Title: To create an effective Story in Tableau.

Objective:

1. *Search/locate and download any Data of Your Choice (Use same dataset if it contains location information)*
2. *To learn how to create Story in Tableau*
3. *Apply best practices to create Tableau Story.*

Course Outcome:

CO2 Detect and understand the stories within datasets and its applications.
CO3 Apply data visualization best practices
CO4: Design static charts, interactive Dashboards, and data stories

Books/ Journals/ Websites referred:

1. Data Visualization made simple New York: Routledge - Kristen Sosulski, First edition, 2019
2. Sosulski, K. Data Visualization Made Simple: Insights into Becoming Visual, First edition, 2018
3. https://www.kaggle.com/uciml/adult-census-income
4. https://archive.ics.uci.edu/ml/datasets/adult
5. https://ori.hhs.gov/education/products/n_illinois_u/datamanagement/dctopic.ht ml
6. A review of research process, data collection and analysis - Surya Raj Niraula

Resources used:

https://www.kaggle.com/komalkhetlani/out-of-school-rates-global-data?select=Upper+Secondary.csv

Theory:

Describe content related to story:

A story is a sequence of visualizations that work together to convey information. You can create stories to tell a data narrative, provide context, demonstrate how decisions relate to outcomes, or to simply make a compelling case. A story is a sheet, so the methods you use to create, name, and manage worksheets and dashboards also apply to stories. At the same time, a story is also a collection of sheets, arranged in a sequence. Each individual sheet in a story is called a story point. Storytelling is indeed a powerful force, and in the age of information, it's possible to use the wealth of insights available at your fingertips to communicate your message in a way that is more powerful than you could ever have imagined.

A good data story leverages three major components: Data, narrative, and visuals. The data component is simple, we must have the accurate data, to reach correct insights. The visual component enables us to spot trends and patterns in datasets, which are not easily seen in the rows and columns of spreadsheets. Data storytelling is about communicating your insights effectively, giving your data a voice. The narrative components which concern the simple language used to describe the data can be seen as giving a voice to the data. Each data point is a character in a story - a protagonist - with its own story to tell. Combined together, narrative, data, and visuals can create data stories which drive change in businesses

Implementation

Best Practices for creating stories:

Use stories to make your case more compelling by showing how facts are connected, and how decisions relate to outcomes. You can then publish your story to the web, or present it to an audience. Each story point can be based on a different view or dashboard, or the entire story can be based on the same visualization seen at different stages, with different filters and annotations. A good data story brings data and facts to life. Some of the best practices have been mentioned below.

1. Understand your story's purpose: Before you start to build your story, take some time to think about the purpose of your story and what you want your viewers' journey to be. you're presenting a case, decide whether you want to present data points that lead up to a conclusion at the end, or start with a conclusion then show the supporting data points.

2. Keep it simple: A common error is trying to cram too many views and dashboards into a single story. The result is too many points for your viewers to take in.The clarity of each story point is also important. Take a step back and consider your story from the perspective of someone who's never seen it.

Every element should serve a purpose. If captions, titles, legends, or grid lines aren't necessary, get rid of them!

3. Use 'Fit' in dashboards: Dashboards are a common ingredient in Tableau stories. For dashboards that you plan to include in your story, you can use the Fit to option under Size on the Dashboard pane. It will resize your dashboard so that it's the right size for the story you're creating.

4. Plan for fast load times: The most wonderful story in the world won't have much impact if it takes too long to load once it's published. People find long waits frustrating. Filtering is a common culprit for slow load times. Although filters are effective in restricting the amount of data being analyzed, they also impact query performance. For example, Exclude filters tend to be slower than Keep Only filters. This is because Exclude filters load all the data for a dimension instead of just what you want to keep.

