Coursework2:Data Visualization

\<Comparsion treemap\>

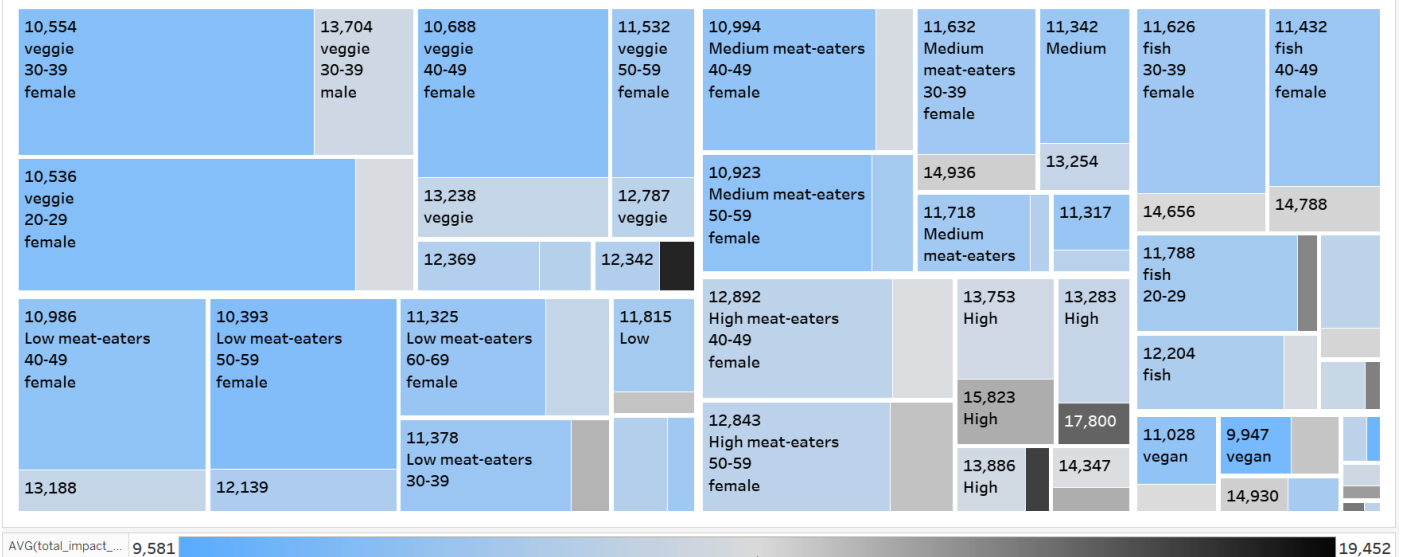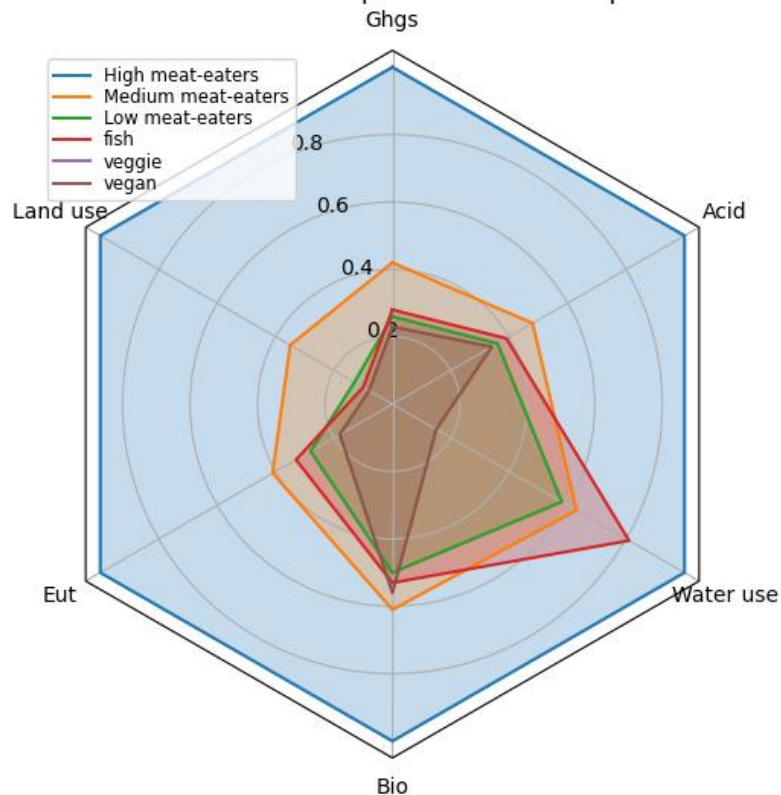| 10,554 veggie 30-39 female | | 13,704 veggie 30-39 male | 10,688 veggie 40-49 female | 11,532 veggie 50-59 female | 10,994 Medium meat-eaters 40-49 female | | 11,632 Medium meat-eaters 30-39 female | 11,342 Medium | 11,626 fish 30-39 female | 11,432 fish 40-49 female |
10,536 veggie 20-29 female		13,238 veggie	12,787 veggie	10,923 Medium meat-eaters 50-59 female	14,936	13,254	14,656	14,788
		12,369	12,342		11,718 Medium meat-eaters	11,317	11,788 fish 20-29	
10,986 Low meat-eaters 40-49 female	10,393 Low meat-eaters 50-59 female	11,325 Low meat-eaters 60-69 female	11,815 Low	12,892 High meat-eaters 40-49 female	13,753 High	13,283 High	12,204 fish	
		11,378 Low meat-eaters 30-39		12,843 High meat-eaters 50-59 female	15,823 High	17,800	11,028 vegan	9,947 vegan
13,188	12,139				13,886 High	14,347		14,930

