

Improving Population Health: the Social Determinants of Health Mapper

Presented by Dave Grolling

GIS Strategist

HealthLandscape

May 11th, 2017



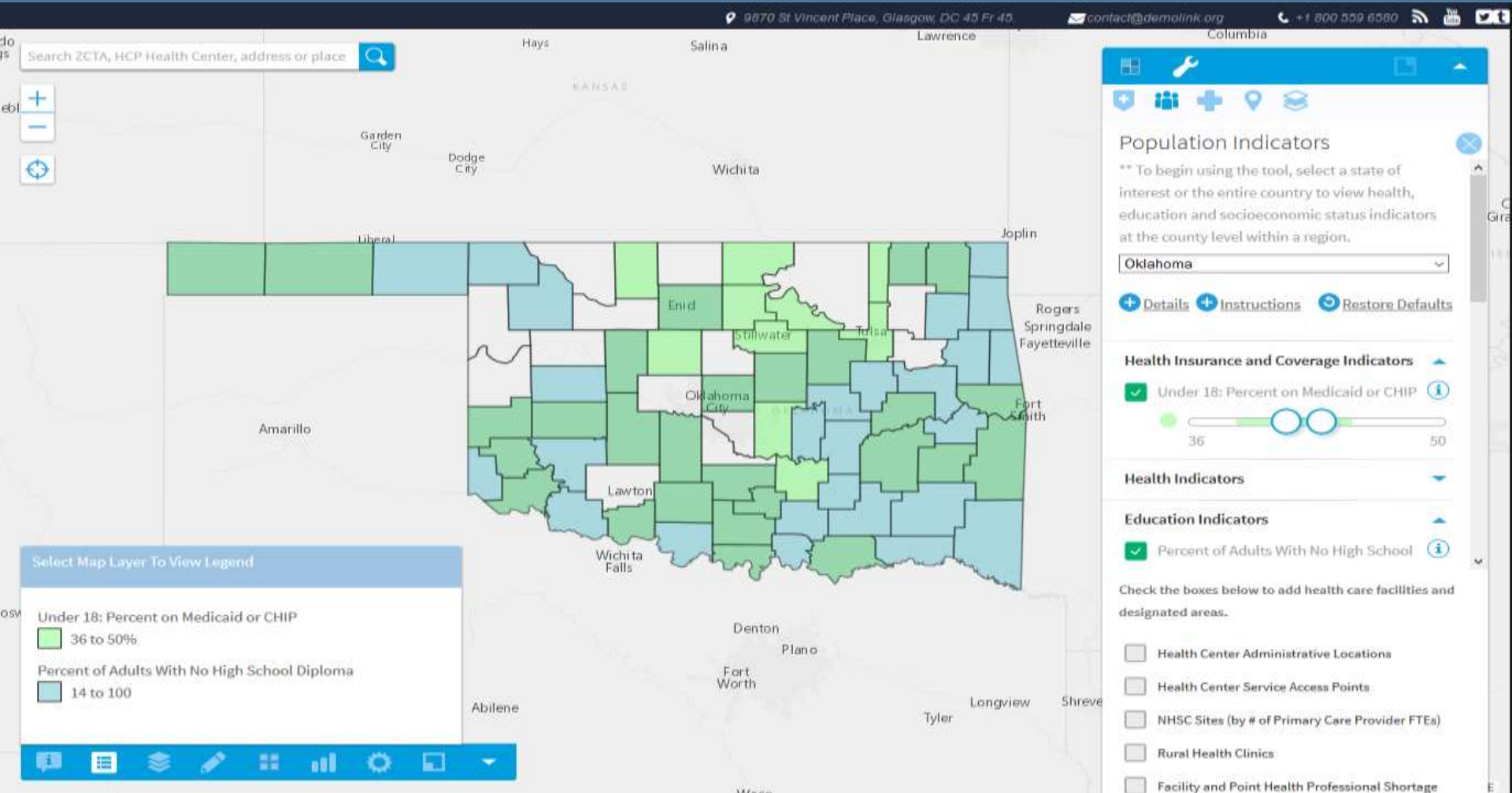
Agenda

- Introductions
- HealthLandscape and web mapping
- Population Health
- Social Determinants of Health Mapper
- Breast Cancer Education in D.C. Area

HealthLandscape

- HealthLandscape is part of the American Academy of Family Physicians (AAFP)
- Building online, geographic information systems since 2005
- Expertise in large datasets, data aggregation and analysis

