HPVx Navigator: Your Guide to Free HPV Vaccination & Community Support

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This toolkit was developed as part of the American Cancer Society National HPV Vaccination Roundtable (ACS HPVRT) Emerging Leaders Program. Fellows are early-career professionals whose work was informed by the guidance and mentorship of ACS HPVRT leadership and team members. The program supports HPV vaccination outreach, quality improvement efforts, and the sharing of best practices. The content does not necessarily represent the official positions of the American Cancer Society or the ACS HPVRT program.

Learn more about the program: Emerging Leaders Program - National HPV Vaccination Roundtable

Overview

Project Summary

The aim of this American Cancer Society Emerging Leaders Capstone Project is to develop the HPVx Navigator, a comprehensive digital tool designed to assist uninsured individuals in North Carolina and Georgia in locating free human papilloma virus (HPV) vaccination services and accessing essential community resources (e.g., transportation assistance programs and food banks). By integrating detailed information on eligibility criteria, free HPV vaccine programs, potentially associated costs, necessary steps, and available social support services, the digital tool will empower users to navigate healthcare barriers efficiently. It will also enhance HPV vaccination access among underserved populations and serve as a scalable model for broader public health initiatives.

Key Achievements

a. Screening tool filters by state and eligibility
b. Community resources filtered and provided for the user's area of interest
c. Developing the tool in Shiny allows for ease of usability and updates

Goals

a. Develop a tool to help parents find where to get HPV vaccines.
b. Assist parents in understanding HPV vaccine eligibility.
c. Promote community resources to reduce gaps in vaccination rates.

Strategy and Development

a. Review gaps in immunization and insurance status.
b. Explore barriers to immunization.
c. Define eligibility criteria.
d. Collect Vaccine for Children (VFC) provider information, and compile community resources.
e. Develop navigation web tool.

Introduction

Background

The HPVx Navigator was developed as a part of the American Cancer Society Emerging Leaders Capstone Project. The goal of this project was to develop a toolkit similar to the Age 9 campaign that was previously produced by the American Cancer Society. The focus of this particular project was VFC-eligible children in North Carolina and Georgia. The leaders of this project aimed to develop a tool that would help increase HPV vaccination rates in these two states. The HPVx Navigator development would achieve this by helping parents find vaccines and understand eligibility criteria. In addition, the tool would help fill gaps in Social Determinants of Health (SDOH) to reduce barriers to vaccination. This tool was developed by public health professionals for parents. It has undergone testing within the public health community and by parents to ensure ease of usability and accurate information.

Objectives

a. Reduce practical barriers to getting children vaccinated against HPV.
b. Facilitate meeting the social needs of families.
c. Increase uptake of HPV vaccination in North Carolina and Georgia.

Rationale

Looking at HPV vaccination for insured and Medicaid patients, there are higher immunization rates than those without insurance (National Center for Immunization and Respiratory Diseases; Immunization Services Division, n.d.). Coverage for all children in North Carolina and Georgia remains well below the 2030 Healthy People goal. When examining intent to vaccinate, many socioeconomically disadvantaged families report positive HPV vaccination intentions, yet this is not translated to uptake (Sonawane et al., 2020). These families may benefit from additional practical support, such as one-stop navigation facilitated by this tool. The addition of community resources with vaccination tools may help with vaccine access to increase immunization rates.

Problem

Information on vaccines and social needs can be very segmented in a world where these things are very closely tied. In addition, it can be difficult for community members to know if their child is eligible for the VFC vaccine and where to get them vaccinated. These barriers and questions pose barriers to vaccination, which result in decreased vaccination rates, especially among high-risk and underserved populations.

Vaccines for Children Program

The VFC program is run by the Centers for Disease Control (CDC) to provide immunizations for children who may not be able to afford them. The program started in 1993 after the measles epidemic in the US left many children at risk of vaccine-preventable disease. This is an entitlement program for children 18 years and provides no-cost vaccines through enrolled providers. The VFC program improves national immunization rates by providing free vaccines, saving money, minimizing barriers to vaccination, and improving collaboration between public and private sectors *(About the Vaccines for Children (VFC) Program, 2025)*.

