Assessing the Impact of COVID-19 on Anti-Asian Hate Crimes in the United States

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1 Introduction

At the end of 2019, the coronavirus outbreak began unexpectedly and quickly spread across the globe. While COVID-19 posed a serious threat to global health, it also worsened social and racial tensions—especially in an ethnically diverse country like the United States. Some U.S. political leaders used discriminatory terms such as "Chinese virus" and "kung flu," linking entire ethnic groups to the virus and fueling fear and hatred toward Asians. According to the Pew Research Center (2023), 58% of Asian Americans said that people were more likely to express racist or discriminatory views toward Asians after the pandemic began. Online hate surged as well—L1GHT (2021) reported a 900% increase in anti-Asian hate speech on Twitter. In reality, the number of federally reported anti-Asian hate crime incidents rose from 158 in 2019 to 279 in 2020, and then to 746 in 2021 (Pew Research Center, 2023). As hate crimes became more visible, many Asian Americans also reported greater fear of being targeted, adding to the psychological and social toll of discrimination (Nguyen & Johnson, 2022).

This paper addresses a central economic question: Did the COVID-19 pandemic cause an increase in anti-Asian hate crimes in the United States, and how did economic and demographic conditions shape that impact? Hate crimes not only harm individuals but also weaken community trust and disrupt economic activity. Fear of being targeted can lower participation in the labor market, reduce consumer behavior, and harm long-term economic growth—especially in diverse urban areas. Understanding how crises like pandemics exacerbate racial violence is therefore important for both social cohesion and economic well-being.

Several studies have begun exploring the relationship between the pandemic and racial discrimination. Han et al. (2022) found that hate crimes against Asians rose sharply in the early stages of COVID-19. Gray et al. (2021) observed a similar trend in London, linking the outbreak to a surge in hate crimes against Chinese individuals. Other research has documented the role of online hate and political rhetoric in fueling anti-Asian sentiment during the pandemic. However, most of these studies focus only on short post-COVID periods or specific cities, leaving a gap in understanding long-run national trends and broader economic implications.

This paper contributes to the literature by using county-level panel data over a longer period (2018–2023) to estimate the causal impact of COVID-19 on anti-Asian hate crime rates. It uses a difference-in-differences event study approach, comparing changes in anti-Asian hate crimes before and after the pandemic to changes in hate crimes against other groups, such as White Americans. In addition to tracking hate crime rates, the paper investigates how economic distress—measured by unemployment and income inequality—interacted with pandemic pressures to intensify racial violence. By analyzing these factors together, this study provides new insight into the socioeconomic roots of hate crimes during a public health crisis.

This paper discovers that anti-Asian sentiment rose during the pandemic, and hate crimes against Asians increased significantly—especially in regions with larger Asian populations. Higher COVID-19 case and death rates were strongly linked to more anti-Asian hate crimes. Economic hardship, as measured by unemployment and income inequality (Gini index), was also associated with rising hate crimes. This suggests that financial stress may have intensified racial tensions. Overall, the results show that the pandemic amplified existing prejudice and discrimination against Asian Americans, leading to a significant increase in anti-Asian hate crimes.

2 Body

2.1 Dataset Description

The main dependent variable in this analysis is the number of anti-Asian hate crime victims per 10 million people. This metric captures the frequency of hate crimes targeting Asian individuals while adjusting for population size to avoid bias. For comparison, the total number of hate crime victims per 100,000 people is also included.

Key independent variables include COVID-19 case and death rates (per capita). As the number of cases and deaths increased, fear and misinformation may have grown, potentially fueling hostility toward Asian communities. These data are sourced from the Centers for Disease Control and Prevention (CDC).

Unemployment rates are also considered to understand if economic stress contributed to rising hate crimes. Past research shows that financial hardship can lead to scapegoating and racial tensions. Since the COVID-19 pandemic caused a significant rise in unemployment, this variable is included as a key factor. To explore its effects more clearly, unemployment is grouped into low, middle, and high percentiles.

