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## **A STUDY ON THE AWARENESS LEVEL OF SUSTAINABLE DEVELOPMENT GOALS**

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## Table of Contents

<b>PROJECT OVERVIEW .....</b>	<b>1</b>
<b>LITERATURE .....</b>	<b>1</b>
<i>Level of Awareness .....</i>	<i>1</i>
<i>Challenges .....</i>	<i>2</i>
<i>Success Stories .....</i>	<i>3</i>
<b>METHODOLOGY .....</b>	<b>4</b>
<i>Sample and Sampling Design .....</i>	<i>4</i>
<i>Data Collection .....</i>	<i>4</i>
<i>Overview of the Instrument and SDGs evaluated in the study. ....</i>	<i>4</i>
<i>Reliability of the Instrument.....</i>	<i>6</i>
<b>DEMOGRAPHIC .....</b>	<b>9</b>
<i>Gender:.....</i>	<i>9</i>
<i>Ethnicity:.....</i>	<i>9</i>
<i>Education:.....</i>	<i>9</i>
<i>Marital Status:.....</i>	<i>10</i>
<i>Age .....</i>	<i>10</i>
<b>OVERALL SCORE .....</b>	<b>11</b>
<i>Awareness and understanding of SDGs in General .....</i>	<i>11</i>
<b>SDGs SCORES .....</b>	<b>11</b>
<i>SDG 1: No Poverty (Item 2).....</i>	<i>13</i>
<i>SDG 2: Zero Hunger (Item 3) .....</i>	<i>13</i>
<i>SDG 3: Good Health and Well-being (Item 4 &amp; 5) .....</i>	<i>14</i>
<i>SDG 4: Quality Education (Item 6) .....</i>	<i>14</i>
<i>SDG 5: Gender Equality (Item 7).....</i>	<i>14</i>
<i>SDG 6: Clean Water and Sanitation (Item 8 &amp; 9) .....</i>	<i>15</i>
<i>SDG 7: Affordable and Clean Energy (Item 10) .....</i>	<i>15</i>
<i>SDG 8: Decent Work and Economic Growth (Item 11) .....</i>	<i>15</i>
<i>SDG 9: Industry, Innovation, and Infrastructure (Item 12) .....</i>	<i>16</i>
<i>SDG 10: Reduced Inequality (Item 13) .....</i>	<i>16</i>
<i>SDG 11: Sustainable Cities and Communities (Item 14) .....</i>	<i>16</i>
<i>SDG 12: Responsible Consumption and Production (Item 15) .....</i>	<i>17</i>
<i>SDG 13: Climate Action (Item 16) .....</i>	<i>17</i>
<i>SDG 14: Life Below Water (Item 17) .....</i>	<i>17</i>

<i>SDG 15: Life on Land (Item 18)</i> .....	18
<i>SDG 16: Peace, Justice, and Strong Institutions (Item 19)</i> .....	18
<i>SDG 17: Partnerships for the Goals (Item 20)</i> .....	18
<b>OVERALL SDG AWARENESS BASED ON DEMOGRAPHICS</b> .....	<b>19</b>
<i>Gender</i> .....	19
<i>Age</i> .....	19
<i>Ethnicity</i> .....	21
<i>Marital Status</i> .....	24
<i>Level of Education</i> .....	25
<b>SDGs AWARENESS ACROSS GROUPS</b> .....	<b>27</b>
<i>Gender Differences</i> .....	27
<i>Level of Education Difference</i> .....	30
<i>Age Group Difference</i> .....	40
<i>Marital Status</i> .....	47
<i>Ethnicity</i> .....	48
<b>Network Analysis on SDGs</b> .....	<b>51</b>
<i>Interpretation:</i> .....	52
<i>Weights Matrix</i> .....	52
<i>Network Structure</i> .....	53
<i>Centrality Measures per Variable</i> .....	54
<i>Centrality Graphs</i> .....	54
<b>RECOMMENDATIONS</b> .....	<b>55</b>
<i>Recommended Topics for Future Research on SDG Awareness in Sarawak</i> .....	56
<b>CONCLUSION</b> .....	<b>57</b>
<b>REFERENCES</b> .....	<b>57</b>

## PROJECT OVERVIEW

The Sustainable Development Goals (SDGs) are a set of 17 global objectives established by the United Nations to to mitigate global sustainability-related issues such as social, economic, and environmental challenges. The SDGs aim to create a sustainable world by 2030, with a specific focus on areas such as poverty, hunger, health, education, gender equality, clean water, and climate action, among others.

In the context of Sarawak's developmental agenda, the SDGs provide a framework to ensure that sustainable development initiatives throughout the region contribute to the state's overall sustainable development. The Sarawak government is committed to aligning its strategies and policies with the SDGs, thereby progressing in areas that promote the well-being of its people, in hope that it can help address critical challenges, promote inclusivity, and foster environmental sustainability.

This research aimed at evaluating the awareness and comprehension of the United Nations' SDGs within Sarawak. With a focus on 17 SDGs as outlined by the United Nations, the project assesses public awareness on SDGs, analyze disparities across age, education, and socioeconomic groups, and identify notable patterns of data related to SDG understanding in Sarawak. The research involves both urban and rural communities across major towns, districts, and sub-districts in Sarawak, utilizing a mixed-method approach for data collection. The main objective is to assess the level of awareness on SDGs among Sarawakians and provide insights for shaping policies related to SDGs in the state. Subsequently, this project contributes to the greater understanding of sustainability awareness and play a pivotal role in advancing sustainability initiatives in Sarawak.

This report presents a comprehensive examination of a study focused on assessing participants' awareness and comprehension of the Sustainable Development Goals (SDGs). It includes demographic factors, including gender, ethnicity, education, marital status, and age. Additionally, the report conducts an analysis of overall SDG awareness across demographic categories to examine variations in awareness among different groups. Noteworthy is the inclusion of a section on network analysis that includes interpretations, weight matrices, network structures, centrality measures, and graphs. This analytical approach contributes to a better understanding of the complex relationships and influences pertaining to SDGs among the study participants.