HealthLandscape

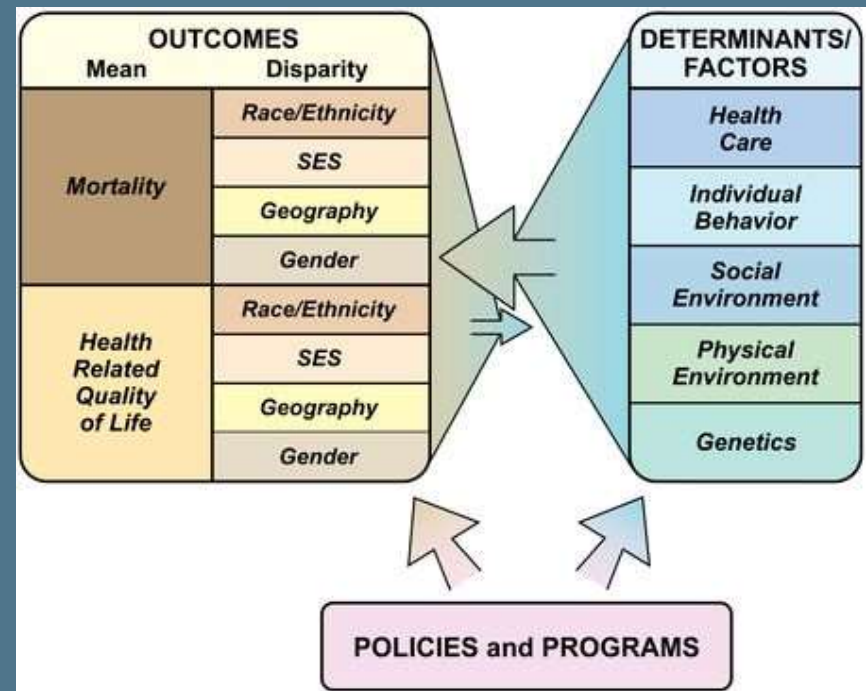


Geospatial Information Systems

- Integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information
- Can be used for spatial, cluster, and network analyses
- Used to map health inequalities, disparities, outcomes, and demographics

Population Health

- “The health outcomes of a group of individuals, including the distribution of such outcomes within the group” - David Kindig
- Facilitates integration of knowledge across the many factors that influence health and health outcomes



Population Health

- Place matters → emergence of population health
- The social determinants of health have begun to shape health care
- Which determinants and outcomes are the most important to measure?

“Cold Spots”

- Concept introduced by John M. Westfall, MD, MPH
- Refers to people living in communities with disintegrated social determinants of health, little community support, and poor access to primary care
- Can be used to identify problem places and targets for community intervention

Determinants of Health

- The range of personal, social, economic, and environmental factors that influence health
- Health Care only accounts for 10% of premature deaths
- Zip Code is a more impactful determinant of health than genes

Determinants of Health

- Employment, income, debt, medical bills
- Transportation, access to parks and playgrounds, walkability
- Literacy and language, higher education
- Hunger and access to healthy food items
- Health coverage and provider availability

Social Determinants of Health Mapper

- Census tracts at the metro and county levels
- Used to identify cold spots by layering indicators on top of each other
- No cost to use
- healthlandscape.org/sdoh

Data

- Tool is built on publicly available data from the American Community Survey, 2011-2015 five-year estimates
- Categorized into six indicator groups
- Education, Demographics, Language Use and Linguistic Isolation, Income and Poverty, Employment, and Household Type

Data

Indicator Group	Variables
Education	% High School Graduate % High School Graduate and Above % College Graduate
Demographics	% Male % Female % Age 65 and Over % Age 18 and Over Median Age Dependency Ratio % Hispanic % White Alone % Black Alone % Non-White

Data

Indicator Group	Variables
Language Use and Linguistic Isolation	% English % Spanish Speaking % Other Language Speaking % Linguistically Isolated Households
Income and Poverty	Median Household Income Per Capita Income % Population Below 50% FPL % Population Below 100% FPL % Population Below 200% FPL % Population Under 18 in Poverty % Population 65 and Older in Poverty GINI index

Data

Indicator Group	Variables
Employment	% Unemployed % Management Occupations
Household Type	% Households with Married Couple Families

Breast Cancer Education

- Where are areas around the D.C. metro area that could be targeted for increased breast cancer awareness?
- Importance of knowing where they are for targeting education programs
- Will use ACS 2011-2015 estimates for percent female, percent white only, and percent population over 65 years old

Welcome Screen

The screenshot shows the 'Metro Area SDOH' application interface. At the top, there are navigation tabs for 'Map', 'Data', 'Chart', 'Graphs', and 'Resour'. A search bar is present with the placeholder text 'Search for a point on the map'. To the right of the search bar are buttons for 'Draw', 'Print', 'Tools', and 'Share'. The 'Tools' button is highlighted with a red box. Below the navigation is a map showing various cities including Edmonton, Calgary, Regina, Winnipeg, Salt Lake City, Las Vegas, Los Angeles, Phoenix, San Diego, Tucson, El Paso, Austin, New Orleans, and Jacksonville. A 'Legend' is visible at the bottom left. On the right side, there is a sidebar with the title 'Metro Area SDOH' and a list of indicators with 'show this list' links. A 'Welcome to the Social Determinants of Health Mapper' window is overlaid in the center. The window contains the following text: 'Welcome to the Social Determinants of Health Mapper', 'Place matters to personal and population health. The social determinants of health have begun to shape public health and policy interventions. Neighborhood socioeconomic and demographic characteristics play significant roles in influencing health outcomes. People coming from economically disadvantaged neighborhoods and minority groups are at higher risk for a number of health conditions, particularly chronic conditions such as Diabetes.', and a checkbox labeled 'Show welcome window each time' which is checked. To the right of the text is a 'Select a Metro Area' dropdown menu with a search icon and a list of metro areas.

