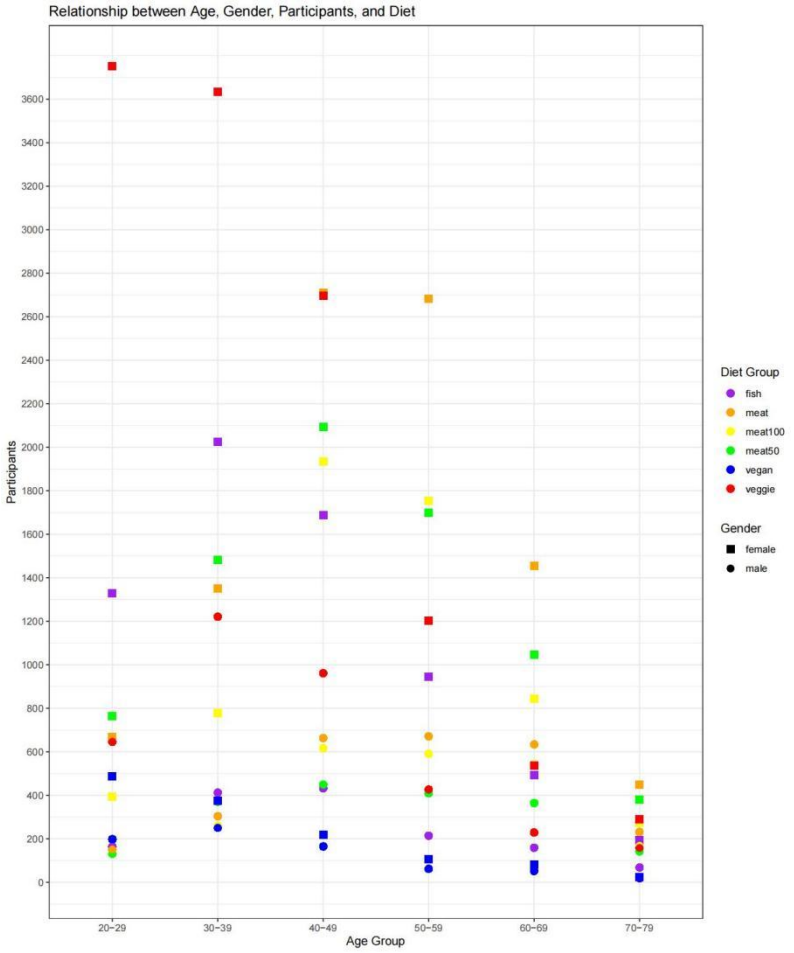
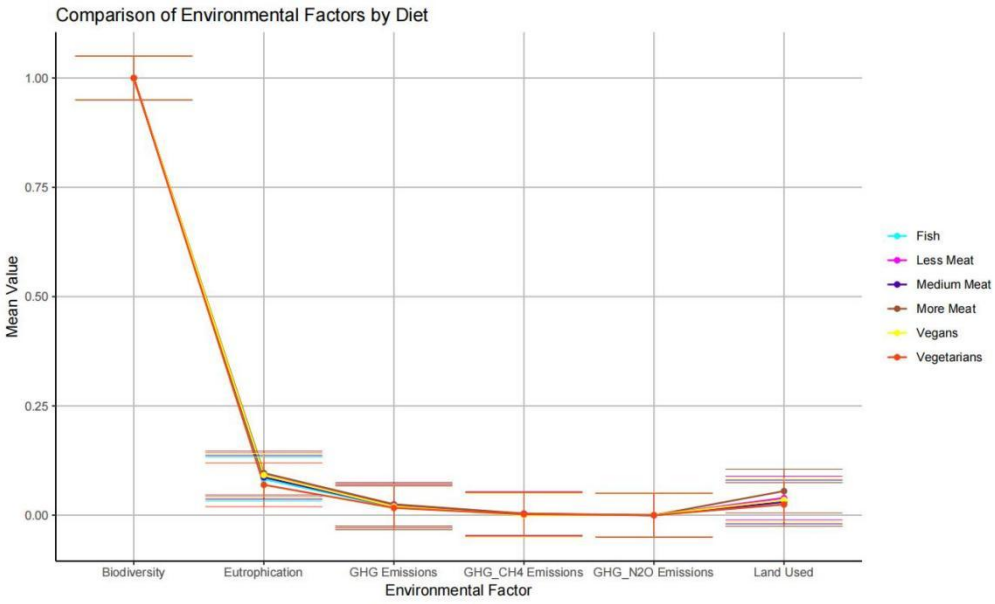
Visualization: Analysis of Environmental Impact and Demographic Factors in Dietary Types





- **Visual Design Type:** Relationship/Scatter plot; Comparison/Parallel coordinate plot
- **Name of Tool:** R studio
- **Country:** UK
- **Study Focus:** Relationship and Comparison by Diet Patterns
- **Year:** 2023
- **Visual Mapping:**
  - **color:** In the scatter plot, six different colors were used to distinguish dietary groups; similarly, six different colors were used in the parallel coordinate plot to distinguish dietary groups.
  - **shape:** In the scatter plot, different shapes are used to distinguish different genders.
  - **position:** In the scatter plot, two coordinate axes represent the age group and the corresponding number of participants; in a parallel coordinate graph, two axes represent the average value of environmental indicators and environmental factors, respectively, with the vertical axis data ranging from 0 to 1.
- **Unique Observation:**
  - The scatter plot reflects the relationship between dietary groups and age, gender, and number of participants. Observers can clearly and intuitively obtain the distribution of population corresponding to different genders and dietary groups for each age group from the graph.
  - The parallel coordinate graph illustrates the comparison of the environmental impacts of different dietary habits. Each line represents a dietary habit connected to the average of different environmental factors. In addition, in order to eliminate numerical differences caused by different scales, normalization mathematical methods were used to classify different scales into the same data scale between 0 and 1, making it easier for observers to distinguish the relative manifestations of different dietary habits in different environmental factors.
- **Data preparation:**
  - Firstly, modify the data table and rewrite the data to a data name that is easy to describe and understand. For example, rewrite "mean_bio" to "biodiversity," "meat100" in the "diet_group" column to "more meat," and so on.
  - Secondly, calculate the weighted average of each dietary group to reflect the impact of different dietary types and environmental factors.
  - Finally, using normalized mathematical methods to standardize the final data, the data scale is scaled between 0 and 1, making it easier to observe and analyze the data.
- **User-interaction:**

  Interactive data graph and video display. Video URL:
  https://youtu.be/t_6BWZTETj8
- **Resource URL(Contains source code and PDF file):**

  https://github.com/YeQ456/Research-Method