## LITERATURE

### Level of Awareness

The assessment of SDG awareness in prior research was conducted in diverse samples. Locality can affect awareness of the Sustainable Development Goals (SDGs) due to unique perspective (Javeed et al., 2020). Studies suggest that the level of awareness on SDGs varies across different regions, with some countries like Singapore, Iceland, and Sweden having high levels, while others like Afghanistan, Central African Republic, and Somalia have low levels, and countries like Pakistan and China showing mixed results (Fullman et al., 2017) Within a country, the results can also be significantly difference. For instance, a significant spatiotemporal difference was observed across different regions in the 2000s, whereby eastern China recorded a higher awareness score compared to western China(Xu et

al., 2020). Therefore, the results of these studies should not be extrapolated to a broader population. In the case of Sarawak, aside from this research, a comprehensive state-wide SDG awareness research was not found.

Most awareness studies found were conducted in schools and higher education institutes. For example, a survey to assess the level of awareness and knowledge of the SDGs was conducted in a Nigerian university. Only 43% of those surveyed were aware of the SDGs, with only 4.2% having good knowledge of them. However, respondents held a positive attitude toward the SDGs (56.3%) (Omisore et al., 2017). Another survey conducted among Thai industrial-education teachers has shown that an average overall higher percentage of respondents scored in the categories of attitudes (90%) and action (91%) than in the awareness category (69%). However, the survey also revealed that the lowest-ranked items in the attitudes and action categories were related to SDG 5, which focuses on gender equality. (Sunthonkanokpong & Murphy, 2019). Notably from the research, it was found that respondents who reported having good knowledge of the SDGs were mainly academic staff or had studied or learned about the goals (Omisore et al., 2017). The gap in knowledge poses a significant risk to the achievement of the SDGs.

For the student sample, a recent survey conducted among University of Malaya students sought to assess their level of knowledge and attitudes toward SDGs. The findings indicated that the respondents had a positive attitude toward SDGs and possessed a high level of knowledge (Afroz & Ilham, 2020). However, it is worthy to note that the level of awareness and knowledge of students regarding SDGs are highly dependent on locality. For example, high-performance schools in Greater Kuala Lumpur recorded the highest scores for knowledge, attitude, and practice towards SDGs as compared to other regions (Ilham et al., 2021). Although the level of awareness in higher education is acceptable, there should be initiatives to elevate SDG awareness further. The implementation of project-based awareness campaigns, such as Ecological Projects, has shown to be effective in raising students' awareness of the SDGs. This effort subsequently increased students' cognitive, social, and moral levels (Manolis & Manoli, 2021).

## **Challenges**

The European Sustainable Development Network (ESDN) Quarterly Report reported various challenges in the implementation of the 2030 Agenda and the Sustainable Development Goals (SDGs) (Mulholland et al., 2017). The 2030 Agenda represents a worldwide pledge made by all United Nations Member States to attain sustainable development by 2030. This agenda comprises 17 Sustainable Development Goals (SDGs) that target global challenges such as poverty, inequality, climate change, environmental degradation, peace, and justice. The 2030 Agenda offers a comprehensive blueprint for action that incorporates the economic, social, and environmental aspects of sustainable development. Among the notabilia of challenges discussed in the Mulholland et al. (2017) report are:

### **Complexity and Size**

There are 18 SDGs, and each SDGs have its own priority areas. Given this, the complexity of the 2030 Agenda presents significant obstacles in effectively communicate and promote its goals and targets. Therefore, it is challenging for the public to relate to and comprehend its importance.

### **Communication and Awareness Raising**

One of the primary obstacles in effectively communicating the importance of Sustainable Development Goals (SDGs) is making them relatable to people's everyday lives without oversimplification.

### **Media Engagement**

The lack of daily exposure in mainstream media to these SDG goals for most stakeholders and the public, coupled with the lack of embedded SDGs in media content, makes it difficult for the media to connect their stories with specific SDGs. This limitation further hinders public awareness.

### **Institutional Support**

There is also the lack of authorized directive for certain organizations to organize and spearhead campaigns aimed at promoting the 2030 Agenda and SDGs. This deficiency in communication prevents reaching those who are not yet aware nor interested in the SDGs.

### **Diverse Target Groups**

We need to recognize the differences between target groups and determine the most effective strategies for implementing awareness initiatives. Additionally, providing suitable tools and platforms that can encourage participation from all diverse target groups is a complex challenge. The issue of diverse target groups becomes more prominent with the increasing regional area and population. For example, China's integrated actions to mitigate climate change and increase social awareness of SDGs faced various difficulties in different regions and sectors (Zhang et al., 2020).

## **Success Stories**

A study conducted in Japan showed that when participants were provided with sustainable development-related information, they were more likely to support companies that advocate on SDG. This result provide evident that increasing awareness could drive actions toward sustainability (Yamane & Kaneko, 2021). The European Sustainable Development Network (ESDN) Quarterly Report detailed several of successful communication and awareness-raising efforts related to the 2030 Agenda and the SDGs ) (Mulholland et al., 2017). Here are some examples:

### **Social Media**

The Swiss Agency for Development and Cooperation (SDC) utilized social media channels, such as Facebook and Twitter to effectively reach individuals who are already interested in the SDGs.

### **Websites**

Finland's Prime Minister's Office has launched a website dedicated to sharing information about the SDG 2030 Agenda. Not only does the website offer reports on the subject, but it also makes the information available in dual languages (English and Swedish) to ensure that the information reaches a wider audience, providing the public with easy access to information regarding the SDG agenda.

### **Conferences and Workshops**

The University of Geneva recently conducted a workshop on the SDGs, with over 100 participants attending from various sectors. This effort reportedly been proven to be successful in raising awareness about the SDGs

### **Educational Programs**

In the ESDN report, educational programs also have been touted to be an effective way to raise awareness about the SDGs among students. For example, the University of Lausanne has embedded the SDGs into its curriculum, which has been successful in raising awareness among students. This initiative has also been undertaken by i-CATS University College to increase awareness of SDG among i-CATS UC's students.

