Beyond Cervical Cancer: Using Cancer Registry Data to Make the HPV Vaccination Case for Oropharyngeal (and Other) Cancers

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2018 Dialogue for Action on Cancer Screening and Prevention
April 12, 2018

Outline

- Overview of CDC's Division of Cancer Prevention and Control HPV-related priorities
- Trends in HPV-associated cancers
- Resources and opportunities for on-the-ground efforts to support HPV vaccination uptake

All People Free of Cancer

Aspirations

Elimination of preventable cancers

All people get the right care at the right time for the best outcome

Cancer survivors live longer, healthier lives

Strategic Priorities

Reduce the incidence of preventable cancers by reducing modifiable risk factors and promoting healthy behaviors ***(…by increasing HPV-vaccination)***

Scale our best practices to increase impact of screening continuum

Improve health outcomes for cancer survivors

Our Guiding Principles

Address Health Disparities	***Define Expected Outcomes Upfront***	***Collaborate***	***Communicate: Tailor to a Specific Audience***

Our Key Strengths

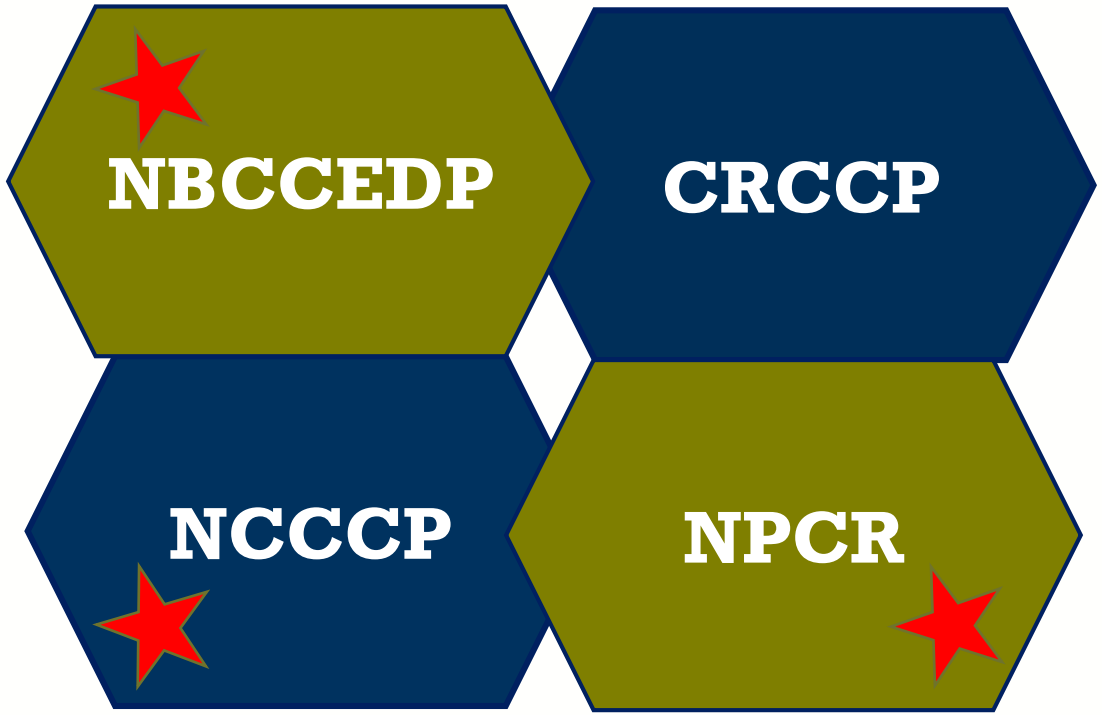
Data	***Translation & Evaluation***	***Partnership***

Goal and Aspirations
Our longer term **strategic framework.**

Strategic Priorities
Objectives are identified based on need and our **potential to impact** that change over time as desired outcomes are achieved.

Key Strengths
We demonstrate our key strengths by combining **flawless execution** of the familiar and a constant focus on innovation.

Coordination and Collaboration Across Cancer Programs



National Breast and Cervical Cancer Early Detection Program **(NBCCEDP)**

Colorectal Cancer Control Program **(CRCCP)**

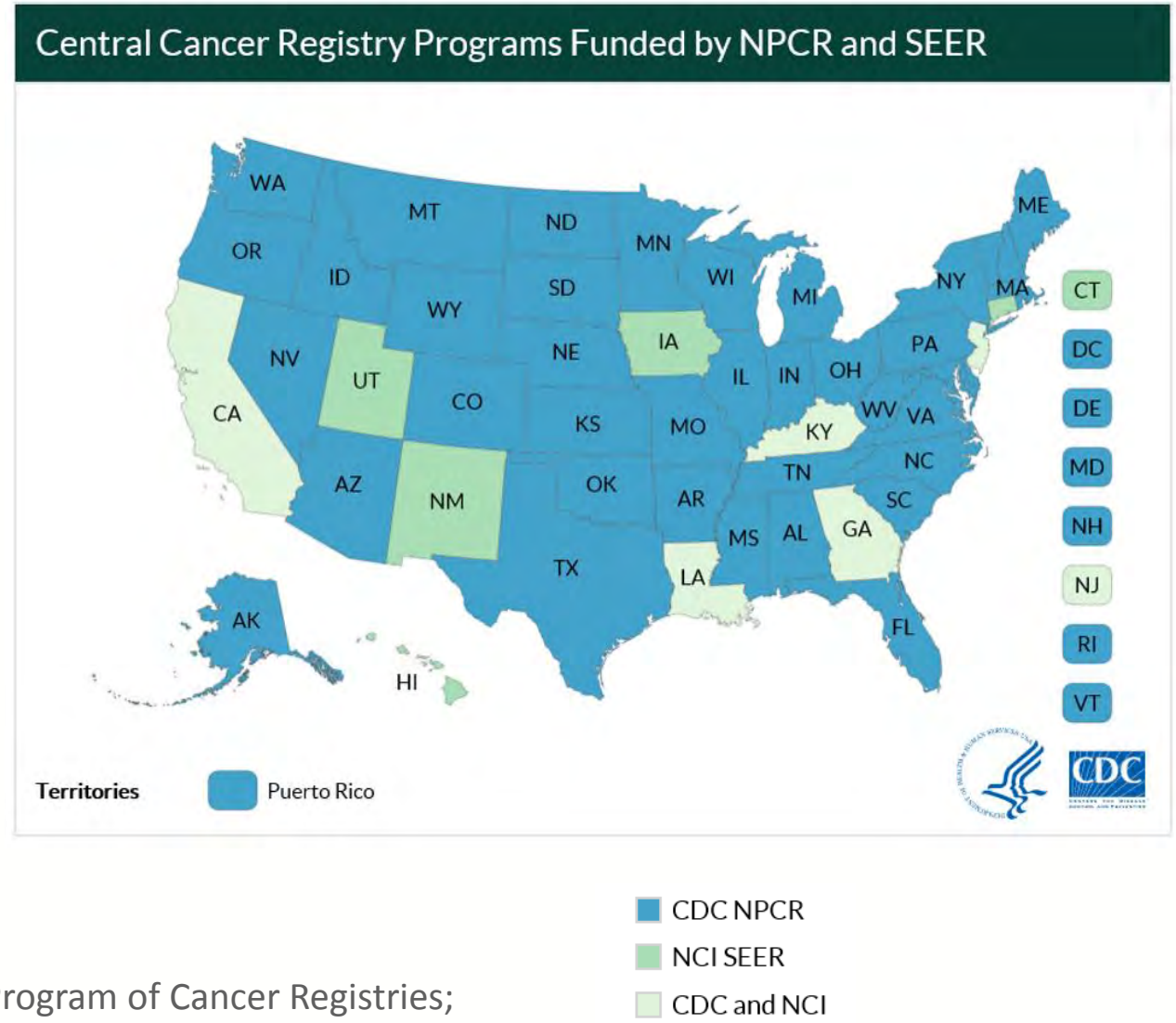
National Comprehensive Cancer Control Program **(NCCCP)**

National Program of Cancer Registries **(NPCR)**

Trends in HPV-associated Cancers

Data Source

- All 50 states, the District of Columbia, and Puerto Rico
- For 1999–2014, registry data that met specific quality standards covered approximately 97% of the U.S. population