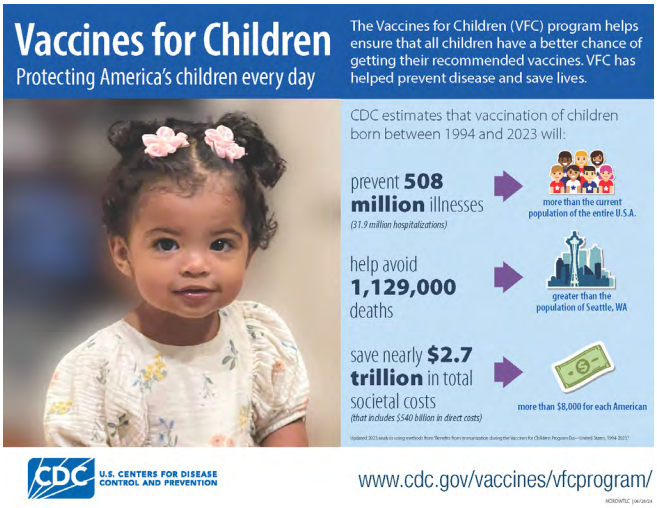
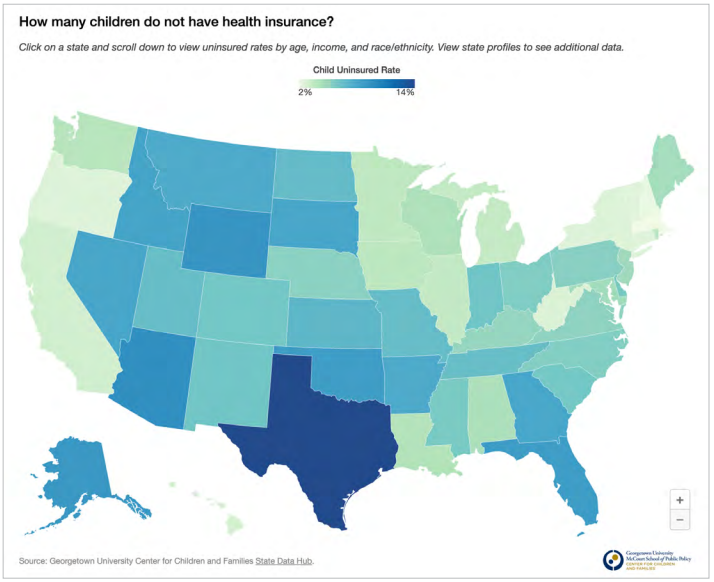


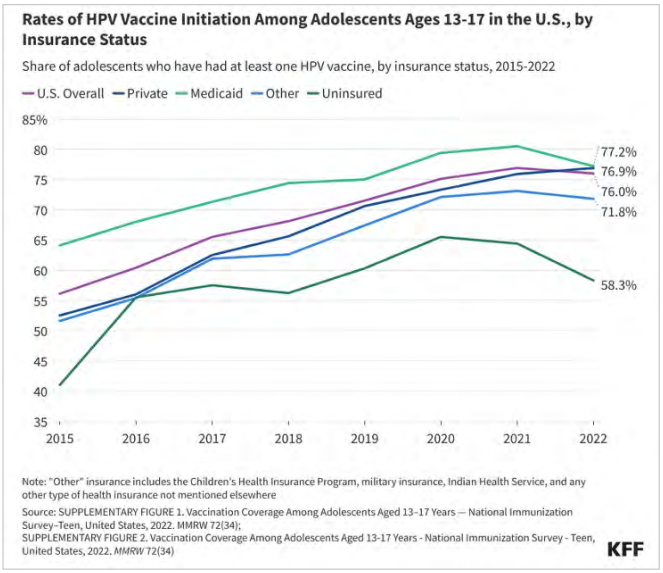
Image from CDC David J. Sencer CDC Museum.

