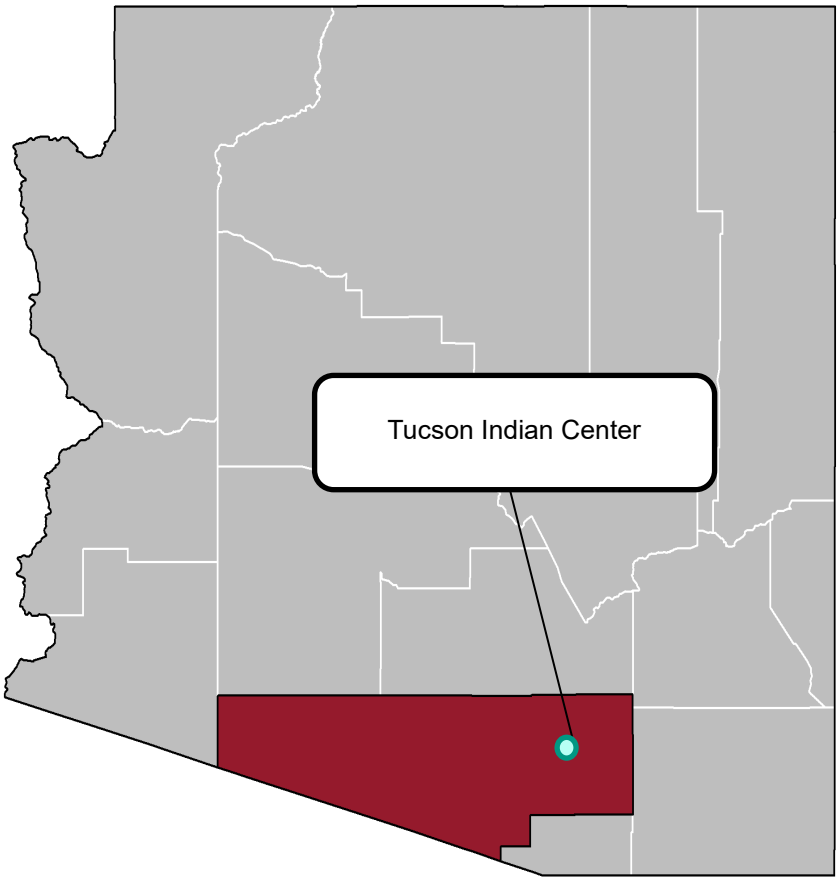
COVID-19 URBAN INDIAN ORGANIZATION SUMMARY
JANUARY 20, 2020–SEPTEMBER 28, 2021

Tucson Service Area

COVID-19 Case Surveillance Information for American Indians and Alaska Natives living in counties served by Urban Indian Organizations (UIOs) in the Tucson Service Area

MAP 1: Tucson Service Area



UIO Service Area Counties	Pima
UIO Service Area State	Arizona

Urban Indian Health Institute
A Division of the Seattle Indian Health Board

Our mission is to decolonize data, for indigenous people, by indigenous people.
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Introduction

The COVID-19 pandemic resulted in a disproportionate loss of life among American Indians and Alaska Natives.[1,2] To quantify this impact, Urban Indian Health Institute (UIHI) prepared this report to provide surveillance information for areas served by Urban Indian Organizations. This report contains information regarding COVID-19 cases, hospitalizations, and deaths. Please note that this data reflects information available from counties overall and does not represent individual organizations or providers.

About UIHI

As a Public Health Authority and one of 12 Tribal Epidemiology Centers in the country—and the only one that serves Urban Indian Organizations nationwide—UIHI conducts research and evaluation, collects and analyzes data, and provides disease surveillance to strengthen the health of American Indian and Alaska Native communities. UIHI's mission is to decolonize data, for Indigenous people, by Indigenous people.

Data Quality

The data used in this report is from the Centers for Disease Control and Prevention (CDC) COVID-19 Case Surveillance Data, which may differ from what is shown on your county's public health dashboard. To assess discrepancies in CDC and state data, we present metrics on data quality. The quality of COVID-19 data is measured in two ways: the completeness of racial data sent to the CDC and the proportion of cases sent to the CDC from the state.

Not all COVID-19 cases within counties have been reported to the CDC. To assess the overall representativeness of the CDC COVID-19 Case Surveillance Data, we compare the total number of COVID-19 cases reported to the CDC by county with the total number of cases reported to the New York Times.[3] The number of COVID-19 cases reported by the New York Times in a given county vary based on whether they include confirmed COVID-19 cases or confirmed and probable COVID-19 cases. Therefore, the cases reported by New York Times provide an upper limit for the number of COVID-19 cases in a county.