The proportion of the Asian population in each county is analyzed to examine whether areas with larger Asian communities experienced more targeted hate. This helps ensure that higher hate crime rates are not simply due to larger Asian populations. Data on this are obtained from the Federal Bureau of Investigation (FBI).

Geographic location is another important factor. Hate crime patterns vary by place, influenced by local demographics, COVID-19 policies, and economic conditions. By analyzing differences at the state and county levels, the study explores whether regions with stricter lockdowns, higher unemployment, or larger Asian populations saw more hate crimes.

The Gini index, a measure of income inequality, is used to understand how economic disparity may contribute to social tension. High inequality is often linked to increased social unrest and violence, including racially motivated crimes (Fajnzylber, Lederman, & Loayza, 2002).

State-level homicide rates are included to provide context on overall violent crime levels. High violent crime may indicate broader racial or social instability, suggesting that rising hate crimes could be part of a larger trend of unrest.

Political context is also relevant. State-level party affiliation in the 2020 election is used as a proxy for political ideology. Democratic-leaning states may support more inclusive policies, potentially lowering racial tensions, while Republican-leaning areas may have environments where intolerance is more normalized, possibly contributing to higher hate crime rates.

Urbanization is another control. The percentage of people living in urban areas may influence hate crime rates. Cities, being more diverse, may experience heightened social tensions during crises like the pandemic.

Lastly, police size at the county level is included. The number of law enforcement personnel per 100,000 residents may affect both the occurrence and reporting of hate crimes. Areas with more police may have higher reported rates due to better detection.

In addition to official data, a web-scraped dataset from Reddit is used to examine online discussions about anti-Asian hate during the pandemic. This offers insight into public sentiment and serves as a complementary resource to formal crime statistics.

2.2 Summary Statistics

Table 1: Summary Statistics of Key Variables (COVID = 0)

Variable	Mean	Median	Std Dev	Min	Max
Asian percentage	1.4114	0.6448	2.7772	0.0000	44.2843
Asian Count	0.0112	0.0000	0.1560	0.0000	23.0000
Cases	0.0000	0.0000	0.0000	0.0000	0.0000
Deaths	0.0000	0.0000	0.0000	0.0000	0.0000
Anti-Asian Crime Rate	0.0047	0.0000	0.2688	0.0000	88.6525
Cases Rate	0.0000	0.0000	0.0000	0.0000	0.0000
Deaths Rate	0.0000	0.0000	0.0000	0.0000	0.0000
Gini Index	0.4400	0.4379	0.0360	0.2001	0.7070
Unemployment Rate	5.7575	5.2000	2.1900	2.1000	13.8000
Homicide Rate	4.8947	4.9136	2.0783	0.9631	24.1655
Police Size	275.2195	249.9325	251.9549	0.0634	9497.9743

Table 2: Summary Statistics of Key Variables (COVID = 1)

Variable	Mean	Median	Std Dev	Min	Max
Asian percentage	1.6565	0.8121	3.0172	0.0000	46.8048
Asian Count	0.0405	0.0000	0.5981	0.0000	60.0000
Cases	1160311.7412	123856.5000	6231867.5677	0.0000	413645853.0000
Deaths	15185.5579	2125.0000	80699.6301	0.0000	5018181.0000
Anti-Asian Crime Rate	0.0109	0.0000	0.2364	0.0000	31.3480
Cases Rate	11.1719	8.0218	13.5742	0.0000	1035.0930
Deaths Rate	0.1740	0.1146	0.1962	0.0000	3.1414
Gini Index	0.4462	0.4438	0.0376	0.0824	0.7279
Unemployment Rate	4.5784	3.9000	1.8587	1.9000	13.5000
Homicide Rate	6.6221	6.5768	2.9454	0.8783	40.9695
Police Size	295.7832	263.0173	452.7384	0.3145	25581.3953

Notes: - Hate crime rates are the number of anti-Asian hate crimes per 100k capita per quarter. - COVID cases rate and deaths rate are per capita per quarter. - Unemployment rate is the state-level average. - Percent Urban refers to the urban population percentage in each county. - Gini Index measures income inequality. - Homicide rate measures the number of homicide cases per 100k capita per year. - Police size refers to the number of police officers and civilians per 100k capita per year.

