What?

1. Dataset type -> **Table**

   A **table** is a form of spreadsheet, that are made up of rows(items) and columns(attributes) and intersection of row and columns are cell. The cell contains the value.

2. Data type -> **Items and attributes**

   Items – *"An item is an individual entity that is discrete."* Items are the rows in the table, in our dataset the item is list of countries.

   Attribute – *"An attribute is some specific property that can be measured, observed, or logged."* Columns represents the attributes in the table. In our dataset country/region/world, sex, year

3. Attribute type

   Categorical attribute – Categorical attribute are the data which cannot be ordered. The value of this attribute type does not support any arithmetic operations. Categorical attributes in our dataset - *country/region/world and sex*

   Ordered

   -> **Quantitative** – Quantitative data are the values which supports all arithmetic comparisons.Quantitative attributes in our dataset – *prevalence of raised blood pressure, prevalence of diabetes, and prevalence of BMI.*

WHY?

ACTIONS

1. Analysis

   -> **Consume** – Consume is a process of using data which is already stored in a format that supports all computation.

   ->**Discover**: Finding new information like, pattern for each measurements and relationship between measurements from the data that was not known previously.

->**Present**: To communicate the findings to an audience by using dashboard and story.

-> **Produce**

->**Annotate**: Annotation is manually adding textual mark, point or area to the visualization elements. In this project I have used annotations to highlight the findings which makes audience understand the findings easily.

2. Search

->**Explore**: "*Both location and target are unknown."* In this case, we are searching for patterns in line graph, over time and across different regions.

->**Browse**: "*Location known and target unknown."* The location is known by the categorical attribute – *countries/regions.*

3. Query

->**Identify**: *"The scope of identity is a single target".* In the visualization, the map shows which country has the highest and lowest prevalence of raised blood pressure. That is, it shows specific references.

->**Compare**: *"The scope of compare is a multiple target."* In this case, we are comparing two or three measurements to find out any relationship between them.

->**Summarize**: *"The scope of the summarize is all possible target."* Provided an overall view of all the prevalence measurements for both men and women.

TARGETS

1. Data

->**Trend**: Looking for pattern in each of the measurements in this project. For instance, decrease in raised blood pressure and increase in obesity level.

2. Attributes

->**Distribution**: Distributing all the values for each attribute in the data to find which is having highest and lowest prevalence.

->**Correlation**: finding relation between measurements to achieve the analysis goals. For example: correlation between obesity and diabetes.

Finding 1

- The line graph shows that the obesity level is raising over time whereas raised blood pressure is decreasing.
- From 1980 to 2014, women were more likely to be affected by obesity than men while, men were more prone to raised blood pressure. (Over time)
- Bar graph illustrates more people are suffering from hypertension. By looking deeper about the raised blood pressure across countries, even though Hungary has less population than many other countries, it has higher prevalence of raised blood pressure. And USA has the less prevalence of raised blood pressure when compared to all other countries. (Across different countries/regions)

