COVID-19 Impact Disparities among Ethnicity Groups in San Diego County

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Executive Summary:

- **The Hispanic and Latino population had the highest growth rate in both sheer volume and as a percentage of their population size in every category of County- wide COVID-19 data including cases, hospitalizations, and death.**

- Even though Whites represent 45% of the county population, four minority ethnicities reported higher rates of cases and deaths when it was factored as a percentage of their respective populations

- Pacific Islanders and Black or African Americans, representing only 0.6% and 5.5% of the population respectively, were among the highest growth rates in all categories, though not as high as Hispanic and Latino

- Representation as a percentage of their population, Asians displayed the fourth largest growth rate in COVID-19 cases and third in mortality, but paraxially the very slowest rate of hospitalizations.

- **A second stage of growth in number of cases was determined to shortly follow the reopening order made effective by San Diego County on June 12, 2020, with most ethnicities impacted within a week one another.**

Introduction

It is important to explore the health disparity issues in COVID-19 outbreaks. While all communities have been struck by the onset of this pandemic, certain demographics of San Diego County have been disproportionately affected. By analyzing data from the early days of the virus' onset, this report aims to illuminate the changes in and differences of not only infection rates, but also death and hospitalization rates based on ethnicity. By identifying and highlighting the varying impacts of the virus between ethnic populations, we can gain insight into how best to intercept it's spread and advance localized public health strategies. This report is created using the public PDF files available on the County of San Diego from April 05, 2020 to August 09, 2020. (https://www.sandiegocounty.gov/coronavirus.html).

Comparing COVID-19 confirmed Cases between ethnic groups

Ethnic data for all cases of COVID-19 in San Diego County facilitates the exploration of the impact the virus has on distinct ethnicities and communities. As shown in Fig. 1, Hispanics and Latinos had the fastest growth and the highest number of cases of all ethnicities since it overtook White cases on **March 15, 2020**. Ethnicities Unknowns and White have both contended for second place in volume of cases since then. Following similar trajectories, White had overtaken the lead most recently due to a sudden drop of Ethnicity Unknown infections. Asian and Black or African American seem to have had relatively low numbers of county-wide cases, while the other groups appeared almost negligible.

