



Arkansas Department of Health

Trends in Human Papillomavirus (HPV)-Associated Cancers, Arkansas, 2001-2018

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Outline

- Purpose
- Background
 - Defining HPV-associated cancers
- U.S. Trends
- AR Trends
 - Incidence
 - Cancer by site
 - Demographics
 - Age, Sex, Race
- Immunization Rates in AR



Purpose

- Analyze state-specific trends in HPV-associated cancers
- Describe current HPV vaccination rates in Arkansas
- Specify target populations
 - Cancer risk
 - Vaccination



Background

- Estimated 43 million HPV infections in U.S., 2018
- Most infections are transient, clear spontaneously
- HPV is the most common sexually transmitted infection in the United States
- Persistent infection can lead to cancer
 - Progression from infection to invasive cervical cancer: 10-20 years
- HPV causes cancer of the following sites:
 - Cervix
 - Vagina SCC
 - Vulva SCC
 - Anus/Rectal SCC
 - Penis SCC
 - Oropharynx (*including base of tongue, tonsils, and back of throat*) SCC
- HPV vaccine publicly available in U.S. starting June 2006

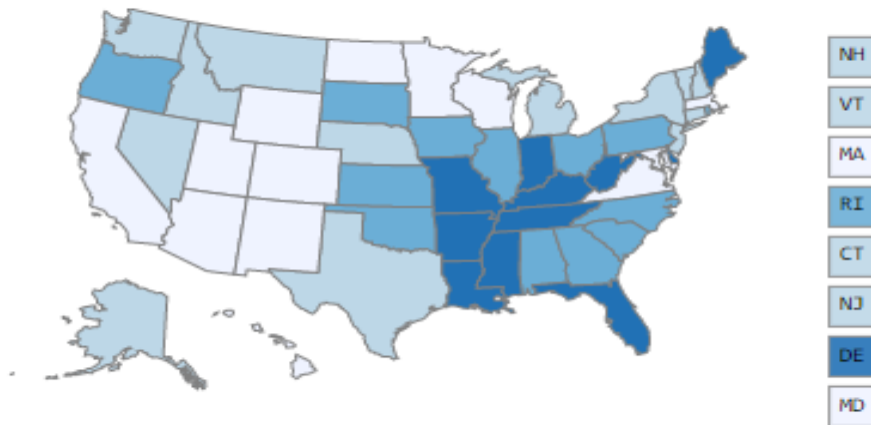


HPV-Associated Cancer Rates by State, 2013-2017 Combined

Rate of New HPV-associated Cancers by State

All HPV-associated Cancers, Male and Female, United States, 2013-2017
Rate per 100,000 people

Map Table Export



Rate per 100,000 people



State	Rate
1. KY	16.4
2. WV	15.4
3. MS	15.0
4. AR	14.9
5. FL	14.8
6. LA	14.5
7. TN	14.4
8. IN	14.1
9. MO	13.9
10. ME	13.8

Incidence data are compiled from cancer registries meeting U.S. Cancer Statistics data quality criteria covering 100% of the U.S. population. Rates are the number of cases per 100,000 people and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). Rates and counts are suppressed if fewer than 16 cases were reported in a specific category, such as cancer type, race, ethnicity, and age. Rates are not presented for people of unknown or other race. Data for specified racial or ethnic populations other than white and black should be interpreted with caution. Race categories are not mutually exclusive from Hispanic origin. For more information, see U.S. Cancer Statistics Data Visualizations Tool [Technical Notes](#).



Technical Notes

Reporting Cancer Cases

Cancer registries across the United States report to one of the following:

- CDC National Program of Cancer Registries (NPCR)
- National Cancer Institute's (NCI) Surveillance, Epidemiology, and End Results (SEER) Program

The ACCR is funded by the CDC NPCR and is designated as a Registry of Distinction by NPCR and gold-certified by the North American Association of Central Cancer Registries (NAACCR).



Technical Notes (cont.)

Data Analysis for this Report

Data: National Program of Cancer Registries and Surveillance, Epidemiology, and End Results SEER*Stat Database: NPCR and SEER Incidence – U.S. Cancer Statistics Public Use Research Database, Nov 2019 submission (2001-2017), United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Released June 2020, based on November 2019 submissions. Available at www.cdc.gov/cancer/public-use.

Software: Surveillance Research Program, National Cancer Institute SEER*Stat software (www.seer.cancer.gov/seerstat) version 8.3.5

Incident cases only

Year listed = year of diagnosis

Software automatically suppresses data and analysis if <16 cases in a group

Note: Some data, including county-level and survival information, sourced directly from Arkansas Central Cancer Registry and analyzed in the Central Cancer Registry Database Management System, CancerCORE v2.



Predefined Variables

Human Papillomavirus-Associated Cancers³⁻⁷

Cancer	ICD-O-3 site codes	ICD-O-3 histology codes	Additional restrictions
Squamous cell carcinoma of the oropharynx	C01.9, 02.4, 02.8, 05.1–05.2, 09.0–09.1, 09.8–09.9, 10.0–10.9, 10.8–10.9, 14.0, 14.2, 14.8	8050–8084, 8120–8131	Restrict to microscopically confirmed
Squamous cell carcinoma of the anus	C21.0–21.8, 20.9	8050–8084, 8120–8131	Restrict to microscopically confirmed
Squamous cell carcinoma of the vulva	C51.0–51.9	8050–8084, 8120–8131	Restrict to females and restrict to microscopically confirmed
Squamous cell carcinoma of the vagina	C52.9	8050–8084, 8120–8131	Restrict to females and restrict to microscopically confirmed
Carcinoma of the cervix	C53.0–53.9	8010–8671, 8940–8941	Restrict to females and restrict to microscopically confirmed
Squamous cell carcinoma of the penis	C60.0–60.9	8050–8084, 8120–8131	Restrict to males and restrict to microscopically confirmed

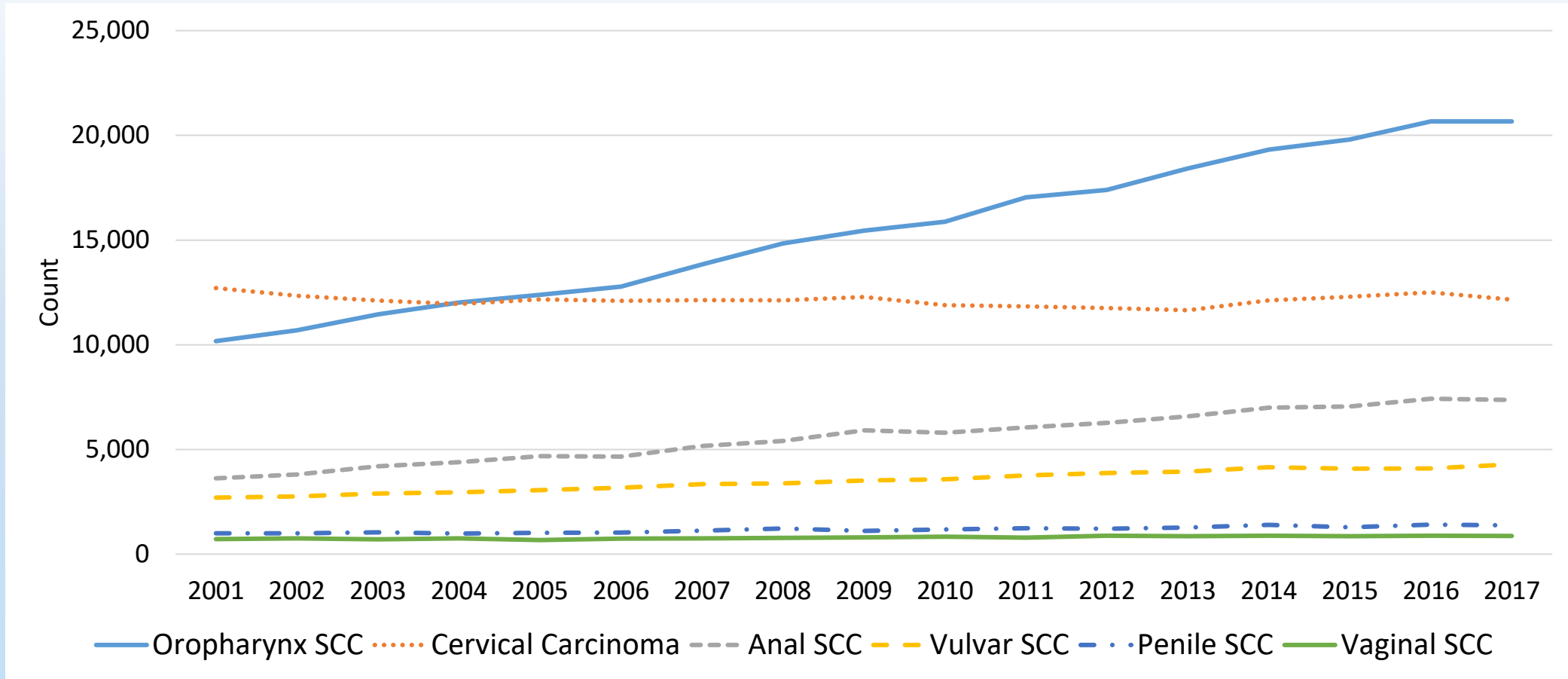
Notes: Table showing which International Classification of Disease for Oncology (ICD-O)-3 site codes, histology codes, and other restrictions used for the predefined SEER*Stat variables. Adapted from *Predefined SEER*Stat Variables for Calculating the Number of Associated Cancers for Selected Risk Factors*, by Centers for Disease Control and Prevention, 2017, retrieved from <https://www.cdc.gov/cancer/npcr/pdf/public-use/predefined-seer-stat-variables.pdf>