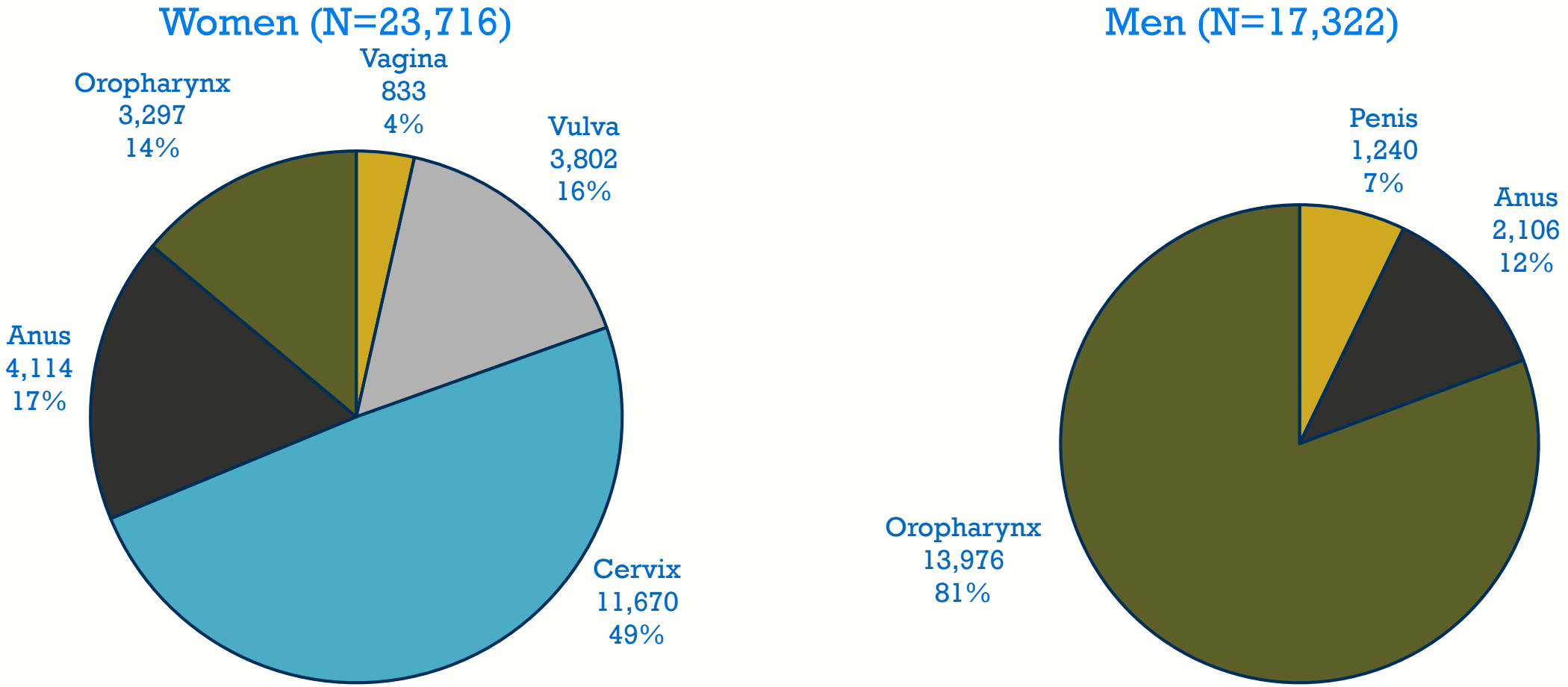
CDC = Centers for Disease Control and Prevention; NPCR = National Program of Cancer Registries; NCI = National Cancer Institute; SEER = Surveillance, Epidemiology, and End Results

Number of HPV-Associated Cancer Cases Probably Caused by HPV per Year in the United States, 2010–2014

Cancer site	Average number of cancers per year in sites where HPV is often found (HPV-associated cancers)	Percentage probably caused by any HPV type	Number probably caused by any HPV type	Percentage probably caused by HPV types 16/18	Number probably caused by HPV types 16/18	Percentage probably caused by HPV types 31/33/45/52/58	Number probably caused by HPV types 31/33/45/52/58
Cervix	11,670	91%	10,600	66%	7,700	15%	1,700
Vagina	833	75%	600	55%	500	18%	100
Vulva	3,802	69%	2,600	49%	1,800	14%	500
Penis	1,240	63%	800	48%	600	9%	100
Anus	6,220		5,700		5,000		500
Female	4,114	93%	3,800	80%	3,300	11%	400
Male	2,106	89%	1,900	79%	1,700	4%	100
Oropharynx	17,273		12,200		10,600		900
Female	3,297	63%	2,100	51%	1,700	10%	300
Male	13,976	72%	10,100	63%	8,900	4%	600
TOTAL	**41,038**	**79%**	**32,500**	**64%**	**26,200**	**9%**	**3,800**
Female	**23,716**	**83%**	**19,700**	**63%**	**15,000**	**13%**	**3,000**
Male	**17,322**	**74%**	**12,800**	**65%**	**11,200**	**5%**	**800**

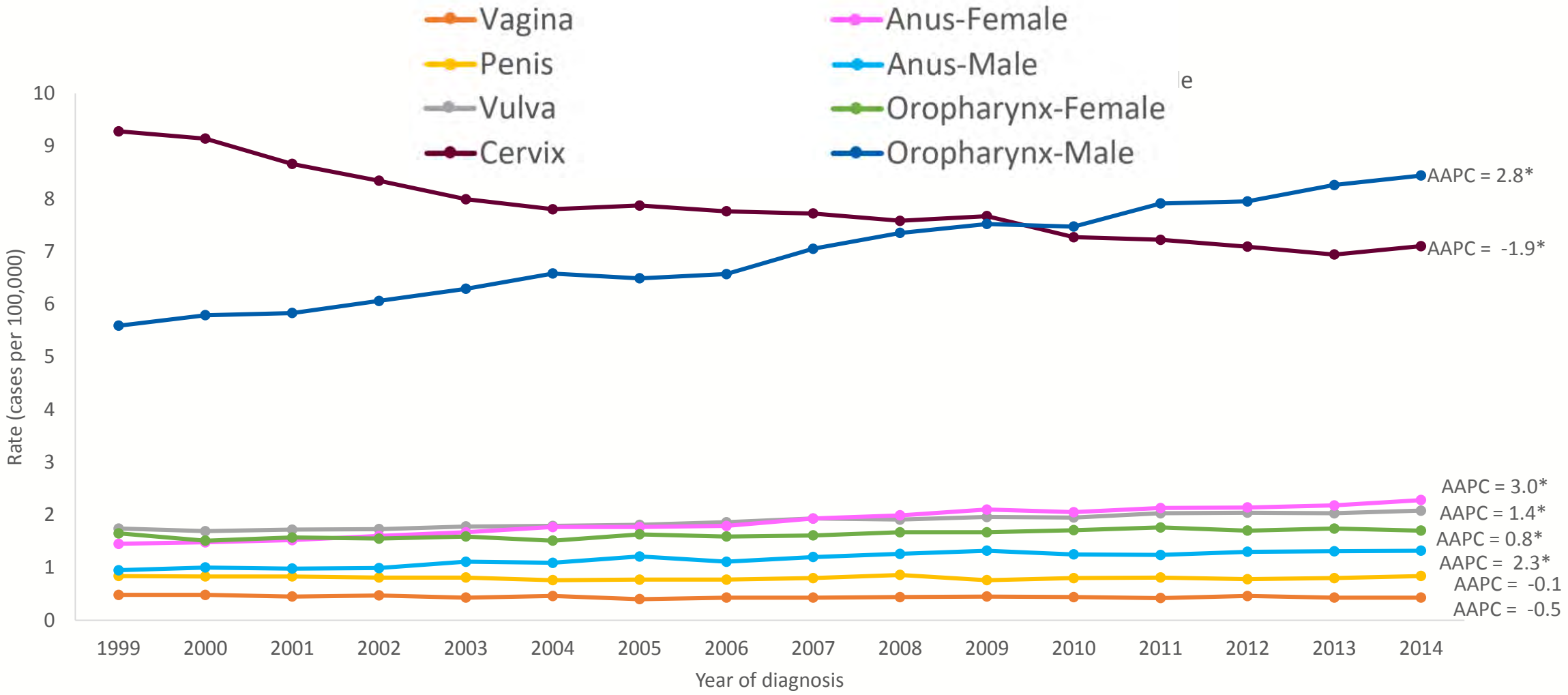
Data are from population-based registries participating in the CDC National Program of Cancer Registries and/or NCI Surveillance, Epidemiology, and End Results Program, meeting criteria for high data quality for all years 2010–2014, and covering about 99% of the US population.

