Report for Visual Analysis

Group Members and Student ID's

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WHAT

What is Dataset type?

- Multidimensional dataset based on 3 keys (countries, year, and sex)

What is the Data type?

- Countries, Year, Sex – Items
- Prevalence of BMI, Raised Blood Pressure, and Age Standardized Diabetes – Attribute

What is the Attribute type?

- Countries and Sex – Categorical
- Year – Ordinal Ordered
- Prevalence of BMI, Raised Blood Pressure, and Age Standardized Diabetes – Quantitative Ordered

Task 1

WHY

What does the visualization aim to show?

Finding 1:

- The pie and line chart will show the general idea of the difference in the prevalence of obesity between two sexes.

From 1975 to 2016

In the span of 41 years

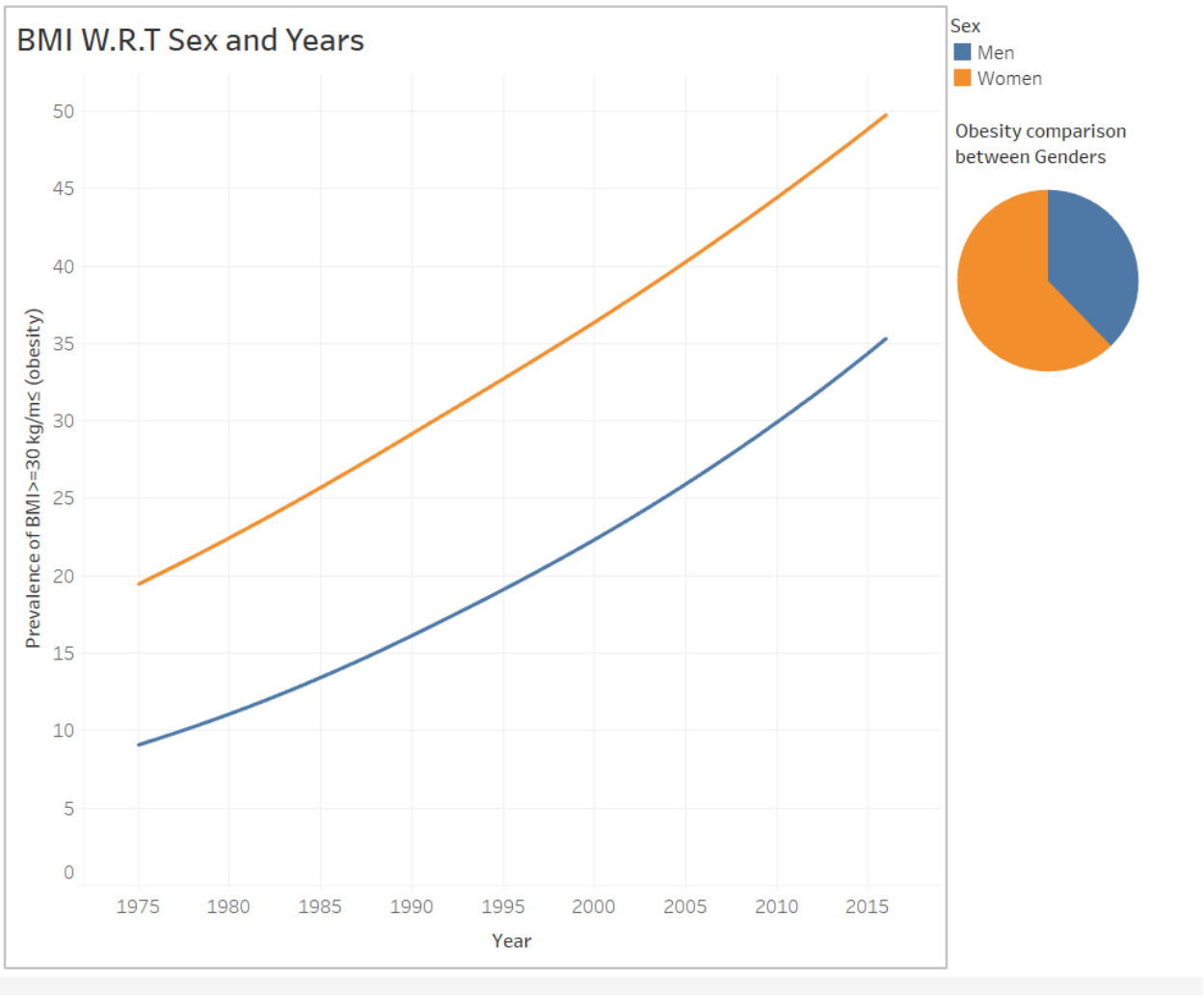
Prevalence of BMI in Women increased from 19.46 to 49.76, which is an overall increase of 30.3 across the globe (In context to this dataset).

That is 2.5 times the increase.

Prevalence of BMI in Men has also grown from 9.08 to 35.33, which is an increment of 26.25 across different regions.