According to the summary table of our dataset, the most notable difference between the pre- and post-COVID summary tables is that both the total number of anti-Asian hate crimes and the number of anti-Asian hate crimes per 100k capita increased during the COVID-19 period. While the average total number of anti-Asian hate crimes increased from 0.0112 during the COVID-0 period to 0.0405 during the COVID-1 period, the standard deviation also increased significantly, indicating that the count of anti-Asian hate crimes changed more during the pandemic. Therefore, the impact of the pandemic on hate crimes against Asians was broader and potentially stronger. This is supported by the increase in anti-Asian hate crimes per 100k capita during the COVID-1 period.

Another important finding is the change in the proportion of Asians in the population. During COVID-1, the average proportion of the total population that was Asian was higher (1.7%) than during COVID-0 (1.4%). This suggests that anti-Asian hate crimes were significantly higher in areas with a higher proportion of the Asian population, especially in areas that were severely impacted by COVID-19, where anti-Asian sentiment may have been exacerbated by misconceptions linking the virus to the Asian community.

Additionally, the Gini index shows a slight increase in income inequality during the COVID-1 period, suggesting that areas with greater economic disparity may have experienced more heightened social tensions. The unemployment rate also shows a decline during the COVID-1 period, reflecting the economic impacts of the pandemic, which may have influenced the rise in hate crimes as communities faced greater uncertainty and frustration.

These findings suggest that COVID-19 created an environment conducive to an increase in anti-Asian hate crimes, especially in areas with large Asian populations and higher levels of impact from the pandemic. The broader economic and social context, marked by rising inequality and unemployment, further intensified the conditions under which hate crimes flourished.

2.3 Plot and Map

The results from the maps and plots provide clear evidence that COVID-19 significantly increased anti-Asian hate crimes, supporting our hypothesis that the pandemic exacerbated racial tensions, particularly against the Asian community.

My first map shows a notable shift in the geographic distribution of anti-Asian hate crimes before and after COVID-19. Coastal areas in the West, which already had higher crime rates, remain hotspots. However, comparing the pre-COVID and COVID periods reveals a significant increase in the overall number of anti-Asian hate crimes. More counties reported such crimes, and fewer counties were gray, indicating missing values. Most notably, the map's overall color became redder during the pandemic, signaling a rise in hate crime rates. The pattern of red distribution in the maps remained largely similar, with the states of Minnesota and New York standing out for experiencing a significant increase in anti-Asian hate crimes. This observation aligns with the broader trend that the outbreak of COVID-19 prompted a surge in anti-Asian hate crimes.

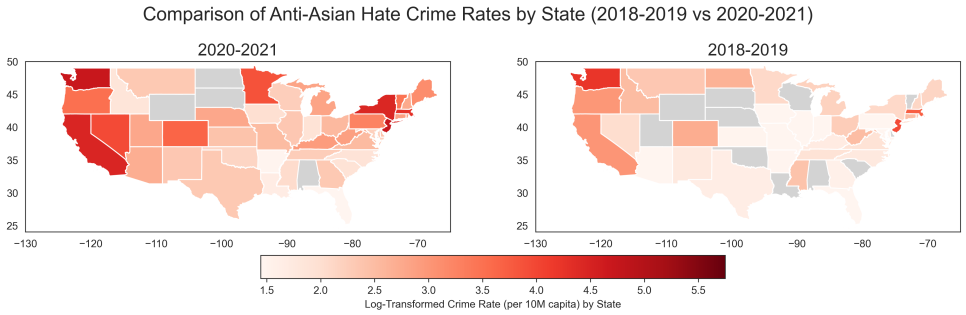

Figure 1: Comparison of Anti-Asian Hate Crime Rates by State Before and After COVID-19 Outbreak