Average Number of HPV-Associated Cancers Per Year in the United States, 2010–2014



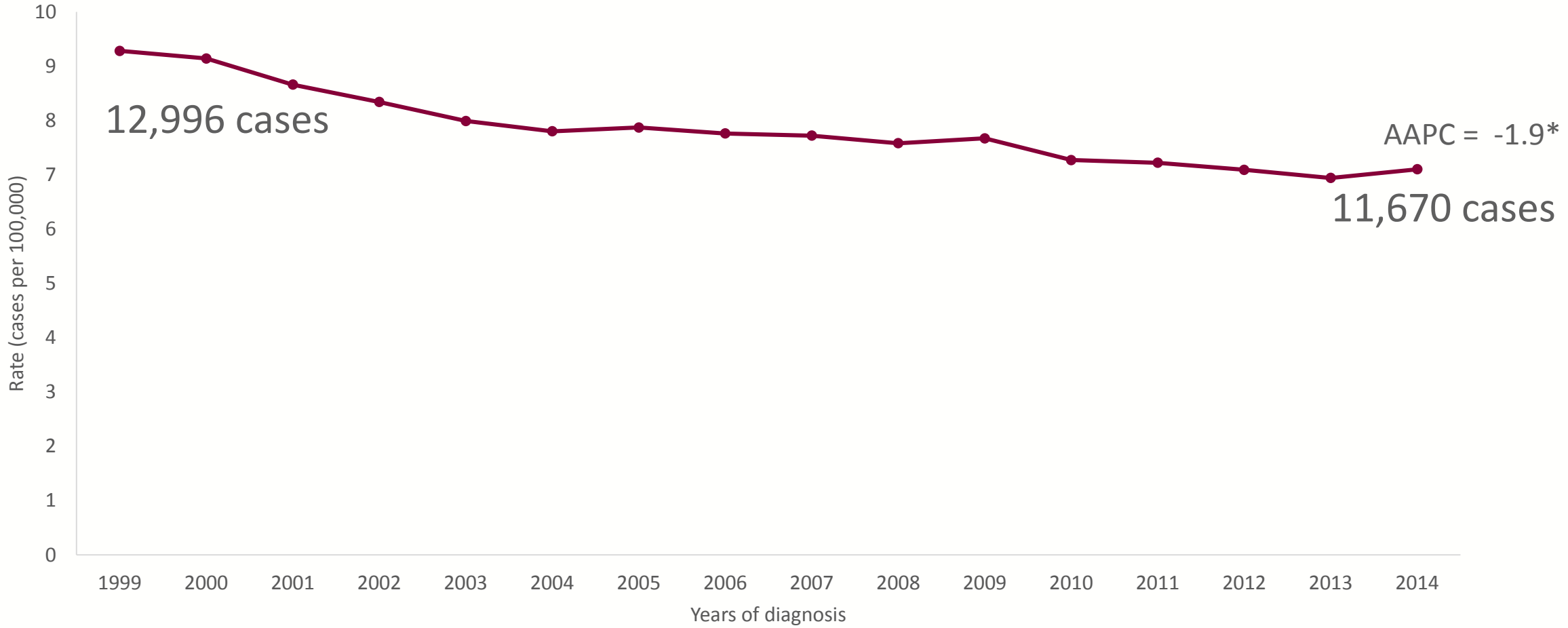
Data are from population-based registries participating in the CDC National Program of Cancer Registries and/or NCI Surveillance, Epidemiology, and End Results Program, meeting criteria for high data quality for all years 2010–2014, and covering about 99% of the US population. HPV-associated cancers were defined as cancers at specific anatomic sites with specific cellular types in which HPV DNA frequently is found. All cancers were confirmed histologically. Cervical cancers (ICD-O-3 site codes C53.0–C53.9) were limited to carcinomas (ICD-O-3 histology codes 8010–8671, 8940–8941). Vaginal (ICD-O-3 site code C52.9), vulvar (ICD-O-3 site codes C51.0–C51.9), penile (ICD-O-3 site codes C60.0–60.9), anal (ICD-O-3 site code C21.0–C21.9, 20.9), and oropharyngeal (ICD-O-3 site codes C01.9, C02.4, C02.8, C05.1, C05.2, C09.0, C09.1, C09.8, C09.9, C10.0, C10.1, C10.2, C10.3, C10.4, C10.8, C10.9, C14.0, C14.2 and C14.8) cancers were limited to squamous cell carcinomas (ICD-O-3 histology codes 8050–8084, 8120–8131). Based on: Viens et al. Human Papillomavirus- Associated Cancers—United States, 2008–2012. MMWR 2016;65(26):661-666.

HPV-Associated Cancers Trends — United States, 1999–2014



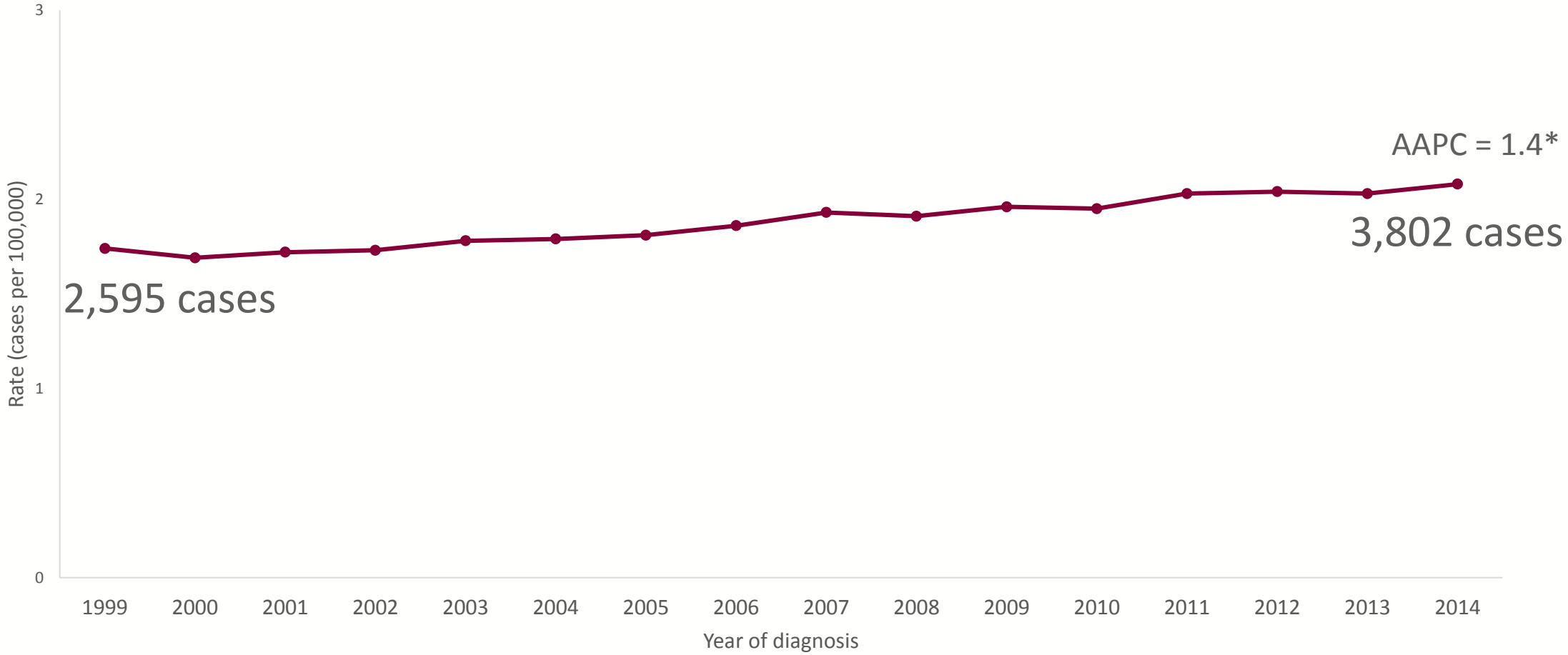
Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$

Cervical Cancer Trends — United States, 1999–2014



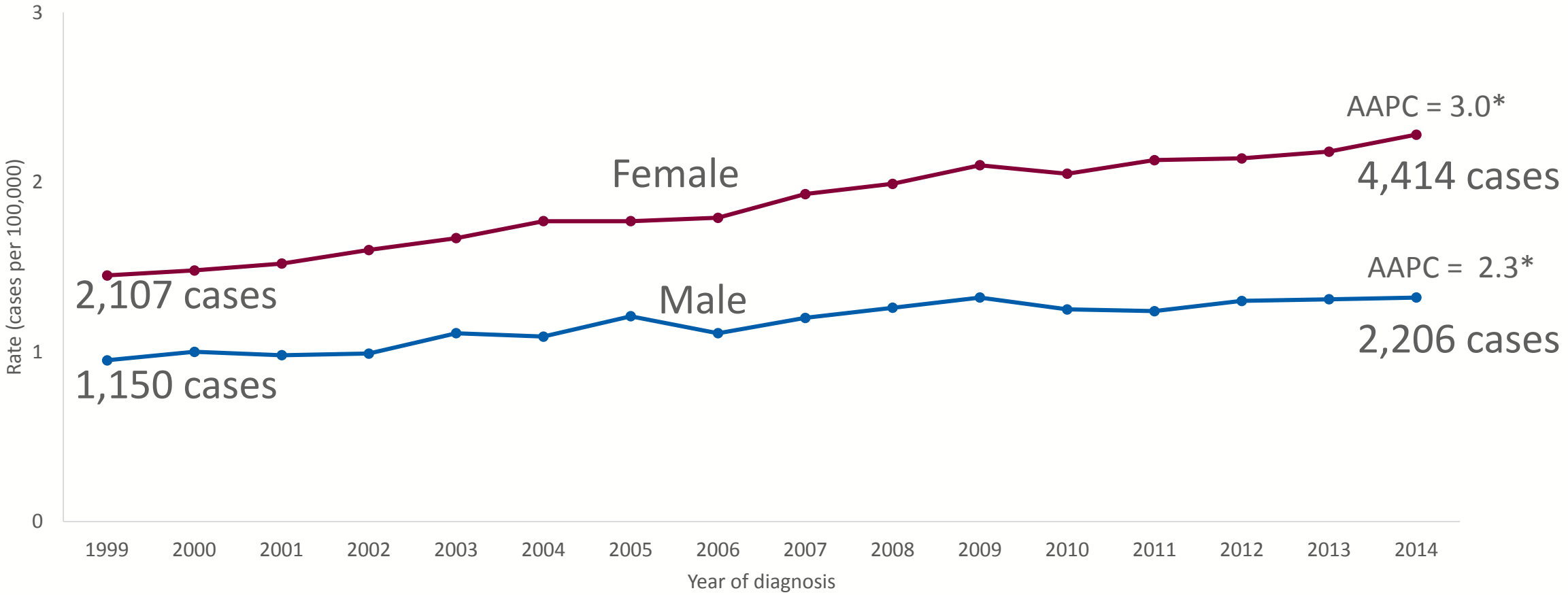
Analyses limited to cervical carcinomas. Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$.