AVG(total_impact_... 9,581 ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ 19,452

Different Diet Group Environmental impact

- **First Visual Design Type:** Treemap
- **Name of Tool:** Tableau
- **Diet Groups**: Veggie, Low meat eaters($<50gd^{-1}$), Medium meat eaters(50-$99gd^{-1}$), High meat eaters($\geq100gd^{-1}$), Fish, Vegan
- **Age groups:** 20-29, 30-39, 40-49, 50-59, 60-69, 70-79
- **Gender:** Female, Male
- **Visual Mappings:**

–color: color is mapped to the difference between total environmental impact

    –shape: each bottom level rectangle represents a diet group

    –size: the size of the bottom-level rectangle is mapped to the difference in participants number between the diet group and age group, segmented by gender.

    –position: the position of each rectangle is determined by the participant's number; rectangles representing more participants are positioned further to the left.

    –hierarchy: the rectangles are grouped by diet group → age group → gender

- **Unique Observation:** We can see the outliers that the veggie between 70 and 79 imposes the greatest burden on the environment, which surprises me. Then it is followed by high meat eaters between 20 and 29.

  Besides, the vegan between 50 and 59 has the least impact on the environment.

  Given that most areas of high meat eaters are close to dark, we can estimate that the high meat eaters put the greatest pressure on the environment.

  Also, females impose less impact on the environment as their areas are bluer than males in general.

  In terms of participants' features, the female participants outnumber male participants, with veggies constituting the largest group This could create bias in the final output.

- **Data Preparation:** To calculate the environmental impact, the column of total environmental influence is calculated by summing standardized GHG emissions, Agricultural Land Use, Water Scarcity, Biodiversity, Water Usage, and Acidification Potential.

- **Second Visual Design Type:** Radar area chart

- **Name of Tool:** Python

- **Diet Groups**: Veggie, Low meat eaters($<50gd^{-1}$), Medium meat eaters($50-99gd^{-1}$), High meat eaters($\geq100gd^{-1}$), Fish, Vegan

- **Environmental impacts**: GHG emissions, Biodiversity, Water use, Acidification, Eutrophication and Land use

- **Visual Mappings:**

    –color: color is mapped to show differences between diet groups

    –axis: each axis represents a different aspect of environmental impact

- **Unique Observation:**

  From the radar area chart, it is obvious that high meat eaters rank highest in all aspects of negative impact on the environment. Vegan has the least negative impact on the environment. The special thing is that the fish diet ranks only second in water use.

- **Data Preparation:** Normalize different impacts like land use, GHGs, acid, water use, bio, eutrophication on a scale from zero to one.

- **URL to source code:** https://github.com/Emilyhelin/visualization-environmental-impact