For the data presented in this report to be of high quality, racial data needs to be both collected by states and relayed to the CDC. **Unfortunately, many states have poor collection of racial data and/or do not send most COVID-19 data to the CDC. We recommend using caution when interpreting these numbers in the absence of the quality of their data.** These data quality issues vary over time. Data is especially poor around the peaks of COVID-19 case burden. Please refer to Figure 1 and Table 1 to assess the overall quality of COVID-19 data in this service region.

Methods

The Centers for Disease Control and Prevention COVID-19 Case Surveillance Data are voluntarily submitted by local health jurisdictions to the CDC using the COVID-19 Case Report Form.[4] This data is then transmitted to UIHI for analysis. Population denominators use the 2020 postcensal estimates.

The COVID-19 Case Report Form allows for the selection of multiple racial identities independent of ethnicity, however, many states and counties do not report data to the CDC in this format. Due to the methods of data collection and reporting, American Indian and Alaska Natives (AI/ANs) were defined as non-Hispanic AI/AN alone in this report. Using other definitions of AI/ANs would result in rates that underestimate the burden of COVID-19 among AI/ANs. Because of the under-reporting of racial data, the statistics presented in this analysis are only applicable to non-Hispanic single race AI/ANs, a portion of the entire AI/AN population. The non-Hispanic White (NHW) population is included as a comparison population to assess disparities in COVID-19 incidence, hospitalization, and mortality in recognition of the effects of structural racism.

Ethnicity categories are captured as "Hispanic/Latino", "Non-Hispanic/Latino", or "Unknown". Age is calculated by the provided date of birth. Cases were assigned to individual counties based on their listed county of residence. Sex is recorded in the Case Report Form as "Male", "Female",

“Other”, or “Unknown”. The 2020 postcensal estimates do not provide estimates for individuals whose sex is not male or female, thus case rates for “Other” or “Unknown” patients cannot be calculated.

Cases were defined as individuals with a positive PCR test for COVID-19. Cases were excluded when an individual did not report county of residence. COVID-19 case dates were assigned based on when COVID-19 cases were reported to the CDC.

Age-adjusted case, hospitalization, and mortality rates stratified by race and gender are presented in this report. Age adjustment for incidence rates were calculated using the direct method applying weights from the U.S. 2000 Standard Population. Age adjustment for relative risks was performed via logistic regression.

Case counts that are less than 10 are suppressed in this report to protect confidentiality. Rates are presented with an asterisk (*) when its relative standard error (RSE) is greater than or equal to 25%. RSE provides a measure of reliability. Where the RSE is greater than or equal to 25%, the estimate is unreliable. Analyses adhere to Washington Department Of Health guidelines for the reporting of data with small numbers.[5]

Data were analyzed using R version 4.2.

GLOSSARY OF TERMS

Age-adjusted

This report refers to several analyses as age-adjusted. Age-adjustment is a statistical approach that allows for communities with different underlying age compositions to be compared. For example, COVID-19 has had disproportionate impacts based on age.[6] As a population, AI/AN are younger than NHW.[7] As a result of these two factors, any analysis that does not undergo age adjustment when comparing COVID-19 rates between AI/AN to NHW may only reflect that, as a population, AI/AN are younger than NHW and therefore have different rates of COVID-19. To adjust for this effect, our analysis compares individuals with similar ages to one another separately and then combines those values after appropriately weighting them.

Confirmed COVID-19

COVID-19 is determined to be “Confirmed” if there is confirmatory laboratory evidence, which requires detection of SARS-CoV-2 RNA in a clinical specimen using a molecular amplification detection test.

Confidence Interval

A confidence interval is a statistical tool used to describe the uncertainty of our estimates. It provides a range of values that is likely to include the true population value with a certain degree of confidence. It is often expressed as a percent whereby the true population value lies between an upper and lower interval. In this report, many of our estimates are presented with 95% confidence intervals. A 95% confidence interval can be interpreted as, we are 95% confident that the true value of an estimate lies within the confidence interval range.

Incidence

Incidence refers to the occurrence, rate, or frequency of disease. In this report, incidence refers to the total number of COVID-19 infections, hospitalizations, or deaths divided by the total number of individuals at risk of infection. In this report we present incidence as the number of cases per 100,000 individuals to standardize the numbers across analyses with a different total number of individuals that could have been infected with COVID-19.

