

Utah Breast and Cervical Cancer Disparities Profile



Trends in screening, incidence, staging, and mortality by race, ethnicity, and geographical area among women in Utah

Utah Breast and Cervical Cancer Program | January 2023

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Overview

The Utah Breast and Cervical Cancer Program (Utah B&C) compiled over 20 years of health data to assess and report the disparities in breast and cervical cancer morbidity and mortality among disparate groups of women in Utah. Breast and cervical cancer impacts thousands of women in Utah each year with a disproportionately greater impact among women of racial and ethnic minorities and among under- or uninsured women. Significant disparities in health outcomes still exist, which creates a wide gap in mortality rates and poorer outcomes between these women and other women in Utah. The trend analyses in female breast and cervical cancer incidence, mortality, staging, and screening presented in this report differed by demographic characteristics, suggesting that cancer prevention and control strategies be tailored to address certain racial, ethnic, and geographical communities of women disproportionately burdened by cancer and help eliminate health disparities.

The public health, health care, and social institutions that shape Utah should be adequate and accessible to promote health equity for all. Collective action across sectors to reverse systems that perpetuate or ameliorate health disparities must include evidence-based interventions that are culturally and linguistically responsive and inclusive.

Purpose

UTAH B&C is committed to better understanding and addressing health disparities in cancer morbidity and mortality. The data presented in this report is intended to guide the planning, implementation, and evaluation of equitable policies, evidence-based interventions, and community-based research. It should serve as a resource for state, county, and local agencies and organizations interested in addressing health disparities and improving health status in Utah populations.

Data Notes

The data presented in this report utilizes various data sources to identify long-term trends in breast and cervical cancer outcomes in Utah from years 2000 to 2021. The data sources are listed at the bottom of each graph. Readers should be cautious when identifying long-term trends or shifts in health status as not all data sources are consistent across the 20-year span covered by this report. Further, when data are disaggregated by race, ethnicity, and geographic location, data is often compiled from a series of years in order to obtain reliable estimates. Even then, some samples may not be high enough to yield statistically significant differences. These kinds of data insufficiencies are noted throughout this report with asterisks and footnotes. Small area population and Utah Health Improvement Index data are available for years 2010-2020, and

thus trend analyses utilizing these data are limited to this time frame.

Introduction

Utah's population continues to diversify along many dimensions, including race and ethnicity. It is projected that the state's minority population will increase from 20 percent in 2015 to 35 percent in 2065.¹ Previous research has shown Utah's growing racial and ethnic communities bear a disproportionate burden of disease and poor health outcomes.² Health disparities limit the opportunity for individuals, families, and communities to achieve optimal health, which impacts their length of life, quality of life, and economic and social well-being.

UTAH B&C compiled over 20 years of health data to analyze and report the disparities in breast and cervical cancer morbidity and mortality among disparate groups of women in Utah. Assessing health disparities is a critical step to ensuring state, county, and local agencies and organizations can make data-informed decisions on their programmatic activities aimed at eliminating disparities and advancing health equity.

Breast and cervical cancer affects hundreds of women each year across Utah with greater impact on those with inadequate healthcare options for prevention and/or treatment. Screening and early

detection of breast and cervical cancer can significantly reduce mortality rates and greatly improve cancer patients' survival. However, health disparities in breast and cervical cancer screening and treatment signal a disproportionate burden of disease and poor health outcomes among women who are underserved and who have increased cancer risk due to health inequities. Implementation of effective cancer control interventions that reduce health disparities in cancer detection and treatment can close the gap in health outcomes and promote breast and cervical health for all women throughout Utah.

Health Disparities Definition

Health disparities refer to the differences in outcomes or disease burden between different groups. They are used to measure and assess progress toward reaching health equity. Health equity is achieved when every person has an equal opportunity to live the healthiest life possible, and no one is denied the possibility to be healthy because of social position or other socially determined circumstances.

Identification of health disparities through disaggregating population health data by group is vital to better understanding and addressing health disparities and progressing health equity.

¹ Ken C. Gardner Policy Institute, *Utah's Increasing Diversity: Population Projections by Race/Ethnicity*, 2019.

² Utah Department of Health Office of Health Disparities Moving Forward in 2016 reports.

The data presented in this report are disaggregated by race, ethnicity, county classification, and small area health improvement index score. All race categories presented in this report are in combination with non-Hispanic ethnicity, and Hispanic ethnicity includes all races. The race categories “Asian” and “Native Hawaiians and Other Pacific Islanders” are separated in accordance to updated U.S. Census guidelines.³ Additional notes on race and ethnicity analysis are included in individual tables.

For the purposes of this report, a health disparity is defined as a significant difference between the overall population and a specific minority group for the same indicator. If the difference between two values is not statistically significant, then there is no disparity.

Population Characteristics

Utah’s racial and ethnic minority communities account for approximately 22% of the total population (see Table 1). The majority of racial and ethnic minority people reside along the Wasatch Front in Salt Lake, Utah, Weber, and Davis counties (see Table 2). Utah Small Areas with high Utah Health Improvement Index (HII) scores are located within these four counties (see Figure 1). The Utah HII is a weighted composite measure of social determinants of health indicators created by the Utah Department of Health (UDOH). It is grounded in the methods used by Singh for Area Deprivation Index (ADI). The Utah HII is based on 9 indicators from the Utah Behavioral Risk Factor Surveillance System

Table 1. Number of Residents in Utah by Race/Ethnicity, 2020

Race/Ethnicity	Population (Count)	% of Total Population
All Utahns	3,281,684	
NH American Indian or Alaska Native	30,476	0.9
NH Asian	82,782	2.5
NH Black or African American	38,492	1.2
Hispanic/Latino	479,105	14.6
NH Native Hawaiian or Other Pacific Islander	33,916	1.0
NH Two or More Races	72,341	2.2
NH White	2,544,572	77.5

NH – Non-Hispanic

Source: U.S. Census Bureau, Population Division, 2020 Vintage Estimates

³ Jensen, E., et al. (2021). Measuring Racial and Ethnic Diversity for the 2020 Census. US Census Bureau.

Table 2. Distribution of Racial/Ethnic Minority Residents by Utah Counties, 2020

County	Racial/Ethnic Minority (count)	% of County Population
Salt Lake	348,996	29.9
Utah	120,954	18.6
Weber	64,172	24.4
Davis	61,724	17.2
Washington	30,166	16.3
Cache	21,451	16.5
Tooele	13,572	18.2
San Juan	8,438	55.2
Iron	8,242	14.5
Box Elder	7,637	13.4
Summit	6,668	15.7
Uintah	6,595	18.3
Wasatch	6,100	17.3
Sanpete	4,341	13.8
Carbon	3,660	17.6
Duchesne	3,024	15.2
Millard	2,262	17.0
Grand	1,850	18.9
Sevier	1,814	8.3
Beaver	1,085	16.0
Juab	1,072	8.8
Emery	933	9.2
Kane	768	9.7
Morgan	675	5.4
Garfield	589	11.7
Wayne	275	10.0
Rich	206	8.4
Piute	161	10.9
Daggett	79	7.7

Source: US Bureau of the Census, IBIS Version 2020.

(BRFSS) by geographic area. Those indicators are:

1. Population aged ≥ 25 years with < 9 years of education, %
2. Population aged ≥ 25 years with at least a high school diploma, %
3. Median family income, \$
4. Income disparity
5. Owner-occupied housing units, % (home ownership rate)
6. Civilian labor force population aged ≥ 16 years unemployed, % (unemployment rate)
7. Families below poverty level, %
8. Population below 150% of the poverty threshold, %
9. Single-parent households with children aged < 18 years, %

The geographic areas refer to the Utah Small Areas, which are based on ZIP Codes, local health district and county boundaries, demographic similarities, and input from local community representatives. The HII ranges from 72 to 161. The composite measure was computed for each small area and standardized to a mean of 100 and a standard deviation of 20. The 99 small areas are classified in five groups as shown in Table 3 on the next page.

The higher the index, the more improvement the area needs. A larger percentage of rural and frontier small areas are classified as high or very high (see Figure 1). Additionally, small areas with higher index scores tend to have a greater percentage of racial/ethnic minority residents (see Figure 2).

The HII categories are a useful tool for identifying small areas where reducing health disparities can make meaningful progress in advancing health equity and ultimately decreasing adverse health outcomes. As many of the areas with higher HII scores are often associated with larger percentages of racial/ethnic minority residents, the HII report emphasizes the importance of addressing social determinants of health through a health equity lens. For more information on the definitions and methodology of Utah HII, as well as the classification of small areas in HII groups, please visit the UDOH Office of Health Equity at <https://healthequity.utah.gov/>.

Table 3. Utah HII Classification

HII Group	Score	Small Areas (#)
Very Low	<80.00	19
Low	80.00–94.99	19
Average	95.00–104.99	21
High	105.00–119.99	26
Very High	120.00+	14

Source: Health Indicator Report of Utah HII, Utah BRFSS, IBIS Version 2018.

Figure 1. Distribution of Urban and Rural/Frontier Utah Small Areas by HII Group

Source: Utah Department of Health

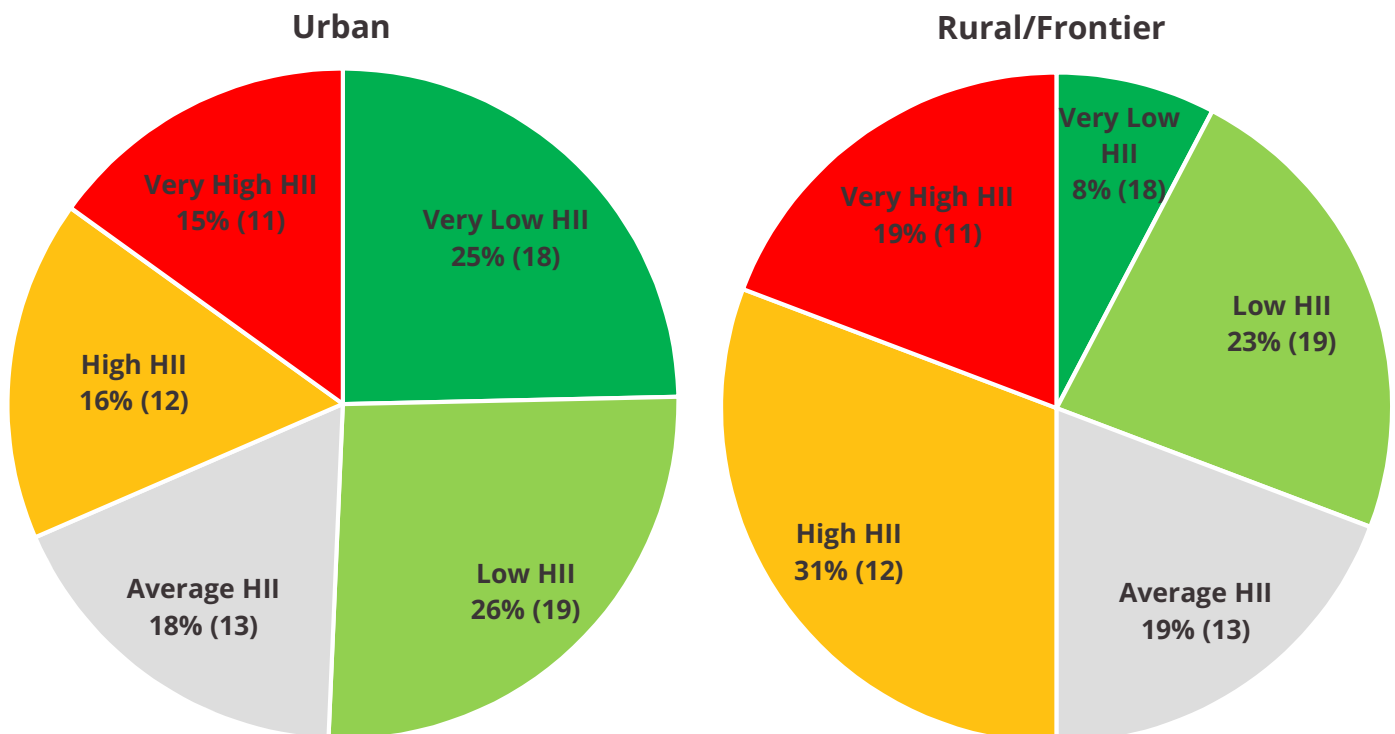


Figure 2. Utah Health Improvement Index
Source: Utah Department of Health

HII Classification Definitions

Very High HII: geographically, this is a very high health disparities area; **SUBSTANTIAL IMPROVEMENTS** are needed to advance health equity and reduce health disparities in the area.

High HII: geographically, this is a health disparities area; **IMPROVEMENTS** are needed to advance health equity in the area and reduce health disparities.

Average HII: geographically, this is **NOT** a health disparities area; adverse health outcomes **CANNOT** be considered health disparities.

Low HII: geographically, this is **NOT** a health disparities area. In terms of health equity, this area is doing **BETTER** than average; adverse health outcomes in this area cannot be considered health disparities.

Very Low HII: geographically, this is **NOT** a health disparities area. In terms of health equity, this area is doing **MUCH BETTER** than average; adverse health outcomes in this area cannot be considered health disparities.

Local Health District	County	ID#	Utah Small Area	HII Group	Population (2017)	Percent Racial/Ethnic Minority
E-Weber-Morgan LHD (12)	Weber	5	Ben Lomand	High	62,407	28.9%
		6.1	Weber County (East)	Very Low	35,519	9.5%
	Morgan	6.2	Morgan County	Very Low	11,871	4.7%
		7	Ogden (Downtown)	Very High	39,706	32.3%
	Weber	8	South Ogden	High	37,963	25.9%
		9	Roy/Hooper	Low	47,911	20.9%
		10	Riverdale	Average	28,279	15.3%
		11	Clearfield Area/Hooper	Low	72,508	22.0%
		12	Layton/South Weber	Low	83,944	20.1%
		13.1	Kaysville/Fruit Heights	Very Low	38,946	6.8%
13.2		Syracuse	Very Low	29,230	11.1%	
14.1		Centerville	Very Low	16,927	7.6%	
B-Davis County LHD (03)	14.2	Farmington	Very Low	22,414	8.6%	
	15.1	North Salt Lake	Low	19,980	26.2%	
	15.2	Woods Cross/West Bountiful	Low	15,631	12.3%	
	16	Bountiful	Average	48,259	11.1%	
	17	Salt Lake City (Rose Park)	Very High	36,676	64.4%	
	18	Salt Lake City (Avenues)	Low	22,944	15.6%	
	19.1	Salt Lake City Bench (Foothill/East Bench)	Low	22,369	17.3%	
	20	Magna	High	28,303	36.4%	
	21.1	Salt Lake City (Glendale) V2	Very High	25,631	65.4%	
	22.1	West Valley (Center)	Very High	52,999	51.8%	
	22.2	West Valley (West) V2	Average	31,406	46.2%	
	23.1	West Valley (East) V2	Very High	53,253	55.5%	
	24.1	Salt Lake City (Downtown) V2	High	39,037	28.2%	
	24.2	Salt Lake City (Southeast Liberty)	Low	23,793	13.5%	
	A-Salt Lake County LHD (04)	25	South Salt Lake	Very High	27,420	44.3%
		26.1	Salt Lake City (Sugar House)	Average	33,933	18.3%
26.2		Millcreek (South)	Very Low	22,755	12.6%	
26.3		Millcreek (East)	Very Low	25,138	10.6%	
27.1		Holladay V2	Low	25,388	13.4%	
28		Cottonwood	Low	42,156	12.9%	
29.1		Kearns V2	Very High	41,292	40.4%	
30		Taylorsville (East)/Murray (West)	High	38,345	30.8%	
30.1		Taylorsville (West)	Average	40,584	* New ZIP code. Data Not Available	
31		Murray	High	35,173	24.5%	
32		Midvale	Very High	31,669	34.2%	
33.2		West Jordan (Northeast) V2	Average	32,061	29.4%	
34.1		West Jordan (Southeast)	Average	38,901	28.2%	
34.2		West Jordan (West)/Copperton	Low	47,502	25.7%	
35.1		South Jordan V2	Very Low	36,412	12.6%	
35.2		Daybreak	Very Low	32,320	* New ZIP code. Data Not Available	
36.1		Sandy (West)	High	27,577	21.6%	
36.2		Sandy (Center) V2	Very Low	29,731	15.1%	
37		Sandy (Northeast)	Very Low	25,288	10.8%	
38		Sandy (Southeast)	Very Low	30,624	11.9%	
39.1	Draper	Very Low	45,782	15.0%		
39.2	Riverton/Bluffdale	Very Low	42,867	8.8%		
39.3	Herriman	Low	46,212	15.8%		
D-Tooele County LHD (08)	40.1	Tooele County (Other)	High	16,470	18.7%	
	40.2	Tooele Valley	Average	50,977	16.1%	
C-Utah County LHD (10)	41.1	Eagle Mountain/Cedar Valley	Low	32,736	12.9%	
	41.2	Lehi	Very Low	67,193	12.5%	
	41.3	Saratoga Springs	Very Low	27,058	11.0%	
	42.1	American Fork	Low	48,865	10.6%	
	42.2	Alpine	Very Low	10,938	5.5%	
	43	Pleasant Grove/Lindon	Low	60,088	11.8%	
	44	Orem (North)	High	39,647	29.2%	
	45	Orem (West)	High	35,265	24.7%	
	46	Orem (East)	Low	23,128	15.5%	
	47	Provo/BYU	Very High	53,657	15.2%	
	48.1	Provo (West City Center)	Very High	34,403	37.6%	
	48.2	Provo (East City Center)	Very High	34,967	22.7%	
	49.1	Salem City	Very Low	9,812	6.8%	
	49.2	Spanish Fork	Low	43,194	14.1%	
	49.3	Springville	Average	34,240	19.8%	
	49.4	Mapleton	Very Low	9,889	10.7%	
	50.1	Utah County (South) V2	High	13,900	16.3%	
	50.2	Payson	High	27,286	13.6%	