### **Partnerships**

Effective collaboration among stakeholders has been well documented by the ESDN as an effective way of raising awareness about the Sustainable Development Goals (SDGs). The SDG Summit 2019 emphasized the need for collaboration between governments, civil society, and the scientific community to achieve the SDGs, as governments cannot do it alone. Another successful example was collaboration between The Business School of Lausanne and several Small and Medium Enterprises (SMEs). Through their collaborative efforts, the integration of SDGs into business strategies has led to success in promoting sustainable development.

## **METHODOLOGY**

The research utilized a cross-sectional survey approach to gather data from participants at a specific point in time. This approach provides a snapshot of their characteristics and experiences over a certain period.

### **Sample and Sampling Design**

The researcher of this study used a convenience sampling method to select participants for their sample. This method involves selecting individuals who are most easily accessible and available at the time of the study.

### **Data Collection**

For this study, the researchers utilized a survey questionnaire as the primary data collection method. To ensure that the questionnaire was effective in gathering data on various aspects of SDG awareness, the researchers carefully designed it to cover all the relevant areas of interest. By utilizing this approach, the researchers were able to gather valuable insights into the level of SDG awareness among the survey respondents, which could be useful in building and implementing sustainable initiatives.

### **Overview of the Instrument and SDGs evaluated in the study.**

#### **1. SDG 1: No Poverty (Item 2)**

Definition: SDG 1 aims to end poverty in all its forms everywhere, emphasizing the global commitment to eradicate extreme poverty and ensure that all people have access to the resources and opportunities needed for a decent standard of living.



**2. SDG 2: Zero Hunger (Item 3)**

Definition: SDG 2 seeks to end hunger, achieve food security, and promote sustainable agriculture, with a focus on ensuring everyone has access to sufficient, safe, and nutritious food.

**3. SDG 3: Good Health and Well-being (Item 4 & 5)**

Definition: SDG 3 aims to ensure healthy lives and promote well-being for all at all ages, addressing issues related to health, disease prevention, and access to quality healthcare.

**4. SDG 4: Quality Education (Item 6)**

Definition: SDG 4 aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, with a focus on education access, equity, and quality.

**5. SDG 5: Gender Equality (Item 7)**

Definition: SDG 5 seeks to achieve gender equality and empower all women and girls, emphasizing the importance of eliminating discrimination and ensuring equal opportunities for all genders.

**6. SDG 6: Clean Water and Sanitation (Item 8 & 9)**

Definition: SDG 6 aims to ensure availability and sustainable management of water and sanitation for all, with an emphasis on safe drinking water and adequate sanitation facilities.

**7. SDG 7: Affordable and Clean Energy (Item 10)**

Definition: SDG 7 seeks to ensure access to affordable, reliable, sustainable, and modern energy for all, with a focus on energy efficiency and renewable energy sources.

**8. SDG 8: Decent Work and Economic Growth (Item 11)**

Definition: SDG 8 aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all, emphasizing the importance of job creation and fair labor practices.

**9. SDG 9: Industry, Innovation, and Infrastructure (Item 12)**

Definition: SDG 9 focuses on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation to support economic development.

**10. SDG 10: Reduced Inequality (Item 13)**

Definition: SDG 10 seeks to reduce inequality within and among countries, emphasizing the importance of policies and measures that empower and promote the social, economic, and political inclusion of all.

**11. SDG 11: Sustainable Cities and Communities (Item 14)**

Definition: SDG 11 aims to make cities and human settlements inclusive, safe, resilient, and sustainable, emphasizing urban planning and infrastructure development for sustainable living.

**12. SDG 12: Responsible Consumption and Production (Item 15)**

Definition: SDG 12 focuses on ensuring sustainable consumption and production patterns, encouraging responsible resource use and reducing waste and environmental impact.

**13. SDG 13: Climate Action (Item 16)**

Definition: SDG 13 calls for urgent action to combat climate change and its impacts, emphasizing mitigation, adaptation, and awareness of climate-related issues.

**14. SDG 14: Life Below Water (Item 17)**

Definition: SDG 14 is dedicated to conserving and sustainably using the oceans, seas, and marine resources for sustainable development, addressing marine conservation and sustainable fisheries.

**15. SDG 15: Life on Land (Item 18)**

Definition: SDG 15 aims to protect, restore, and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt biodiversity loss.

**16. SDG 16: Peace, Justice, and Strong Institutions (Item 19)**

Definition: SDG 16 seeks to promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels.

**17. SDG 17: Partnerships for the Goals (Item 20)**

Definition: SDG 17 focuses on strengthening the means of implementation and revitalizing the global partnership for sustainable development, emphasizing cooperation, capacity-building, and resource mobilization to achieve all the SDGs.

**Reliability of the Instrument**

Table below show the scale reliability statistics for the survey instrument. Cronbach's  $\alpha$  is a statistical measure that determines the internal consistency of a scale by measuring the correlation between its items. A high Cronbach's  $\alpha$  score, such as the one obtained in this analysis (0.956), indicates excellent reliability of the overall scale. A score close to 1.0 suggests that the items in the scale are highly correlated, which means that the measurement is reliable.