National Trends



Number of Incident of HPV-Associated Cancer by Site, United States, 2001-2017



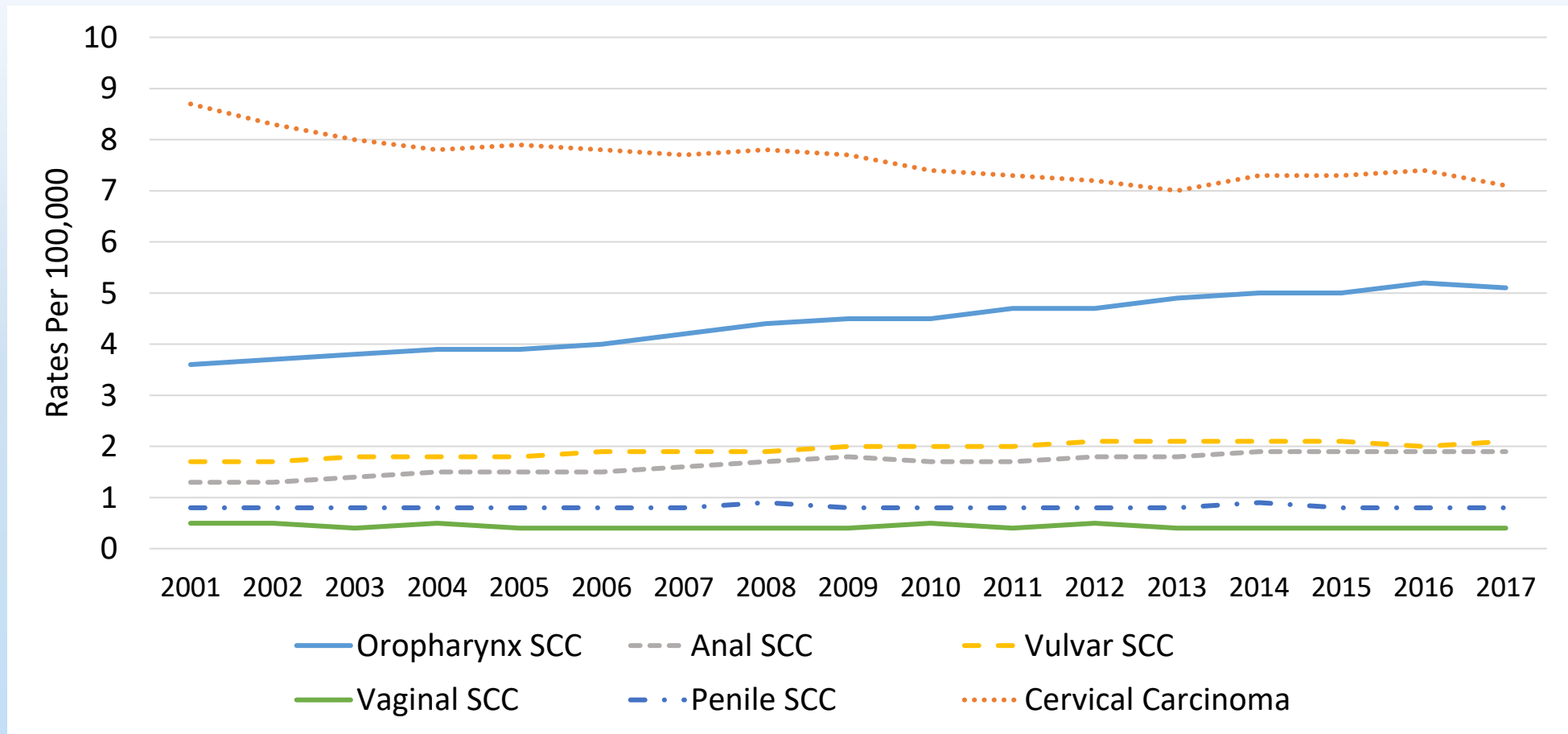
Abbreviations: SCC = squamous cell carcinoma

Software: Surveillance Research Program, National Cancer Institute SEER*Stat software (www.seer.cancer.gov/seerstat) version 8.3.5.

Data: SEER*Stat Database: NPCR and SEER Incidence – U.S. Cancer Statistics Public Use Database, Nov 2019 submission (2001-2017). Created on 4/6/21.



Trends in Age-Adjusted HPV-Associated Cancer Incidence by Site, United States, 2001-2017



Abbreviations: SCC = squamous cell carcinoma

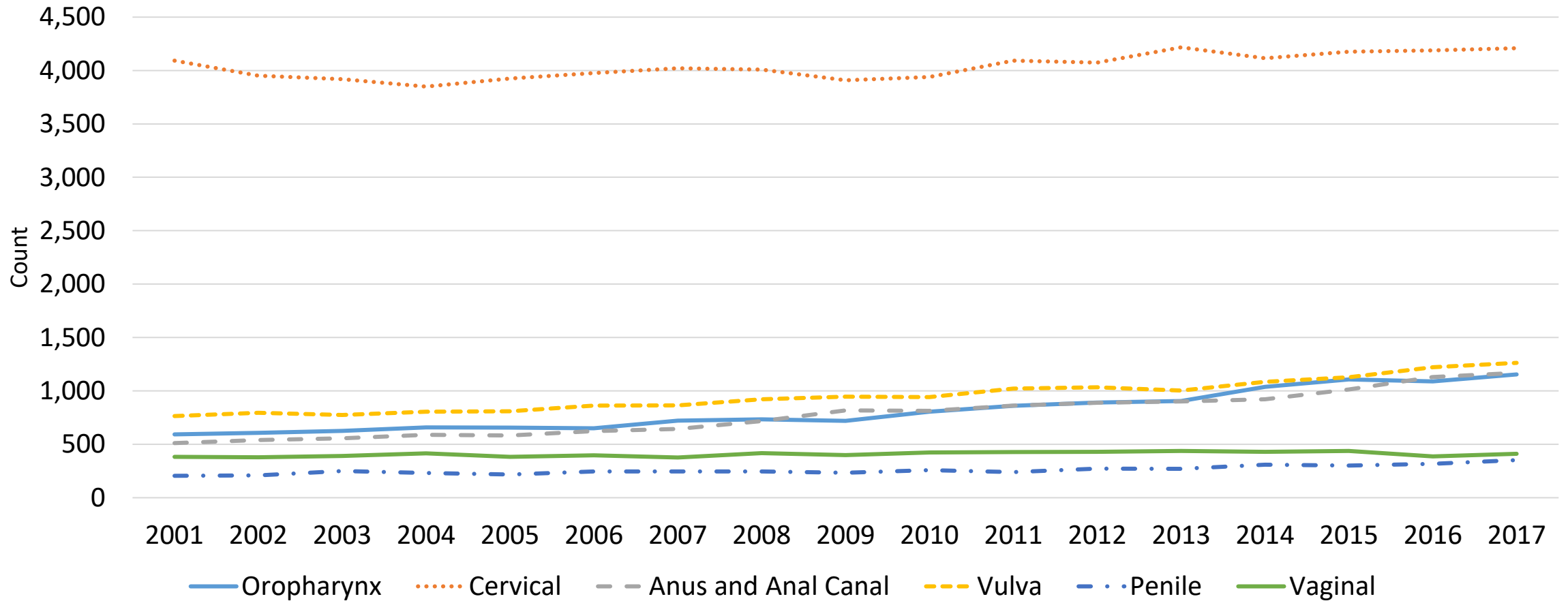
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: NPCR and SEER Incidence – U.S. Cancer Statistics Public Use Database, Nov 2019 submission (2001-2017).