Vulvar Cancer Trends — United States, 1999–2014



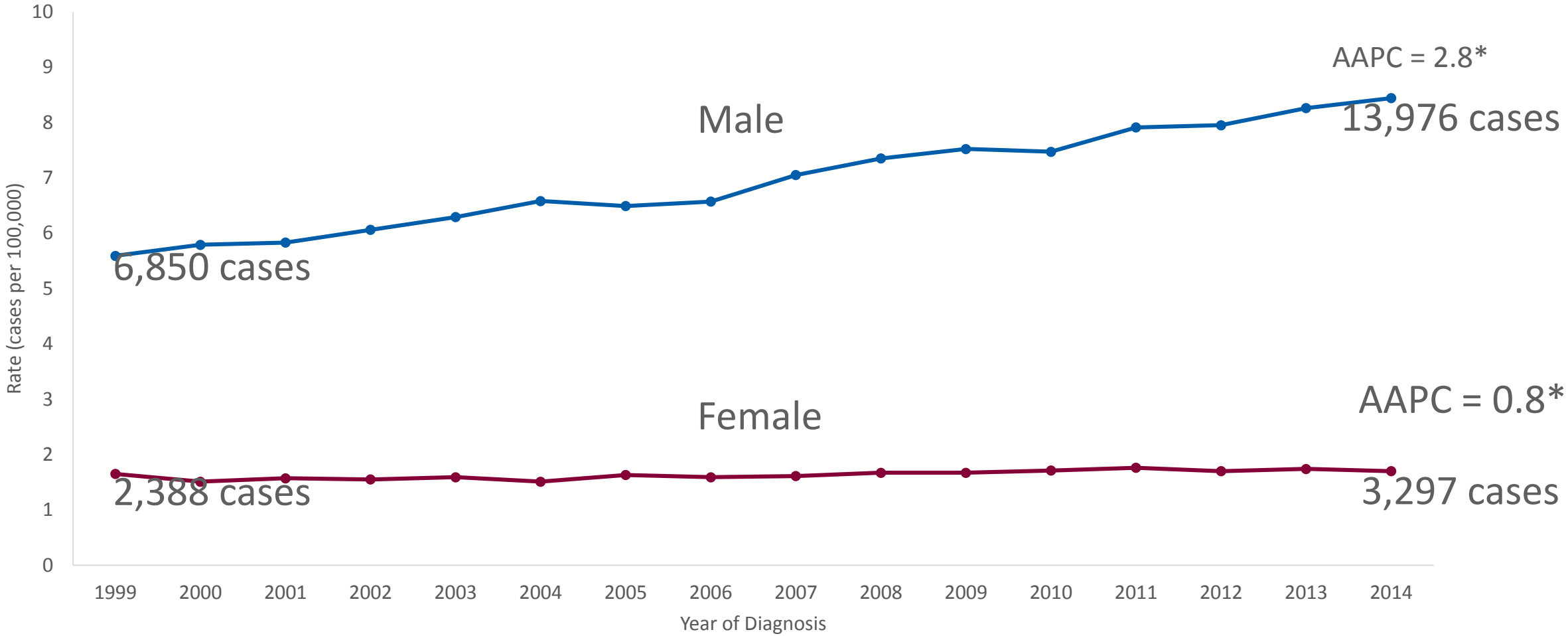
Analyses limited to vulvar squamous cell carcinomas. Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$.

Anal Cancer Trends — United States, 1999–2014



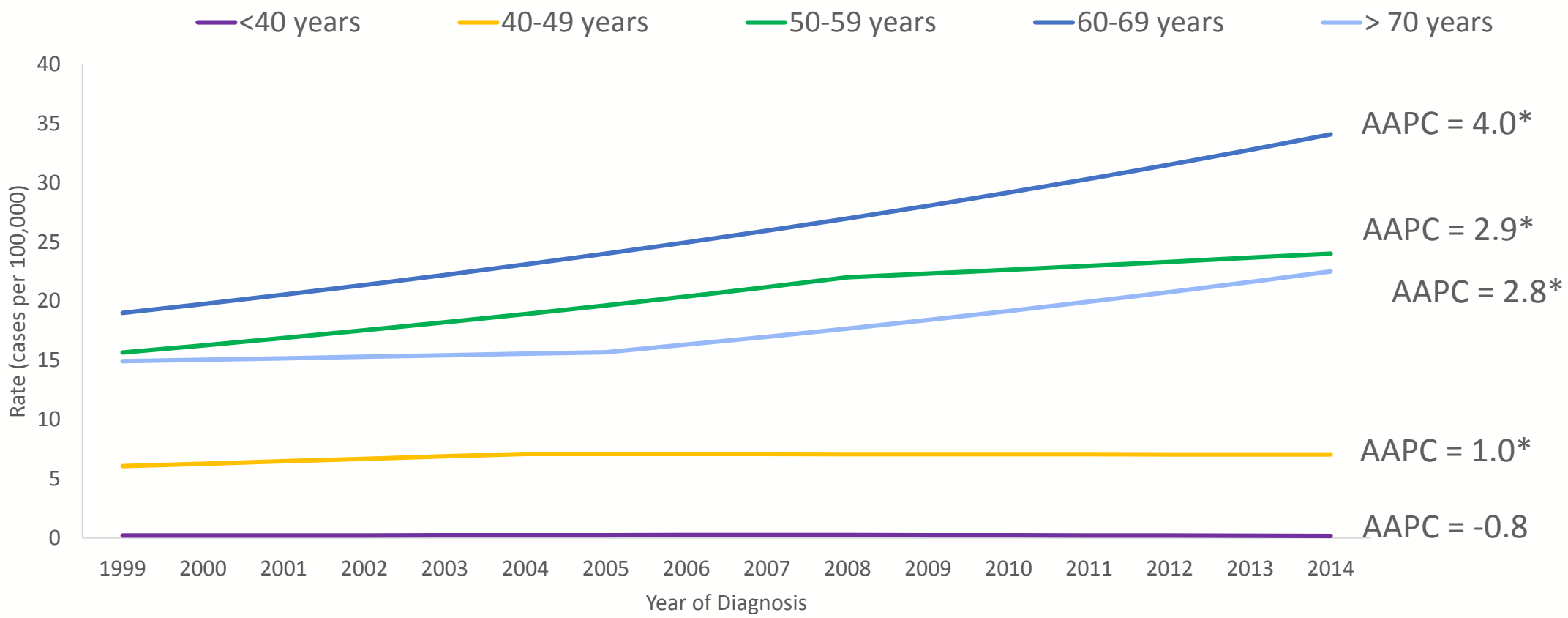
Limited to anal squamous cell carcinomas. Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$.

Oropharyngeal Cancer Trends — United States, 1999–2014



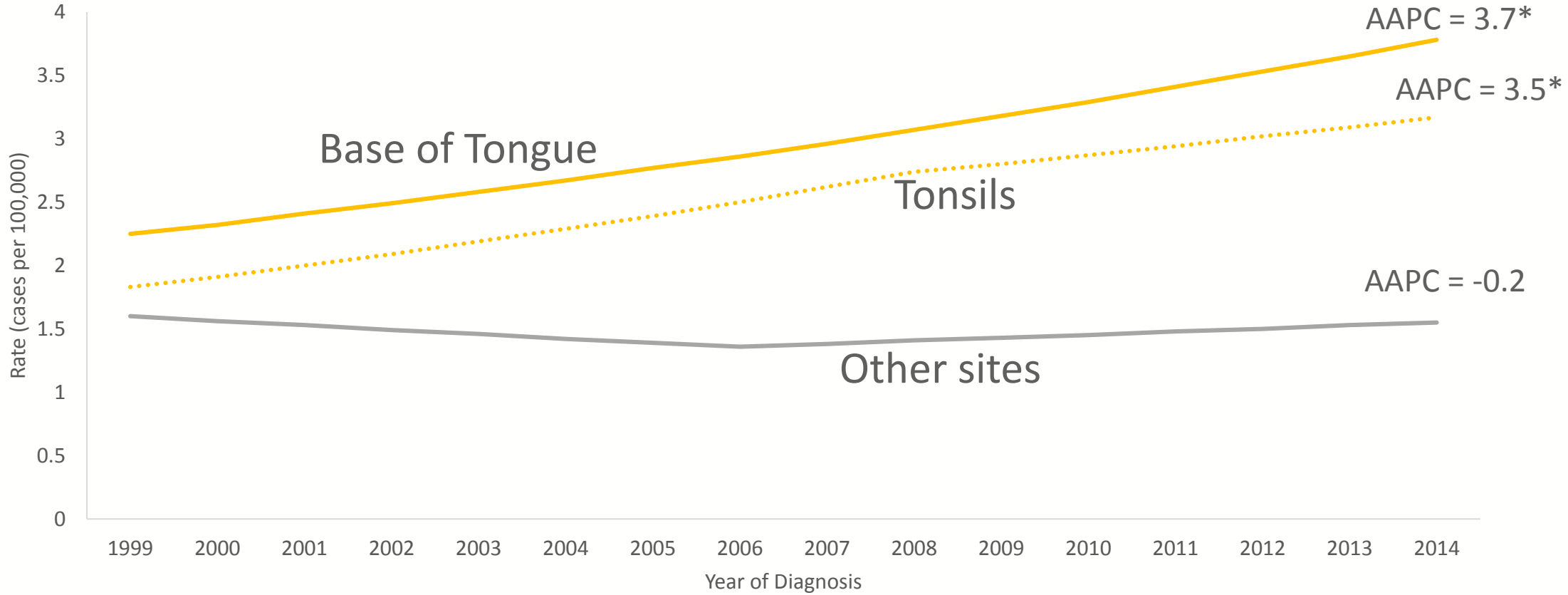
Analyses limited to oropharyngeal squamous cell carcinomas. Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$.