Scale Reliability Statistics	
	Cronbach's $\alpha$
SDG Awareness	0.956

## Item Reliability Statistics

	Mean	SD	Item-rest correlation	If item dropped Cronbach's $\alpha$
<i>Matlamat Pembangunan Lestari Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan istilah kelestarian?</i>	1.84	1.01	0.485	0.956
<i>Tiada kemiskinan (No Poverty) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan kemiskinan?</i>	2.14	0.936	0.609	0.955
<i>Kelaparan Sifar (Zero Hunger) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan pemakanan seimbang?</i>	2.44	0.973	0.603	0.955
<i>Kesihatan Baik (Good Health) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan kesihatan baik?</i>	2.77	0.941	0.69	0.954
<i>Kesejahteraan (Well-Being) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan kehidupan sihat?</i>	2.68	0.974	0.708	0.953
<i>Pendidikan Berkualiti (Quality Education) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan kepentingan pendidikan berkualiti?</i>	2.65	1.087	0.727	0.953
<i>Kesamarataan Jantina (Gender Equality) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus program berkaitan dengan program kesamarataan jantina?</i>	2.23	1.078	0.724	0.953
<i>Air Bersih (Clean Water) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus program berkaitan dengan kempen penggunaan air bersih?</i>	2.56	1.062	0.735	0.953
<i>Sanitasi (Sanitation) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus program berkaitan dengan program sanitasi?</i>	2.62	1.096	0.754	0.953
<i>Tenaga Berpatutan dan Bersih (Affordable and Clean Energy) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan penggunaan tenaga secara berpatutan dan bersih?</i>	2.35	1.048	0.758	0.953
<i>Pekerjaan Layak dan Pembangunan Ekonomi (Decent Work and Economic Growth) - Pendapatan Isi Rumah Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan program peluang pekerjaan di kawasan anda?</i>	2.35	1.089	0.76	0.953
<i>Industri, Inovasi dan Infrastruktur (Industry, Innovation and Infrastructure) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan aktiviti inovasi teknologi (penciptaan baharu) anjuran mana-mana agensi?</i>	2.39	1.137	0.762	0.953
<i>Mengurangkan Ketidaksamaan (Reduced Inequalities) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan keselamatan pekerja di tempat kerja?</i>	2.51	1.142	0.7	0.954
<i>Bandar dan Komuniti yang Mampan (Sustainable Cities and Communities) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan isu semasa? Contohnya,</i>	2.47	1.039	0.713	0.953

<i>keselamatan, kemudahan infrastruktur dan keistimewaan sebagai penduduk setempat. Penggunaan dan Pengeluaran yang Bertanggungjawab (Responsible Consumption and Production) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan pengendalian sisa-sisa pepejal, pengurusan kebersihan sungai, saliran, perparitan dan projek kitar semula?</i>	2.59	1.116	0.746	0.953
<i>Tindakan Iklim (Climate Action) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan program kesedaran mengenai perubahan iklim di kawasan anda?</i>	2.41	1.031	0.766	0.953
<i>Kehidupan Bawah Air (Life Below Water) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan pemuliharaan dan pemeliharaan hidupan laut atau sungai?</i>	2.43	1.061	0.751	0.953
<i>Kehidupan di Darat (Life On Land) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan gotong-royong atau aktiviti kemasyarakatan yang lain?</i>	2.88	1.141	0.692	0.954
<i>Keamanan, Keadilan dan Institusi yang Teguh (Peace, Justice and Strong Institutions) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan kempen atau ceramah mengenai keamanan, keadilan dan institusi yang teguh?</i>	2.53	1.124	0.762	0.953
<i>Kerjasama demi Matlamat (Partnership for the Goals) Pernahkah anda membaca/mendengar/menghadiri taklimat/kursus berkaitan dengan agensi atau pihak berkuasa tempatan bekerjasama dalam melaksanakan apa-apa aktiviti berkaitan dengan kelestarian?</i>	2.37	1.076	0.62	0.955

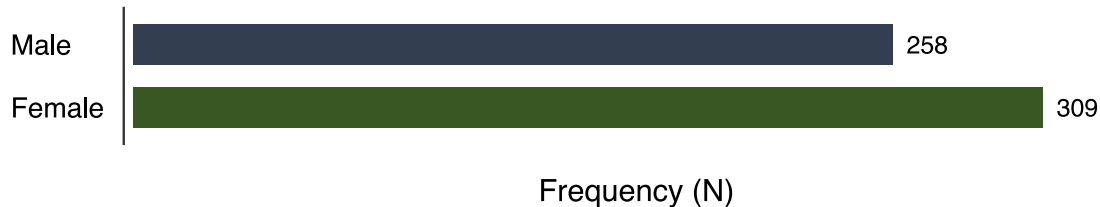
All of the items in the survey have strong correlations with the overall scale. This means that each item is a good measure of the scale as a whole. The high Cronbach's  $\alpha$  value of 0.956 demonstrates that the survey is internally consistent and reliable, indicating that it is a strong tool for measuring respondents' awareness of sustainable development goals. The reliability analysis confirms that the survey instrument has high internal consistency and is a reliable measure of respondents' awareness of sustainable development goals.

### DEMOGRAPHIC

#### Gender:

- **Male:** There are 258 individuals identified as male, which accounts for 45.5% of the total.
- **Female:** There are 309 individuals identified as female, representing 54.5% of the total. The cumulative percentage of gender distribution is 100%.

