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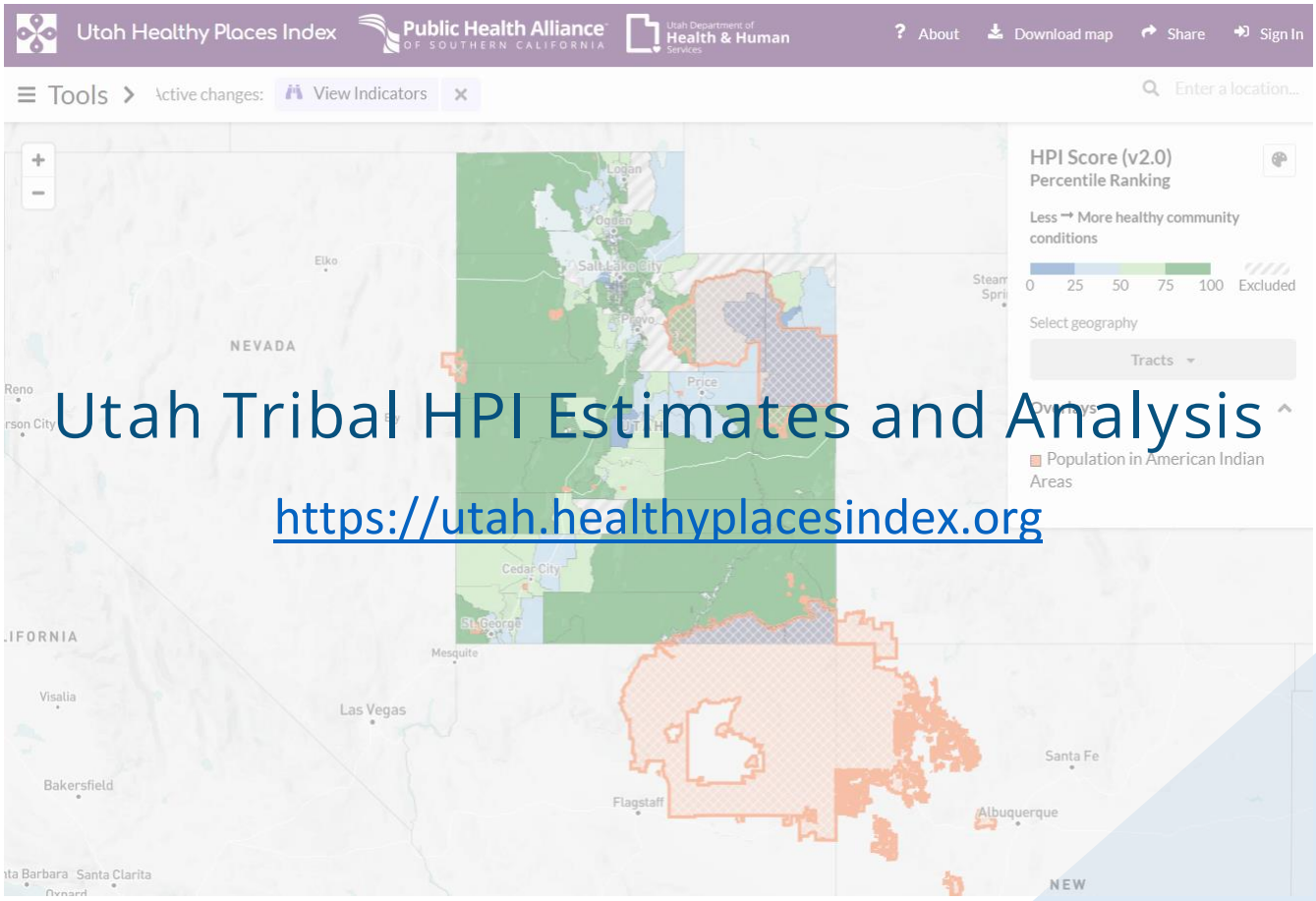
Utah Department of Health & Human Services



Utah Tribal HPI Estimates and Analysis

https://utah.healthyplacesindex.org

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Preface

Historically, the federal government relocated American Indians onto lands specifically held for tribes, namely, Indian reservations. When you look at a map of Utah, you will notice that reservations are located in some of the most remote parts of the state and far from the urban corridor of the Wasatch Front.

Relocation onto Indian reservations has significant health implications for American Indians. Where a person lives influences their health more than any other factor. Among other things, a person's residence influences the air they breathe, the food they eat, the economic opportunities available to them, and their access to healthcare.

The Utah Healthy Places Index is a tool designed to measure location-based factors that influence health. Designed to provide information at a community level, the index is a valuable tool for community members and policymakers. It allows them to identify community strengths, opportunities for improvement, and evidence-based policies to affect change.

In 2022, I had the opportunity to beta-test the Utah Healthy Places Index. In my feedback, I noted that tribes were not included in the index. This omission obscured information that would be unique to reservations and serve decision making related to tribes. I am grateful for the Utah Healthy Places Index team and the Public Health Alliance of Southern California for making this tool more useful for tribal jurisdictions. This report would not have been possible without their support and expertise.

The information presented in this report is intended to inform tribes, tribal leaders, tribal organizations, and the Indian Health Service. It is not intended to speak on their behalf. Any information in this report should be contextualized by directly engaging with the relevant tribes and the health system that serves them. For that reason, I am grateful for the guidance of the Utah Indian Health Advisory Board, the Uintah and Ouray Indian Health Service Unit, and Utah Navajo Health System. Their feedback and contributions to this project were essential for this report's relevance and propriety.

The Utah Healthy Places Index is a powerful tool that can be used to understand the factors that influence health and make data-informed decisions to improve community conditions. By including tribal jurisdictions in the index, we are striving to make sure all Utahns have the information needed to live safe and healthy lives.

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Technical Summary

Introduction

The Utah Healthy Places Index 2.0 (UT HPI 2.0), developed by the Public Health Alliance of Southern California (Alliance) in partnership with Utah's Department of Health and Human Services (DHHS), is an online mapping tool designed to advance health equity through open and accessible data. Our evidence-based, peer-reviewed methodology combines 22 indicators of social determinants of health across Utah's census tracts, organized into eight key policy areas: economic, education, social cohesion, transportation, neighborhood environment, housing, clean environment, and healthcare access. The Utah Tribal Healthy Places Index (UT Tribal HPI) project expands on the existing HPI framework to explicitly include the American Indian/Alaska Native (AIAN) population on tribal reservation lands in Utah by providing tailored community conditions data for these tribal jurisdictions. This fills a gap for the UT HPI 2.0, which summarizes community conditions data at census tracts, zip codes, and other geographies, but not at tribal lands, which can help identify tribal disparities that may be overlooked at broader geographic levels.

Methods

The same 22 HPI indicators and respective data sources from the Utah HPI 2.0 were used for the UT Tribal HPI. Of the six populated tribal reservation lands, or AIAN areas, in Utah, two had a sufficient population size of in-state residents (> 1,500): the Uintah and Ouray Reservation and the Utah portion of the Navajo Nation Reservation. For the Navajo Nation Reservation, HPI indicator values were calculated using a population-weighted aggregation of the two tracts that it intersects with. The Uintah and Ouray Reservation is more complex because it overlaps with six counties and has a large proportion of non-AIAN residents. Depending on data availability, HPI indicators were either 1) sourced directly at the AIAN area, 2) crosswalked using a population-weighted aggregation from census blocks or tracts to the AIAN area, or 3) crosswalked from county to the AIAN area using race-stratified AIAN only data. For both AIAN areas, indicators were standardized and averaged across domains in a process described by the UT HPI 2.0 Technical Report.[1] AIAN area percentile rankings for indicators, domain scores, and HPI score were based on their position relative to the 693 HPI-eligible tracts across Utah. HPI score is positively framed, such that higher scores (and higher percentile rankings) correspond to healthier community conditions and improved access to health-promoting resources.