That is 3.9 almost 4 times the increase

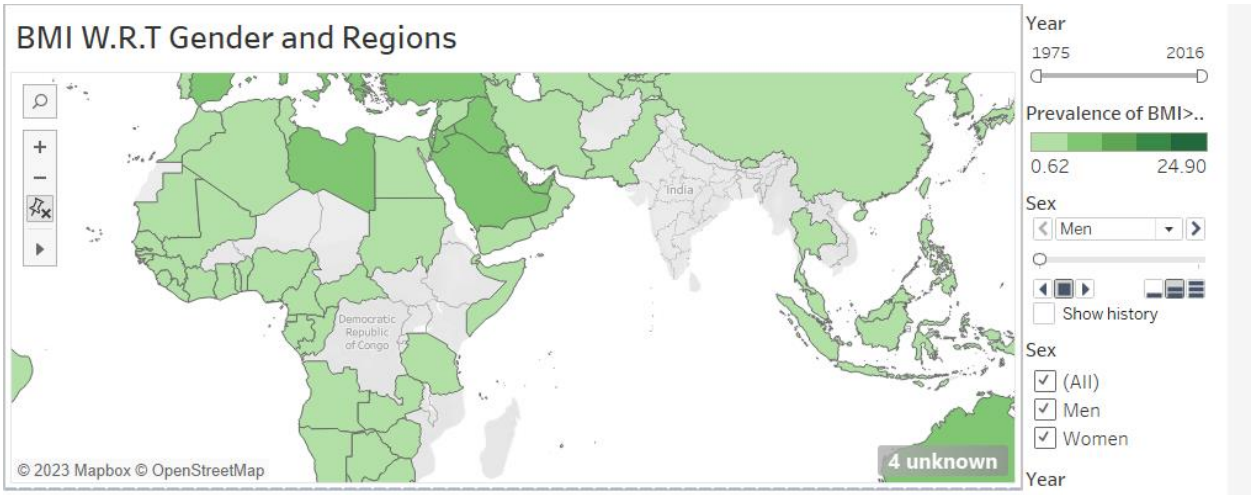
- We have also discovered that the prevalence of obesity in the overall population between two sexes, women are more prevalently obese than men since 1975 to 2016 and for both sex, the trend shows that prevalence has been constantly increasing. This can be seen also in a pie chart where women make up the bigger piece of the pie chart.



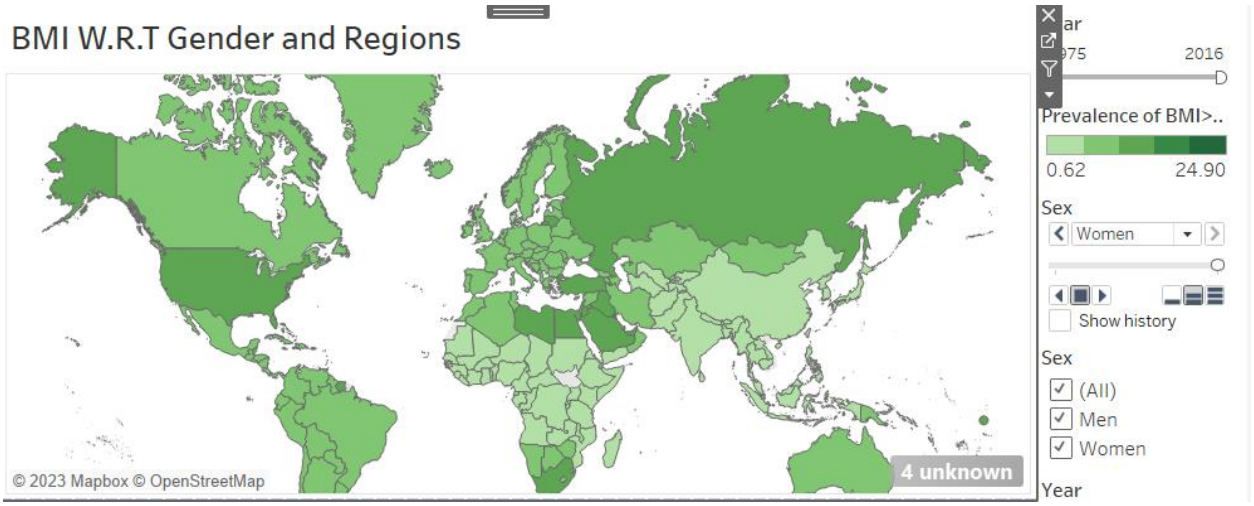
Finding 3:

- The visual shows a map with different color hues based on the **prevalence of BMI W.R.T Genders across different regions.**
- We have also done a world map visual to show the prevalence of BMI from 1975 to 2016 for each gender and we found that, for some regions That are dis-colored in the visual for Men basically suggest that there is no prevalence of BMI>=30 (obesity) in these regions for **males only.** To name a few regions; India, dr Congo, and some regions of Africa are included.
- For Women, The visual suggests the regions where obesity is prevailing in Females. The darker shades of green depicts the higher prevalence.

