Tableau Workshop

July 31, 2019 – Addis Ababa University

Data Visualization Workshop using Tableau
Yacob Zuriaw

How do we know whether a country is making progress in its ability to plan, finance, and implement solutions to address its own development challenges?

- Brandon Pustejovsky, USAID Chief Data Officer

QED Group brings more than 20 years providing data-driven and insightful solutions in nearly 100 countries.

Working across the "three Ds" of foreign affairs; Defense, Diplomacy and Development, we help our clients collect, analyze, visualize, and ultimately use data in more effective ways.

Data,
Technology
and
Innovation

QED offers:
- Human-centered design
- Data analysis
- Data visualization
- Network mapping
- Infographics

CENTER FOR GLOBAL DATA VISUALIZATION

- Designed to **build data visualization capacity** and strengthen a **culture of data use** in international development

- Mobilizes the **power of university students** to close the gap in data visualization

- Collaborating universities will have access to **trainings** and can **publish research** on the CGDV platform

CENTER FOR GLOBAL DATA VISUALIZATION

- https://www.centerforglobaldata.org/
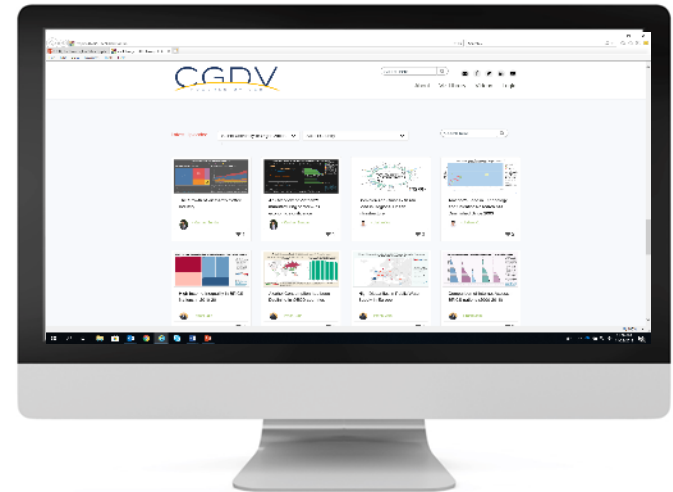
- Sign up for an account

- Create your own profile!

Yacob Zuriaw

Email: yacob.zuriaw@emory.edu   Mobile:

Country: United States   Organization: Emory University

Biography:

Hi, I'm Yacob! I am a recent grad of the Master's in Development Practice program at Emory University. I have a background in Microeconomics and International Relations, and am interested in applying data insights to aid the path of progress in Ethiopia and beyond.

CENTER FOR GLOBAL DATA VISUALIZATION

- Visit our GitHub and find out public available data source
- https://cgdv.github.io/dataSource/

CGDV Recommended Data Sources

CGDV promotes open data for public good. We recommended the following data sources for researching and creating data visualizations. Please let us know if there is more to be added to the list.

- Development Data Library (DDL): Your gateway to USAID-funded, machine-readable data.
- IDEA: International Data & Economic Analysis by USAID.
- DEC: Development Experience Clearinghouse by USAID.
- PEPFAR: Program results achieved through PEPFAR support.
- CDC: Centers for Disease Control and Prevention.
- FOREIGN ASSISTANCE: How the U.S. government invests in countries around the world.
- DHS: The DHS Program: Demographic and Health Surveys.
- DATA.GOV: The home of the U.S. Government's open data.
- UNSD: United Nations Statistics Division

- World Bank Open data: Free and open access to global development data.
- IMF data: Access to macroeconomic & financial data.
- OECD data: Data about OECD countries.
- Humanitarian Data Exchange: Find, share and use humanitarian data all in one place
- Google Public Data: Google's Public Data Explorer
- UNICEF data: Monitoring the situation of children and women.
- Global Health Observatory data repository: WHO's gateway to health-related statistics for more than 1000 indicators for its 194 Member States.
- WHO/UNICEF JMP: The WHO/UNICEF JMP collects data on water, sanitation and hygiene in countries and regions around the world.
- UNAIDS AIDSinfo: Data about HIV prevention, treatment, care and support.

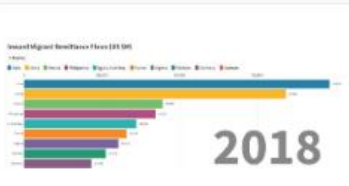Latest Uploaded | ♥Upvote | Select University or Organization ▼   Select Country ▼   Search here ...

Select Challenge ▼

Top 10 Countries by
Remittance Outflows & Inflows

- Reema Rustagi

♥ 1

Prevalence and Attitudes of
FGM in Ethiopia

- Yacob Zuriaw

♥ 1

Tracking the Ebola Outbreak in
the DRC

- Jiahao Xu

♥ 3

Ethiopia's Shrinking Gender
Gap in Education

- Yacob Zuriaw

♥ 2

Antenatal Care in Uganda

- Jiahao Xu

♥ 3

Household Access to Safe
Drinking Water in Ethiopia

- Yacob Zuriaw

♥ 3

The Growth of Gross National
Income in Central Asia from
1995-2017

- Jiahao Xu

♥ 4

High Expenditure of Ethiopian
Government Leads to Increases
in Enrollment Rates for Primary

- Prachi Jain

♥ 3

What is Tableau?

What is Tableau?

- Tableau Desktop is a business intelligence and data visualization tool that can be used by anyone.

- It specializes in transforming tabulated data into eye-candy graphs and representations.

- Although designed with business in mind, it's ability to interactively visualize data freely transcends fields

What is Tableau?

Tableau vs. Excel

Tableau vs. Excel:

- People are often confused between Tableau and Microsoft Excel. Both these tools can be used to create interactive visualizations and have the tools to analyze data. But the approach each of these tools uses to reach the insights is very different.

- Tableau is a data visualization tool, meaning that it formats data in the initial stage into pictorial representations. When users drill down the data, the representations change accordingly. Excel, on the other hand, needs the user to first analyze data in tabular format and then opt for visualizations for better understanding and insights.

Tableau Installation

Tableau Installation

- Tableau Academic Program:

www.tableau.com/academic/students

ACADEMIC PROGRAMS

Tableau for Students

Download Tableau Desktop and Tableau Prep to gain data skills

GET TABLEAU FOR FREE
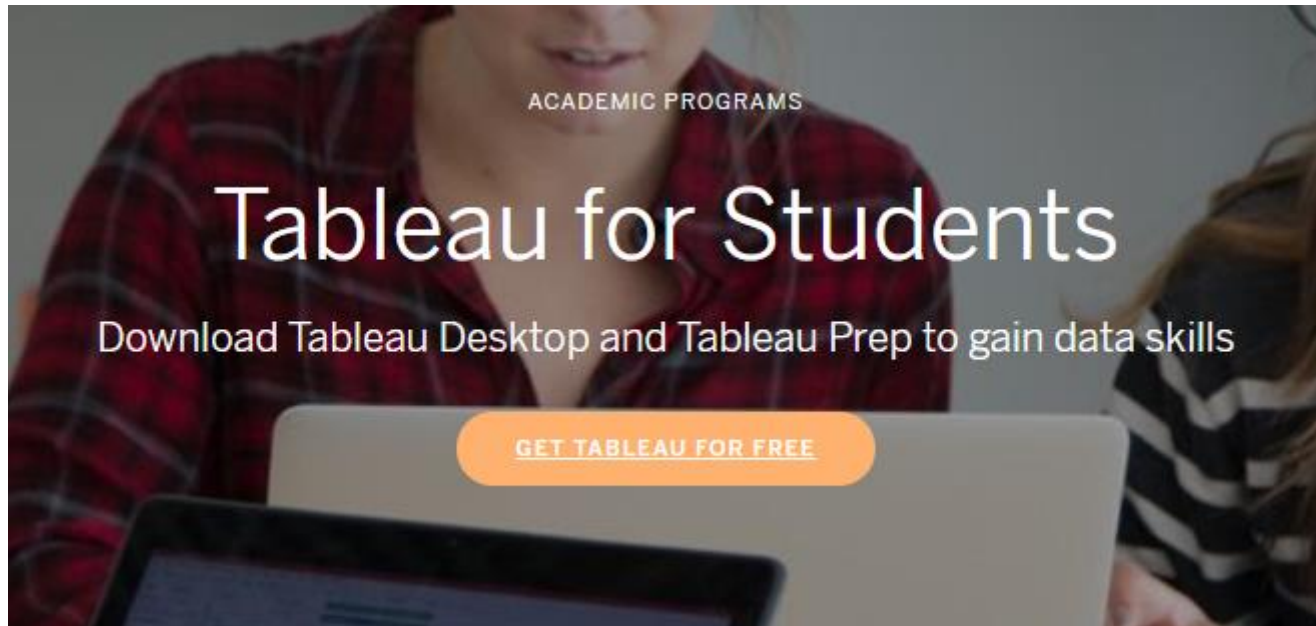
Verify Your Student Identity

You will receive an email from Tableau with instruction of how to download and activate Tableau