The UT Tribal HPI methodology was developed by data experts at the Alliance and informed by the DHHS's tribal epidemiologist and HPI mapping team, and all data processing steps were performed by the Alliance. The methodology and preliminary results were presented to tribal partners through tribal consultations, facilitated by DHHS's tribal health liaison.

Results

The overall HPI score for the Navajo Nation Reservation ranks in the 2nd percentile, indicating healthier community conditions than only 2% of other Utah neighborhoods. There are particular strengths across the Clean Environment domain (100th percentile), while the other seven domains fall in the first quartile (<=25th percentile) and represent areas for improvement. The percentage of residents living above 200% of the federal poverty level is an estimated 35.1%, compared to a statewide average of 71.5% and only 7.6% of adults on the Navajo Nation Reservation held a bachelor's degree or higher, versus the statewide average of 35.5%. The Uintah and Ouray Reservation ranks in the 14th percentile statewide for overall HPI score. Domain scores vary widely from Clean Environment (89th percentile) and Transportation (71st percentile) to Healthcare Access (0th percentile) and Economic (11th percentile). Some of the

greatest areas for improvement include Employed (6th percentile), Uncrowded Housing (4th percentile), and Bachelor's Education (0th percentile).

Discussion

The UT Tribal HPI summarizes community conditions data for two tribal reservation lands in Utah, revealing inequities that are difficult to quantify at other geographies. This highlights the importance of consulting with tribal communities and considering ways that tribal geographies and tribal members can be better represented in statewide data projects. Given the unique socio-political environment of tribal reservations, some HPI indicators may have nuanced interpretations and not be directly linked to life expectancy at birth through the same mechanisms as for other neighborhoods across the state. More investigation into the meaning and prioritization of these indicators, such as Insured Adults and Census Self-Response, should be considered for any further extensions of this work. Even with these limitations, this project can complement other quantitative and qualitative data such as the Utah Tribal Health Improvement Index (HII) estimates, input from tribal members, and tribe-specific data, to provide a more complete picture of the unique conditions and barriers to health experienced on tribal reservations.

Introduction and Background

What is the Utah Healthy Places Index

The Utah Healthy Places Index (Utah HPI) is a joint initiative of the Utah Department of Health and Human Services (DHHS) Office of Health Promotion and Prevention and the Public Health Alliance of Southern California (Alliance), launched in 2022 as a statewide data and policy platform to advance health equity through open and accessible data. Based on peer-reviewed methodology,[2] the Utah HPI supports efforts to prioritize equitable community investments, develop critical programs and policies across the state, and much more.

Where we live is strongly tied to measures of well-being and life expectancy — even more so than genetics. Decades of research have demonstrated how health outcomes are strongly tied to neighborhood environments and community conditions.[3–6] However, conditions that support health — access to education, good job opportunities, transportation, and clean air — vary drastically by neighborhood. The Utah HPI quantifies these health-supportive community conditions at a granular geography, census tracts, by combining 22 social indicators of health — all positively associated with life expectancy at birth — from multiple peer-reviewed sources into a single composite index. The Utah HPI leverages a positive, asset-based frame, with higher HPI scores indicating more health-supportive community conditions.

A web-based mapping application allows people to explore HPI data interactively to identify community assets and opportunities for improvement, and the map links each HPI indicator to a Policy Action Guide, which highlights equitable solutions to improving community health. On the map, HPI scores and indicators are available for census tracts and also ten other geographies, including zip codes, counties, school districts, and Small Areas. The map also provides nearly 400 decision support indicators in addition to the 22 HPI indicators, providing important contextual information to complement HPI score, including health outcomes, health risk and protective factors, data on schools and education, other indices of (dis)advantage, and race/ethnicity data.

Measuring Health Opportunity for Tribal Lands

The purpose of this report is to document and present Utah Tribal HPI estimates, an extension project of the Utah HPI that aims to provide actionable community conditions data for tribal reservation lands in Utah and elevate tribal inequities that are obscured at larger geographies. The Utah Tribal HPI fills a gap on the HPI map, which provides community conditions data for census tracts, zip codes, and other geographies, but not for reservations. By summarizing HPI data at tribal reservation lands, we can directly compare community conditions of reservations with those of other Utah neighborhoods, identify disparities that may be overlooked at broader geographic levels, and inform local decision-making by highlighting community assets and opportunities for improvement.

In 2023, DHHS's Office of American Indian/Alaska Native Health and Family Services released a similar report, Tribal Health Improvement Index (HII) Estimates, which used Utah's Health Improvement Index (HII) methodology to approximate HII scores for American Indian/Alaska Native (AI/AN) populations on tribal reservation lands.[7] While both the HII and the HPI are area-based measures of (dis)advantage, there are notable differences in indicators, framing, and geographic granularity between the two. The HII constitutes nine indicators centered around measures of socioeconomic status, and the Utah HPI incorporates 22 social indicators of health across eight domains, including transportation, clean environment, social cohesion, and the neighborhood built environment. The Alliance collaborated with DHHS's Tribal Epidemiologist in the Office of American Indian/Alaska Native Health and Family Services as well as staff from the Office of Health Promotion and Prevention's HPI mapping team to adapt the objectives and methods used

for the Tribal HII Estimates to the Utah HPI. The Alliance carried out data production, analyses, and report writing for the UT Tribal HPI and DHHS partners reviewed project methodology and all final materials. In combination, both indices (HII and HPI), provide a broader range of data available for tribes and partners to use in their work in identifying and addressing inequities.

Utah is home to eight federally recognized tribes, six of which have populated tribal reservation lands (Figure 1). A tribal reservation is land reserved for and managed by a tribe under treaty or other agreement with the U.S. federal government.[8] Tribal reservation lands are unique geographies — in many cases spanning multiple census tracts, counties, and/or state boundaries — which complicates actionability and can obscure inequities affecting that community, making them more difficult to address. Using the HPI map, which primarily displays data at the census tract geography, is inadequate for evaluating community conditions for most tribal reservation lands across the state given the size of those tribal lands is either far larger or far smaller than the overlapping census tracts (Figure 2). To address this, we tabulated Utah HPI indicators and overall HPI score directly at tribal reservation lands for the Utah Tribal HPI, providing a detailed summary of health-supportive community conditions on tribal lands in Utah.