Created on 4/6/21



Number of Cancer Deaths by Site, United States, 2001-2017



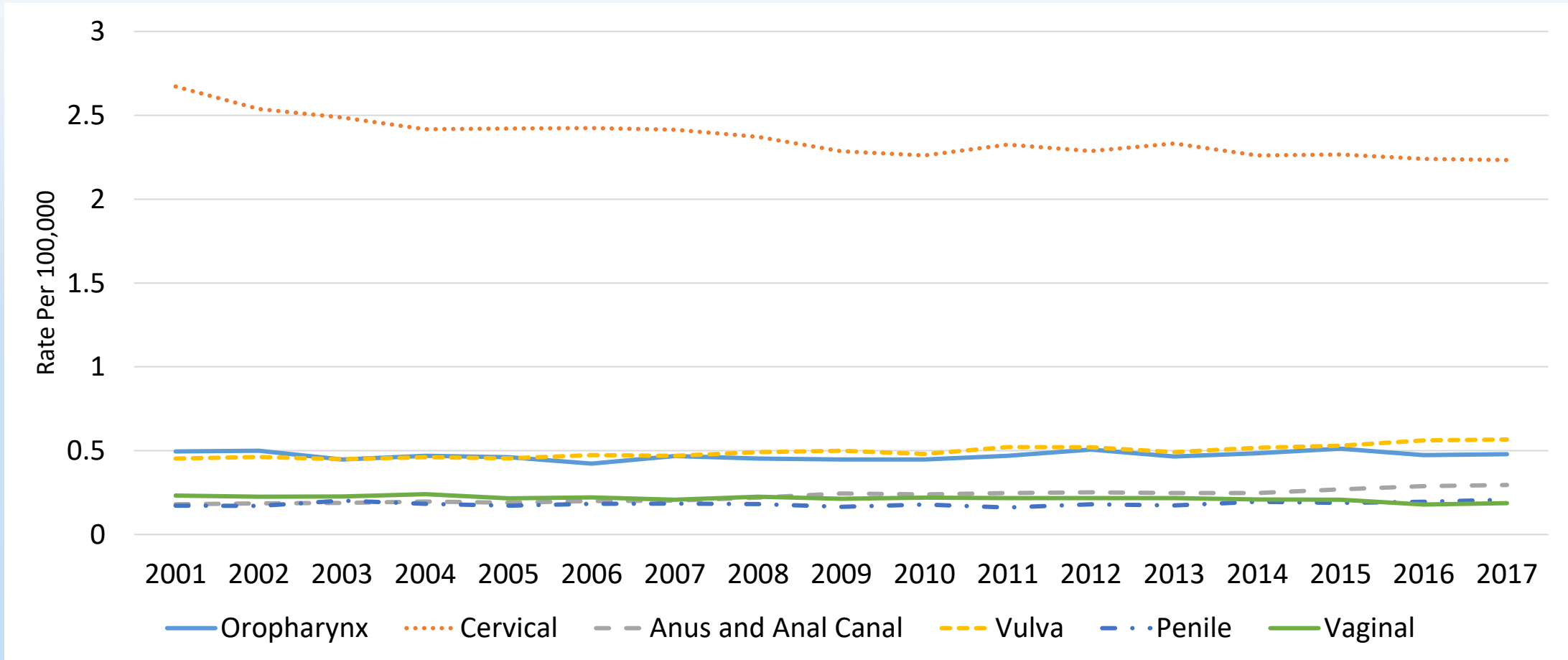
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: CDC Wonder Mortality Data

Created on 4/30/21



Trends in Age-Adjusted Cancer Mortality by Site, United States, 2001-2017



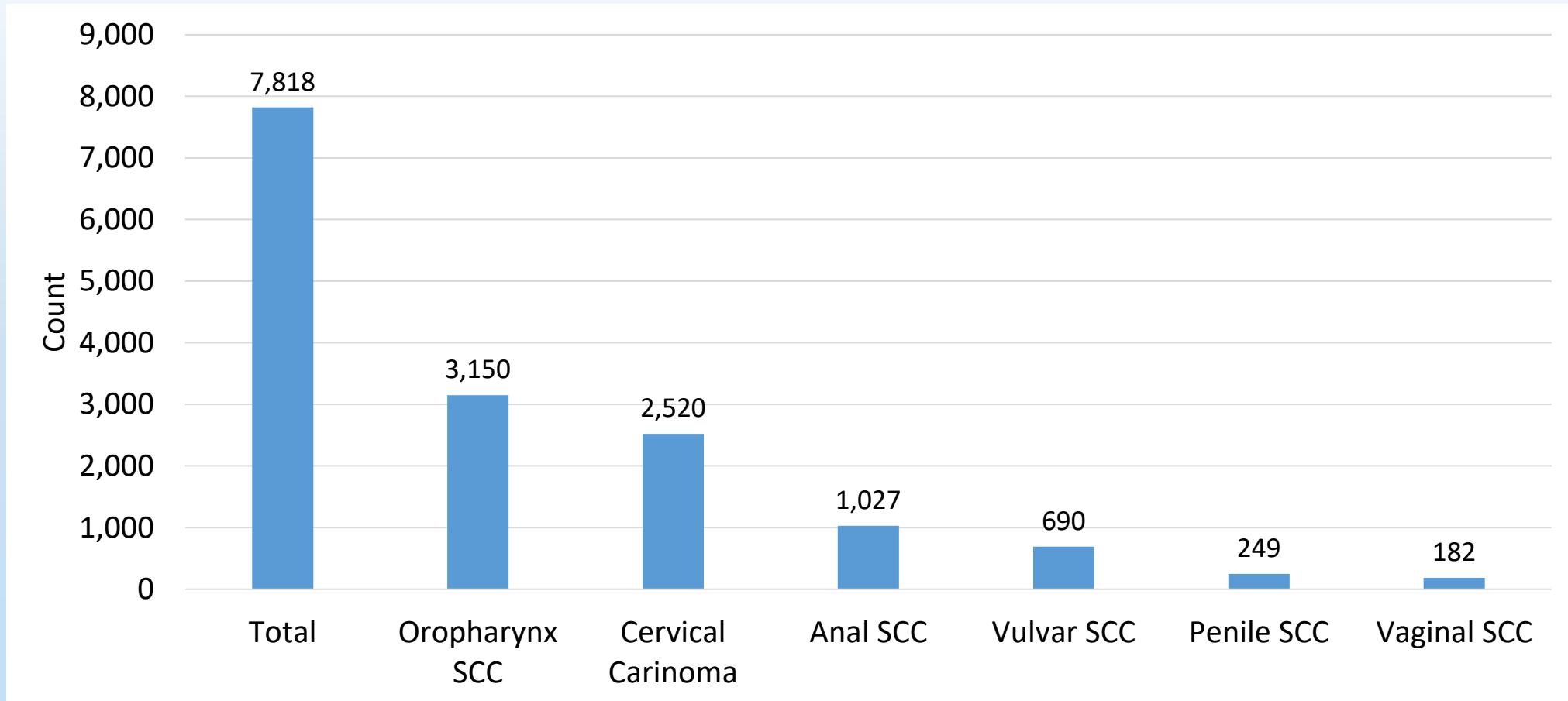
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.
Dataset: CDC Wonder Mortality Data
Created on 4/30/21



Arkansas Trends 2001-2018



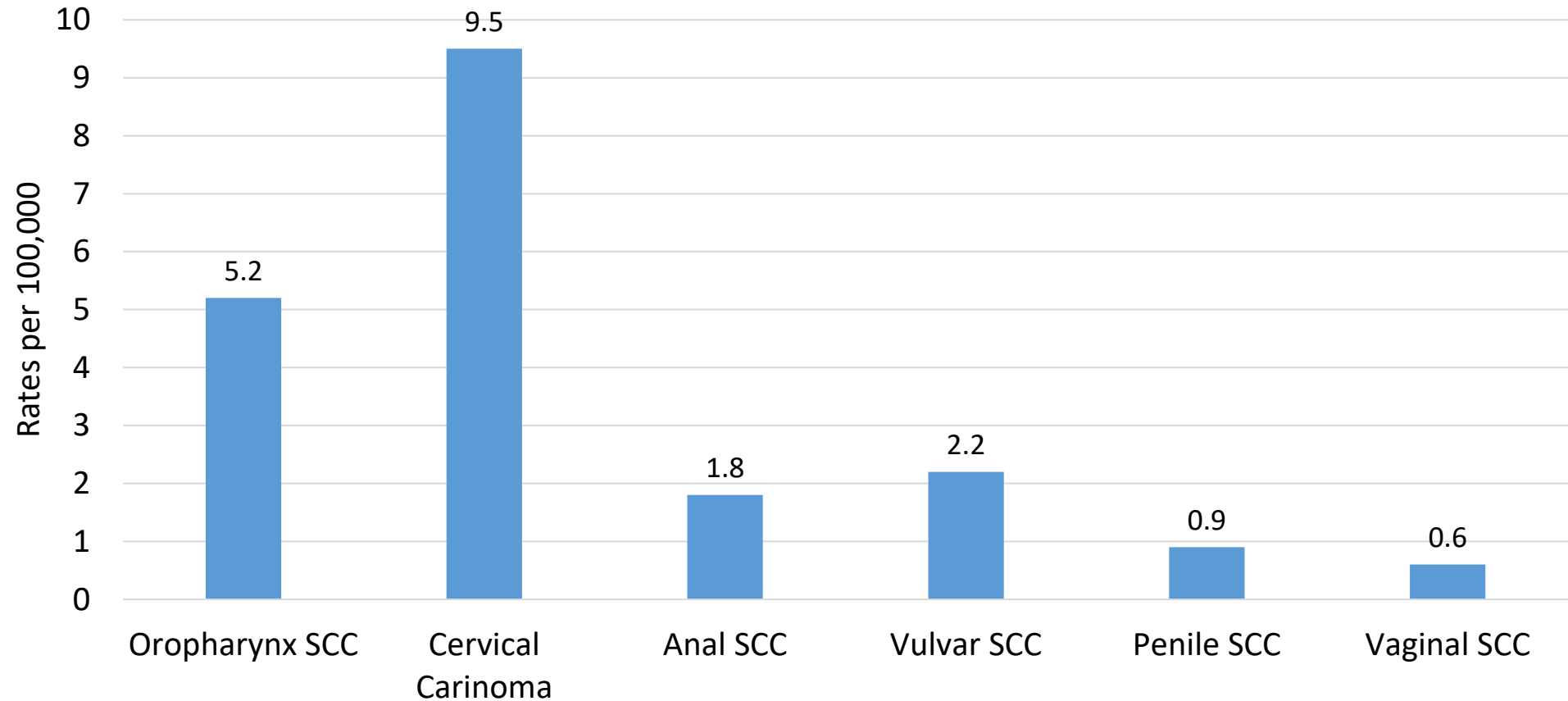
Number of HPV-Associated Cancers Diagnosed in Arkansas by Cancer Type, 2001-2018 Combined



Abbreviations: SCC = squamous cell carcinoma
Dataset: ACCR, Nov 2020 submission (2001-2018).
Created on 3/31/21



