COMMUNITY HEALTH NEEDS ASSESSMENT (CHNA)

IMPLEMENTATION PLAN 2021-2023 (to Fiscal Year ending 9/30/2024)

A nonprofit hospital facility such as The Guidance Center is permitted to conduct its CHNA once every three years and in collaboration with other organizations. TGC has identified the following specific implementation plan needs with respect to mental health in the *Northern Arizona University Center for Health Equity Research – Arizona Regional Health Update CHNA* (8/30/2021) and *Coconino County Health & Human Services (CCHHS) Community Health Assessment* (12/2020) and sets forth the following implementation strategy:

- **Social determinants of health, or needs addressing social, environmental, and economic conditions that impact the health and well-being of the communities served, often drive health inequity.**

Implementation: TGC expanded and continues to broaden accepted insurance plans and has diversified self-pay options for a variety of services to allow greater access and affordability in healthcare services. TGC provides no-cost services to individuals experiencing a behavioral health crisis and needing stabilization or to individuals who: are pregnant or women who have dependent children and needing substance use support, use drugs intravenously or have a diagnosed disorder for opioid use. Treatment staff regularly visit local shelters to offer housing and financial resources. TGC's Crisis Stabilization Unit completes screenings on social determinants of health to better inform discharge plans and ongoing care needs.

- **Across 2016, 2018 and 2020 Arizona Youth Survey years, Coconino (and two other) counties all had higher percentages of students perceived to be at high risk compared to the state as a whole. Starting in 2017, suicide became the leading cause of death among adolescents. In 2018, Coconino County adolescents had the highest suicide death rate of any age group.**

Implementation: TGC provides intensive, dedicated care management, therapy, skills training, psychological evaluation and testing, family support, behavioral analysis and crisis services to children and adolescents in a variety of settings. TGC collaborates with all local school districts to provide prevention education, suicide risk screenings, and a direct referral process that involves schools referring students to services and TGC outreaching the family for support and care. TGC continually expands children's services, having added more psychological testing and behavioral analysis in the past 18 months and with plans to improve crisis stabilization service offerings over the coming years.

- **Local and national initiatives are needed to address how beliefs, values and privilege influence worldviews on issues of equity.**

Implementation: TGC implements community education and training initiatives including Mental Health First Aid, a program that educates the general public, law enforcement officials, higher education affiliated faculty and staff, and youth. The program offers stigma reduction efforts by educating and improving comfort levels for people to "identify, understand and respond" to crises or any situation where a person is experiencing a mental health or substance use problem. TGC participates in a local instructor collaborative to provide trainings county-wide with an emphasis on school-based trainings. TGC will continue to enhance its community leadership in MHFA initiatives as it takes the entire community to most effectively help individuals struggling with thoughts of suicide or suffering the effects of mental health conditions and/or substance use.

Arizona Regional Health Update

AUGUST 30, 2021

Contents

Behavioral health conditions and the justice system

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Psychiatric Technicians and Aides, at https://www.bls.gov/ooh/healthcare/psychiatric-technicians-and-aides.htm (visited August 03, 2021).

Within Arizona, behavioral health positions are expected to grow at a rate of 38% between 2018 and 2028, 11% higher than the national growth rate of 19%.
- Substance abuse, behavioral disorder, and mental health counselors (43% increase)
- Rehabilitation counselors (29% increase)
- Mental health and substance abuse social workers (38% increase)
- Psychiatric technicians (41% increase)

Eaves, E.R., Camplain, R.L., Lininger, M.R. and Trotter II, R.T. (2021), "Adverse childhood experiences in relation to drug and alcohol use in 30 days prior to incarceration in a county jail", International Journal of Prisoner Health, Vol. 17 No. 2, pp. 142-155.
https://doi.org/10.1108/IJPH-06-2020-0038

- People who self-reported use of methamphetamine, heroin, other opiates or cocaine in the 30 days prior to incarceration had higher average ACEs scores.
- Methamphetamine use was significantly associated with living with anyone who served time in a correctional facility and with someone trying to make them touch sexually.
- Opiate use was significantly associated with living with anyone who was depressed, mentally ill or suicidal; living with anyone who used illegal street drugs or misused prescription medications; and if an adult touched them sexually.
- Binge drinking was significantly associated with having lived with someone who was a problem drinker or alcoholic.

Trotter, R. T., II, V. Y. F., Camplain, R., Arazan, C. L., Camplain, C., Eaves, E. R., ... & Baldwin, J. A. (2019). Health disparities in jail populations: Mixed methods and multi-disciplinary community engagement for justice and health impacts. Practicing anthropology, 41(4), 2.

Self-report of mental health conditions in an incarcerated population (N = 199)
- Anxiety= 72 (36.5%)
- Depression= 66 (33.7%)
- Bipolar Disorder= 39 (19.9)
- Schizophrenia-= 22 (11.2%)
- PTSD= 52 (26.3%)
- ADHD= 45 (23.1%)

- Approximately three-fourths (78.5%) of the individuals surveyed reported a minimum of two and up to ten or more co-morbid conditions. We also found that co-morbidities present a special challenge to county detention centers and incarcerated individuals in terms of treatment priorities, health policy, and general population health characteristics

Camplain, R., Camplain, C., Trotter, R. T., Pro, G., Sabo, S., Eaves, E., ... & Baldwin, J. A. (2020). Racial/ethnic differences in drug-and alcohol-related arrest outcomes in a southwest county from 2009 to 2018. American journal of public health, 110(S1), S85-S92.

- Our findings indicate substantial racial/ethnic disparities in arrest outcomes for drug- and alcohol-related crimes in a Southwest county over a 10-year period.
- Our study population included 24,467 individuals who were arrested 36,073 times between January 1, 2009, and May 31, 2018.
- Those arrests resulted in 62,756 drug- or alcohol-related reasons for arrest. Alcohol-related charges (n=16,781) accounted for more arrests than drug-related charges (n=8,111). Individuals with drug- and alcohol-related arrests on average were aged 30.3 years 612.0, and 74% were male.
- Among all arrested for drug- and alcohol-related charges, 35% were AI/AN, 9% were Latino/Latina, 4% were Black, and 51% were White.
- Compared with drug-related arrests, a higher proportion of those arrested for alcohol-related offenses were AI/AN (24% vs 40%), and a lower proportion were Latino/Latina (12% vs 8%), Black (6% vs 2%), and White (57% vs 49%).
- Among drug- and alcohol-related arrests, AI/AN, Latino/Latina, and Black individuals were booked into the county jail more often than White individuals (Table 2), and this increased over the study period for all racial/ethnic groups

Lipari, R.N., Van Horn, S., Hughes, A. and Williams, M. *State and substate estimates of serious mental illness from the 2012–2014 National Surveys on Drug Use and Health*. **The CBHSQ Report: July 20, 2017. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Rockville, MD.**

- Based on annual averages of combined 2012 to 2014 (National Survey on Drug Use and Health) NSDUHs, 4.25% of adults (aged 18 years or older) in AZ had a Serious mental illness (SMI) in the past year.
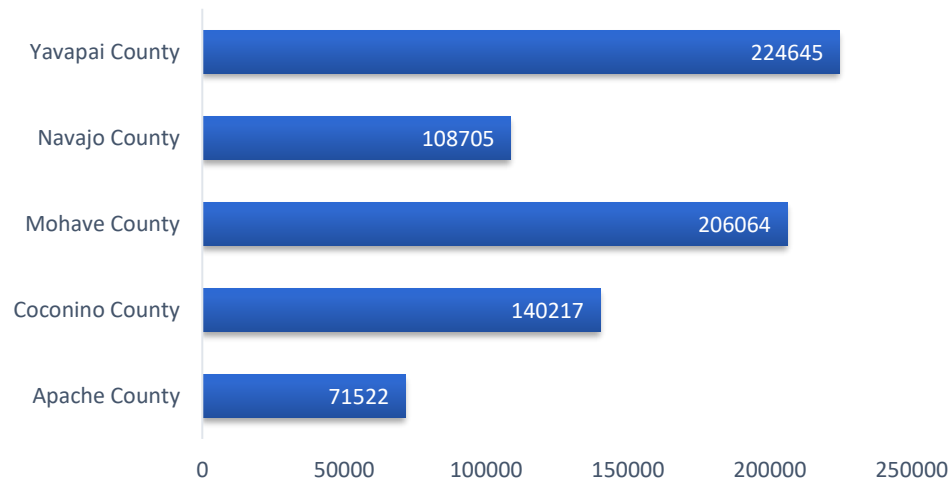
Demographic and SDOH trends for the region

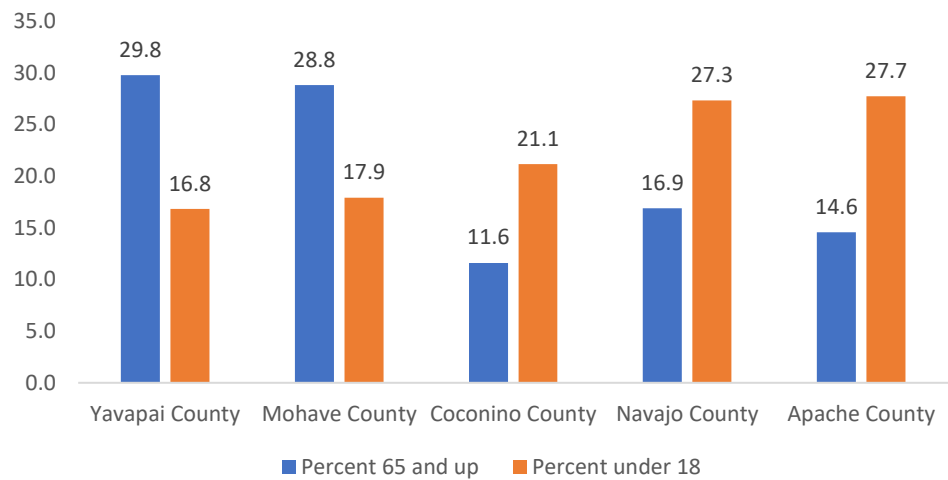**AHRQ SDOH Database, derived from American Community Survey (ACS)**

Demographics

- Apache and Navajo counties have a much younger population than most other counties, with roughly 27% of their respective populations younger than 18. (This is a slight drop from what was reported in the needs assessment (30%)). Yavapai (median age=52.9) and Mohave (median age=50.9) counties have relatively larger aging adult populations.
- Distribution of males and females is approximately equal in all counties.
- Increase in White population in Yavapai from 84% to 91.5% (↑), Mohave from 85% to 90.5% (↑), Apache from 17% to 23% (↑) (compared to old report). Drop in White population in Navajo from 58% to 48% (↓). Percentage of Whites in Coconino has approximately remained the same.
- Hispanic population increased in Mohave, Yavapai and Navajo Counties, but fell in Apache county in 2018 compared to earlier report.
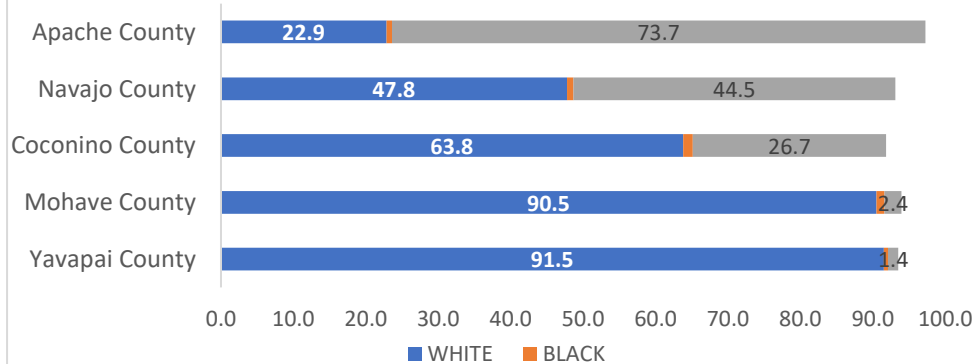
Population 2018

County	Population
Yavapai County	224645
Navajo County	108705
Mohave County	206064
Coconino County	140217
Apache County	71522

Age Distribution

County	Percent 65 and up	Percent under 18
Yavapai County	29.8	16.8
Mohave County	28.8	17.9
Coconino County	11.6	21.1
Navajo County	16.9	27.3
Apache County	14.6	27.7

Race Distribution

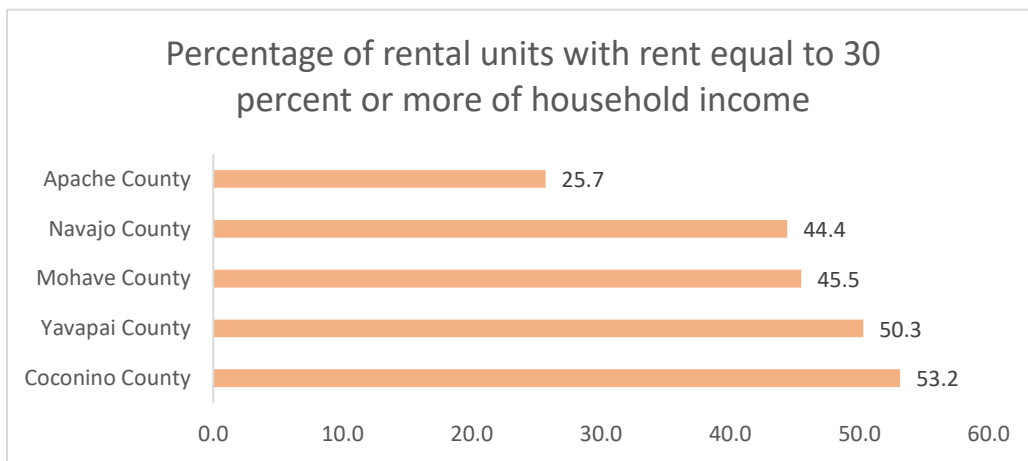| County	WHITE	BLACK	(Other)
Apache County	22.9		73.7
Navajo County	47.8		44.5
Coconino County	63.8		26.7
Mohave County	90.5	2.4	
Yavapai County	91.5	1.4	

Poverty and Income
- Median Income in AZ in 2018 was $59,246. All counties had a median income that was below the state average.
- On average 14% of the population in AZ was below poverty in 2018. The proportions are higher than the state average in all Northern AZ counties except Yavapai.
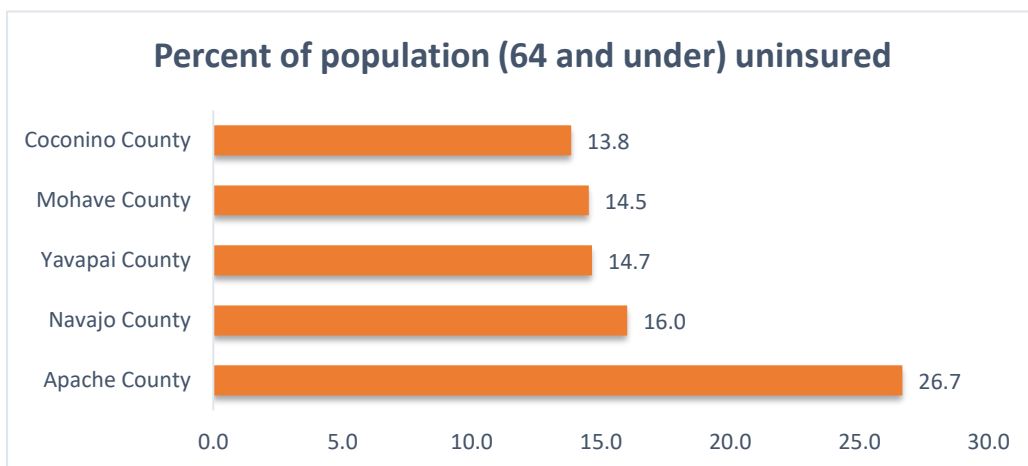
Housing and Living Conditions

- The percentage of households in Arizona with broadband internet connection between 2015-2019 was 84%. Northern Arizona counties report numbers that are lower than the state average.
- On average 91.7% of Arizona's households reported having computers. Apache, Navajo and Mohave counties report numbers much below the state average.
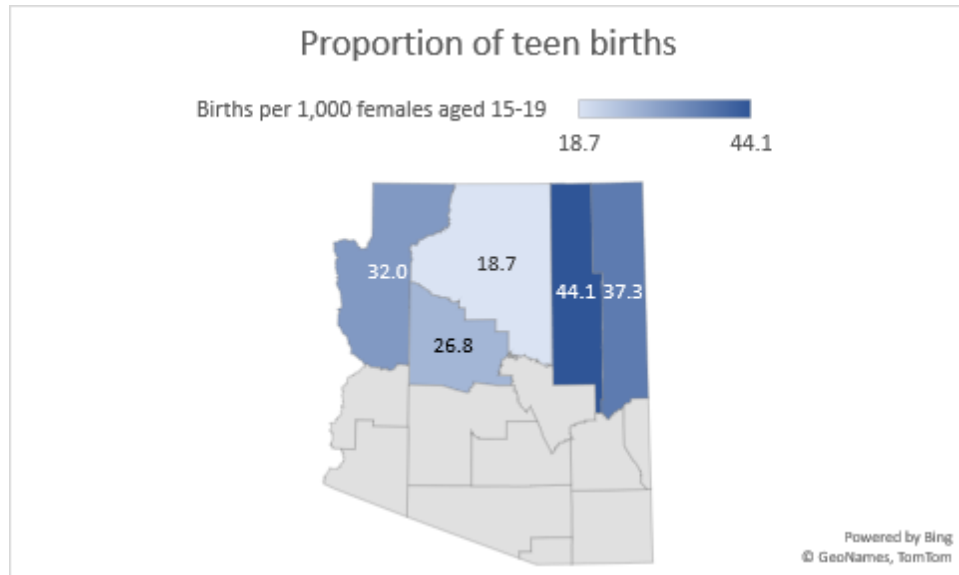
Percentage of rental units with rent equal to 30 percent or more of household income

County	Value
Apache County	25.7
Navajo County	44.4
Mohave County	45.5
Yavapai County	50.3
Coconino County	53.2

Health Insurance
- Reported state average was 13.6%. All Northern Arizona counties except Coconino, exceed the state average.