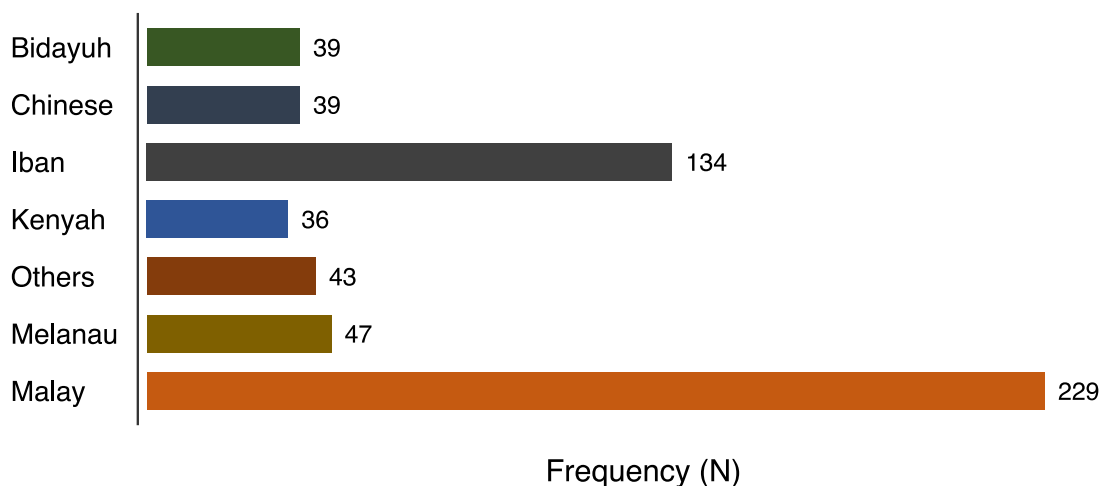
#### Gender



#### Ethnicity:

- **Bidayuh:** There are 39 individuals from the Bidayuh ethnic group, constituting 6.9% of the total.
- **Chinese:** There are 39 individuals from the Chinese ethnic group, also making up 6.9% of the total.
- **Iban:** The Iban ethnic group is represented by 134 individuals, accounting for 23.6%.
- **Kenyah:** There are 36 individuals from the Kenyah ethnic group, comprising 6.3%.
- **Others:** The other minorities has 43 individuals, making up 7.6%.
- **Melanau:** There are 47 individuals from the Melanau ethnic group, which is 8.3%.
- **Malay:** The Malay ethnic group has the largest representation with 229 individuals, making up 40.4%. The cumulative percentage of ethnic distribution is 100%.

#### Ethnicity

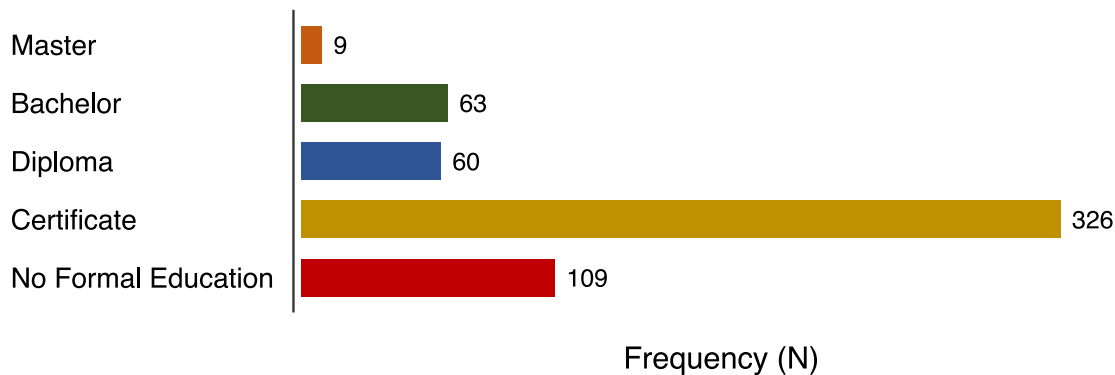


#### Education:

- **Diploma:** There are 60 individuals with a diploma level of education, constituting 10.6%.

- **Master's degree:** Nine individuals have a Master's degree, accounting for 1.6%.
- **Bachelor's degree:** Bachelor's degree category is represented by 63 individuals, making up 11.1%.
- **Certificate:** The Certificate category is the largest, with 326 individuals, accounting for 57.5%.
- **No formal education:** There are 109 individuals who have not received any formal education, representing 19.2%. The cumulative percentage of education levels is 100%.

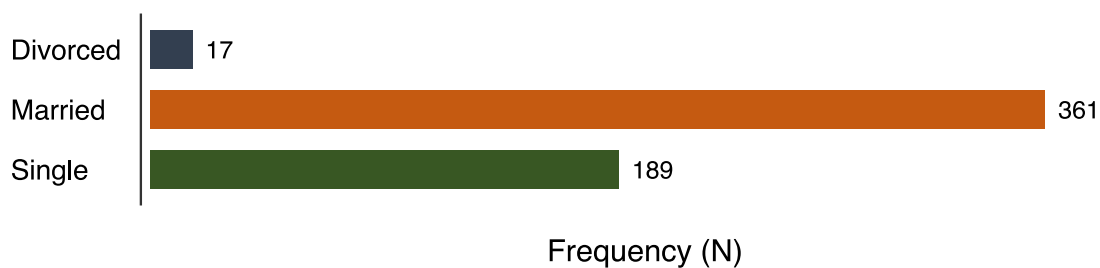
### Education



### Marital Status:

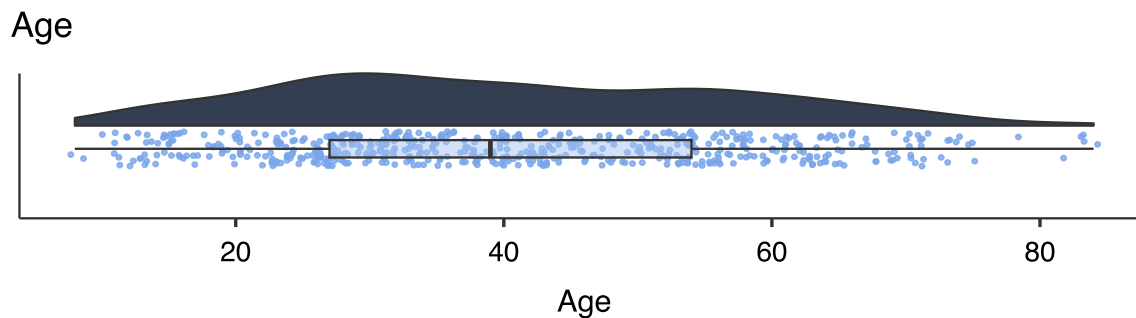
- **Divorced:** There are 17 individuals who are divorced, making up 3.0%.
- **Married:** The majority, 361 individuals, are married, constituting 63.7%.
- **Single:** There are 189 individuals classified as single (unmarried), accounting for 33.3%. The cumulative percentage of marital status is 100%.