Age-Adjusted Incidence of HPV-Associated Cancers by Site, Arkansas, 2001-2018



Abbreviations: SCC = squamous cell carcinoma

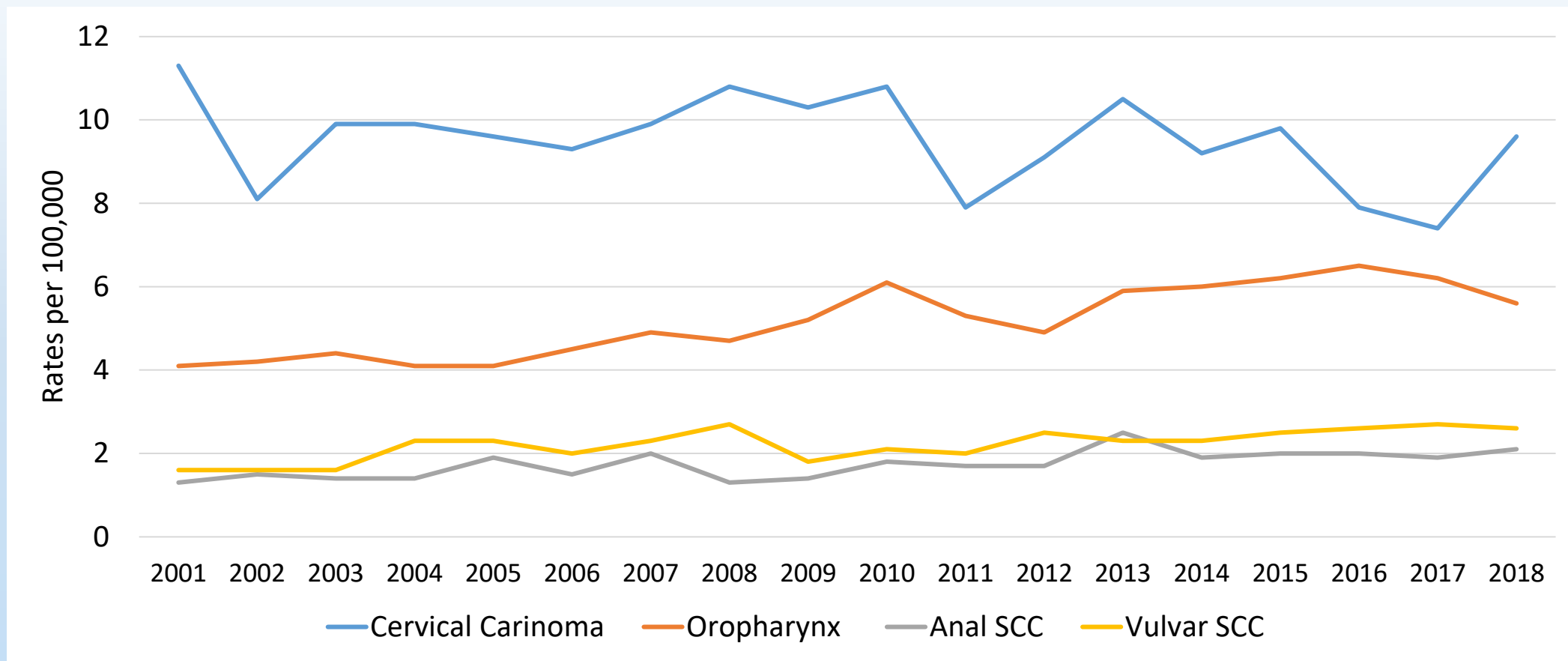
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population

Dataset: ACCR, Nov 2020 submission (2001-2018).

Created on 3/31/2021.



Trends in Age-Adjusted HPV-Associated Cancers Incidence by Site*, Arkansas, 2001-2018



* Vaginal SCC and penile SCC not displayed due to fewer than 16 cases per year in multiple years.

Abbreviations: SCC = squamous cell carcinoma

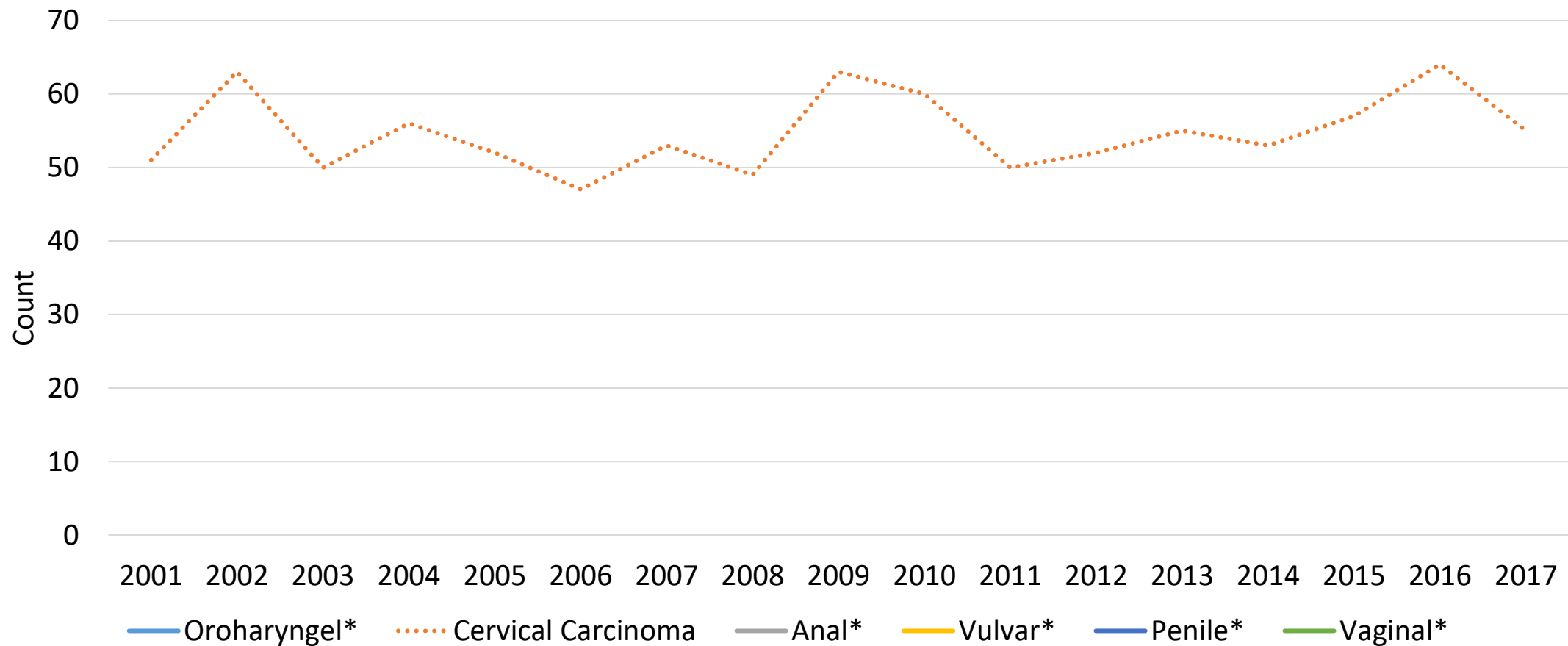
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: ACCR, Nov 2020 submission (2001-2018).

Created on 4/5/21.



Number of Cancer Deaths by Site, Arkansas, 2001-2017



***Suppressed due to low count**

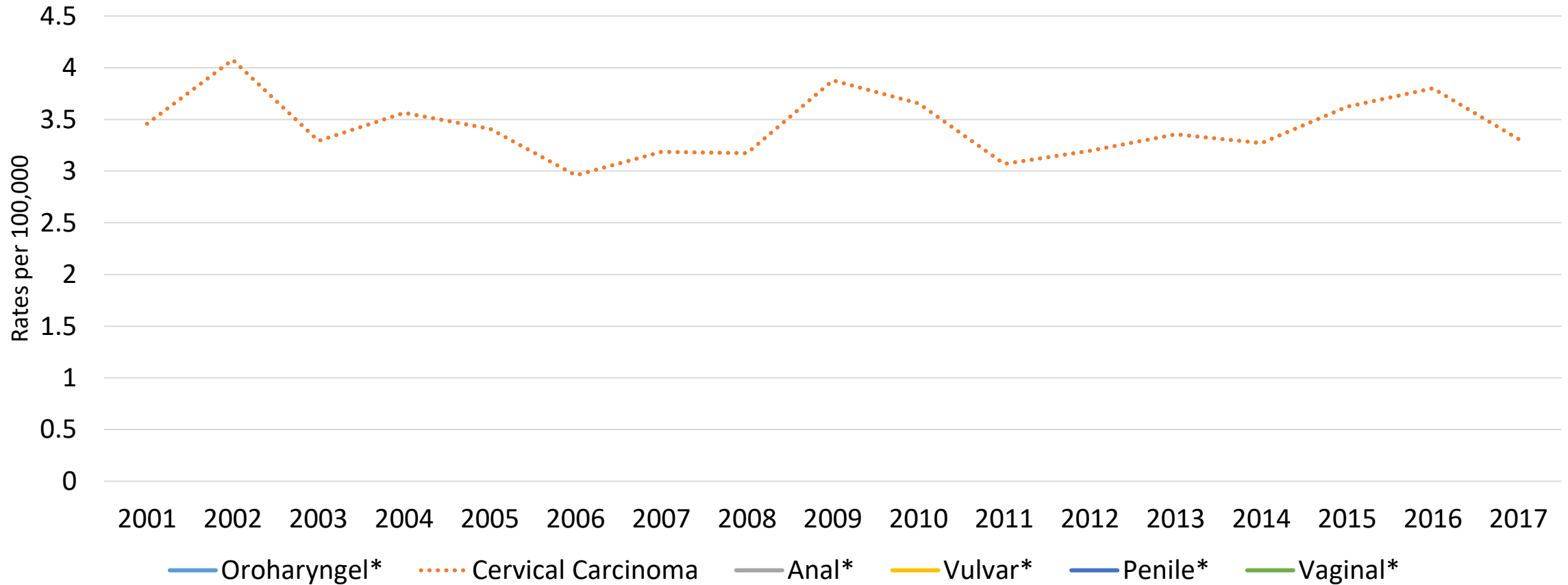
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: CDC Wonder Mortality Data