Relative Risk

Relative risk in this report refers to the probability of an individual who is AI/AN being infected, hospitalized, or dying from COVID-19 relative to a non-Hispanic White individual. A relative risk greater than one indicates that AI/AN individuals had a greater risk of infection, hospitalization, or death relative to NHW. Conversely, a relative risk less than one indicates that AI/AN individuals had a lower risk relative to NHWs.

Relative Standard Error (RSE)

Standard error tells you how accurate the estimate is compared to the true value. The greater the standard error is, the more likely that the estimate is an inaccurate representation of the true value. Relative standard error is used to show how large the standard error is, relative to the size of the estimated value. For this report, we determine our estimates to be unreliable when the relative standard error of an estimate is greater than 25%. We recommend caution when using estimates with an RSE greater than 25% due to their low reliability.

Rolling Average

A rolling or moving 14-day average is the average number of confirmed COVID-19 cases, hospitalizations, or deaths over a 14-day period. It is calculated for each day by averaging the values of that day and the 13 days before. This method is used to reduce fluctuations that occur on a weekly or daily basis due to external factors such as specimen processing and reporting time.

Service Area

Urban Indian Health Organization's service areas are defined by the Urban Indian Organizations who described to UIHI the counties they serve.

EXECUTIVE SUMMARY

COVID-19 Cases

Since January 20, 2020, a total of 3,129 AI/ANs residing in the Tucson UIO service county have been reported to the CDC as having confirmed COVID-19. This corresponds to an age-adjusted incidence of 10,559 COVID-19 cases per 100,000 or approximately 1 in every 10 AI/ANs in the Tucson Service Area were diagnosed with COVID-19. Compared to their non-Hispanic White counterparts of a similar age, AI/AN individuals were 1.57 times more likely to be infected with COVID-19.

COVID-19 Hospitalizations

Since January 20, 2020, a total of 348 AI/ANs residing in the Tucson UIO service county have been reported to the CDC as hospitalized with confirmed COVID-19. This corresponds to an age-adjusted incidence of 1,332 COVID-19 hospitalizations per 100,000 people. Compared to their non-Hispanic White counterparts of similar age, AI/AN individuals were 3.07 times more likely to be hospitalized with COVID-19.

COVID-19 Deaths

Since January 20, 2020, a total of 85 AI/ANs residing in the Tucson UIO service county have been reported to the CDC as having died due to COVID-19. This corresponds to an age-adjusted incidence of 152 COVID-19 deaths per 100,000 people. Compared to their non-Hispanic White counterparts of similar age, AI/AN individuals were 3.75 times more likely to die from COVID-19.

Data Quality

Of the 134,557 total COVID-19 cases reported by the New York Times in the Tucson UIO service county, the CDC has complete race and ethnicity available for 81,676 (60.7%) of cases. This report does not contain information regarding whether COVID-19 hospitalizations or deaths were reported to the CDC. However, of the hospitalizations and deaths in the CDC data, there is complete racial information available for 79.8% and 87.8% of cases, respectively.

FIGURE 1: Quality of COVID-19 Information Over Time, May 20, 2020–September 28, 2021, Tucson Service Area