Population Characteristics Cont'd

Utah's racial and ethnic minority communities tend to have a younger age distribution compared with the state's non-Hispanic, White population (see Figure 3). Only the non-Hispanic White and the non-Hispanic Asian populations have median ages greater than the state average (see Table 4 on the next page). While roughly one in five Utah adults identify as a racial or ethnic minority, this proportion increases to more than one in four (27%) for the population under the age of 18. The populations that identify as non-Hispanic, Two or More Races and Hispanic or Latino have the highest percentage of children

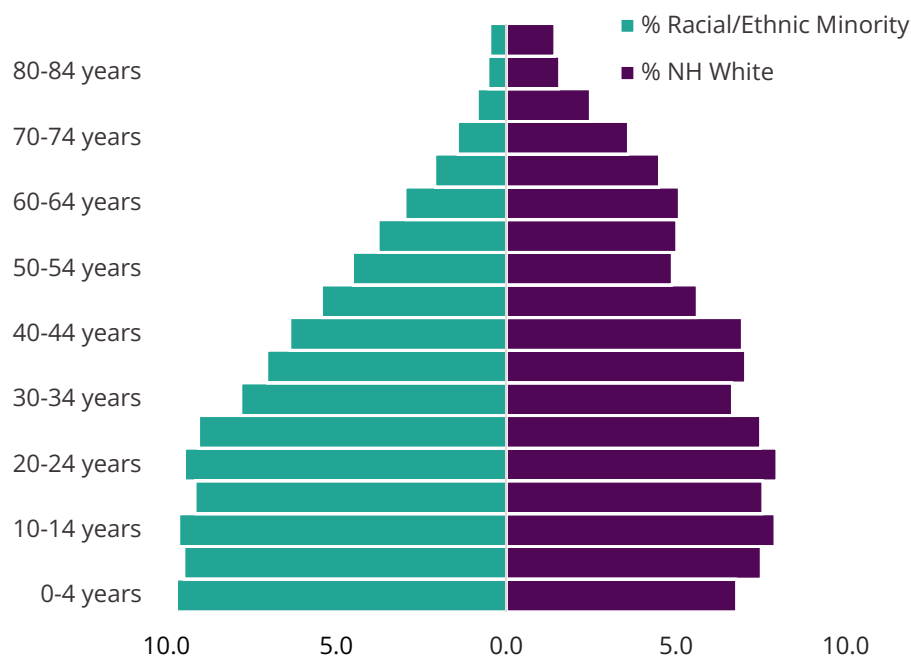
under the age of 5, at 14.4% and 9.8%, respectively. The non-Hispanic White population has the greatest percentage of adults over the age of 65 years at 13.2%, followed by those who identify as non-Hispanic Asian (9.1%) and non-Hispanic American Indian or Alaska Native (AIAN) (8.1%).

Health insurance rates are a key indicator of equality in access to care. Persons with health insurance are more likely to have a regular source of primary health care and receive routine preventive care compared to those without coverage. Substantial disparities in uninsured rates are prevalent across various demographic and socioeconomic groups in Utah. Figure 4 illustrates the significant gap in health care coverage between different racial/ethnic

communities. The highest uninsured rates were observed among the Hispanic/Latino (33.2%) and non-Hispanic, Black/African American (20.1%) populations, whereas the lowest uninsured rates were among the non-Hispanic, White and non-Hispanic, Asian communities with both at just 7.5%.

Uninsured rates were also associated with an area's HII category. Small areas with high (14.1%) and very high HII (17.4%) scores had significantly greater uninsured rates compared to

Figure 3. Utah State Population Pyramid, 2020



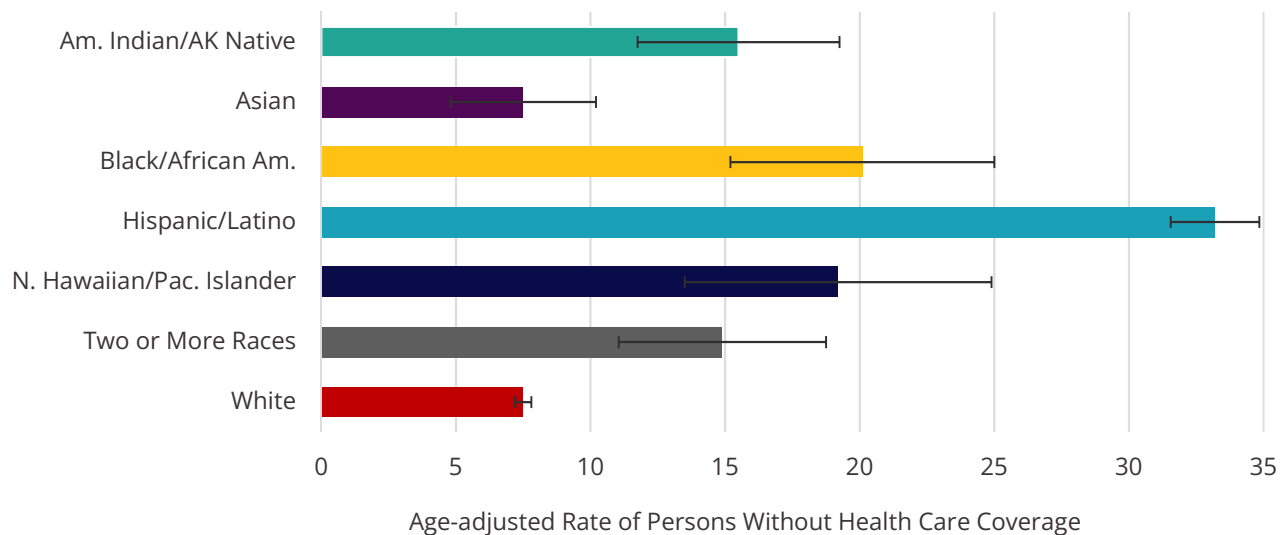
NH - Non-Hispanic
 Source: U.S. Census Bureau, Population Division, 2020 Vintage Estimates

Table 4. Selected Age Groups by Race*/Ethnicity, 2020

	Median Age (Years)	Total (Count)	Under 18		18 or older		Under 5		65 or older	
			Estimate	%	Estimate	%	Estimate	%	Estimate	%
All Utahns	31	3,281,684	949,355	28.9	2,332,329	71.1	242,243	7.4	374,229	11.4
Am. Indian/AK Native	31	30,476	8,080	26.5	22,396	73.5	2,063	6.8	2,475	8.1
Asian	33	82,782	17,355	21.0	65,427	79.0	5,143	6.2	7,493	9.1
Black/African Am.	28	38,492	11,514	29.9	26,978	70.1	2,770	7.2	1,953	5.1
Hispanic/Latino	25	479,105	172,759	36.1	306,346	63.9	47,064	9.8	23,002	4.8
N. Hawaiian/Pac. Islander	27	33,916	11,054	32.6	22,862	67.4	3,094	9.1	2,097	6.2
Two or More Races	18	72,341	35,057	48.5	37,284	51.5	10,402	14.4	2,113	2.9
White	33	2,544,572	693,536	27.3	1,851,036	72.7	171,707	6.7	335,096	13.2

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race
Source: U.S. Census Bureau, Population Division, 2020 Vintage Estimates

Figure 4. Uninsurance Rates by Race*/Ethnicity, Utah, 2017-2021

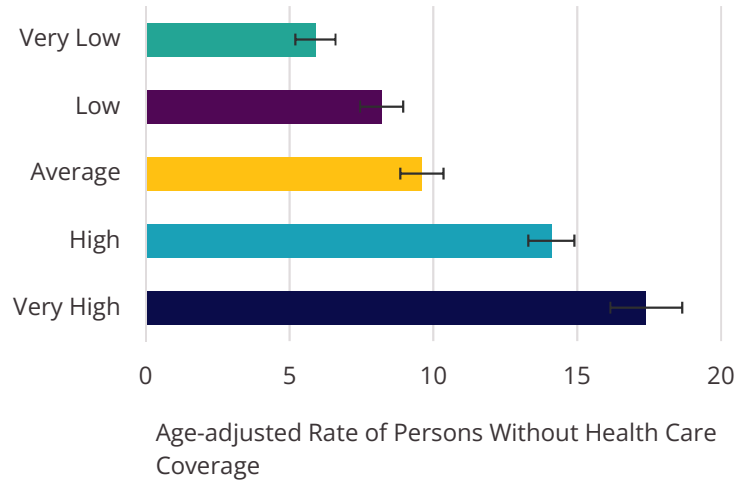


*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.
Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

those with average (9.6%), low (8.2%), and very low (5.9%) scores (see Figure 5).

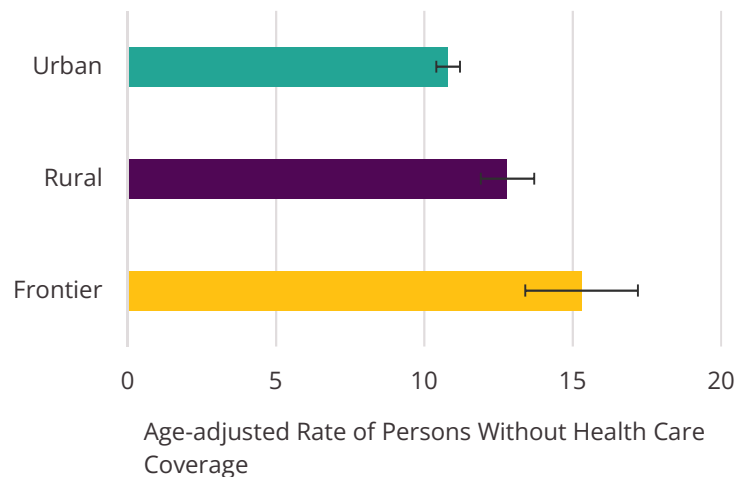
Finally, uninsurance rates also differed by county classification. Both rural and frontier counties had significantly higher rates of uninsured persons compared to urban counties (see Figure 6.) Frontier counties had the highest rate of uninsured persons at 15.3%. However this did not differ significantly to the uninsured rate of rural counties (12.8%).

Figure 5. Uninsurance Rates by Utah Health Improvement Index, 2017-2021



Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

Figure 6. Uninsurance Rates by County Classification, Utah 2017-2021



Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

Breast Cancer Disparities Profile

Trend analyses in breast cancer screening, incidence, late-stage diagnosis, and mortality:

“Disparities among vulnerable populations continue to exist and have not improved in recent years, particularly in the areas of cancer, diabetes, and heart disease. Ethnically diverse women, carry a heavy burden of disease and greater community efforts are needed to help alleviate these burdens and create change.”

– Ana C. Sanchez-Birkhead, associate professor at the University of Utah

Mammography Screening

Screening mammograms are currently the most effective method for detecting breast cancer early. Several studies have demonstrated that routine mammography every 1-2 years can reduce breast cancer mortality by nearly 40% for women at average risk.⁴ The American College of Radiology and Society of Breast Imaging currently recommends women start getting annual mammograms at age 40.⁴

Figures 5, 6, and 7 illustrate trends in mammography screening among women aged 40 and older. Mammography screening rates among all Utah women have declined steadily over time, from 72.6% in 2000 to 62.7% in 2020.⁵ The largest drop in screening rates occurred among Asian

women, who in the last decade alone experienced an approximate 21% decrease from years 2010–2014 to 2016–2020 (see Table 5). Although mammography screenings rates have decreased among all women in Utah, positive trends occurred among certain minority populations. Notably, AIAN women saw an approximate 25% increase in screening rates from years 2002-2008 to 2016-2020.

Figure 6 illustrates an emerging disparity gap in mammography screening rates between women living in frontier areas and the rest of the state of Utah. From 2016–2020, the average screening rate among women living in frontier areas (57.6%) was significantly lower compared to all women in Utah during the same time period (63.8%). On the contrary, the gap in screening rates between urban residents and all Utah women appeared to be closing as mammography

⁴American College of Radiology. Continue Mammography Care in 2022. Website: <https://www.acr.org/>

⁵Health Indicator Report of Breast Cancer Screening (Mammography). Retrieved on December 5, 2022 from UDHHS, Division of Data, Systems and Evaluation, IBIS for Public Health website: <http://ibis.health.utah.gov/>.

rates increased by roughly 11% from over the past two decades.

All HII categories observed a decline in screening rates since 2010 (see Figure 7). However, a significant disparity in mammography rates across certain categories of HII persists. From 2018-2020, women living in small areas categorized as “very low” had significantly higher mammography rates compared to residents in small areas categorized as “very high” at 68.3% and 57.6%, respectively (see Table 7).

Figure 5. Women 40+ with a Mammogram in the Past 2 Years by Race/Ethnicity (Age-adjusted)

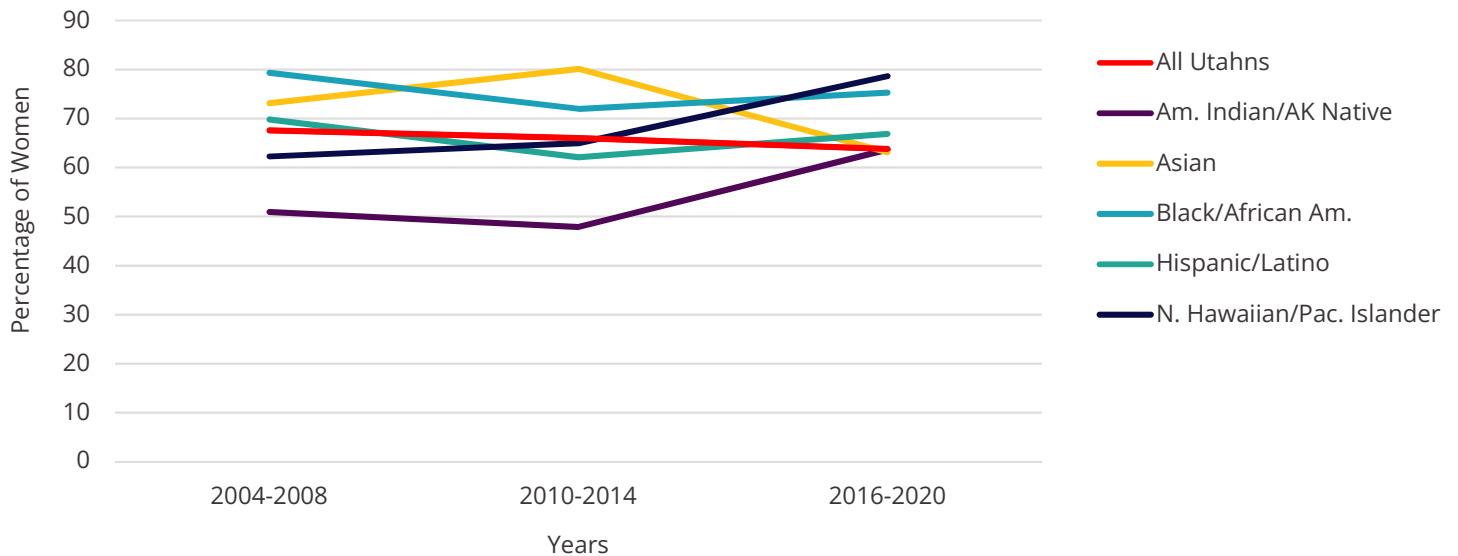


Table 5. Percentage of Women 40+ with a Mammogram in the Past 2 Years by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity*	% of Women with a Mammogram in the Past 2 Years	95% Confidence Interval	Number of Responses	Signifiacnet†
2004-2008				
All Utahns	67.22	65.9-68.52	5,169	
Am. Indian/Ak Native	49.2	36.69-61.8	30	Lower
Asian	69.4	54.96-80.82	35	Same
Black/African Am.	77.84*	54.87-91.03*	13	Same
Hispanic/Latino	68.98	63.0-74.39	237	Same
N. Hawaiian/Pac. Islander	66.32*	41.66-84.45*	12	Same
2010-2014				
All Utahns	66.03	65.06-66.98	12,388	
Am. Indian/Ak Native	47.89	37.02-58.96	83	Lower
Asian	80.13	72.39-86.11	94	Higher
Black/African Am.	71.98	59.18-81.99	36	Same
Hispanic/Latino	62.09	57.54-66.44	579	Same
N. Hawaiian/Pac. Islander	64.95	46.56-79.83	21	Same
2016-2020				
All Utahns	63.79	62.64-64.92	8,327	
Am. Indian/Ak Native	63.67	52.1-73.82	99	Same
Asian	63.11	51.09-73.69	52	Same
Black/African Am.	75.32*	59.97-86.14*	31	Same
Hispanic/Latino	66.86	62.25-71.16	436	Same
N. Hawaiian/Pac. Islander	78.66*	60.99-89.67*	25	Same

Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Signifiacnet indicates whether the percentage was higher or lower than for all Utahns.

