

Pacific Islanders and the impact of COVID-19 in Hawai'i

by

Janice Ke'alahilani Worthington

BA Neuroscience, Washington & Jefferson College, 2019

Submitted to the Graduate Faculty of the
Department of Epidemiology
Graduate School of Public Health in partial fulfillment
of the requirements for the degree of
Master of Public Health

University of Pittsburgh

2021

UNIVERSITY OF PITTSBURGH
GRADUATE SCHOOL OF PUBLIC HEALTH

This essay is submitted

by

Janice Ke‘alohilani Worthington

on

April 16, 2021

(can be the date you expect first signature)

and approved by

Essay Advisor: Akira Sekikawa, MD, MPH, PhD, PhD, Associate Professor, Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh

Yue-Fang Chang, PhD, Research Associate Professor, Department of Epidemiology, Department of Neurological Surgery, Graduate School of Public Health, School of Medicine, University of Pittsburgh

Kamal Masaki, MD, Chair, Department of Geriatrics, John A. Burns School of Medicine, University of Hawai‘i Manoa

Joshua Quint, MPH, PhD, Disease Outbreak Control Division, Hawai‘i State Department of Health

Copyright © by Janice Ke‘alohilani Worthington

2021

Pacific Islanders and the impact of COVID-19 in Hawai'i

Janice Ke'alahilani Worthington, MPH

University of Pittsburgh, 2021

Abstract

This essay analyzes the disparities in COVID-19 cases that Pacific Islanders in Hawai'i have been facing, in depth, during the COVID-19 pandemic and discusses the factors that have possibly contributed to the inequity. At the recommendation of the Native Hawaiian and Pacific Islander communities, Hawai'i State Department of Health's (DOH) Disease Outbreak Control Division restructured its disaggregation methodology to be more representative and relevant to Hawai'i's unique racial demographics. The methodology is adopted from the classification system created by Hawai'i DOH's Office of Health Status Monitoring, which includes nine mutually exclusive racial groups: White, Black, Native Hawaiian, Pacific Islander, Japanese, Chinese, Filipino, Other Asian and Other. Most notably, it disaggregates Asians and Native Hawaiians/Pacific Islanders into the previously mentioned specific race groups. Pacific Islanders have carried the largest share of the COVID-19 case burden in Hawai'i and have a mortality risk comparable to minorities in the continental US like Blacks, Latinos, and Indigenous people. This study further investigates the descriptive epidemiology of specific Pacific Islander race groups.

There is a critical need for more extensive exploration in Pacific Islander health and wellness. These data represent a critical step in improving and distinguishing the individual health of Pacific Islander communities and their needs. The findings reaffirmed that social inequities exist

between race groups in Hawai‘i. Implementing culturally relevant and respectful practices in Hawai‘i was critical in improving case rates and fostering community collaborations that improved Pacific Islander health. These findings can be applied in a broader context to a range of health issues to help decrease the gap of inequities that Pacific Islanders in Hawai‘i face and in the continental US.

Table of Contents

Preface.....	x
1.0 Race in Hawai‘i.....	1
1.1 Pacific Islanders.....	2
1.2 Preexisting health conditions and inequities.....	3
1.3 Epidemiology of Pacific Islander COVID-19 case data in Hawai‘i.....	4
1.4 Native Hawaiian and Pacific Islander COVID-19 cases in the continental US.....	5
1.5 Current literature on Pacific Islander health and wellness.....	7
1.6 Public Health Significance.....	8
2.0 Objectives.....	9
3.0 Methods.....	10
3.1 Data collection.....	10
3.2 Classification of race.....	10
3.3 Descriptive Epidemiology.....	12
4.0 Results.....	13
4.1 Pacific Islander COVID-19 cases in comparison to other race groups.....	13
4.2 Specific Pacific Islander Race.....	18
5.0 Discussion.....	20
5.1 Conclusions.....	21
5.2 Practical implications.....	22
5.3 Strengths.....	23
5.4 Limitations.....	23

5.5 Next steps and future research	25
5.6 Public health significance of findings	25
Appendix A Additional tables and figures	27
Bibliography	28

List of Tables

Table 1 Disaggregated Pacific Islander COVID-19 cases, Hawai‘i, March 8, 2020 to January 31, 2021..... 18

Table 2 Disaggregated Pacific Islander COVID-19 deaths, Hawai‘i, March 8, 2020 to January 31, 2021. 19

Table 3 Percent of COVID-19 cases and deaths by race/ethnicity and gender, Hawai‘i, March 8, 2020 to January 31, 2021. 27

List of Figures

Figure 1 Race/ethnicity composition of COVID-19 cases compared to state population estimates, Hawai'i, March 8, 2020 to January 31, 2021 (n=18,045).....	14
Figure 2 Proportion of the population diagnosed with COVID-19 by race/ethnicity group, Hawai'i, March 8, 2020 to January 31, 2021 (n=18,045).....	15

Preface

This essay is intended to be an extension of the report “COVID-19 in Hawai‘i: Addressing Health Equity in Diverse Populations” that analyses confirmed COVID-19 cases by race/ethnicity group in Hawai‘i. Due to additional required clearances and time constraints, the descriptive epidemiology is limited to using the tables and figures from that report.

Special thanks to Dr. Quint for his mentorship and support.

1.0 Race in Hawai‘i

Hawai‘i has a unique geographical placement that puts it at the crossroads of many nations. Through a complex economic and immigration history, the population of Hawai‘i has expanded to include many Asian and Pacific Islander groups. No single race is the predominant race, making Hawai‘i's racial profile distinct from the continental United States and therefore the needs of the population are also different than those of the continental US. While race is only a social construct, race and ethnicity hold a different level of importance in Hawai‘i and can be used as a tool when addressing community issues. Most continental US efforts focused on minority health have many of their resources focused on Black and Latino populations. Nationally, the US had mortality risks in the first 9 months of the pandemic at 9.8 deaths per 10,000 people for non-Hispanic Blacks, 6.8 deaths per 10,000 people for Latinos, and 7.9 deaths per 10,000 people for Indigenous people (Zalla et al., 2021). Non-Hispanic whites were experiencing mortality risks of 5.0 deaths per 10,000 people and non-Hispanic Asians had a mortality risk of 4.2 deaths per 10,000 people. These race/ethnicity groups are a different proportion of the population in Hawai‘i than they are nationally.

Despite sharing some racial groups with the continental US, Hawai‘i is arguably in a different position than the continental US because of the proportion of Pacific Islanders in Hawai‘i (Hawai‘i State Department of Health, 2021) and the resources available to address racial disparities faced by Pacific Islanders. Hawai‘i has the potential to be a leader in utilizing race as a pathway in addressing disparities and implementing effective solutions in the community. The governmental leadership from the continental US and Pacific Island nations have been using Hawai‘i as a frame of reference while constructing their evolving response to the ongoing

pandemic. The Hawai‘i State Department of Health (Hawai‘i DOH) has also collaborated and assisted the departments of health in some of these island nations with their reopening plans.