Percent of population (64 and under) uninsured

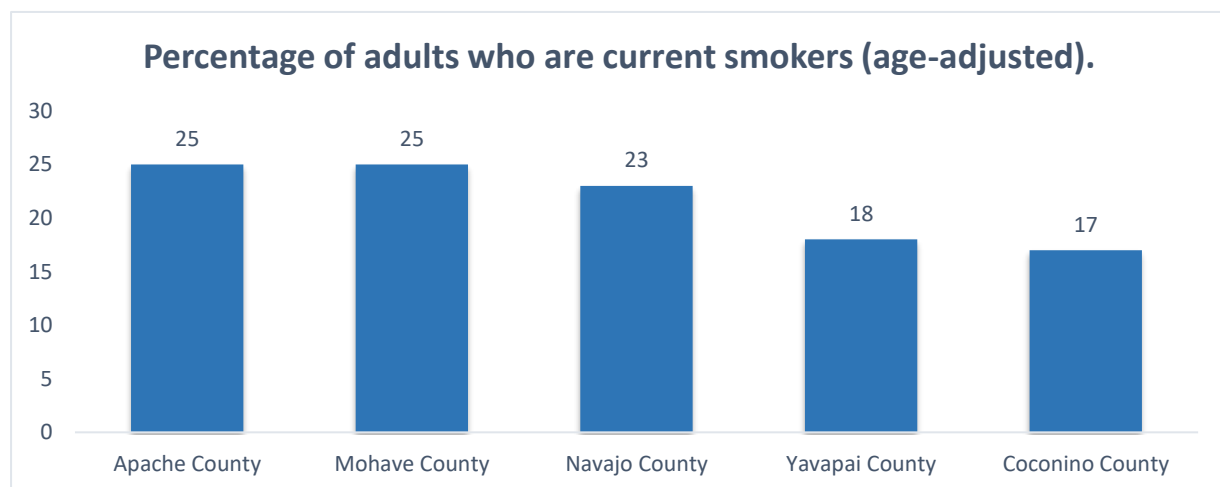| County	Value
Coconino County	13.8
Mohave County	14.5
Yavapai County	14.7
Navajo County	16.0
Apache County	26.7

The 2021 County Health Rankings

Teen births

- Average teen birth rate in AZ was 18.5 births per 1000 females (https://www.cdc.gov/nchs/pressroom/states/arizona/az.htm). All northern Arizona counties, except Coconino report rates that are much higher than the state average.

Proportion of teen births

Births per 1,000 females aged 15-19

18.7   44.1

32.0   18.7

44.1 37.3

26.8

Powered by Bing
© GeoNames, TomTom

Data Source: AHRQ SDOH Database, derived from County Health Rankings (CHR).

Smoking status

- Percentage of adults who are current smokers (age-adjusted) by county
    - Apache: 25
    - Mohave: 25
    - Navajo: 23
   - Yavapai: 18
    - Coconino: 17

Percentage of adults who are current smokers (age-adjusted).

County	Value
Apache County	25
Mohave County	25
Navajo County	23
Yavapai County	18
Coconino County	17

Data Source : The 2021 County Health Rankings used data from 2018 for this measure.

Adult Obesity
- Percentage of the adult population (age 20 and older) that reports a body mass index (BMI) greater than or equal to 30 kg/m2 by county
    - Apache: 35
    - Mohave: 31
    - Navajo: 33
    - Yavapai: 24
    - Coconino: 25

- Trends in adult obesity are increasing in Apache, Mohave, and Navajo Counties.

Adult obesity in Mohave County, AZ
County, State and National Trends
Mohave County is getting worse for this measure.
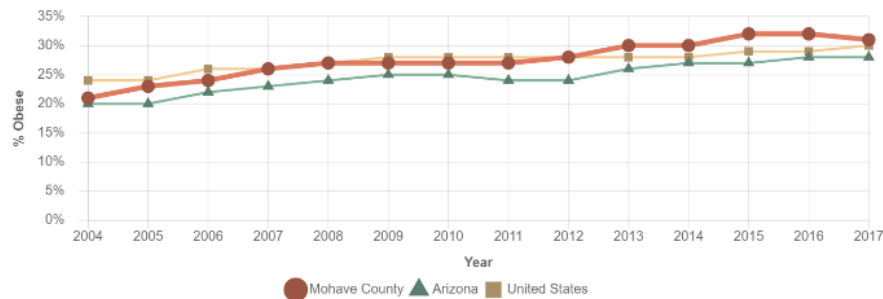
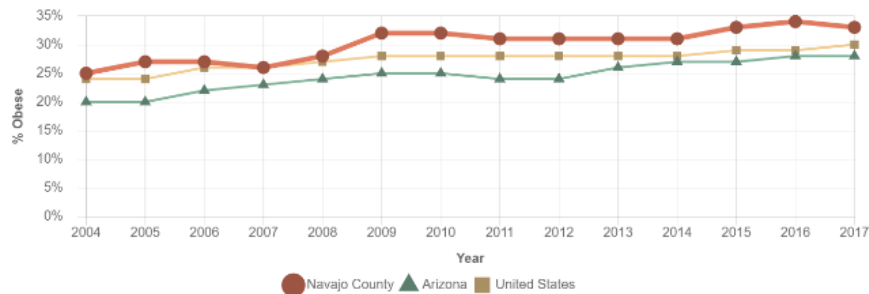Legend: Mohave County ● Arizona ▲ United States ■

Notes:
Each year represents a 3 year average around the middle year (e.g. 2015 is the middle year of 2014-2016).
Starting with the 2011 data, a new BRFSS methodology was introduced that included cell phone users. Data from prior years should only be compared with caution.

Adult obesity in Navajo County, AZ
County, State and National Trends
Navajo County is getting worse for this measure.

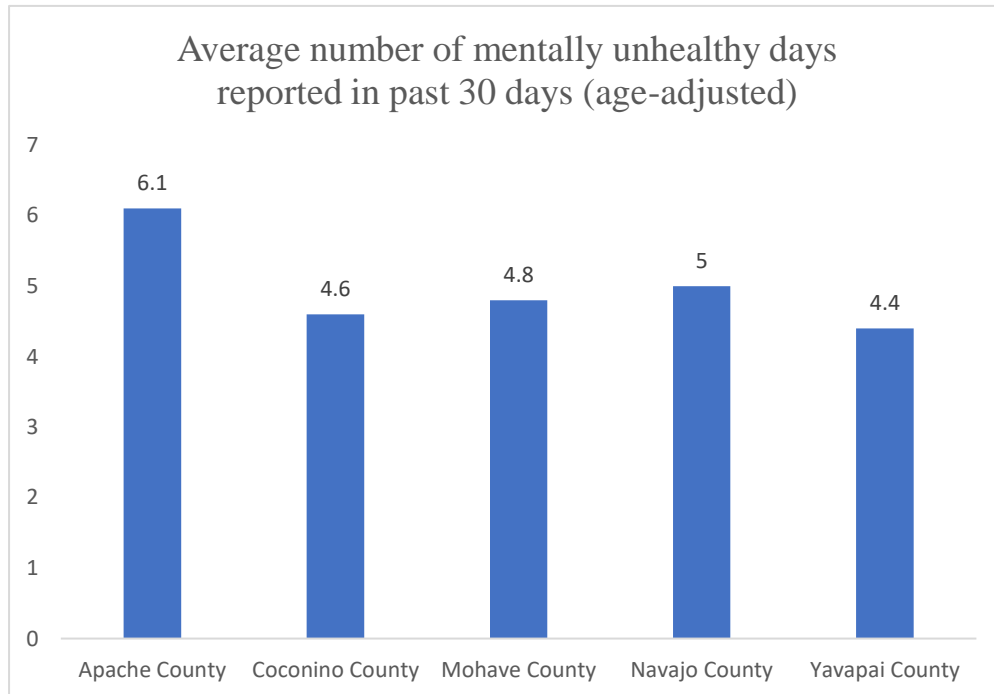Legend: Navajo County ● Arizona ▲ United States ■

Notes:
Each year represents a 3 year average around the middle year (e.g. 2015 is the middle year of 2014-2016).
Starting with the 2011 data, a new BRFSS methodology was introduced that included cell phone users. Data from prior years should only be compared with caution.

Adult obesity in Apache County, AZ
County, State and National Trends
Apache County is getting worse for this measure.

Notes:
Each year represents a 3-year average around the middle year (e.g. 2015 is the middle year of 2011-2016).
Starting with the 2011 data, a new BRFSS methodology was introduced that included cell phone users. Data from prior years should only be compared with caution
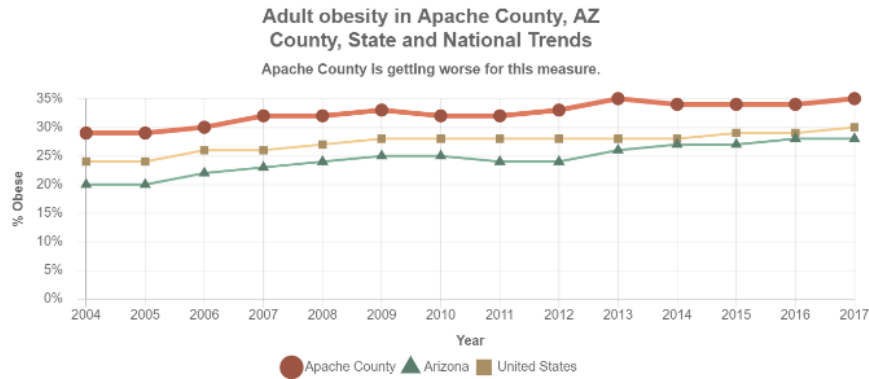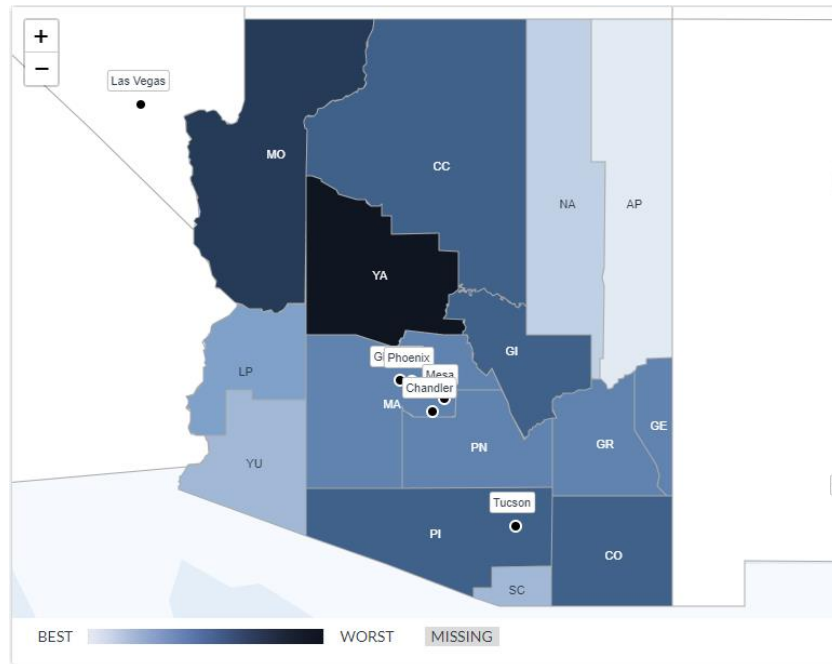
Poor Mental Health Days

- Overall rate for AZ is 4.0 days. All Northern AZ counties report a rate higher than the state.

Average number of mentally unhealthy days reported in past 30 days (age-adjusted)

| County	Value
Apache County	6.1
Coconino County	4.6
Mohave County	4.8
Navajo County	5
Yavapai County	4.4

Excessive drinking

Description of measure:
https://www.countyhealthrankings.org/app/arizona/2021/measure/factors/49/description

Health outcomes

- The overall rankings in health outcomes represent how healthy counties are within the state. The healthiest county in the state is ranked #1. The ranks are based on two types of measures: how long people live and how healthy people feel while alive.
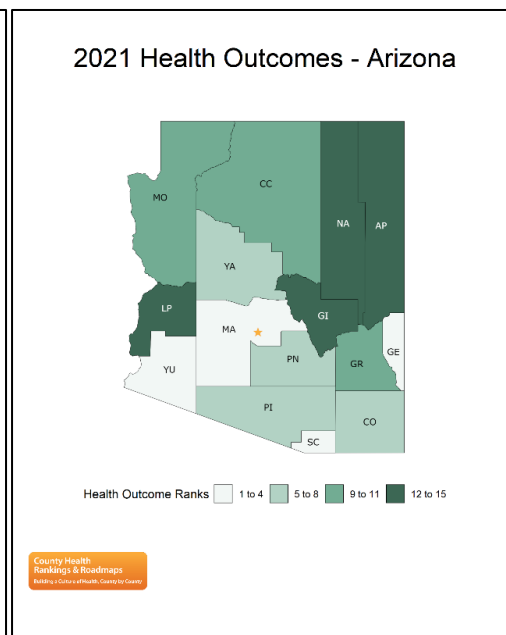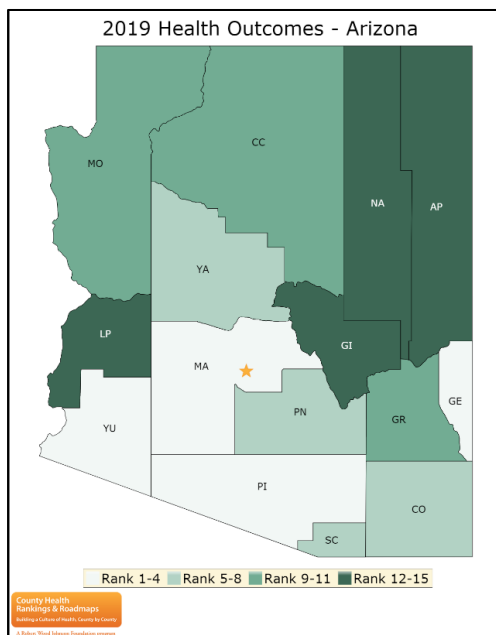
Health factors

- The overall rankings in health factors represent what influences the health of a county. They are an estimate of the future health of counties as compared to other counties within a state. The ranks are based on four types of measures: health behaviors, clinical care, social and economic, and physical environment factors.
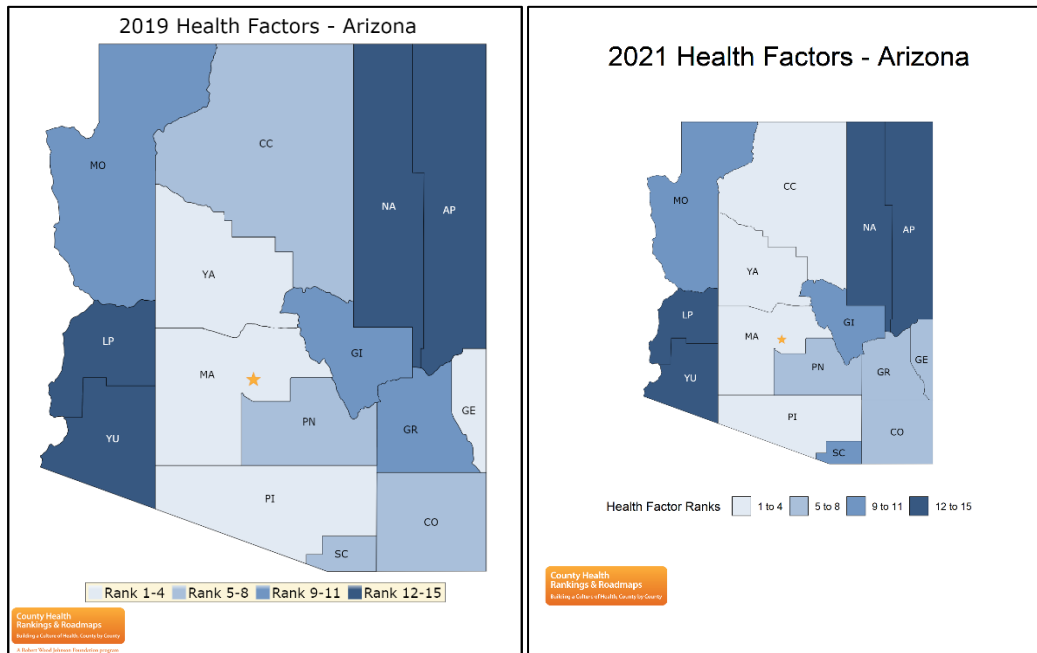
Coconino County Health & Human Services (CCHHS) Community Health Assessment December 2020

- The top 3 socio-environmental circumstances most responsible for health issues in the community were:
    1. Lack of affordable housing
    2. Poverty
    3. Health care costs.
- In 2017, the percent of the population living below the federal poverty line in Arizona was 17%. Except for Yavapai County (14.6%), each northern Arizona county's percentage of those living below the poverty line is greater than the state percentage. Apache County has the highest percent (35.9%), followed by Navajo (29.1%), Coconino (21%), and Mohave (18.6%).
- The percent of Coconino County residents with health insurance coverage in 2017 was 86.3%, which was lower than Arizona (87.8%) and the United States (89.5%).
- Four regions in Coconino County qualify as a Mental Health Professional Shortage Area (HPSA): Flagstaff as a low-income population HPSA and Grand Canyon, Navajo Nation, and Hopi Tribe as high-needs geographic HPSA. This means residents of these areas have limited access to mental health services necessary to meet their needs.