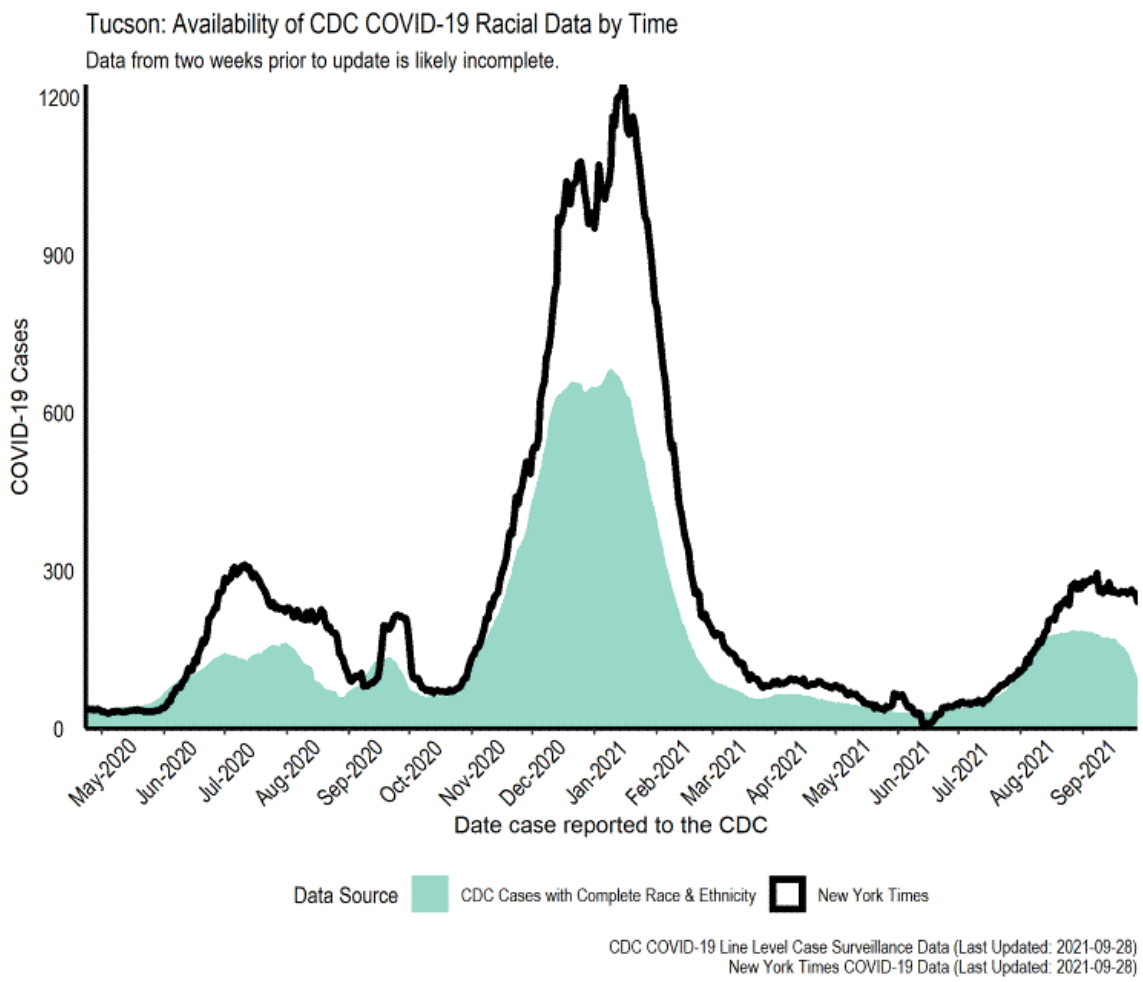


TABLE 1: Overall Data Quality for Tucson Service Area COVID-19 Data, January 20, 2020–September 28, 2021

Data Quality Element	Data Source	Subset	# of COVID-19 Cases	Percent Completion
Completeness of Race & Ethnicity in CDC Dataset	CDC	Case Reported to CDC with Complete Race & Ethnicity	81,676	60.9
	CDC	All Cases	134,007	
Completeness of Race & Ethnicity for Cases who were Hospitalized in CDC Dataset	CDC	Case Hospitalized with Complete Race & Ethnicity	7,645	79.8
	CDC	All Hospitalized COVID-19 Patients	9,584	
Completeness of Race & Ethnicity for Cases who Died in CDC Dataset	CDC	COVID-19 Case Died with Complete Race & Ethnicity	2,294	87.8
	CDC	All COVID-19 Cases who Died	2,614	
Cases Sent to the CDC	CDC	All Cases	134,007	99.6
	NYT	All Cases	134,557	
Completeness of CDC Racial Data in Comparison to All Known Cases	CDC	Case Reported to CDC with Complete Race & Ethnicity	81,676	60.7
	NYT	All Cases	134,557	

CDC = COVID-19 Case Surveillance Data Centers for Disease Control & Prevention, NYT = New York Times

TABLE 2: Incidence of COVID-19 among Non-Hispanic American Indians and Alaska Natives (AI/ANs) and Non-Hispanic Whites (NHWs), January 20, 2020– September 28, 2021, Tucson Service Area