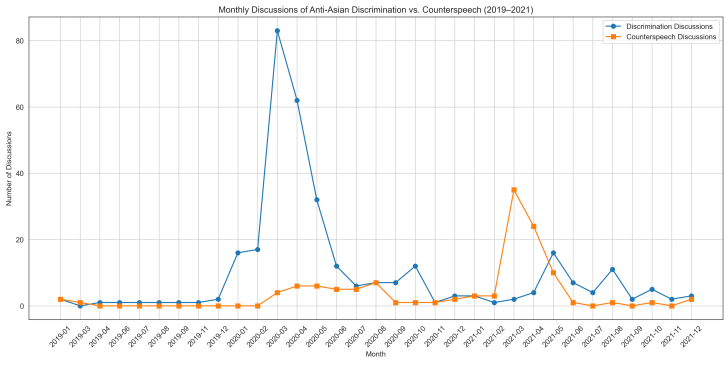

Figure 2: Pre-COVID and COVID Regression Lines of Log(Asian Percentage) vs Log(Anti-Asian Crime Rates)

The second plot offers an interesting insight into public sentiment during the pandemic, focusing on the online discussion surrounding anti-Asian hate. In 2019, anti-Asian hate discussion was minimal, with little focus on anti-Asian sentiment. However, this discussion surged dramatically in January 2020 as $COVID-19$ became associated with China. The volume of discussion peaked in March 2020 with over 80

posts, likely due to the increasing scapegoating of the Asian community during the pandemic. Discussion slowly decreased after March 2020 but remained above pre-COVID levels, suggesting that anti-Asian sentiment persisted even after the initial COVID-related spike. Another important observation is that there were zero opposing comments until February 2020, indicating that early on, there was little public pushback against the rising anti-Asian rhetoric. Opposition began to grow in February 2020, and the number of opposing comments surged sharply in March 2021, likely related to the growing "Stop Asian Hate" movement, which gained widespread attention in 2021, especially after the Atlanta spa shootings that left six Asian women dead. However, this movement and the corresponding opposition gradually declined in late 2021 as public focus shifted or the movement lost momentum.

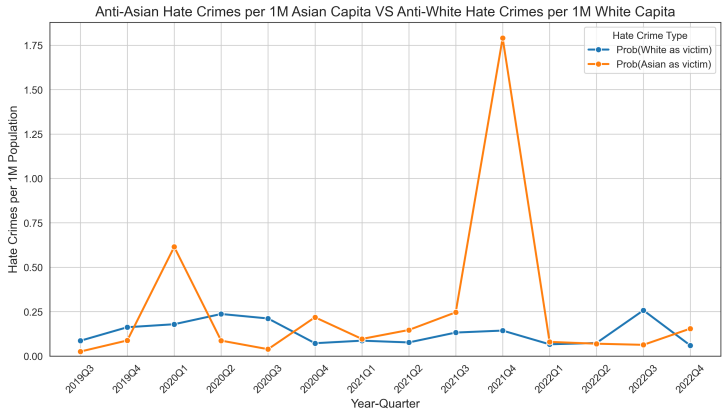

Figure 3: Anti-Asian Hate Crimes per 1M Asian Capita VS Anti-White Hate Crimes per 1M White Capita

The third plot reiterates the findings from the second, showing the comparison between anti-Asian and anti-White hate crimes per 1M population, adjusted for racial composition. The results mirror the previous figure: the anti-Asian hate crime rate spikes significantly in 2020Q1 and 2021Q4, while anti-White hate crime rates show no such increases. This further confirms that the COVID-19 pandemic disproportionately affected Asians in terms of racially motivated hate crimes, supporting the idea that the pandemic was a driving factor in the rise of such crimes.

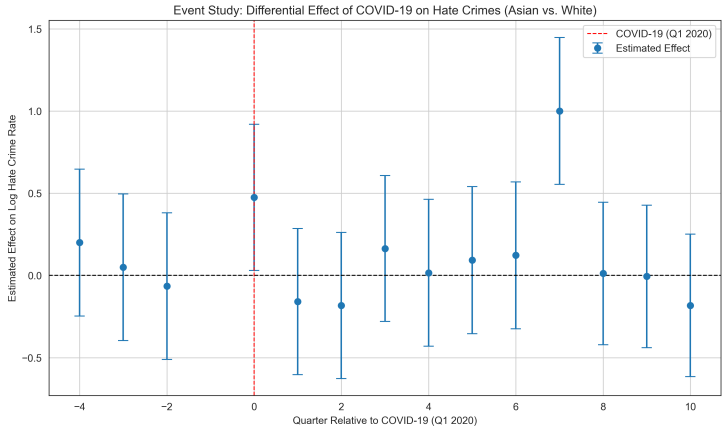

Figure 4: Differential Effect of COVID-19 on Hate Crimes (Asian vs. White)