Figure 1. Map of Populated Tribal Reservations Overlaying Utah Counties

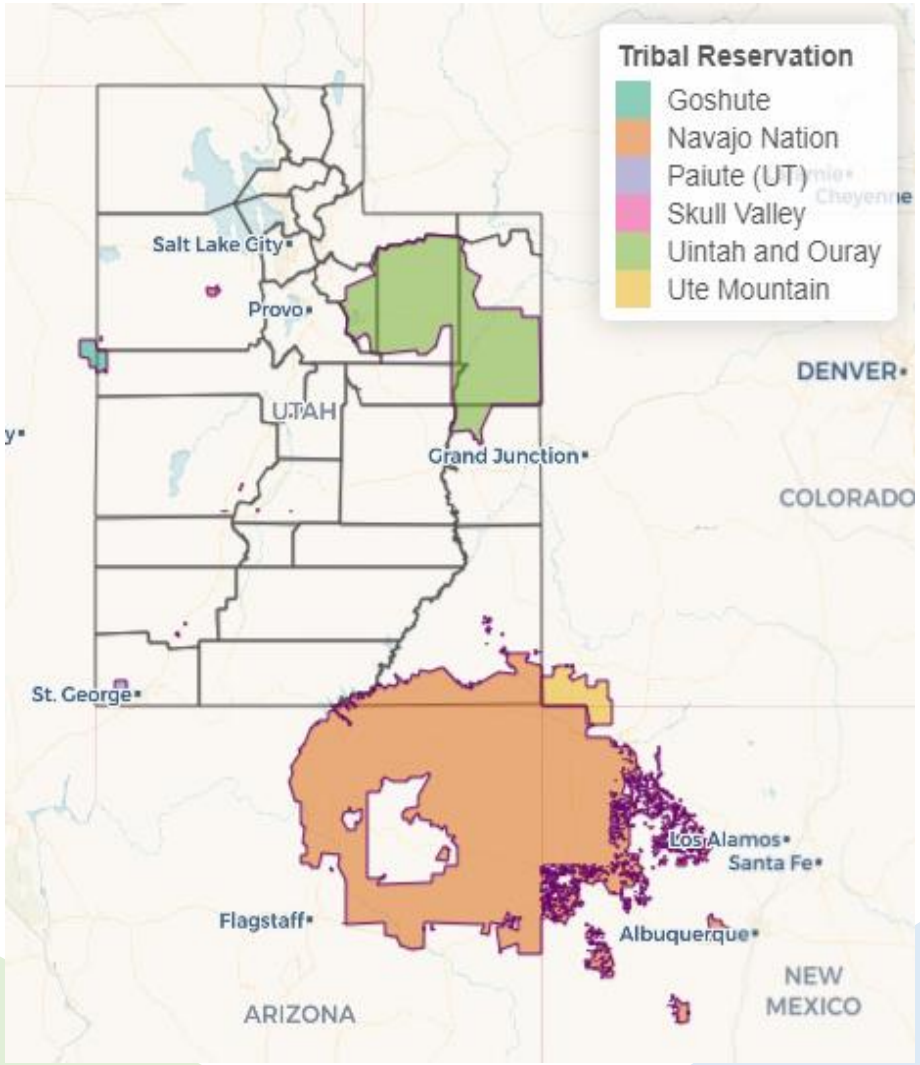
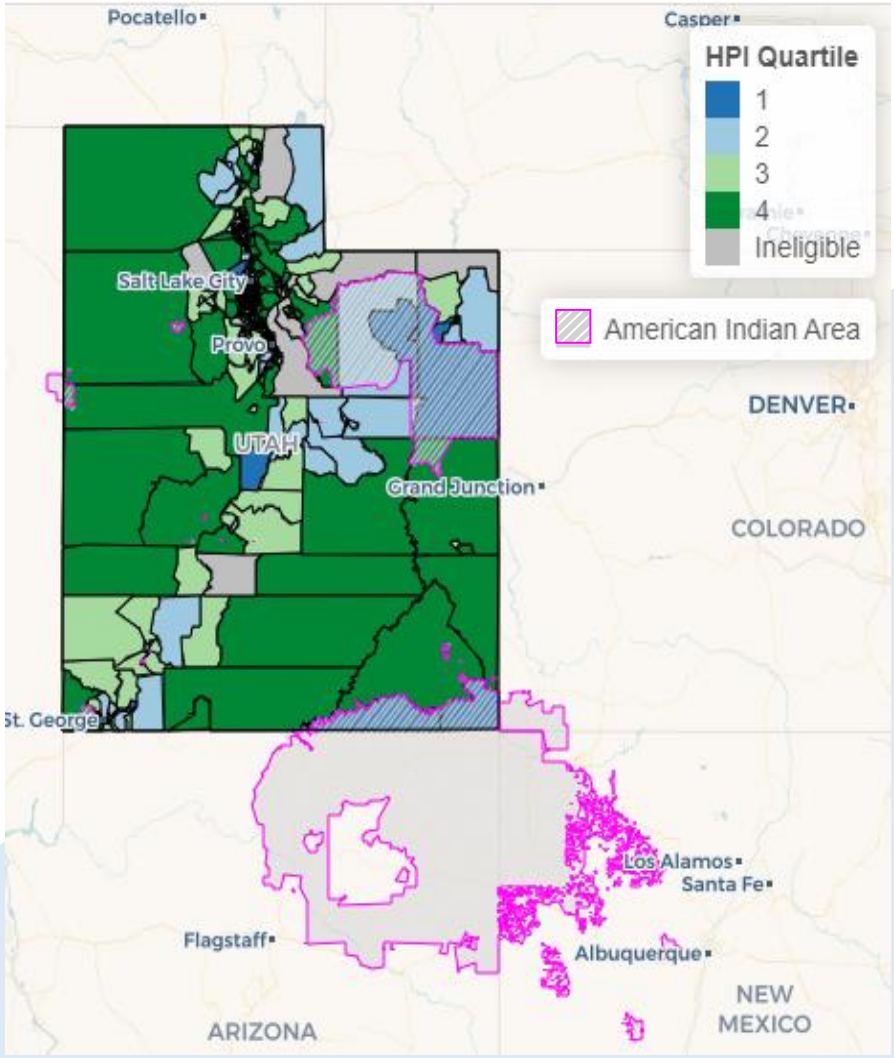


Figure 2. Map of Utah reservations overlaid with UT HPI 2.0 score at the census tract geography



Methods

Tribal Lands

This analysis focused on Utah's tribal reservation lands, also referred to as AIAN (American Indian/Alaska Native) areas in this report. Geographic boundaries for AIAN areas were obtained from the U.S. Census Bureau's TIGER/Line shapefiles and processed using the R "tigris" package. AIAN areas were evaluated for inclusion based on a minimum population size of 1,500 people, using the most recent five-year estimates from the American Community Survey (ACS 2018–2022). The Ute Mountain Reservation, with a population of 1,751, was also excluded due to the vast majority of that population residing outside of the state of Utah. This inclusion criteria ensured sufficient population size to support stable indicator estimation. Of the AIAN areas included, the Utah portion of the Navajo Nation had a population of 6,010, with 92.5% identifying as AIAN while the Uintah and Ouray Reservation had a population of 25,222, with 7.8% identifying as AIAN (throughout this report, we use a definition of AIAN that is defined as American Indian and Alaska Native alone and is inclusive of Hispanic or Latino ethnicity). A full summary of reservation areas, population estimates, and their inclusion status is provided in Table 1.

Table 1. Tribal Reservation Population Estimates, American Community Survey, 2018-2022

Name	Population	Included in UT Tribal HPI (Y/N)
Goshute Reservation, NV--UT[+]	149	N
Navajo Nation Reservation and Off-Reservation Trust Land, UT portion only	6,010	Y
Paiute (UT) Reservation, UT	424	N
Skull Valley Reservation, UT	23	N
Uintah and Ouray Reservation, UT	25,222	Y
Ute Mountain Reservation, CO--NM--UT[+]	1,751	N

[+]Note: Goshute Reservation and Ute Mountain Reservation cross state line boundaries, so population estimates include those living outside Utah state boundaries.

HPI Indicator Data Sources

Indicator selection and source data were aligned with the broader Utah HPI 2.0 framework to ensure comparability.[1] Each indicator falls under one of eight domains representing social and environmental determinants of health: Clean Environment, Economic, Education, Healthcare Access, Housing, Neighborhood, Social, and Transportation. Detailed definitions, data sources, and years of data used are presented in Table 2.

Table 2. Summary of Utah Tribal HPI Domains, Indicators, and Data Sources

Domain	Indicator	Definition	Data Source, Year+
Transportation	Bike Lane Access	Total miles of bike lanes and paths	UGRC/Transportation, 2023
	Traffic Volume	Traffic volume (average annual daily traffic) along nearby major roads	US EPA EJScreen, 2020
	Automobile Access	Percent of households with access to an automobile	American Community Survey, 2017 – 2021
Clean Environment	Diesel PM	Average daily amount of particulate pollution (very small particles) from diesel sources, measured in micrograms per meter cubed.	US EPA EJScreen, 2019
	Ozone	Average amount of ozone in the air (measured for 8 hours a day) during the 10 most polluted days	US EPA EJScreen, 2019
	PM 2.5	Yearly average of fine particulate matter concentration (very small particles from vehicle tailpipes, tires and brakes, powerplants, factories, burning wood, construction dust, and many other sources), measured in micrograms per meter cubed.	US EPA EJScreen, 2019
Neighborhood	Tree Canopy	Percent of land with tree canopy (weighted by number of people per acre)	MRLC NLCD; US Census Bureau 2020 TIGER/Line Shapefiles, 2021
	Park Access	Total acres of parks, public land, and public golf courses per person	UGRC Recreation; 2020 Decennial Census, 2023
Economic	Per Capita Income	Average income computed for every person in a particular group	American Community Survey, 2017 - 2021
	Employed	Percent of people aged 20-64 with a job	American Community Survey, 2017 - 2021
	Above Poverty	Percent of people earning more than 200% of federal poverty level	American Community Survey, 2017 - 2021
Social	Voting	Percent of registered voters who voted in the 2022 general election. This data was generated using data from the	Redistricting Data Hub/L2, 2022

