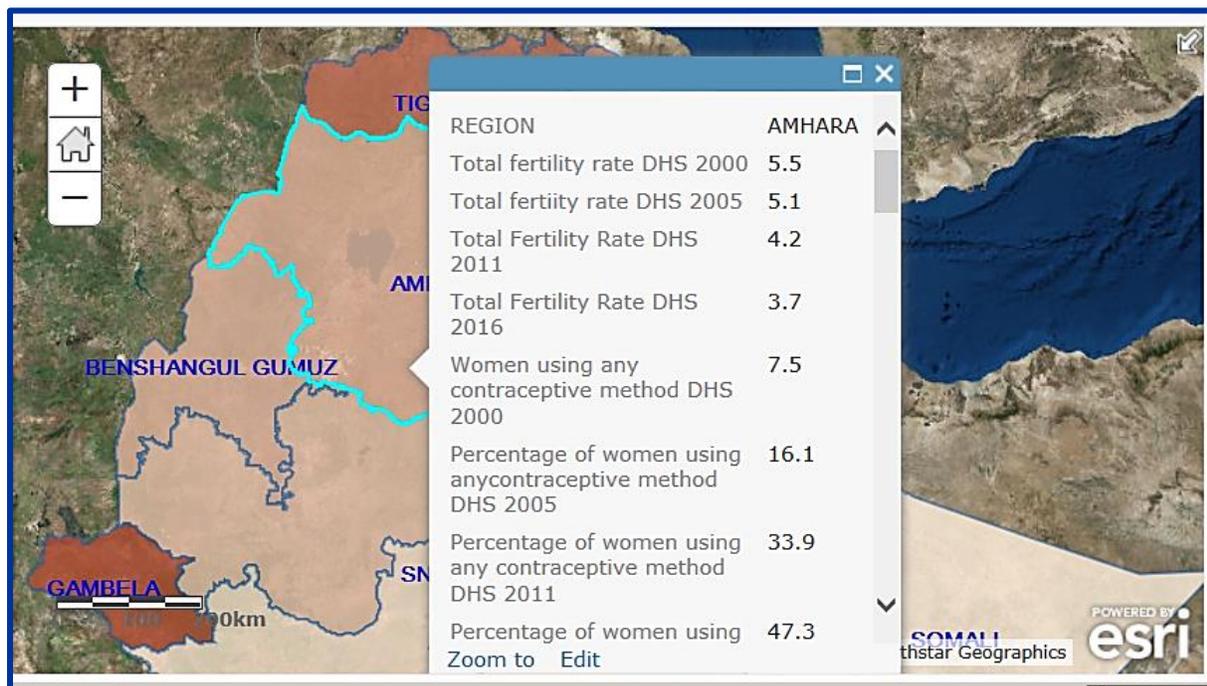


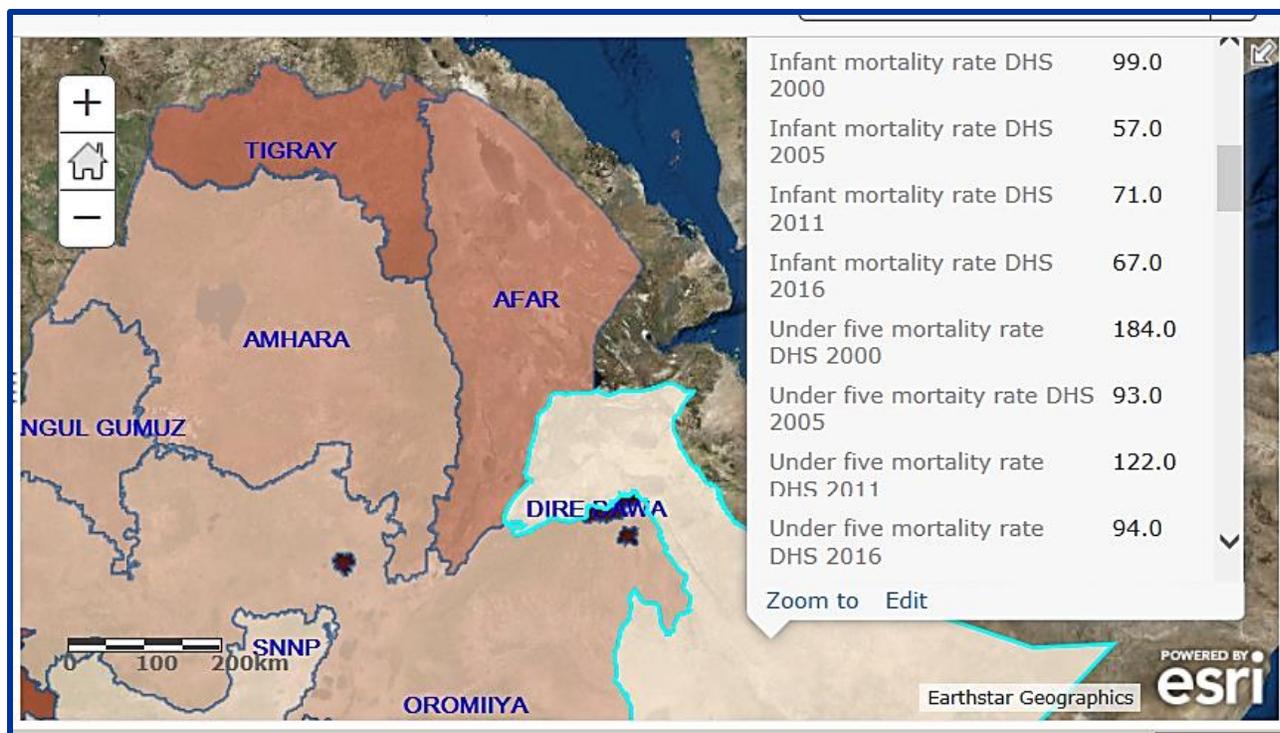
MAP OF ETHIOPIAN DEMOGRAPHY AND HEALTH

(HOW TO USE INTERACTIVE WEB MAPS OF REGIONS AND WEREDAS)

By Aynalem Adugna (PhD) Sonoma State University

Read the below instructions before clicking [HERE](#) to access the interactive web map of Ethiopia's regional demography and health. The link provides clickable user-friendly features. The URL is given at the bottom of this document. Below are sample screenshots of what you will see when clicking a region (Amhara is clicked below as an example), but first read the instructions below.





INTRODUCTION

The Geographic Information System (GIS) is an important tool for spatial analyses and display of geo-referenced data. The data featured in this map came from Ethiopia's Demographic and Health Surveys (DHS) - 2000, 2005, 2011, and 2016. The Environmental Systems Research Institute's (ESRI) ArcGIS 10.4 software is used to provide the interactive functionality shown in the map by capturing and displaying DHS data from all four surveys.

An ArcGIS geo-map of *Weredas* has also been made (see link to the *Wereda* population density map at the bottom of this document). The interactive web maps are mobile-friendly, which means that one can access them using mobile phones and, of course, by using iPods/tablets as well as laptops and desktop computers.

Objectives

The objective of the interactive mapping project is to place a point-and-click geo-referenced data at the finger tips (literally), of researchers and the academic community at large, whether they are in Ethiopia or abroad. This ties in seamlessly with the overall objective of the online book that has been in existence for nearly a decade (www.EthioDemographyAndHealth.Org), and where this document resides. Additionally, this map tutorial is intended to aid ArcGIS map navigation by any user, whether savvy or novice, and provide end-users the ability to change fields from a drop down menu and map any variable of their choice. The manual also provides guides and mechanisms for changing visual displays including color schemes and legend placement.

The Instruction Manual

This instruction manual has three parts – 1) display limitations, 2) map tutorial, and 3) data definitions of mapped variables.

Display Limitations:

When accessing the Regional and *Wereda* URLs using Mobile phones and tablets the users experience is limited to clicking a Region name or *Wereda* name. Doing so will display density per square kilometer in the case of the *Wereda* interactive web map, and a sundry of demographic and health variables in the case of the Region-level interactive web map. You would need a laptop or a desktop computer to be able to use the functionality and tools described in the sections below.

