HPV Vaccine Data and Maps (Heat Maps) Tool

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BACKGROUND

Despite being introduced nearly two decades ago, human papillomavirus (HPV) vaccination rates remain far below the national goal (80%). While HPV vaccination is available at the national and state levels, county-specific HPV vaccination rates remain largely unavailable. Disaggregating HPV vaccination to the county level can be extremely valuable for understanding HPV vaccination disparities.

OBJECTIVE

Our objective was to develop an interactive web-based tool to disseminate data-

1) Describing HPV vaccination rates at the state and county level
2) Illustrating geographic disparities in HPV vaccination rates between states and within states (metro vs. non-metro)

METHODS

- We developed an interactive web-based tool, **HPV Vaccine Data and Maps (Heat Maps)** Tool, to disseminate county-level data.
- Medical claims data of over 10 million adolescents across 50 states was analyzed.
- HPV vaccination rates (≥ 1 dose) among 13-15-year-old adolescents was estimated during the calendar year 2020 at the national level, and at the state and county levels.
- Universal vaccine purchase policy and bundled vaccine payment states were excluded.
- Color-coded interactive spatial maps were rendered using Tableau JAVAScript API.

HPV VACCINE DATA AND MAPS

Figure 1: State-specific HPV vaccination (≥1 dose) rates (Metro, Non-metro, and Overall).*

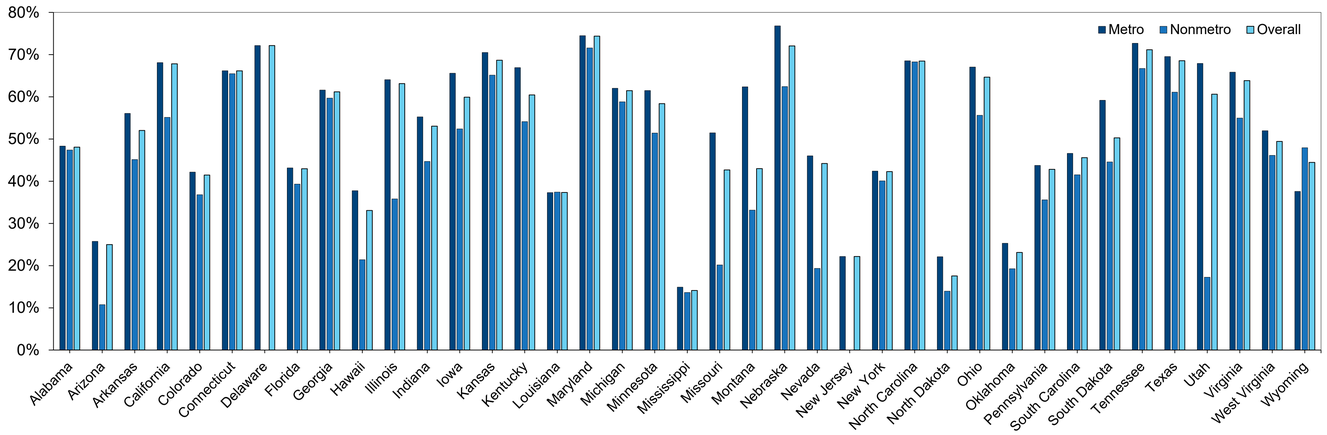


Figure 2: County-level HPV vaccination (≥1 dose) rates.*

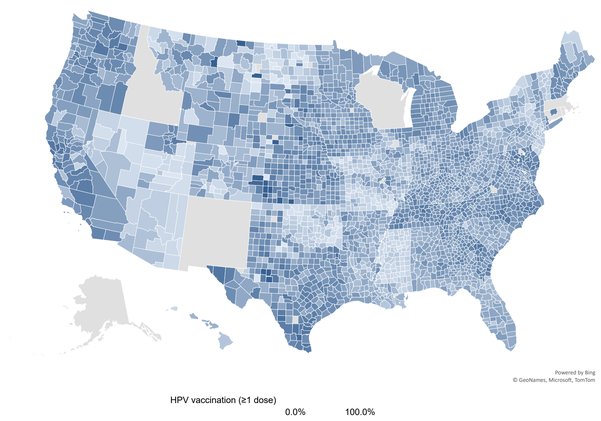
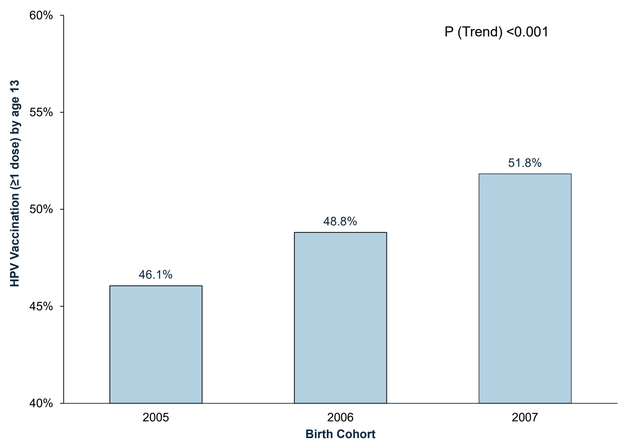


Figure 3: HPV vaccination (≥1 dose) by age 13 years in contemporary adolescent birth cohorts.*



*Excluding States with Universal Purchase [MA, AK, ID, ME, NH, NM, OR, RI, VT, WA] and Wisconsin state (bundled vaccine payments).

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RESULTS

- Of a total of 2.8 million [2.4 million urban and 0.4 million rural] adolescents, over one-half (54.3%) of the 13-15-year-old adolescents in 2020 had received an HPV vaccine dose.
- State averages exceeded 70% for Maryland, Delaware, Nebraska, and Tennessee, but were <30% in Mississippi, North Dakota, New Jersey, and Oklahoma **(Figure 1)**.
- Nationally, the rate was 8.8%-point higher for urban counties compared to rural counties (P<.001).
- In nearly all states, the average of urban counties was higher than rural counties; urban-rural difference in Utah, Missouri, Arizona, Nevada, Montana, and Illinois exceeded 25%-points .
- County-level rates varied widely within states and ranged from 1.7% in Benson county (North Dakota) to 90.9% in Brooks county (Texas) **(Figure 2)**.
- Increasing trend in HPV vaccination by age 13 years was observed in contemporary adolescent birth cohorts (2005, 2006, and 2007; P<0.001)) **(Figure 3)**.

CONCLUSION

- The visualization tool was highly effective in illustrating county-level HPV vaccination data and revealed substantial urban-rural vaccination disparities across the nation.
- Interventions to mitigate these geographic disparities are urgently needed to prevent the morbidity and mortality burden of HPV-associated cancers.