Oropharyngeal Cancer Trends among Men by Age — United States, 1999–2014



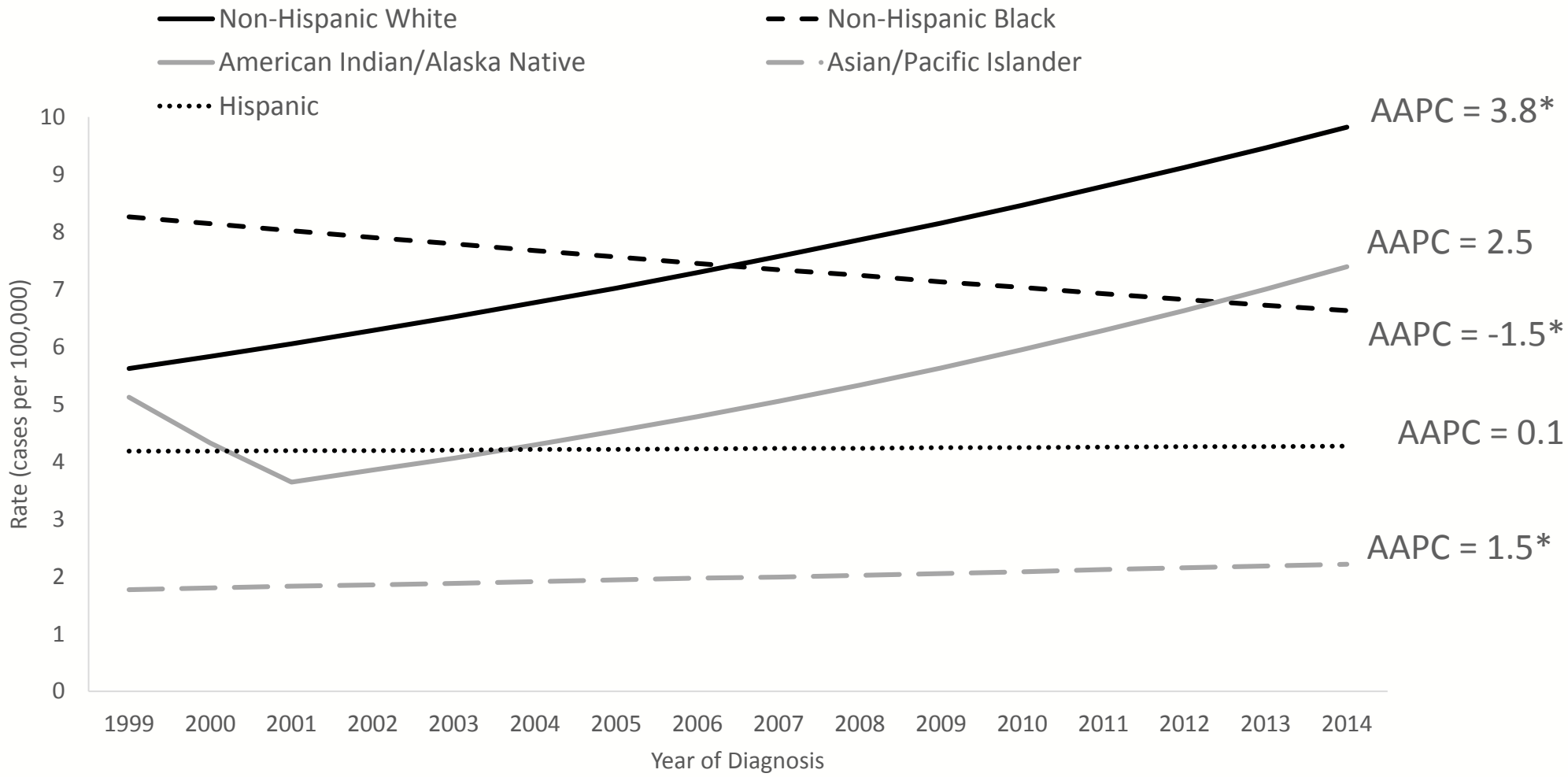
Analyses limited to oropharyngeal squamous cell carcinomas. Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$.

Oropharyngeal Cancer among Men by Primary Site — United States, 1999–2014



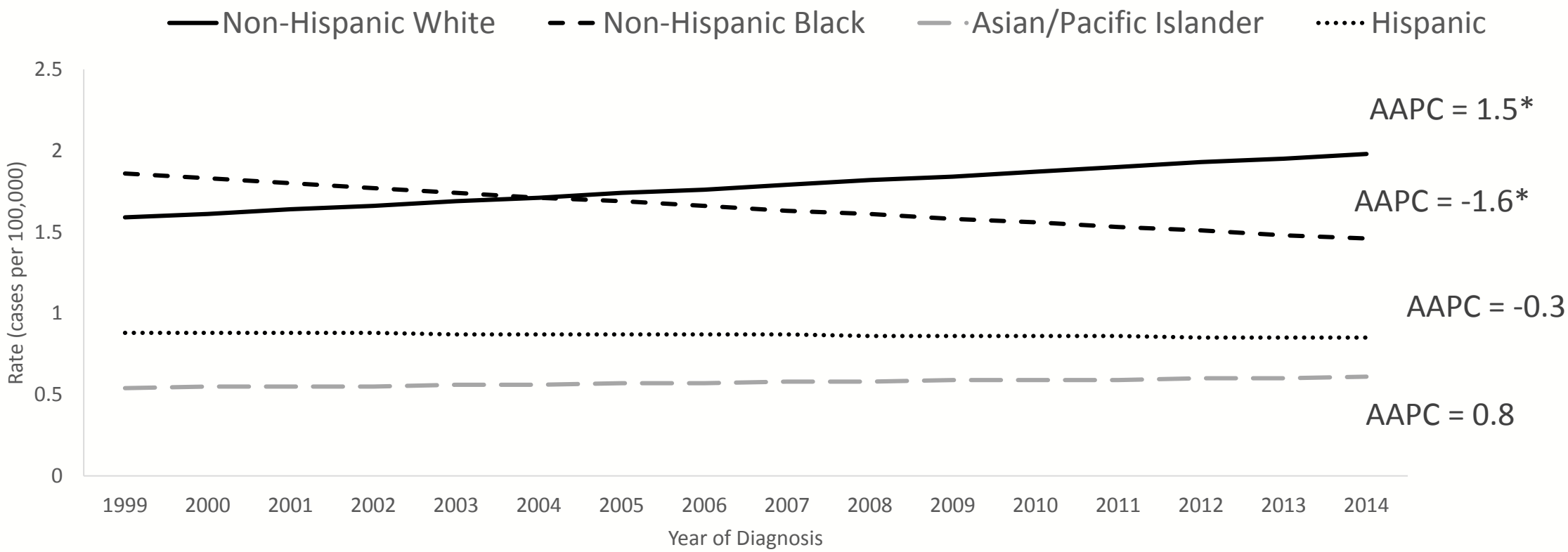
Analyses limited to oropharyngeal squamous cell carcinomas. Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$.

Oropharyngeal Cancer Trends among Men by Race/Ethnicity — United States, 1999–2014



Analyses limited to oropharyngeal squamous cell carcinomas. Rates were considered to increase if annual average percentage change (AAPC) >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. * = $p<0.05$.