	Geography	AI/AN Cases	AI/AN Population	AI/AN Age-adjusted Incidence per 100k (95% CI)	NHW Age-adjusted Incidence per 100k (95% CI)	Relative Risk Age-adjusted (95% CI)
OVERALL	UIO Service Area	3,129	25,694	10,559 (10,188, 10,943)	6,746 (6,669, 6,823)	1.57 (1.51, 1.62)
	State Overall	43,063	285,811	13,508 (13,378, 13,640)	8,618 (8,587, 8,649)	1.57 (1.55, 1.58)
BY SEX						
Female	UIO Service Area	1,785	13,401	11,119 (10,603, 11,660)	6,893 (6,784, 7,004)	1.61 (1.54, 1.69)
	State Overall	23,362	147,456	13,769 (13,589, 13,952)	8,791 (8,747, 8,836)	1.57 (1.54, 1.59)
Male	UIO Service Area	1,331	12,293	9,795 (9,274, 10,345)	6,473 (6,368, 6,580)	1.51 (1.43, 1.60)
	State Overall	19,642	138,355	13,168 (12,981, 13,358)	8,403 (8,359, 8,446)	1.57 (1.54, 1.59)
Other or Unknown	UIO Service Area	13	NA	NA	NA	NA
	State Overall	59	NA	NA	NA	NA
BY AGE						
0–19	UIO Service Area	718	7,686	9,342 (8,683, 10,051)	6,253 (6,085, 6,425)	1.49 (1.38, 1.62)
	State Overall	8,893	85,767	10,369 (10,156, 10,587)	6,989 (6,927, 7,051)	1.48 (1.45, 1.52)
20–54	UIO Service Area	1,860	12,772	14,563 (13,916, 15,240)	9,475 (9,343, 9,609)	1.54 (1.47, 1.61)
	State Overall	24,760	139,324	17,772 (17,552, 17,994)	11,983 (11,929, 12,036)	1.48 (1.46, 1.50)
55+	UIO Service Area	551	5,236	10,523 (9,680, 11,440)	5,841 (5,747, 5,937)	1.80 (1.65, 1.96)
	State Overall	9,410	60,720	15,497 (15,187, 15,814)	7,610 (7,568, 7,652)	2.04 (1.99, 2.08)
Unknown	UIO Service Area	<10	NA	NA	NA	NA
	State Overall	<10	NA	NA	NA	NA

TABLE 3: Incidence of COVID-19 Hospitalizations among Non-Hispanic American Indians and Alaska Natives (AI/ANs) and Non-Hispanic Whites (NHWs), January 20, 2020 – September 28, 2021, Tucson Service Area

	Geography	AI/AN Cases	AI/AN Population	AI/AN Age-adjusted Incidence per 100k (95% CI)	NHW Age-adjusted Incidence per 100k (95% CI)	Relative Risk Age-adjusted (95% CI)
OVERALL	UIO Service Area	348	25,694	1,332 (1,186, 1,494)	434 (407, 463)	3.07 (2.74, 3.43)
	State Overall	5,751	285,811	2,003 (1,948, 2,059)	690 (679, 701)	2.90 (2.82, 2.99)
BY SEX						
Female	UIO Service Area	195	13,401	1,466 (1,264, 1,700)	444 (411, 479)	3.30 (2.84, 3.84)
	State Overall	3,091	147,456	2,033 (1,958, 2,112)	664 (650, 679)	3.06 (2.94, 3.18)
Male	UIO Service Area	153	12,293	1,086 (855, 1,380)	384 (317, 464)	2.83 (2.39, 3.34)
	State Overall	2,650	138,355	1,969 (1,890, 2,051)	709 (693, 725)	2.78 (2.67, 2.89)
Other or Unknown	UIO Service Area	<10	NA	NA	NA	NA
	State Overall	<10	NA	NA	NA	NA
BY AGE						
0–19	UIO Service Area	13	7,686	169 (98, 291)*	116 (95, 142)	1.45 (0.81, 2.59)*
	State Overall	222	85,767	259 (227, 295)	191 (181, 201)	1.36 (1.18, 1.56)
20–54	UIO Service Area	185	12,772	1,448 (1,254, 1,673)	461 (432, 491)	3.14 (2.68, 3.68)
	State Overall	2,888	139,324	2,073 (1,999, 2,150)	696 (684, 709)	2.98 (2.86, 3.10)
55+	UIO Service Area	150	5,236	2,865 (2,441, 3,362)	1,075 (1,035, 1,116)	2.66 (2.26, 3.14)
	State Overall	2,641	60,720	4,349 (4,187, 4,519)	1,653 (1,634, 1,673)	2.63 (2.53, 2.74)
Unknown	UIO Service Area	<10	NA	NA	NA	NA
	State Overall	<10	NA	NA	NA	NA

*=Relative Standard Error > 25%, Estimate Uncertain

TABLE 4: Incidence of COVID-19 Deaths among Non-Hispanic American Indians and Alaska Natives (AI/ANs) and Non-Hispanic Whites (NHWs), January 20, 2020–September 28, 2021, Tucson Service Area