Men:

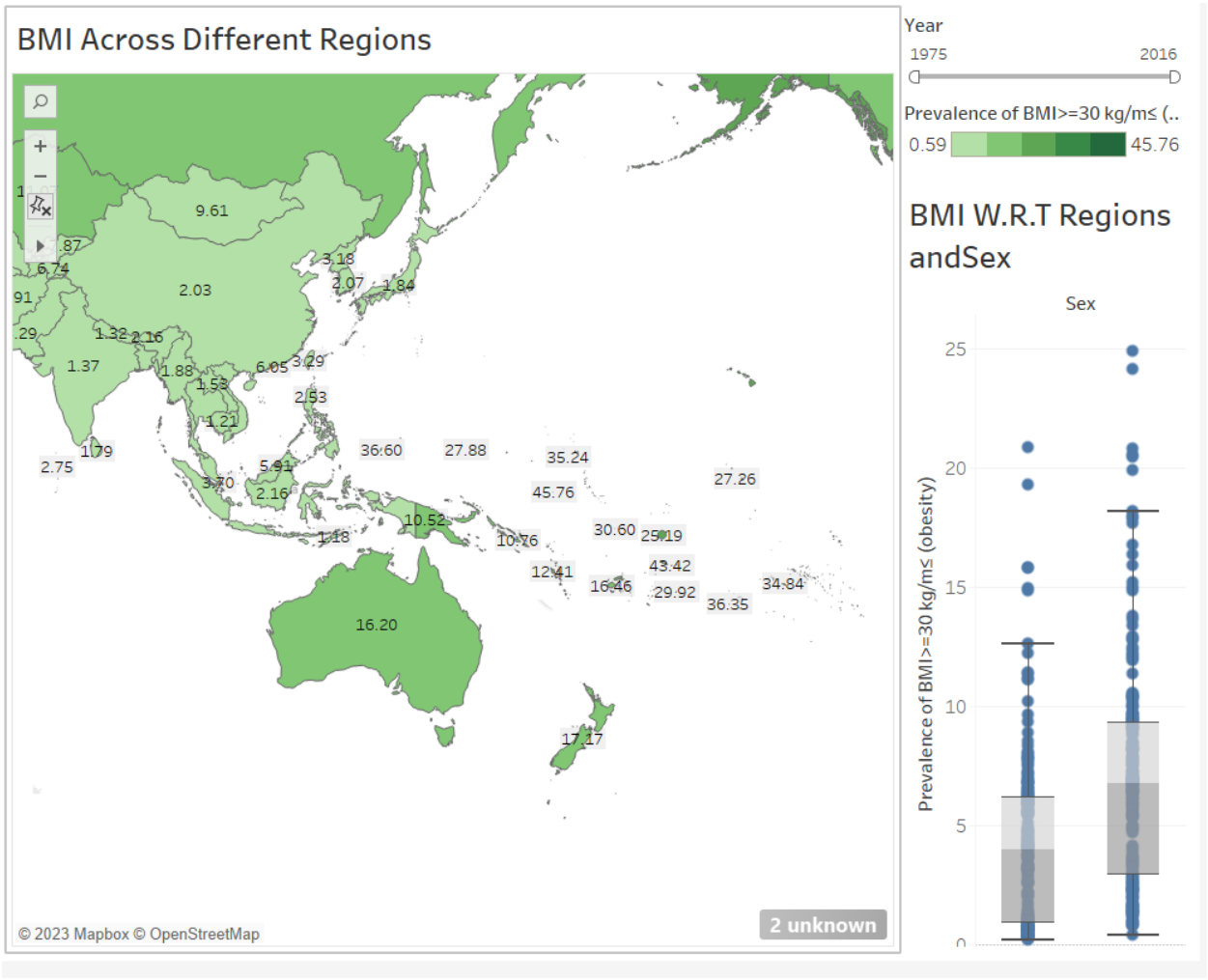


Women:

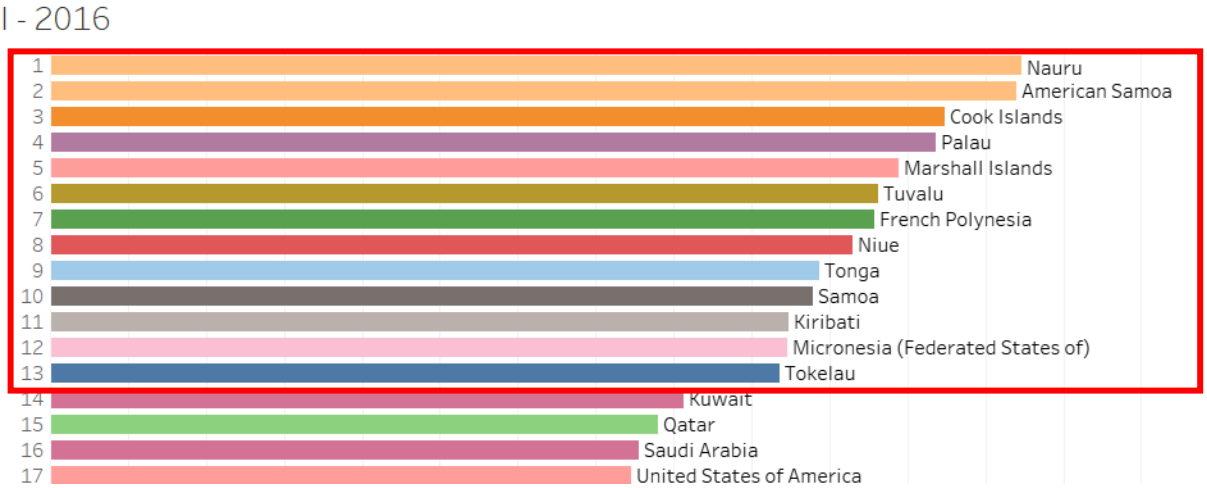


Finding 2:

- The Visual shows map for **BMI across different regions.** You can see the labels for oceanic regions and islands. The obesity levels are the highest in these regions compared to any other region



- We have **discovered** that although the USA has a high rank in terms of obesity, it is not the highest rank in the prevalence of obesity but it is the Pacific islanders such as Nauru, Cook Islands, America Samoa, and others. Alternatively, we can also see that the bottom of the list consists of countries in South, East, and Southeast Asia and Africa.



- Another **discovery** is that Middle Eastern countries also take some of the top spots.

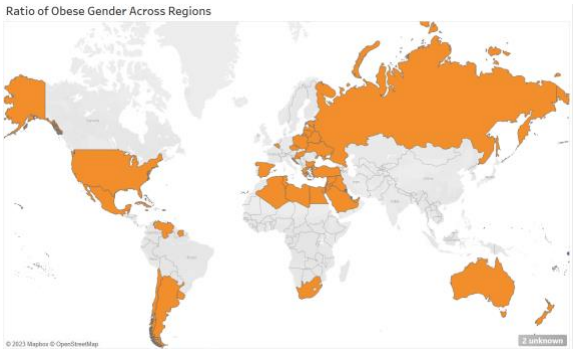
Describe the "Actions" from all three aspects: "Analyze", "Search", and "Query"?

- At first we have assumed that the USA will be in the highest rank in the modern era when it comes to obesity, raised blood pressure, and diabetes due to them being in the forefront of the media especially when it comes to their supersize meals and their love for sweet drinks especially soda.
- We also assume that women would be more obese than men in the earlier years since most jobs at that time were manual labor and were designed for men and as time goes by and the digital age started and a more liberal view of the world both men and women are working with jobs that are situated in an office setting the rate of increase for men will be higher than women.
- It is also assumed that as obesity increases the chances of having raised blood pressure and diabetes also increases. By analyzing the data simultaneously we will be able to see if it is true

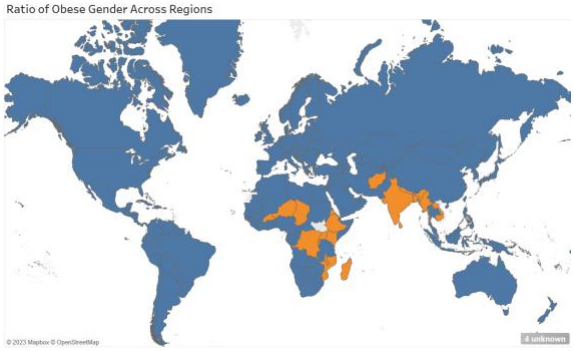
Describe the “Targets” from both the “Data” and “Attribute” aspect.

- We also found that initially in the early years (1975-1979), women are more increasingly obese than men but once the modern era (2016) rolls around, men obesity rate increases more than women.