Map Tutorial - All Devices:

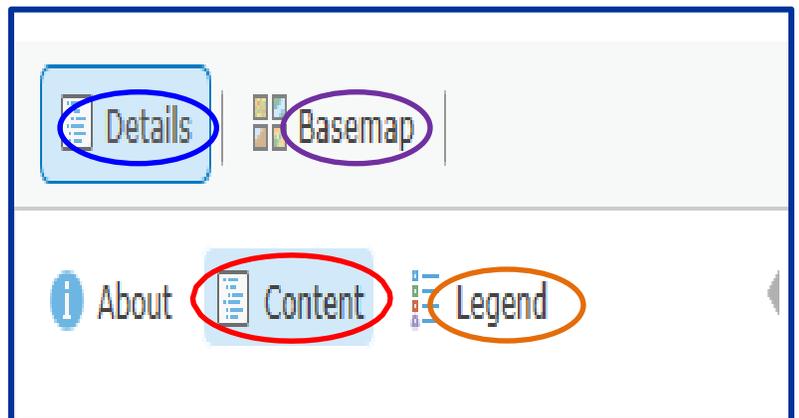
Opening the ArcGIS web page using the above link leads to displays such as the mapped percentages of children stunted (see the map below).

- Zoom in or out by left-clicking the zoom feature in the top left corner of the map, and move the map with the cursor (computer) or finger (mobile device) to access the desired area on the map.
- Note that mobile phones do not allow application of the tools shown below. And yet, they can be important accessibility devices as they permit access to Region-level demographic and health data as well as *Wereda*-level population density values.

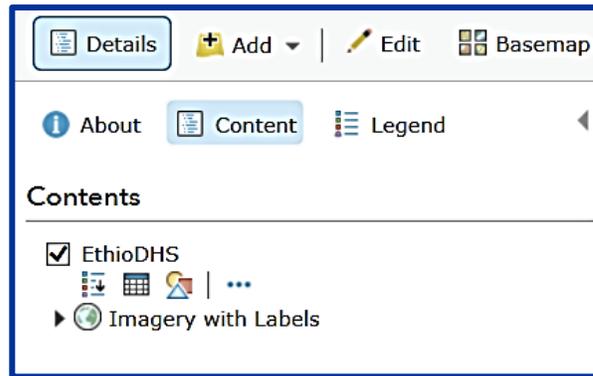


Map Tutorial - Personal Computers and Laptops Only

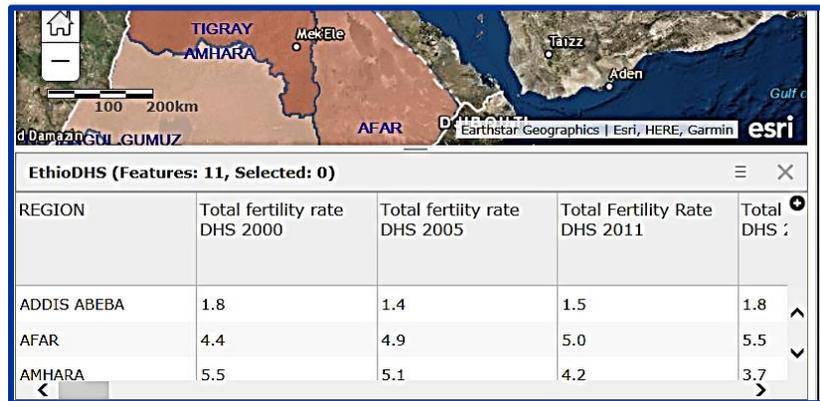
- The selection menu is on the left side of your screen and the map is on the right side.
- Clicking the “Detail’s button (shown in blue circle below) allows toggling between the “Details” menu or having map-only displays.
- Left-click “Details” anytime to get to the “Contents” main menu (shown in red circle).
- You will see a “Contents” display with the map checkbox automatically selected.
- Click legend (shown in orange circle) to display the legend
- Clicking the “Basemap” button allows you to choose among a host of available foundational maps provided by ESRI