Created on 4/30/21



Trends in Age-Adjusted Cancer Mortality by Site, Arkansas, 2001-2017



*Suppressed due to low rates

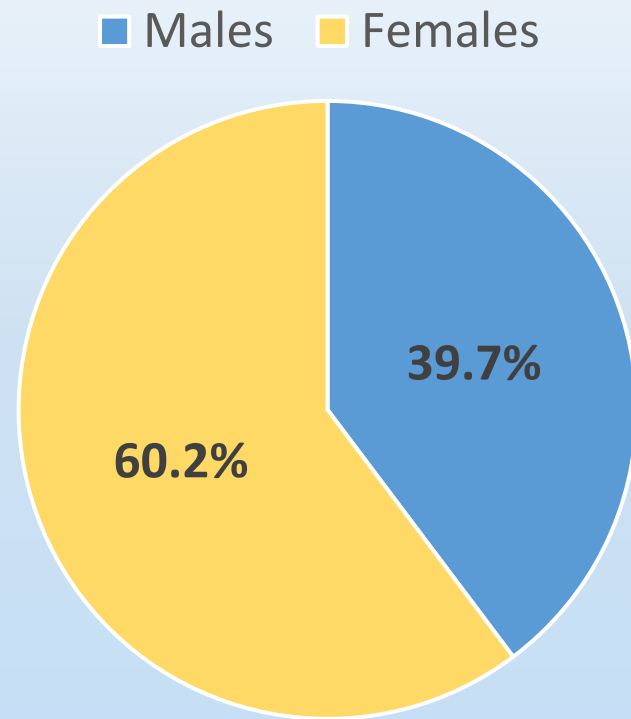
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: CDC Wonder Mortality Data

Created on 4/30/21

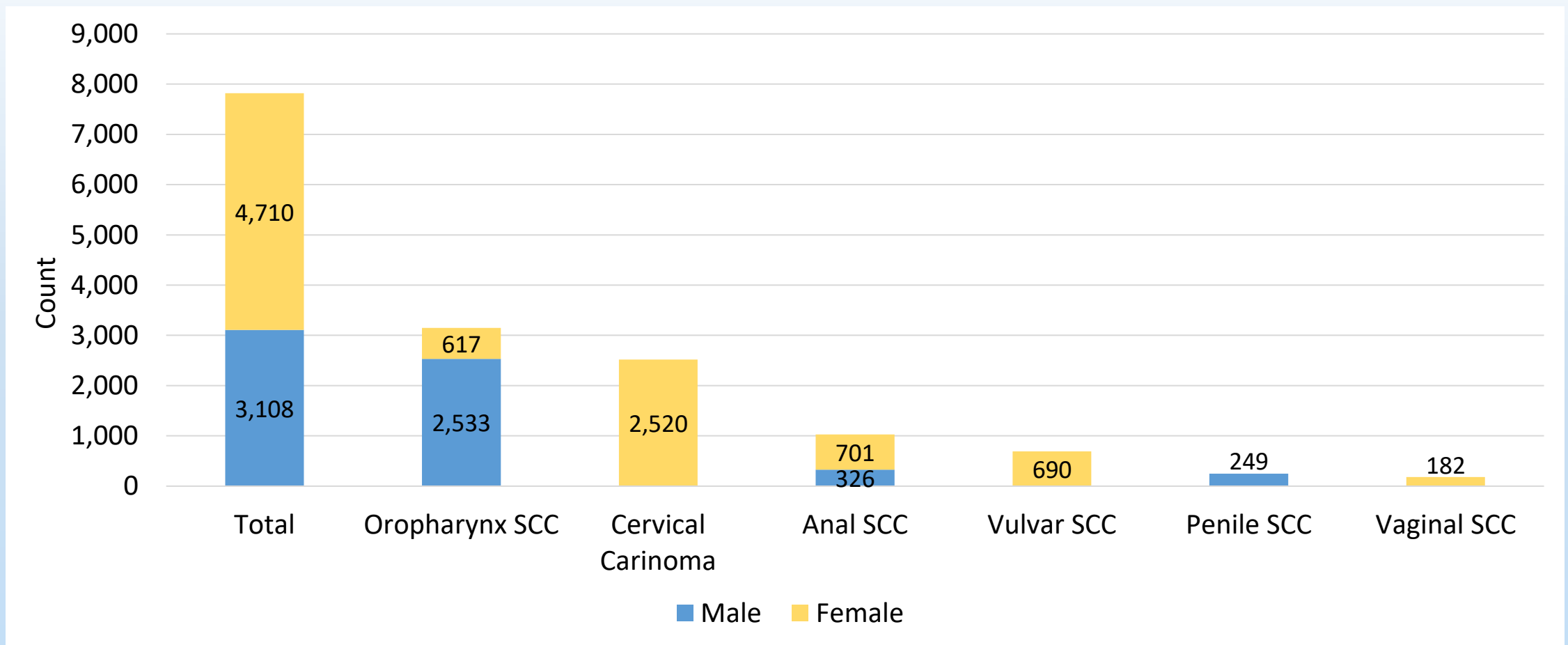


Percentage of HPV-Associated Cancers Diagnosed in Males and Females, Arkansas, 2001-2018 Combined



Approximately 460 HPV-associated cancers are diagnosed annually

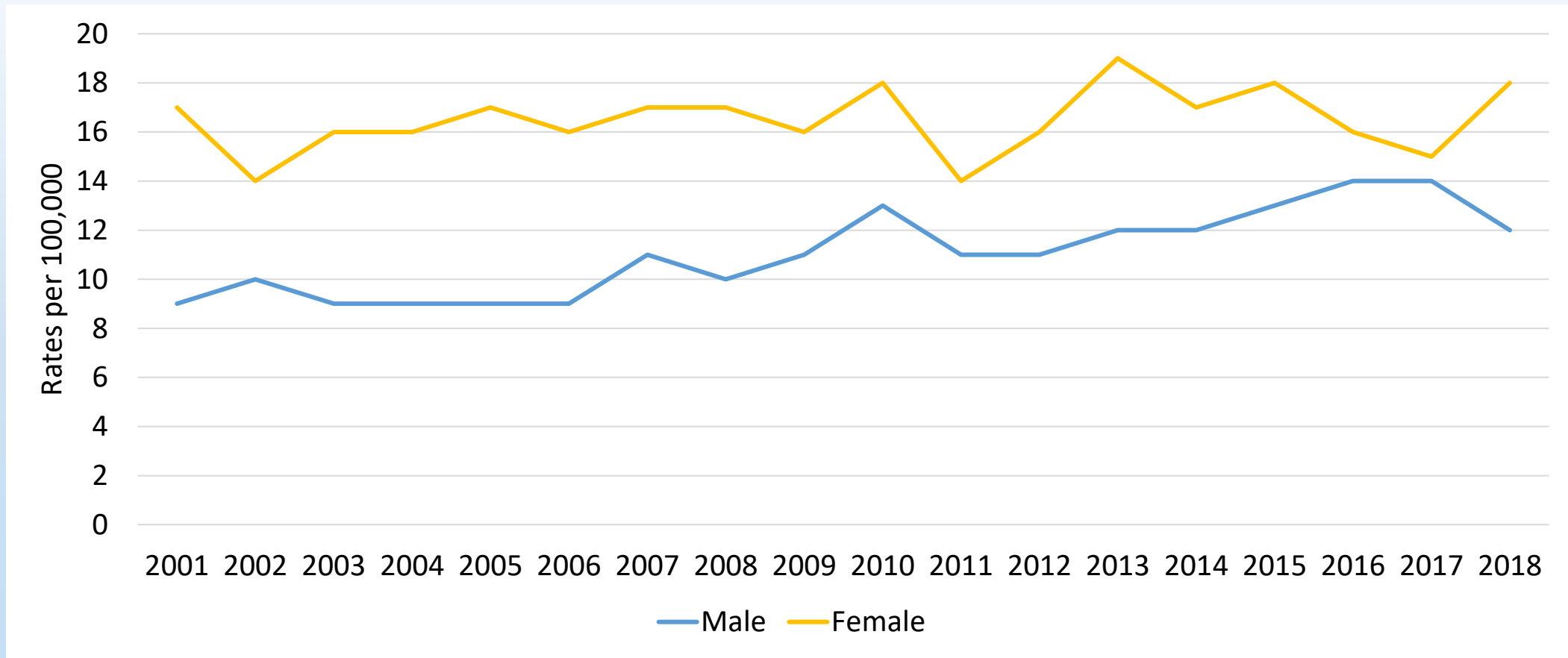
Number of HPV-Associated Cancers Diagnosed in Arkansas by Cancer Type, 2001-2018 Combined



Abbreviations: SCC = squamous cell carcinoma
Dataset: ACCR, Nov 2020 submission (2001-2018).
Created on 3/31/2021.