	Geography	AI/AN Cases	AI/AN Population	AI/AN Age-adjusted Incidence per 100k (95% CI)	NHW Age-adjusted Incidence per 100k (95% CI)	Relative Risk, Age-adjusted (95% CI)
OVERALL	UIO Service Area	85	25,694	152 (105, 220)	41 (30, 56)	3.75 (3.00, 4.68)
	State Overall	1,622	285,811	240 (212, 272)	47 (41, 53)	5.14 (4.87, 5.42)
BY SEX						
Female	UIO Service Area	44	13,401	152 (97, 239)	32 (22, 47)	4.71 (3.45, 6.43)
	State Overall	744	147,456	209 (179, 245)	40 (34, 46)	5.29 (4.89, 5.72)
Male	UIO Service Area	41	12,293	188 (123, 290)	60 (43, 84)	3.13 (2.28, 4.30)
	State Overall	878	138,355	287 (234, 351)	55 (45, 67)	5.25 (4.88, 5.64)
Other or Unknown	UIO Service Area	<10	NA	NA	NA	NA
	State Overall	<10	NA	NA	NA	NA
BY AGE						
0–19	UIO Service Area	<10	7,686	Suppressed	Suppressed	Suppressed
	State Overall	<10	85,767	Suppressed	Suppressed	Suppressed
20–54	UIO Service Area	17	12,772	133 (83, 214)	30 (23, 38)	4.49 (2.62, 7.68)
	State Overall	427	139,324	306 (279, 337)	34 (31, 37)	9.00 (7.93, 10.22)
55+	UIO Service Area	68	5,236	1,299 (1,024, 1,647)	519 (491, 548)	2.50 (1.96, 3.20)
	State Overall	1,189	60,720	1,958 (1,850, 2,073)	555 (544, 566)	3.53 (3.32, 3.75)
Unknown	UIO Service Area	<10	NA	NA	NA	NA
	State Overall	<10	NA	NA	NA	NA

TABLE 5: Incidence of COVID-19 among Non-Hispanic America Indians/Alaska Natives (AI/AN) and Non-Hispanic Whites (NHW), January 20, 2020–September 28, 2021, Tucson Service Area

County	Geography	AI/AN Cases	AI/AN Population	AI/AN Age-adjusted Incidence per 100k (95% CI)	NHW Age-adjusted Incidence per 100k (95% CI)	Relative Risk Age-adjusted (95% CI)
Pima	County	3,129	25,694	10,559 (10,188, 10,943)	6,746 (6,669, 6,823)	1.57 (1.51, 1.62)
All Arizona	State	43,063	285,811	13,508 (13,378, 13,640)	8,618 (8,587, 8,649)	1.57 (1.55, 1.58)

FIGURE 2: Rolling Fourteen-day Average Incidence of COVID-19 by Date Reported to the CDC, May 20, 2020–September 28, 2021, Tucson Service Area

