# HPV Vaccination and Cervical Cancer Rates – How Utah is doing compared to the rest of the US

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## Abstract

Human papillomavirus (HPV) is the most common sexually transmitted infection, with nearly all sexually active individuals exposed to it at some point in their lives. While most HPV infections resolve on their own, persistent infections with high-risk strains, particularly HPV-16 and HPV-18, can lead to cervical cancer. The HPV vaccine is highly effective in preventing infections from the most dangerous strains of the virus and can reduce the risk of cervical cancer by up to 90%. Despite such convincing evidence for cancer prevention, the uptake of HPV vaccination in the US and Utah still lags behind other vaccines. As of 2023, in Utah teens ages 13-17, 61.2% of males and females are up-to-date with their HPV vaccination, increased substantially from 30.5% in 2016. Utah now matches the average percentage of up-to-date in teens in the US (61.4%). While this improvement in up-to-date status of HPV vaccination in Utah adolescents is encouraging uptake still significantly lags behind when compared to other common childhood vaccinations which have an estimated coverage percentage of >90%. Utah has many resources and initiatives aimed at improving our HPV vaccination rate.

## Background

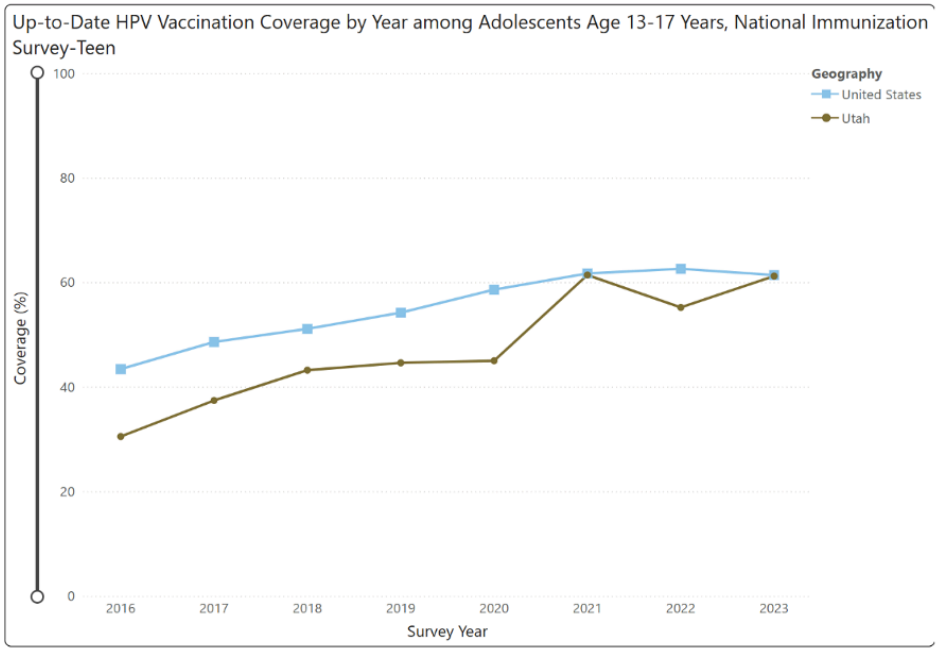
Human papillomavirus (HPV) is the most common sexually transmitted infection, with nearly all sexually active individuals exposed to it at some point in their lives. While most HPV infections resolve on their own, persistent infections with high-risk strains, particularly HPV-16 and HPV-18, can lead to cervical cancer. HPV is responsible for more than 90% of cervical cancer cases in the US.[1] Cervical cancer is the fourth most common cancer among women, with an estimated 600,000 new cases and 340,000 deaths globally each year.[2] The HPV vaccine is highly effective in preventing infections from the most dangerous strains of the virus and can reduce the risk of cervical cancer by up to 90%. First available in 2006, it has been administered over 270 million times globally and has been proven to be safe and effective. The first version of the vaccine, Gardasil 4, provided protection against 4 strains of HPV. In 2014, Gardasil 9 was approved by the FDA and now covers 9 major strains of HPV and the trials leading to its approval found it to be nearly 100% effective in preventing the 6 HPV cancers.[3] A recent retrospective analysis of cervical cancer mortality found an overall 62% reduction in cervical cancer mortality among women under the age of 25, corresponding with the first cohort of women for whom HPV vaccination was available.[4] Despite such convincing evidence for cancer prevention, the uptake of HPV vaccination in the US and Utah still lags behind other vaccines. The HPV vaccine is currently recommended for all children and teens between the ages of 9 and 29, with the typical practice to start the vaccination at age 11. The vaccine is given in a 2 or 3 shot series depending on the age at which the first dose was given.[5] This data snapshot will compare Utah's HPV vaccine rate among adolescents to that of the US as well as look at cervical cancer rates in Utah and the US.