1.1 Pacific Islanders

Polynesian is a broad term used to define those who come from island nations located in the Southern Pacific Ocean, in an area referred to as Polynesia (Anderson & O'Regan, 2000, 440-454). The Polynesian triangle is a commonly used figure that represents this area in the Pacific Ocean, with Hawai‘i, New Zealand, and Easter Island representing the three corners of the triangle. The distance of each of these sides is roughly equal to the distance from Alaska to Mexico. In this study, the term Pacific Islander is used to identify those individuals who are of Polynesian, Micronesian or Melanesian descent but are not Native Hawaiian. This covers an even larger area, with the Micronesian and Melanesian islands being to the left-hand side of the Polynesian triangle. Each Pacific Island nation has its own unique history, culture and language, with that individuality maintained within its ethnic communities across the world (D'Arcy, 2006).

As the indigenous peoples of Hawai‘i, Native Hawaiians face different situations than their Pacific Islander counterparts do, hence the distinction of the two groupings. Most of the Pacific Islander communities in Hawai‘i come from Samoa, Tonga, Guam, the Republic of Palau, Chuuk, or the Republic of the Marshall Islands (RMI) (Hawai‘i State Department of Health, 2021). Those who come from the Federated States of Micronesia (FSM), RMI, and the Republic of Palau likely immigrated through immigration policy agreements between each of the three island nations and the US. Each of these individual nations are a cluster of islands under a single governing body, but these islands are still relatively far from one another. RMI is one of the closer island groups to

Hawai‘i, but the distance between the two is about equal to the distance from California to Washington, DC. These agreements, known as the Compacts of Free Association (COFA), gave the US military access and rights to the geography of the islands. In exchange, the US provided support both economically and politically. In part, this allowed citizens of these island nations to live and work in US states and territories without the need of a US visa or green card (US Department of the Interior, n.d.).

1.2 Preexisting health conditions and inequities

While there are many non-profit groups and research studies oriented towards addressing the social inequities faced by Native Hawaiians, these resources can sometimes miss other vulnerable Polynesian communities. Pacific Islanders are presented with many social, educational, occupational, and health barriers that too often go unnoticed due to a variety of factors, least of which is the fact that Pacific Islanders are rarely disaggregated into their own racial category. This limits analysis and focus on this specific race group, as it is often aggregated together with Native Hawaiians or Asians. Native Hawaiians and Pacific Islanders (NHPIs) have some of the highest rates of preexisting health conditions, uninsured individuals and houselessness (Park et al., 2019) (Park et al., 2018). There are also numerous barriers that can limit the accessibility of care and health outreach programs to these communities, such as language or transportation barriers.

Pacific Islanders are a large part of the essential workforce in Hawai‘i (US Bureau of Labor Statistics, 2014) and many of these families live in multigenerational homes with dense living situations (Hawai‘i Appleseed Center for Law & Economic Justice, 2020). They are also not offered the same opportunities in attaining a higher education degree (Teranishi et al., 2009) and

this can put Pacific Islanders at a disadvantage regarding socioeconomic position and health literacy. In 2017, it was reported that 23.3 percent of NHPI individuals had bachelor's degree and 6.9 percent had a graduate degree, compared to 35.8 percent and 13.8 percent of White individuals, respectively (US Department of Health and Human Services, 2021). Furthermore, Native Hawaiians and Pacific Islanders do not have the same life expectancy as other racial groups, likely due to several social inequity factors. Native Hawaiian life expectancy is 10 years less than Chinese and Japanese populations, and there is no disaggregated data available on Pacific Islander life expectancy (Wu et al., 2017).

These inequities have culminated in disparities that have only been exacerbated by the effects of the COVID-19 pandemic. The detrimental impact of these aggregating numbers goes beyond just COVID-19. NHPI communities have also repeatedly been affected by other infectious diseases at significantly higher rates than other race communities. In 2017, the tuberculosis rate for NHPIs was 38 times higher than the White population (US Department of Health and Human Services, 2021). In news reports and other platforms, NHPI leaders have repeatedly said they were unsurprised that their communities have been hit severely by the pandemic due to a culmination of social inequities and aggregated data (Kaholokula et al., 2020) (Blethen, 2021) (Sacramento County Department of Health, 2021). These populations have been overlooked repeatedly in history and the COVID-19 pandemic has yet to write a different narrative.

1.3 Epidemiology of Pacific Islander COVID-19 case data in Hawai'i

There is significant difficulty in finding stable Pacific Islander population counts, even with special requests, to perform epidemiological analyses on Pacific Islander data. Most census

data had counts that are either too small to be released or utilize federal standards that aggregated race into seven groups. There are limited data available on confounding factors as well, such as immigration status, education, income, and comorbidities, that either have limited access or do not exist to be comparable at the population level.

In June 2020, the number of Pacific Islander COVID-19 cases increased significantly, sparking concern about the vulnerability of these communities and that resources were missing the people who needed them most (Kaholokula et al., 2020). The Hawai‘i DOH had been continuously releasing daily case counts disaggregated by race on their website’s COVID-19 data dashboard over the course of the pandemic. However, in March 2021, the Hawai‘i DOH released a health equity report that underlined the intersectionality of race with the COVID-19 pandemic. Effectively, it summarized the hard hit that Pacific Islanders communities had suffered in terms of COVID-19 case counts (Hawai‘i State Department of Health, 2021).

1.4 Native Hawaiian and Pacific Islander COVID-19 cases in the continental US

It is important to acknowledge that Hawai‘i is the only state in the US whose health department disaggregates its Native Hawaiians and Pacific Islanders (NHPI) COVID-19 case data into specific race (Hawai‘i State Department of Health, 2021). The disaggregation of NHPI from the Asian race category is a recent change in standard federal measures from 1997 (Office of Management and Budget (OMB), 1997). Still, Native Hawaiians and Pacific Islanders are still fighting to be disaggregated from Asians at a federal level. As recently as President Biden’s COVID-19 Relief Plan, the legislation does not disaggregate Native Hawaiians and Pacific Islanders from Asians (Blethen, 2021). There has been a continuous fight from NHPI communities

across the US to further disaggregate Native Hawaiians from Pacific Islanders because these are not monolithic communities and have unique needs specific to their cultures and populations (Hawai'i State Department of Health, 2021).

NHPI communities are facing similar COVID-19 burdens in the continental United States as NHPI are in Hawai'i. In Washington, which contains the third largest NHPI populations (US Census Bureau, Population Division, 2016), there are drastic COVID-19 disparities between NHPI populations compared to other race groups. In a report released by the Washington State Department of Health, NHPI communities have been experiencing case rates four times higher, hospitalization rates ten times higher, and mortality rates six times higher than other race groups (Washington State Department of Health, 2021). As of February 21st, UCLA reported that the case rate for Native Hawaiians and Pacific Islanders is 7,132 per 100,000 people, followed by a death rate of 151 per 100,000 in Washington state (UCLA Center for Health Policy Research, 2021). The health department in Sacramento, another area with one of the larger NHPI populations in the continental US, also released a COVID-19 health report that showed NHPI communities had a case rate twice as high as the county's average (Sacramento County Department of Health, 2021). These numbers again confirm that NHPI communities are suffering at rates that are the highest in Washington state, compared to any other racial group. These same disparities have been observed in vaccine rollout in the continental US. Native Hawaiian and Pacific Islander elders have struggled to have access to the vaccine, due to technological barriers and other access barriers (Blethen, 2021).