Total school dropout percentage vs Countries
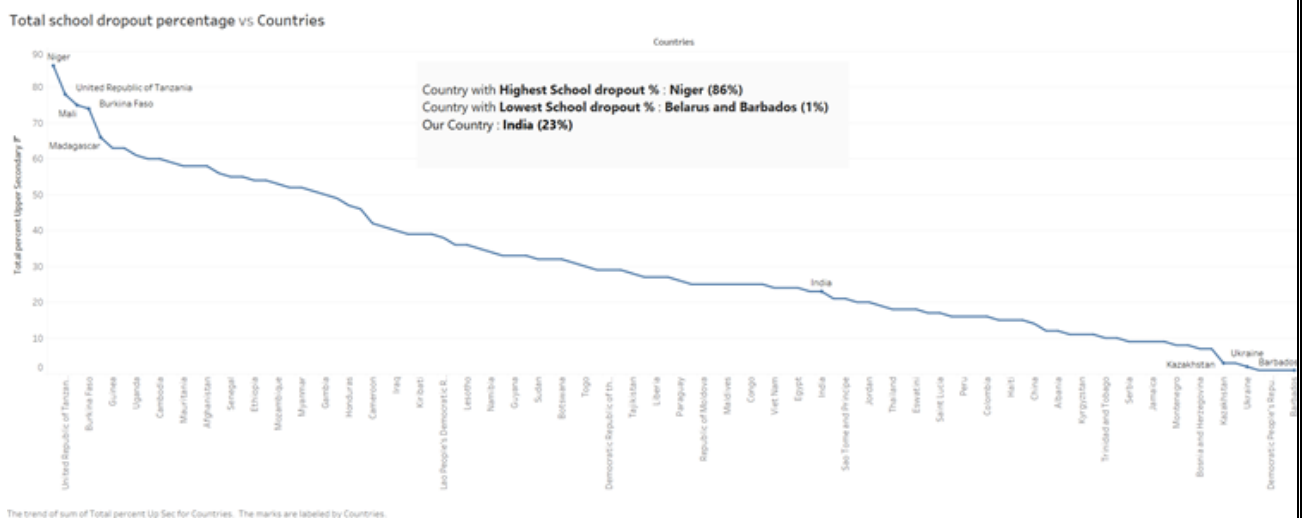
This line graph shows the school dropout rates for various countries.

As we can see Niger is leading at the top with 86%, followed by United Republic of Tanzania, Mali and Madagascar.

India has a total dropout rate of 23%.

Countries with lowest dropout rates are Belarus, Barbados, Ukraine and Kazakhstan.

The line chart seems to be a better option than bar chart as we can easily observe the countries with highest and lowest school dropout rates, at a single glance.

We have considered two types of settlements – Urban and Rural. In this chart, we have compared the dropout rates in Urban and Rural Areas for different countries.

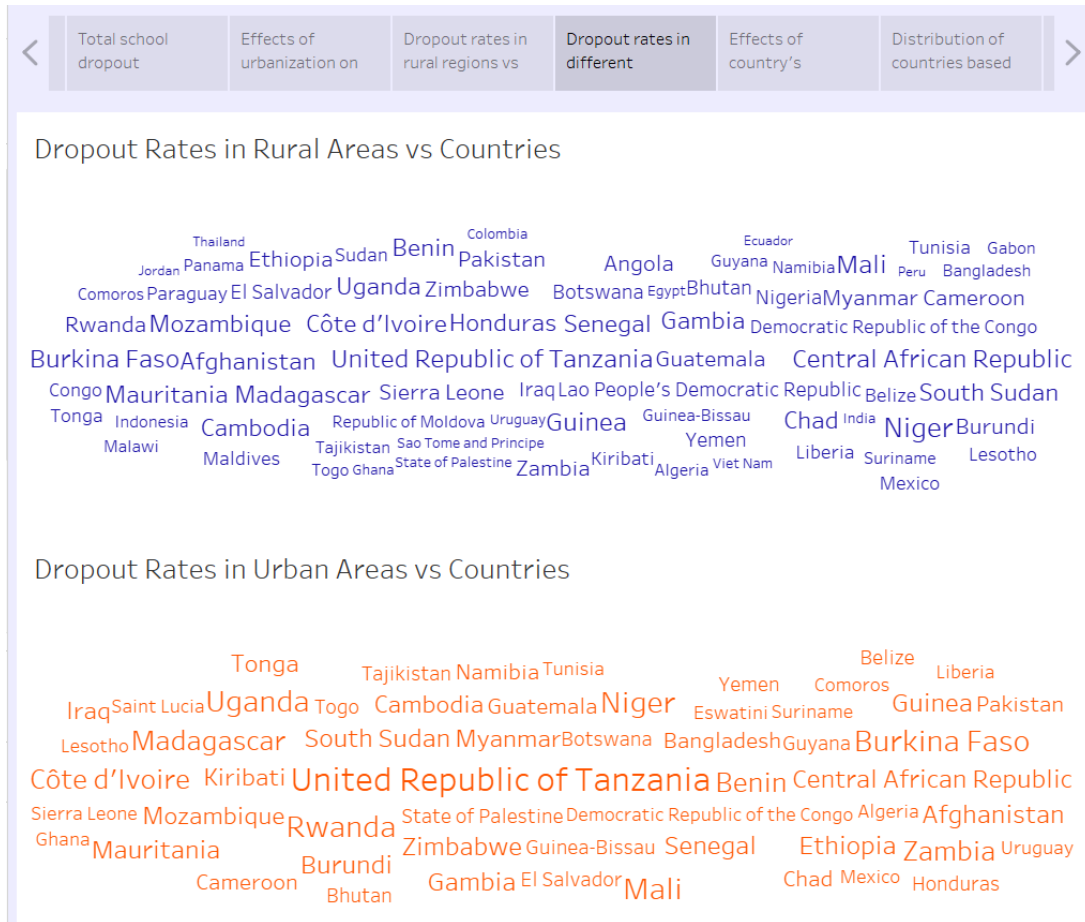Most countries as expected have higher dropout rates in rural areas but some exceptional countries with little or no difference are Rwanda, Sri Lanka, Bosnia etc. Countries with more dropout rates in urban areas are African countries like Eswatini, Kenya and even south Africa.