Trends in HPV-Associated Cancers[◇] by Sex, Arkansas, 2001-2018



[◇] HPV-associated cancers in males include oropharynx SCC, anal SCC, and penile SCC. HPV-associated cancers in females include oropharynx SCC, anal SCC, vaginal SCC, vulvar SCC, and cervical carcinoma.

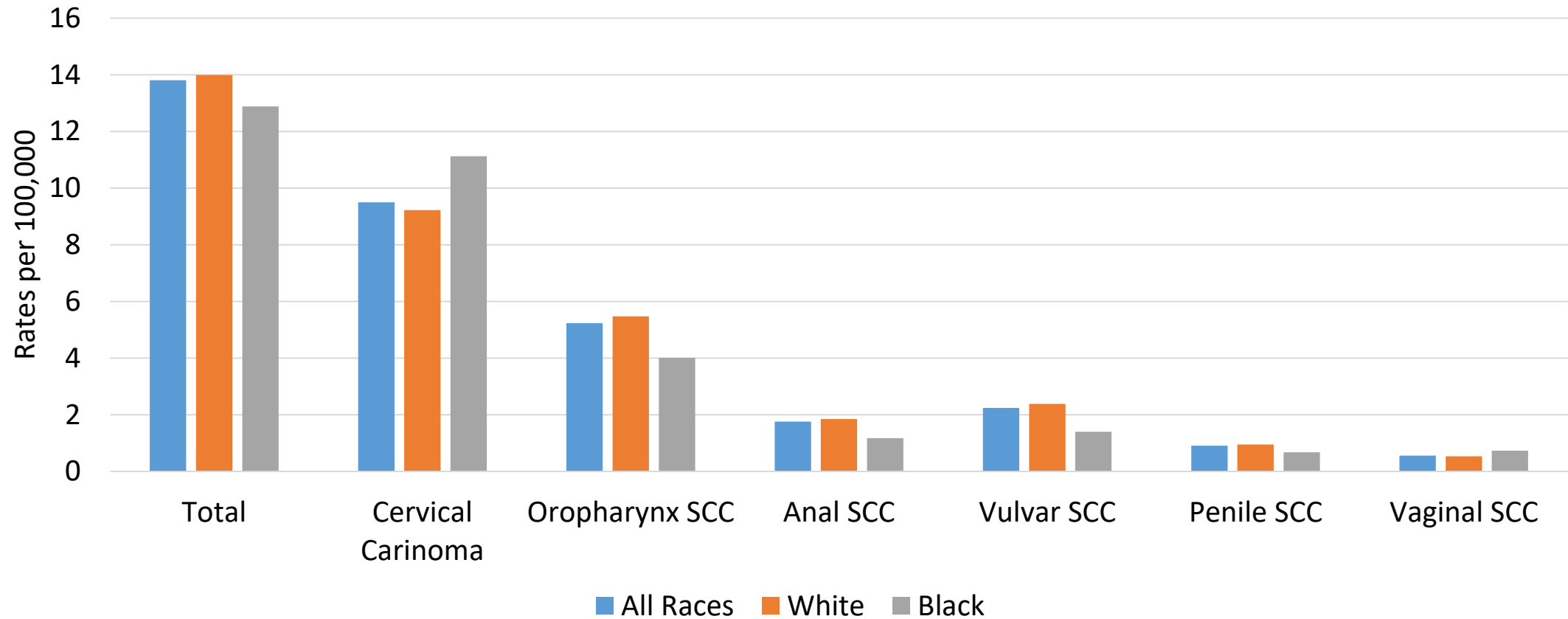
Note: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: ACCR, Nov 2020 submission (2001-2018).

Created 4/5/21.



Age-Adjusted Incidence of HPV Associated Cancers by Site and Race, Arkansas, 2001-2018



Abbreviations: SCC = squamous cell carcinoma

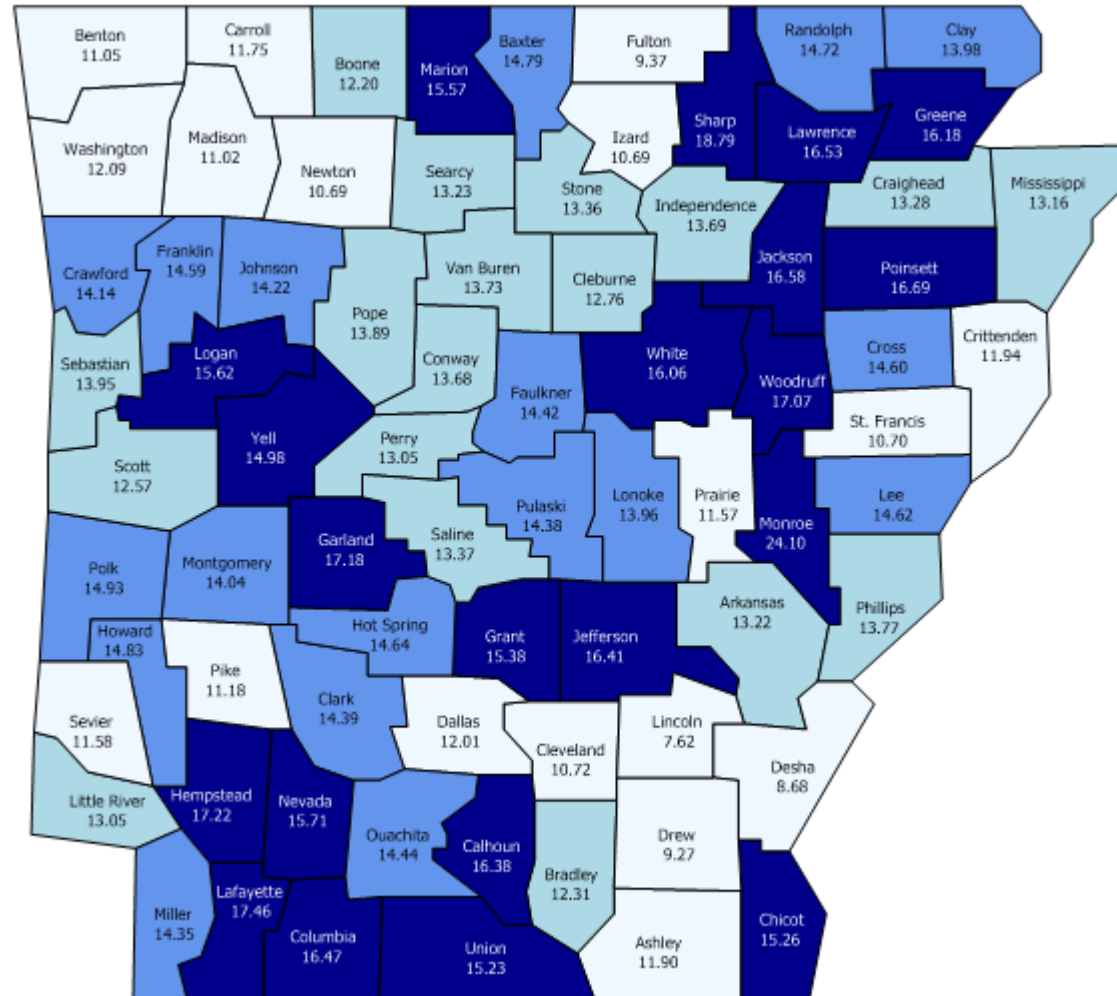
Notes: Trend rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: ACCR, Nov 2020 submission (2001-2018).

Created on 4/5/2021



Age-Adjusted Incidence of HPV Associated Cancers by County, Arkansas, 2001-2018 Combined



* Rates Per 100,000 (2000 U.S. Standard Million)

HPV-associated cancers include oropharynx SCC, anal SCC, and penile SCC in males, and vaginal SCC, vulvar SCC, and cervical carcinoma in females.

Abbreviations: SCC = squamous cell carcinoma

Notes: Rates per 100,000 population age-adjusted to the 2000 U.S. Standard Population.

Dataset: ACCR, Nov 2020 submission (2001-2018).