*Insufficient relative standard error to meet UDOH standard for data reliability, interpret with caution.

Figure 6. Women 40+ with a Mammogram in Past 2 years by County Classification (Age-adjusted)

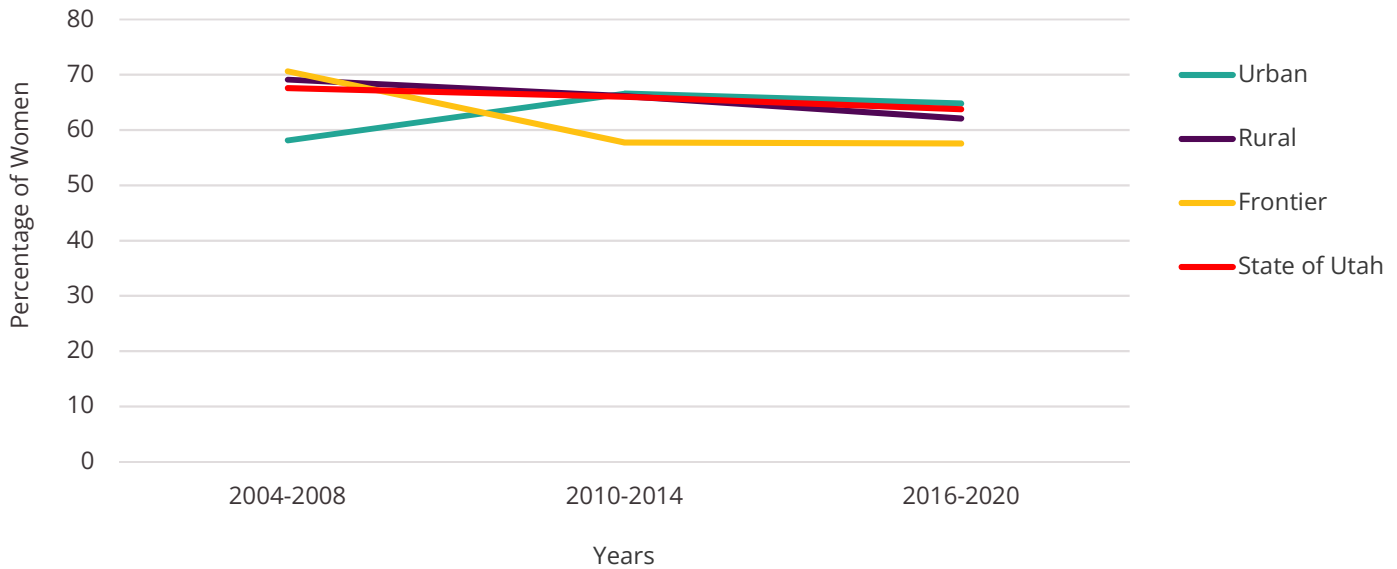


Table 6. Percentage of Women 40+ with a Mammogram in the Past 2 Years by County Classification (Age-Adjusted)

County Classification	% of Women with a Mammogram in the Past 2 Years	95% Confidence Interval	Number of Responses	Significance†
2004-2008				
State of Utah	67.22	65.9-68.52	5,169	
Urban	58.14	48.93-66.8	102	Same
Rural	69.12	65.8-72.26	756	Same
Frontier	70.64	65.45-75.34	365	Same
2010-2014				
State of Utah	66.03	65.06-66.98	12,388	
Urban	66.59	65.44-67.72	7,571	Same
Rural	66.15	64.18-68.07	3,951	Same
Frontier	57.76	53.67-61.75	787	Lower
2016-2020				
State of Utah	63.79	62.64-64.92	8,327	
Urban	64.81	63.45-66.14	5,109	Same
Rural	62.09	59.65-64.47	2,366	Same
Frontier	57.56	53.13-61.86	754	Lower

Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 7. Women 40+ with a Mammogram in the Past 2 Years by Utah Health Improvement Index Score (Age-adjusted)

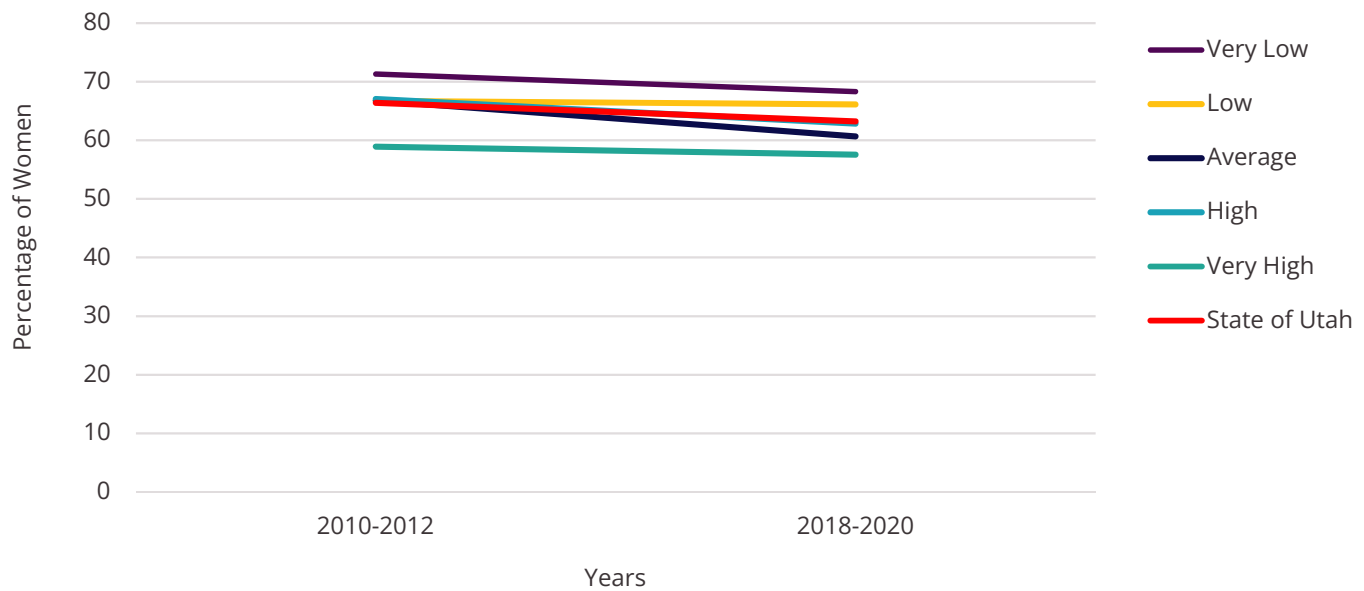


Table 2. Percentage of Women 40+ with a Mammogram in the Past 2 Years by Utah Health Improvement Index Score (Age-Adjusted)

HII Classification	% of Women with a Mammogram in the Past 2 Years	95% Confidence Interval	Number of Responses	Significance†
2010-2012				
State of Utah	66.4	65.17-67.62	7,599	
Very Low	72.91	70.22-75.44	1,358	Higher
Low	66.08	63.34-68.71	1,528	Same
Average	65.82	63.17-68.37	1,592	Same
High	65.41	63.0-67.74	2,224	Same
Very High	61.23	57.11-65.19	706	Same
2018-2020				
State of Utah	63.24	61.88-64.58	5,678	
Very Low	69.21	66.11-72.15	886	Higher
Low	63.67	60.83-66.41	1,043	Same
Average	65.6	62.6-68.49	1,168	Same
High	60.03	57.4-62.6	1,753	Same
Very High	58.55	53.68-63.25	579	Same

Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Breast Cancer Incidence

Breast cancer is the most common cancer among women in Utah excluding nonmelanoma of the skin. While the cause of breast cancer is multifactorial, decades of epidemiologic research have identified a number of modifiable risk factors that can increase a person's risk of developing the disease. It is estimated that 30% of all breast cancer cases can be attributed to lifestyle behaviors such as physical inactivity, alcohol consumption, and excess body weight, and thus may be preventable.⁵

In 2019, the latest year for which incidence data are available, the age-adjusted rate of female breast cancer in Utah was 118.5 cases per 100,000 women which was significantly lower than the national rate of 129.7 cases per 100,000 women.⁶ Trends in breast cancer incidence among all Utah women have remained relatively steady over the past two decades, however, notable fluctuations were observed across certain racial/ethnic minority populations (see Figure 8).

Historically, racial/ethnic minority women saw lower breast cancer incidence rates compared to the state's average. However, the trend analysis illustrated in Figure 8 shows that this may be changing. Native Hawaiian/Other Pacific Islander (NHOPI) women saw nearly a 37% increase in breast cancer incidence rates from the early 2000's to recent years (see Table 8).

Hispanic/Latino women also saw a significant increase (though not as prominent) of approximately 13% in the same time period.

Disaggregating the data by county classification revealed no significant trends in breast cancer incidence among urban and rural counties (see Table 9). Conversely, frontier counties experienced an overall rise of roughly 25% from 2000 to 2019, which while a considerable increase, still fell well below the overall average incidence rate across the state of Utah.

Slight upward trends in breast cancer incidence rates were observed when examining the data by HII ranking. Somewhat surprisingly, the average incidence rate across small areas categorized by very low HII scores during 2018–2019 was significantly greater than the overall incidence rate in Utah during the same time period at 126.3 cases per 100,000 women and 117.6 cases per 100,000 women, respectively (see Table 10).

Figure 8. Female Breast Cancer Incidence by Race/Ethnicity (Age-adjusted)

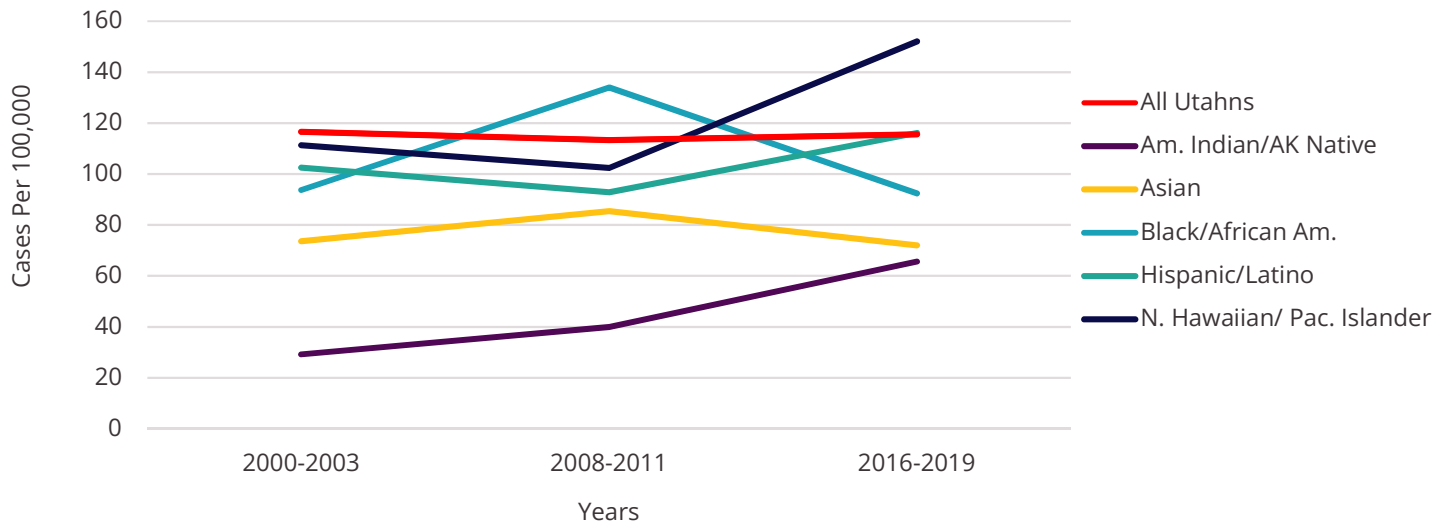


Table 8. Female Breast Cancer Incidence by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity*	Cases per 100,000 Women	95% Confidence Interval	Number of Responses	Significance†
2000-2003				
All Utahns	116.63	113.12-120.21	4,210	
Am. Indian/Ak Native	34.3	18.02-59.22	13	Lower
Asian	73.27	54.01-97.17	51	Lower
Black/African Am.	93.7	50.92-157.9	15	Same
Hispanic/Latino	103.3	87.75-120.81	189	Same
N. Hawaiian/Pac. Islander	111.3	64.14-179.65	18	Same
2008-2011				
All Utahns	113.35	110.26-116.49	5,201	
Am. Indian/Ak Native	43.71	24.27-72.54	17	Lower
Asian	85.42	68.22-105.64	91	Lower
Black/African Am.	136.07	93.42-191.5	36	Same
Hispanic/Latino	94.73	83.34-107.23	309	Lower
N. Hawaiian/Pac. Islander	99.16	57.2-159.93	20	Same
2016-2019				
All Utahns	115.73	112.92-118.58	6,622	
Am. Indian/Ak Native	69.57	47.04-99.15	32	Lower
Asian	72.02	59.2-86.78	113	Lower
Black/African Am.	92.37	61.09-133.99	32	Same
Hispanic/Latino	117.1	107.45-127.39	622	Same
N. Hawaiian/Pac. Islander	154.07	116.86-199.37	63	Same

Source: Utah Cancer Registry. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 9. Female Breast Cancer Incidence by County Classification (Age-adjusted)

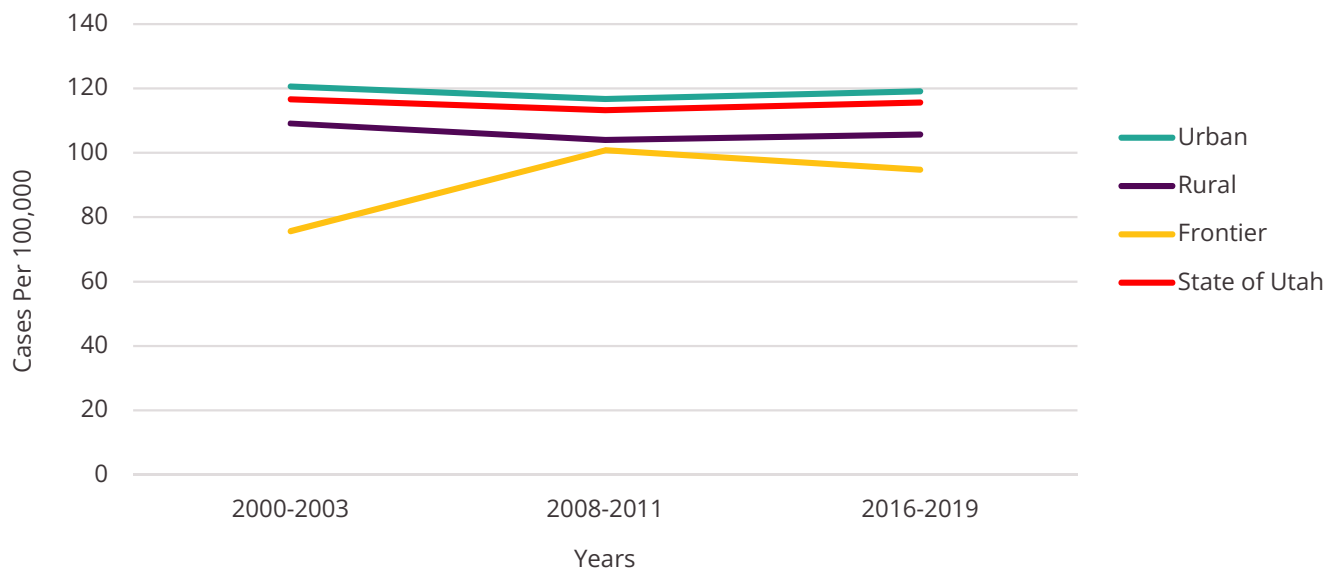


Table 9. Female Breast Cancer Incidence by County Classification (Age-Adjusted)

County Classification	Cases per 100,000 Women	95% Confidence Interval	Number of Responses	Significance†
2004-2008				
State of Utah	67.22	65.9-68.52	5,169	
Urban	58.14	48.93-66.8	102	Same
Rural	69.12	65.8-72.26	756	Same
Frontier	70.64	65.45-75.34	365	Same
2010-2014				
State of Utah	66.03	65.06-66.98	12,388	
Urban	66.59	65.44-67.72	7,571	Same
Rural	66.15	64.18-68.07	3,951	Same
Frontier	57.76	53.67-61.75	787	Lower
2016-2020				
State of Utah	63.79	62.64-64.92	8,327	
Urban	64.81	63.45-66.14	5,109	Same
Rural	62.09	59.65-64.47	2,366	Same
Frontier	57.56	53.13-61.86	754	Lower

Source: Utah Cancer Registry. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 10. Female Breast Cancer Incidence by Utah Health Improvement Index Score (Age-Adjusted)