Welcome to the Social Determinants of Health Mapper

Place matters to personal and population health. The social determinants of health have begun to shape public health and policy interventions. Neighborhood socioeconomic and demographic characteristics play significant roles in influencing health outcomes. People coming from economically disadvantaged neighborhoods and minority groups are at higher risk for a number of health conditions, particularly chronic conditions such as Diabetes.

Show welcome window each time

Select a Metro Area

Select a Metro Area

Welcome Screen

The screenshot shows the HealthLandscape Metro Area SDOH interface. A central white window with a grey border and a close button (X) is overlaid on the map. The window contains the following text:

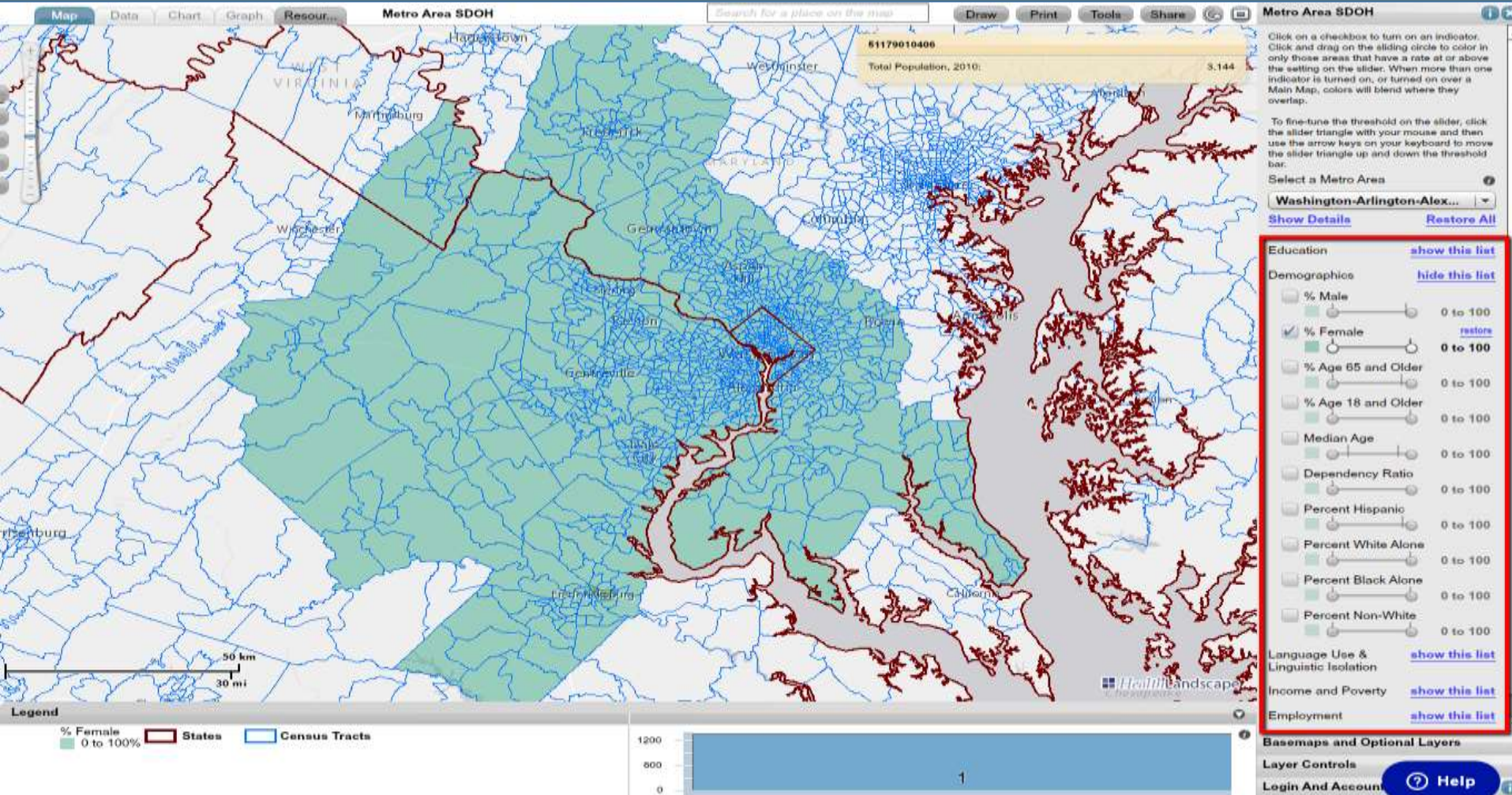
Welcome to the Social Determinants of Health Mapper

Place matters to personal and population health. The social determinants of health have begun to shape public health and policy interventions. Neighborhood socioeconomic and demographic characteristics play significant roles in influencing health outcomes. People coming from economically disadvantaged neighborhoods and minority groups are at higher risk for a number of health conditions, particularly chronic conditions such as Diabetes.