Trends in fatality causes and suicide rates

AHRQ SDOH Database, derived from County Health Rankings (CHR).

Alcohol impaired driving deaths in northern AZ counties
- Compared to state and national trends, Yavapai and Navajo counties are doing better while Coconino and Mohave counties are doing worse on these measures.
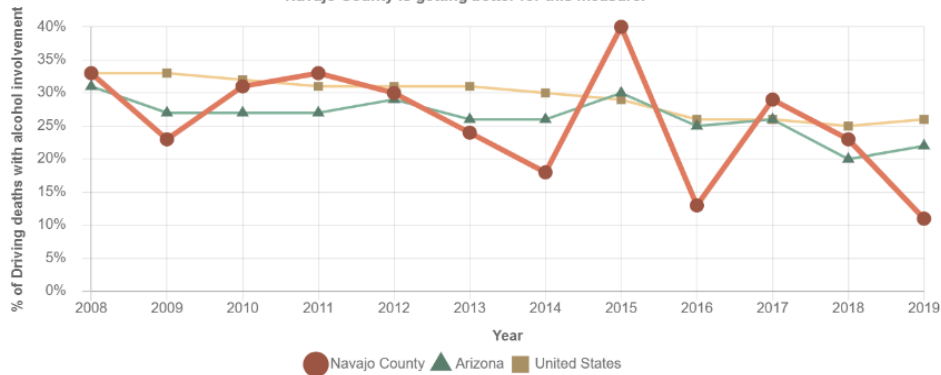
Alcohol-impaired driving deaths in Yavapai County, AZ
County, State and National Trends

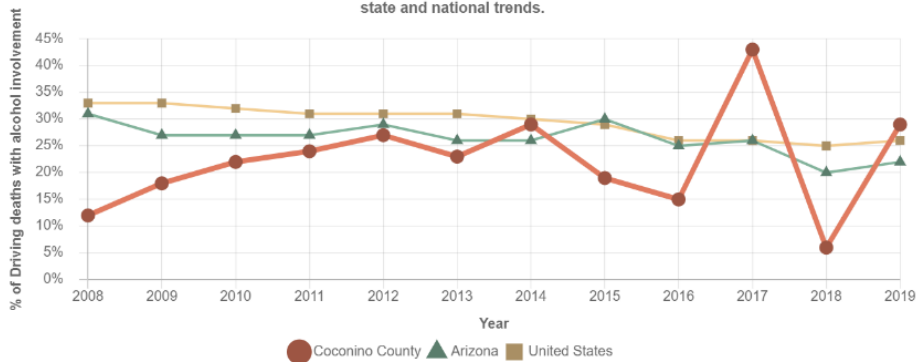Yavapai County is getting better for this measure.
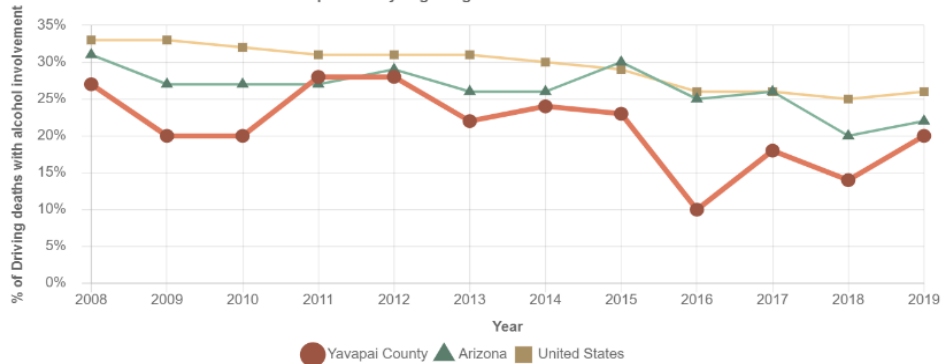
Alcohol-impaired driving deaths in Navajo County, AZ
County, State and National Trends

Navajo County is getting better for this measure.

Alcohol-impaired driving deaths in Coconino County, AZ
County, State and National Trends

Although no significant trend was found in Coconino County for this measure, please note state and national trends.

Alcohol-impaired driving deaths in Apache County, AZ
County, State and National Trends

Apache County is getting worse for this measure.
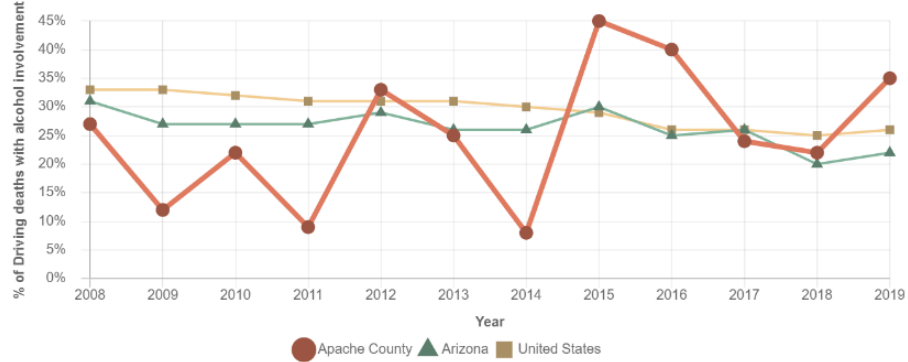
Premature Deaths

- Counties that saw an increase in premature deaths in the last few years were Apache, Coconino, and Navajo.

Premature death in Navajo County, AZ
Years of Potential Life Lost (YPLL): County, State and National Trends

Navajo County is getting worse for this measure.
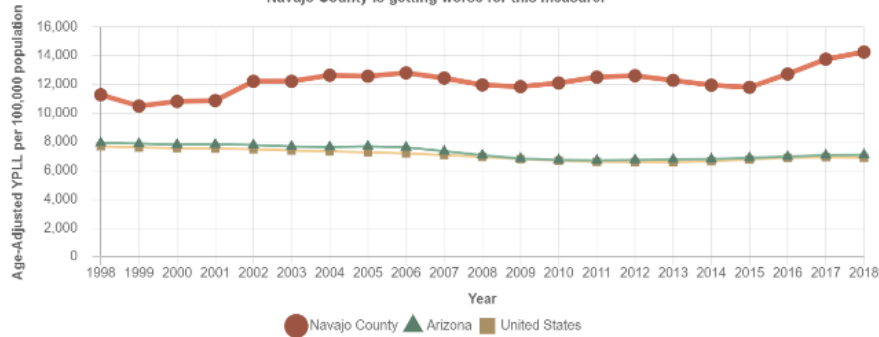
Notes:
Each year represents a 3-year average around the middle year (e.g. 2015 is the middle year of 2014-2016).

Premature death in Coconino County, AZ
Years of Potential Life Lost (YPLL): County, State and National Trends

Coconino County is getting worse for this measure.

Notes:
Each year represents a 3-year average around the middle year (e.g. 2015 is the middle year of 2014-2016).

Premature death in Apache County, AZ
Years of Potential Life Lost (YPLL): County, State and National Trends
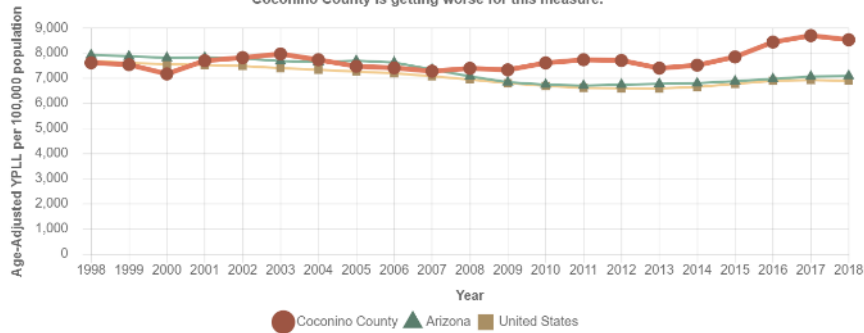Apache County is getting worse for this measure.

Notes.
Each year represents a 3-year average around the middle year (e.g. 2015 is the middle year of 2014-2016).
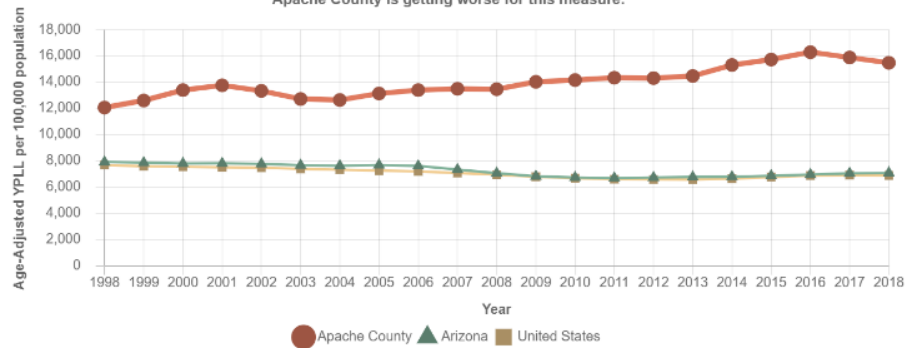
CDC, 2018 Fatal Injury Reports (accessed from www.cdc.gov/injury/wisqars/fatal.html on 3/1/2020).

- More than five times as many people died by suicide in Arizona in 2018 than in alcohol related motor vehicle accidents.
- The total deaths to suicide reflected a total of 27,938 years of potential life lost (YPLL) before age 65.
- Suicide cost Arizona a total of $1,246,006,000 combined lifetime medical and work loss cost in 2010, or an average of $1,139,987 per suicide death
- 8th leading cause of death in AZ
- 2nd leading cause of death for ages 10-31
- 3rd leading cause of death for ages 35-44
- 5th leading cause of death for ages 45-64
- 8th leading cause of death for ages 55-64
- 13th leading cause of death for ages 65+
- AZ ranks 14 national wide with 1,438 deaths by suicide (19.21 rate per 100,000)

Data source: https://www.countyhealthrankings.org/app/arizona/2021/measure/factors/161/data
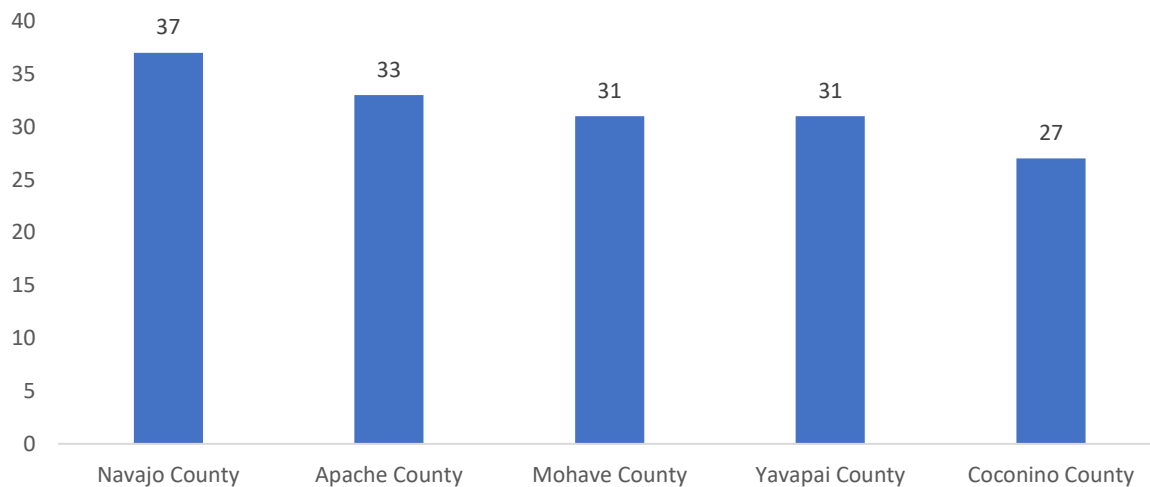
Ahmad FB, Cisewski JA. Quarterly provisional estimates for selected indicators of mortality, 2018-Quarter 4, 2020. National Center for Health Statistics. National Vital Statistics System, Vital Statistics Rapid Release Program. 2021.

- Arizona age-adjusted death rates for Suicide 12 months ending with quarter
  - 2019 Q3 – 19.0
  - 2020 Q3 – 18.2

CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files

Number of deaths among American Indians or Alaska Native individuals due to intentional self-harm per 100,000 population (age-adjusted to data year) in AZ

- 2015 = 18.3
- 2016 = 21.6
- 2017 = 26.6
- 2018 = 34.1

Drug overdose death rate in AZ: 26.8 (per 100,000)

Coconino County Examiner

- Between 7/1/2019 and 6/30/2021 there have been 94 (M=75, F=19; W=74, AI=19, B=1) documented suicides in Coconino County.
- The average age was 44.44 (min=15, max=85).