Women were more likely to be affected by obesity than men.
Prevalence of raised blood pressure is higher among men than women.
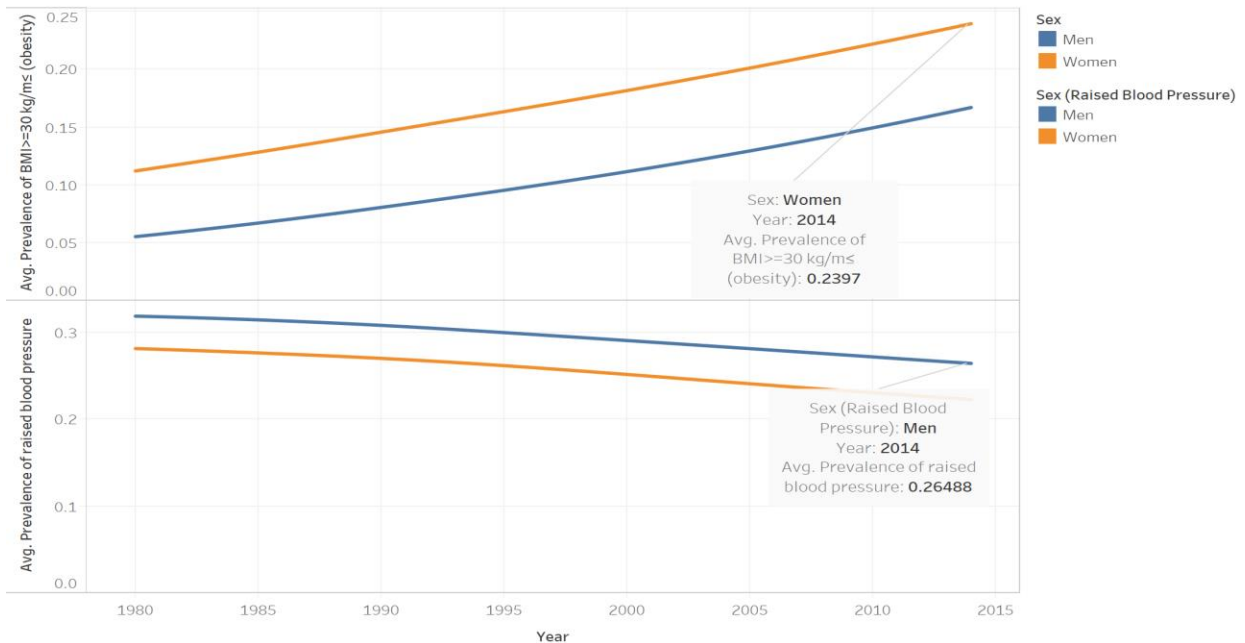
The trends of average of Prevalence of BMI>=30 kg/m≤ (obesity) and average of Prevalence of raised blood pressure for Year. For pane
Average of Prevalence of BMI>=30 kg/m≤ (obesity): Colour shows details about Sex. For pane Average of Prevalence of raised blood pressure:
Colour shows details about Sex (Raised Blood Pressure).

Finding 1: Mark and channels

- **Mark**: Line, it shows the increasing and decreasing pattern for the prevalence of obesity and raised blood pressure. Line is the most effective way to show the trend over time.

    Alternative design:

    - Circles can be used but it is hard to understand the trend when compared to line.
    - Bar charts can be used instead of line, but bar chart needs enough white space between values to show accurate trends. In this case we have many values, so bar chart is not most effective way to shoe pattern.
- **Channels**: Horizontal position mapping the timeframe. This is effective way to show the pattern of increasing or decreasing health issues over time.
- **Channels**: Color to differentiate sex (categorical attribute). Using color is best way to differentiate categorical values because it distinguishes between the categories and it is easy to understand the categories.

Alternative design:

- Shape can be used instead of color, but shape cannot be easily understood like colors.
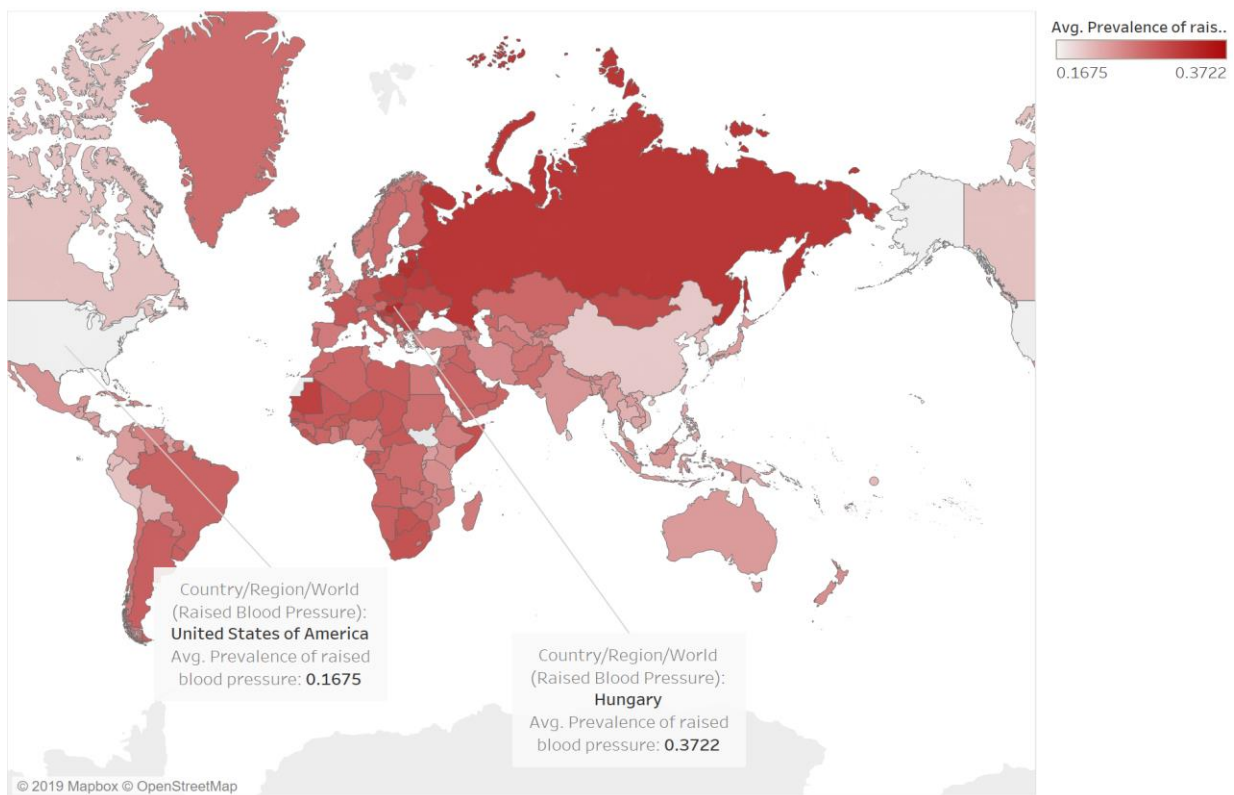
Map based on Longitude (generated) and Latitude (generated). Colour shows average of Prevalence of raised blood pressure. Details are shown for Country/Region/World (Raised Blood Pressure). The data is filtered on Clusters (2), which keeps multiple members.