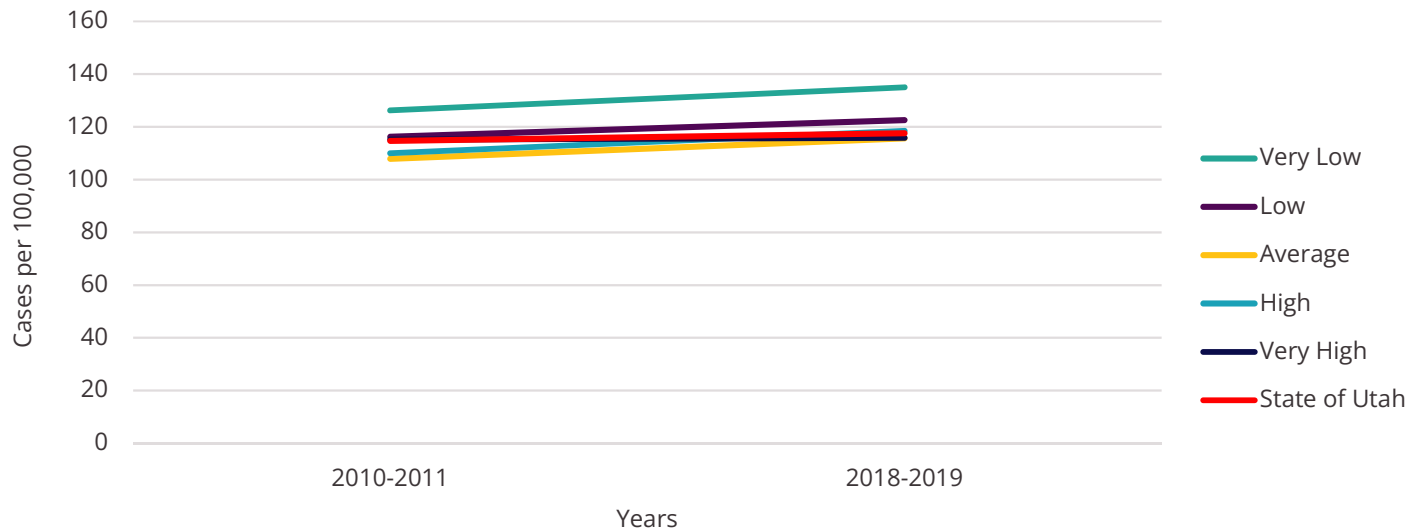


Table 10. Female Breast Cancer Incidence by Utah Health Improvement Index Score (Age-Adjusted)

HII Classification	Cases per 100,000 Women	95% Confidence Interval	Number of Cases	Significance†
2010-2011				
State of Utah	114.69	110.36-119.15	2,688	
Very Low	126.38	115.23-138.32	487	Same
Low	116.24	107.64-125.35	691	Same
Average	107.92	99.1-117.31	564	Same
High	110	100.2-120.49	473	Same
Very High	115.18	104.57-126.59	440	Same
2018-2019				
State of Utah	117.67	113.73-121.71	3,459	
Very Low	133.46	123.3-144.24	660	Higher
Low	122.91	115.04-131.18	934	Same
Average	116.1	107.73-124.96	744	Same
High	118.73	109.28-128.78	604	Same
Very High	115.45	105.1-126.54	469	Same

Source: Utah Cancer Registry. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Breast Cancer Mortality

Breast cancer is the most commonly occurring cancer among U.S. women (except for basal and squamous cell skin cancers) and the leading cause of female cancer-related death in Utah. Clinical trials and observational studies have demonstrated that routine screening and early detection can substantially lower the risk of breast cancer death. Breast cancer mortality rates in Utah have steadily declined over time (though not significantly), from 22.6 deaths per 100,000 women in 2000 to 20 deaths per 100,000 women in 2020.⁶ On average, Utah has a lower age-adjusted breast cancer mortality rate than the U.S. However, in 2020, the latest year for which mortality data are available, the U.S. age-adjusted rate of female breast cancer death (19.1 per 100,000 females) was slightly lower compared to Utah, though this was not statistically significant difference.⁷

Although Utah's overall breast cancer mortality rate has decreased over time, disaggregating the data by race/ethnicity revealed markedly different trends among certain subgroups of women. Most notably, rates of breast cancer death drastically increased among women who

identified as Black/African American and NHOPI (see Figure 11). From 2016–2021, mortality rates among Black/African American women (33.7 deaths per 100,000) and NHOPI women (32.1 deaths per 100,000) were much higher than the average across the state of Utah (19.9 deaths per 100,000), though this difference was not statistically significant.

Figure 12 illustrates trends over time by county classification. Similar to the overall trend across Utah, urban and rural areas also saw a decline in female breast cancer death by approximately 15% in urban areas and 20% in rural areas. Conversely, frontier areas saw a 20% increase in breast cancer death over this past decade. However the mortality rate from 2016-2021 among frontier areas (22.9 deaths per 100,000 women) is not significantly greater than the average rate across Utah (19.9 deaths per 100,000).

Examining mortality trends by HII score revealed some interesting patterns. Only the small areas categorized as “Very Low” and “Very High” saw an increase in female breast cancer mortality, bringing these areas closer to the state's average rate. All other small areas observed a decline in mortality rates, with small areas categorized as “Low” seeing the greatest decrease at approximately 17%.

⁶Health Indicator Report of Breast Cancer Deaths. Retrieved on November 18th, 2022 from Utah Department of Health and Human Services, Division of Data, Systems and Evaluation, Indicator-Based Information System for Public Health website: <http://ibis.health.utah.gov/>

⁷Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated with State, Total U.S. (2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2021. Underlying mortality data provided by NCHS (www.cdc.gov/nchs)

Figure 11. Female Breast Cancer Death by Race/Ethnicity (Age-adjusted)

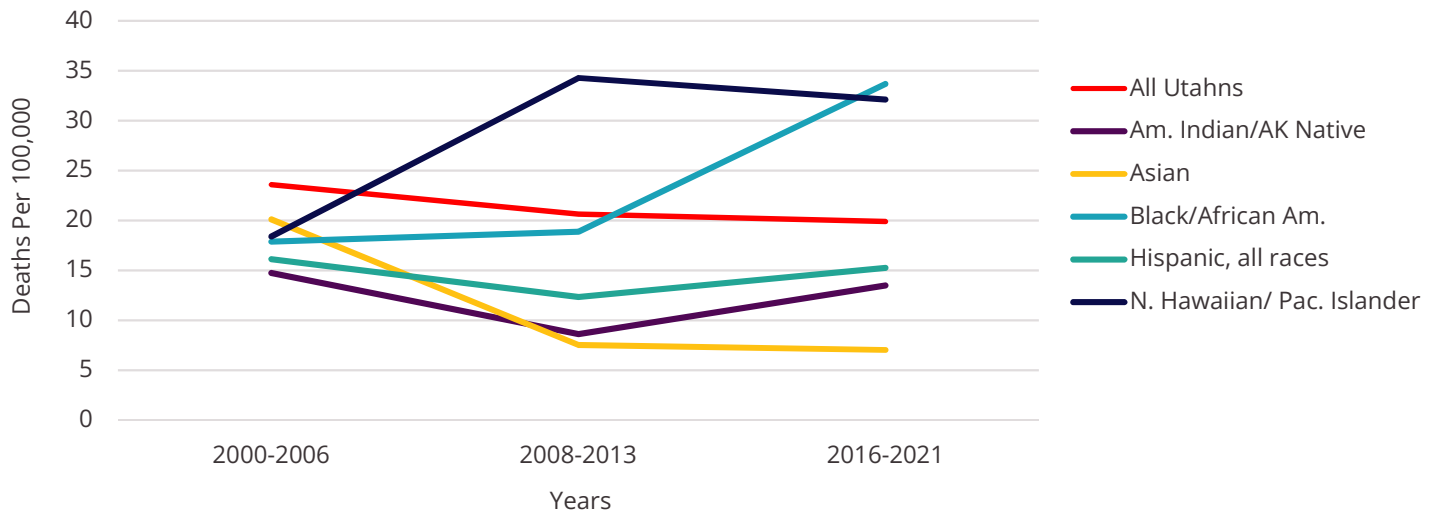


Table 11. Female Breast Cancer Death by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity*	Deaths per 100,000 Women	95% Confidence Interval	Number of Deaths	Significance†
2000-2006				
All Utahns	23.58	22.42-24.79	1,558	
Am. Indian/Ak Native	14.73*	4.88-34.01*	6	Same
Asian	20.11	12.63-30.39	24	Same
Black/African Am.	17.87*	5.46-43.09*	5	Same
Hispanic/Latino	16.12	11.65-21.73	51	Same
N. Hawaiian/Pac. Islander	18.4*	3.96-49.6*	3	Same
2008-2013				
All Utahns	20.63	19.57-21.73	1,446	
Am. Indian/Ak Native	8.61*	2.05-23.56*	4	
Asian	7.51	3.8-13.32	12	
Black/African Am.	18.88*	6.41-42.99*	6	
Hispanic/Latino	12.33	9-16.49	56	
N. Hawaiian/Pac. Islander	34.28*	14.76-67.67*	10	
2016-2021				
All Utahns	19.89	18.95-20.86	1,730	
Am. Indian/Ak Native	13.49*	6.41-24.96*	10	
Asian	7.03	3.96-11.54	16	
Black/African Am.	33.67	17.85-57.75	15	
Hispanic/Latino	15.25	12.41-18.55	117	
N. Hawaiian/Pac. Islander	32.11	19.44-49.91	21	

Source: Utah Death Certificate Database, Office of Vital Records and Statistics, Utah Department of Health. Population

Estimates by Age, Sex, Race, and Hispanic Origin for Counties in Utah, U.S. Bureau of the Census, IBIS Version 2020

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

*Insufficient relative standard error to meet UDOH standard for data reliability, interpret with caution.

Figure 12. Female Breast Cancer Death by County Classification (Age-adjusted)

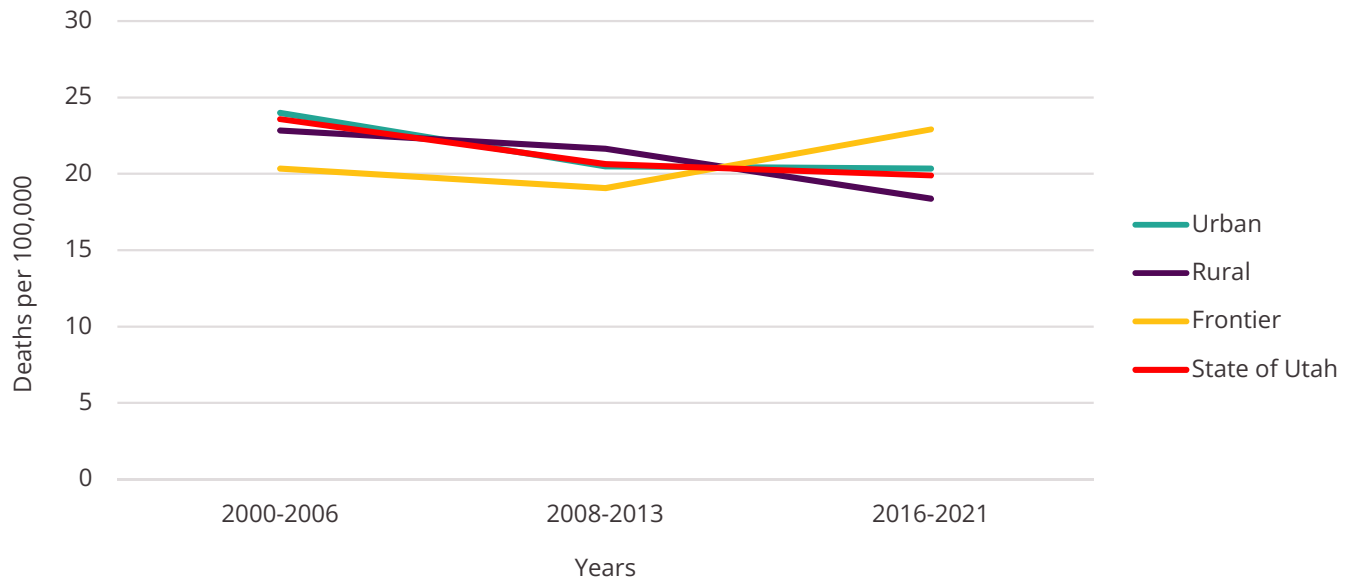


Table 12. Female Breast Cancer Death by County Classification

County Classification	Deaths per 100,000 Women	95% Confidence Interval	Number of Deaths	Significance†
2000-2006				
State of Utah	23.58	22.42-24.79	1,558	
Urban	23.99	22.65-25.38	1,206	Same
Rural	22.84	20.3-25.61	294	Same
Frontier	20.35	15.43-26.34	58	Same
2008-2013				
State of Utah	20.63	19.57-21.73	1,446	
Urban	20.48	19.26-21.75	1,081	Same
Rural	21.64	19.28-24.21	312	Same
Frontier	19.06	14.18-25.07	53	Same
2016-2021				
State of Utah	19.89	18.95-20.86	1,730	
Urban	20.34	19.24-21.47	1,323	Same
Rural	18.37	16.43-20.47	341	Same
Frontier	22.91	17.51-29.46	66	Same

Utah Death Certificate Database, Office of Vital Records and Statistics, Utah Department of Health.
Population Estimates by Age, Sex, Race, and Hispanic Origin for Counties in Utah, U.S. Bureau of the
Census, IBIS Version 2020

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 13. Female Breast Cancer Death by Utah Health Improvement Index Score (Age-Adjusted)

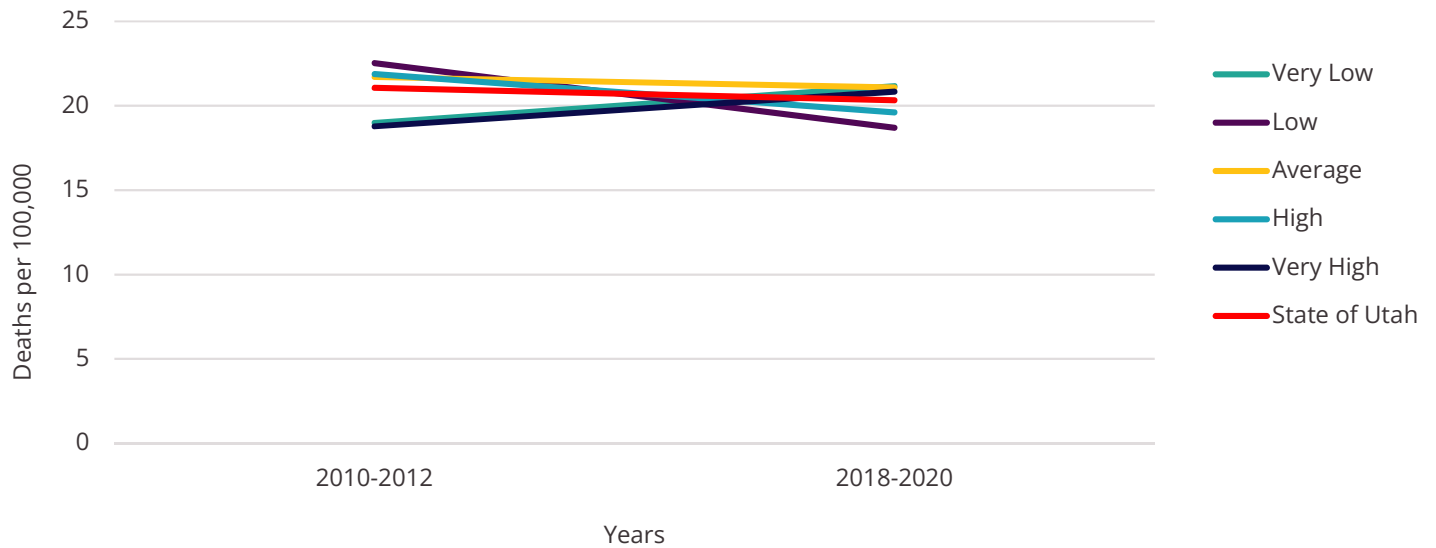


Table 13. Female Breast Cancer Death by Utah Health Improvement

HII Classification	Deaths per 100,000 Women	95% Confidence Interval	Number of Deaths	Significance†
2010-2012				
State of Utah	21.06	19.56-22.64	745	
Very Low	18.99	15.38-23.19	102	Same
Low	22.53	19-26.53	146	Same
Average	21.7	18.52-25.27	168	Same
High	21.88	19.16-24.89	238	Same
Very High	18.78	15.07-23.13	90	Same
2018-2020				
State of Utah	20.33	18.99-21.74	875	
Very Low	21.17	17.91-24.86	157	Same
Low	18.7	15.82-21.96	152	Same
Average	21.08	18.16-24.34	191	Same
High	19.61	17.19-22.27	247	Same
Very High	20.84	17.2-25.02	117	Same

Utah Death Certificate Database, Office of Vital Records and Statistics, Utah Department of Health.
 Population Estimates by Age, Sex, Race, and Hispanic Origin for Counties in Utah, U.S. Bureau of the
 Census, IBIS Version 2020

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Breast Cancer Late-Stage Diagnosis

Other than skin cancer, breast cancer is the most common cancer among women in Utah. Advances in treatment and public health initiatives for breast cancer screening have greatly improved patient survival rates. The 5-year relative survival rate among women in the United States has trended upwards over time.⁸ The current 5-year survival rate for women diagnosed with localized breast cancer is 99%. For those who are diagnosed with regional breast cancer, that figure drops to about 86%. However, women diagnosed with distant disease have a 5-year survival rate of only 29%.⁹ In general, the earlier breast cancer is detected and treated, the greater the changes for long-term survival.