Pediatric health (e.g. developmental disabilities/ASD)

Suicide
- Starting in 2017, suicide became the leading cause of death among adolescents. In 2018, Coconino County adolescents had the highest suicide death rate of any age group. (CCHHS Community Health Assessment, December 2020)
- Statewide adolescent suicide rate (15-19 years old) has continued to rise. It was 12.13 in 2016, 13.22 in 2017, and 17.2 in 2018 (Kids Count)
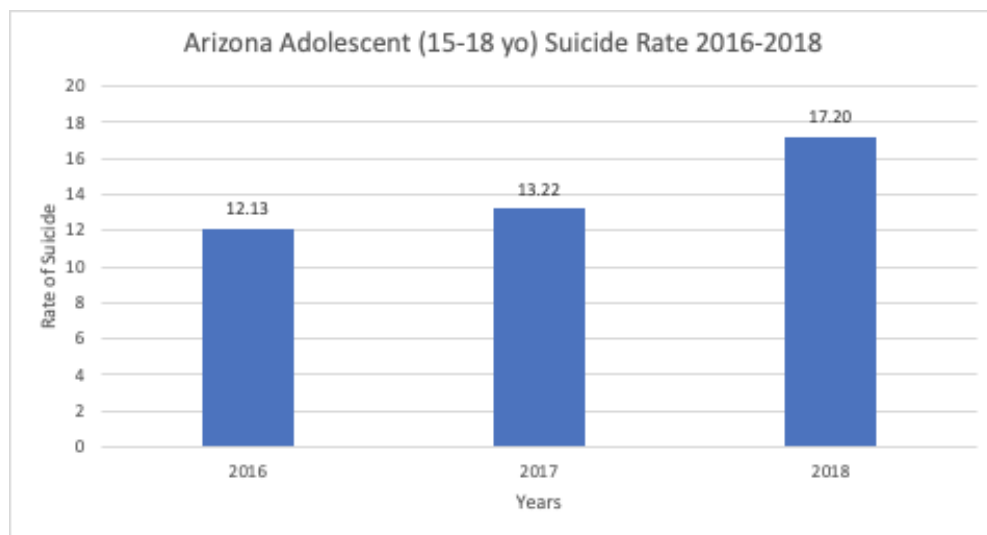
General Mortality
- 2017: death rate of children 0-14 years old was 1.5% higher in Coconino County than in Arizona and the US. Leading cause of death for 1-14 was motor vehicle accidents. (CCHHS Community Health Assessment, December 2020)
- In 2017, the death rate of adolescents 15-19 years old in Coconino County was 37% higher than Arizona, which is attributed to a statewide trend of increased adolescent mortality in rural communities. (CCHHS Community Health Assessment, December 2020)

Risk Factors
- Almost 1 in 4 children (23.2%) under 18 were estimated to live in poverty in Coconino County in 2017. This is just below the state's estimate of 24% of children. (CCHHS Community Health Assessment, December 2020)
- The 2019 Community Health Survey that was administered by CCHHS found that 1 in 5 Coconino County children are living below the federal poverty line. (CCHHS Community Health Assessment, December 2020)
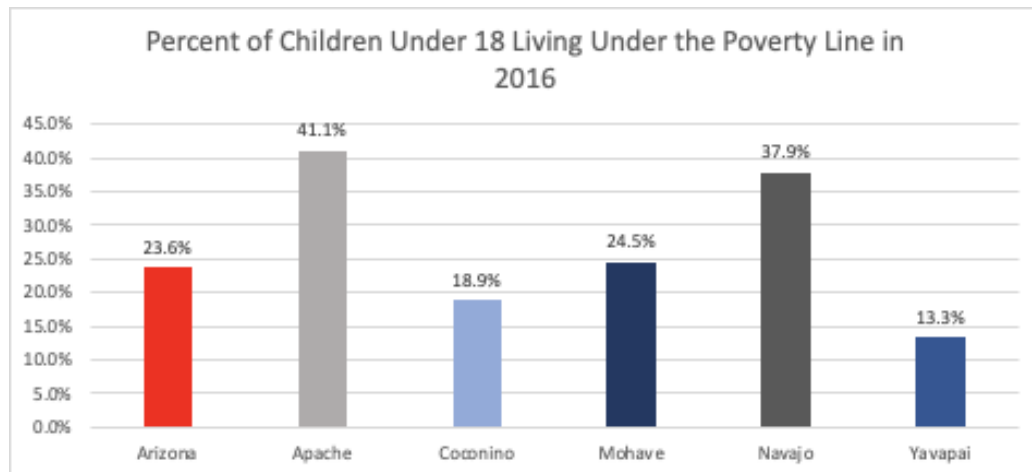- In 2016, Apache County (41.1%), Mohave County (24.5%), and Navajo County (37.9%) all had higher percentages of children under 18 who were living under the poverty line when compared to the state of Arizona as a whole (23.6%). (Kids Count)

Percent of Children Under 18 Living Under the Poverty Line in 2016

- From April 2017 to March 2018, the rate of child abuse reports in three of the five northern Arizona counties were higher than the state rate as a whole (29.8). Mohave had the highest rate of the northern Arizona counties (41.7), followed by Yavapai (36.9), and Coconino (30.3). Apache (10.9) and Navajo (25.5) counties were below the state rate. (CCHHS Community Health Assessment, December 2020)
- Across 2016, 2018, and 2020 Arizona Youth Survey years (8th to 12th graders), Mohave County had a higher percentage on every risk factor question (20 total) from each domain (community, family, school, and peer/individual) compared to the state, except for three times: "perceived availability of drugs" in 2018, "poor family management" in 2016, and "rewards for antisocial behavior" in 2018. Yavapai had a higher percentage on every question except four: "family conflict" from the family domain in all three years, as well as "academic failure" from the school domain in 2018, "rebelliousness" from the peer/individual domain in 2018, and "perceived risk of drug use" from the peer/individual domain. (Arizona Youth Survey)
  - Across the 2016, 2018, and 2020 data, Coconino, Mohave, and Yavapai counties all had higher percentages of students perceived to be at high risk (yes/no) compared to the state as a whole. Apache and Navajo counties were below the state's percentage each year. (Arizona Youth Survey)

Students Categorized as High Risk by County: 2016 through 2018
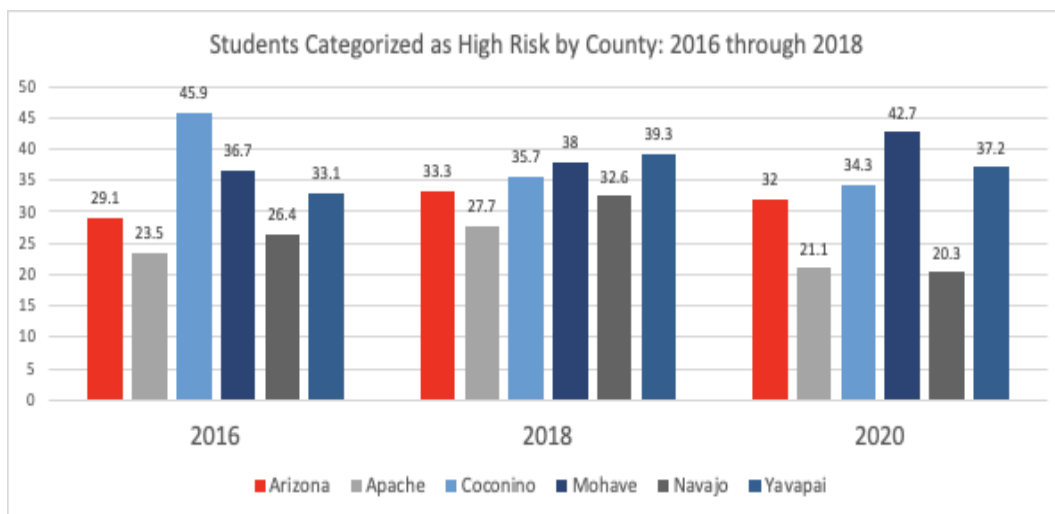
- o **Community domain:** Across three survey years (2016, 2018, 2020), for the question, "perceived availability of handguns," all five northern Arizona counties had higher percentages than the state of Arizona (24.9%). Apache (39.2%) and Navajo (37%) were the two highest.

- o **Family domain:** Apache and Navajo counties were the lowest percentages on each family risk factor question and were below each state percentage.
- o In addition to Mohave County's higher rates than the state across all years, Coconino County was equal to or higher than the state on a couple questions: "poor family management" (2016 and 2018), "family conflict" (2018), "family history of antisocial behavior" (all three years), "parental attitudes favorable to drug use" (2016 and 2020), and "parental attitudes favorable to antisocial behavior" (all three years) (Arizona Youth Survey)

Family Risk Factors by County in 2016

Family Risk Factors by County in 2018

Family Risk Factors by County in 2020
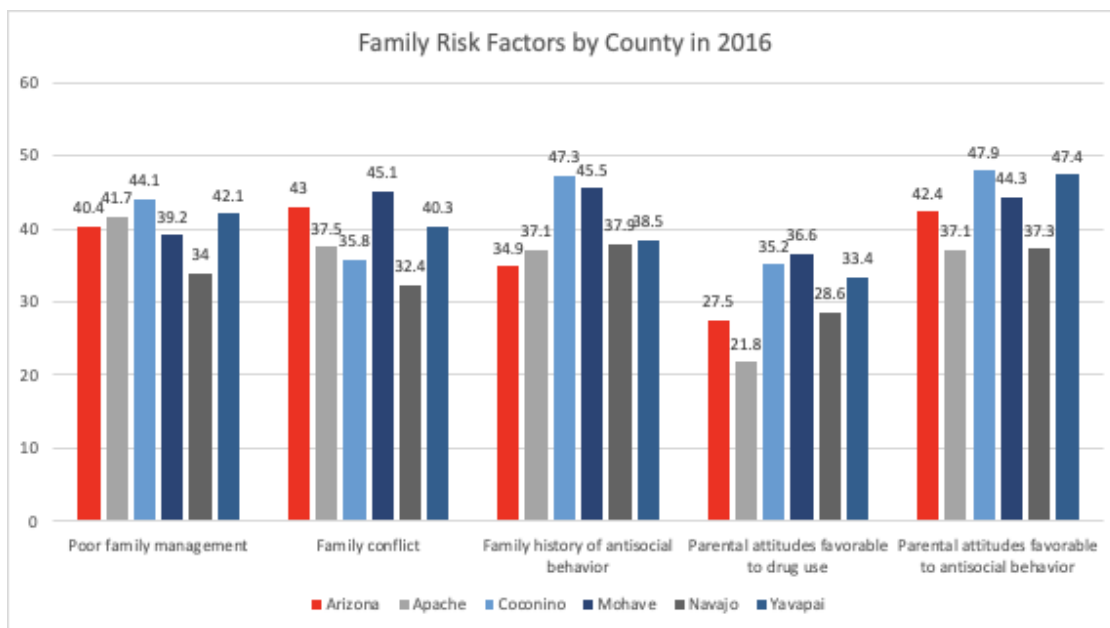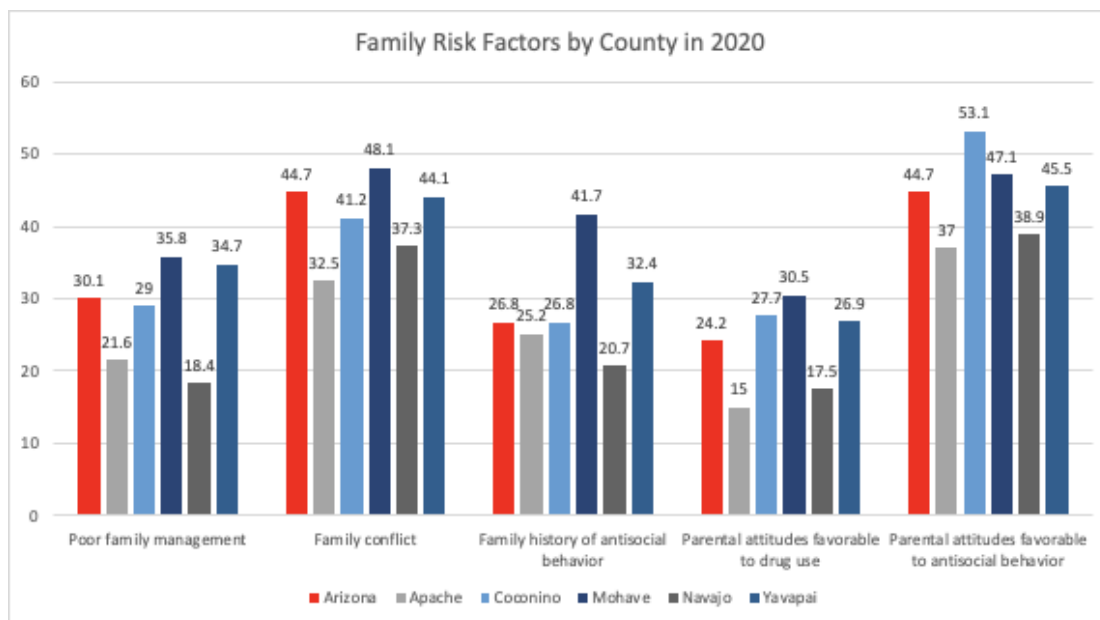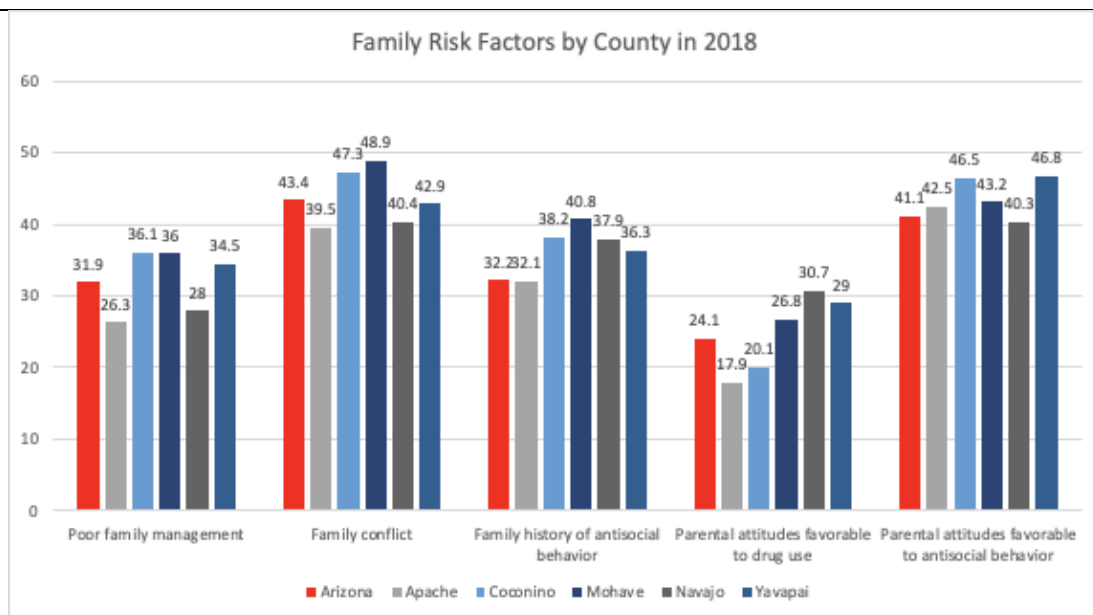
- o **Peer/Individual domain:** In addition to Mohave County's higher rates than the state, Coconino County had higher percentages compared to the state on at least 5 of the 9 peer/individual risk factor questions for every year. In 2016, Coconino County was higher than the state on every question (see Figures T13-T15). (Arizona Youth Survey)

- The Arizona Youth Survey has 6 questions on violence exposure across 2018 and 2020, with four of those six asked in 2016. Across all three years, Mohave and Yavapai Counties were higher than the state on every question except "seen someone attacked with a weapon other than a gun?" in 2020 for Mohave and all three years for Yavapai. Across all three years, Coconino County was higher than the state on every question except, "been harassed or made fun of by another person online or through text?" in 2016 and 2020.

Adverse Childhood Experiences Among 8th – 12th Graders
- In 2016, each northern Arizona county was higher than the state on each of the ACE questions, except for Apache County which was only higher on 3 of 6 questions and Coconino County which was higher on 5 of 6 questions.
- For the question, "ever lived with a drug user?" every northern Arizona county had a higher percentage of yes responses compared to the state as a whole except for Navajo County (18.9%) in 2020 and Apache County (12.6%) in 2016 (see Figures T19 and T20). (Arizona Youth Survey)

Adverse Childhood Experiences (ACEs) in 2016 by County

Adverse Childhood Experiences (ACEs) in 2020 by County

Legend: Arizona, Apache, Coconino, Mohave, Navajo, Yavapai

Category	Arizona	Apache	Coconino	Mohave	Navajo	Yavapai
Ever lived with an alcoholic?	29.1	25.4	40	40.1	23.4	36.9
Ever lived with a drug user?	19.6	22	26	26.4	18.9	22.9
Ever lived with someone who has been incarcerated?	23.6	20.5	34.6	34	22.8	32.1
Parents ever separated or divorced?	40.1	37.5	42.3	48.6	33.6	40.6
Ever lived with adults who fought each other?	14.5	12.5	21.7	19.6	11.7	18.6
Ever lived with adults who insulted or put you down?	33.3	27.8	32.7	38.3	32	36.2

Drug and Alcohol Use Among 8th – 12th Graders

- All five northern Arizona counties had higher rates of cigarette use in the past 30 days than the state across 2016, 2018, and 2020. (Arizona Youth Survey)

Cigarette Use in Past 30 Days by County

Legend: Arizona, Apache, Coconino, Mohave, Navajo, Yavapai

Year	Arizona	Apache	Coconino	Mohave	Navajo	Yavapai
2016	7.4	11.9	21.5	8	14.5	10.5
2018	4.7	6.8	5.9	6.5	9.5	8.1
2020	2.8	4.1	2.9	3.5	6.1	4.7
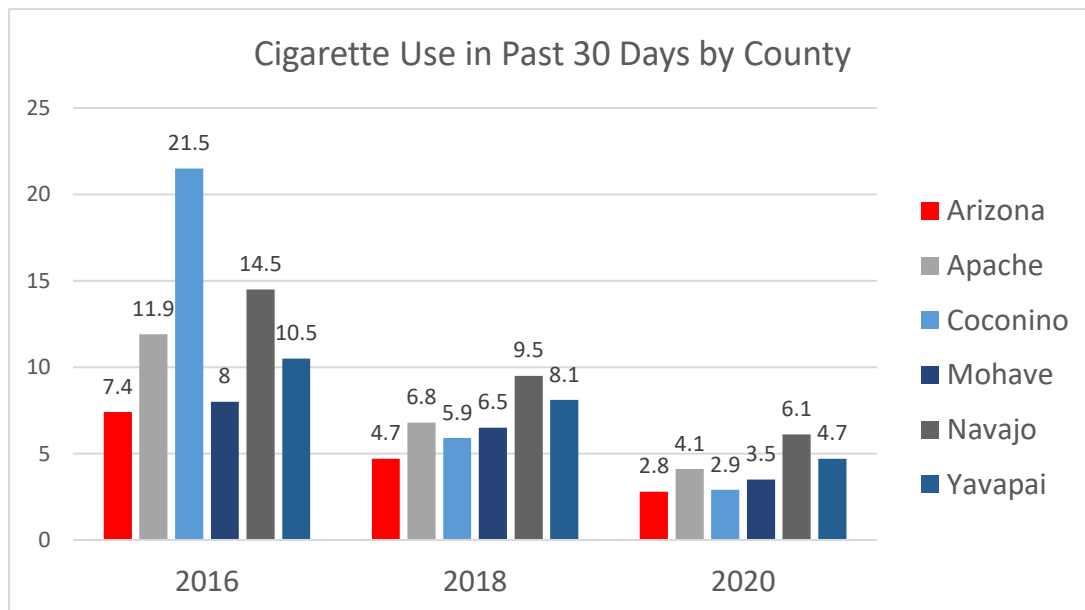
- At least one of the northern Arizona counties was higher than the state in binge drinking (≥ 5 drinks in a row) across all three years. Yavapai had higher rates of binge drinking compared to the state across all three years. Coconino and Mohave were also higher than the state in 2016,