Washington, among other states, has also faced difficulties gathering data and reaching these communities due to cultural barriers and the ineffectiveness of conventional public health methods in NHPI communities. For example, COVID-19 measures that have focused on nursing

homes miss the NHPI elders because NHPI cultures keep elders in the home (Blethen, 2021). It is culturally atypical, and oftentimes financially impossible, to place elders in care facilities.

1.5 Current literature on Pacific Islander health and wellness

While there is already limited research looking at Native Hawaiian and Pacific Islander health as a collective entity, there is even less research looking at them separately as disaggregated specific races. Most research utilizes data that aggregates Native Hawaiians and Pacific Islanders together into one race group, as this is a common practice among federal US standards (Office of Management and Budget (OMB), 1997). However, further disaggregating this race group into specific races can reveal the differences in health burdens that Pacific Islanders experience.

Most population data also follow the federal standards for aggregating race data. Therefore, it is difficult to find disaggregated specific Pacific Islander population counts. It can also be challenging to acquire representative population data on preexisting health conditions, occupation, education, or socioeconomic information on Pacific Islanders. These issues can limit research findings and deeper analysis into the social inequities that Pacific Islanders continually face. Special data requests have to be made in order to extract these counts from census data and these requests don't guarantee that the data reach such a granular level (Hawai'i State Department of Health, 2021). This limitation in population counts can also be affected by immigration status and linguistic barriers that limit the participation of these Pacific Islander communities.

1.6 Public Health Significance

In the continental US and Hawai‘i, Pacific Islanders are a frequently underrepresented and overlooked group that is aggregated with other vulnerable communities. While the acknowledgment of this vulnerability is a first step, Pacific Islanders need to be recognized by their individuality for research addressing disparities to be relevant and efficient.

The COVID-19 pandemic has highlighted the inequities that have existed for a long time yet gone unaddressed. By analyzing the disparities and the potential upstream factors that have deepened the roots of these inequities, Hawai‘i will set an example for other places with Pacific Islander populations to follow suit.

2.0 Objectives

This essay aims to analyze the disparities that Pacific Islanders in Hawai‘i have been facing during the COVID-19 pandemic in terms of cases and theorize the factors that have possibly contributed to the inequity. It was hypothesized that Pacific Islanders have experienced a disproportionately large share of the COVID-19 case burden in Hawai‘i. Upstream factors such as immigration policies, financial opportunities, racial stigma, living situations and educational opportunities have impacted the health of these communities, putting them in vulnerable conditions that made them highly susceptible to COVID-19 infection.

3.0 Methods

3.1 Data collection

Using the case definition approved by the Council of State and Territorial Epidemiologist, a positive COVID-19 case was confirmed with a test using high complexity nucleic amplification at one of four laboratories. Case data were electronically sent by four laboratories in Hawai'i to the Hawai'i DOH. Case information is sent either by electronic laboratory report or by a provider report. The Hawai'i DOH then further investigates the case and collects additional demographic and clinical information that had not already been obtained by the healthcare provider (Hawai'i State Department of Health, 2021). The 24,583 COVID-19 cases used in this essay were collected from March 8, 2020 to January 31, 2021 in the state of Hawai'i. This count includes military personnel and their dependents but excludes all other non-residents. This count does not include probable cases because probable cases did not have the same level of testing information and were not investigated to the same degree as confirmed cases were.

3.2 Classification of race

Initially, the Hawai'i DOH determined an individual's race by following the federal US Census standard used by the US Centers for Disease Control and Prevention (CDC) in its case reporting form, which used the social definition of race that utilizes a person's racial or national origin. Defined by the US Office of Management and Budget, the federal standard used five race

categories: White, Black or African American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander (Center for Disease Control and Prevention, n.d.). People that identified as Hispanic could be of any race and cases could identify as more than one race as well.

At the recommendation of the Native Hawaiian and Pacific Islander communities, Hawai‘i DOH’s Disease Outbreak Control Division restructured its disaggregation methodology to be more reflective and relevant to Hawai‘i’s unique racial demographics by adopting the classification system from Hawai‘i DOH’s Office of Health Status Monitoring. The nine mutually exclusive racial groups that cases can be classified as are White, Black, Native Hawaiian, Pacific Islander, Japanese, Chinese, Filipino, Other Asian and Other. The methodology first labels any case that identifies as any part Native Hawaiian as “Native Hawaiian”. The remaining uncategorized cases are then assigned to the first non-White race group it has listed. State population estimates were provided by the Hawai‘i Health Data Warehouse (HHDW) and are from a special disaggregation request of the American Community Survey 2010-2014 made by the HHDW. The state population estimates also exclude non-residents and the 6,538 (27%) cases missing race data of the original 24, 583 reported cases in Hawai‘i.

Hawai‘i’s racial profile is different than those seen in the continental US, so some groups such as Latinos or Blacks have very small populations that aren’t necessarily always reflective of the disparities seen in the continental US or are representative of their larger communities.

3.3 Descriptive Epidemiology

Due to the limited confounder data collected and population data available, descriptive epidemiology was best fit to assess this observational study. These limitations are further reviewed in the Discussion section of this essay. Confidence intervals are Wald intervals. The age-adjusted COVID-19 mortality rate was calculated using direct method, and the associated confidence interval was estimated based on normal approximation.

4.0 Results

4.1 Pacific Islander COVID-19 cases in comparison to other race groups

Of the 18,045 cases of COVID-19 in the state of Hawai‘i diagnosed from March 8, 2020 to January 31, 2021, the largest proportion of those cases (24%) were Pacific Islanders, despite being only 4% of the state’s population. In Figure 1, their representation among cases was six times higher than their representation in the state’s population, yet no other race group experienced a comparable increase or ratio. Whites, Native Hawaiians, and Japanese represented a lower proportion of cases than expected when compared to their proportion of the state population. Filipinos were the only other group with a high proportion of the case burden that also had more cases than expected.