From 2015–2019, nearly 36% of breast cancer cases among Utah women were diagnosed at a late stage, defined as regional or distant disease.¹⁰ The overall burdens of higher morbidity and mortality rates are far worse for late stages of breast cancer.¹¹ Examining trends in late-stage diagnoses by demographic factors can help identify priority populations where increased breast cancer control efforts can be targeted.

Analyzing trends in late-stage breast cancer diagnosis by race/ethnicity revealed a mounting disparity among NHOPI women and all women in Utah (see Figure 14). From 2015–2019, the average rate of late-stage breast cancer diagnosis among NHOPI women was 76.8 cases per 100,000 women compared to the overall average of just 41.5 cases per 100,000 women. On the contrary, late-stage breast cancer diagnosis rates among AIAN and Asian women saw a slight downward trend, and were both significantly lower than Utah's overall rate at 20.2 and 28.0 cases per 100,000 women, respectively.

Disaggregating the data by county classification did not reveal any significant differences between county types or any unusual trends that diverged from the overall average (see Table 15). Frontier counties appeared to have a slightly lower rate of late-stage diagnoses during the analyzed time frame, however this difference was not significantly different from Utah's overall rate.

⁸Howlander N, Noone AM, Krapcho M, et al., eds. SEER Cancer Statistics Review, 1975–2017, National Cancer Institute. Bethesda, MD. Available at: https://seer.cancer.gov/csr/1975_2017/, based on November 2019 SEER data submission, posted to the SEER web site, April 2020. Accessed December 1, 2020

⁹American Cancer Society. Cancer Facts & Figures 2022. Atlanta, Ga: American Cancer Society; 2022.

¹⁰ SEER*Stat Database: Incidence - SEER Research Plus Data, 17 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.

¹¹Mobley L, Kuo M, Scott L, Rutherford Y, Bose S. Modeling geospatial patterns of late-stage diagnosis of breast cancer in the US. *Int J Environ Res Public Health* 2017;14:484

Figure 14. Breast Cancer Late-Stage Diagnosis by Race/Ethnicity (Age-adjusted)

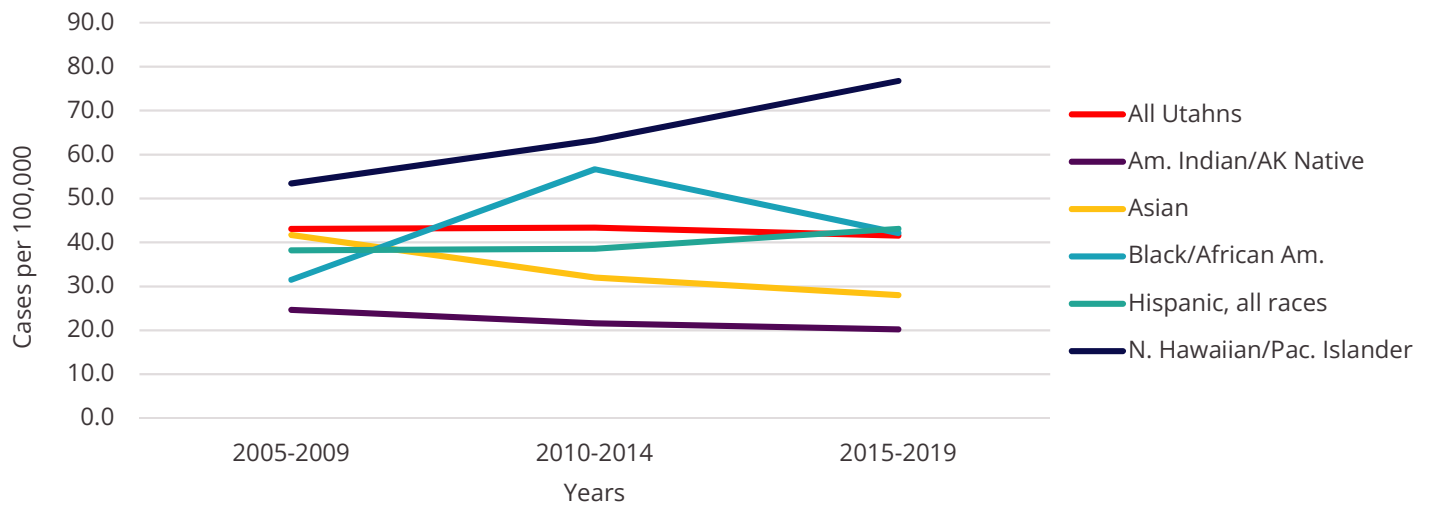


Table 14. Breast Cancer Late-Stage Diagnosis by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity‡	Cases per 100,000		Number of Cases	Significance†
	Women	95% Confidence Interval		
2005-2009				
All Utahns	43.11	41.35-44.87	2,311	
Am. Indian/Ak Native	24.64	9.23-40.05	12	Lower
Asian	41.69	29.08-54.30	42	Same
Black/African Am.	31.5	10.12-52.88	9	Same
Hispanic/Latino	38.22	31.12-45.32	137	Same
N. Hawaiian/Pac. Islander	53.43	20.31-86.55	10	Same
2010-2014				
All Utahns	43.37	41.7-45.04	2,645	
Am. Indian/Ak Native	21.58	9.74-33.42	14	Lower
Asian	32.04	24.57-39.51	49	Lower
Black/African Am.	56.65	30.21-83.09	20	Same
Hispanic/Latino	38.56	32.44-44.68	191	Same
N. Hawaiian/Pac. Islander	63.23	37.93-88.53	24	Same
2015-2019				
All Utahns	41.54	40.01-43.07	2,887	
Am. Indian/Ak Native	20.23	7.63-32.83	11	Lower
Asian	28	20.53-35.47	54	Lower
Black/African Am.	42.12	21.93-62.31	20	Same
Hispanic/Latino	43.12	37.79-48.45	291	Same
N. Hawaiian/Pac. Islander	76.76	52.36-101.17	38	Higher

Source: SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.

‡Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 14. Breast Cancer Late-Stage Diagnosis by County Classification (Age-Adjusted)

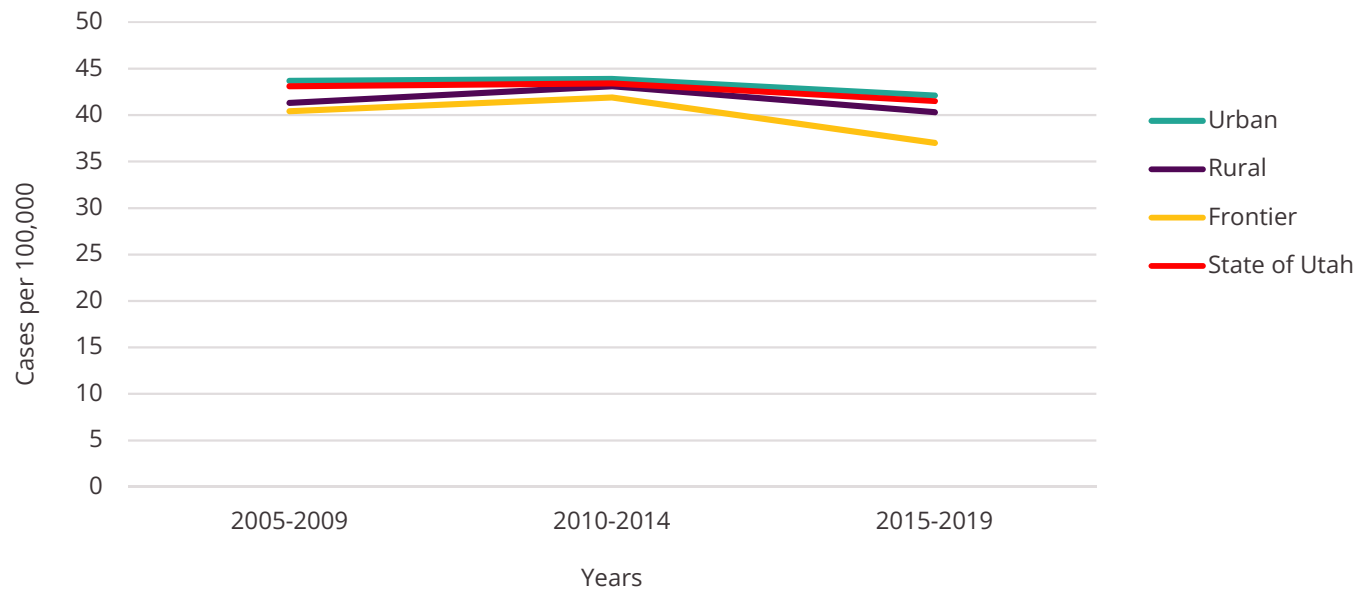


Table 15. Breast Cancer Late-Stage Diagnosis by County Classification

County Classification	Cases per 100,000 Women	95% Confidence Interval	Number of Cases	Significance†
2005-2009				
State of Utah	43.1	41.4-44.9	2,311	
Urban	43.7	41.7-45.8	1,793	Same
Rural	41.3	37.5-45.4	431	Same
Frontier	40.4	32.3-50.1	87	Same
2010-2014				
State of Utah	43.4	41.7-45.1	2,645	
Urban	43.9	42-45.8	2,049	Same
Rural	43.1	34.5-53.1	96	Same
Frontier	41.9	38.2-45.8	500	Same
2015-2019				
State of Utah	41.5	40-43.1	2,887	
Urban	42.1	40.4-43.9	2,230	Same
Rural	40.3	36.9-43.8	567	Same
Frontier	37	29.3-46.1	90	Same

Source: SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Cervical Cancer Disparities Profile

Trend analyses in cervical cancer screening, incidence, late-stage diagnosis, and mortality:

“When women are supported in their mental and physical health, communities, cultures and traditions are able to thrive. When women take care of themselves like they do for others, they create an environment where their family and community flourishes.”

– Ban Naes, Health Equity Program Specialist of the Embrace Project

Pap Test Screening

Cervical cancer is one of the most treatable forms of cancer if detected early and managed effectively. Several studies have demonstrated that routine screening with Pap tests decreases cervical cancer incidence and mortality by at least 80%.¹² The U.S. Preventative Services Task Force recommends women receive a Pap test every 3 years or every 5 years in combination with high-risk human papillomavirus testing if over the age of 30.¹³ Next to the HPV vaccine, routine Pap tests are the best way to prevent cervical cancer.

Pap test screening rates among women in Utah have consistently fallen below national screening rates. In 2020, just 62.9% of Utah women received a Pap test compared to 68.8% nationwide.¹⁴

Screening rates in Utah have also declined over the years, from 82.2% in 2000 to 62.9% in 2020.¹⁴ The largest drop in screening rates occurred among NHOPI women, who saw a 38% decrease in women receiving a pap test (see Figure 16) since 2004. From 2016–2020, the average Pap test screening rate among NHOPI women was just 47.7%.

Conversely, the gap in screening rates between American Indian women and all Utah women appears to have closed in recent years. From 2010-2014, Pap test screening rates among Native American women were significantly lower than the overall screening rate in Utah. However, in recent years, the screening rate among this population of women has increased to nearly 66%, which is slightly above the overall rate in Utah.

¹²American Cancer Society: Cervical Cancer Screening (PDQ®)–Health Professional Version. American Cancer Society, 2022. Available online at <https://www.cancer.gov/>. Last accessed December 12, 2022.

¹³U.S. Preventive Services Task Force: Cervical Cancer: Screening. USPSTF, 2022. Available online at <https://www.uspreventiveservicestaskforce.org/uspstf/>. Last accessed December 12, 2022.

¹⁴Health Indicator Report of Cervical Cancer Screening (Pap). Retrieved on December 13th, 2022 from Utah Department of Health and Human Services, Division of Data, Systems and Evaluation, Indicator-Based Information System for Public Health website: <http://ibis.health.utah.gov/>

Disaggregating the data by county classification and HII group did not reveal any unique trends among the different categories in either chart (see Figures 17 and 18). Each category within both groups saw a downward trend in screening rates, similar to the overall rate in Utah.

Figure 16. Women 18+ with a Pap test in the Past 3 Years by Race/Ethnicity (Age-adjusted)

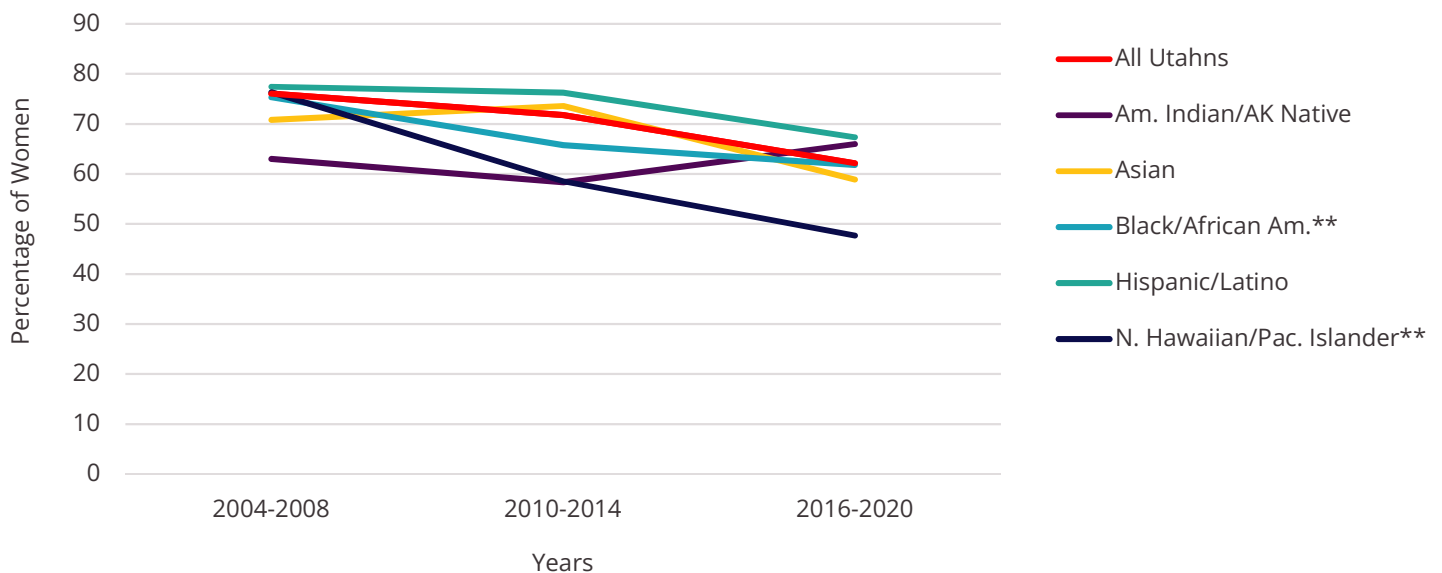


Table 16. Percentage of Women 18+ with a Pap test in the Past 3 Years by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity*	% of Women with a Pap test in the Past 3 Years	95% Confidence Interval	Number of Responses	Significance†
2004-2008				
All Utahns	76.04	74.65-77.37	4,928	
Am. Indian/Ak Native	62.98	44.64-78.22	49	Same
Asian	70.79	55.49-82.49	48	Same
Black/African Am.	75.31*	53.37-89.05*	9	Same
Hispanic/Latino	77.43	71.55-82.38*	380	Same
N. Hawaiian/Pac. Islander	76.33*	61.64-86.62*	22	Same
2010-2014				
All Utahns	71.77	70.91-72.62	10,918	
Am. Indian/Ak Native	58.35	48.27-67.78	89	Lower
Asian	73.59	65.88-80.09	146	Same
Black/African Am.	65.76	53.52-76.21	47	Same
Hispanic/Latino	76.25	73.0-79.22	947	Higher
N. Hawaiian/Pac. Islander	58.54	43.57-72.08	40	Same
2016-2020				
All Utahns	62.14	61.17-63.09	8,369	
Am. Indian/Ak Native	65.97	57.46-73.56	136	Same
Asian	58.88	49.57-67.59	92	Same
Black/African Am.	61.81	48.26-73.74	39	Same
Hispanic/Latino	67.34	63.51-70.96	850	Higher
N. Hawaiian/Pac. Islander	47.68	32.04-63.79	34	Same

Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

*Insufficient relative standard error to meet UDOH standard for data reliability, interpret with caution.