The differences between urban and rural school dropouts in various countries can be observed very clearly by this chart.

# Dropout Rates in Rural Regions vs Urban Regions
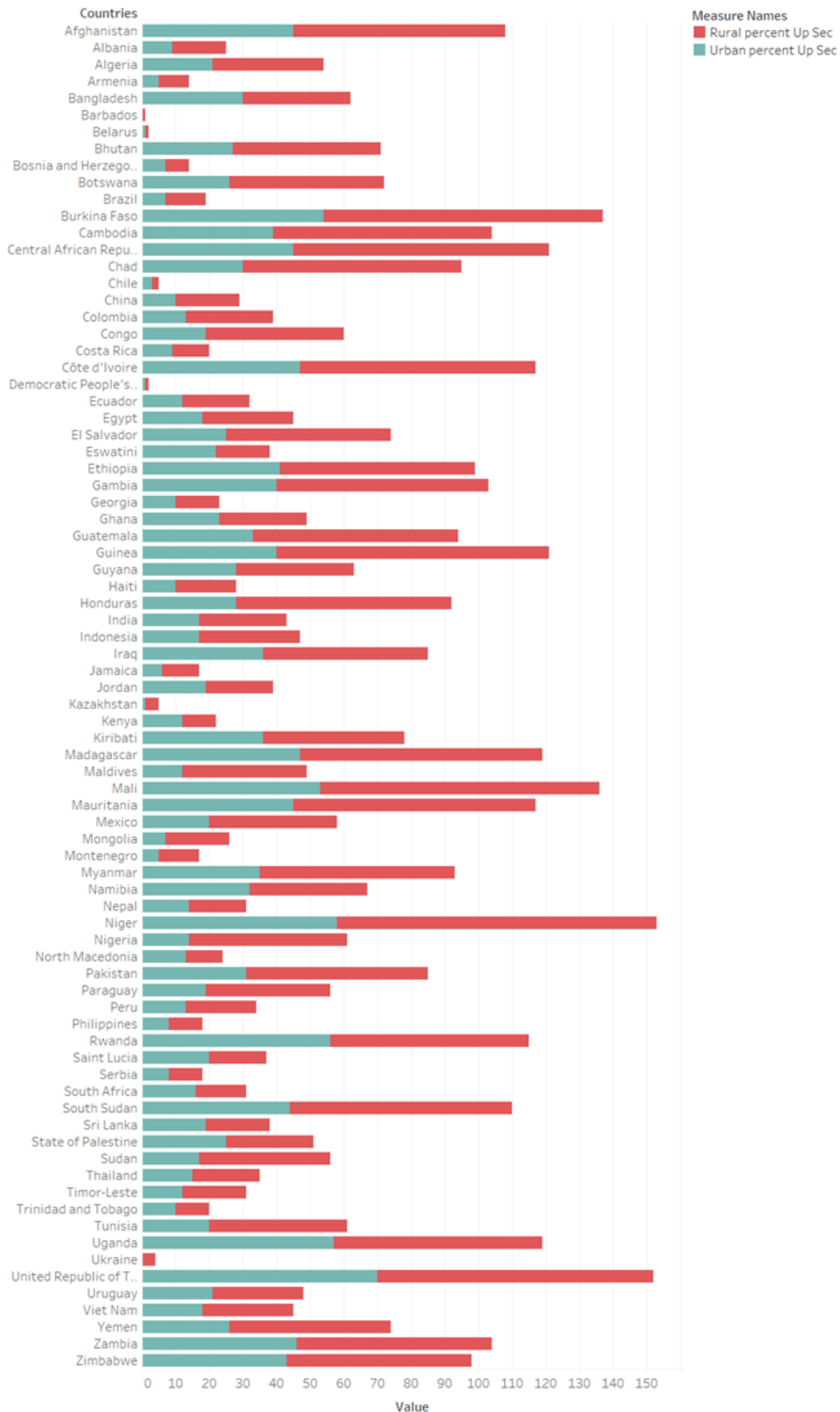
Rural percent Up Sec and Urban percent Up Sec for each Countries. Color shows details about Rural percent Up Sec and Urban percent Up Sec. The view is filtered on Countries, which keeps 80 of 106 members.