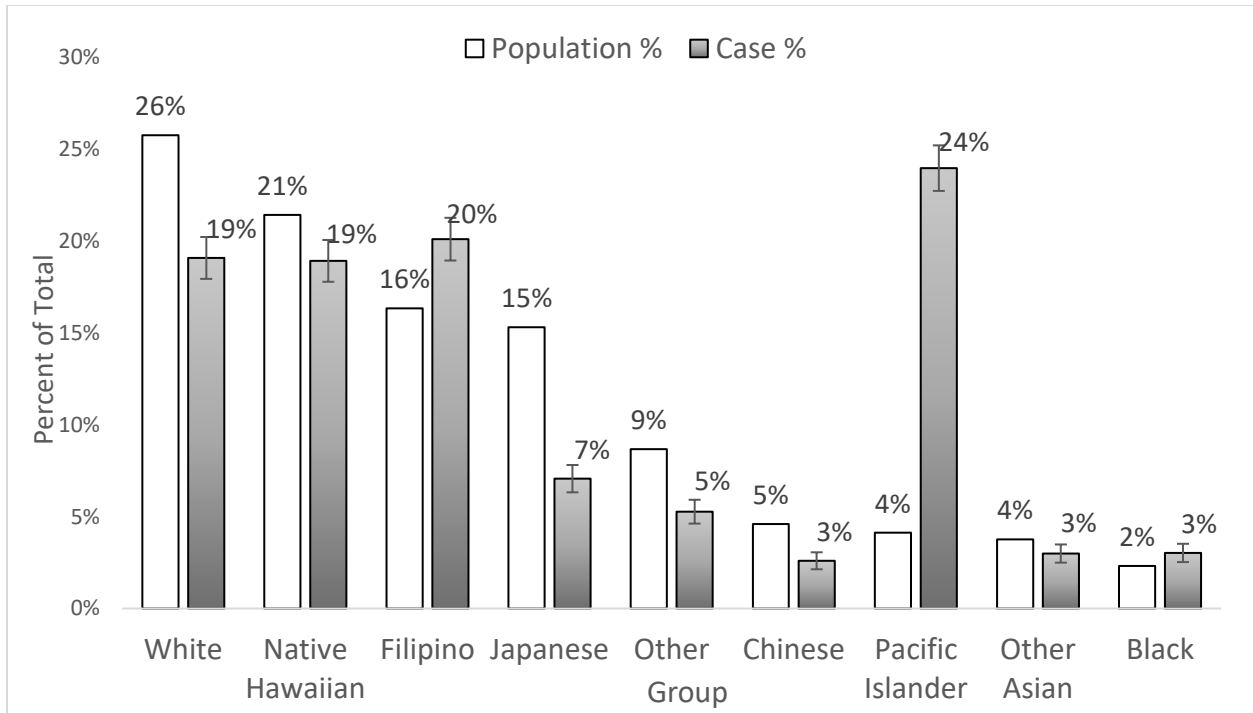


Figure 1 Race/ethnicity composition of COVID-19 cases compared to state population estimates, Hawai'i, March 8, 2020 to January 31, 2021 (n=18,045).

From COVID-19 in Hawai'i: Addressing Health Equity in Diverse Populations (Hawai'i State Department of Health, 2021)

Note: Population % represents the number of persons in each race/ethnicity group divided by the total population of the state. Case % represents the number of cases in each race/ethnicity group divided by the total number of cases in the state. Error bars indicate 95% confidence intervals for the case percent estimate.

Figure 2 also displays this stark difference with case proportions. The case proportion for Pacific Islanders was the highest overall, almost six times larger than the overall rate ratio for the state of Hawai'i. All other race groups had rate ratios less than 2%.

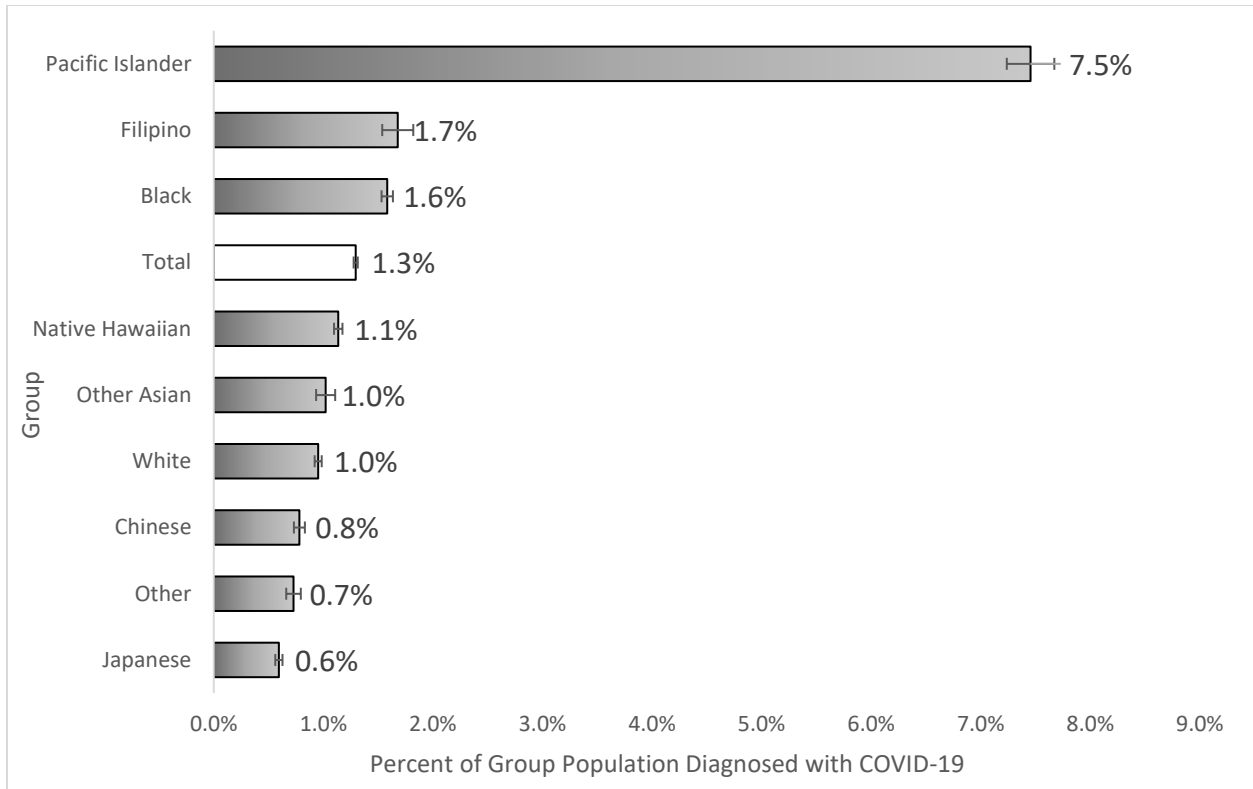


Figure 2 Proportion of the population diagnosed with COVID-19 by race/ethnicity group, Hawai'i, March 8, 2020 to January 31, 2021 (n=18,045).

From COVID-19 in Hawai'i: Addressing Health Equity in Diverse Populations (Hawai'i State Department of Health, 2021)

Note: Group percent represents the total number of cases in each race/ethnicity group divided by the population estimate for that specific race/ethnicity group. Error bars indicate 95% confidence intervals.

Age has been associated with risk for adverse morbidity and mortality outcomes from COVID-19 and there were notable differences in the age distribution of these cases between race groups. Therefore, cases were divided into four age groups and this categorization clustered together ages that would emulate similar health conditions and possibly similar health risks.