Country

Country (of school)*

Ethiopia

Personal information

Legal First Name*

Legal First Name

Legal Last Name*

Legal Last Name

Email*

Email

Confirm Email*

Confirm Email

School information

School Name*

School Name

VERIFY AND CONTINUE

Tableau for Public

- Tableau Public: public.tableau.com

Enter your Email →

Create Tableau Public Profile to Share Your Work

- Tableau Public: public.tableau.com
- Right upper corner: SIGN IN
- Create profile

Create ➡️
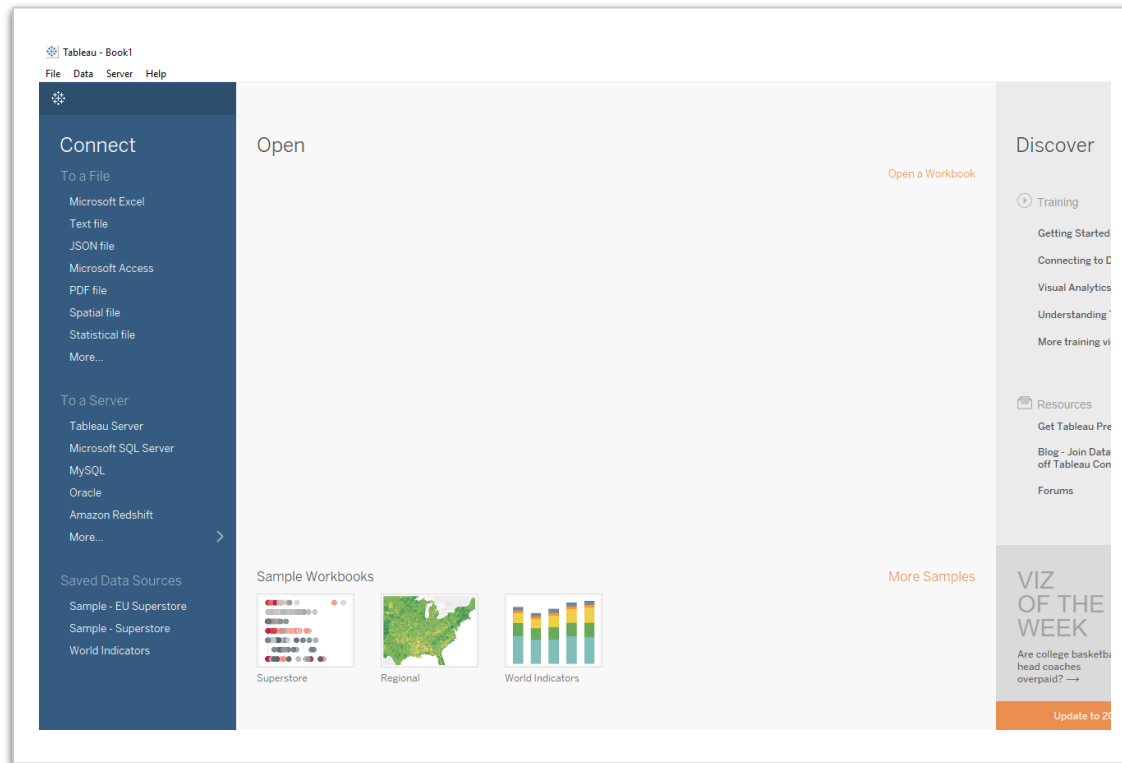
Open Tableau!

If you see above picture, you are ready to go!

Build Your Own Data Visualization in Tableau

Ethiopia HIV Prevalence

Data

- Understand data and make data useful

Today:

- Data cleaning

Visualize

- Choose the right visualization format

Today:

- Line chart

- Choropleth map

- Dashboard

Share

- Share your work for public good

Tomorrow:

- Publish to Tableau public

- Share on CGDV

About the Data

- HIV Prevalence in Ethiopia from 1992 to 2017

- Population: Adult Age 15 - 49

- Data source: UNAIDS

- aidsinfo.unaids.org

- Example data: https://github.com/CGDV/CGDV.github.io/tree/master/workshop/Tableau/data

Data Cleaning

- **Tidy Data** (by Hadley Wickham)

1. Each **variable** is stored in its own **column**

2. Each **observation** is stored in its own **row**

- **Why Tidy Data?**

1. Easy to access variables

2. Automatically preserves observations

3. Data is quickly excluded during filtering

	A	B	C	D	E	F	G	H	I	J
1	Region	1992	1993	1994	1995	1996	1997	1998	1999	2000
2	Addis Ababa	8.6	9.8	10.8	11.6	12.1	12.3	12.2	12	11.5
3	Afar	3.5	3.9	4.3	4.6	4.8	4.9	4.9	4.8	4.6
4	Amhara	3.4	3.9	4.3	4.6	4.9	5	5	4.9	4.7
5	Beneshangul Gumuz	1.4	1.7	1.9	2.1	2.3	2.4	2.5	2.5	2.5
6	Dire Dawa	6.5	7.3	8	8.6	9	9.3	9.3	9.2	8.9
7	Gambella	5.6	6.8	7.9	9	9.7	10.2	10.5	10.6	10.3
8	Harari	4.8	5.4	5.9	6.3	6.5	6.5	6.4	6.2	5.8
9	Oromiya	1.6	1.8	2	2.2	2.3	2.3	2.4	2.3	2.2
10	SNNPR	0.5	0.6	0.7	0.8	0.8	0.9	0.9	0.9	0.9
11	Somali	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
12	Tigray	3.4	3.9	4.4	4.8	5	5.2	5.2	5	4.8
13	National	2.6	2.9	3.2	3.4	3.6	3.6	3.6	3.5	3.4

	A	B	C
1	Region	Year	HIV Prevalence
2	Addis Ababa	1992	8.6%
3	Afar	1992	3.5%
4	Amhara	1992	3.4%
5	Beneshangul Gumuz	1992	1.4%
6	Dire Dawa	1992	6.5%
7	Gambella	1992	5.6%
8	Harari	1992	4.8%
9	Oromiya	1992	1.6%
10	SNNPR	1992	0.5%
11	Somali	1992	0.4%
12	Tigray	1992	3.4%
13	National	1992	2.6%
14	Addis Ababa	1993	9.8%
15	Afar	1993	3.9%
16	Amhara	1993	3.9%
17	Beneshangul Gumuz	1993	1.7%
18	Dire Dawa	1993	7.3%
19	Gambella	1993	6.8%
20	Harari	1993	5.4%
21	Oromiya	1993	1.8%
22	SNNPR	1993	0.6%
23	Somali	1993	0.4%
24	Tigray	1993	3.9%
25	National	1993	2.9%

Import Data to Tableau

Choose Right Data Type

Let's Visualize Data!

Tableau 101

| Data Source | Sheet 1 | | | |

- Sheet < Dashboard < Story
- Sheet: Single visualization
- Dashboard: Multiple sheets
- Story: Multiple sheets + dashborads

Tableau 101

Dimensions
vs
Measures

Dimensions:
- Level of detail
- How to want to separate data? (location, date…)

Dimensions
- Region
- Year
- *Measure Names*

Measures
- Aggregation
- How to want to calculate data? (Average, count, …)

Measures
- HIV Prevalence
- *Latitude (generated)*
- *Longitude (generated)*
- *Number of Records*
- *Measure Values*