Dropout Rates in Rural Areas vs Countries

Thailand Colombia Ecuador Tunisia Gabon
Jordan Panama Ethiopia Sudan Benin Pakistan Angola Guyana Namibia Mali Peru Bangladesh
Comoros Paraguay El Salvador Uganda Zimbabwe Botswana Egypt Bhutan Nigeria Myanmar Cameroon
Rwanda Mozambique Côte d'Ivoire Honduras Senegal Gambia Democratic Republic of the Congo
Burkina Faso Afghanistan United Republic of Tanzania Guatemala Central African Republic
Congo Mauritania Madagascar Sierra Leone Iraq Lao People's Democratic Republic Belize South Sudan
Tonga Indonesia Cambodia Republic of Moldova Uruguay Guinea Guinea-Bissau Chad India Niger Burundi
Malawi Tajikistan Sao Tome and Principe Yemen Liberia Suriname Lesotho
Maldives Togo Ghana State of Palestine Zambia Kiribati Algeria Viet Nam
Mexico

Dropout Rates in Urban Areas vs Countries

Belize Liberia
Tonga Tajikistan Namibia Tunisia Yemen Comoros
Iraq Saint Lucia Uganda Togo Cambodia Guatemala Niger Eswatini Suriname Guinea Pakistan
Lesotho Madagascar South Sudan Myanmar Botswana Bangladesh Guyana Burkina Faso
Côte d'Ivoire Kiribati United Republic of Tanzania Benin Central African Republic
Sierra Leone Mozambique Rwanda State of Palestine Democratic Republic of the Congo Algeria Afghanistan
Ghana Mauritania Zimbabwe Guinea-Bissau Senegal Ethiopia Zambia Uruguay
Burundi Cameroon Gambia El Salvador Mali Chad Mexico Honduras
Bhutan

We will compare rural dropout rates among various countries. On doing so we conclude that Niger has the highest rural dropout rate which is 95% followed by Tanzania, ivory coast, guinea, and Central African Republic. The countries with the least dropout rates are Jordan, Thailand, and Ecuador

Now we will compare urban dropout rates among various countries. In doing so we conclude that Tanzania has the highest rural dropout rate which is 70% followed by Niger, Uganda, and Mali. The countries with the least dropout rates are Mexico, St. Lucia, and Suriname.