Created on 4/8/2021



Screening Data Arkansas



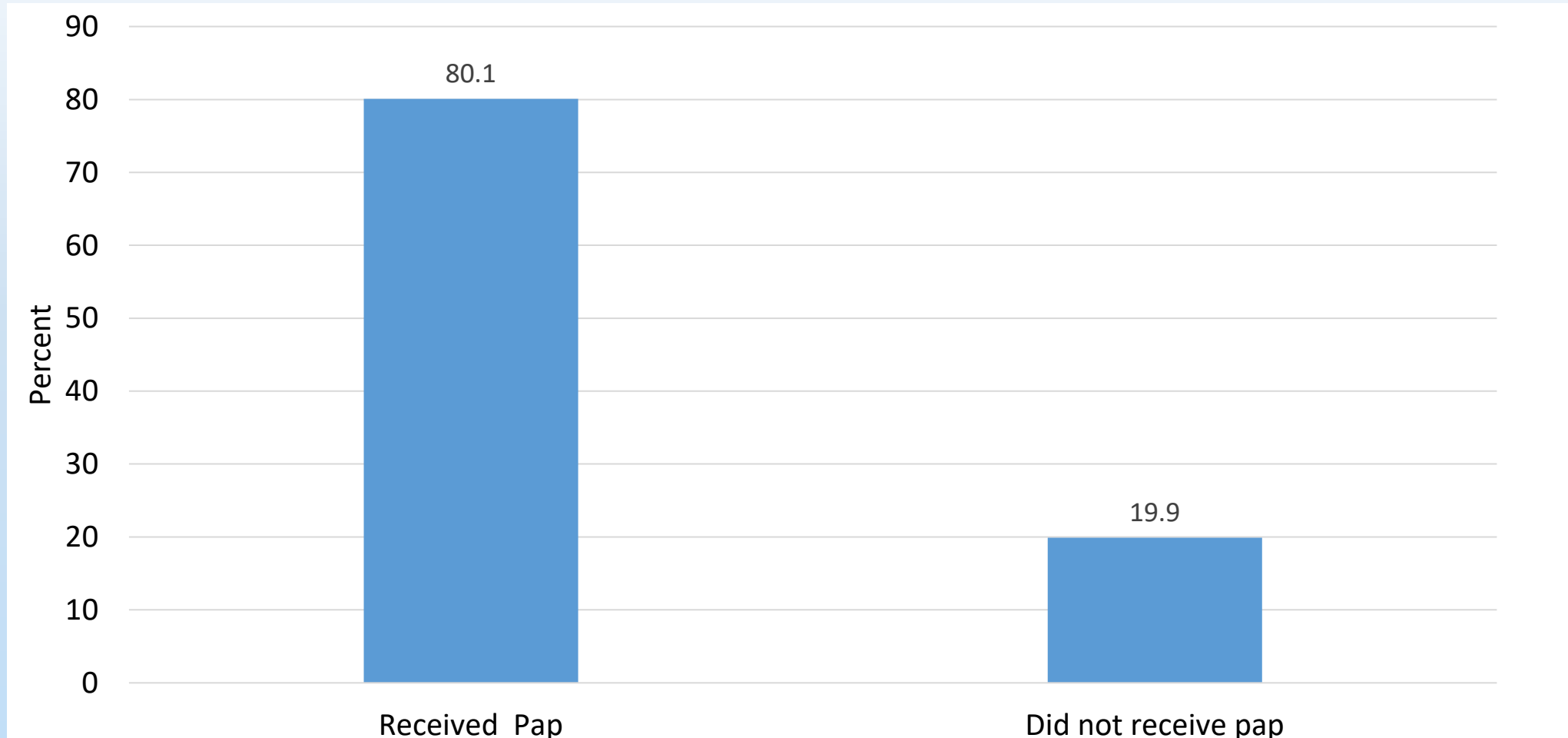
Early Detection

- The United States Prevention Services Task Force (USPSTF) recommends screening for cervical cancer every 3 years with cervical cytology alone in women aged 21 to 29 years. For women aged 30 to 65 years, the USPSTF recommends screening every 3 years with cervical cytology alone, every 5 years with high-risk human papillomavirus (hrHPV) testing alone, or every 5 years with hrHPV testing in combination with cytology (cotesting)..

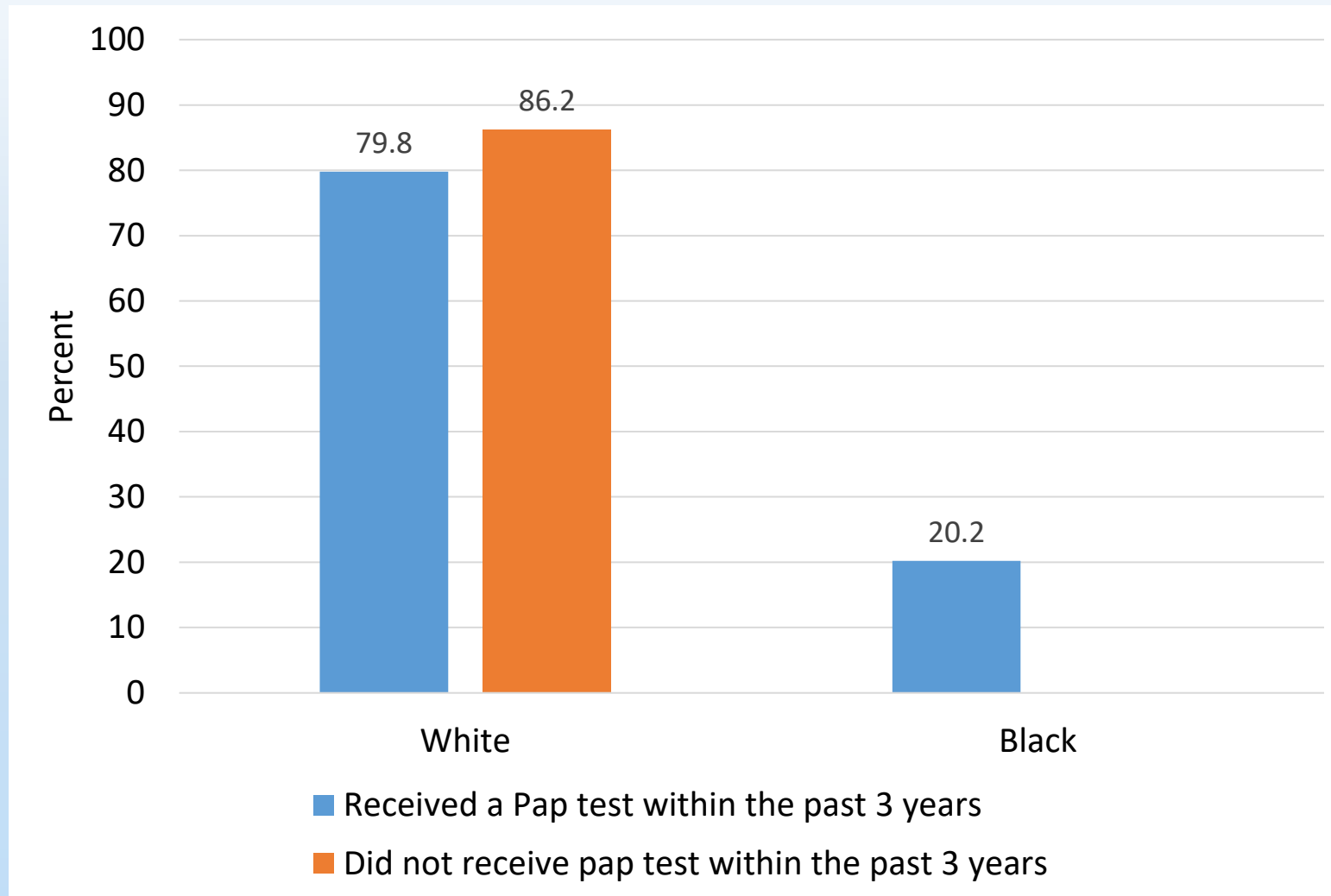
Source: <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/cervical-cancer-screening>



Women aged 21-65 who have had a pap test in the past three years, 2018, BRFSS, Arkansas



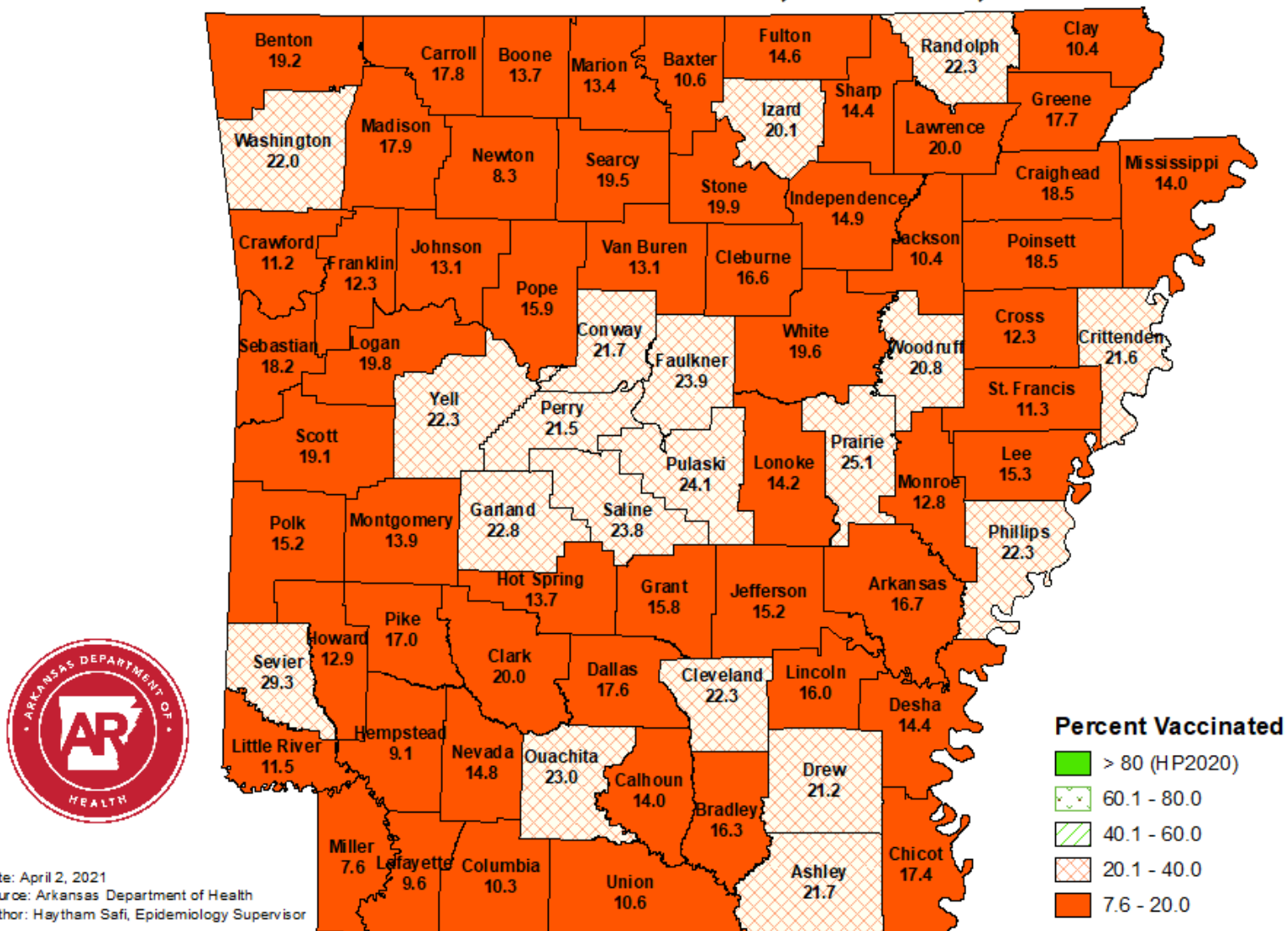
Women aged 21-65 who have had a pap test in the past three years, Arkansas, 2018