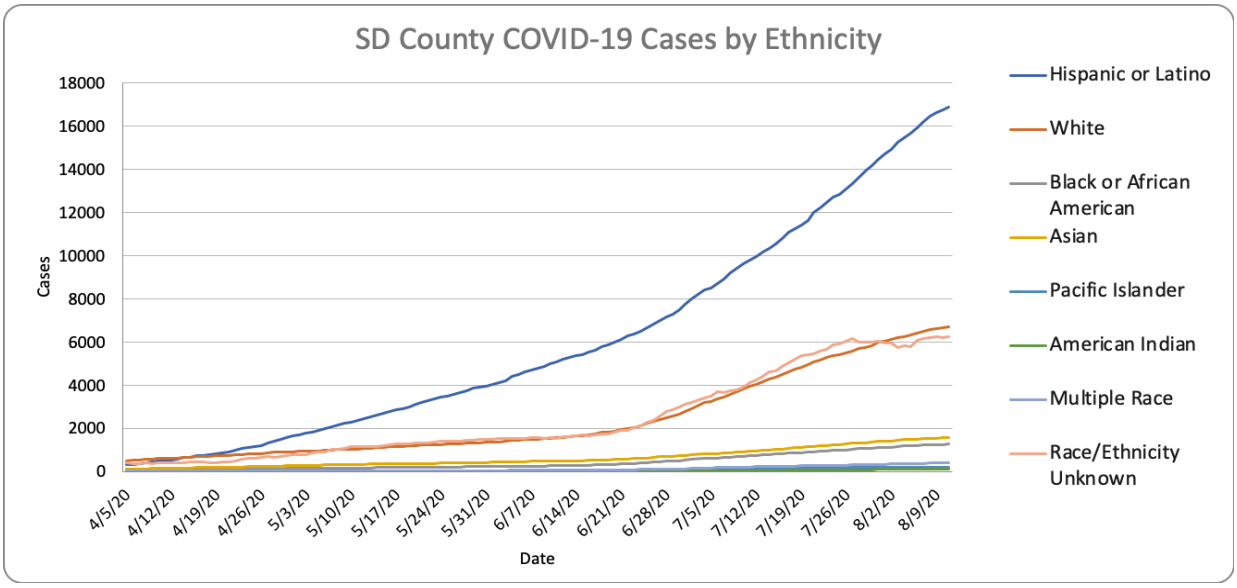

Fig. 1

In order to account for true disparities that exist between ethnicities, the cases data was then calculated as a percentage of the respective ethnicity's San Diego County population based on the 2019 U.S. Census estimates seen in Figure 2. (https://www.census.gov/quickfacts/fact/table/sandiegocountycalifornia,CA/PST045219) Ethnicity Unknown as a percentage of the population was unable to be determined. Referring to Fig. 3, Hispanics and Latinos were still shown to have the fastest growth of COVID-19 cases. At 34.1% of the county population, less than half of that of Whites, they were the most impacted community with the greatest volume of cases. This followed local reports showing predominantly Latino and Black neighborhoods having the highest infection rates.

Race	Percent
Black or African American alone	5.5%
American Indian and Alaska Native	1.3%
Asian alone	12.6%
Native Hawaiian and Other Pacific Islander alone	0.6%
Two or More Races	4.6%
Hispanic or Latino	34.1%
White alone, not Hispanic or Latino	45.0%

Fig. 2

Interestingly, when controlling for population size, Pacific Islanders had the second greatest growth in cases and grew more quickly than the Hispanic and Latino community until **May 6, 2020.** Representing only 0.6% of the total population of San Diego County and testing nearly as high as Latinos given their size, Pacific Islanders were under-represented in Fig. 1 of absolute cases but as a percentage of their population they were impacted by a relatively high infection growth rate.

The third fastest growth rate was of Blacks or African Americans, representing only 5.5%. It was also compelling that although Whites account for an overwhelming 45% of the San Diego population, they had the fourth highest growth rate among all ethnicities. Even though Whites are the majority and make up almost twice the number of Hispanics, Blacks and Pacific Islanders combined, they experienced slower growth rates. These figures revealed glaring racial disparities in the rates of infection and transmission. SANDAG released a report in June finding that approximately half of Black (52%) and Hispanic (49%) residents lived in zip codes with higher than average COVID-19 cases. Only 18% of Whites lived in those areas. This supported why the fastest growth rates were seen among these populations.