This can be easily observed through the word chart.
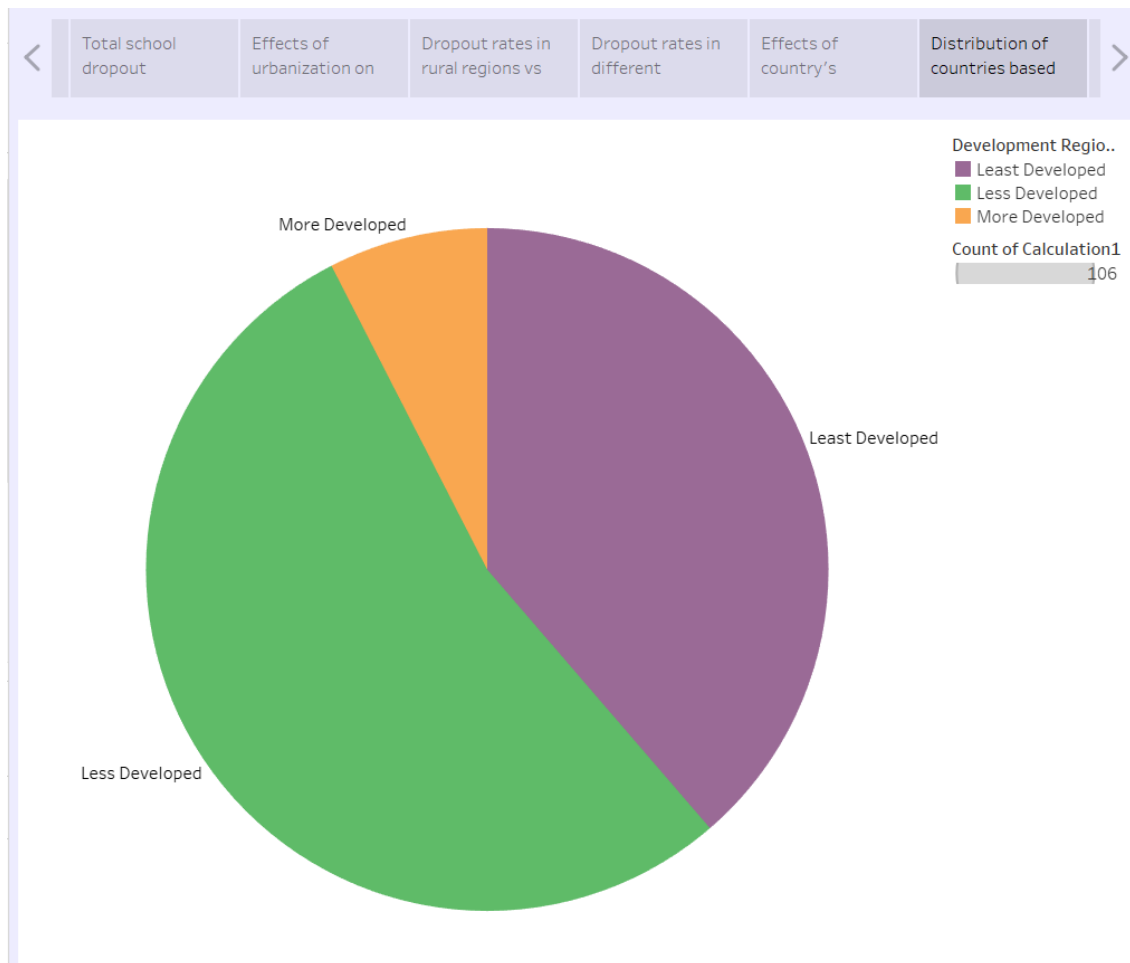
Our dataset has 106 countries, and they are divided into 3 sections as shown.

- Less developed having 57 countries like India, chile, Mongolia etc.
- The least developed having 41 countries like Chad, Afghanistan, Haiti, Nepal etc.
- And more developed having 8 countries like Belarus, Moldova and North Macedonia