Line Chart
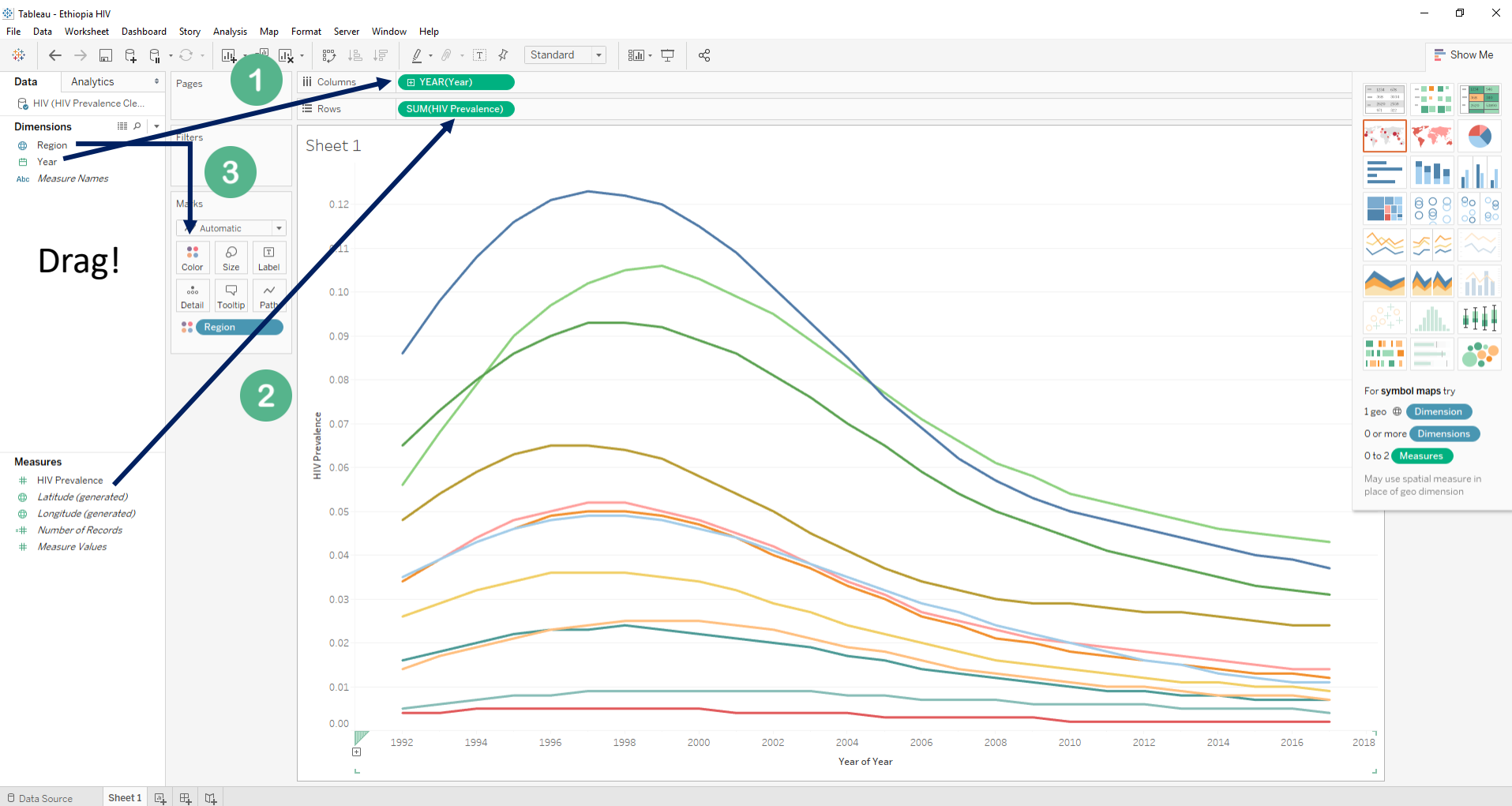
Customize Color

Customize line color
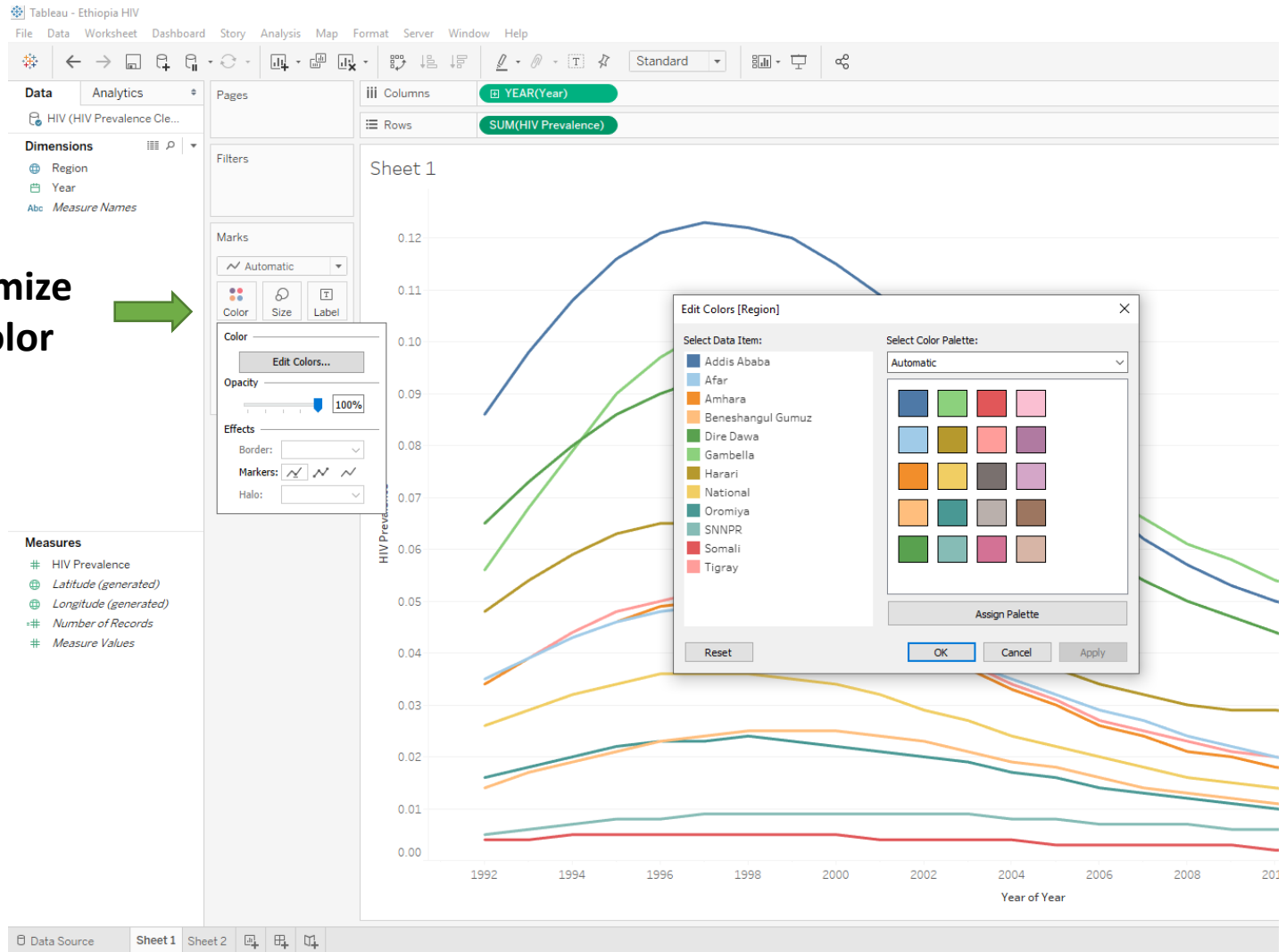
Customize Axis
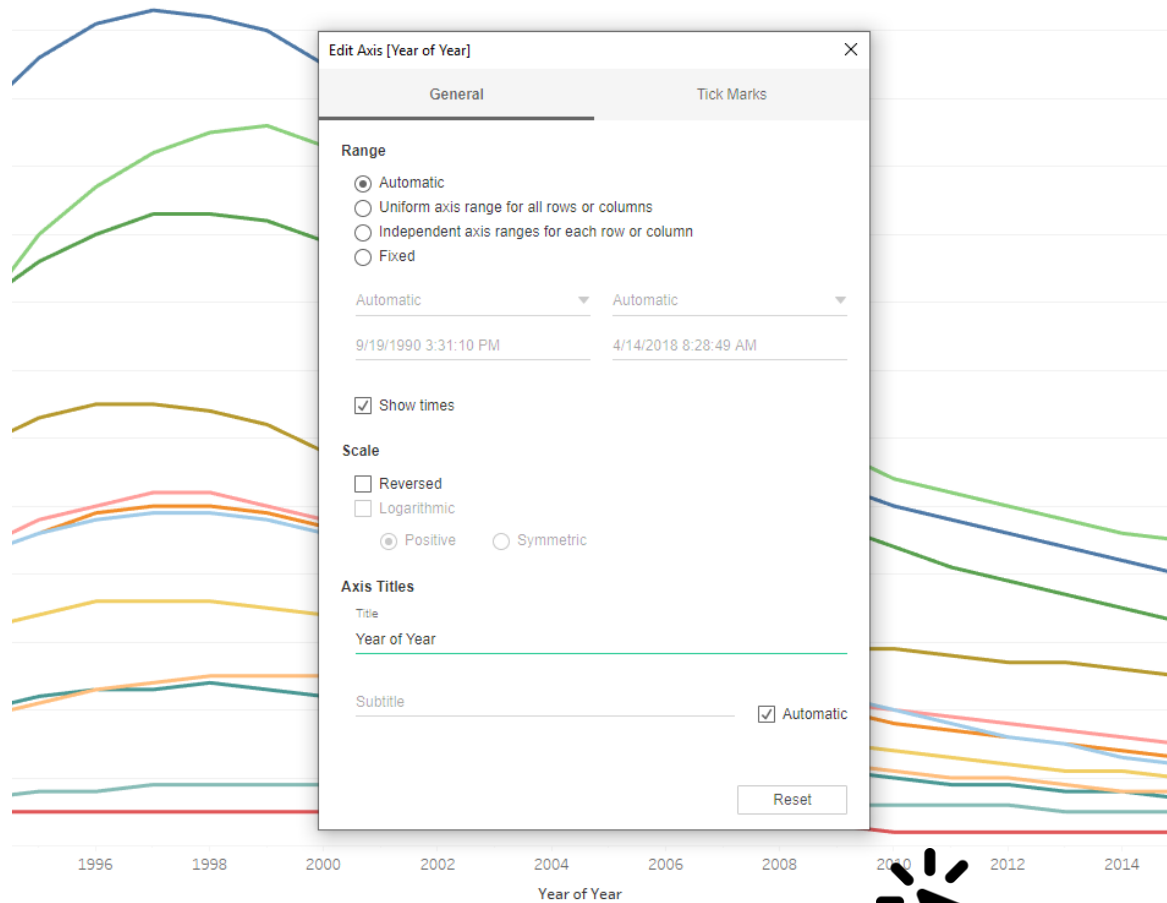
Double click to edit axis

