We Will Start at 2 Minutes After the Hour

- Slides for today’s webinar can be found in the Handouts section of the GoToWebinar attendee interface.
- A link to today’s captions can be found in the Questions/Chat section of the GoToWebinar attendee interface.
  - Submit a question if you require assistance.
Geographic and Data Concepts Important for Population Health
Acknowledgements

This work is supported by the Health Resources and Services Administration under contract HHSH250201800033G
GoToWebinar Attendee Screen

Geographic and Data Concepts Important for Population Health

- Open/close control panel with orange arrow
- Keep control panel open by clicking View and unchecking Auto-Hide the Control Panel
- Type questions into the question box (do not raise hand)
Today’s Slides

- Slides can be found in the Handouts section of the GoToWebinar attendee interface.
- UDS Mapper webinars are recorded.
  - Videos, captions, slides, and supporting materials (if any) will be available on the UDS Mapper website after the files have been processed.
Today’s Agenda

- Background on population health
- Geography for clinical settings
  - Census geography
  - ZIP Code vs. ZIP Code Tabulation Area (ZCTA)
- Service area from patient data
- Social determinants of health (SDOH) data in the UDS Mapper
- Finding user support after the webinar
What is the UDS Mapper?

- An online mapping tool developed to provide access to maps, data, and analysis using Uniform Data System (UDS) and other relevant data to visualize service area information for Health Center Program (HCP) awardees and look-alikes.

- Compares HCP awardee and look-alike data to community/population data and shows spatial relationships between the program, community attributes, and other resources.
Who Can Use the UDS Mapper?

- The UDS Mapper is open to everyone, not just HCP awardees and look-alikes

- To begin using the UDS Mapper all you have to do is register for a user name and password at [www.udsmapper.org](http://www.udsmapper.org)

- More than one person from an organization can have a login for the UDS Mapper
Register for a New Account
Please Remember to Type in Questions

- Open/close control panel with orange arrow
- Keep control panel open by clicking View and unchecking Auto-Hide the Control Panel
- Type questions into the question box (do not raise hand)
Population Health

In order to practice population health:

- **Define** who your population is
  - Examples: all people in X state or county

- **Measure** health outcomes on individuals within that population
  - Examples: mortality, morbidity

- **Examine** the distribution of health and **identify** disparities

- **Address** the disparities to improve population health
Defining Population

- When practicing population health in a clinical setting, the easiest way to define population is your existing patient panel

- You may only be able to measure health outcomes with just the data points captured in a clinical setting
Determinants of Health

Capturing Social and Behavioral Domains in Electronic Health Records (2)

Domains include:

- Race/Ethnicity
- Country of Origin
- Education
- Employment
- Financial Resource Strain (Food and Housing Insecurity)
- Health Literacy
- Stress
- Negative Mood and Affect (Depression and Anxiety)

- Dietary Patterns
- Physical Activity
- Tobacco Use and Exposure
- Alcohol Use
- Exposure to Violence
- Neighborhoods/Community Compositional Characteristics
Generic Service Area Definition

Service area: where patients who come to see me live

- **Generic**: neighborhood, city, county, or state name
- **Examples:**
What Data Are Available?

Are there data available for what you call the neighborhood? What data are available for the city? County?
Census Geography

- Primary uses: apportioning congressional seats/reporting to federal government
  - Therefore they must nest within the nation, state
- States collect data primarily to report to federal and state government so usually collect data at the county level
Census Tracts

- Primary purpose is to provide a stable set of geographic units for the presentation of statistical data
- Population size between 1,200 and 8,000 people, with an optimum size of 4,000 people
- Usually covers a contiguous area, but area varies widely
- Boundaries are delineated with the intention of being maintained over a long time so that longitudinal comparisons can be made
- Occasionally are split due to population growth or merged as a result of substantial population decline
- Boundaries generally follow visible and identifiable features
ZIP Codes