The pie chart seems to be a better option as shown above as it gives a clear indication of the dropout rates in different sections.
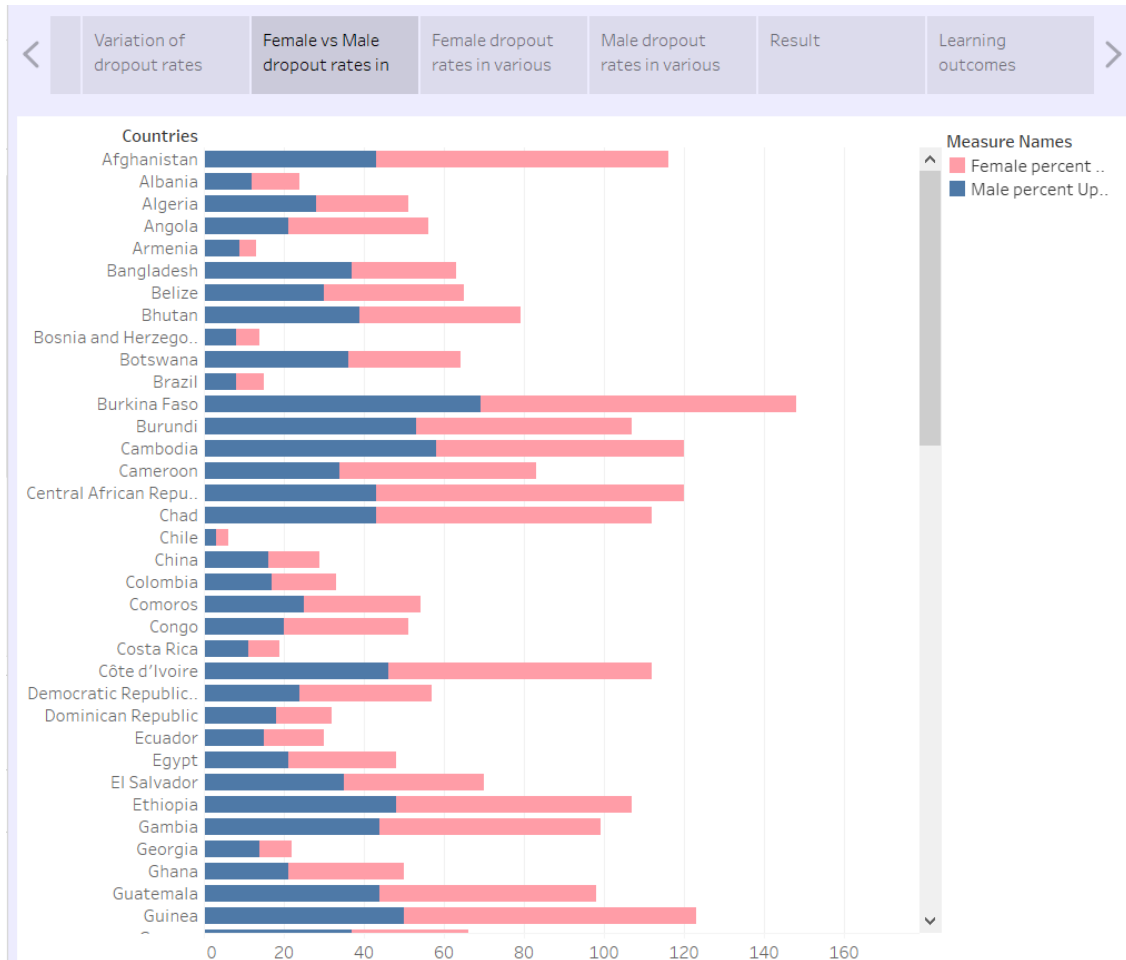
In this chart, we have compared the female dropout rates and male dropout rates for various countries

Most countries as expected to have higher female dropout rates and it is somewhat true

Out of the 106 countries we analyzed, 63 % countries have more female dropout rates