A. Left-click “Details” and then click “Content”. The menu below will appear.

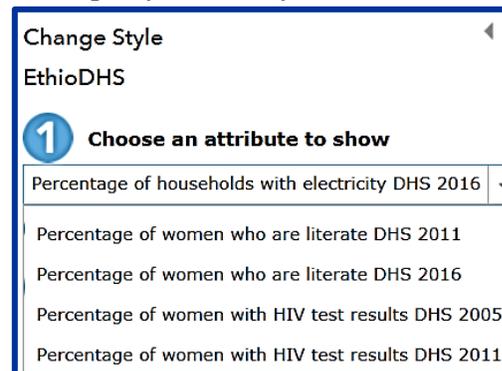


1. Left-click the “Show Table” icon (). A table will open below the map showing the values for each variable and for each Region.



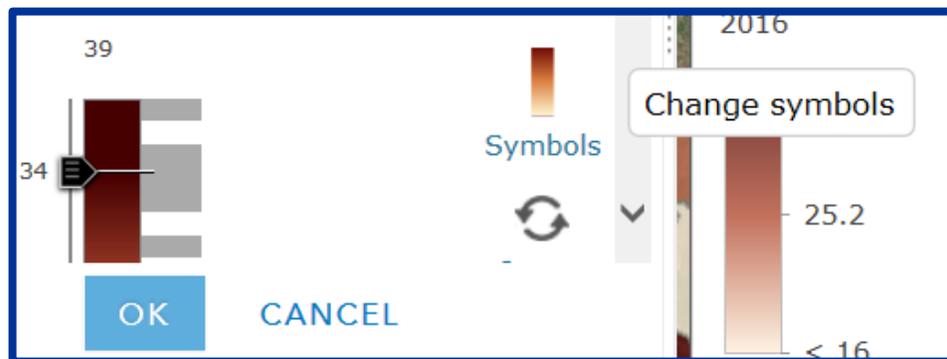
REGION	Total fertility rate DHS 2000	Total fertility rate DHS 2005	Total Fertility Rate DHS 2011	Total DHS :
ADDIS ABEBA	1.8	1.4	1.5	1.8
AFAR	4.4	4.9	5.0	5.5
AMHARA	5.5	5.1	4.2	3.7

2. Left-click the “Change Style” icon (), to select a variable or field from a dropdown menu. This will allow you to map any variable you would like to map.

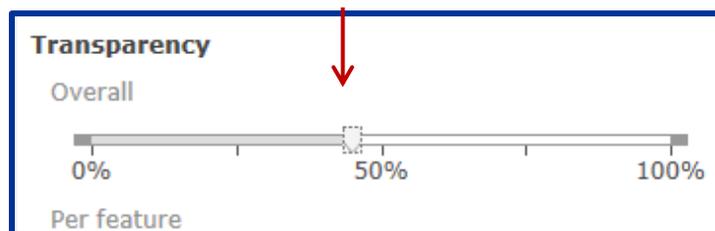


3. Multiple options become available for adjusting the map visuals when clicking the “Change Style” () menu. Left-click the drop-down arrow to select the attribute (or variable) you would like to map. For example, you may select the “percentage of women with HIV test results” attributes.

- a. Then, click “OPTIONS” (shown in red circle) to select a drawing style – fill color and outline color - of your choice by clicking the rectangular bar above “Symbols” (see the second inset below).