A ZIP Code is a route – instructions to drive/walk and put mail in mail boxes on the street or on the building – even if that route crosses county or state lines.
Data by ZIP Code

**PROS**
- Easily accessible from an EHR

**CONS**
- Not true “areas”
  * U.S. Postal Service does not publish boundaries, so attempts at turning ZIP Codes into “areas” don’t always align

- Change at the U.S. Postal Service’s discretion

- Do not contain homogenous populations (like census tracts)

- Vary in size – both physical and population
ZIP Code vs. ZCTA

- ZCTAs are generalized areal representations of U.S. Postal Service’s ZIP Code service areas
- ZCTAs are more stable than ZIP Codes because they only change every 10 years
- ZCTAs are built from census blocks so one can report demographic/Social Determinants of Health (SDOH) data at the ZCTA level
ZCTAs Explained

- Dots are addresses
- Color of dot represents ZIP Code
- Black lines represent census blocks
- Colored area represent ZCTAs

https://www.census.gov/geo/reference/zcta/zcta_delin_anim.html
Census Geography Hierarchy

- Nation
  - Regions
    - Divisions
      - States
        - Counties
          - Census Tracts*
          - Block Groups*
          - School Districts
          - Congressional Districts
          - County Subdivisions
        - Metropolitan and Micropolitan Areas
      - Places
        - Public Use Microdata Areas
        - Alaska Native Regional Areas
        - State Legislative Districts*
      - Urban Areas
        - American Indian Areas / Alaska Native Areas / Hawaiian Home Lands
    - American Indian Areas / Alaska Native Areas / Hawaiian Home Lands
  - Urban Areas
    - Metropolitan and Micropolitan Areas
  - Places
    - Public Use Microdata Areas
    - Alaska Native Regional Areas
    - State Legislative Districts*
  - Urban Areas
    - American Indian Areas / Alaska Native Areas / Hawaiian Home Lands
  - Zip Code Tabulation Areas**

* Indicates data from the 2010 Census
** Indicates data from the 2000 Census
Deriving Service Area from Patient Data (Geographic Retrofitting)

- There are two ways to use patient data to define service area
  - Option 1: geocoding patient address to get census tracts (or other geography)
  - Option 2: use ZIP Codes and convert to ZCTA

- No matter which one you pick, you will then have to aggregate data so that you have a compiled list of areas to create your service area
Geographic Retrofitting Option 1: Geocoding Patient Addresses

- Geocoding is the process of comparing address information to a standard database to assign longitude and latitude for that location.
- Once geocoded, you can verify the different geographies that location is in, including census tract.

1501 Madison Ave SE, Grand Rapids, MI 49507
x = -85.658234, y = 42.940166
Census Tract: 26081003600
ZCTA: 49507
Congressional District: MI-03
etc.
Geocoding Caveats

- Address is Protected Health Information (PHI) under HIPAA*
- Patients with P.O. Boxes will not be placed in correct location
- In rural locations where streets/mapping not fully developed, patients may be placed incorrectly

*HIPAA: Health Insurance Portability and Accountability Act of 1996 is United States legislation that provides data privacy and security provisions for safeguarding medical information
Geocoded Location
Option 2: Using Existing Patient Address Data

- Since ZIP Code is in the EHR, you can extract the data
- Next, convert ZIP Codes to ZCTAs
  - Most five-digit ZIP Codes are the same ZCTAs
  - If you don’t convert before using you will lose data from ZIP Codes that do not have this direct match
- You can use the Clipboard tool in the UDS Mapper to automatically convert your ZIP Codes to ZCTAs
- You can use the ZIP Code to ZCTA Crosswalk (https://www.udsmapper.org/zcta-crosswalk.cfm) for more information
Selecting Many ZCTAs: Pasting a List (1)

1. Create a list of ZIP Codes or ZCTAs in a spreadsheet or document, then select all ZIP Codes/ZCTAs and press Ctrl+c to copy.

