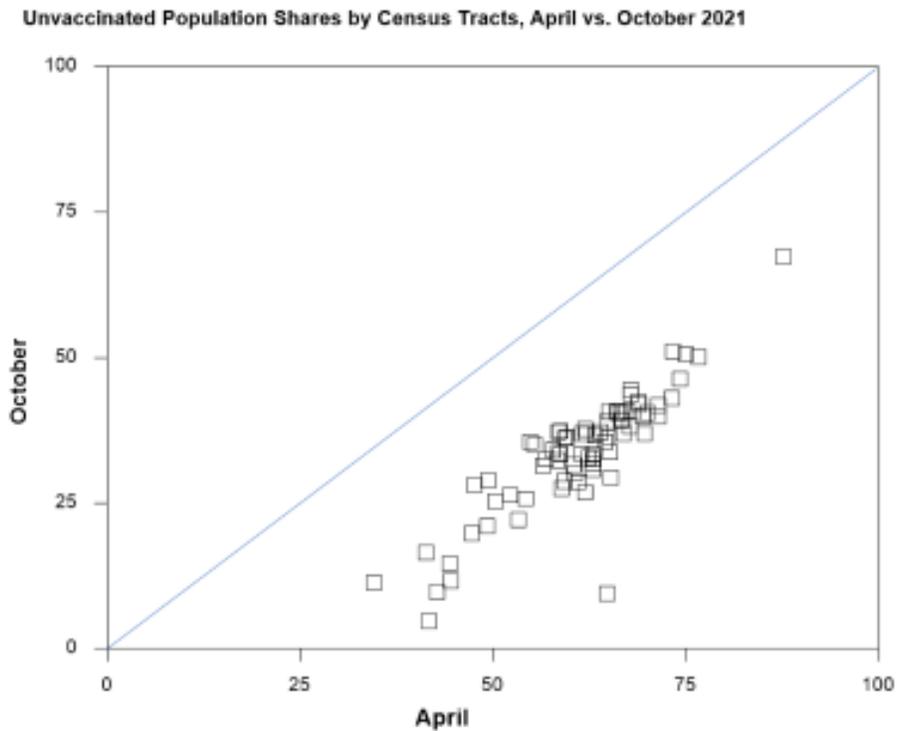
Sources: Corpus Christi Nueces County Public Health District, and authors' calculations.

Surprising Results

The study also found some uncommon results. Contrary to observations from the rest of the world, the unvaccinated population share tended to be lower in local census tracts with relatively more disabled residents and seniors.

These seemingly odd results are attributable to the local efforts aiming to help inoculate homebound residents in Corpus Christi. The city has developed the Save Our Seniors (SOS) Homebound Program, in which firefighters provide in-home vaccinations for senior citizens and the disabled beginning in April.

Neighborhoods with a larger minority population also tended to have a higher vaccination rate. This also contradicts the conventional wisdom about vaccine hesitancy among ethnic minorities.

The political views of Nueces County's residents offer an explanation for this puzzle. Despite an overall lower socioeconomic status for local Hispanics, they are more likely to be Democratic as opposed to Republican voters.

Red and Blue Matter

Across the United States, citizens' political views seem to have a strong influence on their willingness to take COVID-19 vaccines. During the early months of the nationwide vaccination program, Republican voters and major minority groups, notably Hispanics and Blacks, lagged in receiving shots, according to a Pew Research Center study.

While the racial gaps narrowed through the rest of the year, the gap between Republican and Democratic voters remained wide. Another recent survey indicates that nearly 40% of Republican voters were unvaccinated in October 2021, compared with about 10% of Democrats.
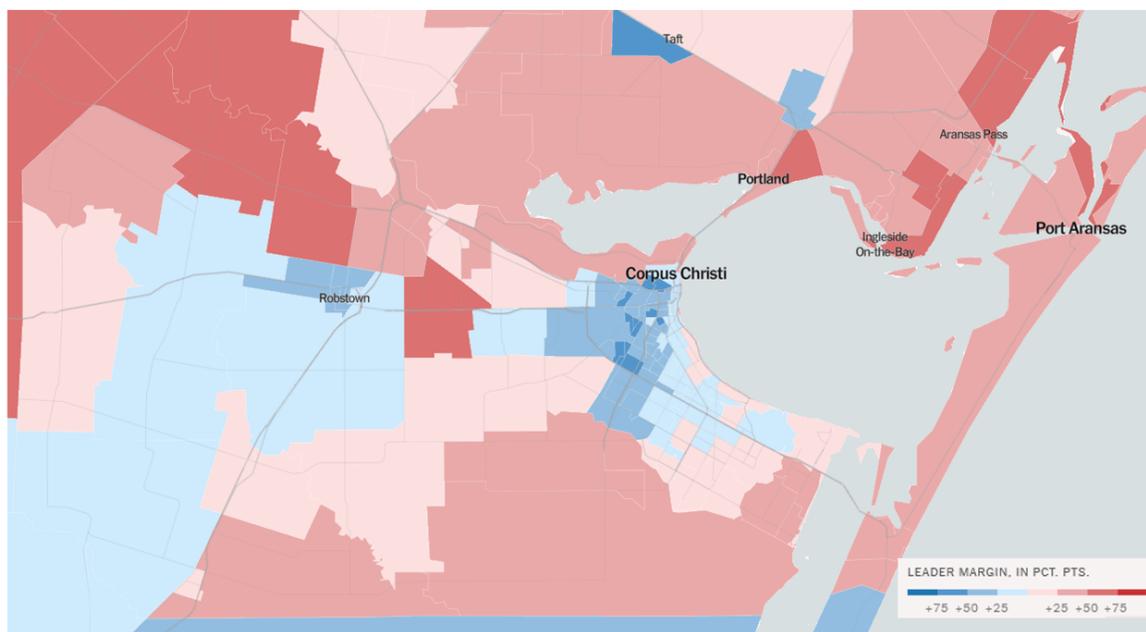
Source: New York Times, An Extremely Detailed Map of the 2020 Election.
https://www.nytimes.com/interactive/2021/upshot/2020-election-map.html