The fourth figure offers a dynamic view of how the difference between the anti-Asian and anti-White hate crime rates changed over time, centered on the outbreak of COVID-19 in early 2020. Before COVID (quarters -4 to -2), the difference between the two groups was small and statistically insignificant. However, when the pandemic began (2020Q1), the difference sharply increased to 0.5, which was significant at the 0.1 level, indicating that Asians were disproportionately targeted for hate crimes. This rise in the gap continued into 2021Q4, reaching a significant value of 1.0. This period likely coincided with the lifting of lockdown measures, public gatherings, and vaccination campaigns, all of which could have fueled tensions and conflicts. Afterward, the gap narrowed and became insignificant, suggesting a shift in the dynamics

of anti-Asian hate crimes post-pandemic.

In summary, the evidence from these figures consistently demonstrates that COVID-19 significantly raised the likelihood of anti-Asian hate crimes, particularly in the first few quarters of the pandemic and into 2021. The analysis shows that the probability of an Asian individual being targeted in a racially motivated hate crime was statistically significantly higher than that of a White individual immediately after the outbreak of COVID-19, and during the first quarter of 2021. This firmly answers our research question: COVID-19 not only exacerbated existing racial tensions but also specifically fostered an increase in anti-Asian hate crimes. The findings highlight the need to understand how pandemics and other global crises can disproportionately affect minority groups, creating an environment where hate crimes are more likely to flourish.

2.4 Result

To investigate how COVID-19 affected hate crimes against Asian communities, I estimate a regression model using a range of demographic and socioeconomic variables.

Hate Crime Rate = β_0+β_1·COVID+β_2·Asian Percentage+β_3·Covid Death Rate+β_4·(COVID×Asian Percentage)+β_5·Co

Table 3: Regression Results: Anti-Asian Crime Rate and COVID-19 Effects

Variables	**Model 0**	**Model 1**	**Model 2**	**Model 3**
COVID	0.005***	-0.004**	-0.005	-0.001
	(0.001)	(0.002)	(0.003)	(0.005)
Asian %	0.120***	0.067***	0.046***	0.045***
	(0.010)	(0.013)	(0.014)	(0.014)
COVID Death Rate	—	0.065***	0.076***	0.081***
		(0.019)	(0.021)	(0.024)
COVID × Asian %	—	0.166***	0.167***	0.168***
		(0.022)	(0.022)	(0.023)
Unemployment Rate	—	—	0.009**	0.015**
			(0.004)	(0.008)
2020 Republican %	—	—	-0.006***	-0.006***
			(0.001)	(0.001)
Gini Index	—	—	0.044**	0.041**
			(0.019)	(0.019)
Demographic Controls	N	N	Y	Y
Fixed Effects	N	N	N	Y
Observations	166,284	166,284	166,284	166,284
R^2	0.001	0.001	0.002	0.003
Adjusted R^2	0.001	0.001	0.002	0.002
Residual Std. Error	0.260 (df=166281)	0.260 (df=166279)	0.260 (df=166272)	0.260 (df=166257)
F Statistic	74.711***	53.260***	36.525***	16.182***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The dependent variable is the anti-Asian hate crime rate per 100,000 population, and my preferred model (Model 6, Regression 1) includes fixed effects for year and quarter, along with a full set of control variables. The coefficient on *COVID* is small and statistically insignificant, suggesting that COVID by itself did not lead to a general increase in anti-Asian hate crimes. However, the interaction term between COVID and the Asian population percentage is positive and highly significant. This implies that the pandemic had a disproportionate effect in areas with larger Asian populations—supporting the idea that COVID-related stigma contributed to a rise in targeted hate.