		Redistricting Data Hub. This map was created using data from the Redistricting Data Hub.	
	Census Self-Response Rate	Percent of households who completed the 2020 decennial census.	2020 Decennial Census, 2020
Healthcare Access	Insured Adults	Percent of adults aged 19 to 64 years with health insurance	American Community Survey, 2017 - 2021
Housing	Homeownership	Percent of people who own their home	American Community Survey, 2017 - 2021
	Low-Income Renter Severe Housing Cost Burden	Percent of low-income renters who pay more than 50% of their income on housing costs	HUD CHAS, 2016 - 2020
	Uncrowded Housing	Percent of households that are not crowded	American Community Survey, 2017 - 2021
	Housing Habitability	Percent of households with basic kitchen facilities and plumbing	HUD CHAS, 2016 - 2020
	Low-Income Homeowner Severe Housing Cost Burden	Percent of low-income homeowners who pay more than 50% of their income on housing costs	HUD CHAS, 2016 - 2020
Education	Bachelor's Education or Higher	Percent of people over age 25 with a bachelor's education or higher	American Community Survey, 2017 - 2021
	High School Enrollment	Percent of 15-17 year olds in school	American Community Survey, 2017 - 2021
	Preschool Enrollment	Percentage of 3 and 4 year olds in school	American Community Survey, 2017 - 2021

[+]UGRC: Utah Geospatial Resource Center

US EPA EJScreen: U.S. Environmental Protection Agency Environmental Justice Screening and Mapping Tool

MRLC NLCD: Multi-Resolution Land Characteristics National Land Cover Database

HUD CHAS: Department of Housing and Urban Development Comprehensive Housing Assessment System

Geographic Aggregation of Indicator Estimates to AIAN Areas

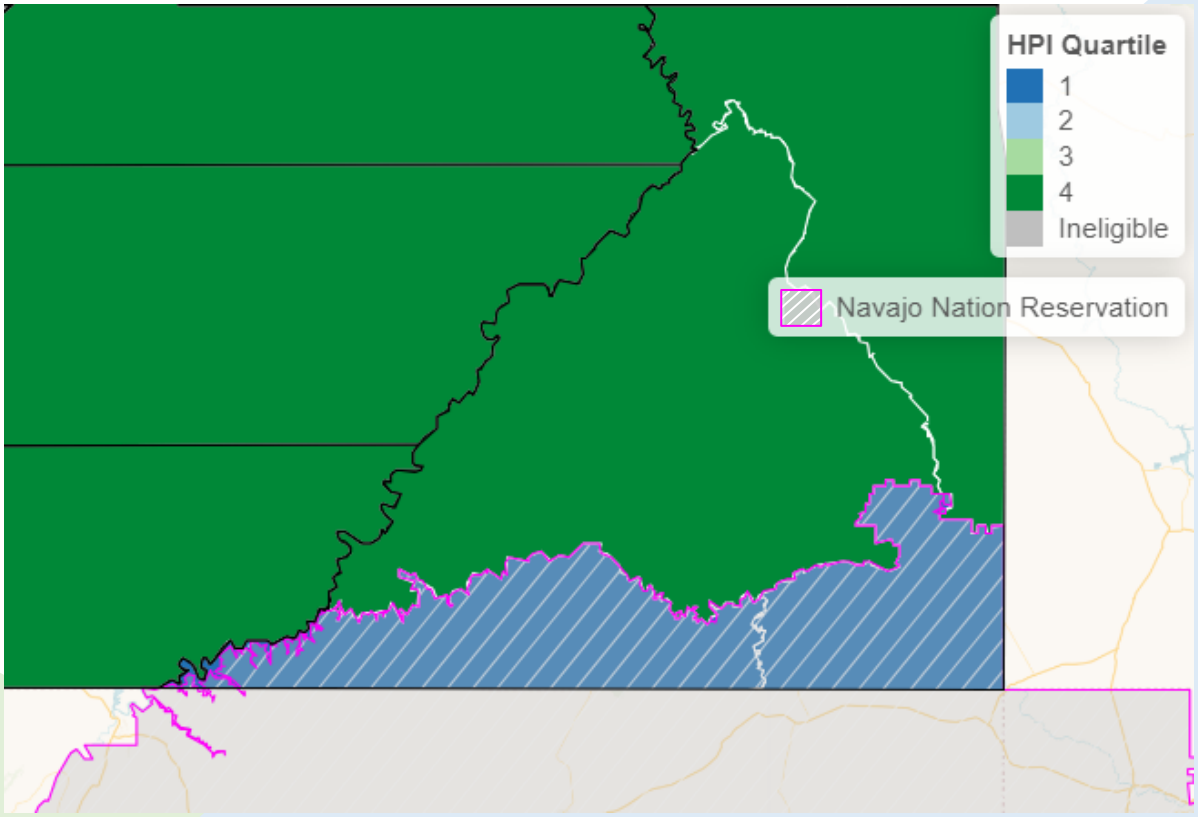
The Navajo Nation Reservation and the Uintah and Ouray Reservation each present unique geographic and demographic considerations that require different methodological approaches to estimate AIAN area indicator values. The Utah portion of the Navajo Nation Reservation is composed of two census tracts (Tract 9421 and Tract 9420) in San Juan County, with approximately 92.5% of the population within these tracts identifying as AIAN. Given that the majority of the population in these tracts identify as AIAN, using non-stratified, tract-level data allows for accurate and representative indicator estimates.

In contrast, the Uintah and Ouray Reservation is more complex, both geographically and demographically. This reservation overlaps with eight census tracts across six counties – Duchesne, Uintah, Wasatch, Carbon, Utah, and Grand – with only 7.8% of the population identifying as AIAN. To ensure accurate representation of AIAN populations across various geography boundaries, indicator estimates for Uintah and Ouray require a more advanced crosswalk methodology and, when available, utilize race-stratified data.

The Navajo Nation Reservation

In order to estimate data for the Utah portion of the Navajo Nation, a pooling of Tract 9421 and Tract 9420 was applied. To do so, tract-level data for all UT HPI 2.0 indicators were combined using a population-weighted approach. This method aggregates indicator values from Tracts 9420 and 9421 proportionally based on the population size of each tract. The resulting estimates reflect the overall conditions of the Utah portion of the reservation and align with the methodology used in the "Pool Geographies" feature on the UT HPI 2.0 map. A visual overview of the reservation boundaries and their relation to HPI tract scores is shown in Figure 3.

Figure 3. Map of the Utah-Portion of the Navajo Nation Reservation overlaid with UT HPI 2.0 score at the census tract geography



The Uintah and Ouray Reservation

Due to the Uintah and Ouray Reservation's complex geography and mixed demographics, a tailored methodological approach was required to develop estimates that accurately reflect the reservation's community conditions.

Three primary methodologies were employed depending on data source and availability.