- Some countries with almost equal dropout rates are Chile, Albania, Nepal, Paraguay, and El Salvador
- The remaining 35 % of countries have more male dropout rates. Some exceptional examples are Mongolia, Thailand, Serbia, Colombia
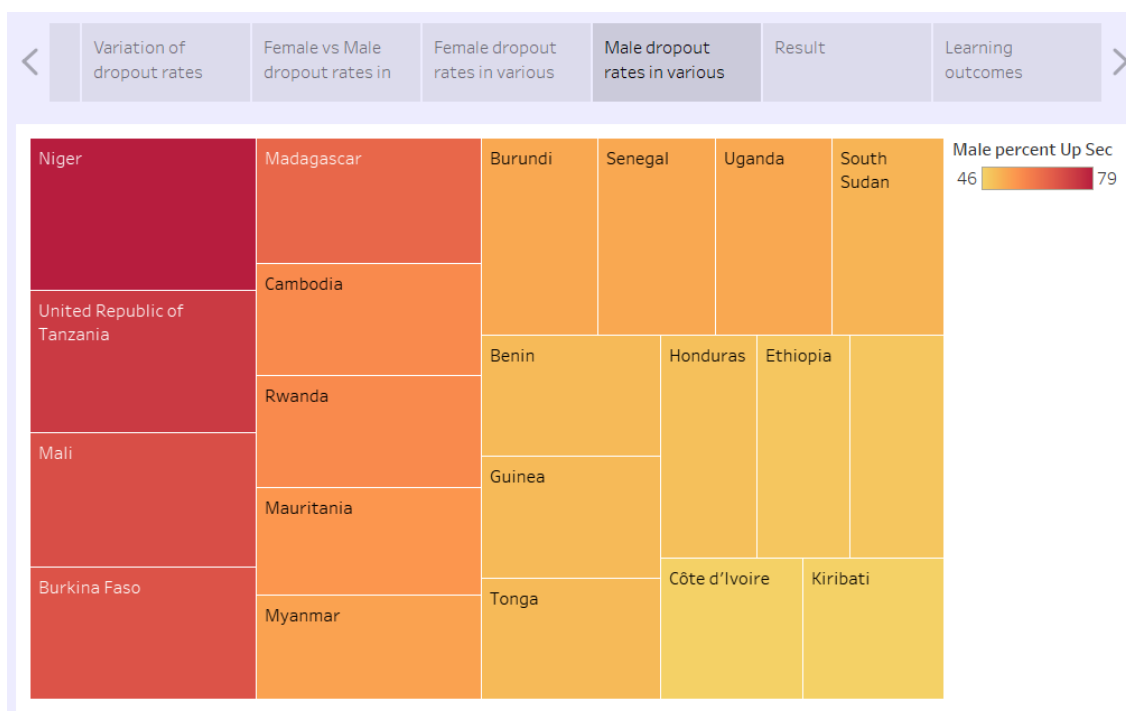
Male vs Female
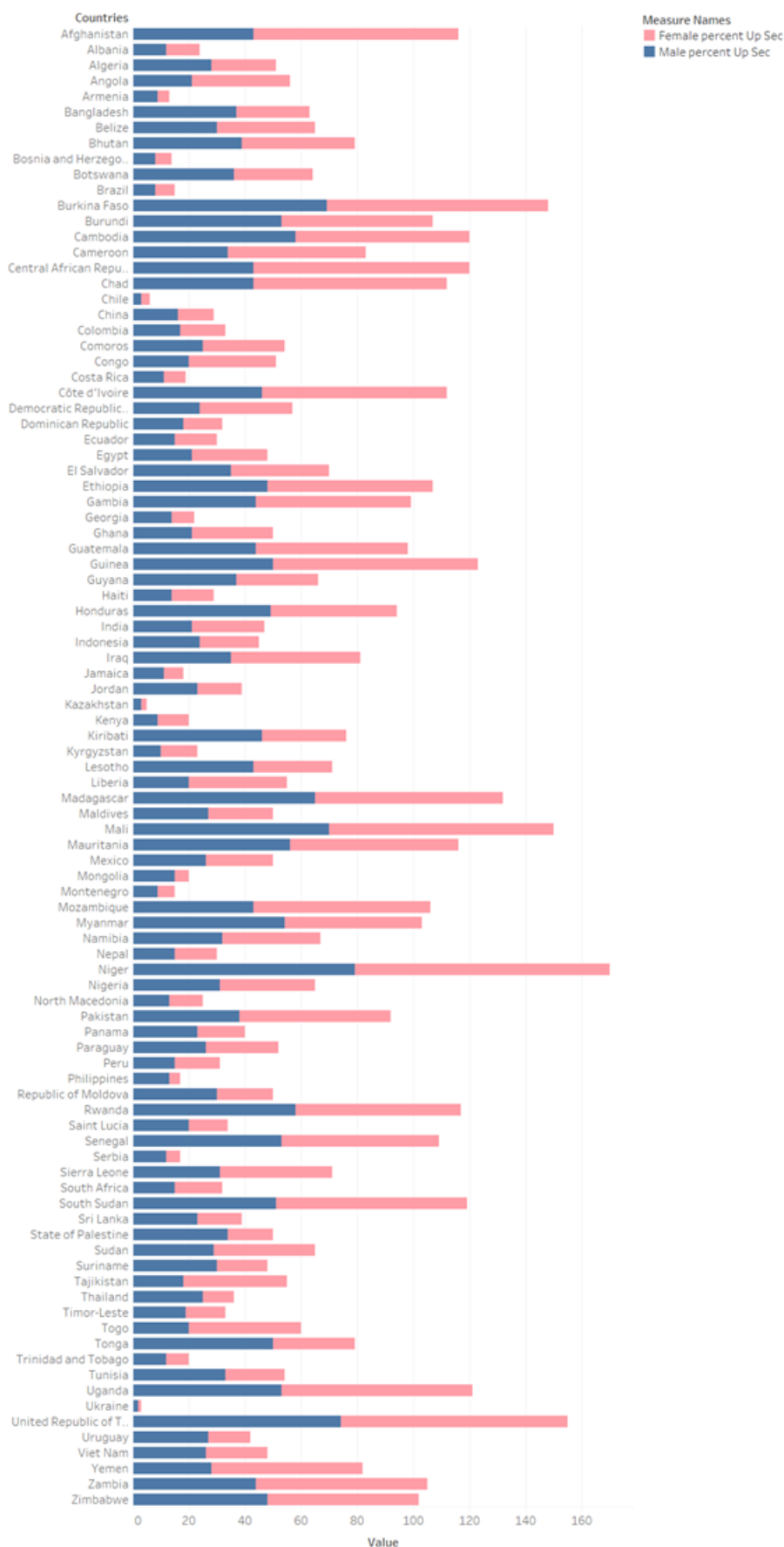
Female percent Up Sec and Male percent Up Sec for each Countries. Color shows details about Female percent Up Sec and Male percent Up Sec. The view is filtered on Countries, which keeps 95 of 106 members.
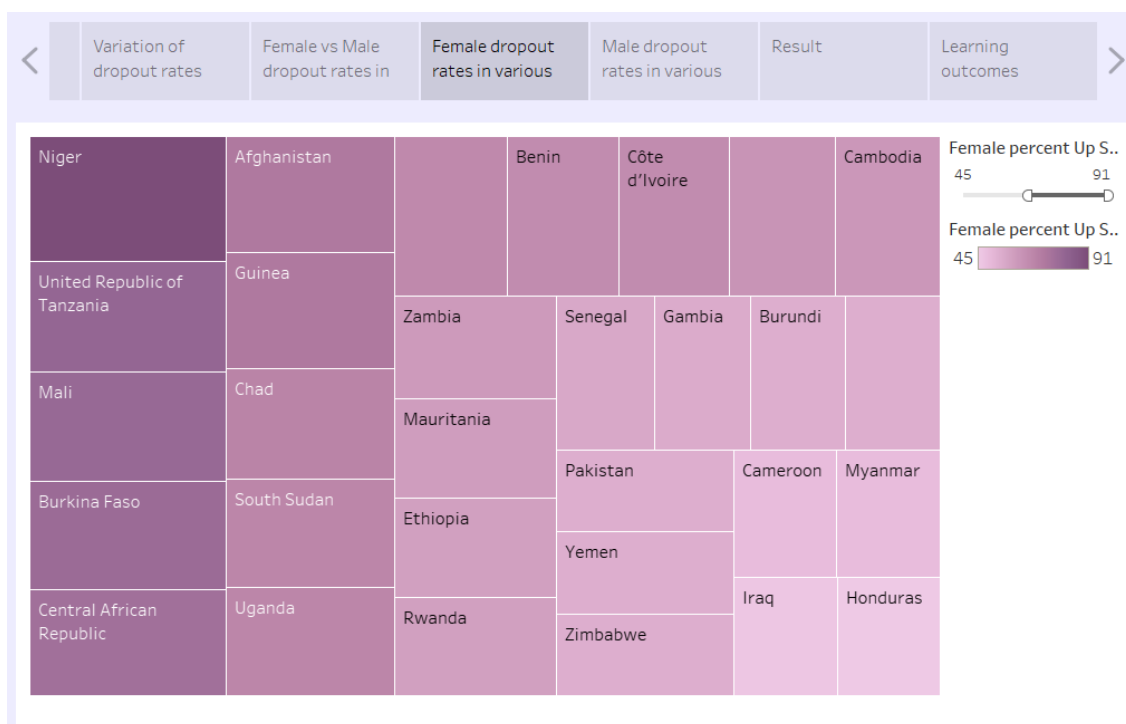
In the following tree chart, we can observe countries with extremely high female dropout rates. Niger is leading with 91 % followed by Tanzania, Mali etc.