## Data

As of 2023, in Utah teens ages 13-17, 61.2% of males and females are up-to-date with their HPV vaccination. This has increased substantially from 30.5% in 2016. Utah now matches the average percentage of up-to-date in teens in the US (61.4%)[6] (Figure 1a). While this improvement in up-to-date status of HPV vaccination in Utah adolescents is encouraging, as shown in

Figure 1b, HPV vaccine uptake still significantly lags behind when compared to other common childhood vaccinations, including meningococcal conjugate (MenACWY), tetanus, diphtheria, pertussis (Tdap), measles, mumps, rubella (MMR), varicella, hepatitis A and hepatitis B, all of which have an estimated coverage percentage of >90%.[6]

A)

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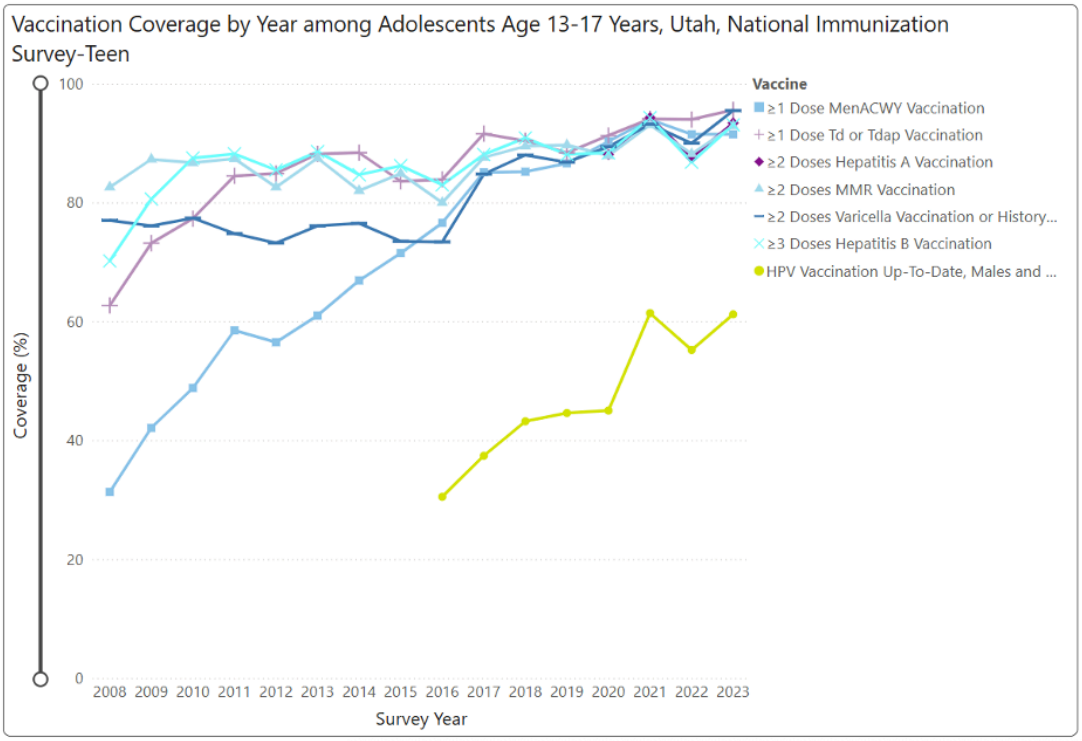
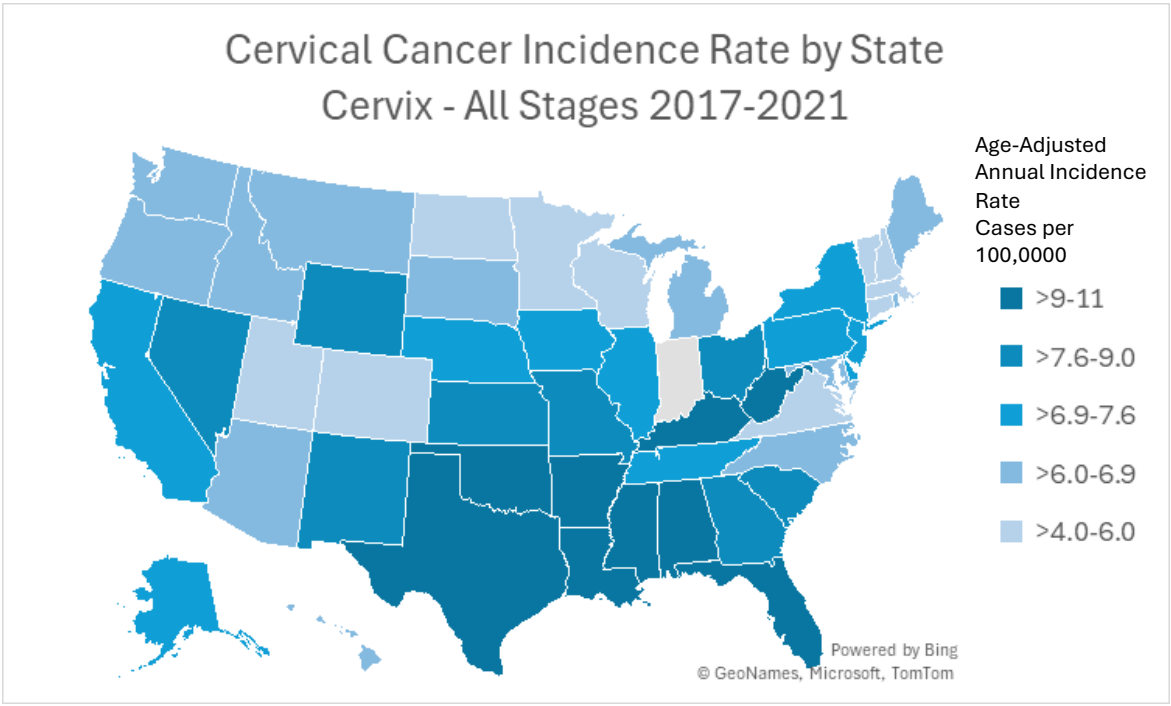