Figure 3 shows that most of the cases in Hawai'i occurred in the 18-44 age group. Most Pacific Islander cases also occurred in the 18-44 and 45-64 age groups. Only 8% of Pacific Islander cases occurred in the 65+ age group. Native Hawaiian cases showed a similar distribution, with

Native Hawaiians and Pacific Islanders being the only race groups to have less than 10% of their cases occur in the 65+ age group at 7% and 8%, respectively. However, the Japanese distribution of cases among age groups was different than Native Hawaiians and Pacific Islanders, with a much larger proportion of its cases occurring in the 65+ age group. Japanese cases were approximately evenly distributed between the 18-44 (31%), 45-64 (31%) and 65+ (30%) age groups.

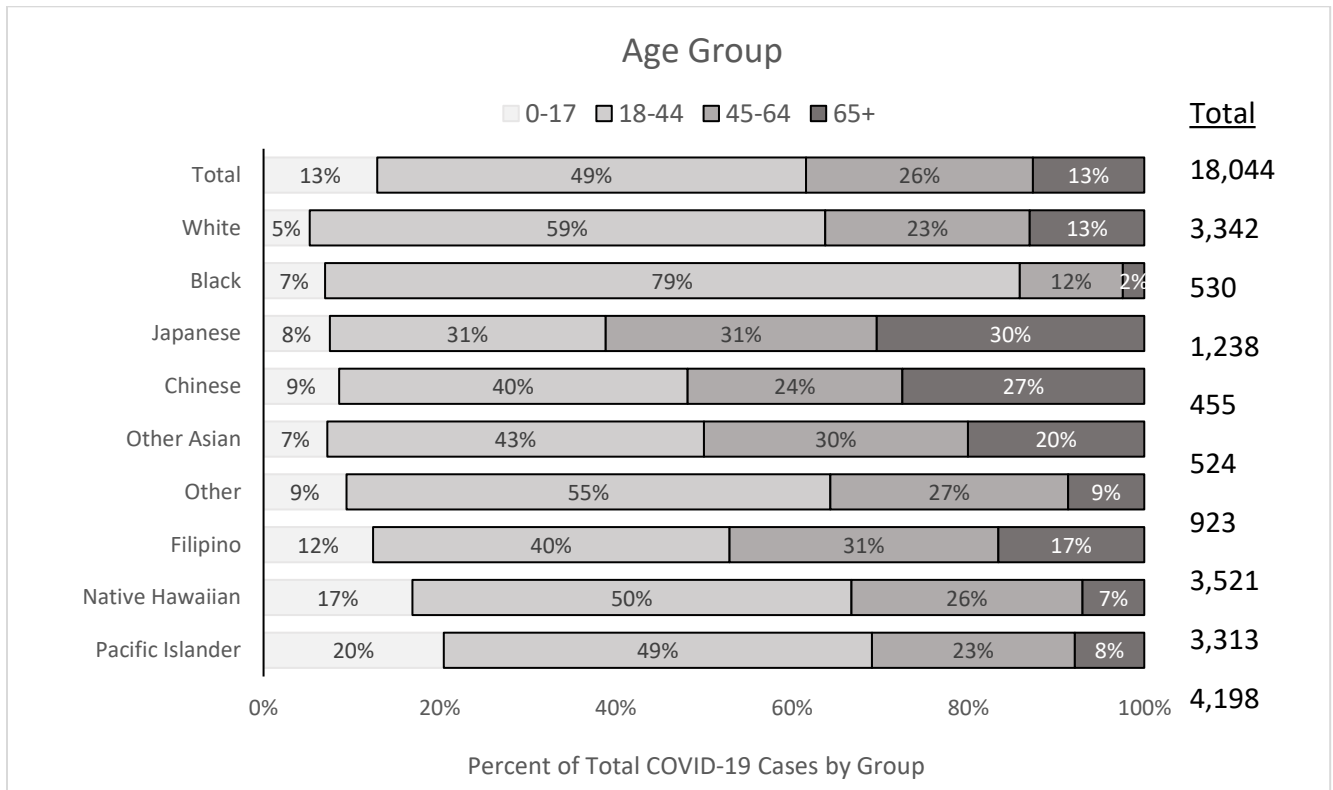


Figure 3 Percent of COVID-19 cases by race/ethnicity and age group, Hawai‘i, March 8, 2020 to January 31, 2021 (n=18,045).

From COVID-19 in Hawai‘i: Addressing Health Equity in Diverse Populations (Hawai‘i State Department of Health, 2021)

Pacific Islanders also experienced alarming disproportionately high COVID-19 mortality rates. In Figure 4, the age-adjusted mortality rate for Pacific Islanders was 319.6 per 100,000, with the next highest rate being only 33.3 per 100,000 in Filipinos. The mortality rate for the state of Hawai‘i was even lower at 22.5.

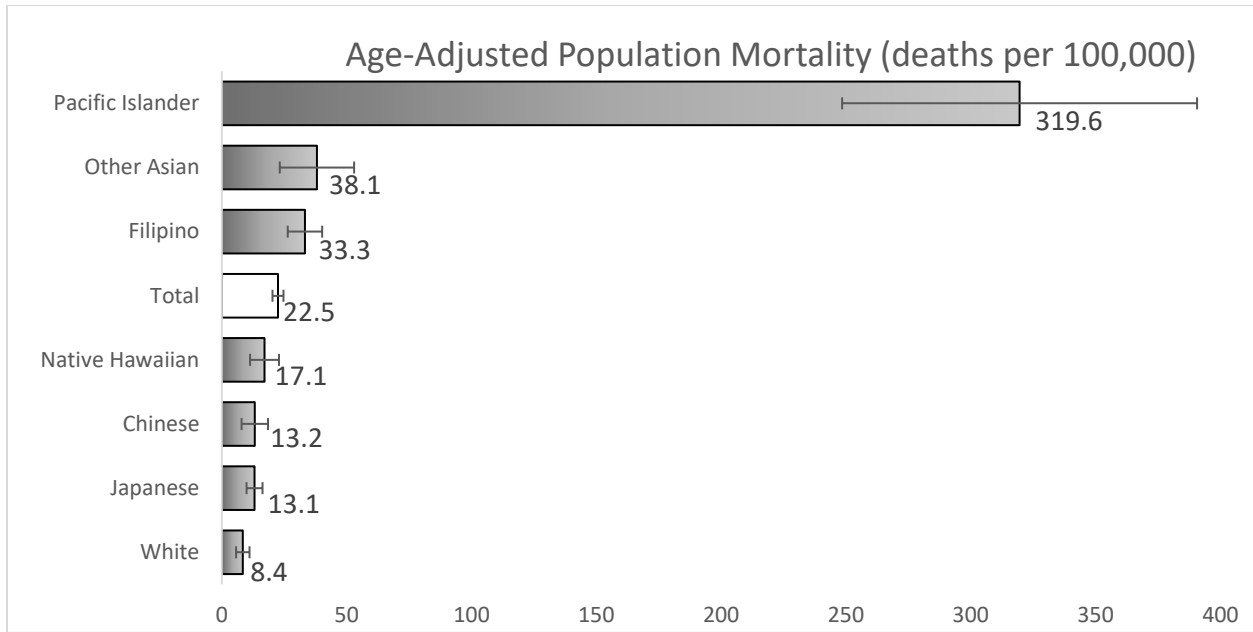


Figure 4 Age-adjusted mortality by race/ethnicity with 95% confidence limits, Hawai‘i, March 8, 2020 to January 31, 2021.