Marks and channels: finding 1

Mark: Area, using the geographical location in the dataset the area is mapped. This is an effective way to show which country has highest and lowest of prevalence.
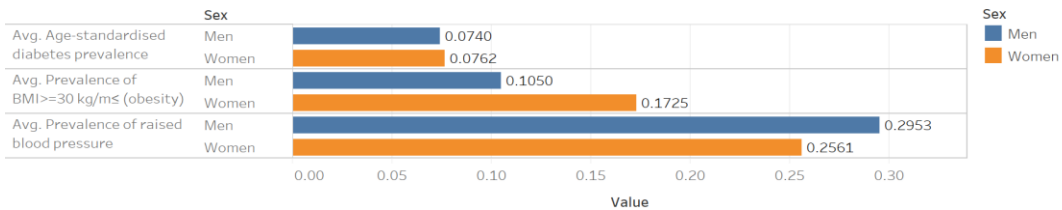
Channel: vertical position – latitude and horizontal position – longitude

Channel: color, color saturation is used to show the country which has highest and lowest prevalence of blood pressure.

Alternative design:

- Other channels like shape, size will not make sense when used in a map visualization.

Prevalence of diabetes, BMI, and Blood pressure in men and women

Avg. Age-standardised diabetes prevalence, Avg. Prevalence of BMI>=30 kg/m≤ (obesity) and Avg. Prevalence of raised blood pressure for each Sex. Colour shows details about Sex.

Prevalence of blood pressure in Hungary and USA
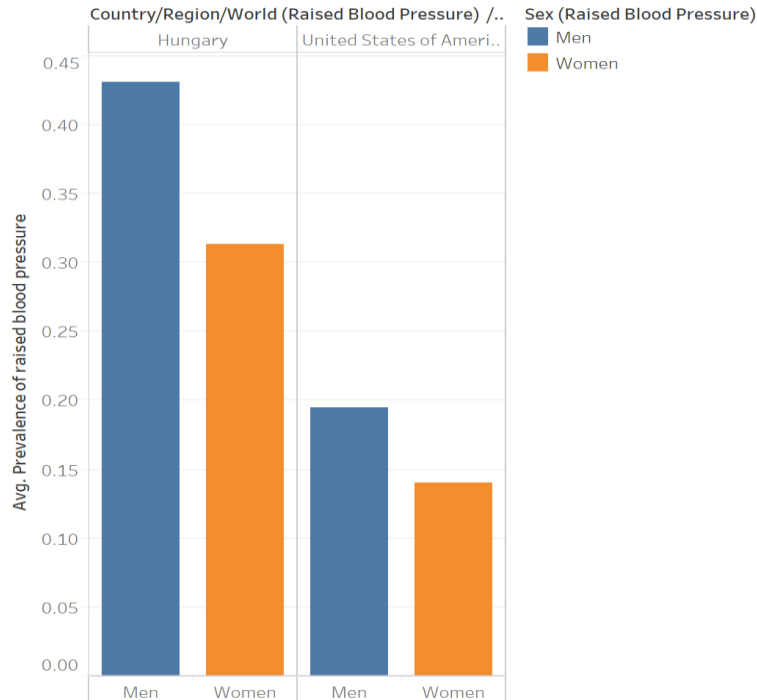
Average of Prevalence of raised blood pressure for each Sex (Raised Blood Pressure) broken down by Country/Region/World (Raised Blood Pressure). Colour shows details about Sex (Raised Blood Pressure). The view is filtered on Country/Region/World (Raised Blood Pressure), which keeps Hungary and United States of America.