HPV Vaccination Data Arkansas



Vaccination Rate per County for Children Aged 11-14 Years With 2 or More HPV Vaccine, Arkansas, 2021

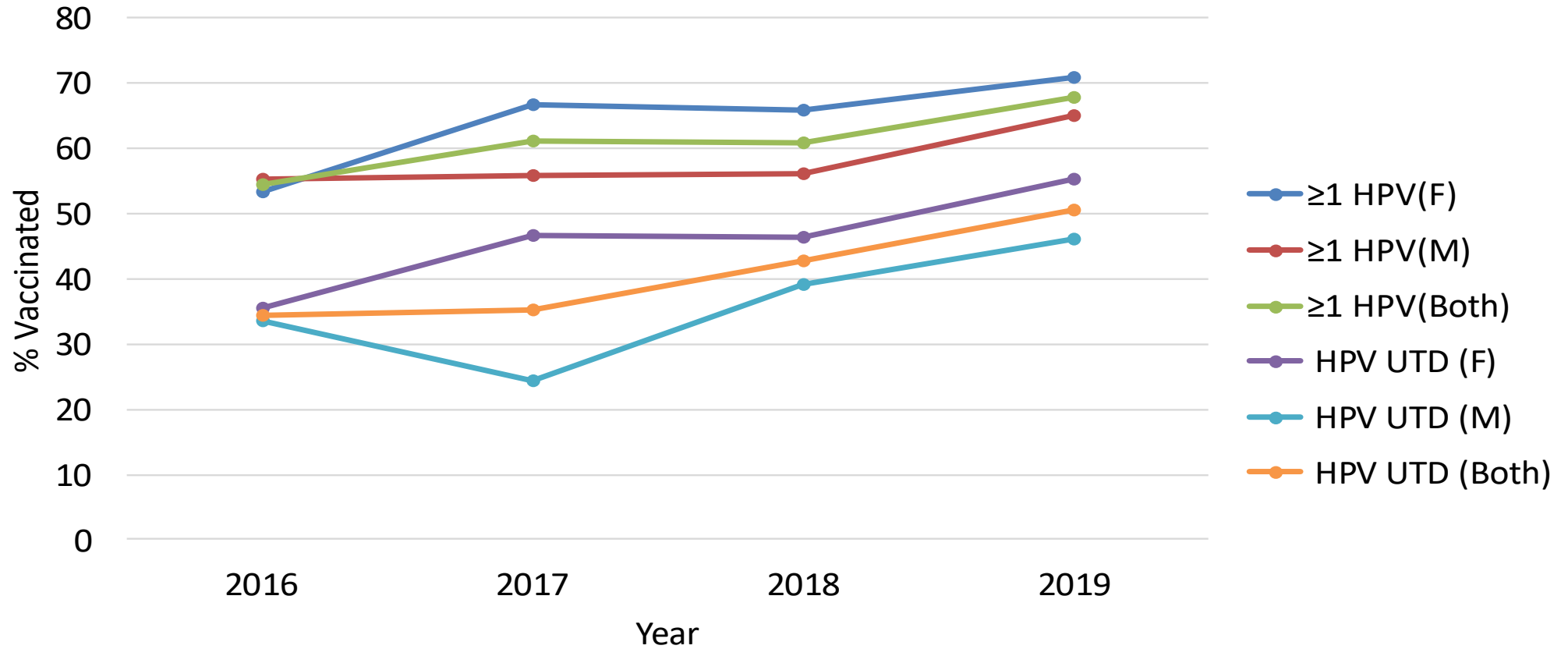


Date: April 2, 2021
 Source: Arkansas Department of Health
 Author: Haytham Safi, Epidemiology Supervisor

HPV: Human papillomavirus



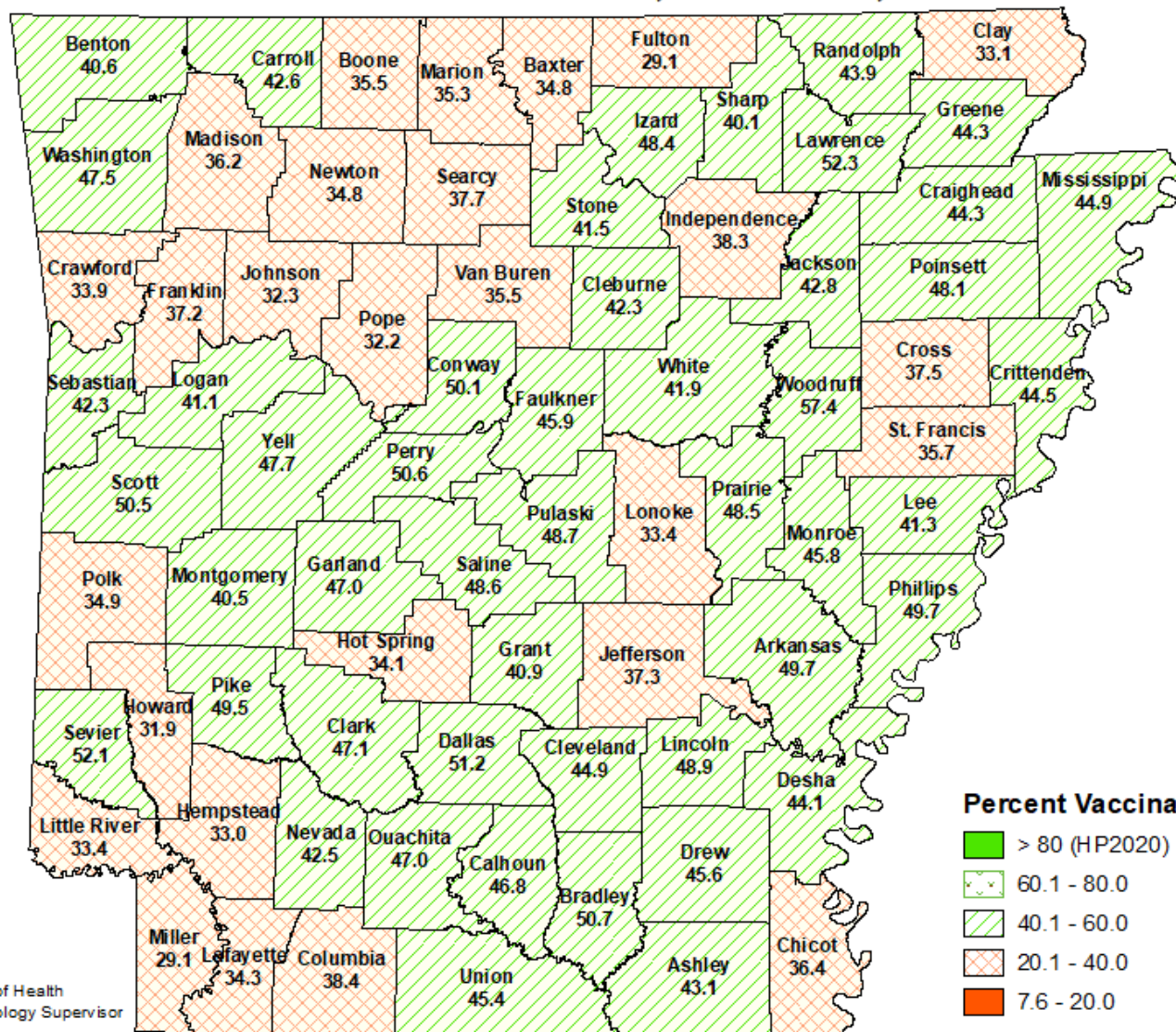
Estimated HPV Vaccination Coverage Among Adolescents Aged 13-17 Years, NIS-Teen, Arkansas



Year	≥1 HPV(F)	≥1 HPV(M)	≥1 HPV(Both)	HPV UTD (F)	HPV UTD (M)	HPV UTD (Both)
2016	53.3	55.4	54.4	35.5	33.6	34.5
2017	66.7	55.7	61.1	46.6	24.3	35.2
2018	65.9	56.0	60.8	46.4	39.0	42.6
2019	71.0	64.9	67.9	55.2	46.1	50.5



Vaccination Rate per County for Children Aged 11-14 Years With 1 or More HPV Vaccine, Arkansas, 2021



Date: April 2, 2021
 Source: Arkansas Department of Health
 Author: Haytham Safi, Epidemiology Supervisor

Percent Vaccinated

- > 80 (HP2020)
- 60.1 - 80.0
- 40.1 - 60.0
- 20.1 - 40.0
- 7.6 - 20.0

HPV: Human papillomavirus