Population of Interest

Overview of Population



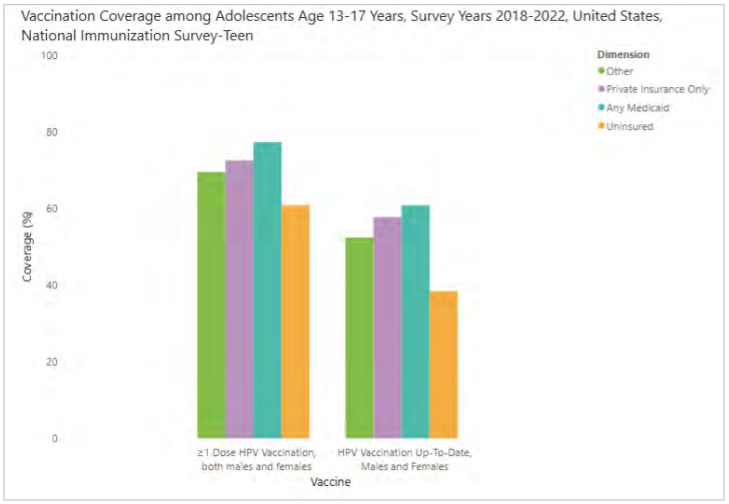
The population of interest for this project is any patient (child or adult) who can receive the HPV vaccine but has not started or completed the HPV vaccine series. This tool was specifically developed to help parents of unvaccinated children find vaccines in their area. The focus being uninsured, underinsured, and Medicaid-eligible children in need of free or low-cost vaccines. This is important as the US average for children who are uninsured under the age of 19 years is 6% (The Center for Children & Families (CCF) at the McCourt School of Public Policy at Georgetown University, n.d.). The purpose of this is that VFC-eligible patients generally encounter more social needs barriers to immunization than those with insurance. This project focuses on HPV vaccination, but VFC providers should have vaccines to cover their patient populations (National Center for Immunization and Respiratory Diseases, 2025). Within this eligible population, the project focuses on parents/children in North Carolina and Georgia. These states were chosen due to proximity to researchers and low immunization rates for HPV.



This trend continues when we look at initiation versus series completion as well. Other insurance, private insurance, and Medicaid have almost 20% higher immunization rates than uninsured adolescents ages 13 to 17 years (National Center for Immunization and Respiratory Diseases; Immunization Services Division, n.d.).

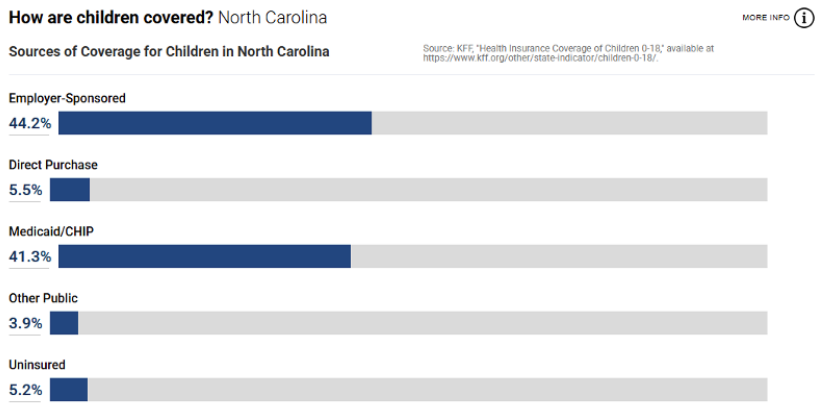
HPV Vaccination by Insurance Status

Examining HPV vaccination rates, there are stark differences in coverage by insurance status. Those with Medicaid and private insurance have the highest up-to-date HPV vaccination rates in the US, while those with other insurance fall approximately 5% lower than the US average. Among 13- to 17-year-olds, vaccination coverage is dramatically lower, at around 58%, almost 20% below the US average (KFF, 2024).



