

# Hysterectomy adjustment factors applied to the United States Cancer Statistics (USCS) data, 2009-2018

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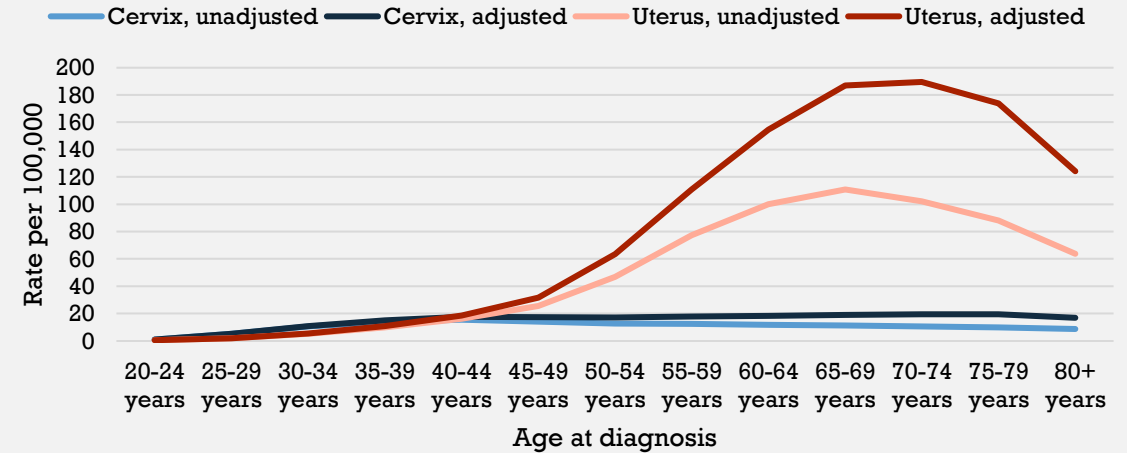
**Background** Hysterectomy is one of the most performed surgeries in the U.S. and changes the cancer risk profile for some gynecological cancers (cervical, uterine) of women who undergo the procedure. Adjusting the at-risk population data file could yield better estimates of the burden of these cancers.

**Methods** I used SAS-callable SUDAAN on Behavioral Risk Factor Surveillance System (BRFSS) data (2010, 2012, 2014, 2016, 2018) to calculate hysterectomy prevalence by 5-year age group (20-24, 25-29 ... 80+) and race/ethnicity over time. I applied the age by race/ethnicity specific factors to the female US populations of corresponding age and race/ethnicity to generate a population file adjusted to remove the estimated number of women who reported hysterectomy. I combined this population with the 2009-2018 NPCR and SEER incidence data to build a female-only SEER\*Stat database using SEER\*Prep and compared the rates of cervical and uterine cancers in the adjusted population data to the rates of these cancers generated from the unadjusted data.

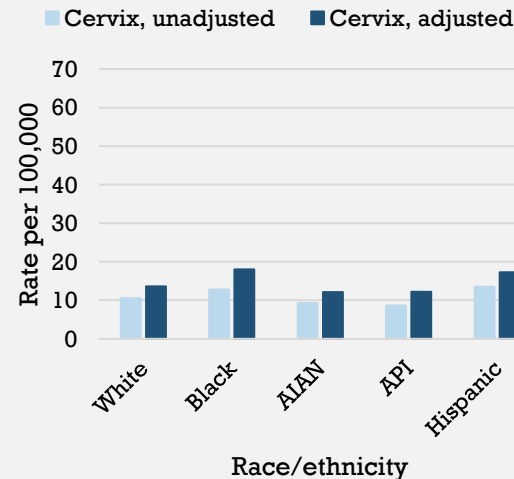
**Results** The incidence rates (per 100,000 persons) for women in the hysterectomy-adjusted dataset are higher in all age groups and race/ethnicities when compared to the unadjusted data. Unadjusted cervical cancer incidence rates are highest in Hispanic women, and hysterectomy-adjusted rates are highest in Black women. Unadjusted uterine cancer incidence rates are highest in White women, and hysterectomy-adjusted rates are highest in Black women. Women aged 75-79 years had the largest difference in hysterectomy-adjusted cervical cancer rates compared to the unadjusted rates and women aged 70-74 had the largest difference for uterine cancer.

**Conclusions** Hysterectomy reduces or eliminates risk of certain gynecological cancers. The population at-risk of developing these cancers varies by age and race/ethnicity due to differing hysterectomy prevalence by these demographic factors over time. Adjusting the female population data file to account for self-reported hysterectomy prevalence by age and race/ethnicity can provide a better estimate of the true burden of these cancers in a population over time. BRFSS is self-reported data and does not include details on the type of hysterectomy procedure performed (partial, radical), so caution should be used in interpreting the results.

Unadjusted and hysterectomy-adjusted rates of cervical cancer and uterine cancer, US women ages 20+, 2009-2018, by age group



Unadjusted and hysterectomy-adjusted invasive cervical cancer incidence rates, US women, ages 20+, 2009-2018, by race/ethnicity



Unadjusted and hysterectomy-adjusted invasive uterine cancer incidence rates, US women, ages 20+, 2009-2018, by race/ethnicity