### Marital Status



### Age

The sample is relatively large, with a central age tendency around 39-40 years, moderate age variability, and a broad representation of different ages.



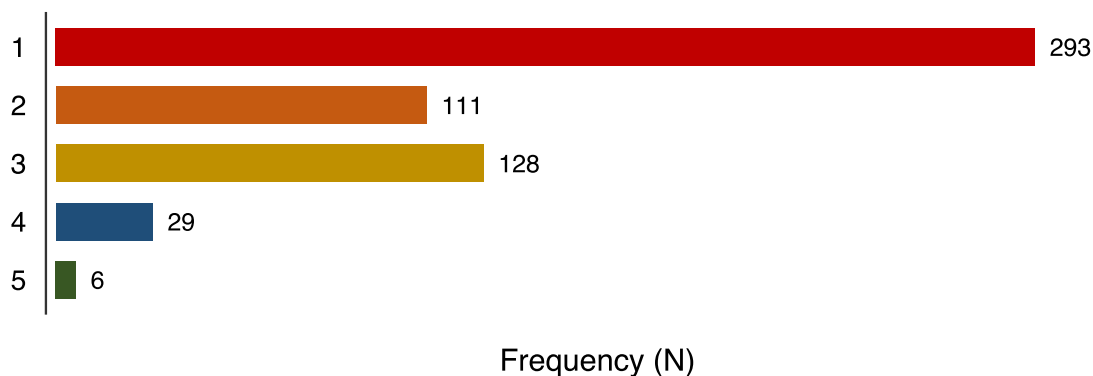
### OVERALL SCORE

#### Awareness and understanding of SDGs in General

Scale Indicator: [1 – Worst; 5 – Best]

There are a total of 567 observations, and there are no missing values. Furthermore, the "Frequencies of SDG" table breaks down the distribution of SDG scores, with a majority (51.7%) scoring 1, followed by 19.6% scoring 2, 22.6% scoring 3, and smaller percentages for scores 4 and 5.

#### SDG



The data reveals that the **mean SDG score is 1.84**, indicating that, on average, the SDG score is close to 2 (Extremely Poor). The median SDG score is 1, suggesting that half of the observations have a score of 1. The standard deviation of 1.01 indicates a moderate degree of variability in SDG scores, with values ranging from a minimum of 1 (Worst) to a maximum of 5 (Best).

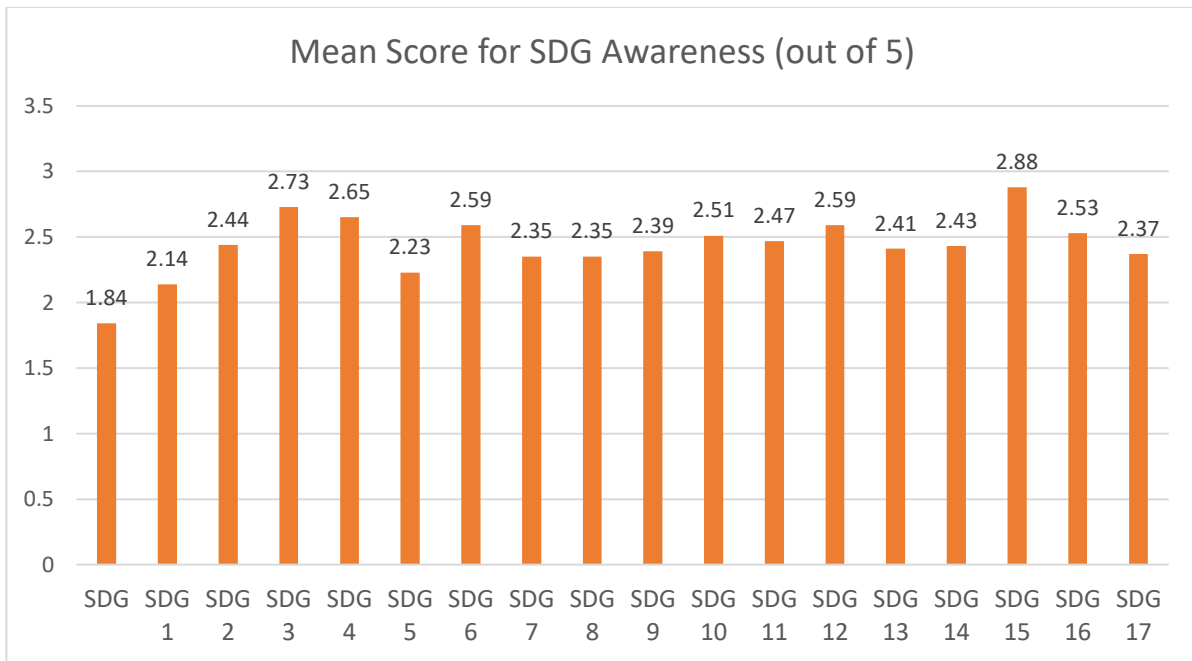
### SDGs SCORES

The presented data provides information on the central tendency, variability, skewness, and kurtosis of scores for each Sustainable Development Goal (SDG). The mean SDG scores range from 1.84 to 2.88, with SDG 15 having the highest mean score and SDG 1 having the lowest. The medians for most SDGs are close to the mean, indicating relatively symmetrical distributions. The standard deviation is consistent (0.205) for all SDGs.