**Figure 1.** A) Up-to-date HPV vaccination among adolescents aged 13-17 in the US and Utah from 2016 – 2023. B) Vaccination coverage of most common childhood vaccines in Utah adolescents aged 13-17 compared to HPV Data Source: https://www.cdc.gov/teenvaxview/interactive/index.html Accessed on 3/3/2025.

Given that HPV is the primary cause of cervical cancer and recent retrospective studies demonstrating an overall decrease in cervical cancer mortality in the population for whom HPV vaccination has been available[4], it makes sense to compare cervical cancer incidence in Utah and across the United States as compared to HPV vaccination coverage. As seen in the heat maps in Figure 2, there is generally a higher incidence of cervical cancer (darker blue) in states in which HPV vaccination coverage is lower (lighter blue). Though Utah is near the national average for HPV vaccination coverage (61.2%), it has a low incidence of rate of cervical cancer (6 cases per 100,000).[6,7]



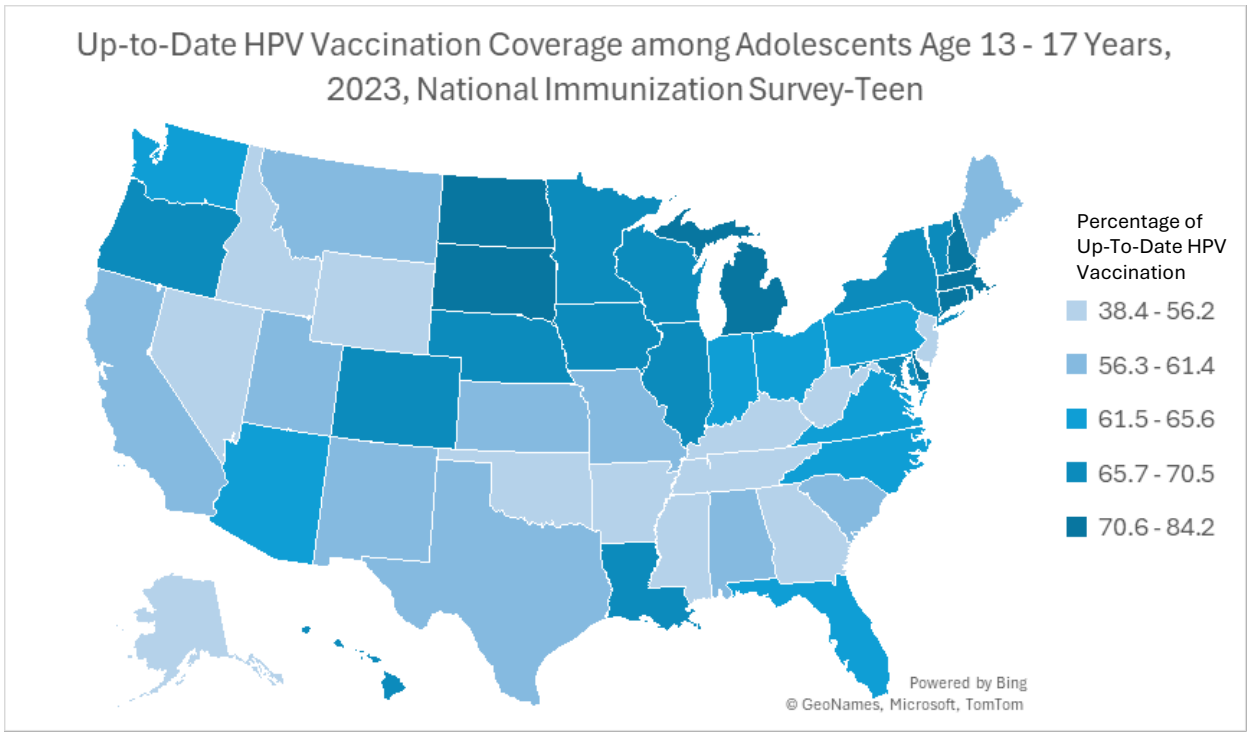




**Figure 2.** Comparison of state by state cervical cancer incidence rate (top) to up-to-date HPV vaccination coverage (bottom). As expected, there is an inverse correlation between cervical cancer incidence and HPV vaccination coverage. Cervical cancer incidence data obtained from National Program of Cancer Registries and Surveillance, Epidemiology, and End Results SEER*Stat Database - United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute. Based on the 2023 submission[7]. HPV Vaccination Coverage Data obtained from https://www.cdc.gov/teenvaxview/interactive/index.html Accessed on 3/3/20256.

## What is Being Done?

Utah has implemented several initiatives to improve HPV vaccination rates among adolescents. Below you will find resources shared in the "Complete Health Indicator Report of Immunizations: HPV, adolescents" from the Utah Department of Health and Human Services,[8] as well as some additional resources and research currently being done in Utah.

- **Public Media Campaigns:** The state has launched extensive media campaigns to educate the public about the benefits of HPV vaccination and its role in cancer prevention. https://cancer.utah.gov/cancers/hpv/