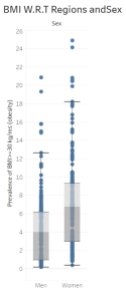
1975-1979



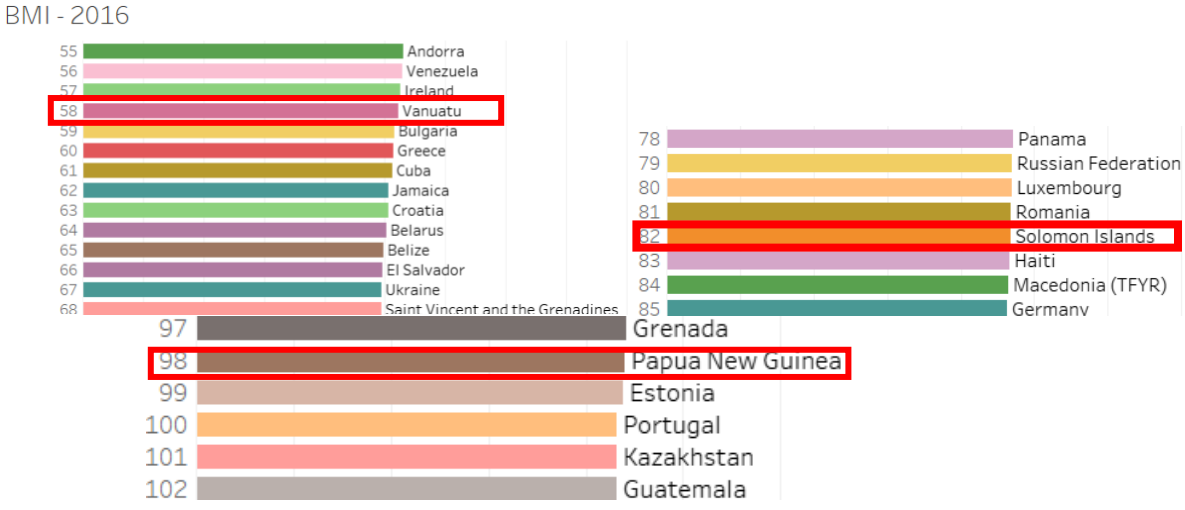
1975-2016



- For the same purpose as the map visual, we have also made a box plot to accurately show that there is a higher obesity rate in women compared to men.

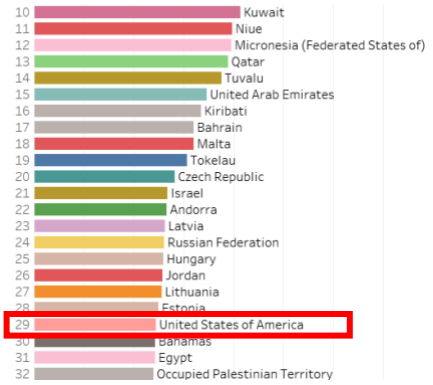


- Among the Pacific island nations, there are some that did not take the top spots such as Vanuatu, Solomon Islands, and Papua New Guinea

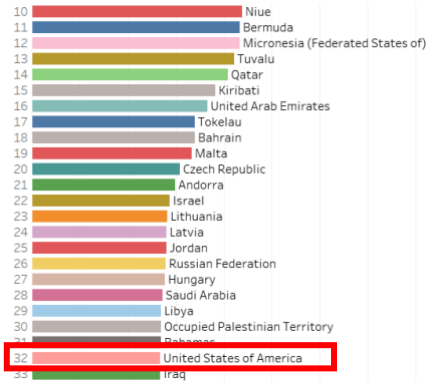


- We can also see that throughout the years the Oceanic and Middle Eastern regions have always maintained the top spots however Russia and its neighboring country were once within the top 30 in 1975 and have slowly dropped out of the top as time goes by. USA however has been on a decline until 1979 and has stagnated until 1982 then has gone on a massive increase to the present day. It is also noted that for every country, the prevalence of BMI increases every year.

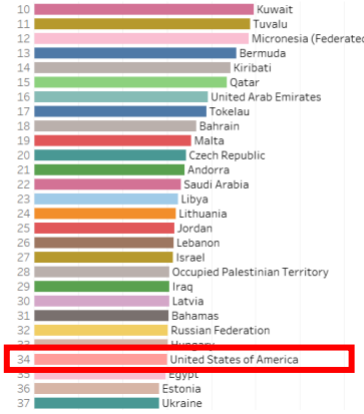
BMI - 1975



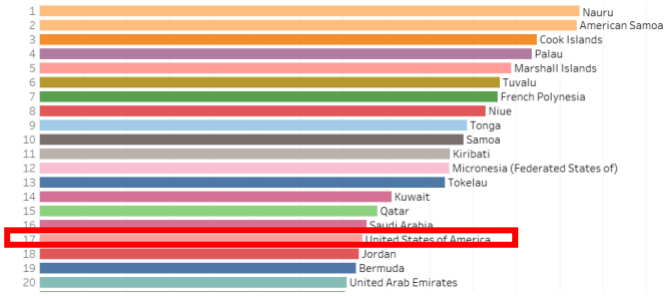
BMI - 1978



BMI - 1982



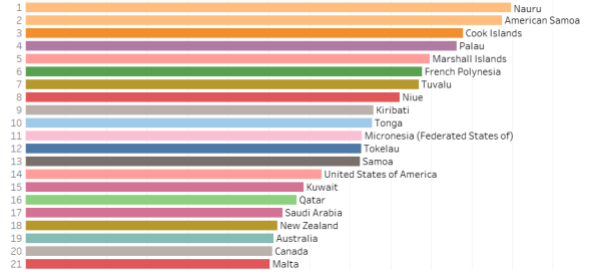
BMI - 2016



- We can also see that women in western countries like USA and UK are more self-conscious of their weight that men in those countries have a way higher rank in obesity rate than women.