Descriptives							
	Mean	Median	SD	Skewness		Kurtosis	
				Skewness	SE	Kurtosis	SE
SDG	1.84	1	1.010	0.8662	0.103	-0.2652	0.205
SDG 1	2.14	2	0.936	0.2269	0.103	-0.8949	0.205
SDG 2	2.44	3	0.973	0.0695	0.103	-0.5477	0.205
SDG 3	2.73	3	0.894	-0.0268	0.103	-0.1298	0.205
SDG 4	2.65	3	1.087	0.1802	0.103	-0.4525	0.205
SDG 5	2.23	2	1.078	0.6454	0.103	-0.0685	0.205
SDG 6	2.59	2.5	0.996	0.4758	0.103	0.1438	0.205
SDG 7	2.35	2	1.048	0.4492	0.103	-0.2610	0.205
SDG 8	2.35	2	1.089	0.4062	0.103	-0.5002	0.205
SDG 9	2.39	2	1.137	0.4001	0.103	-0.5913	0.205
SDG 10	2.51	3	1.142	0.2319	0.103	-0.7175	0.205
SDG 11	2.47	3	1.039	0.2389	0.103	-0.3707	0.205
SDG 12	2.59	3	1.116	0.2716	0.103	-0.5335	0.205
SDG 13	2.41	2	1.031	0.5705	0.103	0.1603	0.205
SDG 14	2.43	2	1.061	0.5257	0.103	-0.0560	0.205
SDG 15	2.88	3	1.141	0.0823	0.103	-0.5943	0.205
SDG 16	2.53	3	1.124	0.2467	0.103	-0.6470	0.205
SDG 17	2.37	2	1.076	0.2925	0.103	-0.6929	0.205

Based on the skewness and kurtosis values, the distributions of SDG scores in this dataset are generally not perfectly normally distributed. They tend to have slightly negative skewness and exhibit deviations from a perfect normal distribution in terms of kurtosis, with some SDGs having heavier tails and sharper peaks. However, these deviations are relatively small, and the data may still be reasonably approximated as normal for practical purposes.





**SDG 1: No Poverty (Item 2)**

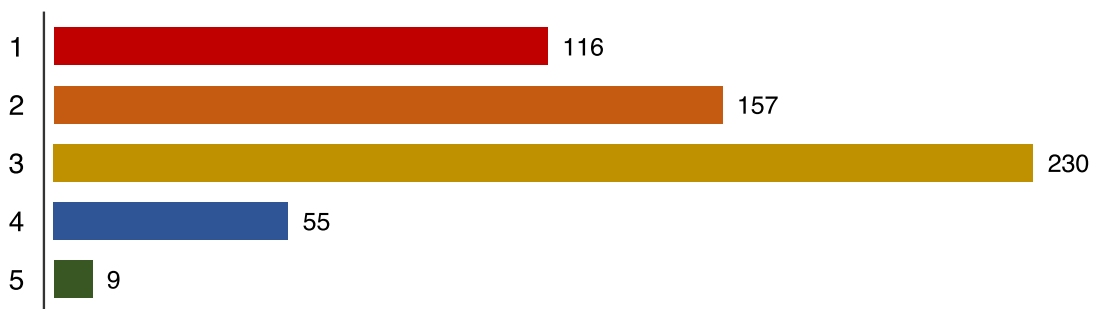
**SDG 1**



Frequency (N)

**SDG 2: Zero Hunger (Item 3)**

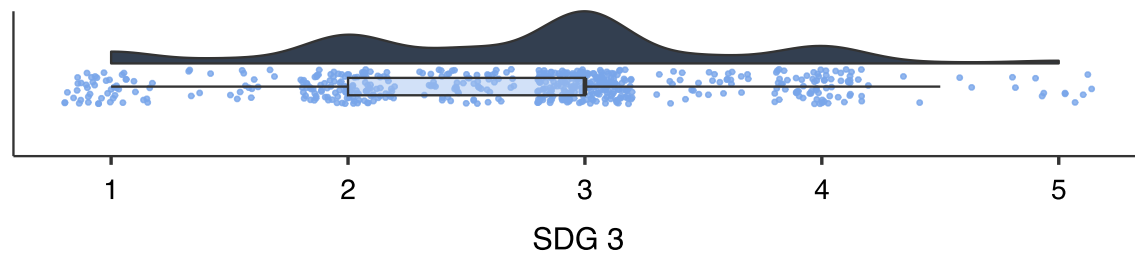
**SDG 2**



Frequency (N)

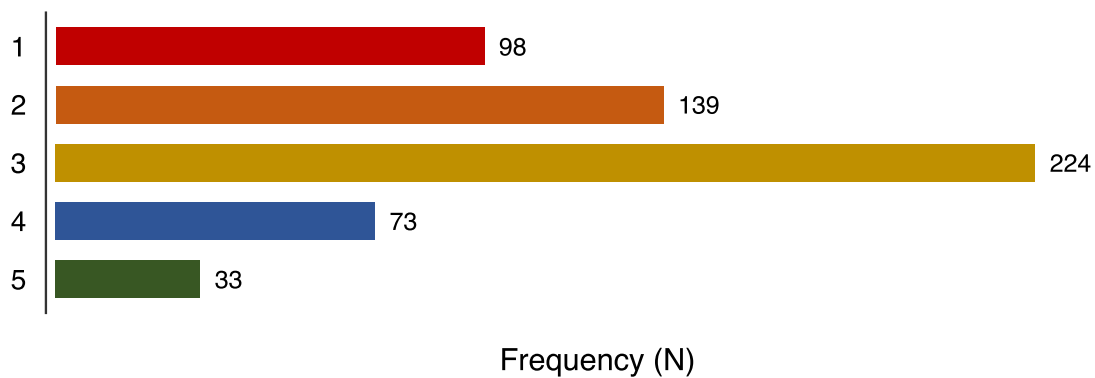
**SDG 3: Good Health and Well-being (Item 4 & 5)**

