Hot Spotting Areas for Outreach and Enrollment under the Affordable Care Act

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Project Background

- Under the Affordable Care Act (ACA), many previously uninsured low-income people will be newly eligible for health insurance.
- Community health centers (CHCs) serve or will serve many of these patients.
  - Thus, CHCs were awarded funding for outreach and enrollment (O&E); need to know where to target.
- To help with O&E, local uninsurance data were made available via the user-friendly UDS Mapper.
  - By the AAFP Robert Graham Center for Policy Studies, with support from the National Association of Community Health Centers (NACHC) and the Health Resources & Services Administration (HRSA).
Background: What is the UDS Mapper?

- An online mapping and decision-support tool driven primarily by patient location data within the health center Uniform Data System (UDS), which were previously not publicly accessible at the local level.
  - Allows for easy visualization of areas served by federal Health Center Program grantees and look-alikes (collectively referred to as “health centers”)
  - Compares health center data to community/population data and shows spatial relationships between the program, community attributes and other resources
  - Displays other relevant data on health, economic, and social factors, providing additional information and context for the displayed UDS data
Background: History of the UDS Mapper

- Developed in 2010 by the AAFP’s Robert Graham Center, as part of the HealthLandscape online mapping platform
  - Funded by the Health Resources and Services Administration (HRSA)
  - Based on formulas and reporting methods developed by John Snow, Inc. (JSI)
- Originally created to assist federal project officers to analyze health center service area overlap
- Audience and functionality expanded to allow health centers and grant-seeking entities to understand the safety-net environment in their service area
Background:
How can the UDS Mapper be used?

- The UDS Mapper has become an essential tool for:
  - planning
  - grantwriting
  - service area definition and analysis
  - community health needs assessments
- Since launching in 2010, the UDS Mapper user base has grown to more than 8,000 registered users
  - 50% from health centers
  - The other half includes users from:
    - Primary Care Associations and Primary Care Offices
    - HRSA and other federal agencies
    - State or local government
    - Rural Health Clinics, hospitals, others
The Uninsurance Explorer in the UDS Mapper
Methods for Uninsurance Hotspotting

1. County-level uninsurance data were imputed to ZCTA and Public Use Microdata Area (PUMA) levels

2. In ArcMap, a spatial join was used to merge these uninsurance data with the national ZCTA 2010 and PUMA 2010 shapefiles

3. In ArcMap, graduated color breaks were chosen for data visualization (higher % = darker red), approximately based on the quintile distribution

4. Layers for each poverty break-down were added to the UDS Mapper and made available to the public

5. In progress: Hot Spot Analysis in ArcGIS is being used to find clusters of high uninsurance
Data Source for Uninsurance Estimates

- American Community Survey (ACS) 2009-2011 3-year estimates by county
  - Used state average for counties with population less than 20,000, for which data were not available
  - Combined with Census Block population data and imputed to ZCTA level (by the Robert Graham Center)
  - Imputed to PUMA level (by the Office of the Assistant Secretary for Planning and Evaluation (APSE))
- Sample population:
  - Total population (not patient data)
  - Excludes undocumented population
  - PUMA data exclude the population aged 65 and over
Result: The NEW Uninsurance Explorer Tool in the UDS Mapper

- Enables the user to:
  - Visualize data that are appropriate for outreach and enrollment planning on the percent of the uninsured total population who are within different poverty thresholds
  - Select and download data
    - by geography
    - by health center service area
    - by driving time/distance to a point
  - Display the locations of safety-net providers (who are likely providers of the uninsured)
Data in the Uninsurance Explorer

- Estimates of the percent of the uninsured who are within different income categories based on the Federal Poverty Level (FPL):
  - by ZIP Code Tabulation Area (ZCTA)*:
    - Below 100% FPL
    - Below 138% FPL
    - Below 200% FPL
    - Between 100% and 400% FPL
    - Between 138% and 400% FPL
  - by Public Use Microdata Area (PUMA)**- Official estimates from CMS:
    - Below 138% FPL
    - Below 200% FPL
    - Between 138% and 400% FPL

* A ZCTA is the US Census Bureau’s approximation of a ZIP Code
**PUMAs are larger Census areas, composed of 100,000 people
Why So Many Levels of the Federal Poverty Level (FPL)?