Figure 17. Women 18+ with a Pap test in Past 3 years by County Classification (Age-adjusted)

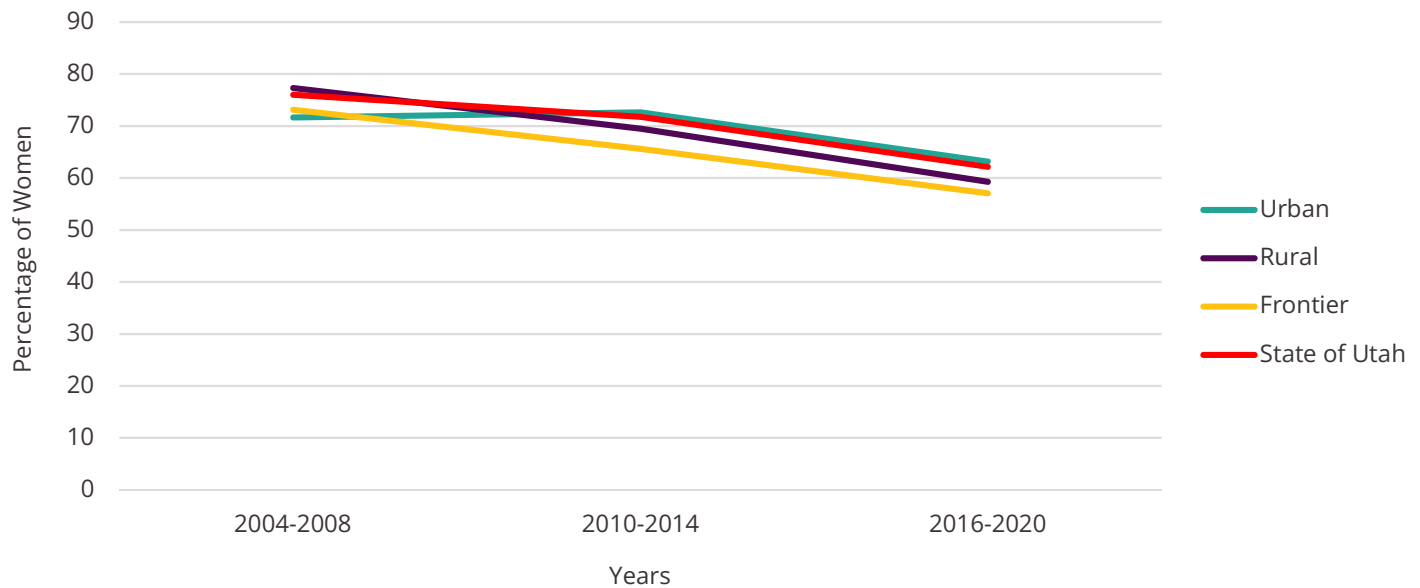


Table 17. Percentage of Women 18+ with a Pap test in the Past 3 Years by County Classification (Age-Adjusted)

County Classification	% of Women with a Pap test in the Past 3 Years	95% Confidence Interval	Number of Responses	Significance†
2004-2008				
State of Utah	76.04	74.65-77.37	4,928	
Urban	71.66	62.22-79.51	93	Same
Rural	77.32	73.66-80.6	670	Same
Frontier	73.14	68.15-77.6	314	Same
2010-2014				
State of Utah	71.77	70.91-72.62	10,918	
Urban	72.64	71.63-73.62	7,155	Same
Rural	69.53	67.63-71.36	3,071	Same
Frontier	65.61	61.66-69.36	614	Lower
2016-2020				
State of Utah	62.14	61.17-63.09	8,369	
Urban	63.19	62.06-64.3	5,491	Same
Rural	59.27	57.13-61.39	2,125	Same
Frontier	57.07	52.53-61.48	626	Same

Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 18. Women 18+ with a Pap test in Past 3 years by Utah Health Improvement Index Score (Age-adjusted)

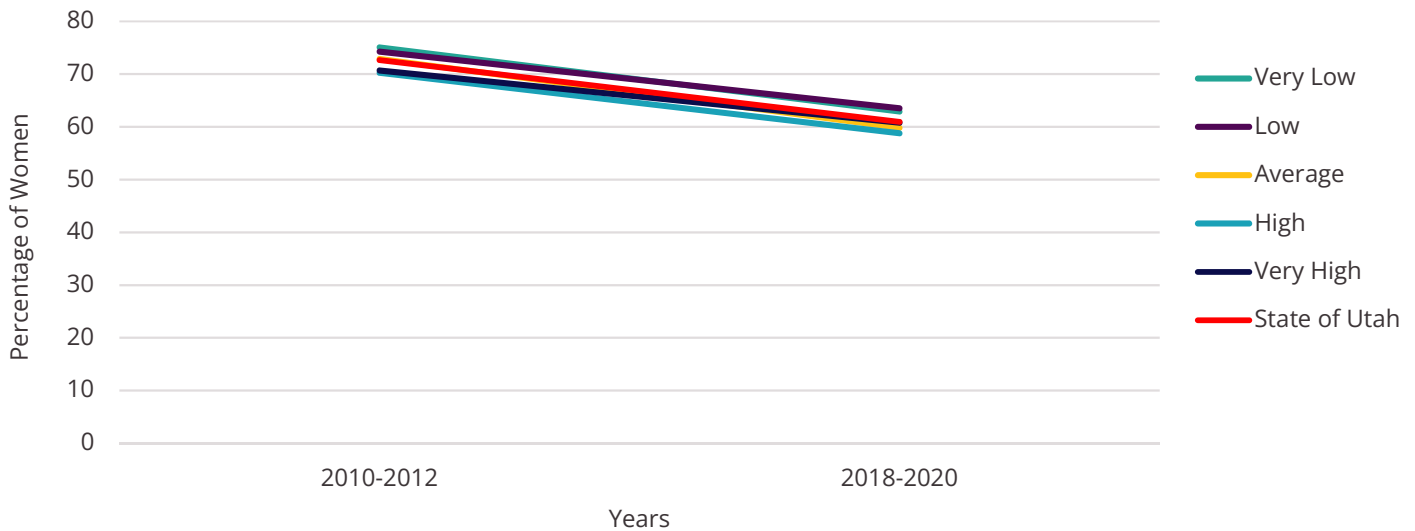


Table 18. Percentage of Women 18+ with a Pap test in the Past 3 Years by Utah Health Improvement Index Score (Age-Adjusted)

HII Classification	% of Women with a Pap test in the Past 3 Years	95% Confidence Interval	Number of Responses	Significance†
2010-2012				
State of Utah	72.66	71.58-73.71	7,083	
Very Low	74.82	72.28-77.2	1,248	Same
Low	73.85	71.36-76.19	1,499	Same
Average	73.92	71.55-76.16	1,516	Same
High	71.9	69.77-73.93	1,885	Same
Very High	68.79	65.64-71.77	776	Same
2018-2020				
State of Utah	60.95	59.82-62.07	5,892	
Very Low	64.74	61.94-67.44	913	Same
Low	60.59	57.99-63.12	1,073	Same
Average	62.78	60.2-65.28	1,181	Same
High	59.22	57.02-61.38	1,707	Same
Very High	59.98	56.62-63.26	731	Same

Source: Utah BRFSS Database. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Cervical Cancer Incidence

The most common cause of cervical cancer is infection by high-risk types of human papillomavirus (HPV). Cervical cancer is largely preventable with HPV vaccination and early detection by regular Pap tests. More than 50% of all new cervical cancers occur in women who have never been screened or have not been screened in the past 5 years.¹⁵

In 2019, the latest year for which incidence data are available, the age-adjusted rate of cervical cancer in Utah was 5.1 cases per 100,000 women compared to 6.6 cases per 100,000 nationwide.¹⁶ Cervical cancer incidence rates among Utah women have not changed significantly over the past two decades. However, notable fluctuations were observed across certain demographic subgroups.

Figure 18 illustrates trends in cervical cancer incidence rates across different racial/ethnic minority groups. The gap between NHOPI women, Black/African American women, and the overall rate among all Utah women has grown extensively over the past two decades. From 2015–2019, the incidence rate among NHOPI women (17.6 cases per 100,000) and Black/African women (16 cases per 100,000) were

significantly greater than the average rate among all Utah women at just 5.5 cases per 100,000 women.

On the contrary, the Hispanic/Latino female population saw a considerable decrease in cervical cancer incidence from 11 cases per 100,000 women between 2000–2004 to just 6.6 cases per 100,000 women in 2015–2019. This demonstrates a substantial improvement in the disparity gap between Hispanic/Latino women and the average rate among all women in Utah.

Figure 19 illustrates improvements made in closing the disparity gap between rural and frontier counties and the overall incidence rate in Utah. Further, trends in cervical cancer incidence among women residing in urban counties mirrored the overall rate across the state of Utah over the past 20 years.

Trends in cervical cancer incidence differed by HII score (see Figure 20). Small areas with Very High, Average, and Very Low scores all saw an upward trend in incidence rates over the past decade. On the contrary, small areas with High and Low HII scores experienced a decline in incidence rates since 2010. None of the trends in cervical cancer incidence within HII categories were statistically significant (see Table 20). Likewise, differences in incidence rates between HII categories were also not statistically significant.

¹⁵Centers for Disease Control and Prevention: Cervical Cancer is Preventable. CDC, 2020. Available online at <https://www.cdc.gov>. Last accessed December 12, 2022.

¹⁶Surveillance, Epidemiology, and End Results Program: Cancer Stat Facts: Cervical Cancer. SEER, 2022. Available online at <https://www.seer.cancer.gov>. Last accessed December 12, 2022.

Figure 19. Cervical Cancer Incidence by Race/Ethnicity (Age-adjusted)

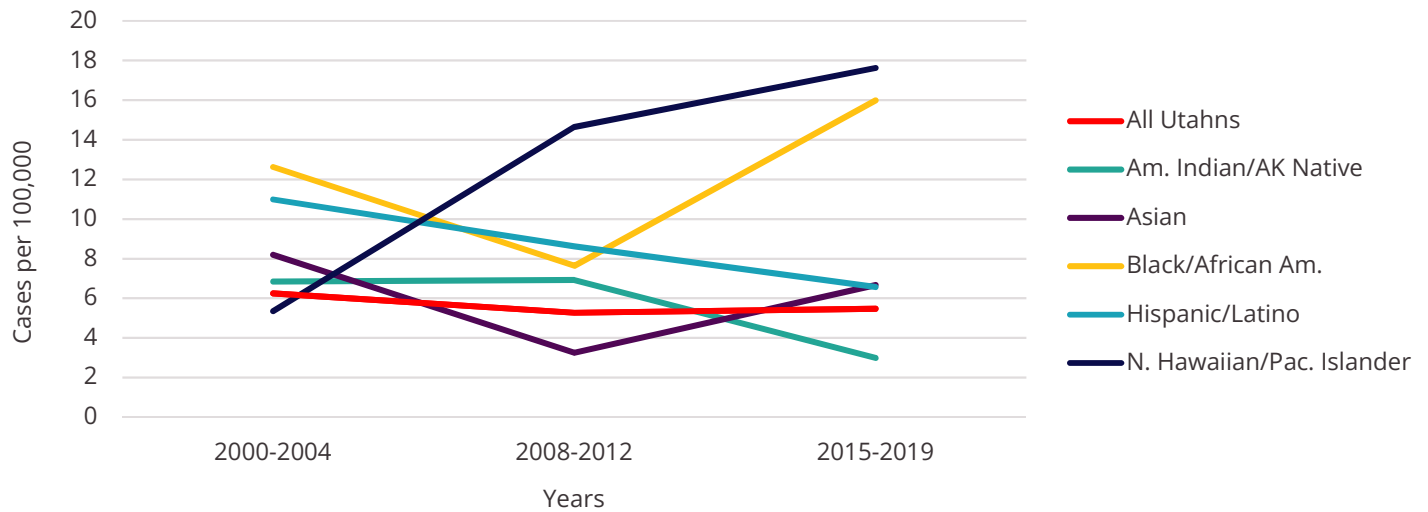


Table 19. Cervical Cancer Incidence by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity*	Cases per 100,000 Women	95% Confidence Interval	Number of Cases	Significance†
2000-2004				
All Utahns	6.2	5.52-6.94	305	
Am. Indian/Ak Native	6.84*	1.24-19.86*	3	Same
Asian	8.21	3.48-16.36	8	Same
Black/African Am.	12.63*	2.78-43.85*	3	Same
Hispanic/Latino	11.21	7.9-15.43	44	Higher
N. Hawaiian/Pac. Islander	5.35*	0.14-29.82*	1	Same
2008-2012				
All Utahns	5.25	4.68-5.87	314	
Am. Indian/Ak Native	6.92*	1.33-23.82*	3	Same
Asian	3.25	1.05-7.58	5	Same
Black/African Am.	7.64*	1.65-23.47*	3	Same
Hispanic/Latino	8.86	6.37-11.99	51	Higher
N. Hawaiian/Pac. Islander	14.65	4.89-33.69	6	Same
2015-2019				
All Utahns	5.52	4.98-6.11	382	
Am. Indian/Ak Native	2.99*	1-14.26*	2	Same
Asian	6.67	3.47-11.6	13	Same
Black/African Am.	15.99	7.97-34.57	9	Higher
Hispanic/Latino	6.57	5.05-8.68	57	Same
N. Hawaiian/Pac. Islander	17.63	7.96-33.75	9	Higher

Source: Utah Cancer Registry. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

*Insufficient relative standard error to meet UDOH standard for data reliability, interpret with caution.

Figure 20. Cervical Cancer Incidence by County Classification (Age-adjusted)

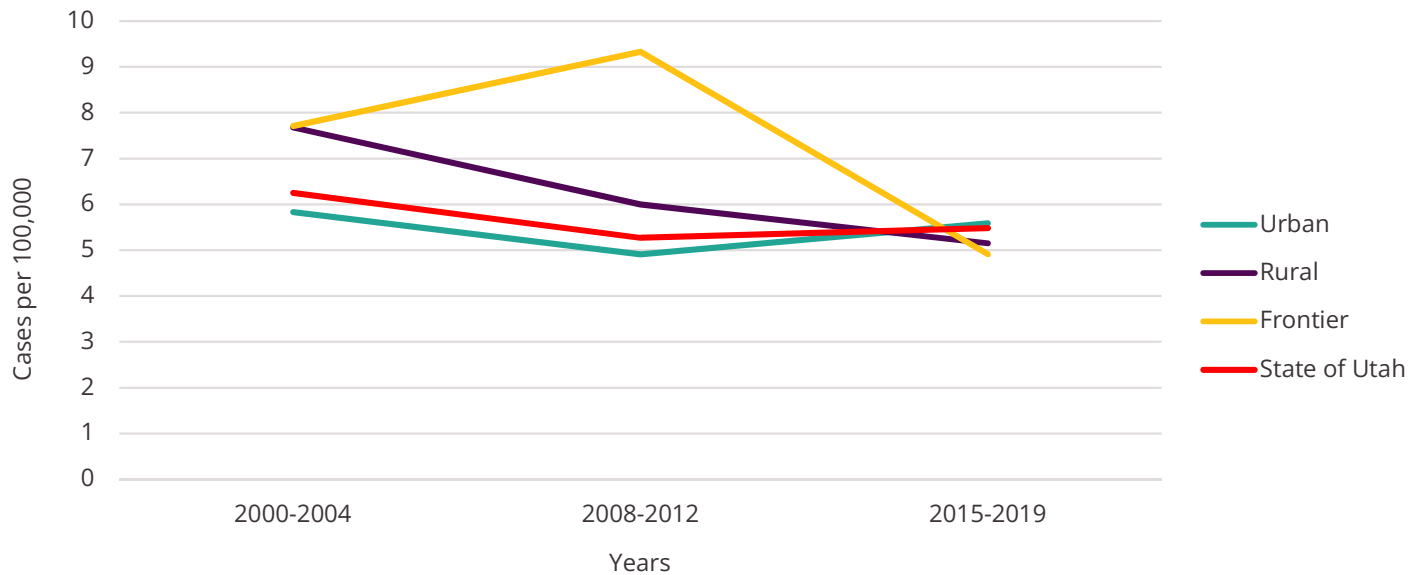


Table 20. Cervical Cancer Incidence by County Classification (Age-Adjusted)

County Classification	Cases per 100,000 Women	95% Confidence Interval	Number of Cases	Significance†
2000-2004				
State of Utah	6.2	5.52-6.94	305	
Urban	5.83	5.09-6.65	227	Same
Rural	7.68	5.9-9.82	64	Same
Frontier	7.71	4.18-13.01	14	Same
2008-2012				
State of Utah	5.25	4.68-5.87	314	
Urban	4.91	4.29-5.6	229	Same
Rural	6	4.61-7.68	65	Same
Frontier	9.33	5.6-14.6	20	Same
2015-2019				
State of Utah	5.52	4.98-6.11	382	
Urban	5.59	4.97-6.26	303	Same
Rural	5.15	3.97-6.57	67	Same
Frontier	4.91	2.19-9.47	9	Same

Source: Utah Cancer Registry. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 21. Cervical Cancer Incidence by Utah Health Improvement Index Score (Age-adjusted)