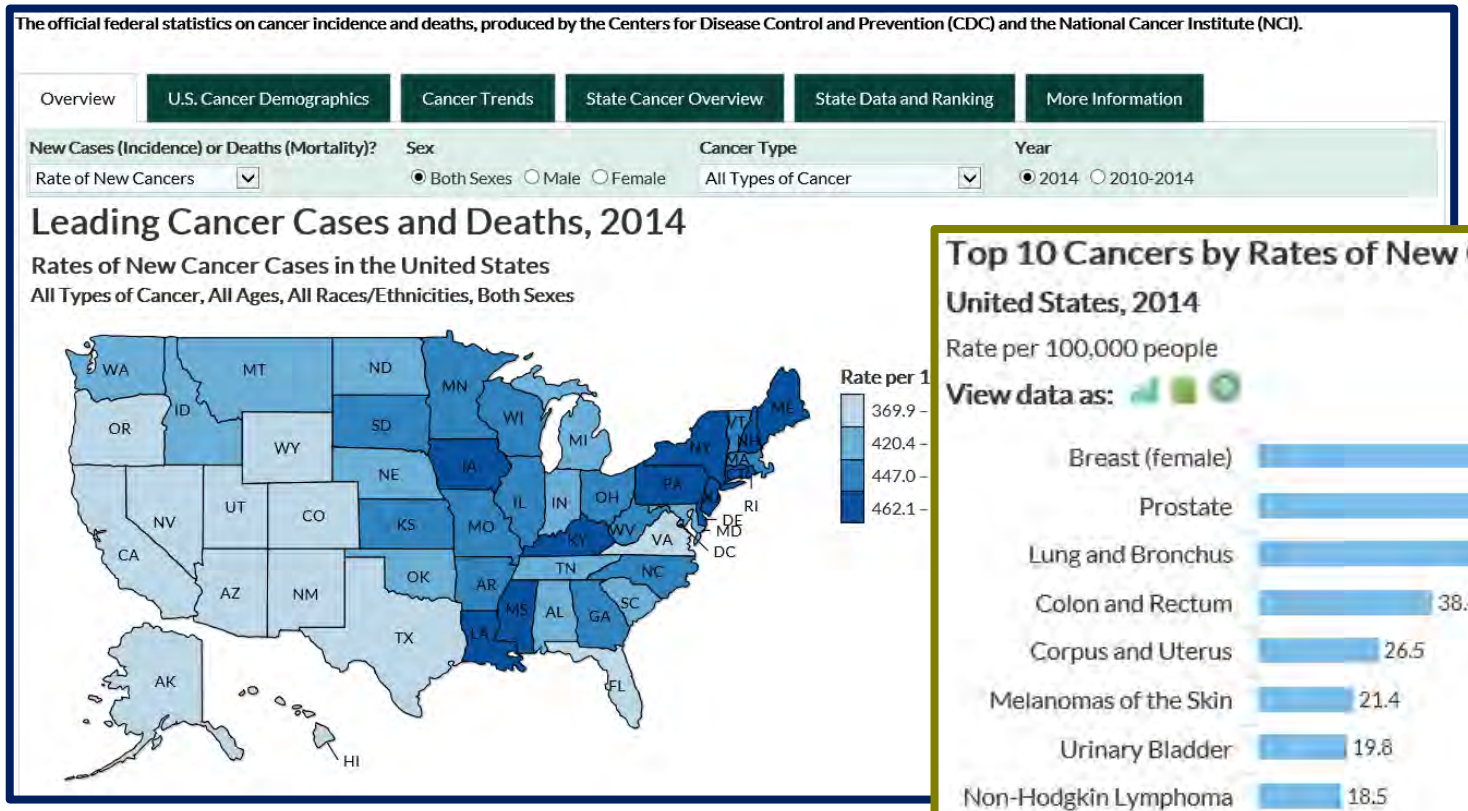
Oropharyngeal Cancer Trends among Women by Race/Ethnicity — United States, 1999–2014

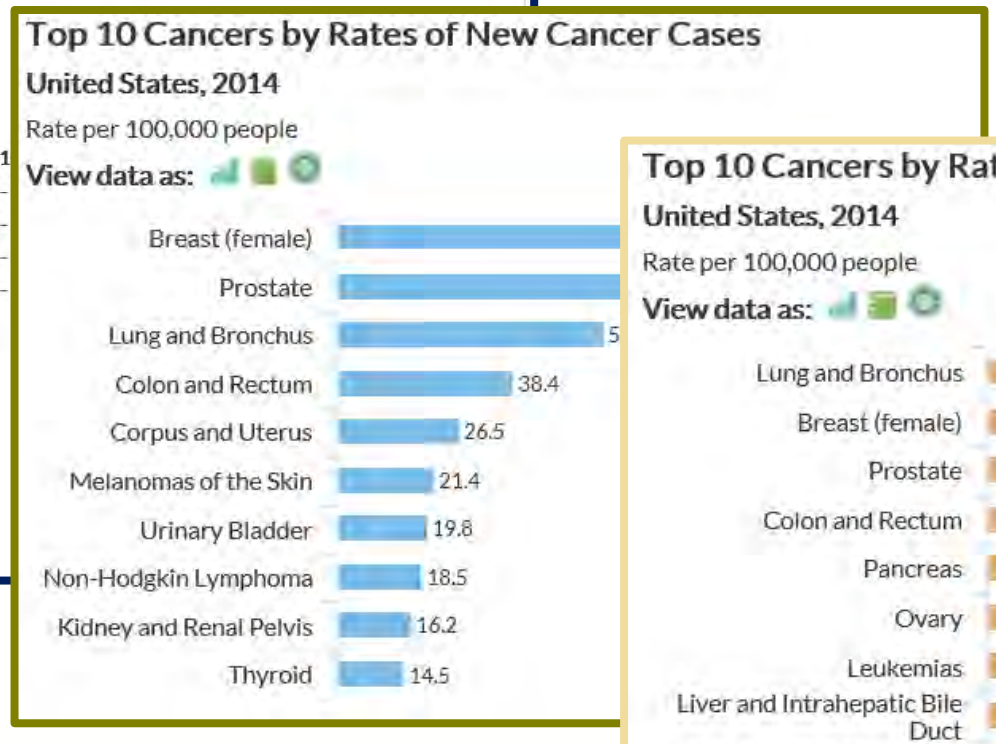


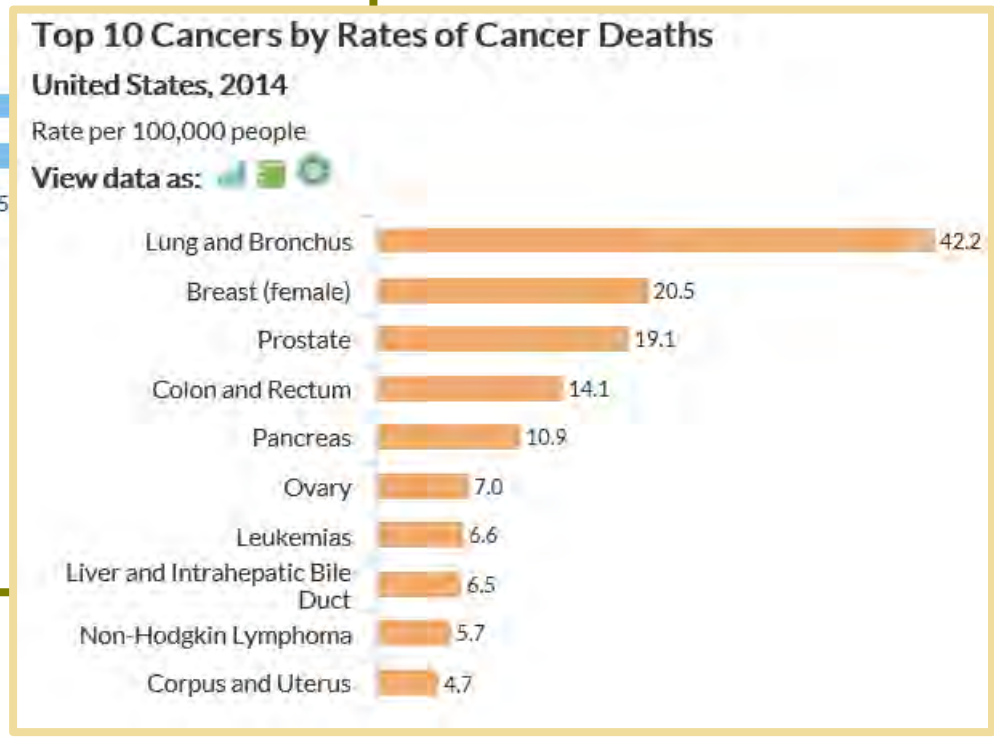
Analyses limited to oropharyngeal squamous cell carcinomas. Trends were measured with AAPC in annual rates (per 100,000, age-adjusted to the 2000 U.S. standard population). Rates were considered to increase if AAPC >0 ($p<0.05$) and to decrease if AAPC <0 ($p<0.05$); otherwise rates were considered stable. *Data suppressed for American Indian/Alaska due to counts. * = $p<0.05$.

How can you use this data?