Show as Percentage
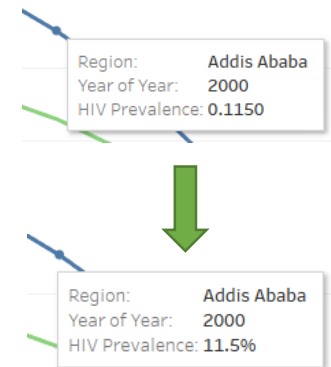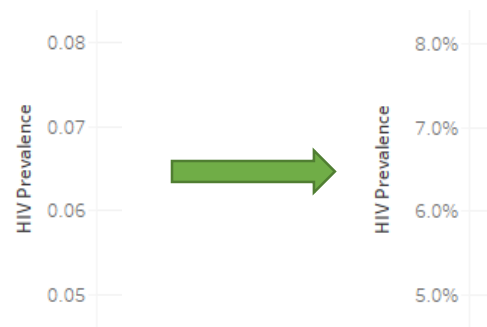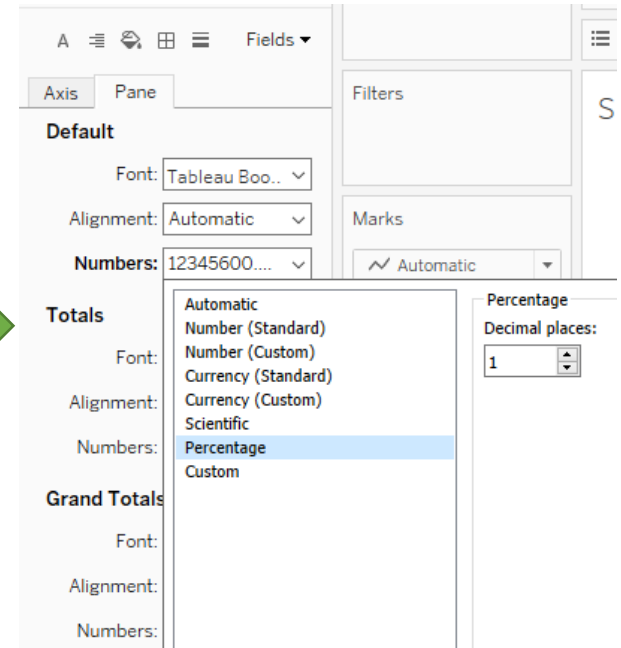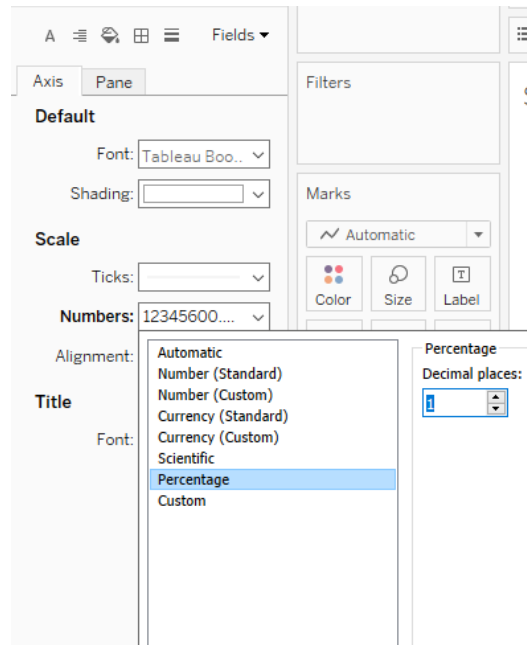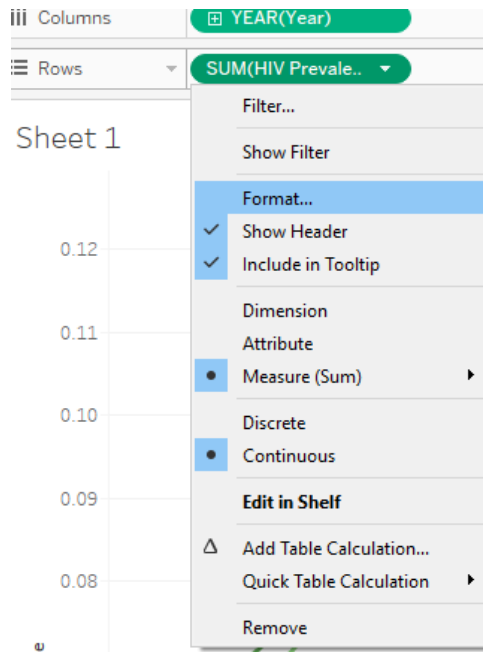
Customize Tooltip
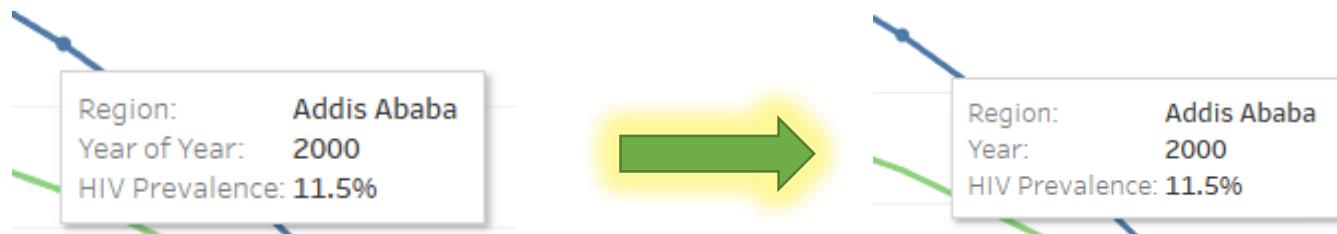
Line Chart Done!
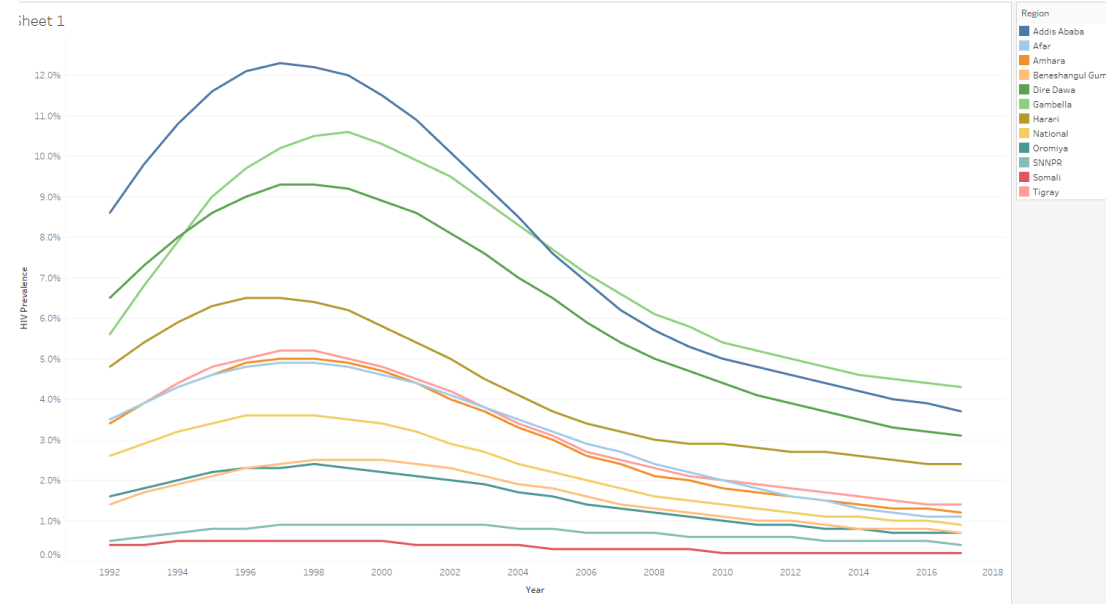
Choropleth Map
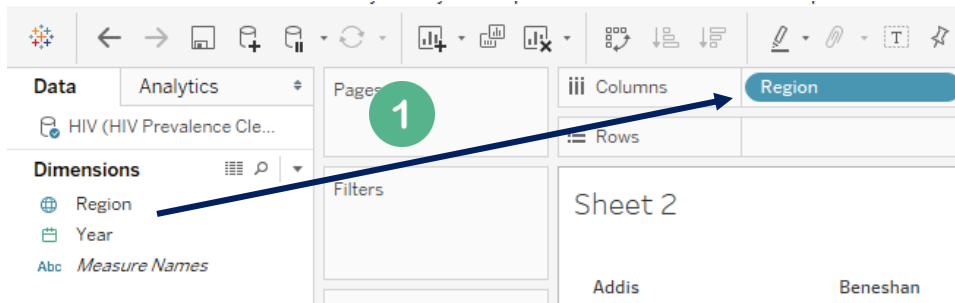
Match Location

Why nothing on the map?