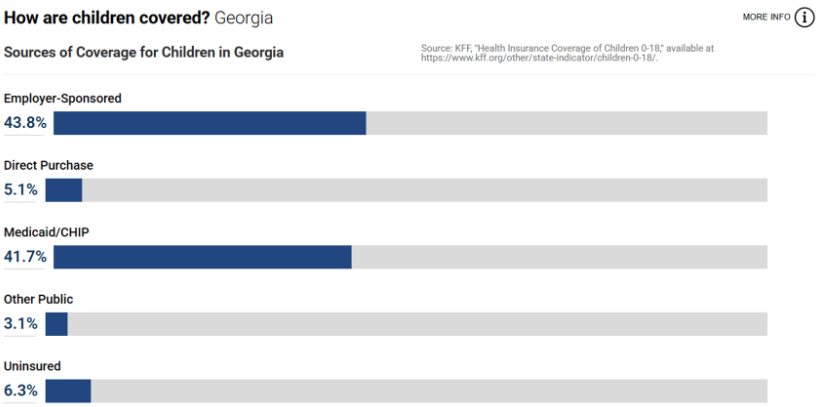
North Carolina Breakdown

In North Carolina, 5.5% of children under the age of 19 are uninsured; this is a major indicator of access to care. This rate has been increasing at the state and national level since 2022. This puts North Carolina at 27 out of 51 states in terms of children who are uninsured. Looking at uninsured children by race, American Indian/Alaskan Native and Other/Multiracial children have the highest rates of being uninsured. When looking at uninsured status in terms of income, 8.7% of children in the 0 to $35,629.02 income range have no insurance. Compared to the 3.6% of children in the $64,550.00 and above income range, who are without insurance. Looking at insurance coverage overall in North Carolina, most children have employer-sponsored (44.2%) insurance or Medicaid (41.3%). Of children who are eligible for Medicaid, 93.1% of them are enrolled. It is important to note that those who are not enrolled may be due to administrative barriers (The Center for Children & Families (CCF) at the McCourt School of Public Policy at Georgetown University, n.d.).



Georgia Breakdown

The state of Georgia comes in above the national average for children without insurance under the age of 19 years. The national average in 2024 was 6%, while Georgia came in with 7.9% of children without health insurance, ranking 42nd out of 51 in the US when looking at the breakdown based on race and ethnicity, American Indian/Alaskan Native and Other/multiracial, at 29.5% and 13.4%, respectively. In terms of ethnicity, the Hispanic/Latino population has 17.7% children without insurance, and the non-Hispanic/Latino population has 6% of children without insurance. From breakdown by poverty threshold based on earning, 10.4% of children in households with incomes between 0 and $35,629.02 are without insurance compared to households with incomes from $64550.00 and above, where 5.4% of children are uninsured. In Georgia, 43.8% of children are on employer-sponsored insurance, and 41.7% of children are on Medicaid. Unfortunately, only 89.1% of children who are eligible to participate in Medicaid are enrolled; this falls below the national average of 91.9%. Overall, this leaves a large care gap for children who could be receiving care through Medicaid (The Center for Children & Families (CCF) at the McCourt School of Public Policy at Georgetown University, n.d.).



Tool Development

The HPVx Navigator was developed as a web-based Shiny dashboard to help parents and caregivers move from a practical question – where can my child get a free or low-cost HPV vaccine? – to a clear next step. Development began by defining the intended users (families in North Carolina and Georgia, with emphasis on uninsured, underinsured, and Medicaid-eligible children), clarifying VFC eligibility categories, reviewing gaps in HPV immunization and insurance status, and identifying common practical barriers such as cost, transportation, fragmented information, and uncertainty about where to go for vaccination services.

The prototype was organized around three core functions: an Eligibility Screener, a VFC Provider Finder, and Community Resources. The screener asked users to select their state, age category, and insurance status, then provided plain-language guidance on likely VFC eligibility and next steps. Inputs were designed to be anonymous and simple, and the home page included brief guidance, a disclaimer about recent HPV vaccination guideline changes, and a link to additional ACS HPV Vaccination Roundtable resources.

The VFC Provider Finder was designed to reflect the different ways provider information was made available in Georgia and North Carolina. For Georgia, users could enter a ZIP code and receive nearby VFC providers with distance, address, and phone number. For North Carolina, the tool redirected users to the official state VFC provider search page; because early user feedback showed that this handoff could feel disorienting, the prototype was revised to include visual, step-by-step instructions showing users where to scroll and what search field to use on the state site. The Community Resources component recognized that vaccination access was not only a clinic-location problem. Families might also need support with transportation, food, housing, or other social needs before they could realistically get to a vaccination appointment. The current prototype connects users to trusted resource pathways and is being refined to include a fuller, verified set of local community resources without distracting from the primary navigation task.

Shiny was selected because it allowed the team to build an interactive, web-based tool that could be updated as VFC provider information, eligibility guidance, and community resource lists changed. The tool was also designed for both desktop and mobile use and included About Us and Feedback tabs to support transparency and ongoing improvement. After internal team review, mentor feedback, and Wave 1 user testing, key refinements included making state selection persist across tabs, adding a Start Over button, improving North Carolina-specific instructions, replacing a needle-based logo with a vial image to reduce possible needle-trigger reactions, and adding a disclaimer acknowledging the January 2026 guideline change.