In the second regression table, I expand the analysis to examine total hate crimes, as well as those targeting Black, White, and Asian communities. Again, the interaction between *COVID* and *Asian percentage* remains positive and significant only in the anti-Asian crime model. In contrast, the *COVID* × *White percentage* interaction is negative and not statistically significant, indicating that anti-White hate crimes did not change meaningfully in relation to White population share. This comparison strengthens

Table 4: Regression Results: Comparison of COVID and Different-type Crime Rate

Dependent Variable:	**Total Hate Crime Rate**	**Anti-Black Crime Rate**	**Anti-White Crime Rate**	**Anti-Asian Crime Rate**
COVID	0.377***	0.037*	0.147***	-0.001
	(0.043)	(0.022)	(0.030)	(0.005)
COVID Death Rate	0.171	-0.064	-0.076	0.081***
	(0.218)	(0.113)	(0.095)	(0.024)
Unemployment Rate	0.203***	0.010	0.111***	0.015**
	(0.068)	(0.036)	(0.030)	(0.008)
2020 Republican %	-0.037***	-0.035***	0.031***	-0.006***
	(0.013)	(0.007)	(0.006)	(0.001)
Gini Index	1.209***	0.229**	0.263***	0.041**
	(0.167)	(0.090)	(0.076)	(0.019)
Black %	—	-0.011	—	—
		(0.024)		
COVID × Black %	—	0.177***	—	—
		(0.040)		
White %	—	—	0.045**	—
			(0.019)	
COVID × White %	—	—	-0.003	—
			(0.032)	
Asian %	—	—	—	0.045***
				(0.014)
COVID × Asian %	—	—	—	0.168***
				(0.023)
Demographic Controls	Y	Y	Y	Y
Fixed Effects	Y	Y	Y	Y
Observations	166,284	166,284	166,284	166,284
R^2	0.010	0.003	0.002	0.003
Adjusted R^2	0.010	0.003	0.002	0.002
Residual Std. Error	2.330 (df=166259)	1.198 (df=166257)	1.016 (df=166257)	0.260 (df=166257)
F Statistic	70.216***	21.982***	12.691***	16.182***

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

the interpretation that Asian communities were uniquely affected, potentially due to racialized blame during the pandemic.