From COVID-19 in Hawai‘i: Addressing Health Equity in Diverse Populations (Hawai‘i State Department of Health, 2021)

Note: error bars indicate 95% confidence limits. Insufficient number of deaths to perform age-adjustment for Chinese, Black, Other Asian, and Other race/ethnicity groups. An age-adjusted rate is a measure that controls for the effects of age differences on health event rates. When comparing across diverse populations, some method of age-adjusting is necessary to control for the influence of populations having different age distributions.

The percentages of male versus female COVID-19 cases and COVID-19 deaths within each race group were also compared (see Appendix). Overall, the percentage of male to female cases was consistent across race groups. There was no difference in trend experienced by Pacific Islanders and these trends are consistent with national and international trends (Blethen, 2021) (Hawai‘i State Department of Health, 2021) (Kaholokula et al., 2020) (Sacramento County Department of Health, 2021) (UCLA Center for Health Policy Research, 2021) (Washington State Department of Health, 2021).

4.2 Specific Pacific Islander Race

The Pacific Islander cases were further disaggregated into nine specific Pacific Islander race groups. The Micronesian unspecified group included those who identified as Micronesian but did not state the specific island they were from. Micronesian unspecified may consist of individuals from islands in the FSM such as Kosrae, Pohnpei, Yap or Chuuk. The Other Pacific Islander, unspecified group includes those who identified as Pacific Islander, but did not indicate a specific Pacific Islander race. When the Pacific Islander race group was further disaggregated into specific Pacific Islander race, additional differences between specific race groups emerged and are shown on Table 1. Samoans were 29% of Pacific Islander cases, trailed by Chuukese and Marshallese, who were 24% and 22% of Pacific Islander cases, respectively. There is no population data available for this level of specific race, therefore, only COVID-19 case counts are available.

Table 1 Disaggregated Pacific Islander COVID-19 cases, Hawai‘i, March 8, 2020 to January 31, 2021.

Cases of COVID-19 among Pacific Islanders, by Specific Island of Origin, Hawai‘i		
Region of Origin	Cases	
	No.	Percent
Chuukese	1,024	24%
Kosraean	233	6%
Pohnpeian	78	2%
Micronesian, unspecified	343	8%
Marshallese	939	22%
Samoan	1,232	29%
Tongan	160	4%
Chamorro/Guamanian	29	1%
Other Pacific Islander, Unspecified	155	4%
Total	4,193	100%

From COVID-19 in Hawai‘i: Addressing Health Equity in Diverse Populations (Hawai‘i State Department of Health, 2021)

Table 2 contains the Pacific Islander COVID-19 deaths by specific Pacific Islander race. All deaths identified as any Micronesian specific race were grouped together to protect patient privacy. Micronesians experienced the largest proportion of the death burden. Approximately 48% of Pacific Islander deaths were identified as Micronesian. The proportion of deaths that were Samoan or Marshallese were half of the Micronesian proportion, at 23% and 22%, respectively.

Table 2 Disaggregated Pacific Islander COVID-19 deaths, Hawai‘i, March 8, 2020 to January 31, 2021.

Deaths of COVID-19 among Pacific Islanders, by Specific Island of Origin, Hawai‘i		
Island of Origin	Deaths	
	No.	Percent
Micronesian, combined	42	48%
Marshallese	19	22%
Samoan	20	23%
Tongan	<5	n/a
Chamorro/Guamanian	0	0%
Other Pacific Islander, Unspecified	6	7%
Total	87	100%

From COVID-19 in Hawai‘i: Addressing Health Equity in Diverse Populations (Hawai‘i State Department of Health, 2021)

Note: Micronesian, combined refers to persons identifying as Chuukese, Pohnpeian, Kosraean, and Micronesian, unspecified.

5.0 Discussion

This essay aimed to analyze the disparities that Pacific Islanders in Hawai‘i have been facing during the COVID-19 pandemic in terms of cases and theorize the factors that have possibly contributed to the inequity. The data showed that Pacific Islanders have carried the largest share of the COVID-19 case burden in Hawai‘i and have a mortality risk comparable to minorities in the continental US like Blacks, Latinos, and Indigenous people (Zalla et al., 2021). Upstream factors can still be considered when assessing how the pandemic has exacerbated the inequities that already existed. Previous research already provided evidence that these inequities existed and there is a critical need of deeper exploration in Pacific Islander health and wellness. However, there were not consistent data collected on confounding factors such as income, household size, houselessness or comorbidities to perform comparative analysis to look for trends. Therefore, existing data needs to be used. These findings should be the first step in a series of analyses and responses in addressing health disparities and social inequities that Pacific Islanders face.

The findings from the COVID-19 case data were not unexpected. Pacific Islanders were already in a vulnerable position from a culmination of many social and economic inequities, supported by the findings in previously discussed articles (Kaholokula et al., 2020) (Park et al., 2018) (Park et al., 2019) (Teranishi et al., 2009) (US Bureau of Labor Statistics, 2014) (Wu et al., 2017). However, the severity of the pandemic’s impact on Pacific Islander communities was surprising and concerning. The gap between Pacific Islanders and any other race in terms of COVID-19 cases or deaths emphasizes the urgent need for these disparities to be addressed. Confounding factors such as educational opportunities, income, comorbidities, and housing density need to also be directly addressed for their importance as social vulnerability factors. While

Pacific Islanders have been identified as a vulnerable group in regard to socioeconomic position, there still are not sufficient resources, attention or research being allocated to these communities. It is even more difficult to address this when Pacific Islanders are not being separated from Native Hawaiians, let alone further disaggregated into specific races. Also, once the Asian race category was also further disaggregated into specific races, the COVID-19 case rate for Japanese individuals was drastically different from the COVID-19 case rate for Pacific islanders. While differences in longevity play a part in this, the differences are likely multi-layered and would be an interesting avenue to conduct future research on.

5.1 Conclusions

The disparities that Pacific Islanders face already systematically existed prior to the pandemic. The high case burden and death toll that Pacific Islanders suffered during COVID-19 stressed not only that these disparities still exist, but they are also still not being appropriately recognized or addressed. Preventative steps were not taken to protect the vulnerable communities, and the time it took to respond to the data trends was also delayed. These issues need to be addressed and Pacific Islanders need to be better supported. The equity report on race and COVID-19 published by the Hawai'i DOH gave a list of recommendations at the end of its analysis of COVID-19 cases in 2020 (Hawai'i State Department of Health, 2021). One of those recommendations (#6) recognizes the need for better representation of Pacific Islanders in leadership positions, which can contribute to improving the recognition and welfare of Pacific Islanders by having members of their own community advocating for them and garnering resources that could be better suited to fit community needs.