Selected prototype snapshots from the HPVx Navigator web tool are included below to document how the tool was operationalized during development and Wave 1 testing. These screenshots show the eligibility screener landing page, the Georgia ZIP code provider results view, and the North Carolina provider-search handoff with visual instructions.

Figure 1. HPVx Navigator landing page and eligibility screener, including state, age, and insurance inputs

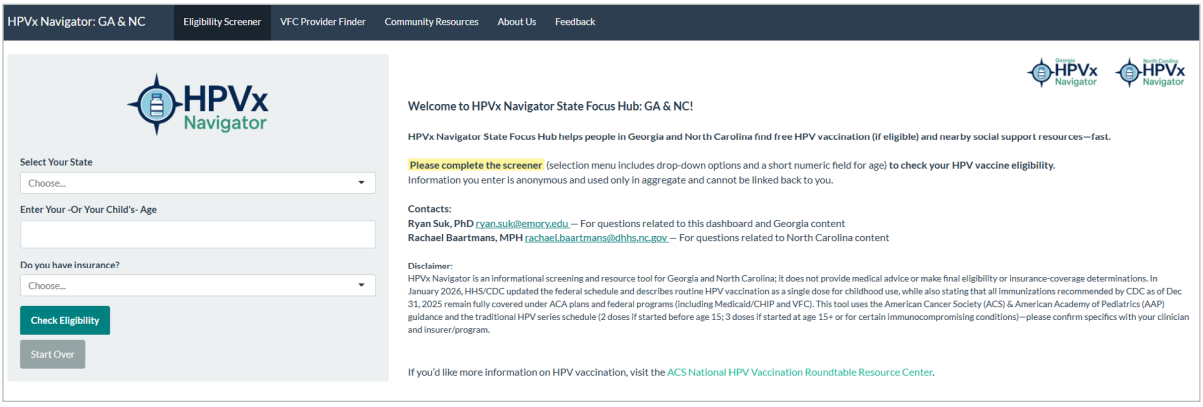


Figure 2. Georgia VFC Provider Finder output showing nearby provider results after ZIP code entry