2. Click the **Paste button** (looks like a clipboard) in the gray bar on the Explore Service Area tool.

3. Click anywhere in the white box and press Ctrl+v on your keyboard to paste.
Selecting Many ZCTAs: Pasting a List (2)

4. Click **Validate** to see if any ZIP Codes do not have a direct ZCTA match
   - If you included a ZIP Code that does not have a corresponding ZCTA, a message will inform you that this ZIP Code has been merged into another ZCTA or removed
   - You can use the ZIP Code to ZCTA Crosswalk for more information

5. Click **Add**

6. ZCTAs will appear in the **Selected ZCTAs** box
ZIP Code to ZCTA Crosswalk

- Enter a ZIP Code into the box and Search
- You will get a single entry back showing information about that ZIP Code and then the correct ZCTA number
Crosswalk Many at the Same Time

- If you would like to crosswalk many ZIP Codes at the same time and they all have a similar start (i.e., like the same first, first two, or first three digits), enter those and then a % sign.
- Alternately, you can download the entire crosswalk.
Compile and (Maybe) Aggregate!

- After either option 1 or option 2 you will end up with a list of ZIP Codes, ZCTAs, census tracts, etc. that you can aggregate into a service area

OR

- You can consolidate the data into counts of patients in each area
Converting Patient Data to Service Area

Let’s say we pulled data out of our EHR and we have patient ZIP Codes

- Which areas have patients?
- How many patients are in each area?
Patient-Based Service Area

Service area: just based on the areas where my patients live
# Weighting Patient Data

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<tr>
<td>TOTAL</td>
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<td>100%</td>
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Weighted Service Area

Service area is based on the number of patients in each area; include the areas with the most patients first (core area)
Why is This Level of Detail Important? (hypothetical data!)

- Focusing on a statistic related to housing stability, with a state average of 24% and a national average of 21%
  - County average = 12.3%
  - City average = 13.2%
  - Neighborhood average = 28%
  - Core service area average = 22.8%
  - Total service area average = 16.0%
Find SDOH Data to Better Understand Contextual Information about Patients

- Health centers have been utilizing SDOH data for years (at least your grant writers have been)
- What is the income level in this neighborhood?
- Do most of the adults in this neighborhood have a high school diploma? College education?
- What is the walkability of this area? Are there sidewalks? Are the parks, if any, usable?
- What is the prevalence of diabetes in the area?
Demographic SDOH Data in the UDS Mapper by ZCTA

From Census Bureau/American Community Survey

- Poverty/low-income
- Race/ethnicity
- Income level of the uninsured
- Age
- Non-employment
- Less than high school education
- Limited English proficiency
- Estimated one-year insurance status
- Disability status
Compare to demographic thematic maps to see how the area it is in compares to others.
Population Health SDOH Data in the UDS Mapper by ZCTA

- Not all data are available from the source at the ZCTA level
- Some data in the UDS Mapper are estimated to the ZCTA level
- Sources: HRSA Area Resource File, CDC Wonder, CDC Behavioral Risk Factor Surveillance System (BRFSS)
  - Low birth weight rate
  - Age-adjusted mortality
  - Prevalence
    - Diabetes, obesity, high blood pressure, no dental visit in the past year, delayed care due to cost, no usual source of care, smoking, binge drinking
UDS Mapper Population Indicators Tool

- Compare your area to population health indicators
- Is your area one that exceeds the national average? State average?
Benchmarks Table

- Tool default is national average
- Benchmarks table in Tutorials & Resources contains state benchmarks
Tutorials and Resources
Thank You!

If you have additional questions or feedback after the conclusion of this webinar, please use the Contact Us form provided on the UDS Mapper Site:

https://www.udsmapper.org/contact-us.cfm

or contact the Bureau of Primary Health Care:

https://www.bphc.hrsa.gov

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