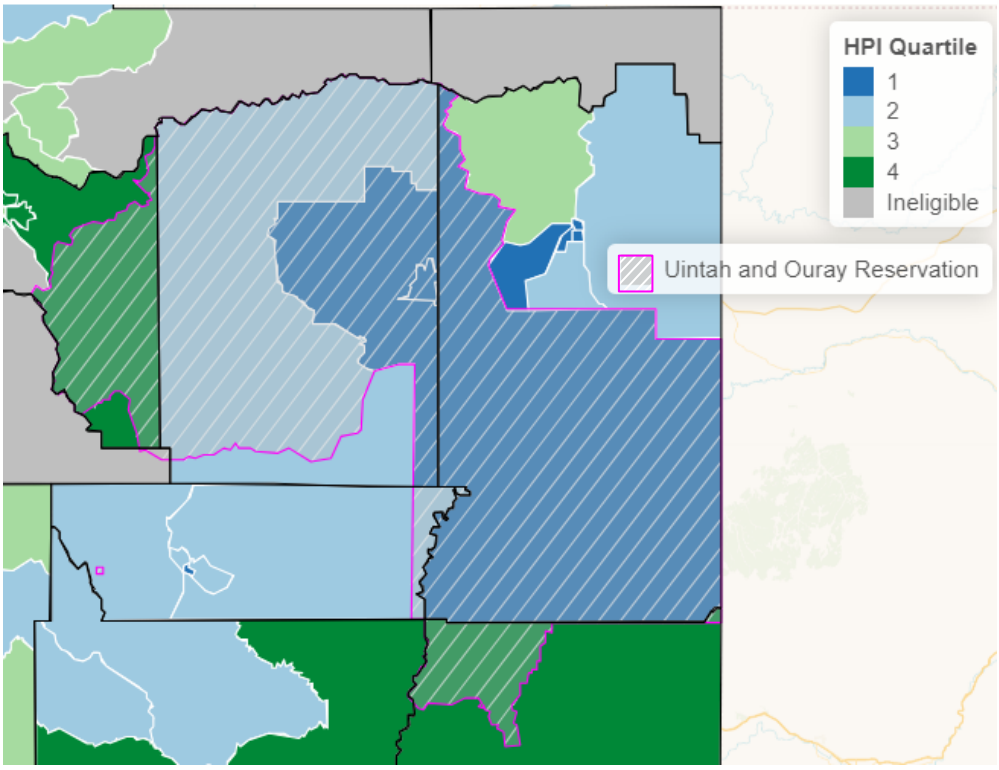
1. ACS Indicators: For indicators available directly at the AIAN area from the American Community Survey (ACS), raw estimates were used without additional transformation. These reflect characteristics of the total population residing within the reservation boundaries.
2. Crosswalked Indicators: For data obtained from other federal and state sources at the census tract or census block level, a crosswalking method was used to reallocate data from the original geography to AIAN areas. This method, described in detail in the UT HPI 2.0 Technical Report, involved a population-weighted aggregation from census blocks or tracts to the AIAN area.
3. Race-Stratified Indicators: As noted earlier, only 7.8% of the population residing on the Uintah and Ouray Reservation identifies as American Indian or Alaska Native. Therefore, for selected indicators with available data, race-stratified ACS estimates at the county level were used to capture the characteristics of the AIAN population better. Data used for the race-stratified indicators were sourced from Duchesne, Uintah, and Wasatch counties and were then allocated to the AIAN area level using an AIAN population-weighted crosswalk. Although Carbon, Utah, and Grand counties include land area that intersects with the Uintah and Ouray Reservation, ACS data show no AIAN population residing in those counties. As a result, those counties do not contribute to the final aggregated estimates. A complete comparison of the ACS data tables and variables used in the UT HPI 2.0 versus those used in the UT Tribal HPI for race-stratified indicators is included in Appendix Table A1. These stratified AIAN-only estimates are inclusive of individuals who identify as Hispanic in addition to AIAN.

Table A2 in the appendix lists all the HPI indicators, along with their source data and corresponding methodologies.

Additionally, to assess the implications of using race-stratified data when available, a comparison between the AIAN-only estimates and the corresponding total reservation population estimates for these indicators was conducted. Given the relatively small proportion of the total reservation population that identifies as AIAN, we anticipated that aggregate estimates may obscure disparities specific to the AIAN community. This comparison highlights the limitations of relying on aggregate data alone and validates our approach of using race-stratified estimates whenever possible to more accurately capture the conditions experienced by AIAN populations on the reservation.

A geographic visualization of the reservation and its overlay with HPI scores is provided in Figure 4, which illustrates the distribution of health opportunity across the intersecting census tracts.

Figure 4. Map of the Uintah and Ouray Reservation overlaid with UT HPI 2.0 score at the census tract geography



Calculating HPI Scores and Domain Scores

The methods for calculating domain scores and HPI scores for both AIAN areas in this analysis followed the exact methods as UT HPI 2.0. Domain scores are calculated by standardizing each indicator using Z-score standardization and then averaging indicator Z-scores within each domain. Overall HPI score is a weighted average of all domain scores, with domain weights pre-determined by the UT HPI 2.0 methodology. Full details on indicator standardization, domain weighting, and score calculation methods are available in the UT HPI 2.0 Technical Report.

AIAN area percentile rankings were calculated for all HPI indicators, domain scores, and HPI score based on their position relative to the 693 HPI-eligible census tracts across Utah. This comparative approach enables the evaluation of each reservation's scores within a statewide context. The HPI score is positively framed, such that higher scores (and higher percentile rankings) correspond to healthier community conditions and improved access to health-promoting resources. Percentile rankings are also grouped into quartiles, with the first quartile (0-25th percentile) representing neighborhoods with the lowest health opportunity and the fourth quartile (75th-100th percentile) representing those with the highest. In addition, statewide average indicator values were calculated for all HPI indicators, representing the average community conditions experienced across all HPI-eligible census tracts and AIAN areas.

Tribal Consultation

To inform our methodology and interpretation of results and provide opportunity for input, the Alliance and our collaborators at DHHS conducted tribal consultation. "Tribal consultation is more than community engagement, it is the formal process of communicating with tribes on a government-to-government basis, and must occur regardless of tribal

population or reservation size. In Utah, consultation is mandated via Governor's Executive Order EO/2014/005 and in the Department of Health and Human Services (DHHS) tribal consultation policy. For more information about tribal consultation in Utah, reach out to Jeremy Taylor, the tribal health liaison for the Utah DHHS at jeremytaylor@utah.gov."[7]

As part of the consultation process, we presented our project objectives and proposed methodology to the Utah Indian Health Advisory Board, which includes representatives from all eight tribes in Utah and representatives from the Urban Indian Organization. We also conducted follow-up consultations with representatives from the two AIAN areas that were included in our analysis, the Utah Navajo Health System and the Uintah-Ouray Service Unit of Indian Health Service.

Results

The Navajo Nation Reservation

Results for the Navajo Nation Reservation are shown in Table 3. The overall HPI score for the Navajo Nation Reservation ranks in the 2nd percentile, placing it in Quartile 1. This indicates that the AIAN area performs better than only 2% of Utah census tracts in terms of combined social and environmental health conditions.

The Clean Environment domain demonstrated the AIAN area's strength, achieving a 100th percentile ranking, the highest possible score. This reflects strong performance across multiple environmental indicators, including low levels of ozone, particulate matter (PM2.5), and diesel particulate matter. In contrast, Economic Conditions, Healthcare Access, and Housing fell within the lowest quartile, reflecting opportunities for growth.

Looking at individual indicators, the Above Poverty measure, which estimates the percentage of residents living above 200% of the federal poverty level, was 35.1% for the Navajo Nation Reservation, compared to a statewide average of 71.5%, placing the area in the 2nd percentile statewide. Similarly, only 7.6% of adults on the Navajo Nation Reservation held a bachelor's degree or higher, versus the statewide average of 35.5%, corresponding to the 1st percentile for this indicator.