Navajo was also higher than the state in 2018, and Mohave was also higher than the state in 2020 (see Figure T23). (Arizona Youth Survey)

- In 2018, every northern Arizona county except for Apache County had a higher rate of poly drug use ever in lifetime compared to the state as a whole (11.7%). In 2020, Mohave, Navajo, and Yavapai counties were higher than the state's percentage (11.4%) (see Figure T24). (Arizona Youth Survey)
- In 2018, every northern Arizona county except for Coconino County had a higher percentage of simultaneous alcohol and pain reliever use ever in lifetime compared to the state (3%). In 2020, Mohave, Navajo, and Yavapai counties were higher than the state's percentage (2.8%) (see Figure T25). (Arizona Youth Survey)
- Across 2016, 2018, and 2020, at least three of the five northern Arizona counties had higher percentages of heroin use ever in lifetime compared to the state as a whole. In 2016, Apache and Mohave counties were lower than the state (0.6%), while in 2018, only Coconino was lower than the state (0.5%) and in 2020 only Navajo was lower than the state (0.7%) (see Figure T26). (Arizona Youth Survey)
- In 2016 and 2018, only Apache County of the five northern Arizona counties had a lower percentage than the state as a whole for prescription pain reliever use without doctor order ever in lifetime. In 2020, Apache and Coconino counties had lower percentages than the state (5.9%). By 2020, the state percentage of prescription pain reliever use for 8th to 12th graders was down to 5.9% from 7.9% in 2016 and 9% in 2018 (see Figure T27). (Arizona Youth Survey)

Health Insurance
- In 2018, one county in northern Arizona, Yavapai, had higher percentages of children 18 and younger who have no health insurance (9.5%) compared to the state of Arizona (8.4%) (see Figure T28). Apache County did not have data for 2018, but was part of three northern Arizona counties in 2016 that had higher percentages than the state (7.3%) (Apache [19%], Coconino [9%], and Yavapai [9.1%]). In 2017, all northern Arizona counties, except for Apache County which had no data, were higher than the state's percentage for youth with no health insurance. (Kids Count)
- Across 2016, 2017, and 2018, Mohave and Navajo counties had higher percentages of children 18 and younger who have public health insurances compared to the state as a whole. Apache County had no data for 2017 or 2018, but was higher than the state in 2016. All northern Arizona counties except Apache (no data) had higher percentages of public insurance compared to the state in 2017 (see Figure T29). (Kids Count)

Pregnancy/Prenatal
- The teen birth rate in each of the five northern Arizona counties is higher than the state rate (21.9), except for Coconino County (16.1). Navajo has the second highest birth rate in the state (38.7), followed by fifth-highest Apache (30.3), seventh-highest Mohave (27.3), and 12th highest Yavapai County. (CCHHS Community Health Assessment, December 2020)

Education
- From 2016 to 2019, Apache County and Navajo County consistently had a higher percentage of students who dropped out of school when compared to the state. In 2020, Apache County's dropout rate (2.8%) fell below the state's dropout percentage (3.3%), but Mohave (3.6%) and Navajo (3.4%) counties remained above that level. (Kids Count)
- The percent of students categorized as a student with a disability for the state of Arizona in 2019 was 12.8%. Each of the five northern Arizona counties have higher percentages of students categorized as having a disability compared to the state, with Mohave (15%) and

Coconino (14.3%) counties at the highest percentages. (Arizona Department of Education, Students with Disabilities Counts, 2019)

Native American health

Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center. *Behavioral Health and Substance Abuse Surveillance among American Indians in Arizona, Nevada, and Utah.* **September 2018.**

- Top behavioral health indicators in AZ for AI/AN:
    1. All mental health disorders,
    2. All mental health disorders except alcohol-and drug-induced disorders,
    3. Mood and depressive disorders,
    4. Schizophrenic disorders,
    5. PTSD
- Top substance abuse indicators in AZ for AI/AN:
    1. All substance abuse,
    2. Other opioid poisoning,
    3. Drug use in pregnancy and associated conditions,
    4. Benzodiazepine poisoning,
    5. Opioid dependence,
    6. Amphetamine poisoning
- In Arizona, the rate of suicide among AI/AN reached its greatest levels in 2016 (24.2 deaths per 100,000 population).
- Prevalence of binge drinking among AI/AN adults in AZ was 19% in 2015 and 21% in 2016.
- data in Figure 7 suggests that the prevalence of binge
- Drinking among AI/AN youth in Arizona in 2015 was almost twice that observed in all racial/ethnic groups combined
- In Arizona, the mortality due to liver disease and cirrhosis increased between 2012 (148 deaths) and 2016 (217 deaths).
- Number of all-cause drug overdose deaths and mortality rate per 100,000 population among AI/AN in AZ in 2016 was 17.8 (number of deaths = 50)

Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center. *The Opioid Epidemic in Indian County: What Tribal Leaders in Arizona Need to Know*, **October 2018.**

- In AZ, opioid related deaths have tripled since 2012 and more than two people a day died due to opioid related causes.
- Between June 2017 and April 2018, 1,144 Arizonans have died from a suspected opioid overdose (35). Additionally in the same time period, there were 6,749 suspected opioid overdoses, 4,488 naloxone doses administered (outside of the hospital by emergency personnel, and others), and 640 infants suspected to be born with NAS (36).
- According to the Arizona Department of Health Services (ADHS) vital statistics, there were approximately 430 AI/AN that had drug related deaths from 2006 to 2016 (37). In 2016, 16 of the 50 drug related deaths of AI/AN involved heroin and other opioids (e.g., codeine, morphine, oxycodone)(38).
- The 2016 Arizona Opioid Report found for AI/AN the drug overdose death rate from 2007 to 2016 is 6.1 per 100,000 people compared to a rate of 12.1 for White non-Hispanics, 5.9 for African Americans, and 5 for Hispanics (39).
- The report also determined the most common preexisting conditions, not race specific, for overdoses due to opioids were (in order of most common): chronic pain, depression, history of substance abuse including alcohol, anxiety, bipolar disorder, suicidal ideation, diabetes,

chronic obstructive pulmonary disease (COPD), cancer, and posttraumatic stress disorder (PTSD).

- The 2016 Arizona Opioid Report found rural communities face a greater risk of people dying from opioid overdose due to dispersed capacity for emergency response and care (40). In 2016, the average rate of opioid prescription dispenses in AZ was 70.2 per 100 people (41) which is higher than the national average is 66.5 per 100 people (42).
- The top three AZ counties with the highest opioid prescription rates in 2016 were:
  1. Mohave County,
  2. Gila County, and
  3. Yavapai County.
- In 2016, Mohave County in AZ dispensed 127.5 opioid prescriptions per (43) 100 residents the highest of any county in AZ.

Navajo Nation, 2011 Navajo Nation Middle School Youth Risk Behavior Survey Report. Window Rock, AZ: Navajo Nation Division of Health, Health Education Program, October 2013.

Achieving Healthy People 2020
- 23.9% of middle school students had ever ridden in a car driven by someone who had been drinking alcohol. HP 2020 Objective = 25.5%
- 11.4% of students had smoke cigarettes on one more of the past 30 days. HP 2020 Objective = 16.0%
- 16.4 % of students had smoked cigarettes or cigars or used chewing tobacco, snuff, or dip on one or more of the past 30 days. HP 2020 Objective = 21.0%
- 89.0% of male students have never had sexual intercourse, and 92.3% of female students have never had sexual intercourse. HP 2020 Objective males = 78.3%, HP 202 Objective females = 79.3%
- 66.0% of female students used a condom during their last sexual encounter. HP 2020 Objective 58.1% for females
- 27.0% of students had exercised for 60 minutes per day on 7 of the previous 7 days. HP 2020 Objective = 20.2%

Key Findings
- All three questions pertaining to suicide are decreasing, however, middle school students in the Navajo Nation were 11.1% more likely to seriously think about killing themselves, 18.6% more likely to make a plan for killing themselves, 52.9% more likely to have tried to kill themselves than New Mexico middle school students.
- female students were more likely to think about, make a plan for, and to have tried killing themselves than male students.
- Female students were more likely to report bullying than male students (43% and 38.5%), and more likely to report electronic bullying (20.3% and 9.3%).
- MS school students were almost as likely to have ever tried marijuana (24.25%) as alcohol (24.7%)
- About 1 in every 8 students has ever tried inhalants
- 1 in every 4 students has ever abused prescription drugs
- 43% of students reported most of the time or always speaking a language other than English in their home
- 47.4% participated in some traditional ceremonies such as puberty, blessing way, fire dance, and Yeibichei
- 70% of students know their mother's clan or ancestry
- 64.9% know their father's clan or ancestry

Improving Trends
- Having ever tried smoking cigarettes has decreased by 45.2% since 2003
- Having smoked on at least 1 of the previous 30 days has decreased by 40% since 2003.
- Having every tried marijuana has decreased by 32.4% since 2003
- Having used chewing tobacco on at least 1 of the previous 30 days has decreased by 20.9% since 2005
- Having smoked before the age of 11 has decreased by 20.4% since 2007
- Having used a condom during last sexual encounter has increased by 136% since 2003.
- Daily PE attendance has increased by 28% since 2005.
- The percentage of students who have never tried alcohol has increased by 26.3%
- The percentage of students who exercised for 60 minutes on at least 5 of the previous 7 days has increased by 14.9% since 2007

Worsening Trends
- The percentage of students who have been taught about AIDS or HIV in school has decreased by 45.9% since 2003.

Navajo Nation. 2011 Navajo Nation High School Youth Risk Behavior Survey Report. Window Rock, AZ; Navajo Nation Division of Health, Health Education Program, October 2013.

Achieving Healthy People 2020
- Only 23.8% of High School students rode one or more times during the past 30 days in a car or other vehicle driven by someone who had been drinking alcohol. HP Objective = 25.5%
- 45% of students never had at least one drink of alcohol on one or more days during their life, and 36.7% of seniors never had a drink of alcohol. HP objective = 30.5%
- 25.8% of students were physically active for a total of at least 60 minutes per day on 7 of the past 7 days. HP objective = 20.2%

Improving Trends
- Binge drinking in the past 30 days decreased by 49.5% since 1997
- Lifetime inhalant use has decreased by 47.6% since 1997
- Smoking for the first time before age 13 has decreased by 42.9% since 1999
- Smoking at least once in the past 30 days has decreased by 42.2% since 1997
- The percentage of students who never tried alcohol increased by 72.4%
- Condom use during their sexual encounter has increased by 67.7% since 2005
- Attempts at quitting smoking has increased among current smokers by 50% since 2005
- Watching TV for 3 or less hours on a typical school day has increased by 18.3% since 1999

Worsening Trends
- Students who had been taught about HIV/AIDS has decreased by 22.0% since 1997
- Obesity has increased by 47.5% since 1999
- Chewing tobacco use in the previous 30 days has increased by 27.9% since 1999
- Sex before age 13 has increase by 21.7% since 1997
- Sex with 4 or more partners in a student's lifetime has increased by 19.4%
- Current sexual activity (sex in the previous 3 months) has increased by 17.1% since 2005.
- NN High School students were more likely than U.S. high school students to:
    - 28.5% more likely to have tried marijuana before age 13
    - 26.1% more likely to have smoke marijuana at schools
    - 43.6% more likely to have ever tried marijuana

- 39% more likely to have used marijuana in the past 30 days
- 91% more likely to have attempted suicide in the past year
- 29.7% more likely to have made a suicide plan in the last year
- 15.2% more likely to have seriously considered suicide in the past year
- 33.8% more likely to be obese
- 15.8% more likely to be overweight
- 34.7% less likely to have used Depo-Provera or birth control pills before last sexual intercourse
- 40% less likely to have used a condom plus Depo-Provera or birth control pills before last sexual intercourse
- 46.4% of students spoke a language other than English in their home most of the time or all the time
- 42.4% of students participated in some traditional ceremony such as puberty, blessing way, fire dance, or Yeibichei
- 78.6% of students know their mother's clan or ancestry & 71.3% know their father's clan or ancestry

Navajo Native American Research Centers for Heath (NARCH) Partnership between Diné College and Northern Arizona University, Navajo Nation Department of Health, and Arizona Department of Health. 2020 Navajo Nation Maternal and Child Health Needs Assessment. 2020.

Ranked priority areas by age group
- Perinatal/Infant 0-5 years
  1. Mortality (Sudden Unexpected Infant Death Syndrome and Shaken Baby Syndrome)
  2. Preterm birth, low birth weight
  3. Breastfeeding duration
  4. Birth defects
  5. Oral health
  6. Large infant gestational size
- Child 6-11 years
  1. Mortality (unintentional injuries, violence, and falls)
  2. Substance use (tobacco, alcohol, marijuana)
  3. Oral health
- Adolescent 12-17 years
  1. Mental health (ACEs)
  2. Alcohol use
  3. Nutrition
  4. Sexual risk behavior – coming of age health education
  5. Tobacco use
  6. Family composition, displacement, and homelessness
  7. Marijuana use
  8. Cognitive disabilities
  9. Sex trafficking and sexual violence
  10. Dating violence
  11. Cyber bullying
- Maternal
  1. Prenatal care in the 1st trimester (family planning education)
  2. Adequate prenatal care
  3. Maternal mortality
  4. Breastfeeding duration
  5. Drug use

6. Diabetes
7. Obesity
8. Oral health

Navajo Epidemiology Center. Navajo Nation Hospitalization and Emergency Room Rate 2016, National Center for Health Statistics 113 Select Causes. Navajo Department of Health, April 2019.

5 Leading causes of hospitalization for the Navajo Nation
- Diabetes
- Anemias
- Primary
- Hypertension
- Renal Failure
- Other Respiratory Diseases

- The 7th and 8th leading causes of hospitalization for the Navajo Nation are Alcohol Dependence and Harmful Use of Alcohol, which are not among the NCHS 113 select causes. Approximately 1.7% of Harmful Use of Alcohol cases were also coded as Alcohol Dependence.

Hospitalization rates were higher for females than males for
- anemias (74.5 and 37.5 respectively)
- cholelithiasis and other disorders of the gallbladder (30.9 and 21.4)
- infections of the kidney (11.7 and 1.8)

Hospitalization rates were higher for males than females for
- diabetes (77.2 and 48.5 respectively)
- alcohol dependence (37.3 and 10.6)
- harmful use of alcohol (34.3 and 12.1)
- primary hypertension (45.3 and 25.9)
- chronic ischemic heart disease (12.8 and 6.2)
- stroke (6.6 and 2.5)
- diseases of the artery (3.2 and 0.8)
- pneumonitis due to solids and liquids (3.3 and 1.0)
- alcohol liver disease (22.2 and 12.5)
- renal failure (38.9 and 22.6)
- other and unspecified non-transportation accidents (11.0 and 4.8)
- and assault by other (non-firearm) means (7.2 and 1.5)

ER visit rates were higher for Males than females for
- other land transportation (51.9 and 16.4 respectively)
- accidental discharge of firearm (3.6 and 0.6)
- accidental exposure to smoke/fire/flame (7.0 and 2.7)
- other and unspecified non-transportation accidents (469.0 and 297.7)
- assault by other (non-firearm) means (268.4 and 146.0)
- legal intervention (9.0 and 1.2)
- other and unspecified events of undetermined intent (13.6 and 8.2).

Females did not have higher ER rates for any types of external injuries.

Francisco S., Foley D., Antone Nez R., Kinlacheeny JB, Yazzie D. (2017). Report of the Navajo Behavioral Risk Factor Surveillance Survey, 2013, 2015, 2016. Navajo Epidemiology Center, Navajo Department of Health, The Navajo Nation. Window Rock, AZ.