In the following tree chart, we can observe countries with extremely high male dropout rates. Niger is leading with 79 % followed by Tanzania, Mali etc.

Conclusion:

Through this experiment we learnt about the concept storytelling and learnt to explain our dashboards in an effective way to explain our topic at hand – "Global School Dropout Rate" and how other factors affect it.

Date: **Signature of faculty in-charge**

Post Lab Question:

1. Explain the need of story in your words.

To minimize the audience's getting "lost in the data," effective data storytelling requires not only using the right tools but also employing best practices. There are a host of factors that impact the effectiveness of conveying your message.

Good data storytelling is even more important today. Clearly conveying the meaning of data has never been more key than during the Covid-19 crisis. As we demand answers and assessments of the pandemic's threats, the public have relied on people who can communicate both findings and uncertainties in understandable ways.

Great data storytellers have demystified complex concepts such as exponential curves and logarithmic axes. The media have been adept at turning data into stories about trends and movements and the impacts of changing lockdowns. More recently we have moved from data about the disease to the impacts on our economy.

We use data to find and share insights to persuade, inform and drive change. Having a full stack of data collection, storage, processing, and analysis is of no use if you and your employees do not know how to use that data to have conversations or to make decisions. Data storytelling turns data from neutral fields in a database into opinions, arguments, and insights.

Only by elevating data culture and educating on digital literacy across the board will we enable individuals to do more engaging and meaningful data storytelling, and in turn, to get a better return on your investment.