The pandemic and the resulting case disparities also called attention to the need for better emergency preparedness and partnerships with the community. The pandemic has forged many new partnerships between the Hawai‘i DOH and external partners, yet these partnerships should have existed previously and could have established a structure of governance and therefore better emergency preparedness.

5.2 Practical implications

There are many practical implications that can be drawn from this observational study. Primarily, data collection during a pandemic should capture as much confounding data as possible. There needs to be an improvement in the existing systems to better handle a large-scale health crisis and raise public trust. Future emergency response planning should account for racial and ethnic disparities as evidenced in this paper. These systems should consider these disparities when allocating healthcare services and prioritizing resources to communities during crisis response. The expectations of cultural and language competence have also been raised. Critical information and communication need to better address known barriers proactively, and materials should be provided in relevant language(s). Some other state departments already do this and can be also used as a supporting guide (State of Hawai‘i Office of Language Access, 2021). The burden Pacific Islanders face in Hawai‘i has also been occurring on the continental US, in states with Pacific Islander populations. The continental US should also take this work as evidence of the need and benefit of further disaggregating Pacific Islanders and recognizing them as an individual polyethnic population. By recognizing their individuality and the risks associated with their communities, resources can be more appropriately allocated to Pacific Islander peoples.

5.3 Strengths

The greatest strength of this study was the quality of the race data. The race data collected was detailed enough to disaggregate Native Hawaiians from Pacific Islanders, as well as further disaggregate Pacific Islanders into their specific Pacific Islander races. This level of detail helps in accurately identifying the communities in need and implementing solutions that are relevant.

This primary source data is also in a unique position because it comes from Hawai‘i and has the potential to advocate for better recognition of Pacific Islanders. The data can support the argument that there is a need for more research and population level data to create meaningful findings that are applicable to populations that also consist of Pacific Islander communities.

5.4 Limitations

Specific race information was missing for 27% of confirmed cases in the state. While this percentage is notable, the level of missingness is lower than most US states (Van Dyke et al., 2021). On the national level, race data is only available for 51% of cases (Van Dyke et al., 2021). The level of specificity of the race data provided is unique to Hawai‘i and not seen in any other US state. As noted in the report by the Hawai‘i DOH, they analyzed the trends of missingness for Pacific Islanders to other groups. The pattern of missingness has stayed consistent during higher and lower case numbers. There is also the possibility of underreporting in Native Hawaiian and Pacific Islander communities, although the exact degree to which this is plausible is unknown at the time. Mild and asymptomatic cases are less likely to be reported, and access to testing on the outer island, which are more rural, may affect accessibility and detection of the cases (Hawai‘i

State Department of Health, 2021). Also, information bias must be considered because each case is interviewed by a case investigator and this analysis is working with the assumption that each case investigator uniformly conducts the investigation and consistently collected specific race.

Also, analysis of this observational study was limited by the lack of confounder data. Potential confounder variables could include comorbidities, socioeconomic status, language, health literacy, or severity. There is only data on deaths, not hospitalization status, and this could be used as alternative outcomes or covariates for future analyses. Using death as the only outcome leaves room for the possibility of differential misclassification of the outcome as a selection bias. These variables may have been collected in later cases, but their collection was not consistent enough during the pandemic to produce any meaningful analysis. It limited the ability to control for any confounding variables, albeit the disparities between Pacific Islanders and all other racial groups were significant enough to be apparent without adjusting.

Another limitation was comparable population data. Population data disaggregated by race using the same methodology used by the Hawai'i DOH would be necessary in order to perform any multivariate analysis. Without rich data on any reference group from an appropriate population source, further statistical tests were not possible. There was also no comparable data from other similar populations, such as the Pacific Island nations, because they closed their borders at the beginning of the pandemic, resulting in stranded citizens outside of the country, but lower case rates of COVID-19. Other states with Pacific Islander populations also do not disaggregate their Pacific Islander data from Native Hawaiians and/or Asians, making it difficult to have a clear understanding of the burden that Pacific Islander communities have faced on the continental US.

Future analyses on either these data or data collection during emergencies should use these lessons to have a better system of preparedness in place.

5.5 Next steps and future research

Future work should include conducting multilevel studies that perform cross-sectional analyses with aggregated income or education data on race. Although future analyses on these COVID-19 data cannot adjust for variables that were not collected during this time, they can adjust for data that already exists from previous studies. Leveraging census tracts data and community surveys to adjust for confounding variables would be advantageous and help to understand the effect modification and interactions with other social determinants of health.

In addition to previous suggestions to improve emergency preparedness, there needs to be more health research that not only disaggregates Native Hawaiians from Pacific Islanders, but also disaggregates specific Pacific Islander race. This would help in recognizing and giving a voice to these communities and the specific challenges they may face. Follow up studies could include more data by forming an office of health equity that focuses on data disaggregation and data sovereignty. This office could assist in standardizing the format in which race/ethnicity questions are asked and the data collection process within its respective division and across other departments and in the state.

5.6 Public health significance of findings

These data represent a critical step in improving and distinguishing the individual health of Pacific Islander communities and their needs. The findings reaffirmed that social inequities exist between race groups in Hawai‘i. The report by the Hawai‘i DOH also mentioned the improvements that come by tailoring messages and solutions to these communities, specifically appropriate

language and culture (Hawai‘i State Department of Health, 2021). Implementing culturally relevant and respectful practices in Hawai‘i was critical in improving case rates and fostering community collaborations that improved Pacific Islander health (Hawai‘i State Department of Health, 2021). These findings can be applied in a broader context to a range of health issues to help decrease the gap of inequities that Pacific Islanders in Hawai‘i face and in the continental US.

Appendix A Additional tables and figures

Table 3 Percent of COVID-19 cases and deaths by race/ethnicity and gender, Hawai'i, March 8, 2020 to January 31, 2021.