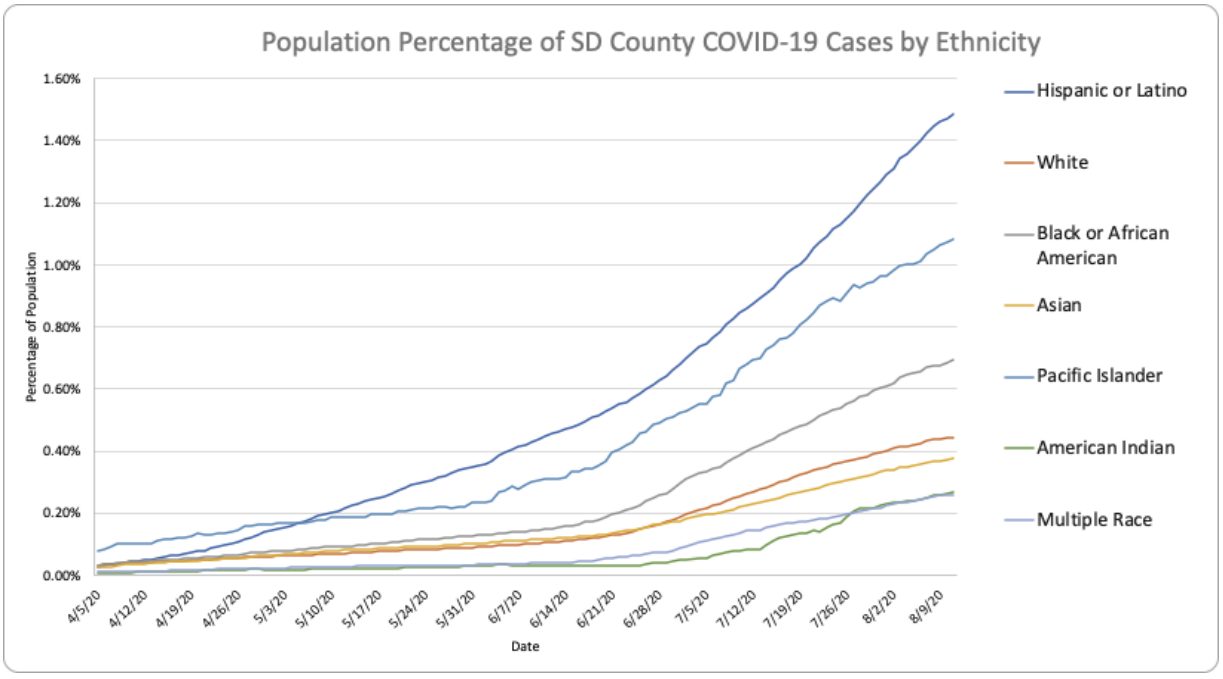

Fig. 3

The data appeared to show two stages of cases, the first exhibited a shallow positive trend and the second a steeper slope where the growth of cases grew at an increased rate. This was consistent with the early directives of the County shutdown and then when the restrictions were lifted. **Piecewise regression** was applied to establish a date as the "break point" between these two stages within each ethnicity. Figure 4 shows the ordered dates determined to be the break and the beginning of the second growth rate stage. Pacific Islanders displayed the earliest signs of a second stage, with the other ethnicities entering the next stage within a week. This second stage of growth closely followed the re-opening announcement made by San Diego County on **June 12, 2020**. As shown in Fig. 3, American Indians experienced a late break out of the second stage on July 2nd. Local tribes were not required to follow state

or county directives regarding COVID-19 so discrepancies may be a reflection of different or absent guidelines.

Ethnicity	Second Growth Stage Date
Pacific Islander	6/14/20
Unknown	6/16/20
Black or African American	6/17/20
White	6/18/20
Multiple Race	6/19/20
Hispanic or Latino	6/21/20
Asian	6/21/20
American Indian	7/2/20

Fig. 4

The differences of the Hospitalization rates between groups

Data about the cases of hospitalizations due to infection gave insight about the varied effects COVID-19 had among ethnicities. In addition to simple case counts of the virus, it was of interest to assess the differences in the severity of infections to determine what communities had been most adversely impacted after becoming infected. By highlighting disparities in hospitalization, factors that vary between and within ethnicities can be dissected to determine what potential risk factors and health implications exist that are unique to each. Thus, we may establish public health strategies that target the characteristics that lead to symptom severity.