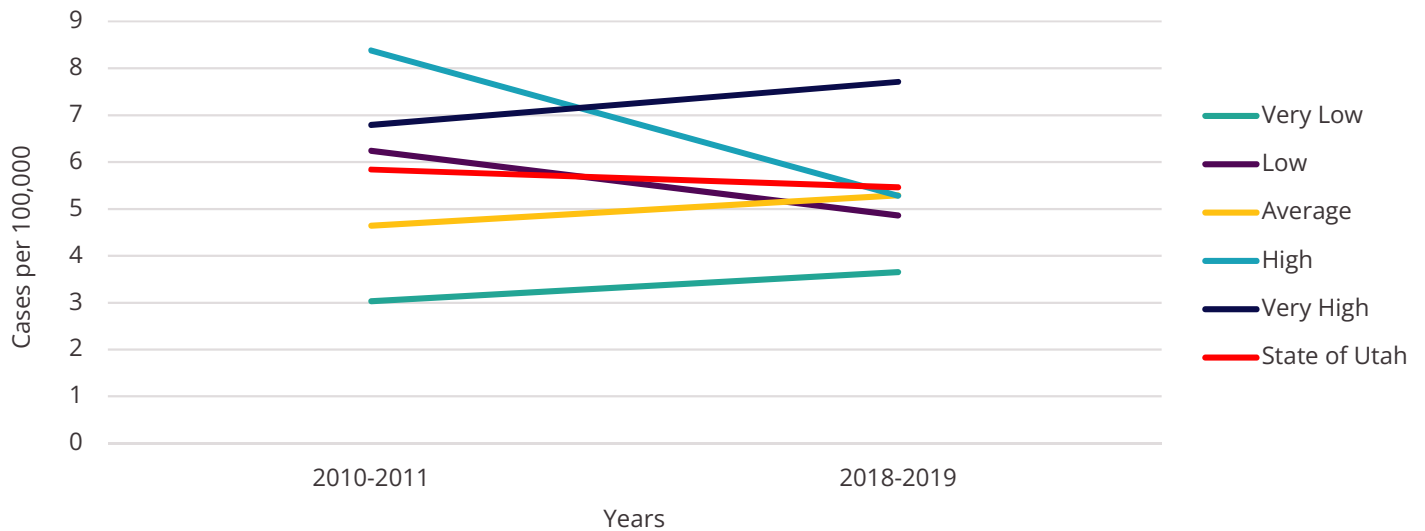


Table 21. Cervical Cancer Incidence by Utah Health Improvement Index Score (Age-Adjusted)

HII Classification	Cases per 100,000 Women	95% Confidence Interval	Number of Cases	Significance†
2010-2011				
State of Utah	5.81	4.88-6.87	140	
Very Low	2.72	1.34-4.91	11	Same
Low	6.24	4.46-8.5	41	Same
Average	4.64	2.92-7.02	23	Same
High	8.38	5.81-11.71	35	Same
Very High	6.79	4.46-9.92	28	Same
2018-2019				
State of Utah	5.16	4.35-6.07	147	
Very Low	3.87	2.35-6.01	20	Same
Low	5.1	3.61-7	39	Same
Average	5.15	3.44-7.41	30	Same
High	5.28	3.41-7.81	26	Same
Very High	7.71	5.23-10.96	32	Same

Source: Utah Cancer Registry. UDHHS, Division of Data, Systems and Evaluation, IBIS Version 2020.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Cervical Cancer Mortality

Cervical cancer was once one of the most common causes of cancer death among women in the United States. However, since the introduction of the HPV vaccine and widespread use of Pap tests there has been a significant drop in the cervical cancer mortality rate. Death rates in Utah have consistently been lower than national rates.¹⁷ However, in 2020, the latest year for which mortality data are available, the U.S. age-adjusted rate of cervical cancer death roughly equaled that of Utah, at 2.2 deaths per 100,000 women and 2.3 deaths per 100,000 women, respectively.¹⁸

Although Utah's overall cervical cancer mortality rate has remained stable over time, disaggregating the data by race/ethnicity revealed markedly different trends among certain subgroups of women (see Figure 22). Most notably, rates of cervical cancer death among women who identified as Black or African American decreased by nearly 38% from years 2000–2010 to 2011–2021. However, despite the substantial decrease, mortality rates among Black and African American women were still significantly higher than the overall rate in Utah.

Figure 23 illustrates trends in cervical cancer mortality over the past two decades by county classification. Trends in areas classified as urban and rural aligned with the overall trend in Utah, whereas frontier areas appeared to diverge from the average rate across the state. It is important to note, however, that the scale used in Figure 23 is relatively small, and all trends illustrated did not significantly differ within or between different county classifications (see Table 23).

Similar to Figure 23, it is important to note that the scale used in Figure 24 was also relatively small, and should thus be considered when interpreting trends in cervical cancer mortality over time. While it may appear in the graph that small areas with low HII scores experienced a sharp increase in rates of cervical cancer death, this difference in mortality over time was not found to be statistically significant. Difference in trends between different HII score categories were also not found to be significantly different (see Table 24).

¹⁷Health Indicator Report of Cervical Cancer Deaths. Retrieved on December 18th, 2022 from UDOH, Division of Data, Systems and Evaluation, IBIS website: <http://ibis.health.utah.gov/>

¹⁸SEER Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated with State, Total U.S. (2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2021. Underlying mortality data provided by NCHS (www.cdc.gov/nchs)

Figure 22. Cervical Cancer Death by Race/Ethnicity (Age-adjusted)

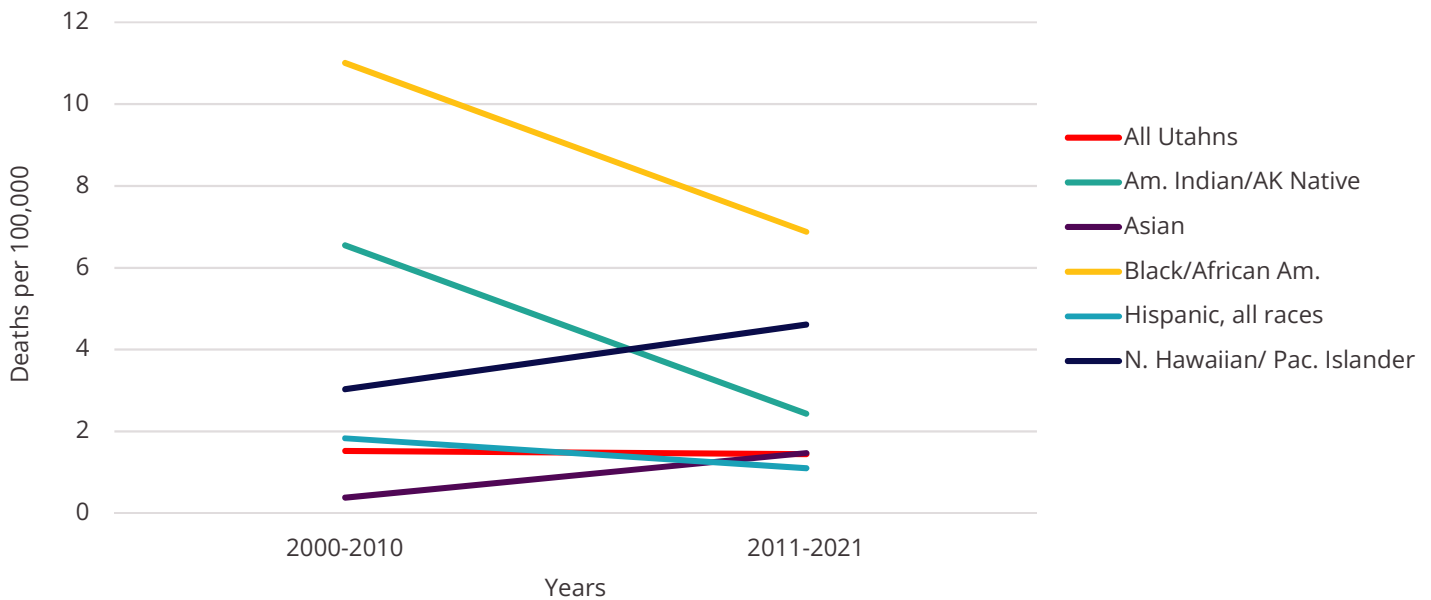


Table 22. Cervical Cancer Death by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity*	Deaths per 100,000 Women	95% Confidence Interval	Number of Deaths	Significance†
2000-2010				
All Utahns	1.52	1.3-1.77	170	
Am. Indian/Ak Native	6.55*	2.28-14.70*	6	Higher
Asian	0.38*	0.012-0.76*	1	Lower
Black/African Am.	11.01*	3.37-24.9*	5	Higher
Hispanic/Latino	1.83	0.88-3.36	13	Same
N. Hawaiian/Pac. Islander	3.03*	0.06-6*	1	Same
2011-2021				
All Utahns	1.44	1.26-1.63	240	
Am. Indian/Ak Native	2.43*	0.05-4.81*	3	Same
Asian	1.47*	0.54-3.22*	6	Same
Black/African Am.	6.88*	2.72-14.31*	7	Higher
Hispanic/Latino	1.1	0.61-1.83	17	Same
N. Hawaiian/Pac. Islander	4.61*	1.47-10.88*	5	Same

Source: Utah Death Certificate Database, Office of Vital Records and Statistics, Utah Department of Health. Population Estimates by Age, Sex, Race, and Hispanic Origin for Counties in Utah, U.S. Bureau of the Census, IBIS Version 2020

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

*Insufficient relative standard error to meet UDOH standard for data reliability, interpret with caution.

Figure 23. Cervical Cancer Death by County Classification (Age-adjusted)

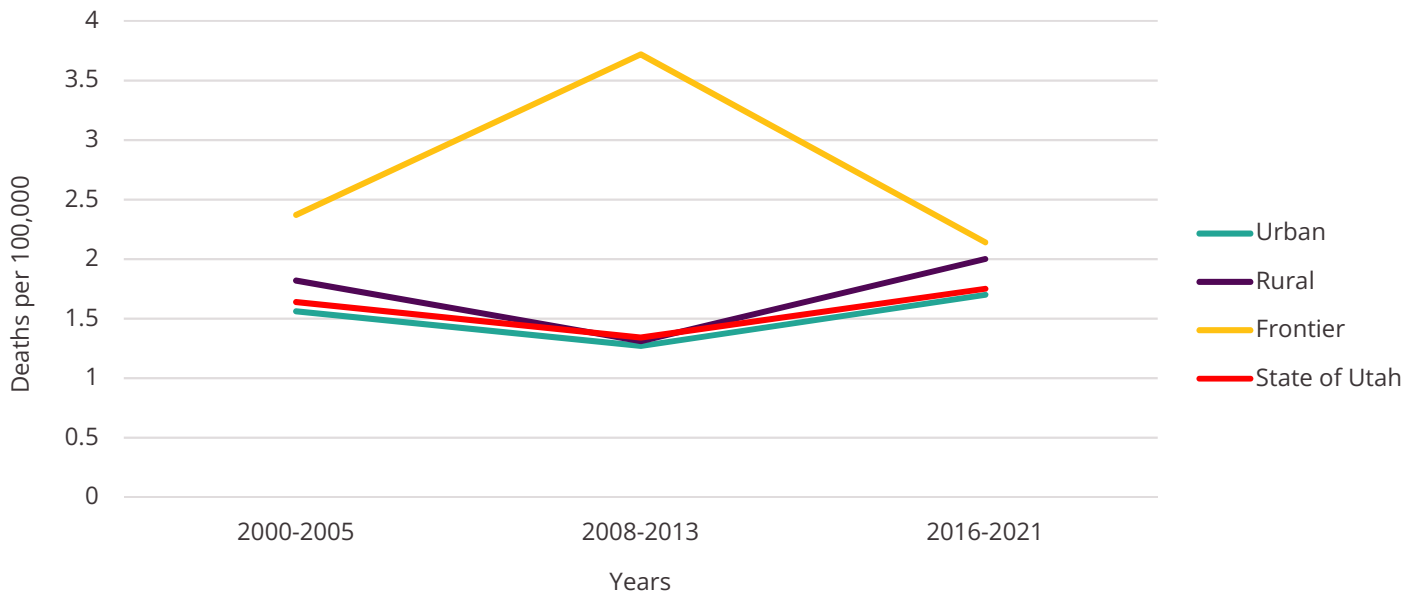


Table 23. Cervical Cancer Death by County Classification (Age-Adjusted)

County Classification	Deaths per 100,000 Women	95% Confidence Interval	Number of Deaths	Significance†
2000-2005				
State of Utah	1.64	1.32-2.01	94	
Urban	1.56	1.21-1.97	70	Same
Rural	1.82	1.09-2.84	19	Same
Frontier	2.37*	0.75-5.59*	5	Same
2008-2013				
State of Utah	1.34	1.08-1.63	96	
Urban	1.27	0.98-1.6	69	Same
Rural	1.31	0.77-2.09	18	Same
Frontier	3.72*	1.68-7.10*	9	Higher
2016-2021				
State of Utah	1.75	1.48-2.06	153	
Urban	1.7	1.4-2.04	114	Same
Rural	2	1.37-2.82	34	Same
Frontier	2.14*	0.66-5.13*	5	Same

Utah Death Certificate Database, Office of Vital Records and Statistics, Utah Department of Health.
 Population Estimates by Age, Sex, Race, and Hispanic Origin for Counties in Utah, U.S. Bureau of the
 Census, IBIS Version 2020

†Significance indicates whether the percentage was higher or lower than for all Utahns.

*Insufficient relative standard error to meet UDOH standard for data reliability, interpret with caution.

Figure 24. Cervical Cancer Death by Utah Health Improvement Index Score (Age-adjusted)

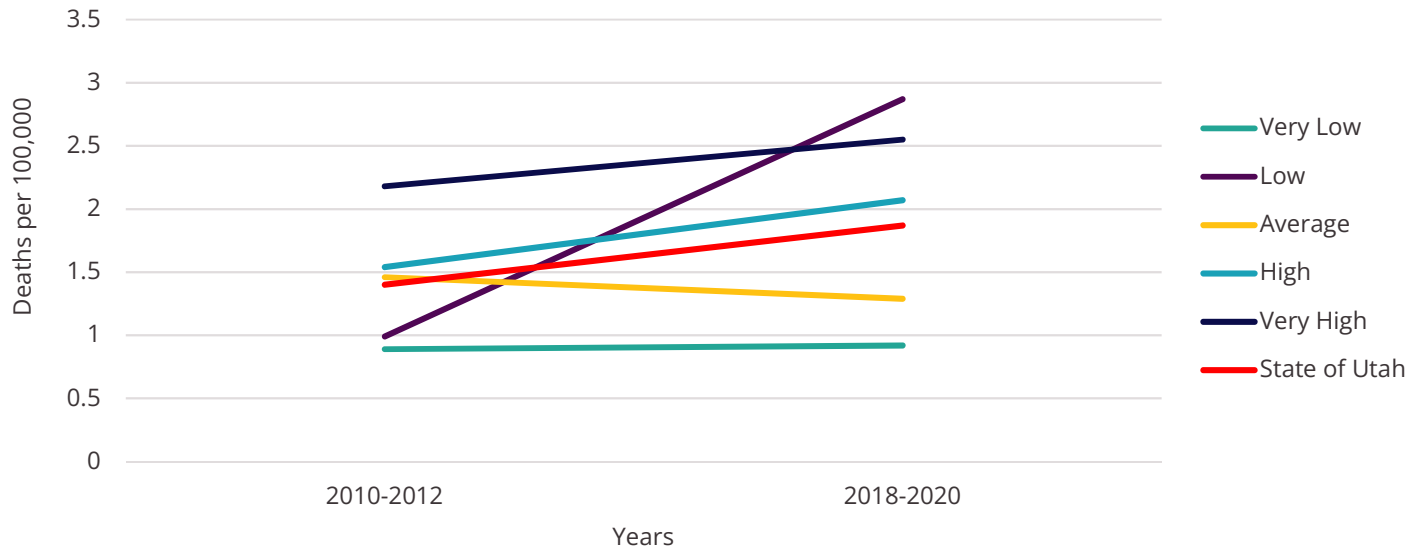


Table 24. Cervical Cancer Death by Utah Health Improvement Index Score (Age-Adjusted)

HII Classification	Deaths per 100,000 Women	95% Confidence Interval	Number of Deaths	Significance†
2010-2012				
State of Utah	1.4	1.04-1.85	50	
Very Low	0.89*	0.28-2.14*	5	Same
Low	0.99*	0.39-2.05*	7	Same
Average	1.46*	0.73-2.63*	11	Same
High	1.54	0.89-2.48	17	Same
Very High	2.18*	1.04-4.02*	10	Same
2018-2020				
State of Utah	1.87	1.48-2.33	80	
Very Low	0.92*	0.36-1.92*	7	Same
Low	2.87	1.83-4.28	24	Same
Average	1.29	0.66-2.27	12	Same
High	2.07	1.3-3.13	23	Same
Very High	2.55	1.38-4.3	14	Same

Utah Death Certificate Database, Office of Vital Records and Statistics, Utah Department of Health. Population Estimates by Age, Sex, Race, and Hispanic Origin for Counties in Utah, U.S. Bureau of the Census, IBIS Version 2020

†Significance indicates whether the percentage was higher or lower than for all Utahns.

*Insufficient relative standard error to meet UDOH standard for data reliability, interpret with caution.

Cervical Cancer Late-Stage Diagnosis

Cervical cancer was once one of the most common causes of cancer death among American women. Today, it is considered one of the most treatable cancers if detected early. Advances in treatment and public health initiatives for cervical cancer screening have significantly improved patient survival rates. When cervical cancer is diagnosed at an early stage, the 5-year survival rate is 92%.¹⁹ When cervical cancer is diagnosed at the regional stage, that figure drops to about 58%.¹⁹ Finally, women diagnosed with distant disease have a 5-year survival rate of only 18%.²⁰ In general, the earlier cervical cancer is detected and treated, the greater the changes for long-term survival.