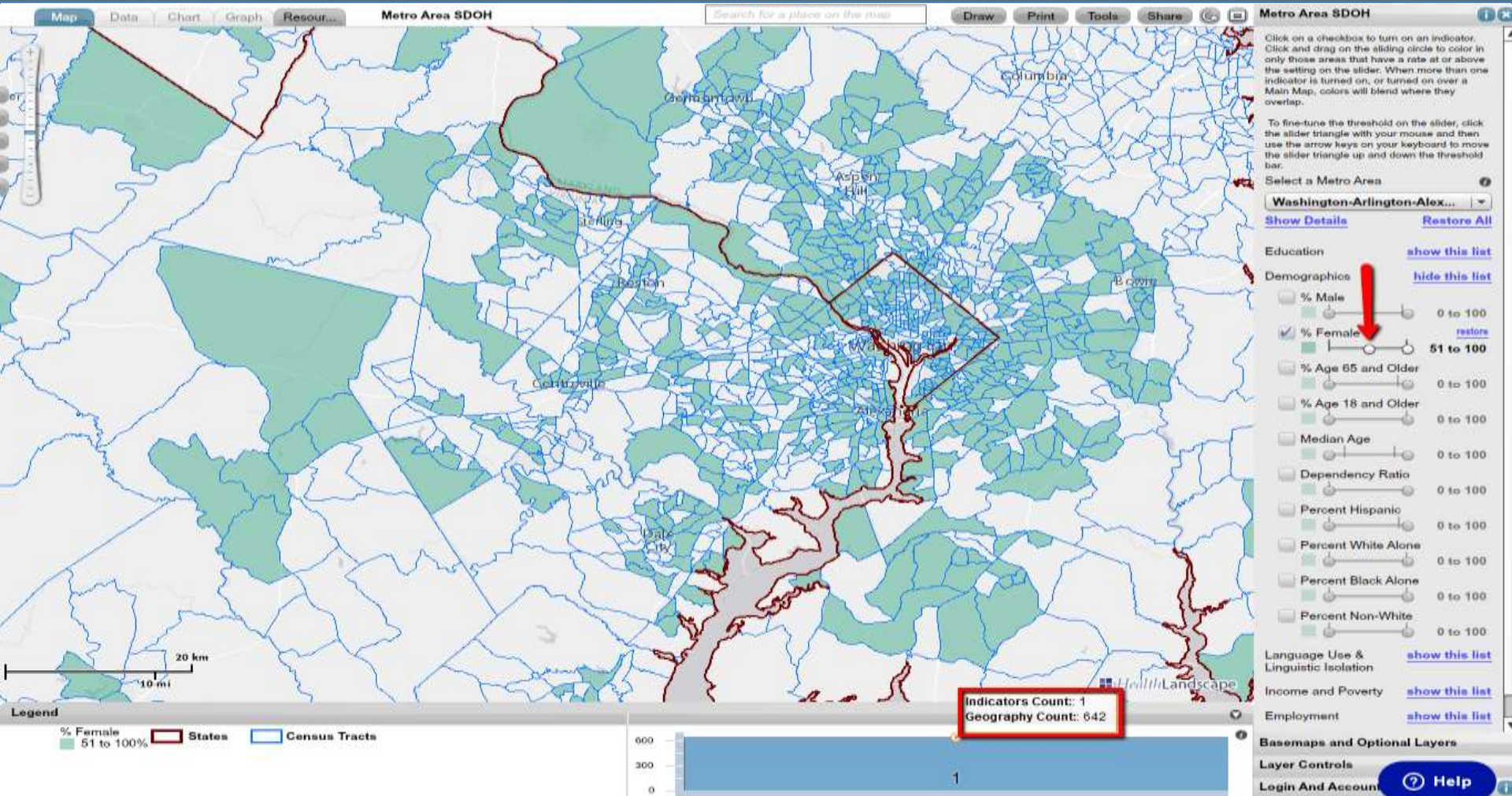
Show welcome window each time

On the right side of the window, there is a dropdown menu with the text "Select a Metro Area" and a red rectangular highlight around it. The background interface includes a map of the United States with city names like Edmonton, Calgary, Regina, Winnipeg, Salt Lake City, Las Vegas, Los Angeles, Phoenix, San Diego, Tucson, El Paso, Austin, New Orleans, and Jacksonville. The top navigation bar has tabs for "Map", "Data", "Chart", "Graph", "Report", and "Metro Area SDOH". The right sidebar contains a "Metro Area SDOH" section with instructions on how to use the indicator, a "Select a Metro Area" dropdown, and a list of indicators with "show this list" links.