Increasing Data Accessibility and Usability



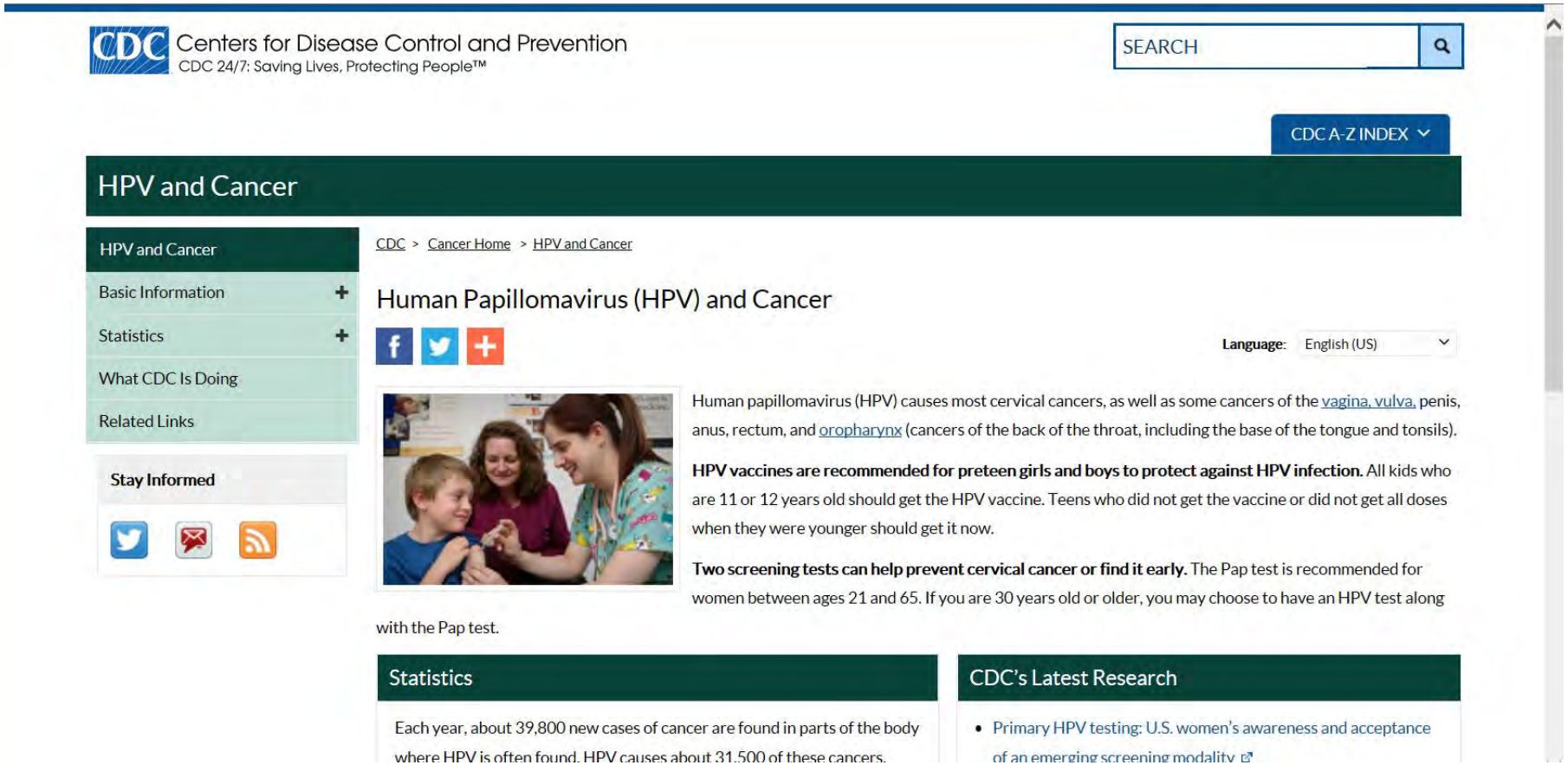




https://nccd.cdc.gov/USCSDataVix/rdPage.aspx

CDC Resources on HPV-associated cancers

Division of Cancer Prevention and Control webpages on HPV-associated cancers https://www.cdc.gov/cancer/hpv/index.htm



CDC Resources on HPV-associated cancers

US Cancer Statistics (USCS) data briefs on CDC Cancer website

- DCPC produces two data briefs or reports describing HPV–associated cancers.
- One brief summarizes national data, the other focuses on state-specific data
- First briefs produced this year, with 2010 - 2014 data (most recent cancer data). They will be produced annually incorporating most recent data.
- Briefs will be available on the DCPC website

CDC Resources on HPV-associated cancers

US Cancer Statistics (USCS) data briefs on CDC Cancer website

United States Cancer Statistics
DATA BRIEF

No. 1
November 2017

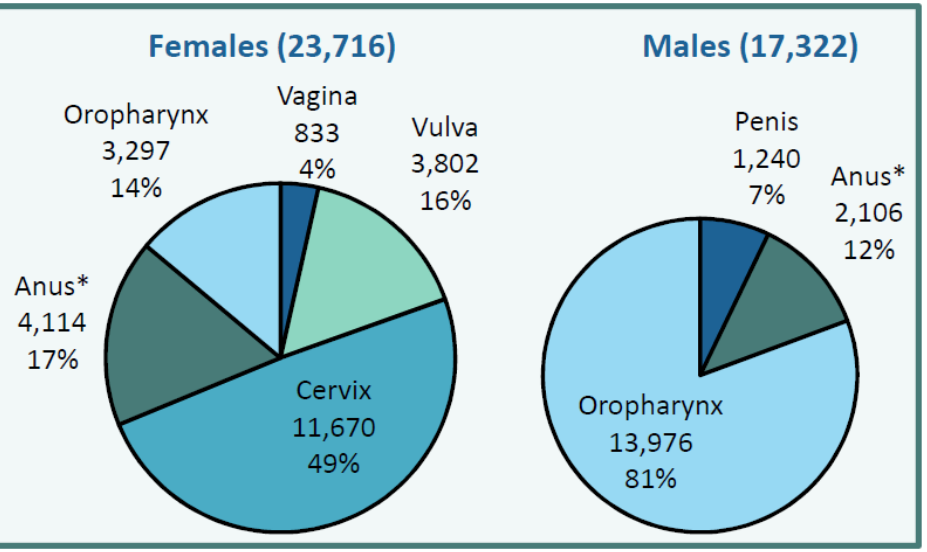
Cancers associated with human papillomavirus, United States—2010–2014

Human papillomavirus (HPV) is a recognized cause of cancer. Although most HPV infections are asymptomatic and clear spontaneously, persistent infections can progress to precancer or cancer. HPV causes most cervical cancers, as well as some cancers of the vagina, vulva, penis, anus, and oropharynx (cancers of the back of the throat, including the base of the tongue and tonsils). Cancer registries do not routinely collect information about HPV status, so in this report, **HPV-associated cancers** are defined as those that occur in parts of the body where HPV is often found.

Number of new HPV-associated cancer cases each year

Based on data from 2010 to 2014 about 41,000 new cases of HPV-associated cancers occurred in the United States each year, including about 23,700 among women, and about 17,300 among men.

Cervical cancer is the most common HPV-associated cancer among women, and oropharyngeal cancers (cancers of the back of the throat, including the base of the tongue and tonsils) are the most common among men.