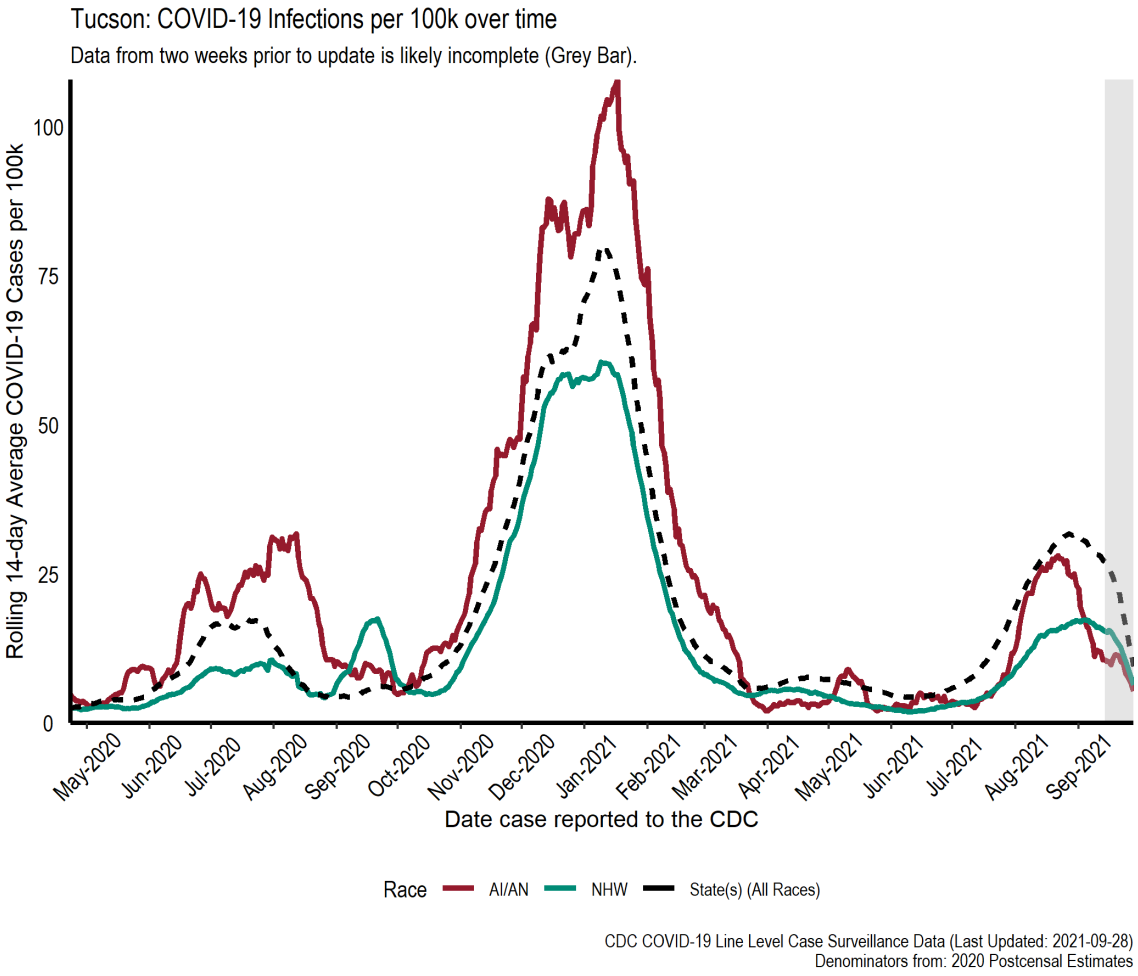


FIGURE 3: Rolling Fourteen-day Average Incidence of COVID-19 Hospitalizations by Date Reported to the CDC, May 20, 2020– September 28, 2021, Tucson Service Area