- In states that are expanding Medicaid:
  - Below 138% FPL: Income threshold for Medicaid
  - 138% FPL-400% FPL: Income range to qualify for subsidized insurance in the exchanges

- In states that are NOT expanding Medicaid:
  - Below 100% FPL: Income threshold for populations who may not be eligible for insurance or subsidies
  - 100% FPL-400% FPL: Income range to qualify for subsidized insurance in the exchanges

- Below 200% FPL: Population that best matches the intent behind HRSA Health Center Program (HCP) funding
  - 93% of all HCP patients are below 200% FPL
How to Use the Uninsurance Explorer Tool in the UDS Mapper

- Turn on the Uninsurance Explorer within the UDS Mapper
- Check a box to turn on/off a map layer
  - e.g. “% Uninsured Population Below 138% FPL”
How to Use the Uninsurance Explorer Tool in the UDS Mapper (continued)

- Zoom in to look for ZCTAs with high uninsurance rates in the local area
- Can roll cursor over a ZCTA to view information in a pop-up “rollover” box:
  - # of uninsured in total population
  - % of uninsured by each FPL level
  - # of people in this ZCTA served by an HCP organization in 2012
  - # of HCP organizations that served patients from this ZCTA
  - Names of HCP organizations that served the greatest shares of patients from this ZCTA
How to Use the Uninsurance Explorer Tool in the UDS Mapper (continued)

- Can add safety-net health care facilities to the map
  - HCP organizations and their service access points
  - National Health Service Corps (NHSC) Sites
  - Rural Health Clinics
  - Hospitals
  - Facility/Point Health Professional Shortage Areas
- Can roll cursor over sites to see name, address, etc.
How to Use the Uninsurance Explorer Tool in the UDS Mapper (continued)

- In ‘by Geography’ mode (the default), you can click on ZCTAs to select them
  - Selected ZCTAs will be listed in the ‘Selected ZCTAs’ box and will be highlighted with small black dots on the map
After ZCTAs are selected, can switch to the Data Table to see the information from the rollover, for multiple ZCTAs at a time.

You can print or export these data to use outside of the UDS Mapper.
In ‘by Patient Origin’ mode, you can obtain data for the ZCTAs that were in the 2012 patient origin service area of an HCP grantee or look-alike.

- Select an HCP grantee or look-alike by clicking their administrative location on the map.
- ZCTAs where the grantee/look-alike reported patients in 2012 will be covered by diagonal lines.
- ZCTAs covered by diagonal lines will be listed in the data table.
In ‘by Distance’ mode, you can obtain data for ZCTAs within a specified driving time/distance from a point.

- Search for an address to place a pushpin at an exact location, or just click on the map to place a pushpin.
- The Mapper will calculate a drive time or distance as large as you specify and select all ZCTAs that have any portion within that area.
Summary of the Uninsurance Explorer:

- The Uninsurance Explorer can be used to look for local “hot spots” of high uninsurance to plan O&E.
  - Can also see how well these areas are served by health centers.
    - Areas that have high uninsurance and are NOT well served need O&E because they are particularly vulnerable, potentially lacking both health care and insurance.
    - In areas with high uninsurance that are already well served, health centers will want to encourage their patients to enroll.

Results:

- 308 attendees at webinar introducing the Uninsurance Explorer tool.
- Over 300 views of the online tutorial on the tool to date.
In Progress: ArcMap Hot Spot Analysis (Getis-Ord Gi*)

- “To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well”

- “The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and that difference is too large to be the result of random chance, a statistically significant z-score results”

Source: Esri

ArcMap Hot Spot Analysis by State: Arizona Uninsured Under 138% FPL*

Hot Spot Analysis narrows the focus by honing in on ZCTAs that have high uninsurance AND are also surrounded by ZCTAs with high uninsurance

Vs. Graduated Colors (as in UDS Mapper)

*138% FPL was used for Arizona because it is a Medicaid expansion state.
Next Steps

- Create a system for ranking ZCTAs for O&E priority that factors in:
  - Hot Spot Analysis results
  - Service penetration by health centers
Limitations

- Uninsurance data are imputed estimates from American Community Survey, which has a large margin of error to begin with
Thank You!

- Questions?
  - Contact Carrie Fahey at the Robert Graham Center: cfahey@aafp.org