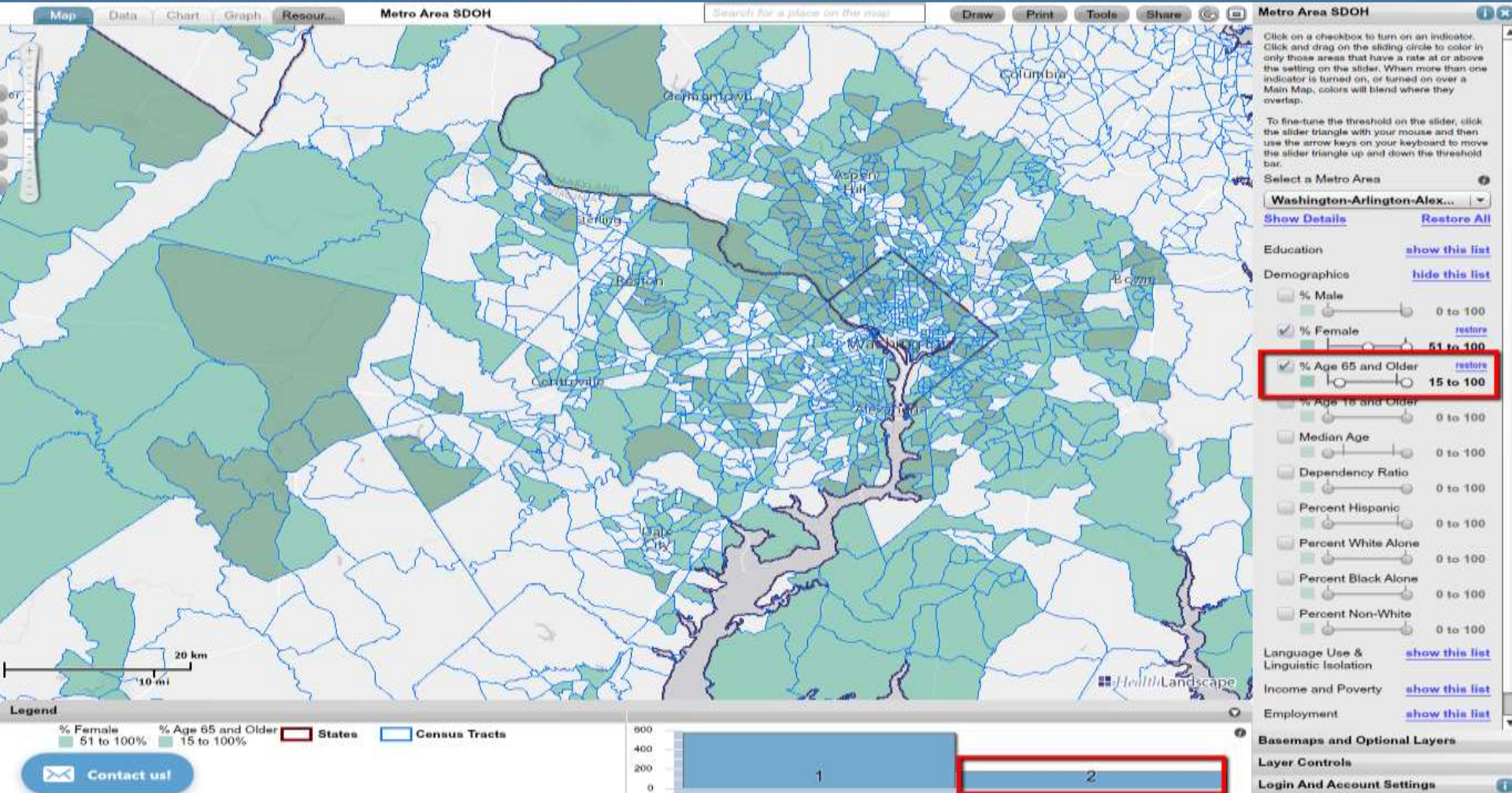
Percent Female



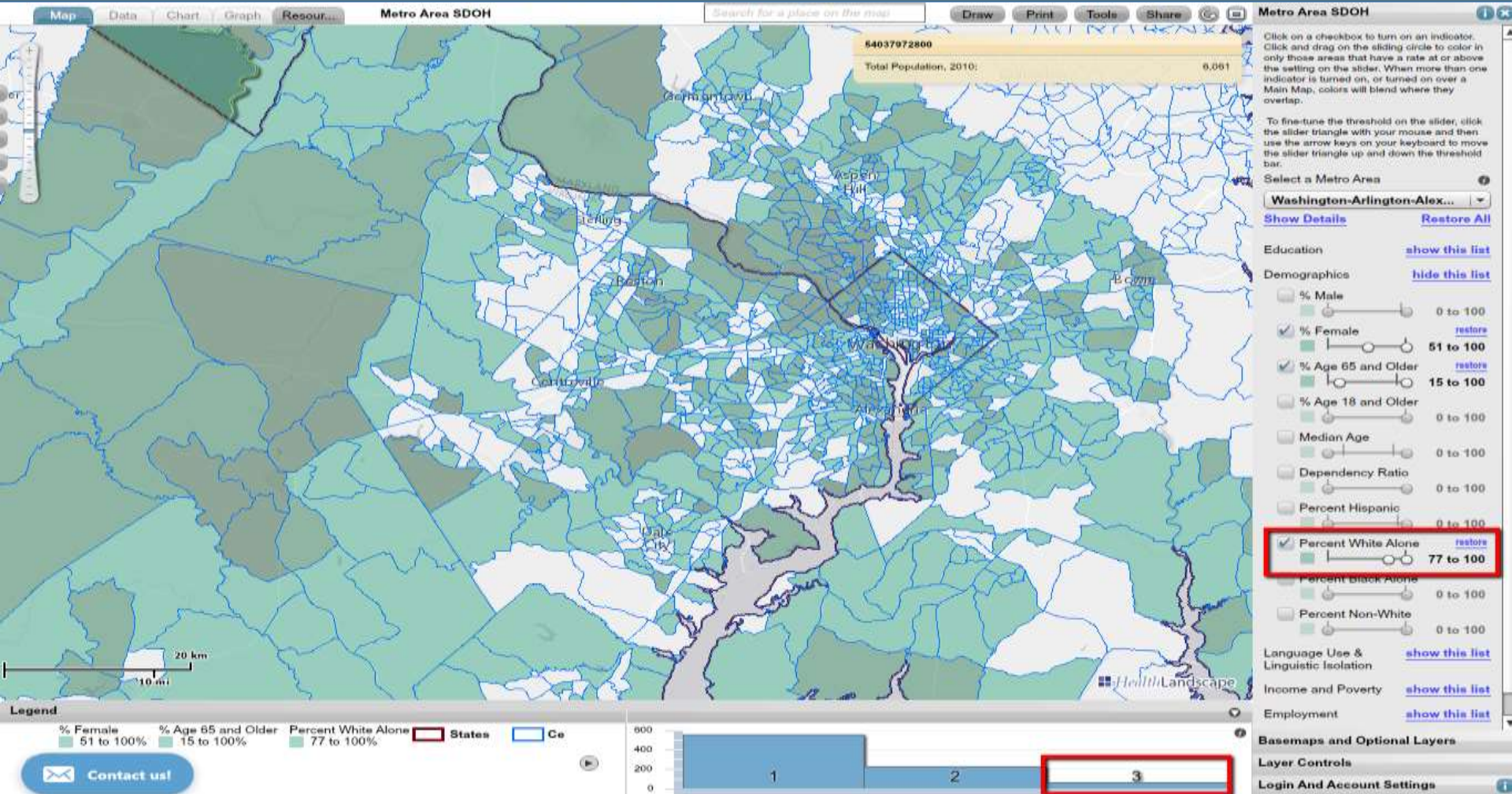
Percent Female Adjusted



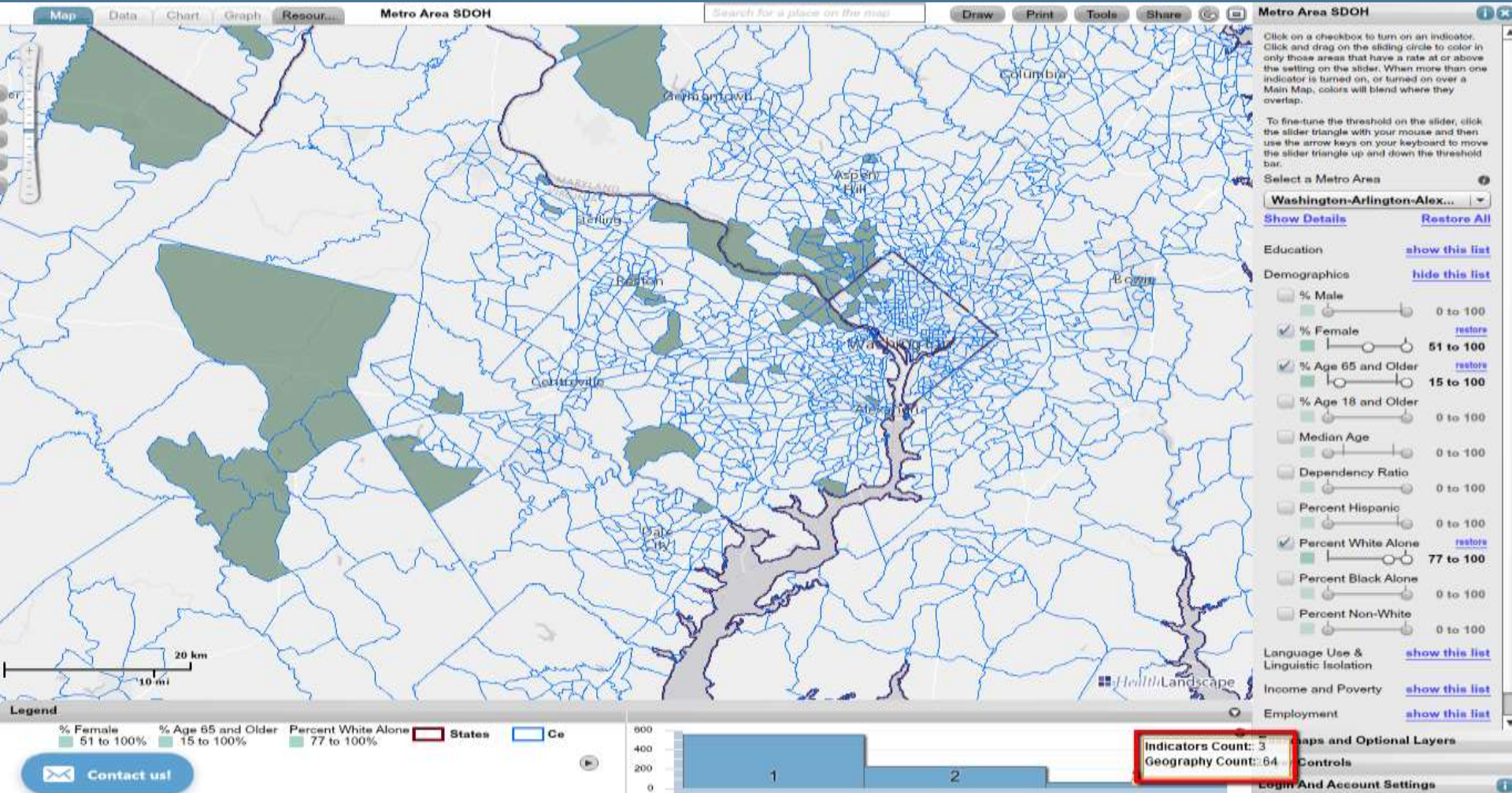
Adding Percent 65 and Older



Adding Percent White Alone



D.C. Metro Cold Spots



Target Areas

The screenshot displays the HealthLandscape Metro Area SDOH interface. At the top, there is a navigation bar with tabs for Map, Data, Chart, Graph, and Resources. A search bar is located next to the 'Draw' button, which is highlighted with a red box. Below the navigation bar is a 'Drawing Tools' panel with options for Shape Color, Outline Only, Label Color, and Show Label Outline. The main map area shows a map of the Washington-Arlington-Alexandria metro area with several green shaded regions and one orange outlined region. A legend at the bottom left identifies the indicators: % Female (51 to 100%), % Age 65 and Older (15 to 100%), and Percent White Alone (77 to 100%). The right-hand sidebar contains a list of indicators with sliders and checkboxes, including % Male, % Female, % Age 65 and Older, % Age 18 and Older, Median Age, Dependency Ratio, Percent Hispanic, Percent White Alone, Percent Black Alone, and Percent Non-White. A tooltip at the bottom right shows 'Indicators Count: 3' and 'Geography Count: 64'. The HealthLandscape logo is visible in the bottom right corner of the interface.