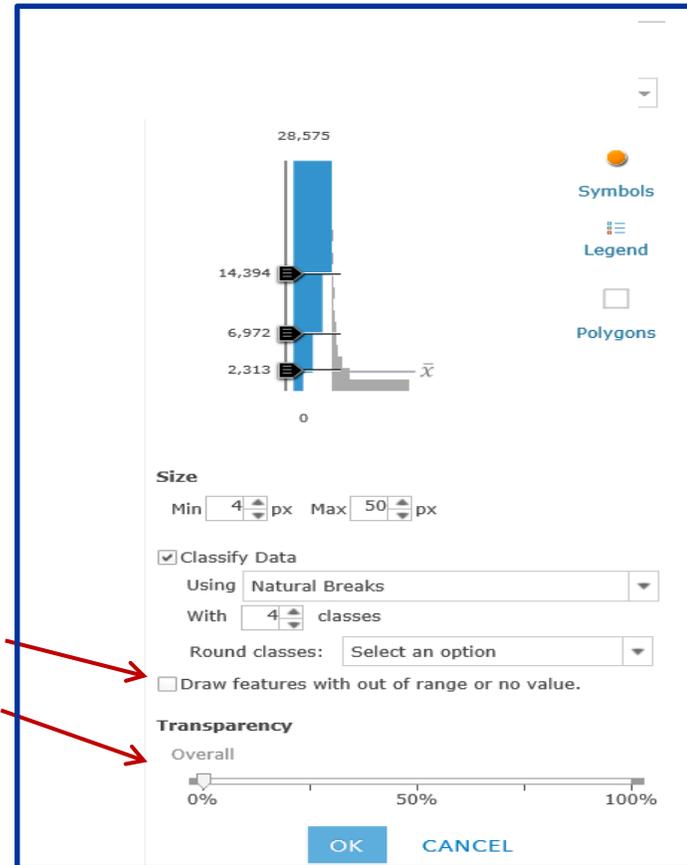


- b. Clicking “Options” again redirects you to a new menu. In the lower side of the menu, adjust the bars titled “Transparency” and “Visible Range” by moving the pale-grey, pentagon-shaped cursors. This brings to focus place names including city and village names embedded in ESRI’s foundational base map.



- c. Left-click “Done” at the bottom of the menu to save all changes and then go back to the “Change Style” menu.

- d. Left clicking the second “Options” button allows you to change the map from a choropleth (thematic) type to proportional circles.
- e. The size of the circles adjusts automatically depending on the value of the variable. For example, Addis Ababa will have the smallest circle for total fertility but the biggest circle for the percentage of households with electricity.
- f. To change the number of classes or class the interval, left-click the “Classify Data” box in the Size section.
- g. Keep the size bar at the automatically pre-set maximum, to show the maximum value in an area.
- h. To categorize the data into more groups, you can click the up or down arrows on the “Width” selection.
- i. Adjust the “Transparency” and “Visible Range” by moving the pale-grey, pentagon-shaped cursor, and then click on “OK”.



Definition of Mapped Variables

Total fertility rate: Total fertility rate for the three years preceding the survey for age group 15-49 expressed per woman

Married women currently using any method of contraception: Percentage of currently married or in union women currently using any method of contraception

Median age at first marriage [Women] 25-49 : Median age at first marriage or union in years among women age 25-49

Infant mortality rate: Probability of dying before the first birthday (in the ten years preceding the survey [five years for Total]) per 1,000 live births

Under-five mortality rate: Probability of dying before the fifth birthday (in the ten years preceding the survey [five years for Total]) per 1,000 live births

Place of delivery Health facility: Percentage of live births in the five (or three) years preceding the survey delivered at a health facility

Received all 8 basic vaccinations: Percentage of children 12-23 months who had received all 8 basic vaccinations

Children stunted: Percentage of children stunted (below -2 SD of height for age according to the WHO standard)

Children wasted: Percentage of children wasted (below -2 SD of weight for height according to the WHO standard)

Children underweight: Percentage of children underweight (below -2 SD of weight for age according to the WHO standard)

Women receiving an HIV test and receiving test results in the last 12 months: Percentage of women who received an HIV test in the 12 months preceding the interview and received the test results

Men receiving an HIV test and receiving test results in the last 12 months: Percentage of men who received an HIV test in the 12 months preceding the interview and received the test results

Women circumcised (FGC): Percentage of women circumcised (women who experienced female genital cutting (FGM))

Women who are literate: Percentage of women who are literate

Households with electricity: Percentage of households with electricity



URL for Regional Demography and Health – DHS 2000, 2005, 2011, and 2016

<http://www.arcgis.com/home/webmap/viewer.html?webmap=6f5f8f518efc48278fede7c31c3f43e6>

Click [**HERE**](#) to access the regional map

URL for *Wereda* population density map (census 2007)

<http://www.arcgis.com/home/webmap/viewer.html?webmap=de8f5c12764b47cdbc6333aa93d79ad1>

Click [**HERE**](#) to access the *Wereda* population density map