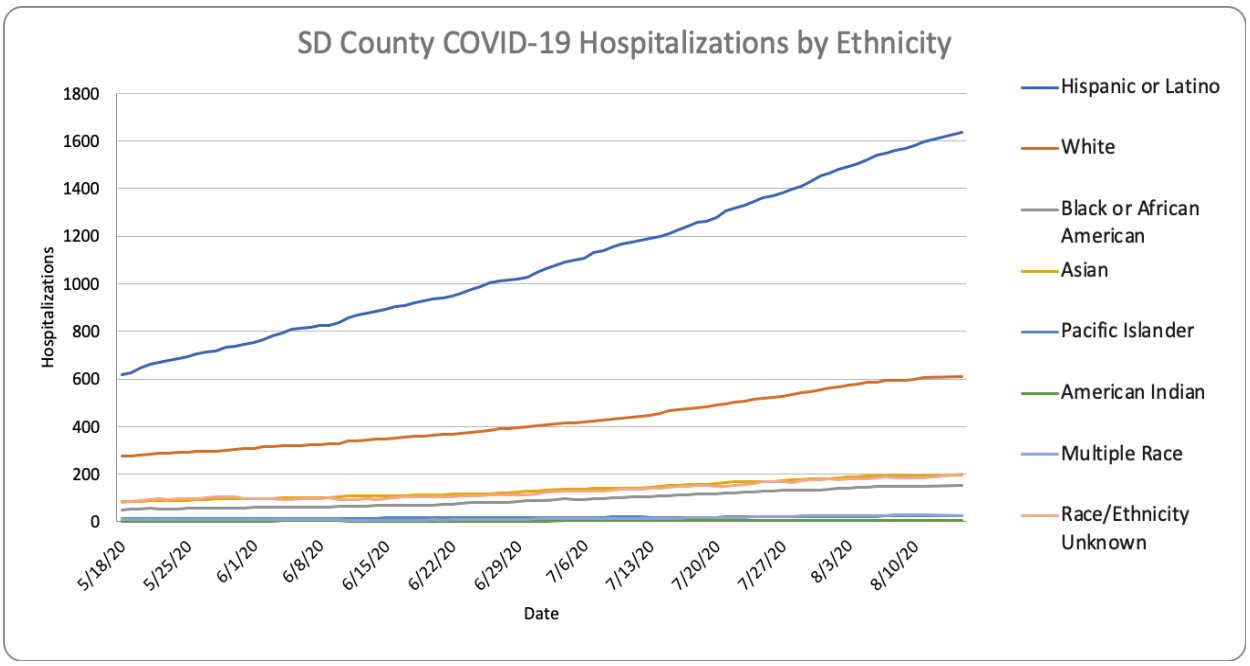

Fig. 5

In both sheer volume and as percentage of their population, Hispanics and Latinos faced the highest growth rate in hospitalizations. (See Fig. 5 and Fig. 6) As could be expected from the number of COVID-19 cases from Figure 1, Whites had the second fastest hospitalization

growth rate. Asian and Unknown ethnicities, however, competed for the third fastest rate with volume consistently similar since data became available on May 18, 2020.

When accounting for the number of hospitalizations as a percentage of the ethnicity's population within San Diego County, there were startling differences that emerged. In Fig. 6, on May 18, 2020 Pacific Islanders had the largest number of hospitalizations but was overcome eventually on June 23 by the steady growth in Hispanic and Latino rates. Pacific Islanders had a less steady rate of growth yet continued its positive trend through mid-August.