We have unknown geographic locations!

For **symbol maps** try

1 geo ⊕ **Dimension**

0 or more **Dimensions**

0 to 2 **Measures**

May use spatial measure in place of geo dimension

etMap contributors

12 unknown

3

Edit Locations
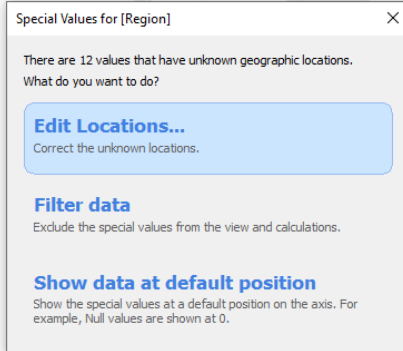
Select Country
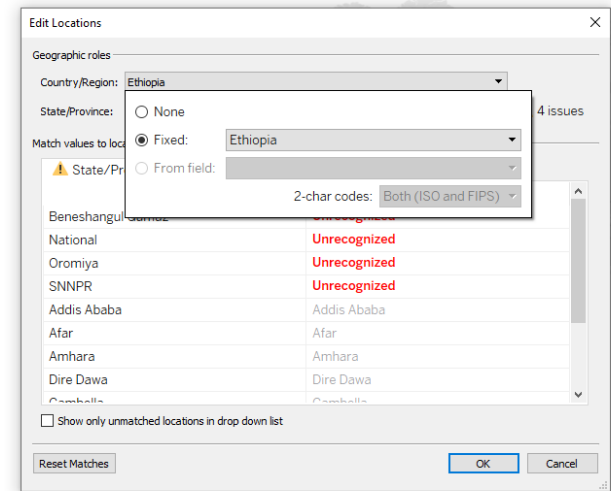
Match Unrecognized Region
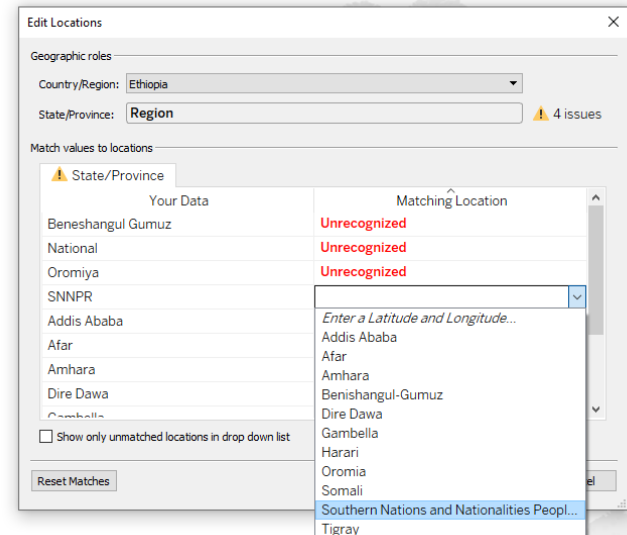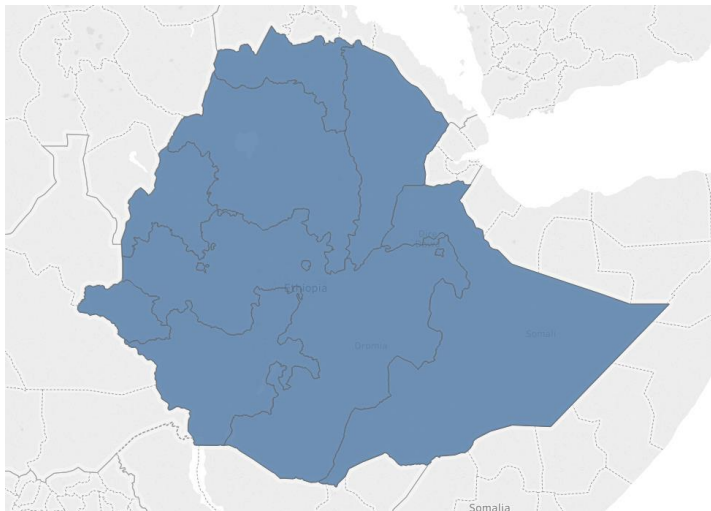
Color

Drag HIV
Prevalence
to Color

Color here shows
sum of prevalence
over past 25 years,
NOT what we
want!!!!

Filter by Year

Drag Year to Filter

Choose single year you want to visualize

Customize Color

Choose Palette

In Advanced,
fix value range

Show as Percentage

Choropleth Map Done!
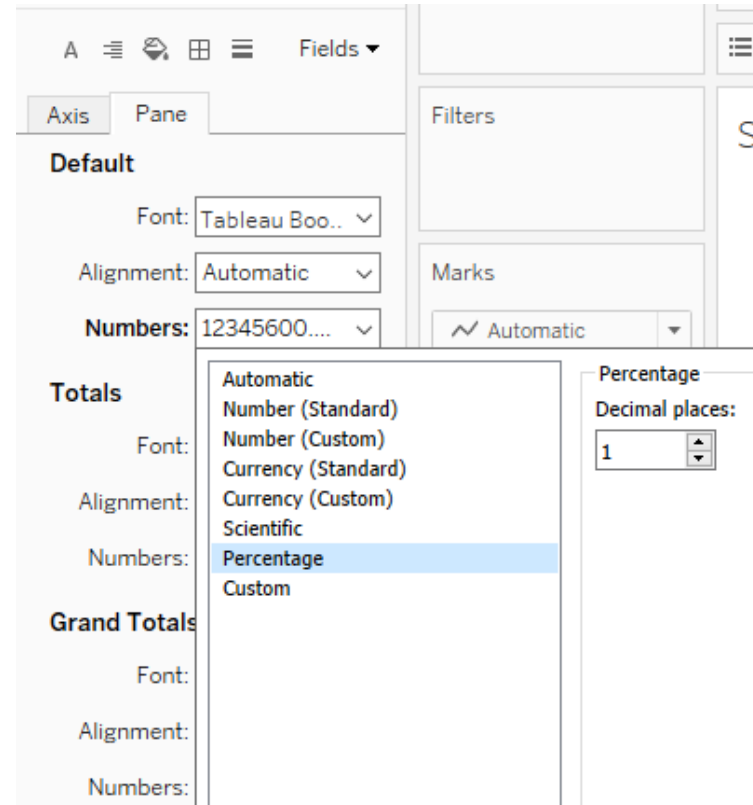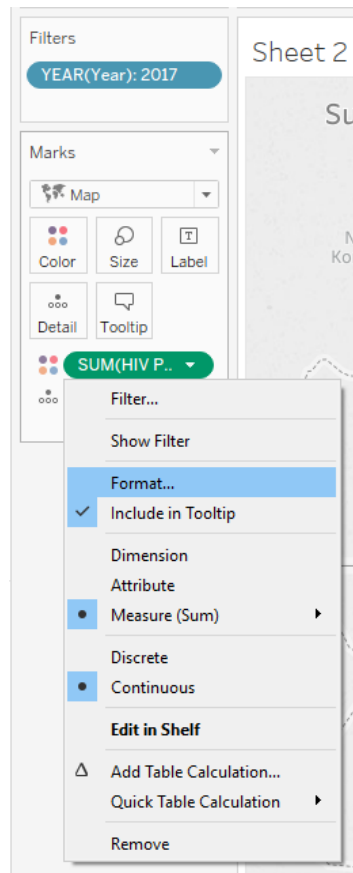
Dashboard