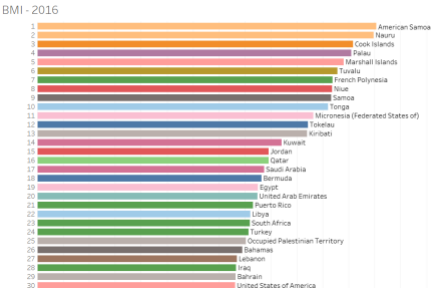
Men

BMI - 2016



Women

BMI - 2016

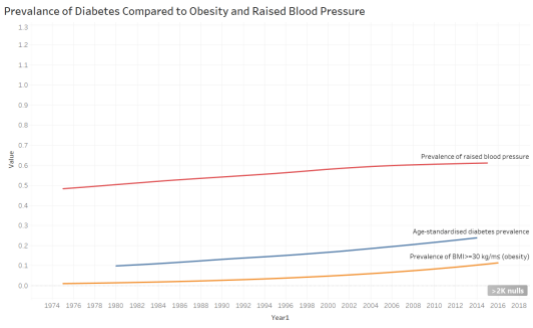


Task 2

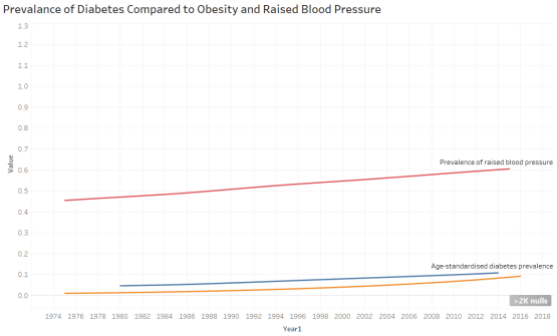
Finding 1:

- Although in general the raised blood pressure decreases as time goes by and obesity and diabetes increase not all countries follow similar structure. Take for example Afghanistan and Ethiopia, has its raised blood pressure increases along with the other measures as time goes by.

Afghanistan

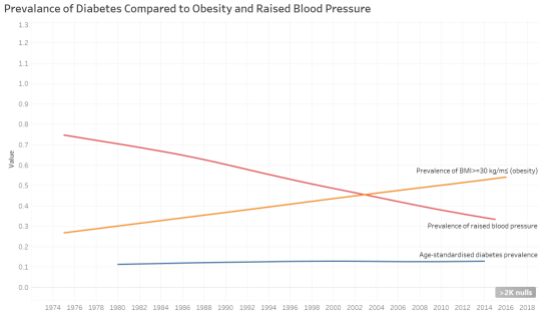


Ethiopia

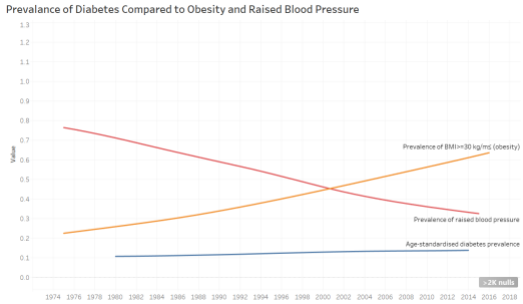


- In some cases we can also see an increase in obesity with the other measures stable or decreasing showing no correlation like from Israel and New Zealand.