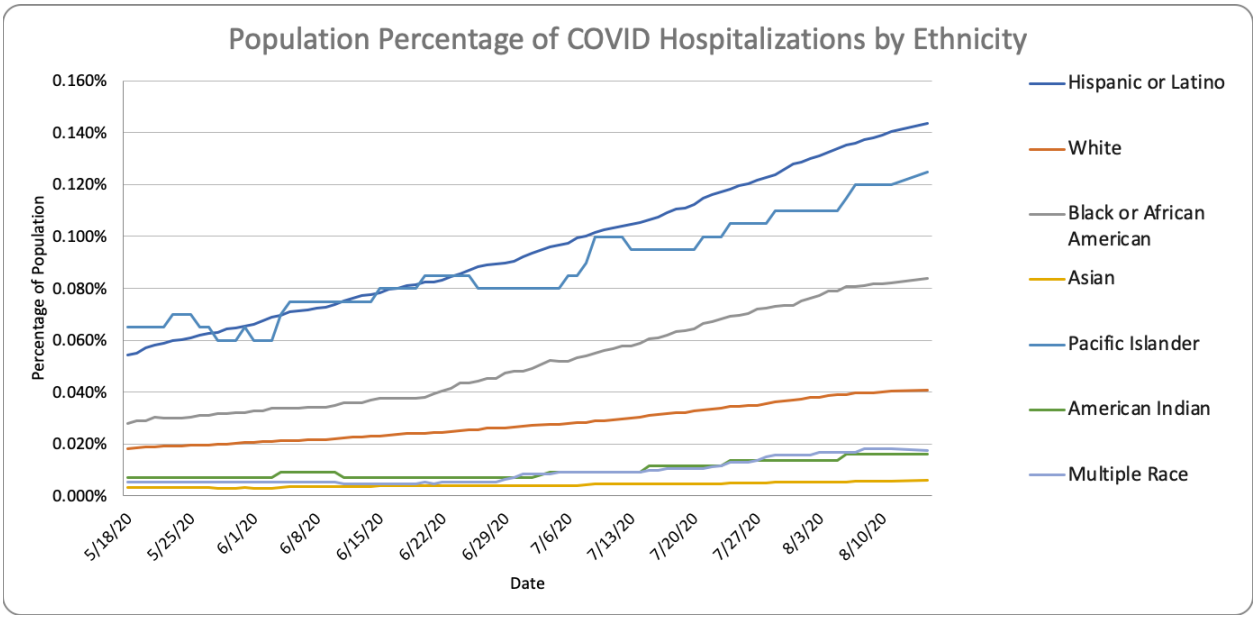

Fig. 6

The same ethnicities which held the fastest rates for percentage of their population with hospitalizations, were those that held the fastest rates for percentage of their population with cases, in order: Hispanic or Latino, Pac Islander, and African Americans. The communities that had the fastest COVID-19 case rates were those that had the highest hospitalizations rates. Not only were they experiencing higher volumes of cases, but the severity and need for medical attention was also greater than in any other ethnicities.

Whites were a more distant fourth in hospitalization and the rate of growth not as critical as those leading populations. Although Asians displayed a close fourth growth rate over time for cases in Fig. 3, they had the lowest growth rate of hospitalization in Fig. 6. This had surprising implications about the relative lack of severity of health complications that Asians experienced due to COVID-19.

Death rates confirm Hispanics and Latinos are most impacted by COVID-19

Along with hospitalizations reflecting the severity of the effects of COVID-19 among ethnicities within San Diego County, was the rate of death. Data from the County was available to us beginning April 7, 2020 when Whites had the highest number of deaths and

the fastest growth rate. By June 3rd, Hispanics and Latinos take the lead in fastest growth of deaths but Whites followed closely the positive trend. Deaths of Unknown Race began around the level of Whites but diverged from the trend we saw in the latter and began an erratic trend. Whites saw their growth rate remain consistent over time. Asians deaths began to pick up with an accelerating growth slope after mid-May. (See Fig. 7)

A relatively low percentage of the White population had cases of the virus yet represented the second fastest death rate among ethnicities. This is reasonable given that there is a larger population of elderly, white people in San Diego County than elderly of other ethnicities. As has been shown, COVID-19 affects the oldest population most adversely. Age is associated with a relatively higher presence of health conditions and disease. Recovering from COVID-19 is complicated by these underlying conditions and comorbidities. When deaths were represented as a proportion of their population, Whites also had the third highest rate among ethnicities in Figure 8.