- Create a new dashboard tab
- Drag both sheets to dashboard
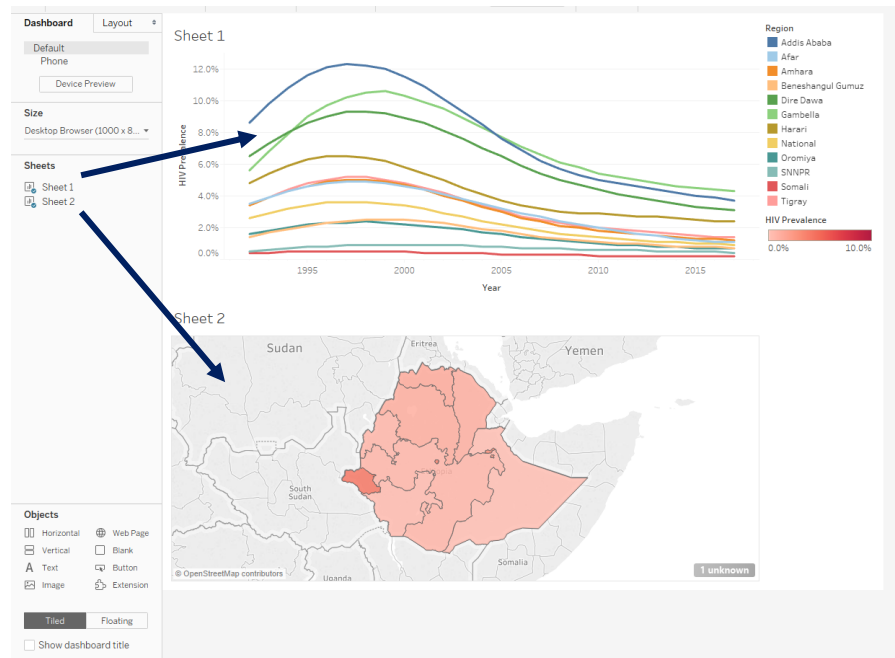
Connect Chart
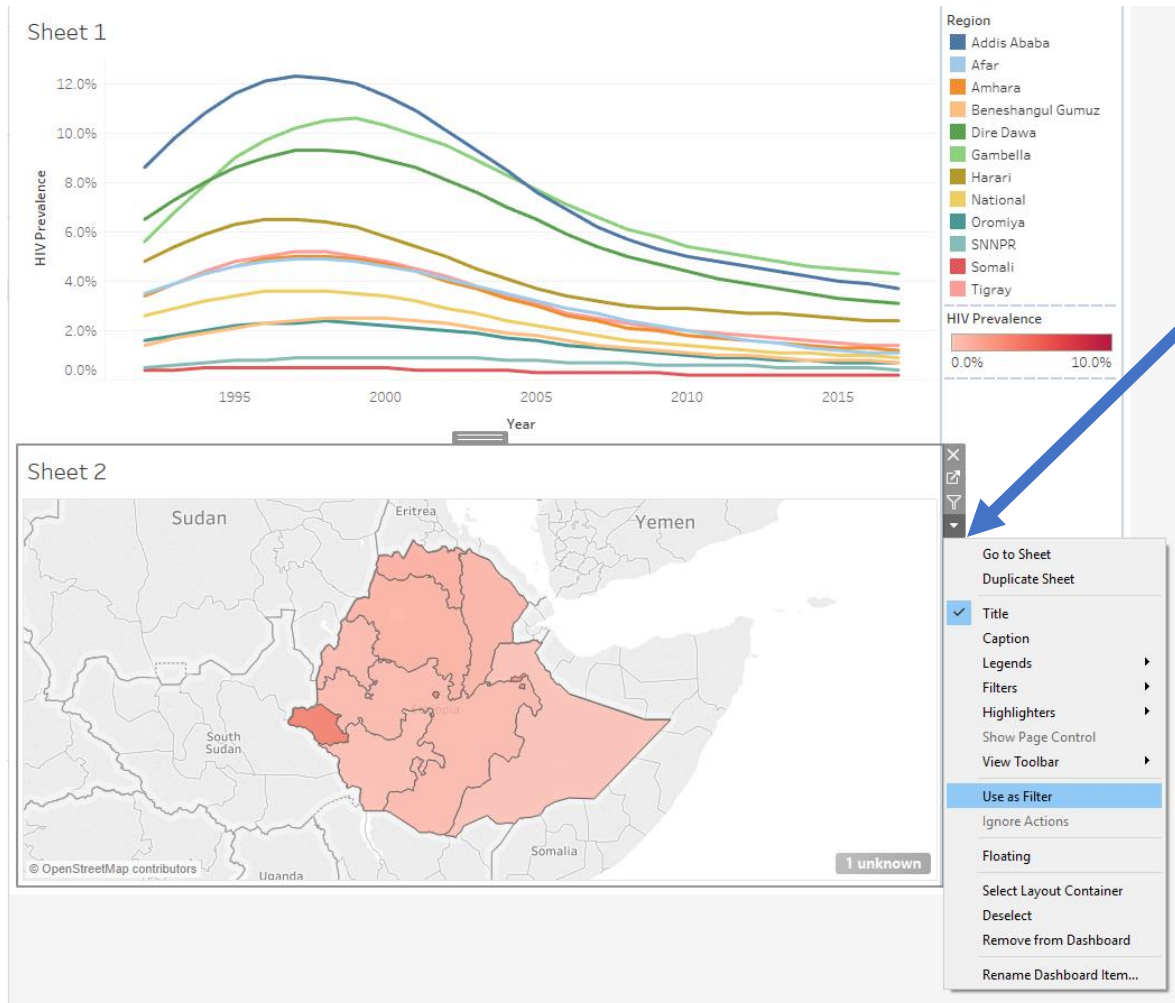
- More options
- Use as Filter

Now when you click on a region, the first chart also change!

Add Time Slider
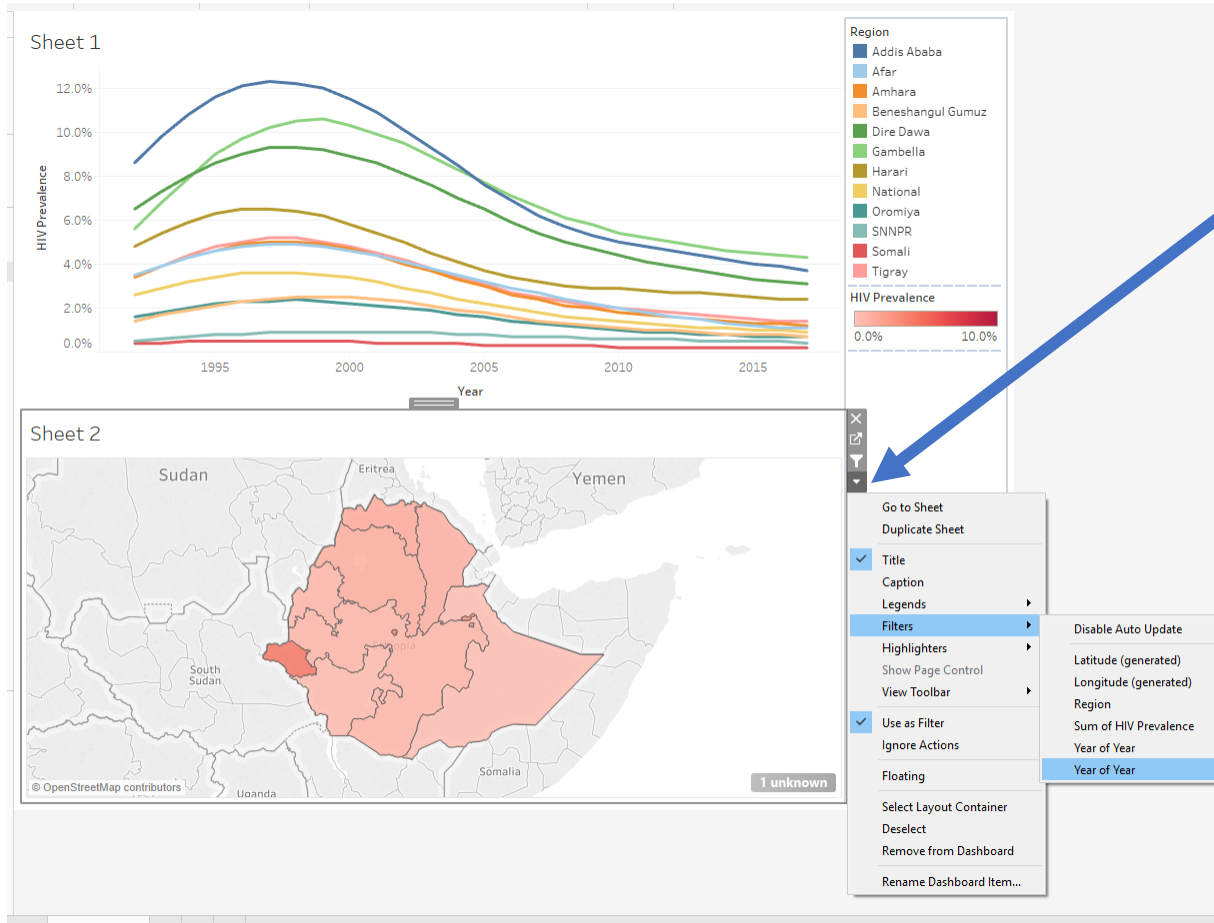
- More options
- Filters
- Year of Year