Alcohol consumption
- In the past 30 days, 1 in 5 adults reported drinking alcohol, which was significantly lower than all 4 comparison groups. Males (34.5%) were much more likely to report drinking alcohol than females (9.8%).
- While 1 out of 7 adults reported binge drinking alcohol in the past 30 days, among those who drank alcohol, approximately 6 out of 7 reported binge drinking.
- In the past 30 days, 0.9% of respondents reported drinking and driving, but a total of 27.9% of participants reported that they had been a passenger with a driver who had too much alcohol, which may be the best estimate of drinking and driving.

Chronic Diseases
- The diabetes prevalence was 18.8%, significantly higher than state and national averages (10% U.S., 7% Utah, 10.1% Arizona and 11.5% New Mexico).
- A total of 3.3% of participants reported they were told they had Chronic Obstructive Pulmonary Disease (COPD), which was significantly lower than all 4 comparison groups.
- Reported prevalence for both heart attack (4.7%) and high blood pressure (29.4%) were similar to all 4 comparison groups.

Diet and BMI
- Based on self-reported height and weight, almost half of participants (47.4%) met the criteria for obesity, significantly higher than all 4 comparison groups (29.8% U.S. average).
- 15
- Self-reported daily fruit consumption (64.5%) was higher than all 4 comparison groups, which ranged from 56.9% to 62.4%. Daily vegetable consumption (70.5%) was lower than all 4 comparison groups (77.7% U.S. average).
- Daily soda consumption was high among males (45.6%) compared to females (32.0%). Consumption was higher among the younger age groups; 47% of adults under age 30 consumed soda daily. The lowest daily soda consumption was 23.1% for adults ages 60-69.

Disability
- Almost one quarter (23.3%) of the participants reported being limited because of a physical mental or emotional problem.
- About 1 in 8 participants reported having a physical, mental, or emotional problem that required the use of special equipment, which is significantly higher than all 4 comparison groups.

Health Care Access
- A total of 42.3% of participants reported having one person they think of as their doctor or health care provider, which was significantly lower than all 4 comparison groups (72% U.S. average).
- Respondents were more likely to report having more than one personal doctor or health care provider (22.3%) and significantly more likely to have reported not having a personal doctor or health care provider.
- Approximately 3 out of 5 Navajo Nation residents reported that they use a traditional healer or native medicine.

Health Status
- Navajo adults were significantly less likely to report "very good health" and significantly more likely to report "fair health" compared to residents of Arizona, New Mexico, Utah, and the U.S.

Tobacco
- Survey participants were significantly less likely to report smoking cigarettes every day and significantly more likely to have never smoked cigarettes compared to all 4 comparison groups.
- About 13.5% of participants reported chewing tobacco, significantly higher than all 4 comparison groups.

Sexual and Intimate Partner Violence
- Sexual violence includes any unwanted sexual contact (e.g. being groped or fondled), exposure to unwanted sexual situations (e.g. sexual harassment, someone exposing sexual parts of their body), and unwanted sex (i.e. rape).
- A total of 2.7% of female participants reported rape during their lifetime, 4.7% sexual violence and 12% physical violence. Among male participants, 0.3% reported sexual violence and 2.6% physical violence.
- These proportions are far lower than national averages, especially for Native American populations, suggesting likely underreporting.

CDC WONDER Online Database, Underlying Cause of Death, Multiple Cause of Death files

Number of deaths among American Indians or Alaska Native individuals due to intentional self-harm per 100,000 population (age-adjusted to data year) in AZ
- 2015 = 18.3
- 2016 = 21.6
- 2017 = 26.6
- 2018 = 34.1

Disparities and COVID vaccine outreach

Data source: https://covid.cdc.gov/covid-data-tracker/#vaccinations-county-view

- In AZ, 47.2% of total population has been fully vaccinated.
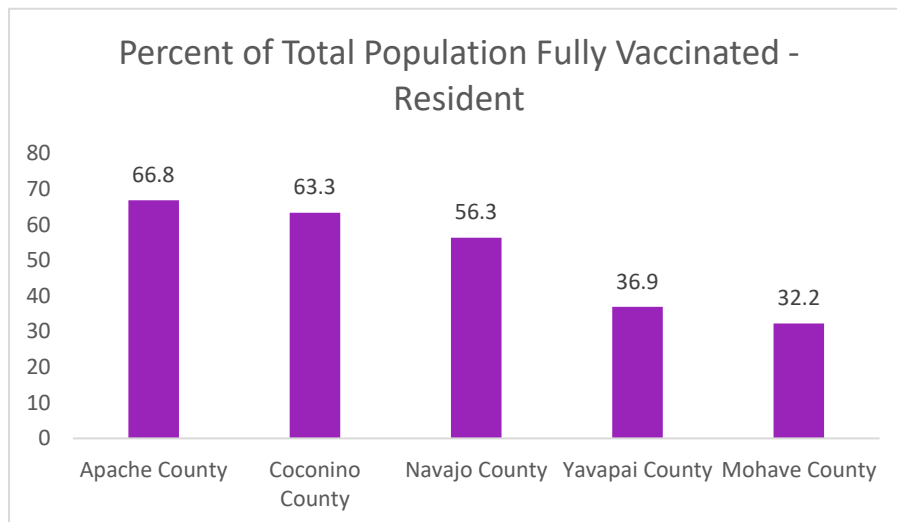
Percent of Total Population Fully Vaccinated - Resident

County	Percent
Apache County	66.8
Coconino County	63.3
Navajo County	56.3
Yavapai County	36.9
Mohave County	32.2

Gomez, O., Jimenez, D., Cadman, E., Gardner, J., Pollitt, A., Meraz, R., & Sabo, S. (2021). Community Engagement Alliance (CEAL) Against COVID-19 Disparities: Results from

Community Health Workers Focus Groups. Flagstaff, Arizona: Center for Health Equity Research, Northern Arizona University. To access this report digitally, please visit the NAU-CHER website (https://nau.edu/cher/ceal/)

Recommendations:
Vaccine Basics
- Illustration of the vaccine contents, function, expected outcomes of the contents (ex. allergic reaction), and a clear list of items not used for vaccines is highly recommended. Visual aids for this information were mentioned as highly recommended to engage patients and facilitate the learning process. Authority figures such as doctors were also mentioned as another strategy to provide this information and ease feelings of hesitancy and fear.

Safety and Side Effects Recommendation
- Language appropriate handouts and published materials should be made available to all persons (see Logistics and Barriers) to address common questions. Recommended material should be primarily visual with limited text to convey known side effects, duration, and indicators for safety. Any developed communication should include clear statements on what to expect "Due to" the vaccine is strongly recommended to enhance trust.

Benefits [of being vaccinated]
- A method of illustrating benefits is the use of testimonials or lived experiences by individuals who have received their vaccine. A combined effort between the items described leading to hesitancy and illustrative handouts may be the best approach especially disseminated on mediums like Facebook, local radio or news networks, ad in local businesses.

Logistics and Barriers
- User friendly websites in Spanish in 6th grade reading level content is a first step to improving access. Next, compiled vaccination locations in websites should include locations marked with indicators for proximity to public transit. Clear indication and expectation of requirements should be stated to encourage immigrant's participation and reduce fear. For example, advertisements should include accepted forms of identification, statements on privacy, indications that immigration status is of no consequence, and association with local trusted organizations among the target population. Lastly, coordinating a team to mobilize vaccination access and "meet them where they are" is especially important homeless individuals as well as providing temporary housing in case of vaccine side effects or medical complication is crucial to ensure this vulnerable population is protected.

Key findings that CHER has identified in recent years

Southwest Health Equity Research Collaborative. A Mapped Resource Guide for Alzheimer's Disease and Dementia Caregivers and Community Members Living in Northern Arizona. April, 2021.

Policy recommendations
- Increasing access to care by developing more financially and geographically available services.
- Allowing for flexibility in implementation of caregiver support resources so communities can make them culturally-relevant.
- Establishing mechanisms that assist caregivers with identifying caregiver support and system navigation.
- Providing training to health and social service providers on ADRD and ways they can support caregivers.

- Ensuring easier access to required specialists (i.e. neurology, gerontologist)
- Establishing additional specialized ADRD care locations, such as senior day care and memory units, to improve caregiver supports in more rural and diverse areas.
- Expanding programs and services specific to ADRD and caregiver support among senior centers that already exist in rural and diverse areas.
- Promoting the development of dementia friendly communities throughout the region (https://www.dfamerica.org/).

Sabo S. O'Meara L and Castro C. (2019). Integration and Financing of the Community Health Worker Workforce in Arizona Cost Containment Care System Health Plans. Flagstaff, Arizona: Center for Health Equity Research, Northern Arizona University.

- Center for Health Equity Research interviewed leadership of all Arizona Health Care Cost Containment System (AHCCCS) contracted health plans to assess innovations in CHW workforce integration and financing. A total of 6 health plans and 16 individuals were interviewed between March and May 2018
- An estimated 4 AHCCCS Health Plans and 10 of 22 Federally Qualified Community Health Centers currently employ CHWs to link patients to community resources to promote self-management.
- Arizona health plan leaders recognize that by utilizing their unique position within their community, coupled with skills and training, CHWs can play a significant role in improving patient outcomes and reducing system costs for health care.

Key Message: Health Plan Leaders:
- Value and capitalize on overwhelming body of scientific evidence demonstrating CHW impact on access to and appropriate use of healthcare, medication adherence, management of chronic disease and mental health, and use of emergency services.
- Utilize the full range of CHW roles, competencies and scope of practice.
- Hire CHWs based on their 'lived experience' and intimate knowledge and connection to community.
- Support CHW Voluntary Certification (HB2324).
- Desire standardized and accessible CHW core competency training
- Innovate through value-based payment models to integrate and sustain CHW services.
- Require AHCCCS billable codes for CHW services to fully incentivize the scale the CHW workforce.

- AHCCCS Complete Care (ACC) contracted health plans with experience in the delivery of behavioral health care through Peer Supports – a subsect of the broader CHW workforce – set precedent for beneficial policy adoption in which ADHS and AHCCCS standardized Peer Support workforce scope of practice and training, and established AHCCCS billable codes.

"We have found that for every social barrier that is removed through a community health worker and tracked through the community impact model, we save $450 in reduced emergency room visits, reduced length of stay in a hospital and reduced rapid readmissions. At the same time, not only is there a cost savings but we have found that there is a significant lift in quality scores when those same social barriers are removed. Members are 1 ½ - 2 ½ times more likely to schedule and complete their primary care physician visits, they are nearly 7 times more likely to have a better adult BMI score, they remain more compliant with their diabetes treatment and so on. We have each measure documented on what the list is by removing a social barrier, which is one of the key roles that we ask the community health workers to play." AHCCCS Health Plan Leader

Health Policy Recommendations:
1. Extend AHCCCS billing codes for CHW services and scope of practice
2. Monitor CHW innovations emerging from (1) the AHCCCS Complete Care contracts which integrate behavioral and physical health services and (2) the CHW voluntary certification legislation.
3. Promote standardized CHW core competency training among health plans and contracted provider networks.
4. Share CHW advances in training, supervision, hiring, financing and integration within health care teams.

Benefits of HB2324 CHW Voluntary Certification:
- A positive impact of CHW workforce development and recognition within their provider network
- Conveys legitimacy of the CHW workforce as a profession
- Establishes the foundation to standardize the CHW workforce
- Potential for AHCCCS to identify CHW serves as billable covered services
- Provides important statewide standardization for CHW training and data tracking
- Standardizes CHW core competencies and scope of practice

Sabo S, Remiker M, Jimenez D, Samarron-Longorio A, Chief C, Williamson H, Dahm L, Teufel-Shone N. (2020) A Regional Health Equity Survey Report: Building Capacity to Address Health Equity in Northern Arizona. Southwest Health Equity Research Collaborative, Northern Arizona University. Flagstaff, Arizona.

Leaders specified the following strategies to advance equity in northern Arizona
- Build community knowledge and capacity
- Develop economic, workforce, and infrastructure
- Activate collaboration and partnerships
- Establish referral and resource systems
- Provide direct services
- Ensure flexible, fair, and equitable access
- Conduct community outreach and engagement
- Engage in advocacy and policy change
- Be culturally and community responsive
- Utilize evidence-based practices

Recommendations:
- Build research and evaluation capacity to address the social, economic, and environmental conditions of health inequity
- Design research to inform strategic planning, policy, and practice to address health inequity
- Strengthen research and training infrastructure to support community-engaged and participatory action-oriented research approaches
- Ensure that research is conducted responsibly, ethically, and in collaboration with the community and affected populations; Ensure results are returned to community for action
- Match and mentor community-engaged scholars to community identified research priorities
- Develop systems to support research faculty, students, and staff that represent and reflect the cultural diversity and backgrounds of our northern Arizona region

- Leverage institutional history and receptivity to multi-disciplinary teams and collaborative grant submissions to produce high impact team science

Appendix

Behavioral health conditions and the justice system

Camplain, R., Warren, M., Baldwin, J. A., Camplain, C., Fofanov, V. Y., & Trotter, R. T. (2019). Epidemiology of incarceration: characterizing jail incarceration for public health research. Epidemiology (Cambridge, Mass.), 30(4), 561.

- The median number of incarcerations during the study period was one (interquartile range [IQR] = 1–2). Forty percent of individuals had >1 incarceration. The median length of stay for first observed incarcerations was 1 day (IQR = 0–5). The median total days incarcerated was 3 (IQR = 1–23). Average length of stay increased by number of incarcerations. By 18 months, 27% of our sample had been reincarcerated.

Pediatric health (e.g. developmental disabilities/ASD)

Risk Factors

- Apache and Navajo counties had lower percentages on **almost** every risk factor question from every domain over all three years compared to the state, as well as other northern Arizona counties. (Arizona Youth Survey)
  - "Perceived availability of handguns" was higher than the state on all three years for Navajo County. Apache County was higher than the state for 2020 and 2018 only.
  - "Low neighborhood attachment" was higher than the state in 2018 and 2020 for Navajo County, and higher than the state in 2016 and 2020 for Apache County.
  - In 2016, Apache County was higher than the state in "poor family management", "family history of antisocial behavior", "academic failure", "rebelliousness", and "early initiation of drug use".
  - In 2016 and 2018, Navajo County was higher than the state in "family history of antisocial behavior", "parental attitudes favorable to drug use", "academic failure", "early initiation of drug use", "interaction with antisocial peers", and "friends use of drugs". In 2018 alone, "perceived availability of drugs" and "attitudes favorable to drug use" were higher than the state in Navajo County. In 2016 alone, "gang involvement" was higher than the state in Navajo County.

- **School domain:** In addition to Mohave and Yavapai counties' higher rates than the state in 2020, Coconino County had higher percentages on both school risk factor questions compared to the state. Again, Navajo and Apache counties had lower percentages than the state. "Academic failure" was higher in all 5 northern Arizona counties compared to the state in 2016 (see Figures T10-T12). (Arizona Youth Survey)

Adverse Childhood Experiences Among 8th – 12th Graders
- In 2020, Coconino, Mohave, and Yavapai counties had higher percentages of students who responded yes to all of the six ACE questions compared to the state of Arizona, except Coconino County was just below the state percentage (33.3%) on "ever lived with adults who insulted or put you down?" (32.7%) (see Figure T20). (Arizona Youth Survey)

Drug and Alcohol Use Among 8th – 12th Graders

- E-cigarette use was higher for each of the 5 counties compared to the state except Mohave in 2016, Coconino and Mohave in 2018, and Apache in 2020 (see Figure T22). (Arizona Youth Survey)

Health Insurance
- In 2018, one county in northern Arizona, Yavapai, had higher percentages of children 18 and younger who have no health insurance (9.5%) compared to the state of Arizona (8.4%) (see Figure T28). Apache County did not have data for 2018, but was part of three northern Arizona counties in 2016 that had higher percentages than the state (7.3%) (Apache [19%], Coconino [9%], and Yavapai [9.1%]). In 2017, all northern Arizona counties, except for Apache County which had no data, were higher than the state's percentage for youth with no health insurance. (Kids Count)
- Across 2016, 2017, and 2018, Mohave and Navajo counties had higher percentages of children 18 and younger who have public health insurances compared to the state as a whole. Apache County had no data for 2017 or 2018, but was higher than the state in 2016. All northern Arizona counties except Apache (no data) had higher percentages of public insurance compared to the state in 2017 (see Figure T29). (Kids Count)

Pregnancy/Prenatal
- Of mothers who gave birth in 2018 in Coconino County, 6% reported smoking during pregnancy, which is an overall increase of 1.6% since 2015. Almost 5% of Coconino County mothers who delivered babies in 2018 were found to have at least one infection, which could have been gonorrhea, syphilis, hepatitis B and hepatitis C. (CCHHS Community Health Assessment, December 2020)
- Of mothers that delivered in Coconino County in 2018, 40.7% had between 11 and 15 prenatal care visits, which is lower than Arizona as a whole (45.3%). As attending 6 to 10 prenatal care visits is becoming more common, it was reported that 32.9% of mothers that gave birth in Coconino County in 2018 had 6 to 10 prenatal care visits, which is just lower than the overall percentage for Arizona (34.6%). Roughly 65% of Coconino County mothers that gave birth in 2018 initiated prenatal care in the first trimester. This is lower than Arizona as a whole (68.8%) and much lower than the US as a whole (75.5%). (CCHHS Community Health Assessment, December 2020)

Education
- For 2016 through 2020, Apache County had a lower graduation percentage than the state as a whole, except in 2019 (see Figure T30). (Arizona Department of Education)
- Coconino County has a large proportion of young adults enrolled in a college or graduate school, with 68% of residents aged 18-24 years old that are college students. Of students enrolled at NAU for the fall of 2019, 65% were Arizona residents. (CCHHS Community Health Assessment, December 2020)
- The percent of students approved for free or reduced lunch at the state level went up from 2016 (56%) to 2017 (57%), but started declining again from 2018 (56%) to 2019 (55%). Across all four years, though, the percentage of those approved has been over 50%.