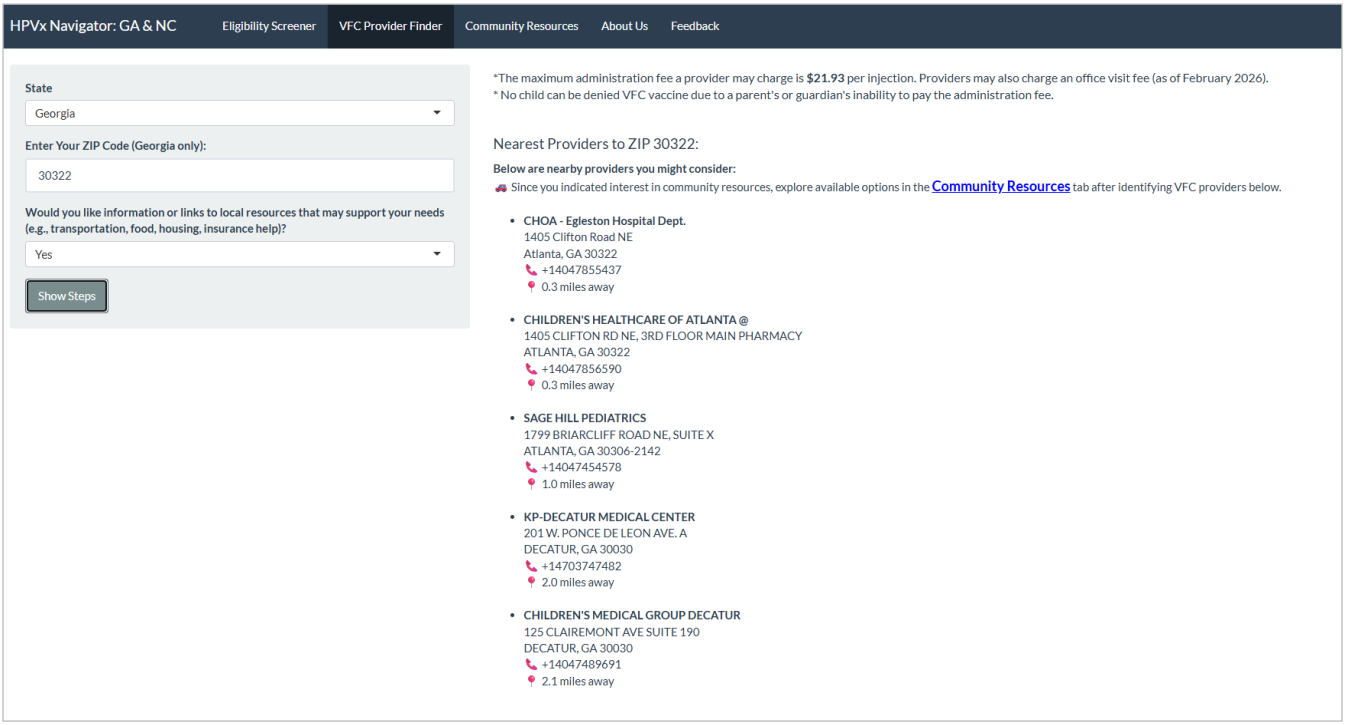
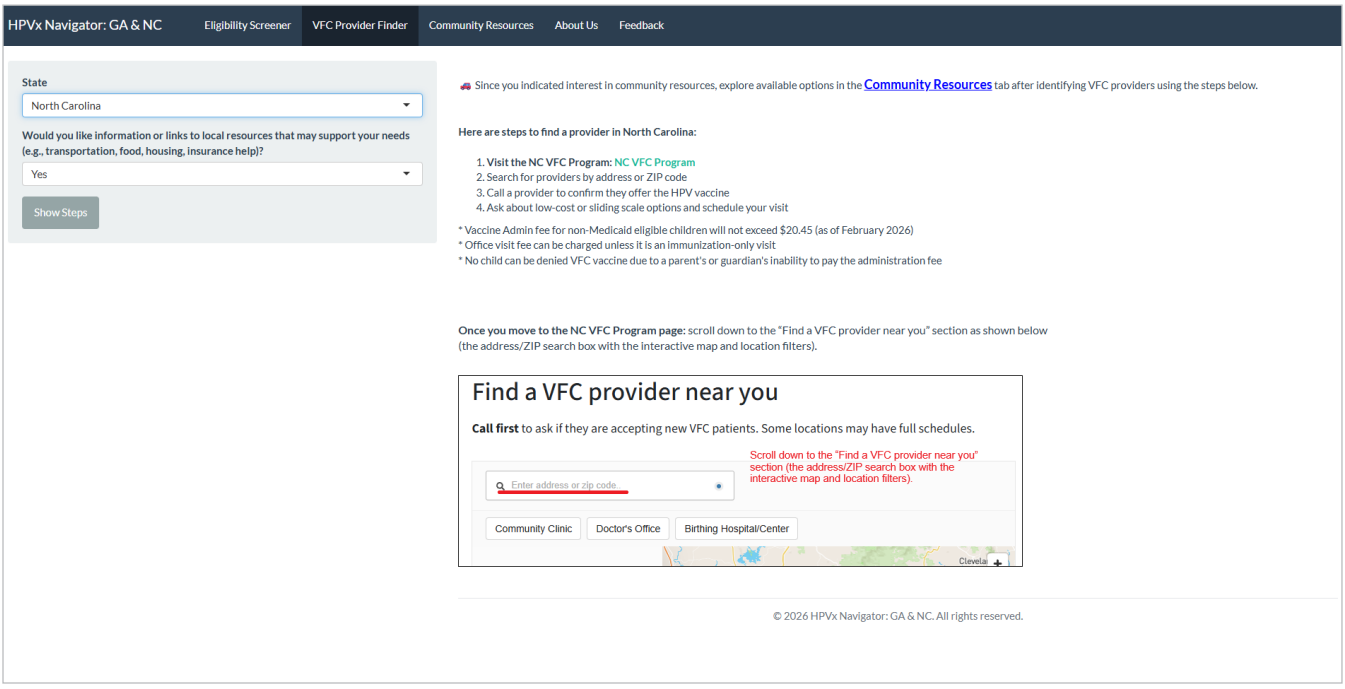


Figure 3. North Carolina VFC Provider Finder workflow, including the state-site handoff and visual search instructions



Preliminary usability and acceptability testing

Overview of Population

The project has not yet tested downstream effectiveness outcomes, such as HPV vaccine initiation, series completion, or sustained reduction in access barriers. Therefore, this section reports preliminary formative evaluation findings rather than evaluating vaccination outcomes. Wave 1 was designed to test whether the prototype was understandable, usable, acceptable, appropriate, and feasible for parents and caregivers, and to identify revisions needed before broader testing.

