

## **Trends and Patterns of Human Papillomavirus Vaccination Rates on Long Island**

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### **1. Background**

Human Papillomavirus (HPV) is a common sexually transmitted infection that can cause various cancers. The HPV vaccine was approved by the U.S. Food and Drug Administration (FDA) in 2006 to prevent such types of cancers.

In the United States, the Centers for Disease Control and Prevention (CDC) encouraged early vaccination, and New York has higher-than-average HPV vaccination rates due to accessible health care and state-funded programs.

On Long Island (LI), New York (NY), some areas that were influenced by limited health care access or cultural resistance have lower vaccination rates, which increases the risk of HPV-related infections. For health care providers and clinicians, recognizing these gaps is crucial to implementing more targeted interventions to improve vaccination rates and reduce the incidence of HPV-related cancers.

### **2. Goals**

This study focuses on HPV vaccination temporal trends and geographical patterns analysis on LI, where a diverse population and varying socio-economic conditions impact vaccination rates. By analyzing LI's trends and patterns, this research aims to guide public health strategies' direction to improve the HPV vaccine uptake and reduce HPV-related cancer risks in the region.

### **3. Solutions and Methods**

The vaccine registration data retrieved from the New York State Immunization Information System (NYSIIS) was used to assess the HPV vaccine administration rate from 2012 to 2023. Patients' demographic information and regional variations were evaluated to identify the disparities between different subgroups. The analysis was conducted between 2023 and 2024.

### **4. Outcomes**

The HPV vaccination rate among LI children ages 9 to 13 demonstrates a growth of 284.43 percent from 2012 to 2019 and a slight decrease of 5.04 percent around 2020. Around 68.07 percent of individuals received their first dose before their 15th birthday and 24.95 percent of them followed the recommended routine to receive 2 doses in half a year. Spatially, eastern LI consistently holds a higher HPV vaccination rate than northwestern LI.

### **5. Lessons Learned and Future Directions**

The rising trend in HPV vaccination coverage on LI with a modest drop around 2020 indicates the likely impact of the COVID-19 pandemic; uptake has still not fully recovered up to now. Additional attention should be paid to the regions with lower uptake rates, given the uneven distribution of the vaccine coverage to prevent HPV-related cancers.

In the future, we are planning to study the socioeconomic variables and the population composition impact on the HPV vaccine rate. Additionally, we will link the HPV vaccine patterns to the HPV-related cancers mortality information to see the level of prevention. Apart from that, we are also planning to enlarge our study scale and find more intrinsic correlations.

Figure