Native American health

Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center. *Behavioral Health and Substance Abuse Surveillance among American Indians in Arizona, Nevada, and Utah.* **September 2018.**

- Of the indicators included in this report, all mental health disorders was the one most frequently observed among AI/AN patients seeking care in Arizona between 2012 and 2016, followed by all mental health disorders except alcohol- and drug-induced disorders, mood and depressive disorders, schizophrenic disorders and PTSD. The prevalence of all mental health disorders, all mental health disorders except alcohol- and drug-induced disorders, mood and depressive disorders, schizophrenic disorders, and PTSD were greater in 2014 than in the years preceding and following.

Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center. *Allergy, Asthma, and Respiratory Disease Surveillance among American Indians in Arizona, Nevada, and Utah*. **October, 2018.**

- Leading causes of mortality by rank and mortality rate per 100,000 among AI/AN in Arizona in 2016: 1. Heart disease, 2. Unintentional injury, 3. Cancer, 4. Chronic liver disease and cirrhosis, 5. Diabetes.
- In Arizona, the prevalence of self-reported current asthma among AI/AN decreased between 2011 (21.7%) and 2016 (2.2%). The percentage of AI/AN self-reporting lifetime asthma decreased between 2011 and 2012, reached a high of 31.2% in 2014, and steadily decreased to 2.2% in 2016 (Figure 2). The percentage of hospital admissions due to asthma decreased overall between 2011 (1.3%) and 2016 (1.0%), although there was a light increase in admittances in 2015 (1.4%) (Figure 5).
- In Arizona, the percentage of hospital admissions due to COPD slightly, yet steadily increased between 2011 (0.17%) and 2016 (0.24%) (Figure 6).
- In Arizona, the age-adjusted CLRD mortality rate per 100,000 people increased between 2011 (14.4) and 2016 (19.5), with a slight decrease in 2014 (12.4) (Figure 7). The CLRD mortality rate ratio between AI/AN and NHW was less than 1 between 2011 and 2016, indicating a health disparity was likely not present (Table 4).
- In Arizona, the percentage of hospitalizations of AI/AN of which the primary diagnosis was any condition considered an acute URI increased between 2011 (5.7%) and 2016 (6.9%) (Figure 8). Between 2011 and 2016, the majority of acute URI among AI/AN were due to infections of multiple or unspecified sites, followed by acute bronchitis and bronchiolitis, and acute pharyngitis. The proportion of acute URI due to acute nasopharyngitis increased from 0.4% in 2011 to 7.3% in 2016 (Figure 9, Table 5).
- In Arizona, the percentage of hospital admissions due to influenza among AI/AN increased overall between 2011 (0.4%) and 2016 (0.9%). However, there were decreases in admittances in 2012 (0.3%) and 2015 (0.4%) (Figure 10). The percentage of hospital admissions among AI/AN due to pneumonia decreased each year between 2011 (1.7%) and 2016 (1.2%) (Figure 11). The combined pneumonia and influenza mortality rate among AI/AN decreased between 2011 (28.4 per 100,000) and 2015 (23.8 per 100,000), and increased in 2016 (29.6). The mortality rate ratio of pneumonia and influenza between AI/AN and NHW was greater than one for all years between 2011 and 2016, indicating a disparity may be present (Table 6).
- In Arizona, there were more than 100 cases of Valley fever among AI/AN for all years between 2011 and 2016, except in 2013. The lowest number of reported Valley fever cases between 2011 and 2016 was 77 in 2013, and the highest number of cases was 166 in 2011 (Table 7).
- In Arizona, the percentage of AI/AN who reported ever receiving a pneumonia vaccine decreased between 2011 (31.7%) and 2016 (23.8%), however there was a reported increase in vaccination in 2015 (50.9%) (Figure 12). The percentage of AI/AN that reported receiving the influenza vaccine in the previous 12 months steadily decreased between 2011 (49.8%) and 2016 (24.6%) (Figure 13).

- In Arizona, the percentage of active IHS AI/AN users that were prescribed an inhaled sympathomimetic bronchodilator was greater than those prescribed an inhaled sympathomimetic bronchodilator in both Nevada and Utah between 2011 and 2016. The percentage of those prescribed an inhaled sympathomimetic bronchodilator in Arizona increased slightly between 2011 (3.95%) and 2016 (4.59%) (Figure 14).
- In Arizona, the percentage of active IHS AI/AN users prescribed an antihistamine remained less than 0.50%, and was lower than Nevada and Utah for all years between 2011 and 2016. The percentage of those prescribed an antihistamine decreased slightly between 2011 (0.49%) and 2016 (0.35%) (Figure 15).
- In Arizona, the percentage of AI/AN that self-reported as current smokers remained equal between 2011 and 2012 (18.7%), decreased in 2014 (13.5%), and increased in 2015 (17.0%) and 2016 (35.6%) (Figure 16).

Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center. *Maternal and Child Health Assessment for American Indians and Alaska Natives in Arizona*. **September 2018.**
- In the available data from 2013 to 2017, Arizona had infant mortality rates of American Indians greater than the 2016 United States infant mortality rate of 5.9 per 1,000 live births.
- From 2013 to 2017, American Indians in Arizona had a higher infant mortality rate compared to Arizona as a whole.
- Between 2015 and 2017 the highest injury **type** for AI/AN infants in AZ was superficial injuries (49%).
- The 2015‑2017 dataset (n=356) has a similar trend with falls accounting for the highest frequency (79.64%) of AI/AN infant injury **cause** in AZ using ICD-10 codes.
- From 2015‑2017, the most common type of injuries for AI/AN children in AZ were superficial injuries (29.95%), open wound of head (23.9%), and fracture of limb (15%).
- Falls had the highest occurrence with 90% of injury causes among AI/AN children in AZ between 2015-2017

Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center. Oral Health among American Indians and Alaska Natives in Arizona, Nevada, and Utah. January, 2020.
- In Arizona, between 2013 and 2018, female IHS active users had a higher percentage of dental access encounters each year compared to males. Among females, the percentage of individuals with a dental access encounter increased between 2013 (78%) and 2018 (83%). Among males, the percentage of individuals with a dental access encounter increased between 2013 (75%) and 2018 (79%).
- Among active IHS users in Arizona, individuals aged 13-21 years had the highest percentage of dental encounters compared to all other age groups. That age group had percentages of dental access visits that ranged from 83% (2013) to 86% (2018). Dental access decreased among those aged 0 – 5 years old between 2013 (68%) and 2018 (53%).
- In Arizona between 2013 and 2018, female IHS active users aged 2-15 had a higher percentage of dental access encounters each year compared to males. Among females, the percentage of individuals with a dental sealant encounter decreased between 2013 (54%) and 2018 (42%). Among males, the percentage of individuals with a dental sealant encounter decreased between 2013 (50%) and 2018 (39%).
- Among active IHS users in Arizona aged 2-15, individuals aged 13-15 years had the highest percentage of dental sealant encounters compared to all other age groups. Dental sealant encounters of those in aged 2 years, 3-5 years, 6-9 years, and 10-12 years decreased from 2013 to 2018. Individuals aged 2 years old had the lowest percentage of dental encounters compared to all other age groups, ranging from 23% in 2013 to 1% in 2018.
- In Arizona between 2013 and 2018, female IHS active users aged 1-15 had a higher percentage of topical fluoride encounters each year compared to males. Among females, the percentage of individuals with a topical fluoride encounter increased between 2013 (70%) and 2018 (72%).

Among males, the percentage of individuals with a topical fluoride encounter increased between 2013 (68%) and 2018 (71%).
- Among active IHS users in Arizona aged 1-15, individuals aged 10-12 years had the overall highest percentage of topical fluoride encounters compared to all other age groups. Topical fluoride encounters of all those except aged 1-2 years increased from 2013 to 2018. Individuals aged 1-2 years old had the lowest percentage of topical fluoride compared to all other age groups, ranging from 61% in 2013 to 40% in 2018.

Inter Tribal Council of Arizona, Inc. Tribal Epidemiology Center. Severe Maternal Morbidity for American Indians and Alaska Natives in Arizona, Nevada, and Utah. September 2020.
- The SMM report published by Arizona Department of Health Services in 2020 identified AI/AN women to have a SMM rate of 292.6 cases per 10,000 delivery hospitalizations; 3.5 times the rate of White women (1).
- Arizona reported that AI/AN women represented 6% of all births between the years 2012 and 2015 (11). In the same time period, the maternal mortality rate for AI/AN women was 70.8 deaths per 100,000 live births, the highest out of the other race and ethnicity groups (11). Of the maternal deaths that occurred during 2012-2015, 17% were AI/AN mothers (11). Of all the pregnancy related deaths reviewed from 2012-2015, 89% were identified as preventable (11). Identifying severe maternal morbidity is imperative to help decrease cases of maternal mortality.
- The highest rate of an SMM event in the AI/AN population in Arizona occurred in the 20-29 age category with 173.8 per 10,000 live deliveries. It's important to take into account that 62% of all AI/AN deliveries were from this age group.
- In 2019, ADHS published a SMM report for data years 2016-2018. The analysis found that AI/AN women were affected by SMM at a rate of 292.6 cases per 10,000 delivery hospitalizations; White women had a rate of 82.1 (1). Even though AI/AN women accounted for 4% of hospital deliveries in Arizona between the years of 2016-2018, they accounted for 10% of all SMM cases. In addition, the report found that women living in rural counties had a higher rate of SMM compared to those living in urban counties (1). Many tribal reservations in Arizona are in rural areas. Additionally, the ADHS SMM report found that most cases of SMM were identified by having a SMM procedure code (63%), diagnosis code (27%), or having both (10%)(1).
- Using AZ hospital discharge data, the highest incidences of a SMM diagnosis code were tied between adult respiratory distress syndrome and disseminated intravascular coagulation (44%). The next two highest counts of a SMM diagnosis code were in pulmonary edema and sepsis, both with 15%.
- Adult respiratory distress syndrome, disseminated intravascular coagulation, pulmonary edema, and sepsis were within the top 5 SMM diagnosis types identified in ADHS' 2016-2018 SMM report (1). Compare with caution as those findings are from different data years.
- The most common SMM procedure code identified in the ADHS 2016-2018 SMM report was blood transfusions and then hysterectomies1. Compare with caution as those findings are from different data years.
- Out of all the mothers who had a SMM procedure code, 92% had one SMM procedure versus 8% who had two or more.

Francisco S., Foley D., Antone Nez R., Kinlacheeny JB, Yazzie D. (2017). Report of the Navajo Behavioral Risk Factor Surveillance Survey, 2013, 2015, 2016. Navajo Epidemiology Center, Navajo Department of Health, The Navajo Nation. Window Rock, AZ.

Cancer Screening
- A total of 84.3% of female participants self-reported having had a mammography screening; 85.4% reported a cervical cancer screening.

- One third of participants age 50 and over reported ever having had a fecal occult blood test to screen for colorectal cancer; 25.0% used a home-based blood stool test in the past 2 years, which was significantly higher than all comparison groups (12.8% U.S. average).
- Colorectal cancer screening with sigmoidoscopy or colonoscopy among the Navajo was significantly lower (estimate 38.6%) than all 4 comparison groups (68.8% U.S. average).
- Prostate cancer screening among the Navajo in the past 2 years was significantly lower (20.6%) compared to all 4 comparison groups (42.8% U.S. average).

HIV Screening
- HIV screening among respondents was 45.7%, which was significantly higher than all 4 comparison groups.
- HIV screening was higher among younger age groups, with the highest proportion in the 18-29 age group.

Injury Prevention
- Unintentional injury is the leading cause of mortality on the Navajo Nation. Motor vehicle crashes are the most common type of unintentional injury resulting in death.
- Approximately 9 out of 10 participants reported always wearing their seat belt, similar to national and state averages.

Oral Health
- More than half (54.5%) of participants have had at least one permanent tooth removed, which was significantly higher than all 4 comparison groups.
- Almost 1 out of 6 (16.3%) participants aged 65+ have had all of their teeth extracted.

Arizona Advisory Council on Indian Health Care. Arizona Indian Health System Primary Care Workforce Assessment, June 2021

Key Findings
- The average tribal Primary Care Health Professional Shortage Area (HPSA) score is 19, versus state average of 14.
- The average tribal Dental HPSA score is 20, versus state average of 16
- An additional 52.53 primary care doctors are needed to eliminate tribal HPSAs
- An additional 40.33 dentists are needed to eliminate tribal HPSAs
- An additional 12.21 psychiatrists are need to eliminate tribal HPSAs

Recommendations for future study
- Conduct additional workforce surveys with IHS , Urban Indian Health System and tribal facilities, including assessing impact of obligated or temporary providers, providers planning to retire, and number of Medicaid claims. Include smaller tribes that do no have their own HPSAs in assessment.
- Assess other types of primary care providers, such as Nurse Practitioners, Nurse Midwives, Physician Assistants, Dental, Therapists and other behavioral health professionals. Also explore the impact of telemedicine on delivery of primary care.
- Inventory successful initiatives and strategies, both within Arizona and nationally, that have effectively increased the health workforce serving American Indian populations. This could include pipeline programs, recruitment and retention programs, or other incentives.

Disparities and COVID vaccine outreach

Gomez, O., Jimenez, D., Cadman, E., Gardner, J., Pollitt, A., Meraz, R., & Sabo, S. (2021). Community Engagement Alliance (CEAL) Against COVID-19 Disparities: Results from Community Health Workers Focus Groups. Flagstaff, Arizona: Center for Health Equity Research, Northern Arizona University. To access this report digitally, please visit the NAU-CHER website (https://nau.edu/cher/ceal/)

Myths:
Social control
- CHWs reported vaccine myths related to the purpose, social implication, and consequences of Covid-19 vaccination. Myths surrounding vaccination relate to politics, social control, anti-Christianity, and population control. For politics, ideas of political propaganda for political or power gain were discussed. Social control myths center around government tools to monitor (microchips) or mind control populations, which relate to fabrication of disease in labs. Religion is situated opposite to the vaccine as an anti-Christian or religious tools aimed against Christians. Lastly, another belief is that the purpose or function of Covid-19 vaccination is to cull populations or intentionally cause deaths as a way to control overpopulation.

Vaccine Harm
- *Some elements of myths include adverse health consequences that will happen as a result of getting vaccinated. Vaccines are thought to alter or restructure one's DNA, leading to abnormalities. A second myth includes that vaccines insert the virus into the person's body or make them sick purposefully. These elements of vaccine myths contribute to ideas of social control via fabrication of virus or disease. Importantly, these myths lead to associations between immunity and death/harm such that the concept of vaccination elicits fear for one's safety.*

COVID misinformation
COVID-19 Basics
- Misbeliefs within the Hispanic/Latinx community suggests a continual misunderstanding of what the virus is and undermines the severity of Covid-19. Many people believe that Covid-19 is just a cold often dismissing the potentially fatal effects of the virus. Another misbelief pertained to the misunderstanding of continuing prevention efforts and behaviors even after recovering from the virus. Many people believe that if they have recovered from Covid-19 that they have built immunity and no longer need to engage in preventative measures like vaccination. Misbeliefs on Covid transmission also spread among people who thought that being asymptomatic means there should be no concern for others getting infected.

Ideas and Beliefs of Health
- Ideas and beliefs of health around the Covid-19 virus included experiences of being misled and misinformed (encouraged by the media) about Covid-19 creating a distrust of medical professionals. Clients also developed beliefs about Covid-19 testing with the thinking that they would contract the virus through the cotton swab used to collect nasal samples. Through hearsay, people are developing phobias about being out in public believing that they could get infected from the air and that clinics are dangerous. As a result, clients are missing important doctor's appointments and are refraining from maintaining their medical treatments. Much of the information related to Covid-19 and vaccines are obtained from social media (Facebook or Instagram) as a primary source of information. CHWs are trying to find ways to communicate and dispel the misbeliefs using CDC materials and encouraging people to seek other valid sources. Other ways to prevent contracting the virus were discussed that included taking Vitamin C daily to help strengthen the immune system, combining a multitude of home

remedies or homemade recipes to cleanse the body's system and prevent them from being infected with Covid-19.