Table 3. HPI Score, Domain Score, and Indicator Estimates for the Utah Portion of the Navajo Nation Reservation Compared to the State Average Values

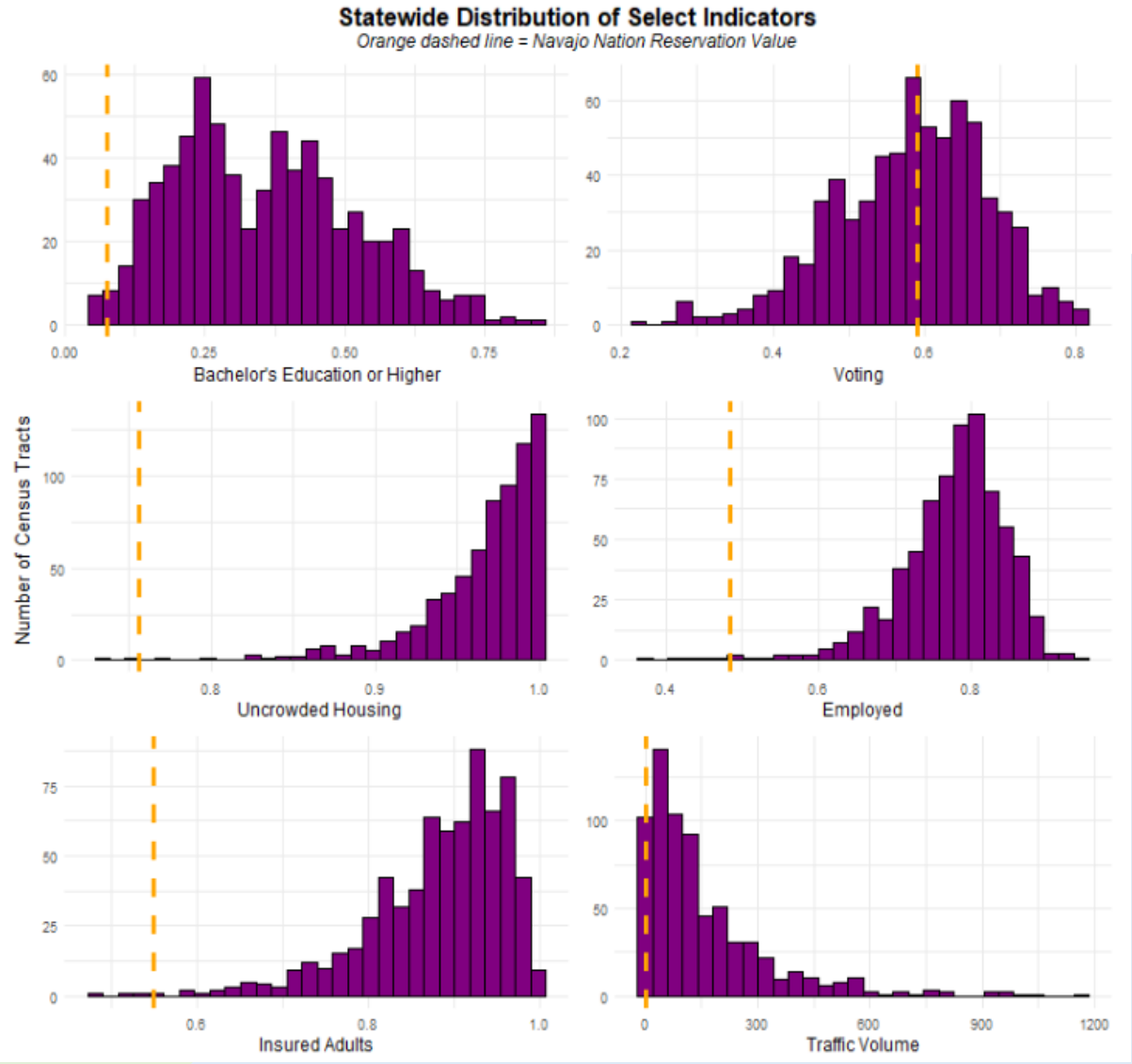
Indicator/Domain	Value	State Average Value	Percentile
HPI Score	-1.06		2nd
Transportation Domain	-0.62		13th
Automobile Access	86.7 %	96.4 %	4th
Bike Lane Access	0 miles	1.76 miles	0th
Traffic Volume	0.19 AADT/m	146.2 AADT/m	100th

Clean Environment Domain	2.24		100th
Diesel PM	0.01 µg/m³	0.26 µg/m³	99th
Ozone	58.97 ppb	64.5 ppb	100th
PM 2.5	4.03 µg/m³	6.08 µg/m³	98th
Neighborhood Domain	-0.69		5th
Park Access	3.75 acres per person	9.46 acres per person	90th
Tree Canopy	0.6 %	6 %	6th
Economic Domain	-2.79		0th
Above Poverty	35.1 %	75.3 %	2nd
Employed	48.5 %	77.8 %	1st
Per Capita Income	$13347.57	$33497.47	1st
Social Domain	-1.99		2nd
Census Self-Response Rate	19.2 %	74.5 %	1st
Voting	59.1 %	58.2 %	50th
Healthcare Access Domain	-4.09		1st
Insured Adults	54.9 %	88.6 %	1st
Housing Domain	-2.58		1st
Homeownership	83.1 %	72.7 %	63rd
Housing Habitability	81.5 %	99.2 %	0th
Low-Income Homeowner Severe Housing Cost Burden	5.5 %	6.1 %	44th
Low-Income Renter Severe Housing Cost Burden	7 %	15.2 %	73rd
Uncrowded Housing	75.6 %	96.7 %	0th

Education Domain	-1.05		5th
Bachelor's Education or Higher	7.6 %	35.5 %	1st
High School Enrollment	93.4 %	96.6 %	15th
Preschool Enrollment	17.2 %	42 %	15th

Histograms of selected indicators are provided in Figure 5. For Bachelor's Education or Higher, the AIAN area again falls near the lower end of the distribution. In contrast, other indicators, such as Voting Participation, fall closer to the statewide median, reflecting areas of relatively typical performance. Additional histograms illustrate distributions for Uncrowded Housing, Employment, Insured Adults, and Traffic Volume.

Figure 5. Histograms of Selected UT Tribal HPI Indicators for the Navajo Nation Reservation



The Uintah and Ouray Reservation

Table 4 presents the overall HPI score, domain scores, and individual indicator values along with the corresponding percentile rankings for the Uintah and Ouray Reservation. The overall HPI score places the AIAN area in the 14th percentile statewide, indicating that its combined social and environmental conditions are healthier than approximately 14 percent of census tracts in Utah. This places the reservation in Quartile 1, identifying it as an area experiencing relatively fewer health-promoting conditions.

Domain scores varied widely. The Uintah and Ouray Reservation ranked highest in Clean Environment (89th percentile) and Transportation (71st percentile). These results suggest relatively strong environmental conditions and access to transportation infrastructure compared to other areas in the state. Conversely, the Healthcare Access domain ranked at the 0th percentile, and Economic Conditions at the 11th percentile, reflecting challenges in those areas.

Table 4. HPI Score, Domain Score, and Indicator Estimates for the Uintah and Ouray Reservation Compared to the State Average Values