The relationship between party affiliations and demographics also seems strong. Another Pew Research Center report finds that white men and people living in rural communities tended to favor the Republican party or Donald Trump in the 2020 presidential election; voters for Democrats and Joe Biden were likely black women and urban dwellers.

So, how does political polarization affect the vaccination outcomes in Nueces County?

The New York Times has reported the outcomes of the 2020 presidential election by individual neighborhoods. The above map clearly reveals the extent of polarization in residents' political views.

In Corpus Christi, the "bluest" census tract 5.00 is commonly known as the "historically segregated" Hillcrest neighborhood with predominantly Hispanic and Black residents.

On the other end of the city is the "reddest" community of census tract 62 on North Padre Island. Residents in this affluent community with over $71,000 median household income, nearly double the Hillcrest income level, favored Donald Trump by a whopping 45% margin.

To Vaccine or Not to Vaccine, That's the Political Question

A comparison of the local election map with the corresponding map of vaccinations (see the images below) suggests that vaccinations rates tend to be higher among "blue" neighborhoods and "red" neighborhoods are likely to have relatively fewer vaccinated residents.

There are exceptions though, partly because some lower socioeconomic neighborhoods also have disproportionately more Democratic voters who are more likely to accept COVID shots. Conversely, a few "red" neighborhoods, like the North Padre Island community, show high vaccination rates perhaps due to the dominance of their highly educated residents.
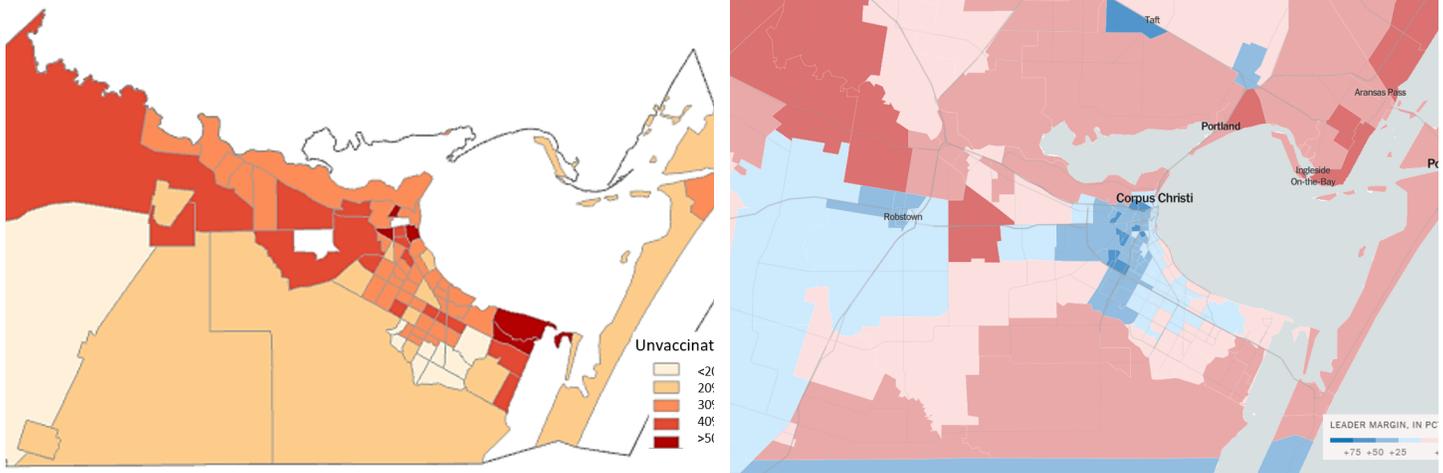
Swipe the center arrow left and right to compare vaccination and election outcomes.

Among other things, this observation reveals the extent of distrust in government particularly among Republican voters. But this also highlights the role that politicians can make an impact on vaccination outcomes.

Overall, the wide range of localized responses to the COVID-19 vaccination service points to the challenge of offering a summary of the national or county-wide vaccination rate when a regional average does not accurately represent diverse local neighborhoods. Those observed disparities in vaccinations across Nueces County are nothing but facets of health inequities that have perplexed local officials who seek to foster an inclusive community.

Instead of one-size-fits-all policy actions, strategies to promote vaccination acceptance and to respond to future pandemics might benefit from prioritizing individual socioeconomic

clusters. One remarkable example is Corpus Christi's SOS program, which has been found to improve the vaccination rates among otherwise underserved neighborhoods with disproportionately more elderly and other homebound residents.

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Citation

This newsletter article draws on a recent study at Texas A&M University-Corpus Christi, *COVID-19 Vaccine Hesitancy: The Role of Socioeconomic Factors and Spatial Effects*, conducted by Lucy Huang and Jim Lee.

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