CDC Resources on HPV-associated cancers

US Cancer Statistics (USCS) data briefs on CDC Cancer website

United States Cancer Statistics

DATA BRIEF No. 2 March 2018

Cancers associated with human papillomavirus by state, 2010–2014

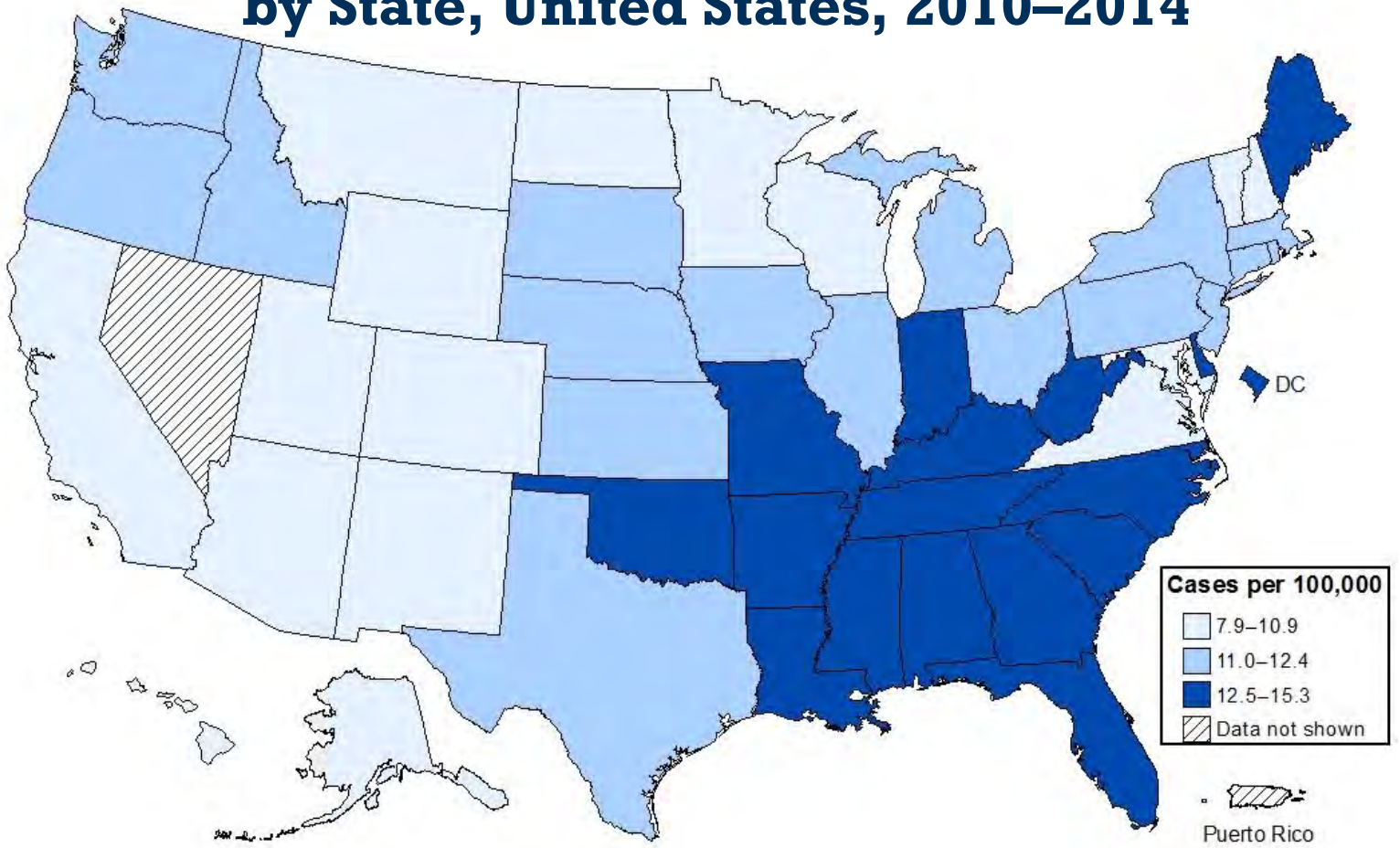
Human papillomavirus (HPV) causes almost all cervical cancers, as well as some cancers of the vagina, vulva, penis, anus, and oropharynx (cancers of the back of the throat, including the base of the tongue and tonsils). In this report, **HPV-associated cancers** are defined as those that occur in parts of the body and cancer cell types where HPV is often found because cancer registries do not routinely collect information about HPV status.

The following tables present the average annual age-adjusted rate and number of cases by sex, cancer type, and state for the time period 2010 to 2014. HPV-associated cancer incidence rates ranged by state from 7.9 per 100,000 persons (Utah) to 15.3 (Kentucky).

Annual rate and number of HPV-associated cancer cases by sex, cancer type, and state, 2010–2014

		Alabama		Alaska		Arizona		Arkansas		California		Colorado	
Cancer Site	Sex	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases
Cervix	Female	8.1	208	5.9	20	6.0	193	9.3	139	7.0	1,366	5.7	150
Vagina	Female	0.6	17	†	†	0.3	11	0.5	9	0.4	90	0.4	10

HPV-Associated Cancer Rates by State, United States, 2010–2014

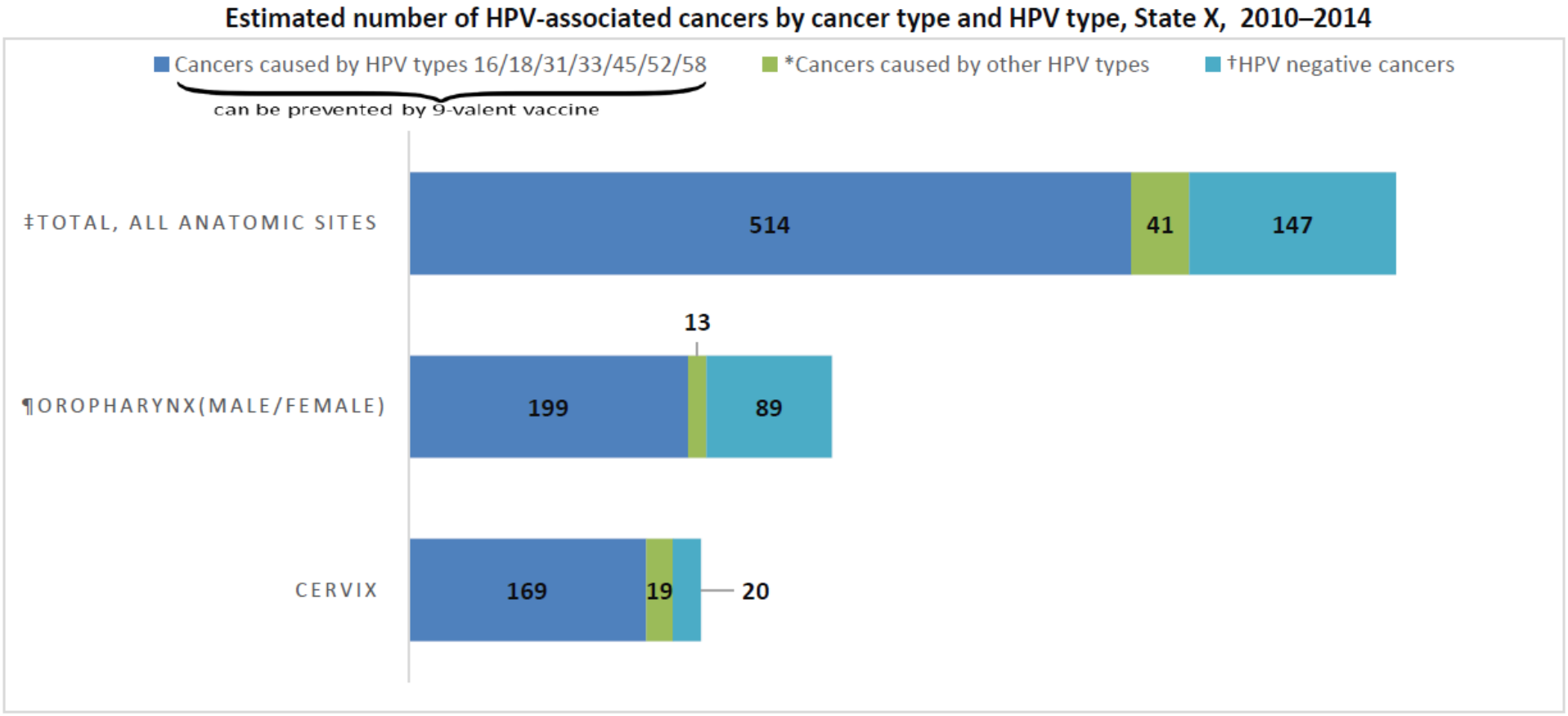


Rates are per 100,000 persons and age-adjusted to the 2000 US standard population. Data are from population-based registries participating in the CDC National Program of Cancer Registries and/or NCI Surveillance, Epidemiology, and End Results Program, meeting criteria for high data quality for all years 2010–2014, and covering about 99% of the US population. HPV-associated cancers were defined as cancers at specific anatomic sites with specific cellular types in which HPV DNA frequently is found. All cancers were confirmed histologically. Cervical cancers (ICD-O-3 site codes C53.0–C53.9) were limited to carcinomas (ICD-O-3 histology codes 8010–8671, 8940–8941). Vaginal (ICD-O-3 site code C52.9), vulvar (ICD-O-3 site codes C51.0–C51.9), penile (ICD-O-3 site codes C60.0–60.9), anal (ICD-O-3 site code C21.0–C21.9, 20.9), and oropharyngeal (ICD-O-3 site codes C01.9, C02.4, C02.8, C05.1, C05.2, C09.0, C09.1, C09.8, C09.9, C10.0, C10.1, C10.2, C10.3, C10.4, C10.8, C10.9, C14.0, C14.2 and C14.8) cancers were limited to squamous cell carcinomas (ICD-O-3 histology codes 8050–8084, 8120–8131). Based on: Viens et al. Human Papillomavirus- Associated Cancers—United States, 2008–2012. MMWR 2016;65(26):661-666.

CDC Resources on HPV-associated cancers

HPV Quarterly reports to the states

- For 2014 data (most recent national cancer data) the report focuses on cervical and oropharyngeal cancers



CDC Resources on HPV-associated cancers

HPV Vaccination Reports to the states

- Brief 2-page report with state-specific data on number of HPV vaccine doses ordered and HPV-associated cancers
- Produced as a collaboration between CDC's Immunization Services Division (ISD) and Division of Cancer Prevention and Control (DCPC)
- The briefs will be distributed several times a year to program representatives in the CDC-funded National Immunization Program, National Comprehensive Cancer Control Program, and National Program of Cancer Registries.

CONCLUSIONS

- HPV-associated cancers include cancers of the cervix, penis, anus, vulva, and vagina. The virus is also associated with oropharyngeal cancers.
- Oropharyngeal cancer is now the most common HPV-associated cancer and increasing, particularly among males.
- The time to make sure everyone understands the importance of the HPV vaccine is now.

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@CDC_Cancer

CDC Breast Cancer

Go to the official source of cancer prevention information: www.cdc.gov/cancer.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.