Add year filter

Add Time Slider
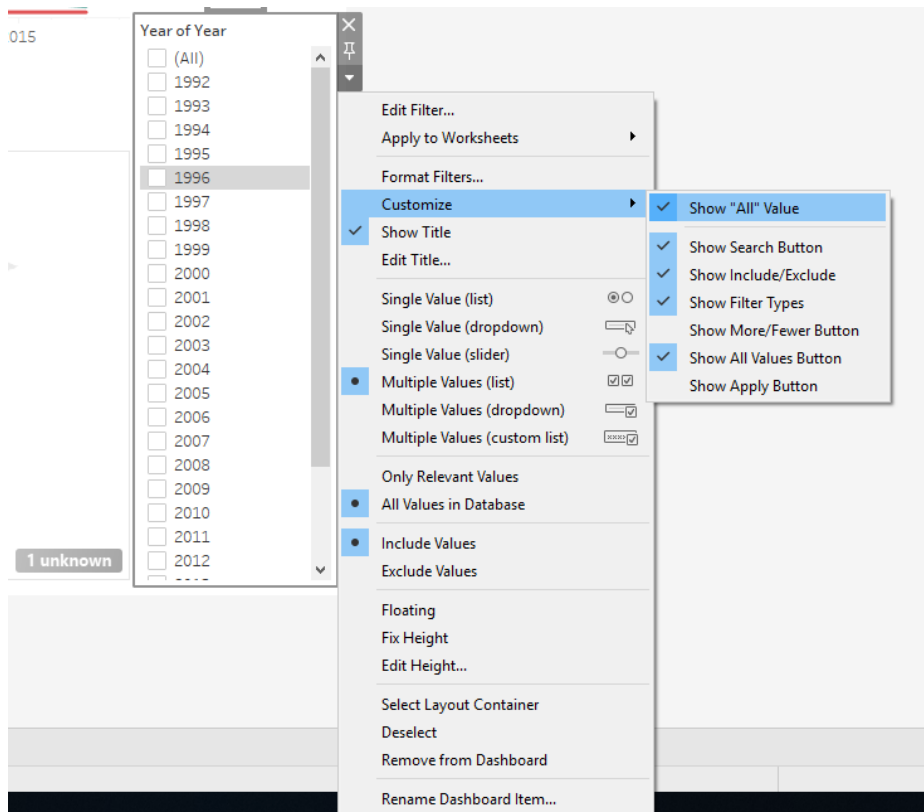
- More options
- Customize
- Uncheck Show "All" Value
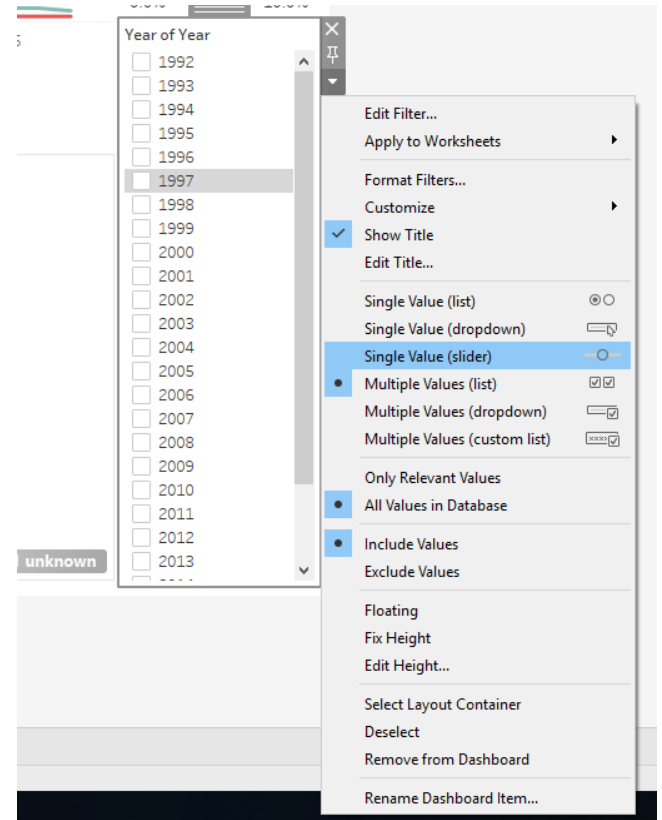
- More options
- Single Value (slider)

Customize Content

- Change dashboard background color

- Format -> Dashboard -> Dashboard Shading
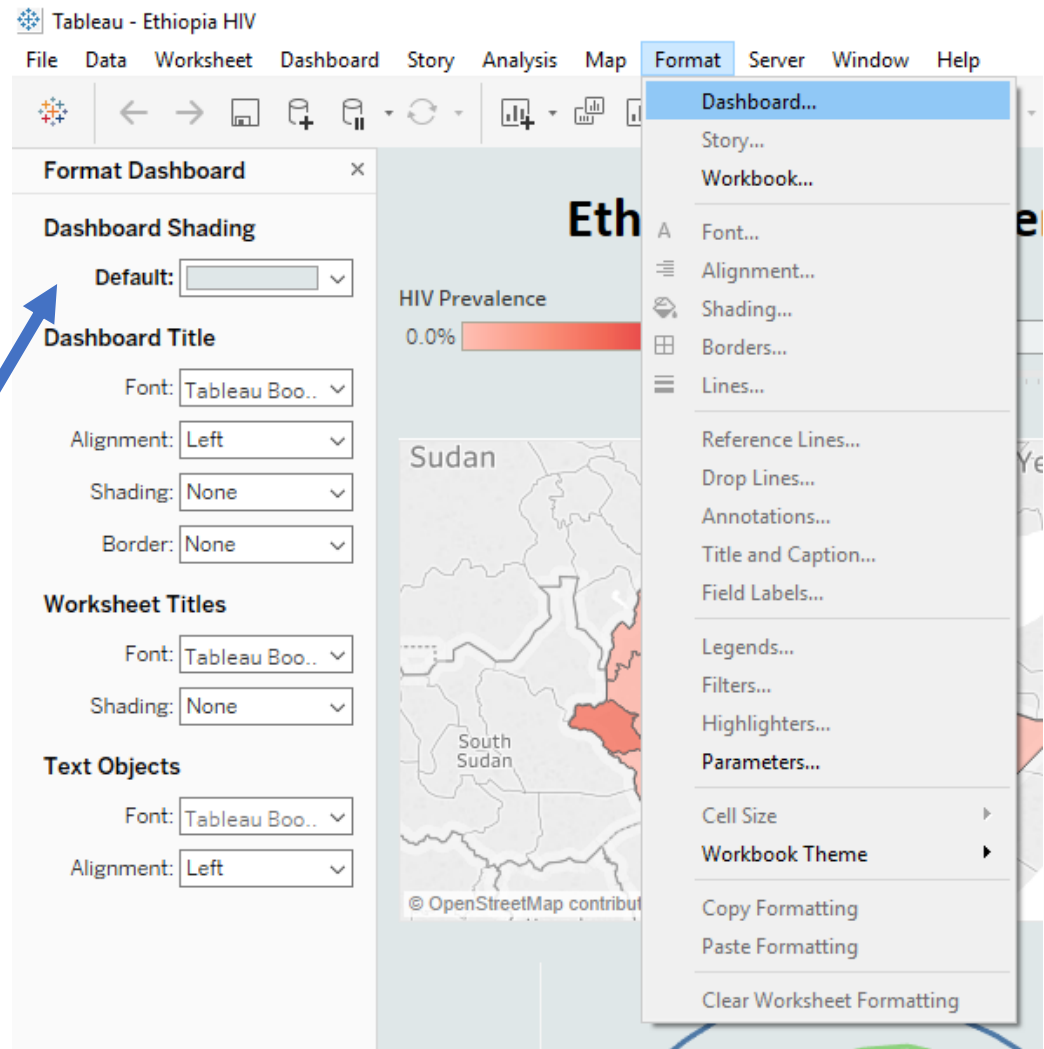
Customize Content

- Modify Title by double clicking on the title
- Add object (text, image) by dragging object to dashboard
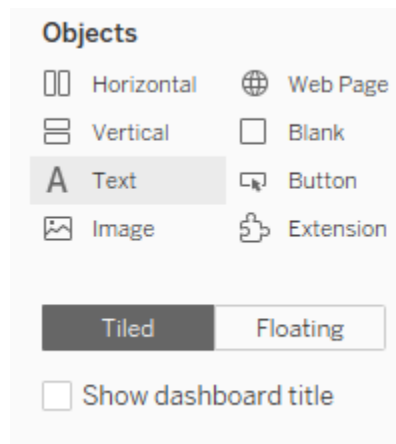
Customize Content

- How to add YouTube video?
- Drag a Webpage ⊕ Web Page to dashboard
- Enter your modified YouTube link

Before https://www.youtube.com/watch?v=Mg43RbYsBho

Keep ID and add "/embed/"