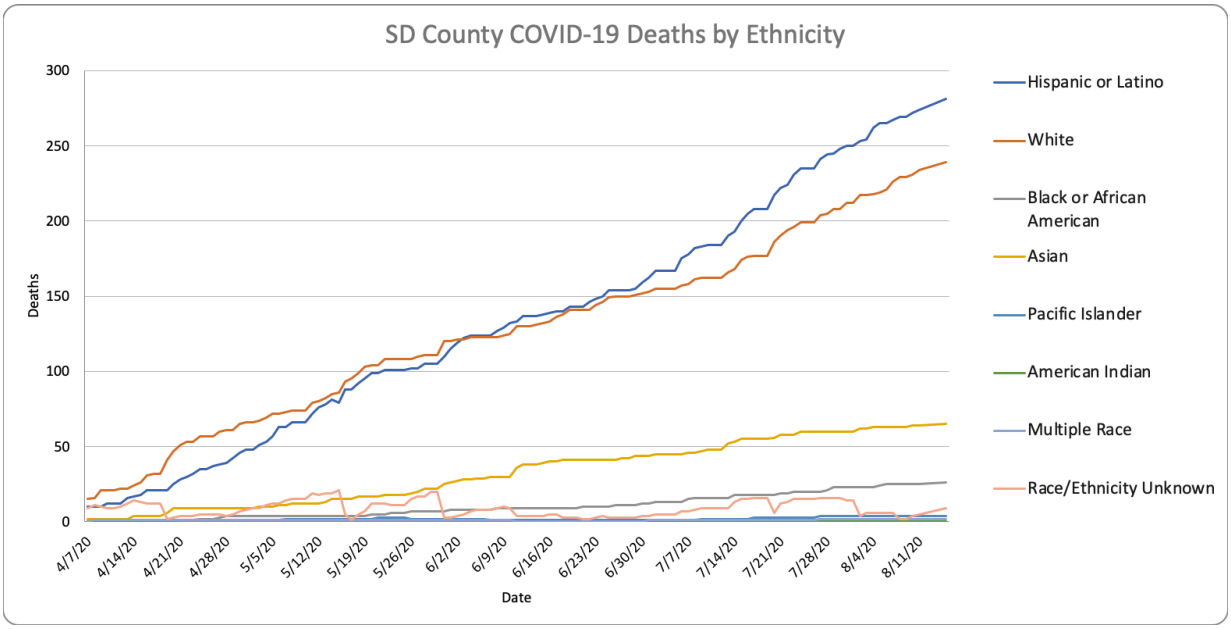

Fig. 7

In addition, when taking into consideration the group as a percentage of the entire county population, people of Hispanics and Latinos ethnicity experienced the fastest growth rates of death and remained first in mortality. Surprisingly, Pacific Islanders were overwhelmingly represented in Fig. 8 when their population size was taken into consideration. They became second in mortality rates after overall, replacing Whites as second when considering absolute numbers. Pacific Islanders never had more than four deaths but relative to their population size, it was substantial.

On April 7th Whites had the highest volume of deaths as a percentage of the population before ceding to Hispanics and Latinos at the beginning of May. Asians briefly overcame the death rates of Whites but eventually ceded to Whites, who had the third highest increase in mortality rates when represented as a percentage of the county population. This followed considering what an overwhelming number of sheer cases of deaths for Whites. Blacks and African

Americans were a close fourth in rates but American Indians and Multiple Races figures stayed relatively low. (Fig. 8)