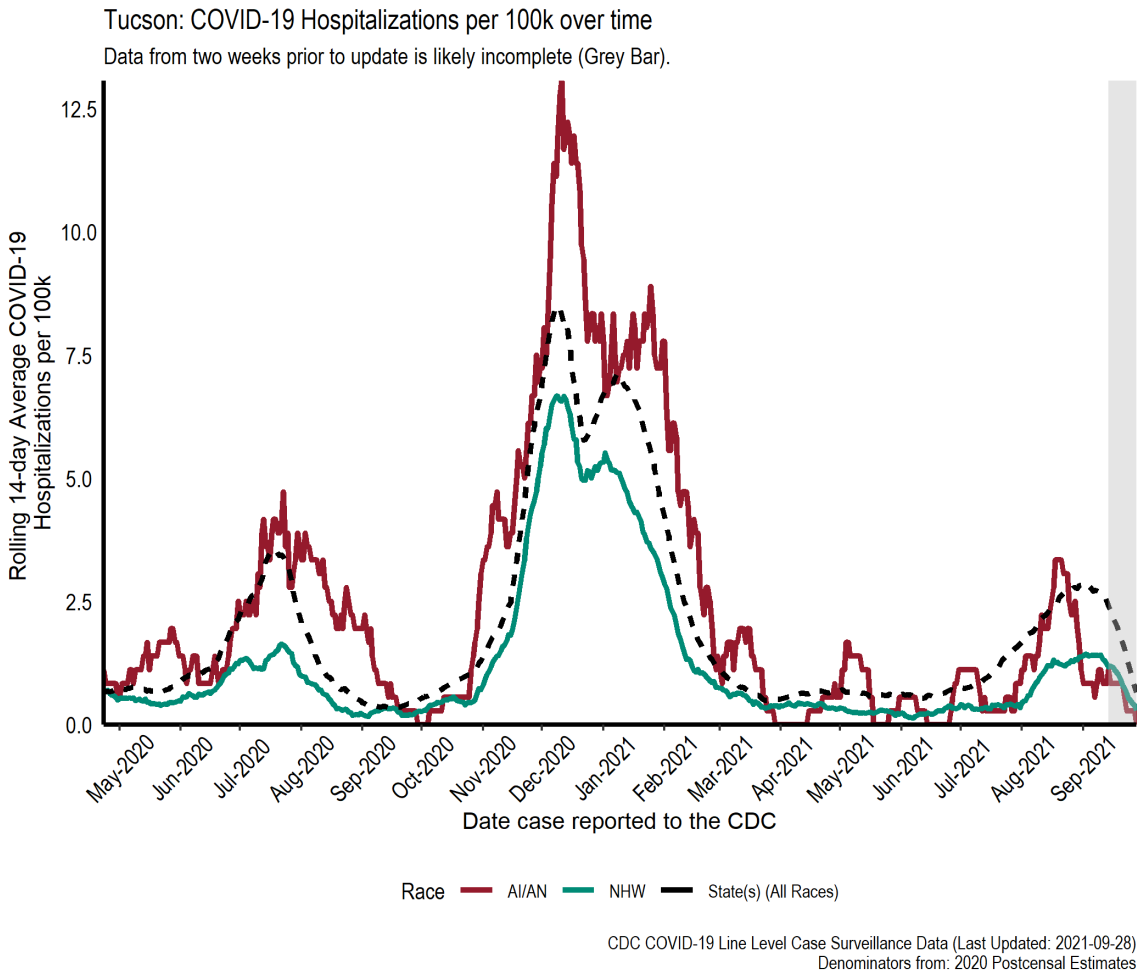
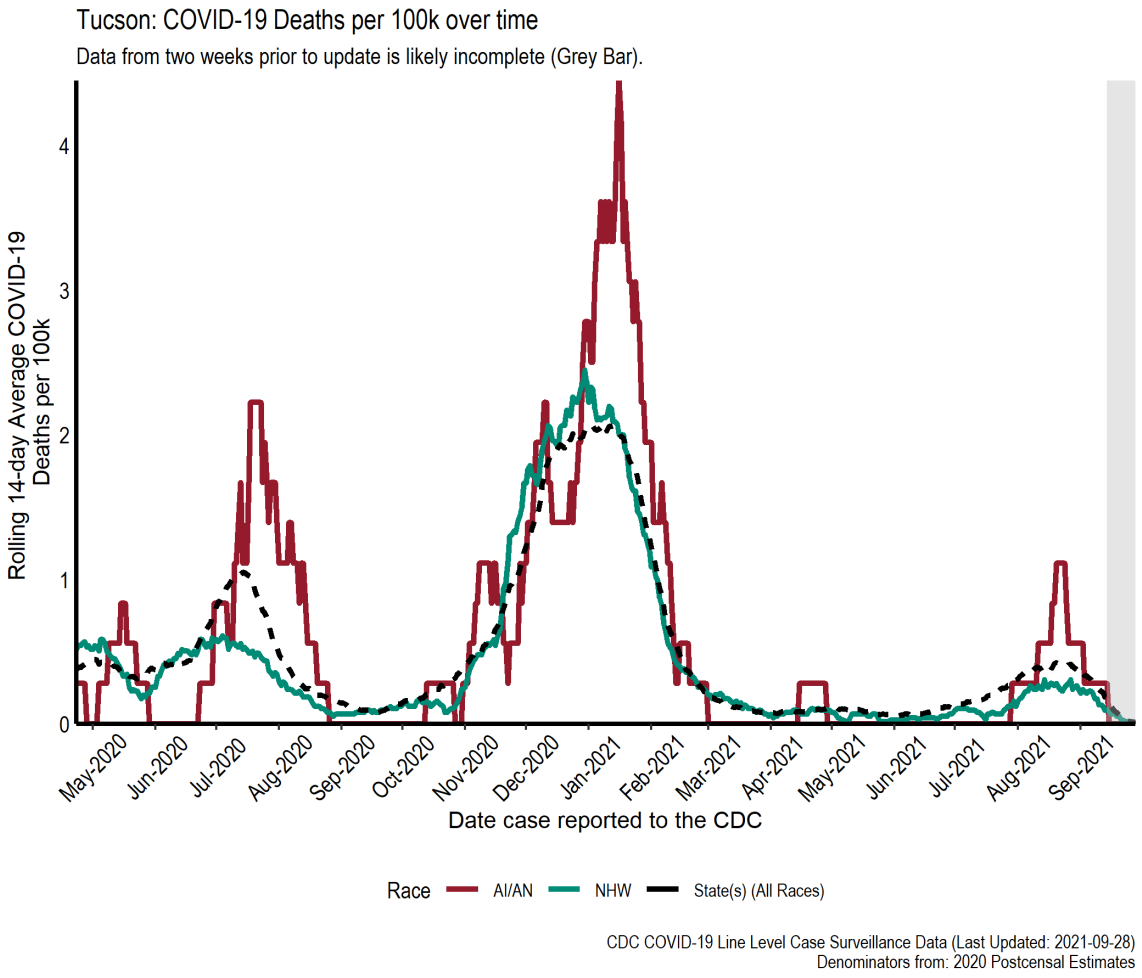


FIGURE 4: Rolling Fourteen-day Average Incidence of COVID-19 Deaths by Date Reported to the CDC, May 20, 2020–September 28, 2021, Tucson Service Area



To request technical assistance in interpreting this report, or to request additional information, email Scott Erickson at scotte@uihi.org

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