After https://www.youtube.com/embed/Mg43RbYsBho

Dashboard Done!
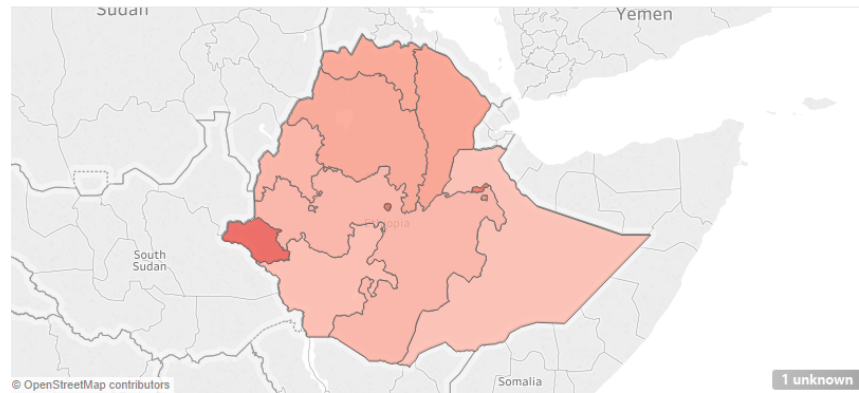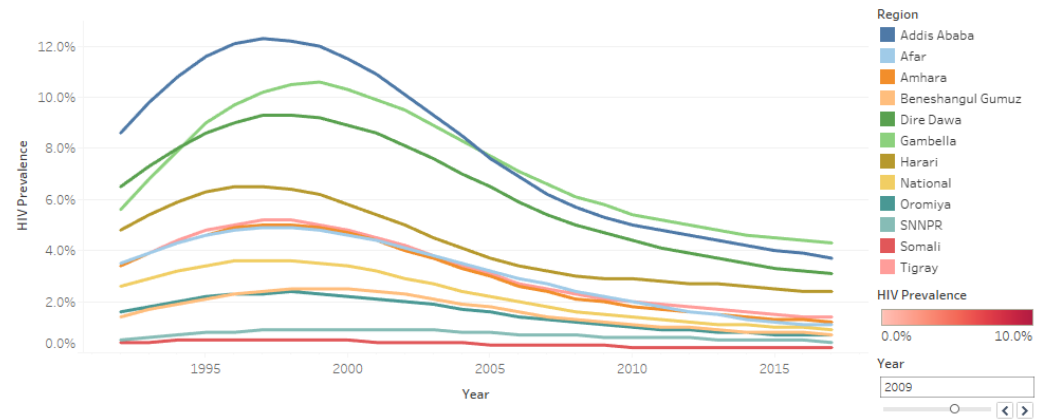
Share Your Tableau Work (Tableau Desktop Only)

- Extract data:
  - Data
  - HIV
  - Extract Data

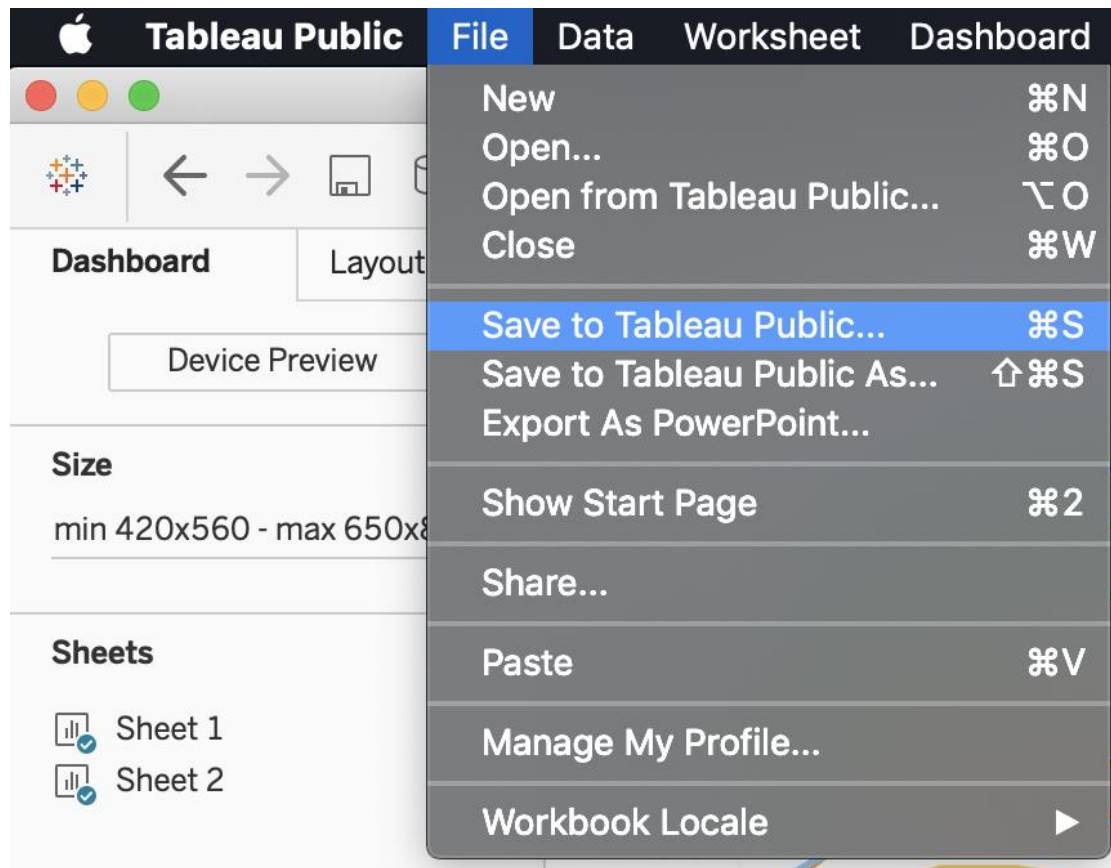# Share Your Tableau Work (Tableau Desktop Only)

- Extract data:

Share Your Tableau Work (Tableau Desktop Only)

- Publish:
  - Server
  - Tableau Public
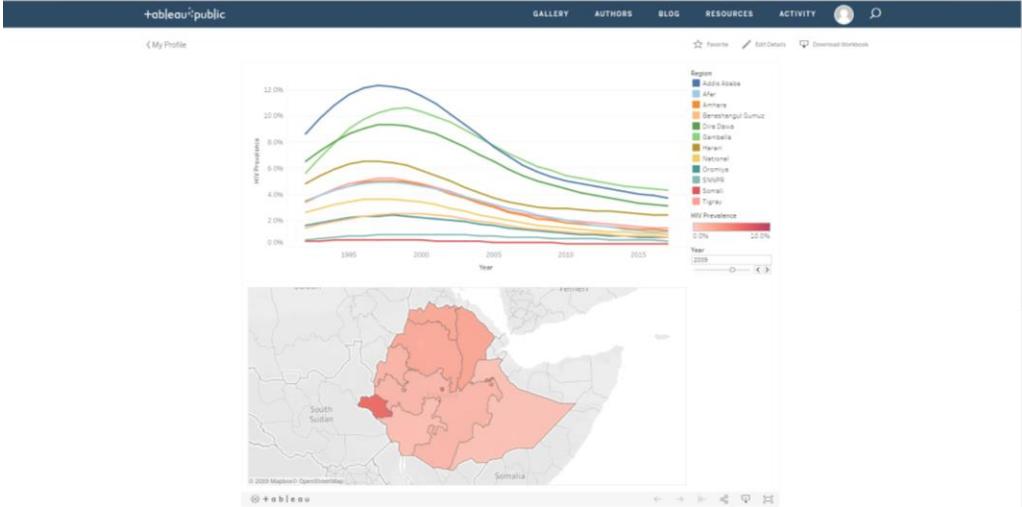 - Save to Tableau Public
  - Sign in your Tableau Public Account
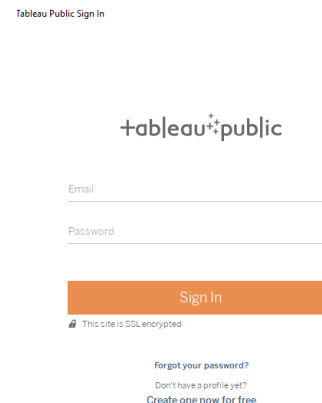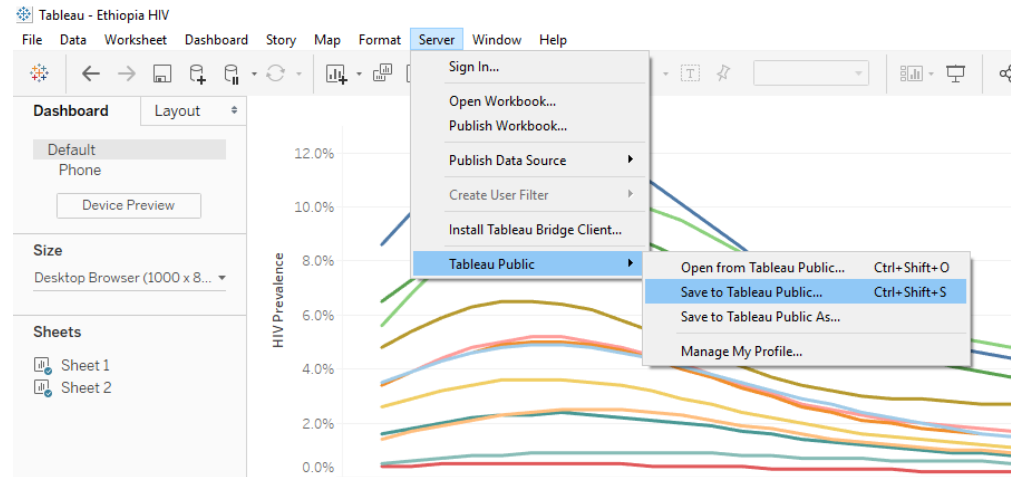
- Easy two steps!

1. "File" on the top

2. Save to Tableau Public

Share Your Tableau Work (Tableau Public Only)

Your Work is Public!

Share Your Tableau Work on CGDV

- Find share button under your Tableau visual

- Copy the Embed code when uploading visual on CGDV.

End of Module 1