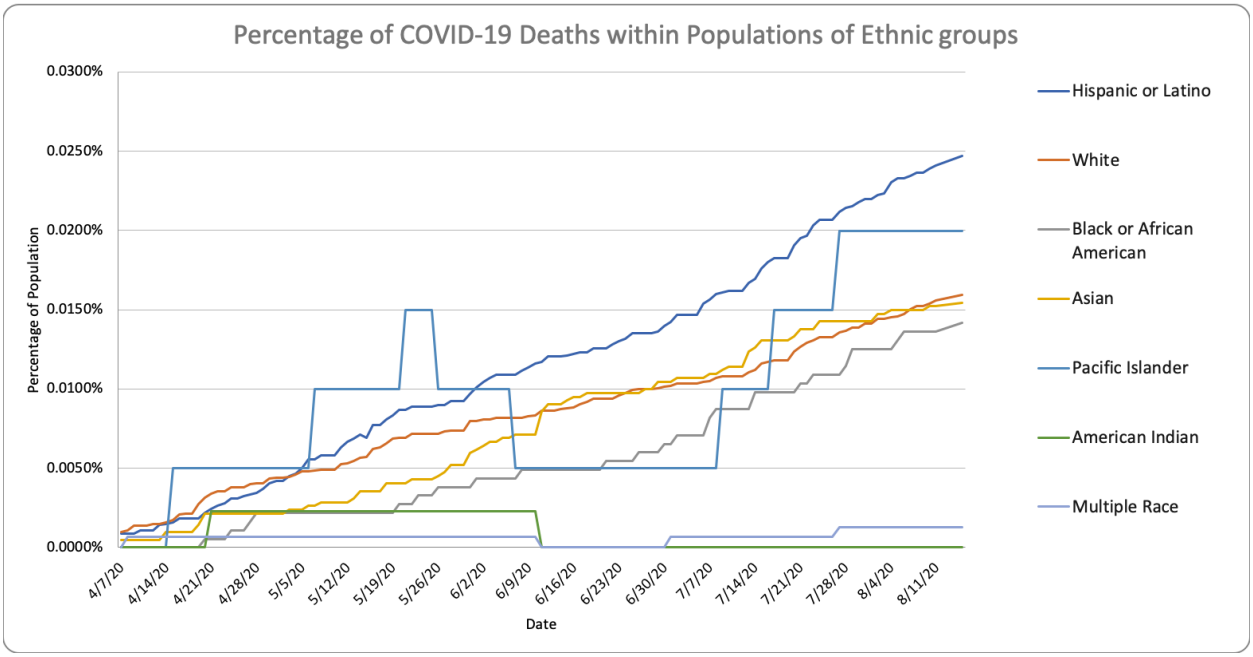

Fig. 8

Discussion

By the implication of any of data and figures herein, Hispanic and Latino communities had without question the fastest growth rates of any of the metrics analyzed and remain at the greatest risk. In both sheer volume and as a percentage of their population, they had the highest rates of cases, hospitalizations and deaths over time. These prove devastating effects on the Hispanic and Latino populations in San Diego County. Latinos make up 34.1% of the population, but 61% of infections, and 45% of the deaths.

Other groups had significant impacts as well. For both the number of cases and hospitalizations, represented as a percentage of their population, Pacific Islanders and Blacks or African Americans had the second and third fastest growth rates respectively. Whites were fourth for these growth rates. In deaths as a percentage of population, Whites rose to third while Asians fell to a very close fourth and Blacks or African Americans rates were a surprising fifth. These cases and hospitalizations results confirmed the consensus that COVID-19 has wrought racial disparities and levied the greatest detriment against minority populations. The conflicting results of the mortality rates as a percentage gave compelling evidence that the virus more adversely affected Whites when it was contracted since they had the third highest death rates but show less representation in cases and hospitalizations. Again, this is most likely due to the comparatively greater population of Whites that is older.

Further research should focus on investigating the break point of the second growth rate stages and how specific policies and guidelines that were lifted affected the varied communities

differently. In the second growth stage, many minority groups display runaway growth in rates of cases, hospitalizations and deaths but especially in Hispanics and Latinos. To deliver an effective pandemic response it is important to understand not only in terms of why, but when these disproportionate rates start to impact communities. With the advantage of local data and within the timeline of the public health response, past protocols and directives can be analyzed in how they affected the most vulnerable communities.

It may also be of interest to analyze the age and demographics of these ethnicities to tease out why the discrepancies between cases and death rates appear. Understanding why COVID-19 is more deadly to certain populations can establish the risk factors that exist within our communities and inform policies to tackle those that are most vulnerable. The dynamics of not only how the virus is spread, but also how to effectively reduce mortality rates within the county, are important.

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