- **Intermountain West HPV Vaccination Coalition:** This coalition, encompassing members from 20 states, meets regularly to identify barriers to HPV vaccination, build partnerships, and discuss related policy priorities and research efforts. https://healthcare.utah.edu/huntsmancancerinstitute/about-us/hpv-coalition

- **Healthcare Provider Education:** The Utah Department of Health and Human Services, in collaboration with organizations like Utah Area Health Education Centers (AHEC), the American Cancer Society, and the Huntsman Cancer Institute, has formed a statewide workgroup focused on educating physicians about HPV vaccination and associated diseases. https://immunize.utah.gov/hpv-information-for-the-public/ The CDC also provides toolkits and resources for physicians on talking to parents about HPV vaccinations, encouraging healthcare providers to discuss it similar to all other routine childhood vaccinations - https://www.cdc.gov/vaccines/vpd/hpv/hcp/index.html

- **Targeted Pilot Programs:** From July 2021 to May 2022, efforts were made to increase HPV vaccination rates in Utah's lowest-performing health districts. Primary care clinics in regions such as Bear River, Southeast, Southwest, Tri County, and Utah County participated in tailored, evidence-based interventions to boost vaccination rates. https://utahafp.org/how-you-can-help-increase-hpv-vaccination-rates-in-utah/

- **Research and Grants:** The Huntsman Cancer Institute, in partnership with the American Cancer Society North Region, has been involved in initiatives aimed at increasing adolescent HPV vaccination rates across five Mountain West states, including Utah. https://uofuhealth.utah.edu/huntsman/labs/kepka/research/grants

Now more than ever, it is important for medical providers, public health students and employees, and defenders of women and children's health to arm themselves with evidence-backed data to share with family, friends, and representatives to keep increasing the rate of this life-saving vaccine.

## References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