Israel

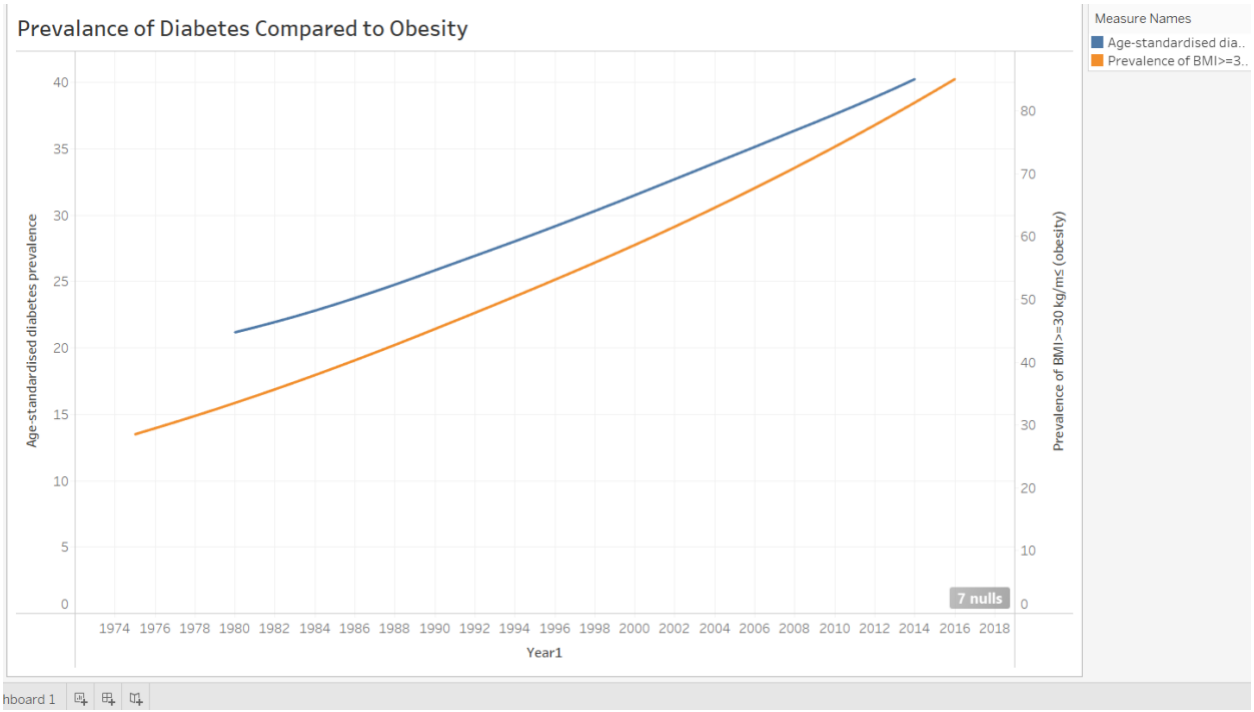


New Zealand



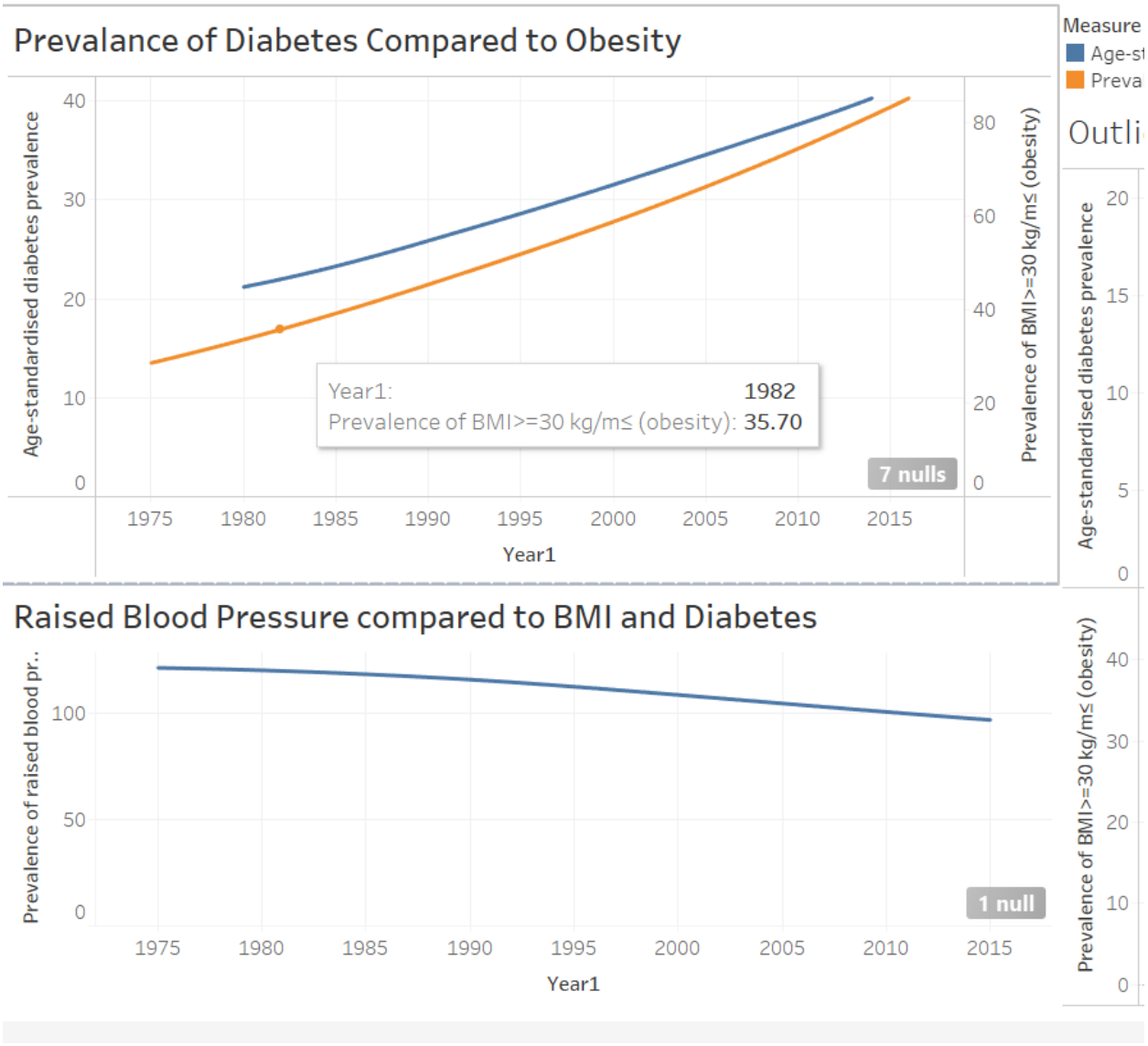
Finding 2:

- Line graph visual shows the Prevalence of diabetes compared to obesity, as you can see in the graph there is a **direct positive correlation** between prevalence of diabetes and BMI>=30 (obesity) throughout the years.