Wave 1 recruitment used a one-page outreach flyer with the navigator QR code and a brief description of the eligibility screener, VFC provider locator, and community resources.

Following prototype use, participants completed the System Usability Scale (SUS) and three implementation outcome measures: the Acceptability of Intervention Measure (AIM), the Intervention Appropriateness Measure (IAM), and the Feasibility of Intervention Measure (FIM) (Brooke, 1996; Weiner et al., 2017). Eight respondents completed the Wave 1 post-task survey. Because this was a small formative sample, results should be interpreted descriptively and used to guide revisions rather than to infer population-level impact

Figure 4. Outreach flyer circulated for Wave 1 survey recruitment



Wave 1 results

Domain / measure	Sample and scale	Wave 1 descriptive result	Interpretation / use
Usability (SUS)	n=8; 0-100	Mean 89.7 (SD 12.6); median 96.2 [IQR 81.9, 98.1]; range 65.0-100.0	Strong early signal that users could navigate the prototype and found it easy to use
Acceptability (AIM)	n=8; 1-5	Mean 4.59 (SD 0.52); median 4.88 [IQR 4.19, 5.00]; range 3.75-5.00	Participants generally viewed the navigator as acceptable.
Appropriateness (IAM)	n=8; 1-5	Mean 4.78 (SD 0.31); median 5.00 [IQR 4.50, 5.00]; range 4.25-5.00	Participants generally viewed the tool as a good fit for the intended purpose.
Feasibility (FIM)	n=8; 1-5	Mean 4.94 (SD 0.18); median 5.00 [IQR 5.00, 5.00]; range 4.50-5.00	Participants generally viewed use of the navigator as feasible.

Open-ended feedback from Wave 1 pointed to several improvement priorities: clarifying whether users should begin with clinic/provider search or community resources, reducing friction after linking to the North Carolina VFC page, and adding enough HPV vaccination education to build confidence without overloading the navigator. These findings directly informed the design revisions described in the conclusion. Future evaluation should include Wave 2 formative validation with another small sample after revisions and a larger Wave 3 summative test to generate more stable usability and implementation-outcome metrics. Assessment of vaccination uptake or service utilization should be reserved for a later implementation phase with secure backend data collection and/or partner-supported follow-up.

Conclusion

Design Iterations: Changes Implemented

Following the input from internal team review, fellowship mentor mid-evaluation, and Wave 1 user testing, there were changes implemented to improve the navigator. To reduce friction and ease navigation within the tool, changes were made to ensure the state selection on the first page persists over all of the tabs. Along with this change, a button to “start over” was added to the tabs. For the state of North Carolina, the tab now includes visualizations with instructions for navigation since the link redirects to the North Carolina Department of Health and Human Services website. The logo was updated to reduce needle-trigger reactions from a need to a vial. Finally, a disclaimer was added to account for all the changes surrounding the Advisory Committee on Immunization Practices (ACIP) and the vaccination schedule.



Next Steps

The team is currently deciding how much educational content should be included in the tool without distracting from the core navigation purpose. Currently, there is a link for users to click to learn more. In the future, the team plans to move this to a paid instructional server that will allow for secure backend data storage and collection. This will enable further data analysis on the usability of the navigator. In addition to backend testing, the tool will undergo two subsequent waves of usability and acceptability testing with real-life users. To ensure the longevity of the tool, the team hopes to partner with organizations to disseminate the navigator. Along with this, there are plans to align with an ongoing Texas-based project to understand facilitators and barriers among families who are eligible. After testing, the team hopes to assess impact and scale-up for different states and/or vaccines and add other language options. This tool will be maintained as a living resource and updated as needed.

"When children are uninsured, they are more likely to have unmet health needs and lack a usual source of care, diminishing their chances to grow into healthy and productive adults."
— Georgetown University