Marks and channel: findings1

Marks: Line, one dimensional.

Channel: vertical position – quantitative – *avg. Prevalence of raised blood pressure*

Horizontal position – categorical attribute – *Sex*

Alternative design:

- line channel cannot be used in categorical data; it does not make sense. In similar way, shape and size cannot be used in categorical and quantitative attributes.

Finding 2

- There is a positive correlation between prevalence of BMI and diabetes. This explains that people with obesity has more chance to get diabetes.
- Looking across the countries and regions Nauru has the highest prevalence of both diabetes and obesity.
- In the year between 2001 and 2007, the prevalence of diabetes among men increased and by the next few years men are prone to diabetes then women, before that women's prevalence of diabetes was higher.

There is a positive correlation between prevalence of BMI and diabetes.This explains that people with obesity has more chance to affect by diabetes.Nauru has largest number of people affected by both obesity and diabetes
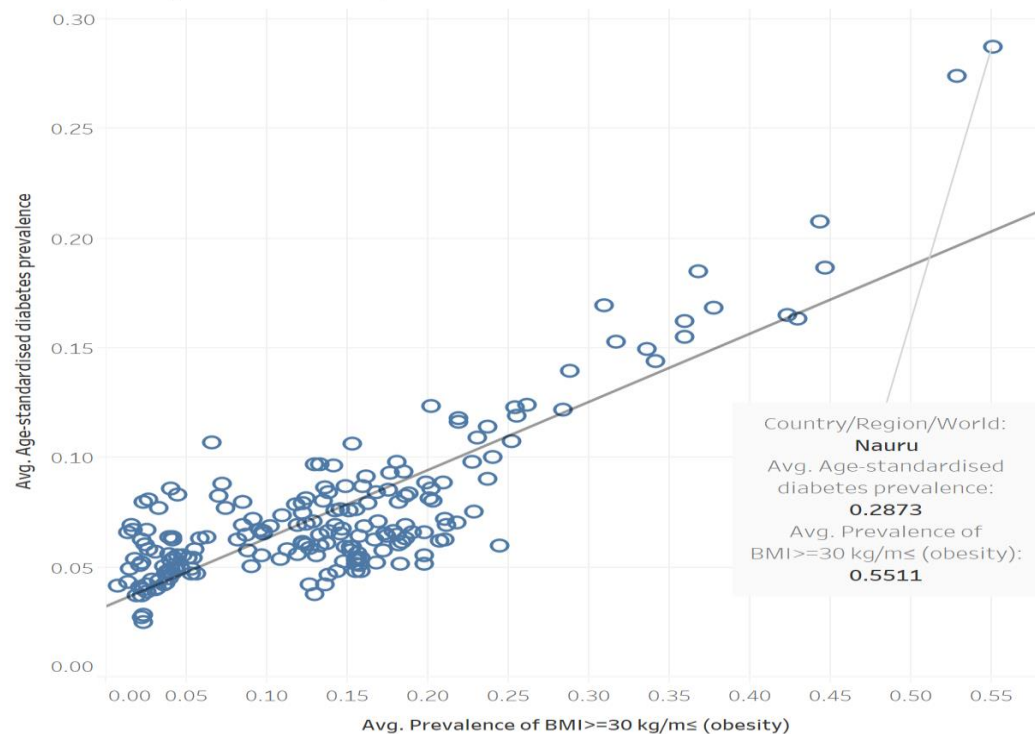
Average of Prevalence of BMI>=30 kg/m≤ (obesity) vs. average of Age-standardised diabetes prevalence. Details are shown for Country/Region/World. The view is filtered on Country/Region/World, which keeps 200 of 200 members.