Data Table

Map Data Chart Graph Resour... Metro Area SDOH Draw **Print** Tools Share Export

NAME	Total Population, 2010:	High School Graduate	Male	Female	Hispanic	White	Black	Age 65+	Median Household Income	Below 200% FPL	English Only	Unemployment
11001000600	4,539	4.3 %	43.2 %	56.7 %	11.9 %	80.9 %	10.0 %	18.8 %	158625.0	11.3 %	81.5 %	3.0 %
11001000801	6,709	2.4 %	46.4 %	53.5 %	10.6 %	79.3 %	5.5 %	18.1 %	121265.0	17.7 %	70.9 %	5.1 %
11001001001	7,436	3.7 %	47.8 %	52.1 %	10.4 %	83.4 %	2.6 %	16.4 %	153992.0	6.8 %	74.3 %	2.2 %
11001001100	4,779	4.9 %	45.8 %	54.1 %	7.8 %	79.3 %	10.2 %	20.2 %	149265.0	5.6 %	82.9 %	3.5 %
11001001301	3,956	1.1 %	45.1 %	54.8 %	5.2 %	78.4 %	12.1 %	17.4 %	128395.0	9.7 %	85.8 %	3.4 %
11001006600	1,909	1.5 %	47.0 %	52.9 %	3.8 %	88.6 %	3.5 %	15.8 %	143485.0	6.3 %	86.1 %	4.0 %
24021752201	2,121	23.3 %	46.3 %	53.6 %	1.7 %	85.9 %	5.2 %	18.7 %	116250.0	15.2 %	92.4 %	6.0 %
24031700400	2,296	18.4 %	46.0 %	53.9 %	4.2 %	90.0 %	5.8 %	17.1 %	105889.0	11.9 %	94.0 %	8.8 %
24031701213	5,458	5.6 %	46.4 %	53.5 %	7.3 %	80.2 %	4.9 %	18.4 %	121054.0	10.0 %	71.2 %	3.7 %
24031703218	1,899	20.9 %	32.1 %	67.9 %	2.1 %	89.2 %	7.0 %	87.1 %	52644.0	18.9 %	87.6 %	2.7 %
24031703219	3,257	21.6 %	37.7 %	62.2 %	2.9 %	80.1 %	10.4 %	82.5 %	53906.0	18.7 %	83.6 %	3.0 %
24031704100	4,661	6.1 %	46.3 %	53.6 %	5.6 %	87.9 %	4.7 %	21.5 %	163158.0	4.4 %	89.8 %	3.1 %
24031704200	2,213	7.5 %	46.8 %	53.1 %	8.3 %	85.0 %	5.2 %	16.3 %	137189.0	12.5 %	80.6 %	3.3 %
24031704501	3,892	12.4 %	46.7 %	53.2 %	13.8 %	82.1 %	1.7 %	18.1 %	127222.0	5.9 %	86.7 %	3.8 %
24031704502	2,677	4.0 %	48.2 %	51.7 %	3.9 %	83.4 %	0.0 %	18.2 %	203000.0	5.3 %	77.5 %	3.0 %
24031704600	5,079	4.4 %	47.6 %	52.3 %	4.7 %	79.6 %	1.3 %	15.9 %	168348.0	6.8 %	72.9 %	3.5 %
24031704700	3,858	3.8 %	46.0 %	53.9 %	6.1 %	87.3 %	1.1 %	16.3 %	227171.0	3.1 %	77.4 %	4.9 %
24031705000	4,405	5.7 %	48.2 %	51.7 %	7.5 %	81.1 %	7.9 %	15.6 %	142768.0	5.9 %	82.3 %	2.0 %
24031705100	5,090	5.2 %	44.9 %	55.0 %	7.4 %	84.8 %	4.9 %	23.2 %	172083.0	5.3 %	82.4 %	2.0 %
24031705200	3,270	1.3 %	46.4 %	53.5 %	4.6 %	91.1 %	3.0 %	17.8 %	250001.0	2.0 %	88.9 %	2.4 %
24031705300	1,895	2.7 %	47.3 %	52.6 %	3.3 %	95.2 %	0.0 %	21.0 %	250001.0	4.2 %	88.4 %	1.4 %
24031705400	2,824	2.5 %	47.6 %	52.3 %	3.5 %	93.7 %	0.0 %	15.8 %	250001.0	1.2 %	88.5 %	3.2 %
24031705501	2,493	5.1 %	42.0 %	57.9 %	12.0 %	85.4 %	0.8 %	45.3 %	108472.0	12.7 %	68.9 %	4.9 %

Select All Select None

Total Population, 2010: Female
 High School Graduate Hispanic
 Contact us White

Black Below 200% FPL
 Age 65+ English Only
 Median Household Income Unemployment

Metro Area SDOH

Click on a checkbox to turn on an indicator. Click and drag on the sliding circle to color in only those areas that have a rate at or above the setting on the slider. When more than one indicator is turned on, or turned on over a Main Map, colors will blend where they overlap.

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Select a Metro Area
 Washington-Arlington-Alex...
[Show Details](#) [Restore All](#)

Education [show this list](#)

Demographics [hide this list](#)

- % Male 0 to 100
- % Female 51 to 100 [restore](#)
- % Age 65 and Older 15 to 100 [restore](#)
- % Age 18 and Older 0 to 100
- Median Age 0 to 100
- Dependency Ratio 0 to 100
- Percent Hispanic 0 to 100
- Percent White Alone 77 to 100 [restore](#)
- Percent Black Alone 0 to 100
- Percent Non-White 0 to 100

Language Use & Linguistic Isolation [show this list](#)

Income and Poverty [show this list](#)

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Basemaps and Optional Layers

Layer Controls

Login And Account Settings

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Map Data Chart Graph Resour... Metro Area SDOH Draw Print Tools Share **Export**

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Questions?

healthlandscape.org/sdoh

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