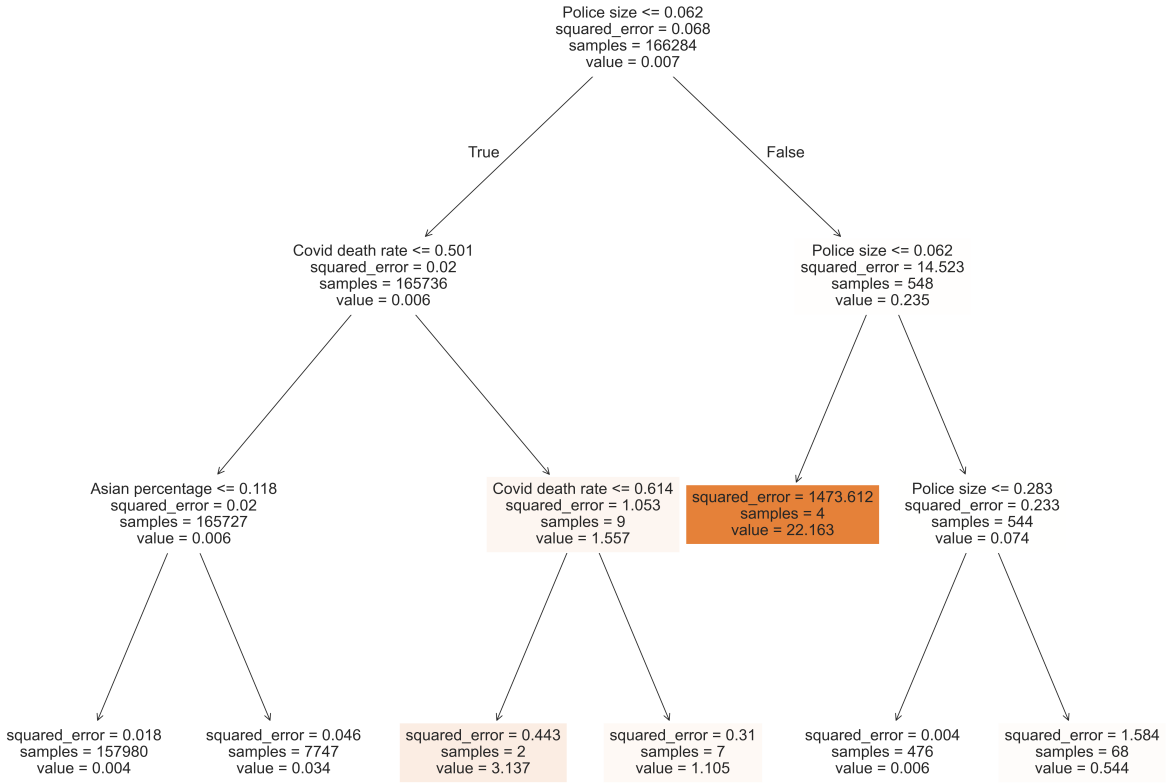

Figure 5: Regression Tree for Main Variables

Looking at economic controls, several variables stand out. The Gini index, which measures income inequality, has a positive and significant relationship with hate crime rates in all models. This suggests that areas with more economic inequality may also experience higher social tension, possibly contributing to hate crimes. The unemployment rate is also positively associated with hate crimes in most models, indicating that economic stress could be a contributing factor, particularly during the COVID-19 period. Interestingly, the interaction between unemployment and COVID is significant in some models, pointing to the possibility that pandemic-related job loss amplified tensions, though the effect is not consistent across groups.

Political context also plays a role. The share of Republican voters in 2020 is negatively associated with anti-Asian and anti-Black hate crimes, but positively associated with anti-White crimes. This may reflect political and cultural differences in how communities respond to external shocks, or differences in reporting behaviors.

To further validate the importance of certain variables, I used regression trees to explore predictive patterns. The most important split across the trees is *police size*, indicating that law enforcement presence strongly predicts hate crime rates. In low-police areas, COVID death rates and Asian population share drive further splits, showing that hate crimes are more likely where these conditions overlap. The right-hand branches, representing high-police jurisdictions, reveal a small number of hotspots with very high predicted hate crime rates—possibly reflecting a combination of institutional focus and true variation. Overall, the tree structure supports the regression findings, highlighting *Asian percentage*, *COVID death rates*, and *police size* as consistently influential variables.

Taken together, my regression models and regression tree show that the rise in anti-Asian hate crimes

during the COVID-19 pandemic was not uniform across the U.S., but rather concentrated in areas with larger Asian populations. While COVID itself may not have directly driven up hate crimes overall, it magnified risk in specific communities. These findings are consistent with previous research suggesting that social and political events, such as Trump's presidency or COVID-19, can amplify targeted hate, particularly when scapegoating narratives are involved.

3 Conclusion

This study examines whether COVID-19 led to an increase in anti-Asian hate crimes in the United States. Based on the results from regression tables and regression tree models, COVID-19, as an external shock, changed the environment surrounding anti-Asian hate crimes, leading to a statistically significant increase—especially in areas with larger Asian populations. In contrast, hate crimes against White and Black individuals did not show similar patterns. At the same time, the pandemic worsened economic conditions, such as higher unemployment rates and greater income inequality (measured by the Gini index), which may have caused some people to scapegoat Asian communities and increase hostility toward them.

Although this study provides strong evidence of a link between COVID-19 and the increase in anti-Asian hate crimes in specific regions, more research is needed to explore the mechanisms behind this effect. Future studies could investigate the impact of local law enforcement practices and the influence of online anti-Asian sentiment on real-world anti-Asian hate crimes. It is also worth noting that this study only examines hate crime data defined by the FBI. Future research could expand the focus to crimes with Asian victims to provide a fuller picture of anti-Asian sentiment.

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