From 2015–2019, an alarming 48% of cervical cancer cases among women in Utah were diagnosed at a late stage, defined as regional or distant disease.²⁰ Given the substantially lower 5-year survival rates among women diagnosed with late-stage disease compared to those diagnosed at an early stage, it is critically important that the subgroups of women burdened with higher rates of cervical cancer morbidity and mortality are identified so cancer control efforts can be targeted.

Analyzing trends in late-stage cervical cancer diagnoses by race/ethnicity revealed a mounting disparity among NHOPI women and the average woman in Utah (see Figure 25). From 2015–2019, the average rate of late-stage cervical cancer cases among NHOPI women was 17.3 cases per 100,000 women compared to the overall rate of just 2.6 cases per 100,000 women, though due to the small population size of NHOPI women, this difference was not statistically significant. On the contrary, rates of late-stage diagnoses among women who identified as Black or African American greatly improved since the early 2000s, decreasing by nearly 50% from years 2005–2009 to 2015–2019. However, Black and African American women still maintain a significantly higher rate of cervical cancer late-stage diagnoses compared to all women in Utah.

Disaggregating the data by county classification did not reveal any meaningful differences between county types or any unusual trends that significantly deviated from the overall average (see Figure 26). Frontier counties saw slightly lower rates of late-stage diagnoses during the analyzed time frame, however this difference was not significantly different from the average rate across all counties in Utah (see Table 26).

¹⁹American Cancer Society. Cancer Facts & Figures 2022. Atlanta, Ga: American Cancer Society; 2022.

²⁰ SEER*Stat Database: Incidence - SEER Research Plus Data, 17 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.

Figure 25. Cervical Cancer Late-Stage Diagnosis Rate by Race/Ethnicity (Age-adjusted)**

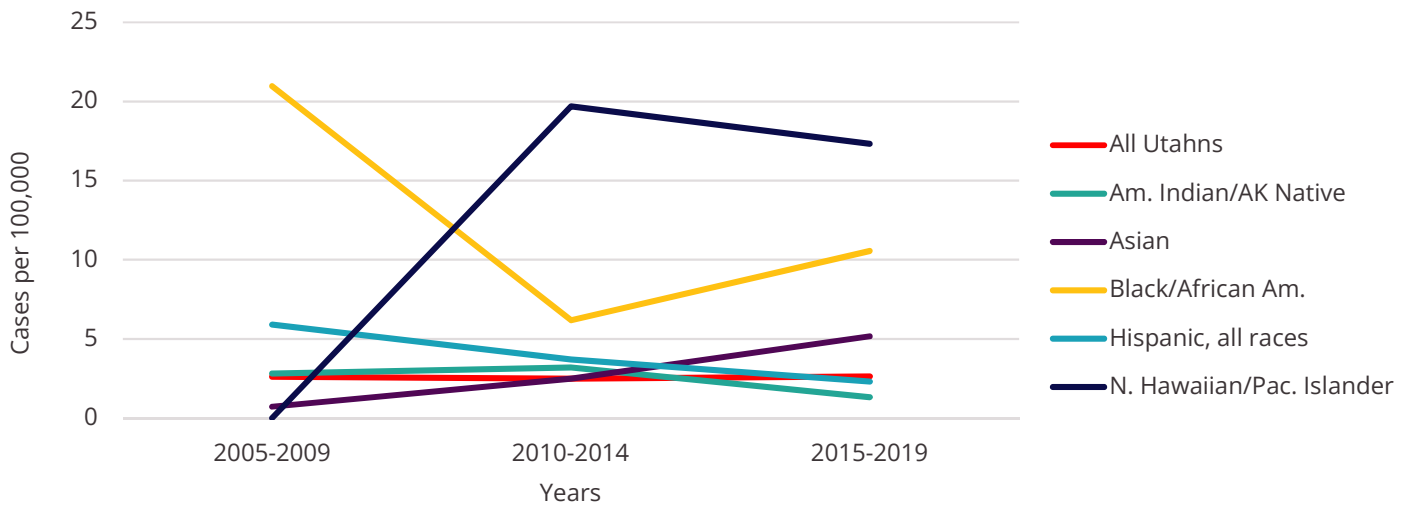


Table 25. Cervical Cancer Late-Stage Diagnosis by Race/Ethnicity (Age-Adjusted)

Race/Ethnicity*	Cases per 100,000 Women	95% Confidence Interval	Number of Cases	Significance†
2005-2009				
All Utahns	2.61	0.22-2.18	141	
Am. Indian/Ak Native	2.81	0-8.32	1	Same
Asian	0.72	0-1.89	1	Same
Black/African Am.	20.97	1.76-40.18	5	Same
Hispanic/Latino	5.9	3.33-8.47	24	Higher
N. Hawaiian/Pac. Islander	0	0-14.72	0	Same
2010-2014				
All Utahns	2.48	2.09-2.87	152	
Am. Indian/Ak Native	3.2	0-9.47	1	Same
Asian	2.48	0-5.68	4	Same
Black/African Am.	6.18	0-13.33	3	Same
Hispanic/Latino	3.71	2.1-5.32	23	Same
N. Hawaiian/Pac. Islander	19.69	0-41.55	8	Same
2015-2019				
All Utahns	2.63	2.24-3.02	183	
Am. Indian/Ak Native	1.32	0-3.91	1	Same
Asian	5.16	1.46-8.87	9	Same
Black/African Am.	10.56	1.17-19.95	6	Same
Hispanic/Latino	2.30	1.28-3.32	20	Same
N. Hawaiian/Pac. Islander	17.32	0-37.57	8	Same

Source: SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.

*Race is in combination with non-Hispanic ethnicity and Hispanic/Latino is of any race.

†Significance indicates whether the percentage was higher or lower than for all Utahns.

Figure 26. Cervical Cancer Late-Stage Diagnosis by County Classification (Age-adjusted)

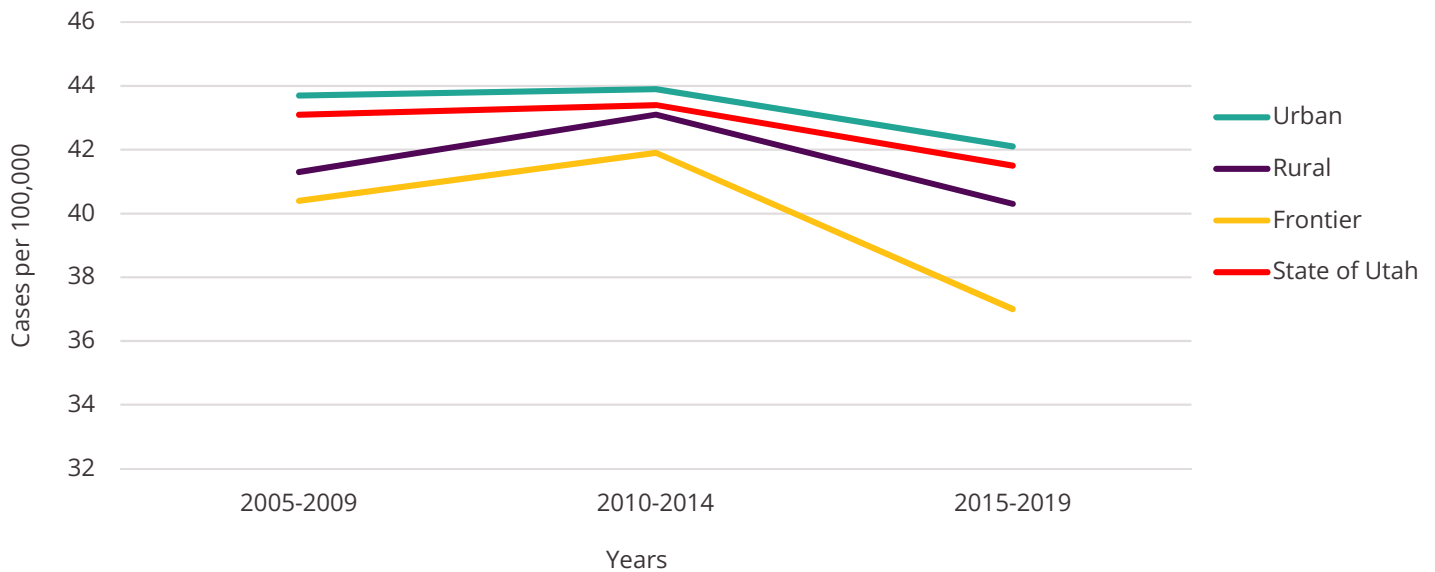


Table 26. Cervical Cancer Late-Stage Diagnosis by County Classification (Age-Adjusted)

County Classification	Cases per 100,000 Women	95% Confidence Interval	Number of Cases	Significance†
2005-2009				
State of Utah	2.61	2.18-3.04	141	
Urban	2.51	2.02-3	104	Same
Rural	3.01	1.91-4.11	30	Same
Frontier	3.26	0.83-5.69	7	Same
2010-2014				
State of Utah	2.48	2.09-2.87	152	
Urban	2.37	1.94-2.8	114	Same
Rural	2.78	1.76-3.8	30	Same
Frontier	3.62	1.01-6.23	8	Same
2015-2019				
State of Utah	2.63	2.24-3.02	183	
Urban	2.63	2.2-3.06	141	Same
Rural	2.65	1.77-3.53	36	Same
Frontier	3.02	0.51-5.53	6	Same

Source: SEER*Stat Database: Incidence - SEER Research Plus Limited-Field Data, 22 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.
 †Significance indicates whether the percentage was higher or lower than for all Utahns.

Moving Forward

Breast and cervical cancer affects all groups of women in Utah, but due to socioeconomic disadvantages, certain groups of women bear a disproportionate burden of disease compared with other groups. The data presented in these profiles demonstrated differences in cancer measures including screening, incidence, mortality, and stage at diagnosis among minority groups of women. The health disparities in breast and cervical cancer detection and treatment highlight the need to improve access to care and eliminate barriers for the most vulnerable patient populations. Therefore, innovative strategies are needed to promote breast and cervical cancer prevention and improve the health outcomes of underserved women in Utah. Furthermore, it is imperative that leaders, researchers, and medical professionals from minority populations are represented in the decision-making processes regarding cancer control interventions so that health disparities in cancer are more effectively addressed.²¹

The Utah Breast and Cervical Cancer Program (UTAH B&C) is committed to better understanding and addressing health disparities in cancer morbidity and mortality. With funding from the National Breast and Cervical Cancer Early Detection Program, UTAH B&C will implement evidence-based interventions that increase early

cancer screening and timely follow-up including patient and provider reminders, one-on-one and group education, reduction of out of pocket expenses, and quality assurance-reporting protocols. As advocates of health promotion, it is critically important that we implement innovative methods of delivering cancer care and removing barriers in order to make breast and cervical cancer care equitable among all women in Utah.

Appendix: Data and Methods

This report utilizes data from various sources, including the Utah Behavioral Risk Factor Surveillance System (BRFSS), the Utah Cancer Registry (UCR), the Utah Department of Health (UDOH), Office of Vital Records, and the Surveillance, Epidemiology, and End Results (SEER) Program database. Cancer screening data was assessed using data from the Utah BRFSS, a telephone survey that does not include data from individuals who do not have a telephone or who were unable to respond to the survey in a language other than English or Spanish. The data is self-reported, which can also introduce different biases. Small numbers of survey respondents who belong to a minority race lower the reliability of the estimates. Utah BRFSS datasets were age-adjusted to the US 2000 standard population based on three age groups: 40–49, 50–64 and 65+.

²¹Yedjou CG, Sims JN, Miele L, Noubissi F, Lowe L, Fonseca DD, Alo RA, Payton M, Tchounwou PB. Health and Racial Disparity in Breast Cancer. *Adv Exp Med Biol.* 2019;1152:31-49.

Cancer incidence was evaluated using data from UCR. UCR collects reports of all newly diagnosed cases of reportable neoplasms among Utah residents from health care providers across Utah. Cancer case reports received from providers are consolidated, edited, and reviewed for quality assurance by UCR staff. Utah BRFSS datasets were age-adjusted to the US 2000 standard population based on ten age groups: 0-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, and 85+.

Cancer mortality was evaluated using data from the UDOH, Office of Vital Records. The Office of Vital Records maintains and provides death certificates of all Utah residents. The causes of death were coded using International Classification of Diseases codes. Utah death certificate datasets were age-adjusted to the US 2000 standard population based on ten age groups: 0-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, and 85+.

Late-stage cancer diagnoses were assessed using data from the SEER program. The program

reports registry data on every case of cancer reported in 19 U.S. geographic areas, including Utah. Seer program data were age-adjusted on 19 age groups: 00 years, 01-04, 05-09, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, and 85+.

This report disaggregates data by group in order to detect health disparities in breast and cervical cancer prevention and treatment, which can be challenging when working with small populations. In Utah, when data are disaggregated by race, small sample sizes make it difficult or impossible to reliably detect statistically significant differences. Thus, when measuring health disparities in small populations, it is necessary to compile data from a series of years in order to obtain reliable estimates. Even with the compiled data, some samples may not be high enough to yield reliable estimates. When this is the case, the data insufficiencies are noted with asterisks and footnotes.

References

1. Ken C. Gardner Policy Institute, Utah's Increasing Diversity: Population Projections by Race/Ethnicity, 2019.
2. Utah Department of Health Office of Health Disparities Moving Forward in 2016 reports.
3. Jensen, E., et al. (2021). Measuring Racial and Ethnic Diversity for the 2020 Census. US Census Bureau.
4. American College of Radiology. Continue Mammography Care in 2022. Website: <https://www.acr.org/>
5. Health Indicator Report of Breast Cancer Screening (Mammography). Retrieved on December 5, 2022 from UDHHS, Division of Data, Systems and Evaluation, IBIS for Public Health website: <http://ibis.health.utah.gov/>.
6. Health Indicator Report of Breast Cancer Deaths. Retrieved on November 18th, 2022 from Utah Department of Health and Human Services, Division of Data, Systems and Evaluation, Indicator-Based Information System for Public Health website: <http://ibis.health.utah.gov/>
7. Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated with State, Total U.S. (2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2021. Underlying mortality data provided by NCHS (www.cdc.gov/nchs)
8. Howlader N, Noone AM, Krapcho M, et al., eds. SEER Cancer Statistics Review, 1975–2017, National Cancer Institute. Bethesda, MD. Available at: https://seer.cancer.gov/csr/1975_2017/, based on November 2019 SEER data submission, posted to the SEER web site, April 2020. Accessed December 1, 2020
9. American Cancer Society. Cancer Facts & Figures 2022. Atlanta, Ga: American Cancer Society; 2022.
10. SEER*Stat Database: Incidence - SEER Research Plus Data, 17 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.
11. Mobley L, Kuo M, Scott L, Rutherford Y, Bose S. Modeling geospatial patterns of late-stage diagnosis of breast cancer in the US. *Int J Environ Res Public Health* 2017;14:484
12. American Cancer Society: Cervical Cancer Screening (PDQ®)–Health Professional Version. American Cancer Society, 2022. Available online at <https://www.cancer.gov/>. Last accessed December 12, 2022.
13. U.S. Preventive Services Task Force: Cervical Cancer: Screening. USPSTF, 2022. Available online at <https://www.uspreventiveservicestaskforce.org/uspstf/>. Last accessed December 12, 2022.
14. Health Indicator Report of Cervical Cancer Screening (Pap). Retrieved on December 13th, 2022 from Utah Department of Health and Human Services, Division of Data, Systems and Evaluation, Indicator-Based Information System for Public Health website: <http://ibis.health.utah.gov/>

15. Centers for Disease Control and Prevention: Cervical Cancer is Preventable. CDC, 2020. Available online at <https://www.cdc.gov>. Last accessed December 12, 2022.
16. Surveillance, Epidemiology, and End Results Program: Cancer Stat Facts: Cervical Cancer. SEER, 2022. Available online at <https://www.seer.cancer.gov>. Last accessed December 12, 2022.
17. Health Indicator Report of Cervical Cancer Deaths. Retrieved on December 18th, 2022 from UDOH, Division of Data, Systems and Evaluation, IBIS website: <http://ibis.health.utah.gov/>
18. SEER Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated with State, Total U.S. (2020) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2021. Underlying mortality data provided by NCHS (www.cdc.gov/nchs)
19. American Cancer Society. Cancer Facts & Figures 2022. Atlanta, Ga: American Cancer Society; 2022.
20. SEER*Stat Database: Incidence - SEER Research Plus Data, 17 Registries, Nov 2021 Sub (2000-2019) - Linked To County Attributes - Total U.S., 1969-2020 Counties, National Cancer Institute, DCCPS, Surveillance Research Program, released April 2022, based on the November 2021 submission.
21. Yedjou CG, Sims JN, Miele L, Noubissi F, Lowe L, Fonseca DD, Alo RA, Payton M, Tchounwou PB. Health and Racial Disparity in Breast Cancer. *Adv Exp Med Biol.* 2019;1152:31-49.