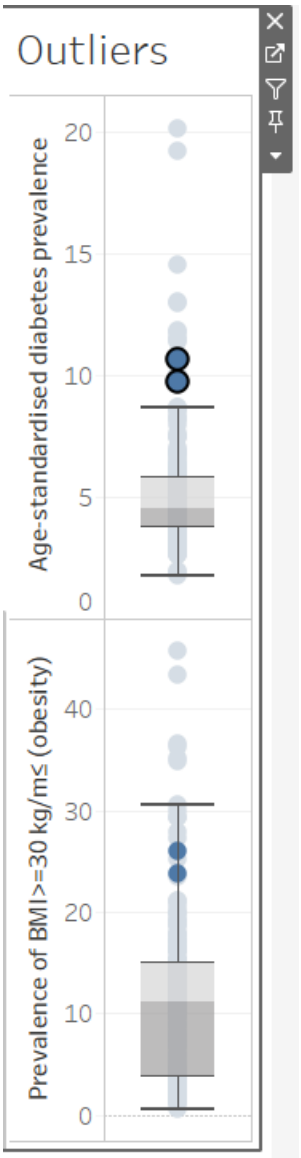
Finding 3:

- The standalone Line underneath the graph of finding 2, represents Raised Blood Pressure In comparison with BMI and Diabetes Prevalence. The line shows a downwards trend Where although there is a positive correlation for Diabetes and BMI, but for raised Blood Pressure the Correlation is Negative with respect to the other two measurements.



Finding 4:

- The whisker Plot shows the two outliers in terms of the raised blood pressure. We can see the two highlighted points are Qatar and Kuwait, Both of these lie outside the upper bound or quartile for diabetic prevalence, but if we take a look at their standings in the BMI whisker plot we will notice that they comfortably lie in between the upper quartile, which suggests that the obesity levels are not too high and raised blood pressure are quite high for these regions in terms of their ratio with the other regions



HOW

Describe the visual mapping or encoding (2%): What are the marks (point, line, shape, etc.);
-What are the channels and what attributes are mapped to them (e.g., 'profit' is mapped to size);

Task 1
Finding 1

- The channel for the pie chart are color for sex and area for the prevalence of BMI
- The channel for the line chart are color for sex, position (horizontal) for year, position (vertical) for the prevalence of BMI.

Finding 2

- The channel for the map visual is color, specifically color hues to represent how high or low the prevalence of BMI is.
- The channel for the box plot is position (vertical) to also show with more accuracy how high or low the prevalence of BMI is.

Finding 3

- The channels for the BMI bar chart are sizes to represent the prevalence of BMI and color to represent the different countries.

Task 2

- The channels for the line graph is color to represent the different measures (BMI, raised blood pressure and diabetes), position (horizontal) for year, and position (vertical) for the measured value.

-Include features such as filtering and dashboard if there is any.

Task 1
Finding 2

- The filter used on the visual map is sex to see the difference in obesity rate and year range can be scaled to include a certain time frame when needed.

Finding 3

- The filter is used on the bar graph to separate men and women to see if there is any difference on the BMI rate as the entire population. A dashboard based on the year is also made.

Task 2

- We have made a dashboard to get an in depth view of what country contributes to the overall reading.

Why are such visual mapping and design effective (2%):
-Why is the chosen chart type a good fit for the finding (e.g., why bar chart is better than other chart types for this finding)

Task 1
Findings 1

- The pie chart is chosen for to view how much of a difference the obesity how much of a difference the obesity is between men and women without the year in context.
- The line chart was chosen to better show the growth rate as the years went on.

Findings 2

- The visual map is chosen to see where specifically in the globe the country has the highest or lowest obesity rate and to see if there are similarities with their neighboring countries and determine if culture plays a part in these results.
- The box plot was chosen to show which between the 2 sex has a higher obesity rate in an easier manner than the visual map.

Findings 3

- A bar chart is great for determining the ranking of the prevalence of obesity as it is simple to analyze by just look at length of the bar and having to create a sort function of either the highest or the least.

Task 2

- We chose the line graph since it is a great visual to show the relationship between multiple measures in graph.

-Is the visual mapping/encoding using the most effective visual channels? For example, why showing 'profit' with size is good for the finding?

Task 1
Findings 1

- The pie chart is the best in order to demonstrate how large the obesity is between the 2 sexes but the line chart is more suitable as it can tell the story of the data through every year.

Findings 2

- The visual map is a great visual to pinpoint the exact location of where the prevalence of obesity is high or low.
- The box plot can accurately show the prevalence but at the cost of not knowing the location.

Findings 3

- For the bar graph, yes, it is better to have the countries with different colors to distinguish them better than with all having the same color. The size of the bar is also chosen to show difference between different countries and the growth of the prevalence each year.

Task 2

- The line graph is a great visual as it can show the trend of the measures easily.

-This also applies to features such as filtering and dashboard if there is any

Task 1
Findings 2

- A dashboard was made to be able to see difference in the obesity rate in different time ranges.

Findings 3

- The filter for men and women is used to show the difference in the obesity prevalence rank between men and women and a year dashboard is made to show the growth in prevalence throughout the year.
  Task 2
- A dashboard is also made for an in depth view on each country prevalences trend.