Social and Political Control/Injustice
- CHW's reported that some of their client base believe the virus was not real and was tied to political games. This minimized the importance of wearing masks and those who opposed mask wearing mandates believed that nothing was going to happen. Currently, while there are many people now following social distancing protocols and mask mandates, there are still certain people who refuse to follow recommendations to protect themselves and others. Similarly, it was commonly believed that the virus was human-made and intentionally spread by governments with the purpose of decreasing the world's overpopulation. This notion regarding the government's intent to control the population is also believed by many people to be a secret governmental operation that they kept hidden from the public while also blaming the virus' origin on other entities such as China, Japan, and bats.

Sources of information and misinformation
- Racial bias was mentioned as a systemic issue leading to intentional lack of response or support on the basis of one's ability to speak English or ethnicity. These fears are often developed from watching the news and the misinformation verbalized by other people. The media, including the tabloids, is believed to use sensationalized headlines to catch the attention of people to increase their audience numbers in order to increase overall sales or ratings. This encourages misinformation to spread through a "girlfriend network" with more people spreading rumors, developing misbeliefs, and responding with increased fear and extreme isolation (e.g., fear of going outside because Covid-19 travels through the air) for themselves and their family members. Many people felt bombarded by too much Covid-19 information from multiple sources (i.e., television, radio, tabloids, and social media) impacting their ability to identify a source that they can trust. CHWs work diligently to help people in their communities to follow information from local health department or trusted sources to address this issue.

Messaging Topics
Children quarantine support
- CHWs mentioned the mental health needs of children who have experienced isolation from their peers throughout the pandemic. CHWs also discussed how families are missing the signs that their children are needing mental health support. They are misinterpreting the kids' behaviors as intentionally defiant instead of recognizing that they are needing support as a result of the effects from the pandemic. Teenagers are needing a lot of support in dealing with the isolation as their typical social routines have been disrupted by the quarantine requirements. Teens are also getting a lot of their misinformation from social media like TikTok and Snapchat which impacts their anxiety levels. CHWs acknowledged the fact that there will be much needed support for children and teenagers in relearning positive aspects of mental health once the pandemic is over.

Elder quarantine support
- CHWs discussed having supportive conversations with elderly clients who are isolating themselves due to fear of contracting the virus while out in public. These conversations strive to reduce fears, correct misinformation, and make sure the clients have what they need at home and that their medical needs are addressed.

CHW mental health
- The importance of taking care of their own mental and physical well-being was discussed by CHWs as a desired topic area for a training. They also acknowledged the need to primarily

strengthen themselves before they would be able to help others. Presenting themselves as an example for their clients was also deemed as an important motivating factor.

Physical and nutritional training

- CHWs offered nutrition classes through zoom to help clients be more conscientious about themselves and others. The need for training was discussed to merge the topics of vaccination with diet/nutrition and physical training and to teach people how to manage a new lifestyle that is focused on health and well-being. Diet and nutrition are important topics for people who are dealing with existing health conditions and CHWs believe they are crucial to serving as an example for teaching and making healthy life choices in the long term.

Tips and strategies

- CHWs are key in helping to educate people with the correct information about the pandemic and valid facts related to the Covid-19 virus and vaccines. CHWs discussed the importance of continually offering guidance around Covid protection strategies. CHWs often communicate reminders to their clients to remain in quarantine whenever test results are positive for Covid-19 (i.e., even in cases of viral re-infection), correct ways to wear masks that help increase protection against the virus and correct handwashing techniques. CHWs discussed the importance of sharing information based on realistic data that is simple and easy to understand, which also does not undermine or create extreme levels of fear within children or the elderly. Other messaging strategies discussed by CHWs included expanding educational session opportunities to outdoor areas while continuing to encourage Covid care and safety measures by distributing PPE to those who attended. CHWs worked diligently to share Covid-19 information while offering saliva testing at outreach events that previously served a different purpose. CHWs also reported using personal networking communication to access and be alerted to Covid Vaccine appointments that opened up in their local areas.

Tools

- Using Facebook as a tool to communicate with the public regarding church events and services.
- Using the CDC and local county health department websites and informational material to educate people about Covid and to help debunk related misinformation or myths.
- Using social media outlets such as WhatsApp to send out Covid information and safe home treatments to support well-being.
- Using local media such as the radio station to send out messages related to Covid around how people can continue taking care of themselves (even after testing positive and recovering) and encouraging them to connect with their doctor, even if it's by phone.
- Provide information on the vaccines using a brochure (triptych) that use language that is simple and understandable and endorsed by a reputable institution (i.e., health departments, universities conducting research in this area, etc.) which would help to ensure confidence with the information provided.
- Using a brochure, flyers, text messages, or web links to educate around the vaccine which may help to dispel doubts and hesitancy among the people who are unsure about getting vaccinated.
- When clients do not have phone numbers, CHWs resort to disseminating Covid-19 information by knocking on their clients' doors, leaving the fliers in their mailboxes and/or leaving extra fliers outside of the community center for anyone who is seeking for information.
- Developing a poster titled 'Your Doubts About the Coronavirus' and speaking from the perspective of the family while also teaching through messages on the poster about how to handle situations related to the effects of the pandemic.
- Distribute brochure (triptych) materials through mailboxes.
- Make brochures with flashy content that will grab the attention and interest of the people.
- Offering contact information on the brochure for the people to use when they are in need of empathy.

- Organize backpacks filled with resource materials and items that promote health and well-being during the period of Covid.
- Using zoom to stay in connection and offer Covid related education to people in the community.
- Incorporate more details within messages on street signs. For example, instead of just saying "stay home," elaborate with "stay safe at home, but breathe fresh air and exercise in any way you can and always contact your doctor when necessary."
- Need training classes about Covid vaccine through zoom taken by CHWs so they can be prepared and well informed to educate people in their community.
- CHWs collaborate with primary prevention mobile health units to reach community members to disseminate Covid-19 informational materials.

Client Social Determinants of Health

Technology Barriers
- Limited technology resources were a barrier to accessing health services for both Covid and non-Covid related care. CHWs report that some of their clients were unable to utilize telemedicine services or were not able to create accounts because of limited technology resources, such as lack of devices to connect to the internet or lack of internet connectivity. Access to technology was a barrier to retrieving accurate information about Covid, causing misinformation to spread and be believed more often. These technological barriers were especially compounded for elderly populations, who may further lack access to technology resources or knowledge and skills to effectively navigate systems required for general access to health services and Covid-specific services such as testing and vaccination. For members of the community that were required to show proof of a negative Covid test result, not having access to a printer was a barrier to returning to work.

Economic Challenges
- Economic challenges have caused barriers to health insurance and access to health care. Community members have experienced difficulties with covering living expenses such as rent and utilities. Economic challenges have led to other difficulties, such as food insecurity and increased stress, further exacerbating the conditions and situations in which community members are living during Covid. Economic factors at the structural and organizational level have contributed to some employees continuing to work while sick and not receiving any health services or other assistance, such as unemployment. Some clients were not aware of programs for people that have experienced economic challenges related to Covid, and therefore, could not receive the assistance they needed. Contributing to economic challenges is loss of jobs, reduced work hours, death, or sickness of the primary wage earner, and pre-existing (before Covid) challenges. These challenges are especially experienced in low-income families, with CHWs reporting that people who lost jobs or have reduced wages work in the service industry, such as hotels and restaurants, or in other typically low-income jobs such as cooking, cleaning, and gardening.

Cultural Systems Challenges
- Cultural systems related to family unit and religion have been significantly impacted due to the Covid pandemic. CHWs describe the importance of family and closeness in the Hispanic/Latinx community, which is limited and even temporality lost during Covid, with the restriction of social gatherings. Community members are struggling to find safe alternative ways to connect with family members, especially while experiencing death and sickness.

Chronic Disease Management

- Patients living with pre-existing chronic disease have experienced challenges related to managing disease, especially related to continuing to seek care and follow-up due to fear on infection or limited availability of health services during Covid. CHW clients may be experiencing increased feelings of isolation because they are extra cautious about limiting their contact with others due to the high-risk of serious Covid illness. Because of the constant attention to Covid, some patients with pre-existing chronic disease have been delaying care or treatment.

Limited Health Services
- Health services became limited during Covid, partially because of precautions at health centers and hospitals to prevent the spread of Covid (e.g. limiting in-person visits, postponing elective surgeries), and the alternative options not being accessible to all clients (e.g. telemedicine services are difficult to navigate for some people). Other social and structural factors have also impacted people's abilities to seek and access needed health services, such as language and cultural barriers, lack of health insurance, and lack of affordable care. Additionally, beliefs and attitudes have affected access to health services for some people, such patients with pre-existing conditions feeling nervous and fearful to attend in-person appointments.

Comprehension
- CHWs reported client barriers leading to limited comprehension of Covid-19 information. These barriers to comprehension were related to language (i.e. information available in the primary spoken/written language and culturally relevant) and general literacy (i.e. client ability to read and write in any language). Language and literacy were barriers to understanding Covid information generally, including prevention measures, as well to accessing social services, including health care. Specifically in Hispanic/Latinx communities, lack of materials and resources, and staff who speak the primary language (i.e. Spanish) are important barriers for both accessing critical Covid information and needed services. Patients that are unable to read or write in English did not have their typical support of a family member to attend appointments with them for translation.

Parental Roles Challenges
- Having children at home with working parents was a challenge. Some parents felt it was difficult to help assist their children with Zoom classes while also working themselves. Other parents were unable to work from home and felt no other option than to leave their children alone at home. Parents feel increased stress related to having their children at home as well as feeling their children are having too much screen time and not adequately learning and falling behind. Some parents felt unable to help their children with homework or their homeschool material. CHWs describe these challenges through a gender role lens, where it is primarily the mother who is juggling multiple roles in the family (e.g. wage-earner, caretaker, teacher).

Any key findings that CHER has identified through diverse efforts in recent years, which are published or otherwise available.

Southwest Health Equity Research Collaborative. A Mapped Resource Guide for Alzheimer's Disease and Dementia Caregivers and Community Members Living in Northern Arizona. April, 2021.

Valuable resources for Alzheimer's Disease and Related Dementia (ADRD)
- Education and classes about ADRD
- Organizations that specialize in ADRD issues

- Support from Veteran's services, faith-based groups, other support groups
- Financial planning services
- Transportation services
- Food assistance programs
- Respite services
- Supported living options, including assisted living with memory care
- Programs that reimburse family caregivers
- In-home supports, such as home health and paid caregivers
- Speech therapy (cognitive changes and communication strategies)
- Memory cafés (none are currently available in Northern Arizona)

Areas for improvement and ADRD caregiver needs
- System navigation
- Easier ways to find resources available in their community
- Providers who understand ADRD
- Culturally-relevant and locally available services
- Locally available specialists who can assist with obtaining an ADRD diagnosis, as a diagnosis is often necessary to access resources

Sabo S. O'Meara L and Castro C. (2019). Integration and Financing of the Community Health Worker Workforce in Arizona Cost Containment Care System Health Plans. Flagstaff, Arizona: Center for Health Equity Research, Northern Arizona University.

Challenges in Integrating and Hiring CHWs within the health plans and provider networks
- Lack of understanding among providers of CHW competencies and training needs
- Reliable transportation among CHWs
- Needing to recraft CHW positions to accommodate non-traditional candidates
- Lack of AHCCCS billing codes for CHWs
- Lack of understanding CHW competencies and roles among health care team
- Locating individuals with the right combination of CHW competency and confidence to integrate into health care team.

CHW contributions
- Quality of care
  - Medical
    - Outreach and Engagement
    - Increase utilization of primary care
    - Increase utilization of preventative care
    - Decrease utilization of emergency services
    - Improve treatment adherence
    - Supportive in meeting Healthcare Effectiveness Data and Information Set (HEDIS)
  - Social Determinants
    - Decrease involvement with justice system
    - Housing Support
    - Health Plan Member Advocacy
- Cost of care
  - CHWs are of high value at a low cost
  - Improve adherence to treatment
  - Reduce use of emergency services
  - Reduce hospital inpatient admissions

- o Enhance early identification of high cost members
- Most valuable contributions
  - o Identify and remove social barriers to care
  - o Save member lives
  - o Normalize health care experience
  - o Meaningful outreach and engagement
  - o Encourage behavior change
  - o Health plan member advocacy
  - o Trusting relationship with health plan member

Sabo S, Remiker M, Jimenez D, Samarron-Longorio A, Chief C, Williamson H, Dahm L, Teufel-Shone N. (2020) A Regional Health Equity Survey Report: Building Capacity to Address Health Equity in Northern Arizona. Southwest Health Equity Research Collaborative, Northern Arizona University. Flagstaff, Arizona.

Over 200 county-level leaders representing various sectors shared their knowledge, attitudes, and actions related to addressing the social, environmental, and economic conditions that impact the health and wellbeing of the communities they serve. In their responses, participating multisector leaders demonstrated their profound knowledge of the drivers of health inequity and were especially cognizant of how their own beliefs, values, and privilege influence their worldviews on issues of equity. Organizational cultures across northern Arizona were found to be primed for action on the social determinants of health and actively engaged in cross-sectoral partnerships. Research on issues related to health equity was perceived as highly valuable.

Inspiring local and national initiatives
- Access to care
  - o Using best practice quality metrics
  - o Training in trauma-informed care
- Behavioral Health Care
  - o Providing opioid overdose trainings
  - o Providing free condoms, naloxone kits, and fentanyl strips
  - o Critical incident stress management
  - o Mental health first aid and crisis intervention services
  - o Syringe clean-up events
  - o Adding mental health services to free children's health care program
- Affordable Quality Housing
  - o Housing-first and jobs-first approaches
  - o Building homeless shelters
- Economic Opportunity
  - o Employers providing paid student internship opportunities to high school students
  - o Developing a freeway interchange to a second hospital facility and promoting retail business development around the health facility
  - o Planning and investing that captures and promotes a community's heritage
- Educational Opportunity
  - o Special needs health fair
  - o Schools using a trauma-informed approach
  - o Creating crisis and response teams at the school and district level
  - o Increasing anti-bullying services in schools
  - o Restorative practices in school
  - o Positive behavior intervention support

- o Increase parent engagement
- o International baccalaureate
- o Signs of suicide (SOS)
- o Securing federal grant projects for libraries
- o Summer reading programs to prevent the "summer slide" in reading abilities
- Environmental Quality
  - o Community purchase of local water service
  - o Wildfire risk reduction
  - o Improved fire protection systems
- Quality affordable food
  - o Programs to distribute food waste to food banks
- Parks and Rec
  - o Building dream court, swimming complexes, skate parks, and pickle ball courts
- Social/cultural cohesion
  - o Tobacco education and youth action groups
  - o Expand community presence with events and social activities
  - o Using the arts as an intervention for social isolation and related negative health impacts
- Social Justice
  - o Specialized courts: mental health, night, drug, veteran's, domestic violence
  - o Fatality review boards: child and domestic violence
- Transportation Options
  - o Transportation vouchers
  - o Regional transit implementation plans
- Technology
  - o Technology training classes: all ages and elderly
  - o Bringing technology and reliable, high-speed internet services to rural areas
  - o Bringing broadband to libraries
  - o Using solar power in sparsely populated areas
  - o Use of drone programs

Health Equity Priority Research Areas
- **Economic Opportunities:** Poverty, disparities in income, job opportunity and lack of higher wage jobs, workforce development, economic development, economic indicators
- **Healthcare:** Access, affordability, and quality of health services and health plan coverage, long distances people have to travel to seek care, understaffing and difficulty attracting and retaining healthcare professionals, especially in rural areas
- **Mental Health:** Access to mental health services, and substance use including drug addiction, rehabilitation, and stigma
- **Education:** Educational opportunities from K-12 through higher education, affordability, and funding
- **Transportation:** Access, affordability, and adequacy
- **Housing:** Access, affordability, and homelessness
- **Food:** Access, food security, quality (healthy foods)
- **Early Childhood Development:** Early childhood education, youth development
- **Social Context:** Social context around health inequities, understanding issues around culture, stigma related to health conditions, social activities
- **Social Justice:** Effects of incarceration, historical trauma, social justice in relation to other social determinants of health
- **Environment:** Climate change

- **Tribal Communities:** Funding, focus, and effectiveness of Indian Health Services, healthcare options on the reservation, impact of Native American culture on health maintenance
- **Rural Communities:** Access to services based on unique challenges experienced by rural communities (healthcare, mental health, transportation, food)
- **Aging and Elderly:** Access to services