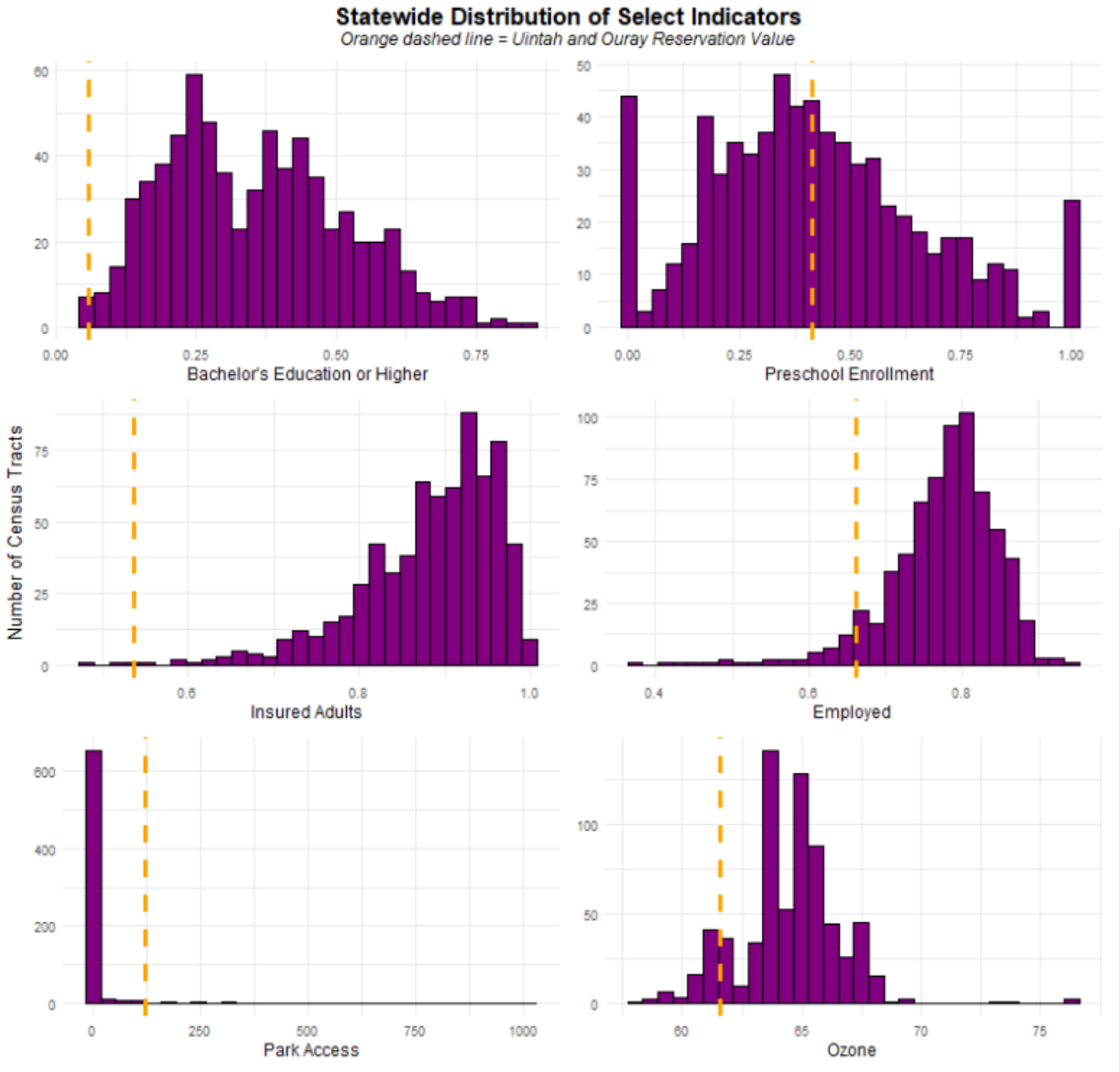
Indicator/Domain	Value	State Average Value	Percentile
HPI Score	-0.47		14th
Transportation Domain	0.28		71st
Automobile Access	96 %	96.4 %	34th
Bike Lane Access	1.72 miles	1.76 miles	66th
Traffic Volume	12.57 AADT/m	146.2 AADT/m	92nd
Clean Environment Domain	1.17		89th
Diesel PM	0.03 µg/m³	0.26 µg/m³	93rd
Ozone	61.57 ppb	64.5 ppb	88th
PM 2.5	5.57 µg/m³	6.08 µg/m³	77th
Neighborhood Domain	0.09		68th
Park Access	119.57 acres per person	9.46 acres per person	97th
Tree Canopy	1.4 %	6 %	13th
Economic Domain	-0.96		11th

Above Poverty	63.6 %	75.3 %	20th
Employed	66.2 %	77.8 %	6th
Per Capita Income	$26692.5	$33497.47	30th
Social Domain	-1.59		5th
Census Self-Response Rate	37.8 %	74.5 %	3rd
Voting	53.1 %	58.2 %	28th
Healthcare Access Domain	-4.23		0th
Insured Adults	53.7 %	88.6 %	0th
Housing Domain	-0.54		15th
Homeownership	65.7 %	72.7 %	32nd
Housing Habitability	99.3 %	99.2 %	27th
Low-Income Homeowner Severe Housing Cost Burden	5.8 %	6.1 %	42nd
Low-Income Renter Severe Housing Cost Burden	18.2 %	15.2 %	37th
Uncrowded Housing	88.1 %	96.7 %	4th
Education Domain	-0.64		13th
Bachelor's Education or Higher	5.8 %	35.5 %	0th
High School Enrollment	96.4 %	96.6 %	24th
Preschool Enrollment	41.5 %	42 %	54th

Among individual indicators, several stood out. For example, only 5.8% of adults on the Uintah and Ouray Reservation have a bachelor’s degree or higher, compared to a statewide average of 35.5%. This places the AIAN area in the 0th percentile, indicating the lowest performance statewide for this indicator. In contrast, Preschool Enrollment was approximately equal to the state average, ranking at the 54th percentile, suggesting average performance in early childhood education access.

To visualize these results, histograms of selected indicators are shown in Figure 6. These distributions represent all Utah census tracts, with the Uintah and Ouray's indicator estimate marked. For the indicator Bachelor's Education or Higher, the AIAN area's value appears at the far left end of the distribution, consistent with its 0th percentile ranking. In contrast, Preschool Enrollment appears near the midpoint of the statewide distribution, illustrating more typical conditions.

Figure 6. Histograms of Select UT Tribal HPI Indicators for Uintah and Ouray Reservation



Comparing AIAN Area Indicator Data, Stratified by Race

To further understand the value of disaggregating data by race, Table 5 presents a comparison of HPI indicator estimates for the Uintah and Ouray Reservation, using two different approaches: one based on American Indian/Alaska Native (AIAN) race-stratified data and the other based on non-race-stratified (aggregate) data. In most cases, the AIAN-specific estimates reveal different, and often less healthy, conditions than those suggested by the aggregate data.

For example, the percentage of adults with a bachelor's degree or higher is estimated at 5.8% using AIAN-restricted data, compared to 13.6% in the non-stratified estimate. Similarly, the percentage of adults with health insurance coverage is 53.7% when restricted to AIAN residents, versus 75.7% in the general population estimate. Differences are also apparent for homeownership and housing conditions: the AIAN-specific homeownership rate is 65.7%, compared to 78.9% in the non-stratified data, while the share of residents living in uncrowded housing is 88.1% versus 95.1%, respectively.

Interestingly, per capita income shows similar values across both data types, with the AIAN-specific estimate at $26,692.50 and the non-stratified value at $26,397.00, suggesting that income data may be less sensitive to population stratification in this context. Nonetheless, these comparisons underscore the importance of disaggregated data for accurately characterizing conditions among AIAN communities. Reliance on non-stratified data may mask underlying disparities and result in misleading conclusions about health-related opportunities and needs.

These results underscore the importance of using race-stratified data, which ultimately is the preferred and actual method used in calculating the UT Tribal HPI results for the Uintah and Ouray Reservation.

Table 5. Selected HPI Indicator Estimates for the Uintah and Ouray Reservation, Stratified by American Indian Alaskan Native (AIAN) Race

Indicator	AIAN Only[+]	Total Population
Bachelor's Education or Higher	5.8%	13.6%
Homeownership	65.7%	78.9%
Insured Adults	53.7%	75.7%
Per Capita Income	$26,692.5	$26,397
Uncrowded Housing	88.1%	95.1%

[+]American Indian and Alaskan Native Alone (Inclusive of Hispanic or Latino ethnicity)

Discussion

Key Data Findings

1. The Navajo Nation Reservation ranks in the 2nd percentile for the HPI when compared to all census tracts in Utah, indicating it performs better than only 2% of census tracts in terms of social and environmental health conditions, placing it in Quartile 1.
    a. The Clean Environment domain is a significant strength for the Navajo Nation Reservation, with a 100th percentile ranking due to low levels of ozone, PM2.5, and diesel particulate matter.
    b. The other seven domains rank in the first quartile (0 - 25th percentile), with significant room for improvement across multiple indicators, including Employed, Census Self-Response Rate, Housing Habitability, Uncrowded Housing, Bachelor's Education, and Insured Adults

2. The Uintah and Ouray Reservation ranks in the 14th percentile for the HPI when compared to all census tracts in Utah, but still falls within Quartile 1.
    a. The Uintah and Ouray Reservation performs well in the Clean Environment domain (89th percentile) and Transportation domain (71st percentile).
    b. Some of the greatest areas for improvement include Employed (6th percentile), Uncrowded Housing (4th percentile), Bachelor's Education (0th percentile), and Insured Adults (0th percentile)
3. Race-stratified data for American Indian/Alaska Native (AIAN) populations reveal less health-supportive conditions in education, health insurance coverage, and housing quality compared to aggregate data, emphasizing the need for disaggregated data to accurately assess and address disparities in AIAN communities.