Marks and channel: Finding 2

Marks: Points, the points denotes the avg.prevelance of BMI and diabetes in every country. This is most effective method to show correlation between measurements because it accurately shows the relationship between the measurements.

Channel: vertical- quantitative- avg.age-standardised diabetes prevalence

Horizontal position – avg.prevelance of BMI(obesity)

Alternative design:

- Size and color channel can be used for showing countries but there are many countries if we use these channels then it will be hard to understand the visualisation.

In the year between 2001 and 2007 , the prevalence of diabetics among men increased and by the next few years men are prone to diabetes then women, before that womens' prevalence of diabetes was higher.
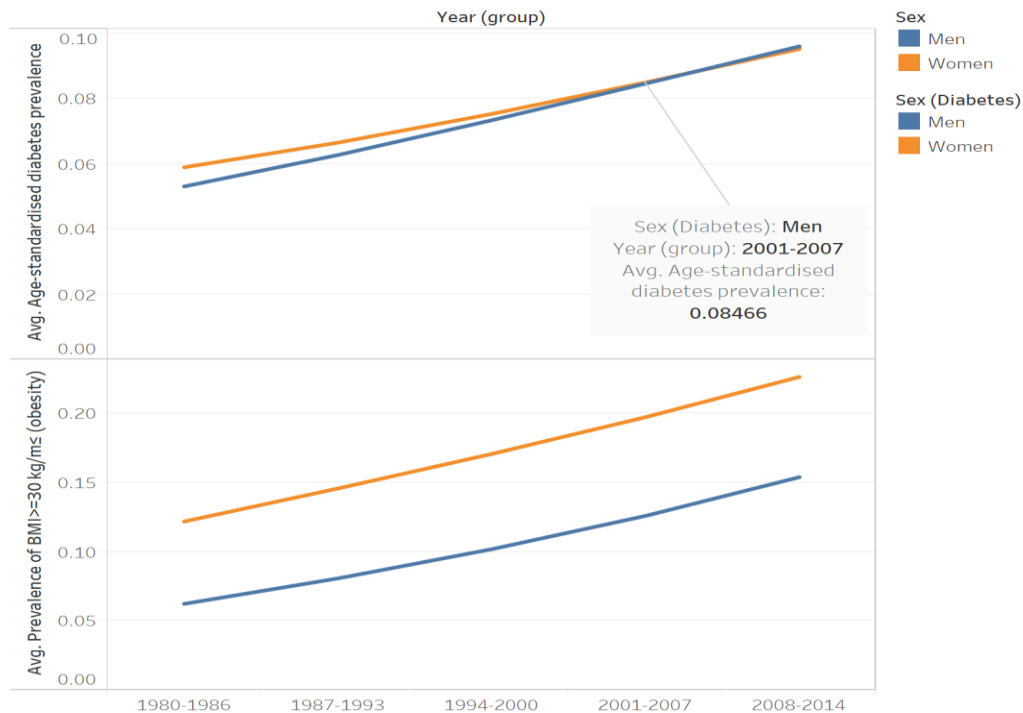
The trends of average of Age-standardised diabetes prevalence and average of Prevalence of BMI>=30 kg/m≤ (obesity) for Year (group). For pane Average of Age-standardised diabetes prevalence: Colour shows details about Sex (Diabetes). For pane Average of Prevalence of BMI>=30 kg/m≤ (obesity): Colour shows details about Sex.

Marks and channel: Finding 2

Mark: line, this shows the relationship between prevalence of BMI and diabetes

Channel: vertical position – *avg. Prevalence of BMI and Avg. Prevalence of diabetes*

Channel: color – categorical attribute – *sex*

Alternative design:

- We can use bar chart to show the relationship between measurements, but bar chart will not show exact trend over time like line chart explains. (change in men prevalence of diabetes in 2001 - 2007)
- We can use size channel for categorical attribute, but it is not as effective as color channel which distinguish the categories clearly.

Use of advanced features:

Dashboard: Dashboard is one of the advanced features in tableau which enables us to merge two or more sheet in single dashboard and make the visualization more effective and communicative. In this project, dashboard is used to combine findings.

Story: Story is used to display the vis in a sequential order so that it is easy to understand the findings and to be more interactive.