Proportion of COVID-19 Cases by Race/Ethnicity and Gender				Proportion of COVID-19 Deaths by Race/Ethnicity and Gender			
Race	Female	Male	Total	Race	Female	Male	Total
White	43%	57%	3,342	White	36%	64%	36
Native Hawaiian	49%	51%	3,314	Native Hawaiian	44%	56%	36
Pacific Islander	52%	48%	4,197	Pacific Islander	38%	62%	93
Filipino	52%	48%	3,520	Filipino	33%	67%	90
Japanese	49%	51%	1,237	Japanese	41%	59%	87
Black	35%	65%	529	Black	n/a	n/a	< 10
Other Asian	52%	48%	524	Other Asian	38%	62%	26
Other	43%	57%	923	Other	n/a	n/a	<10
Chinese	51%	49%	455	Chinese	40%	60%	25
Total	49%	51%	18,041	Total	38%	62%	393

Bibliography

- Anderson, A. J., & O'Regan, G. R. (2000). *To the Final Shore: Prehistoric Colonisation of the Subantartic Islands in South Polynesia*. Australian National University.
- Blethen, R. (2021, February 28). To fight COVID-19 with vaccines, Native Hawaiians and Pacific Islanders in Washington first need to be seen. *The Seattle Times*.
<https://www.seattletimes.com/seattle-news/health/to-fight-covid-19-with-vaccines-native-hawaiians-and-pacific-islanders-in-washington-first-need-to-be-seen/>
- Center for Disease Control and Prevention. (n.d.). Human Infection with 2019 Novel Coronavirus Case Report Form [CDC Person Under Investigation Form]. Retrieved April 17, 2021, from <https://www.cdc.gov/coronavirus/2019-ncov/downloads/pui-form.pdf>
- D'Arcy, P. (2006). *The People of the Sea: Environment, Identity, and History in Oceania*. University of Hawai'i Press.
- Hawai'i Appleseed Center for Law & Economic Justice. (2020, July 29). Hawai'i has the highest portion of multigenerational and crowded households in the nation. What does that mean for reopening our schools? Hawai'i Appleseed Center for Law & Economic Justice.
<https://hiappleseed.org/2020/07/hawaii-has-the-highest-portion-of-multigenerational-and-crowded-households-in-the-nation-what-does-that-mean-for-reopening-our-schools/#:~:text=In%202018%2C%207.7%20percent%2C%20or,person%20per%20room%20as%20crowded.>
- Hawai'i State Department of Health. (2021, March 15). COVID-19 in Hawai'i: Addressing Health Equity in Diverse Populations. Hawai'i State Department of Health Disease Outbreak Control Division, Special Report, 1-37. <https://hawaiiicovid19.com/wp-content/uploads/2021/03/COVID-19-Race-Ethnicity-Equity-Report.pdf>
- Kaholokula, J. K., Samoa, R. A., Miyamoto, R. E., Palafox, N., & Daniels, S.-A. (2020, May 1). COVID-19 Special Column: COVID-19 Hits Native Hawaiian and Pacific Islander Communities the Hardest. *Hawai'i Journal of Health & Social Welfare*, 79(5), 144-146. PubMed. <https://pubmed.ncbi.nlm.nih.gov/32432218/>
- Office of Management and Budget (OMB). (1997, October 30). Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity [Federal Register Notice October 30, 1997]. In Notice of decision.
https://obamawhitehouse.archives.gov/omb/fedreg_1997standards
- Park, J. J., Humble, S., Sommers, B. D., Colditz, G. A., Epstein, A. M., & Koh, H. K. (2018, August). Health Insurance for Asian Americans, Native Hawaiians, and Pacific Islanders Under the Affordable Care Act. *JAMA Internal Medicine*, 178(8), 1128-1129. 10.1001/jamainternmed.2018.1476

- Park, J. J., Sommers, B. D., Humble, S., Epstein, A. M., Colditz, G. A., & Koh, H. K. (2019, November). Medicaid And Private Insurance Coverage For Low-Income Asian Americans, Native Hawaiians, And Pacific Islanders, 2010-16. *Health Affairs (Project Hope)*, 38(11), 1911-1917. Pubmed. 10.1377/hlthaff.2019.00316
- Sacramento County Department of Health. (2021). Report on COVID-19 Response. Sacramento, California. Retrieved April 16, 2021, from <http://www2.agendonet.saccounty.net/BoardOfSupervisors/Documents/ViewDocument/ATT%204%20Summary%20of%20COVID-19%20data%20handout.pdf.pdf?meetingId=6507&documentType=Agenda&itemId=375139&publishId=896409&isSection=false>
- State of Hawai'i Office of Language Access. (2021). Hawaii's Language Access Law. What is the law. Retrieved April 16, 2021, from <http://labor.hawaii.gov/ola/what-is-the-law/>
- Teranishi, R. T., Behringer, L. B., Grey, E. A., & Parker, T. L. (2009, Summer). Critical race theory and research on Asian Americans and Pacific Islanders in higher education. *New Directions for Institutional Research*, 2009(142), 1-105. <https://doi.org/10.1002/ir.296>
- UCLA Center for Health Policy Research. (2021, March 3). NHPI COVID-19 Data Policy Lab Dashboard. Health Profiles. Retrieved April 16, 2021, from <https://healthpolicy.ucla.edu/health-profiles/Pages/NHPI-COVID-19-Dashboard.aspx>
- US Bureau of Labor Statistics. (2014, May 23). Native Hawaiians and Other Pacific Islanders had a higher labor force participation rate than Asians. *TED: The Economics Daily*. https://www.bls.gov/opub/ted/2014/ted_20140523.htm
- US Census Bureau, Population Division. (2016, June). Annual Estimates of the Resident Population by Sex, Race Alone or in Combination, and Hispanic Origin for the United States, States, and Counties: April 1, 2010 to July 1, 2015 [2015 Population Estimates]. https://archive.ph/20200214010825/http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=PEP_2015_PEPSR5H&prodType=table
- US Department of Health and Human Services. (2021, April 5). Profile: Native Hawaiians/Pacific Islanders. US Department of Health and Human Services Office of Minority Health. Retrieved April 16, 2021, from <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=65>
- US Department of the Interior. (n.d.). Compacts of Free Association [Public Law 108-188]. Office of Insular Affairs. <https://www.doi.gov/oia/compacts-of-free-association>
- Van Dyke, M. E., Mendoza, M. C., Li, W., Parker, E. M., Belay, B., Davis, E. M., Quint, J. J., Penman-Aguilar, A., & Clarke, K. E. (2021, March 10). Racial and Ethnic Disparities in COVID-19 Incidence by Age, Sex, and Period Among Persons Aged <25 Years — 16 U.S. Jurisdictions, January 1–December 31, 2020. *Center for Disease Control and Prevention: Morbidity and Mortality Weekly Report (MMWR)*, 70(11), 382-388. <https://www.cdc.gov/mmwr/volumes/70/wr/mm7011e1.htm>

Washington State Department of Health. (2021, March 31). COVID-19 morbidity and mortality by race, ethnicity and spoken language in Washington state. Washington.
<https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/data-tables/COVID-19MorbidityMortalityRaceEthnicityLanguageWAState.pdf>

Wu, Y., Braun, K., Onaka, A. T., Horiuchi, B. Y., Tottori, C. J., & Wilkens, L. (2017, January). Life Expectancies in Hawai'i: A Multi-ethnic Analysis of 2010 Life Tables. *Hawai'i Journal of Medicine & Public Health*, 76(1), 9-14. PubMed.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5226016/>

Zalla, L. C., Martin, C. L., Edwards, J. K., Gartner, D. R., & Noppert, G. A. (2021, March 12). A Geography of Risk: Structural Racism and COVID-19 Mortality in the United States. *American Journal of Epidemiology*, kwab059. PubMed. 10.1093/aje/kwab059