Contextual Considerations for AIAN Area Community Conditions Data

Indicators in the UT Tribal HPI were chosen to match the methodology of the UT HPI 2.0, a statewide data and policy tool. These indicators were selected based on empirical evidence of an association with life expectancy at birth in the state of Utah and are accompanied by evidence-based policy recommendations. The interpretation and applicability of these indicators, however, may differ for tribal reservations compared to other neighborhoods across the state. For example, both the Navajo Nation Reservation and the Uintah and Ouray Reservation ranked below the 2nd percentile for healthcare access - measured as the percent of adults aged 19-64 with health insurance. The data source used, the American Community Survey (ACS), considers an individual health-insured if they have either private health insurance (including employment-based insurance, direct purchase insurance, or TRICARE), or public coverage (such as Medicaid, Medicare, or VA Health Care), but does not include individuals whose only health coverage is Indian Health Service.[9] While only an estimated 55% of the adults in both AIAN areas are health-insured, all members of federally recognized tribes are eligible for healthcare through the Indian Health Service (IHS), so there may not be as substantial of a healthcare access gap as the data shows. Conversely, there is evidence that barriers to care through IHS exist due to insufficient federal funding and limited services or IHS facilities available, which may be alleviated by AIAN individuals enrolling in private or public health insurance, such as that offered through Medicaid.[10,11] Therefore, the Insured Adults indicator in this analysis likely overestimates the healthcare insurance gap but could still be representative of healthcare access as a whole.

Both AIAN areas also had resoundingly low census self-response rates: 19.2% for the Navajo Nation Reservation and 37.8% for the Uintah and Ouray Reservation. Low census self-response rates among the AIAN population for the 2020 decennial census have been documented nationwide, particularly for AIAN-majority census tracts on tribal lands.[12] This low response rate may be in part due to the more rural and remote environments of tribal reservation lands, the lack of mailing addresses for many of their residents, and limited internet service.[13] It should also be acknowledged that there is a deeply rooted history of the exclusion and marginalization of the AIAN population in the U.S. Decennial Census, so distrust and fear may also contribute to hesitancy to respond to the census.[14] The undercount of AIAN people has important implications for public health policy, funding, and resource allocation, but the low census self-response rate observed across Utah's AIAN areas may not be directly linked to life expectancy at birth through the same mechanisms as other Utah neighborhoods where census response is a proxy indicator of social power and social cohesion.

Limitations

There are several limitations to this analysis. The objective of this project was to quantify place-based community conditions for tribal reservation lands that may be actionable for tribal governments and other partners. Importantly, racial identity, tribal affiliation, and tribal lands are not synonymous. This analysis uses publicly available data to best estimate community conditions on tribal reservations for the AIAN population specifically. However, many enrolled tribal members do not live within the boundaries of tribal lands and do not identify as AIAN alone, and not everybody

who identifies as AIAN alone is an enrolled tribal member. Broader assumptions about the AIAN population in Utah cannot be drawn since only an estimated 11% of Utah's AIAN population resides in the two AIAN areas included in analysis (ACS 2019-2023).

Percentile ranking comparisons between the Uintah and Ouray Reservation and the Navajo Nation Reservation, as well as comparisons between the two AIAN areas with other Utah geographies, should be interpreted with caution. There are important methodological and contextual differences between these geographies that may strongly impact results, and in some cases make it difficult to provide accurate indicator estimates. A mix of various methods was used to calculate indicator values for the Uintah and Ouray Reservation, with some indicators reflecting community conditions for the entire population within reservation bounds and others reflecting community conditions for the AIAN alone population. These unique methods used only for the Uintah and Ouray Reservation make direct comparisons to other AIAN areas or Utah census tracts complicated. The percentile rankings provided in this report may be a helpful starting point, but other tools, such as direct comparisons of AIAN area indicator values with state average values, input from tribal consultations, and tribe-specific data, should be used to gather a more complete picture of local community conditions and inform policy and resource allocation decisions. While relatively straightforward and accurate methods were employed to estimate indicator values for the Utah portion of the Navajo Nation Reservation, it should be acknowledged that a large portion of the Navajo Nation Reservation is outside the state of Utah. Residents in this area may be impacted by policies, programs, and resources that originate outside of the state.

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Appendix

Table A1. American Community Survey Data Tables for Race-Stratified HPI Indicators (Used for Uintah and Ouray Estimates)

Indicator	UT HPI 2.0 Data Table & Variables	UT Tribal HPI Data Table & Variables
Per Capita Income	B19301_001	B19301C_001
Insured Adults	S2701_C02_012, S2701_C01_012	C27001C_005, C27001C_006
Homeownership	DP04_0046, DP04_0045	B25003C_001, B25003C_002
Uncrowded Housing	DP04_0076, DP04_0077	B25014C_001, B25014C_002
Bachelor's Education	DP02_0059, DP02_0068	C15002C_001, C15002C_006, C15002C_011

Table A2. HPI Indicators, Source, Year, and Production Methodology

Indicator	UT HPI 2.0 Data Source, Year+	Methodology/Indicator Category
Automobile Access	American Community Survey, 2017-2021	ACS Indicator
Bike Access	UGRC/Transportation, 2023	Crosswalked Indicator
Traffic Volume	US EPA EJScreen, 2020	Crosswalked Indicator
Diesel PM	US EPA EJScreen, 2019	Crosswalked Indicator
Ozone	US EPA EJScreen, 2019	Crosswalked Indicator
PM 2.5	US EPA EJScreen, 2019	Crosswalked Indicator
Park Access	UGRC Recreation; 2020 Decennial Census, 2023	Crosswalked Indicator
Tree Canopy	MRLC NLCD; US Census Bureau 2020 TIGER/Line Shapefiles, 2021	Crosswalked Indicator
Above Poverty	American Community Survey, 2017-2021	ACS Indicator
Employed	American Community Survey, 2017-2021	ACS Indicator

Per Capita Income	American Community Survey, 2017-2021	Stratified Indicator
Census Self-Response Rate	2020 Decennial Census, 2020	Crosswalked Indicator
Voting	Redistricting Data Hub/L2, 2022	Crosswalked Indicator
Insured Adults	American Community Survey, 2017-2021	Stratified Indicator
Homeownership	American Community Survey, 2017-2021	Stratified Indicator
Housing Habitability	HUD CHAS, 2016-2020	Crosswalked Indicator
Low-Income Homeowner Severe Housing Cost Burden	HUD CHAS, 2016-2020	Crosswalked Indicator
Low-Income Renter Severe Housing Cost Burden	HUD CHAS, 2016-2020	Crosswalked Indicator
Uncrowded Housing	American Community Survey, 2017-2021	Stratified Indicator
Bachelor's Education or Higher	American Community Survey, 2017-2021	Stratified Indicator
High School Enrollment	American Community Survey, 2017-2021	ACS Indicator
Preschool Enrollment	American Community Survey, 2017-2021	ACS Indicator

[+]UGRC: Utah Geospatial Resource Center

US EPA EJScreen: U.S. Environmental Protection Agency Environmental Justice Screening and Mapping Tool

MRLC NLCD: Multi-Resolution Land Characteristics National Land Cover Database

HUD CHAS: Department of Housing and Urban Development Comprehensive Housing Assessment System

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