SDG 3



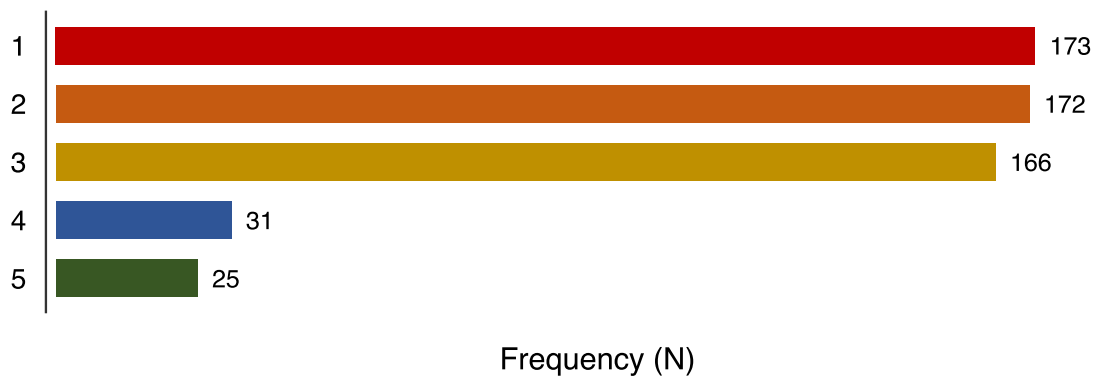
**SDG 4: Quality Education (Item 6)**

SDG 4



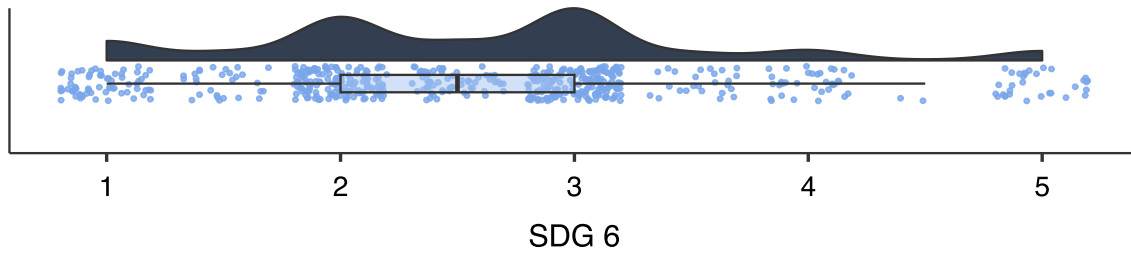
**SDG 5: Gender Equality (Item 7)**

SDG 5



**SDG 6: Clean Water and Sanitation (Item 8 & 9)**

SDG 6



**SDG 7: Affordable and Clean Energy (Item 10)**

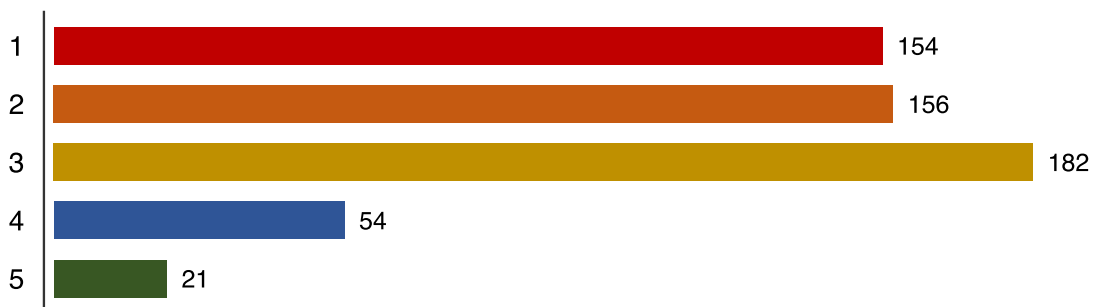
SDG 7



Frequency (N)

**SDG 8: Decent Work and Economic Growth (Item 11)**

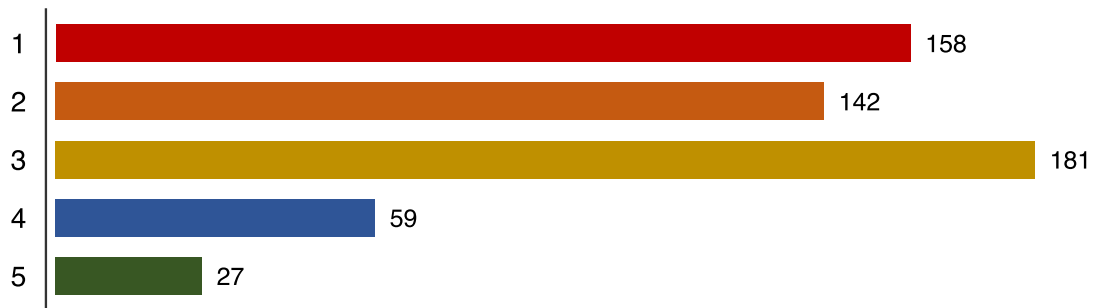
SDG 8



Frequency (N)

**SDG 9: Industry, Innovation, and Infrastructure (Item 12)**

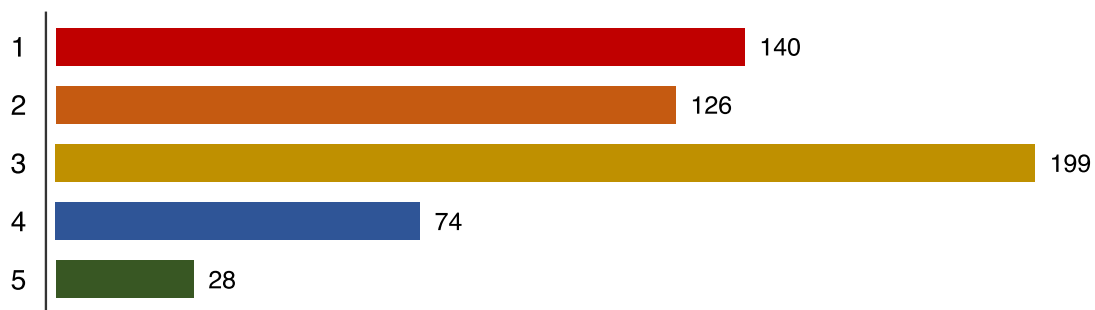
SDG 9



Frequency (N)

**SDG 10: Reduced Inequality (Item 13)**

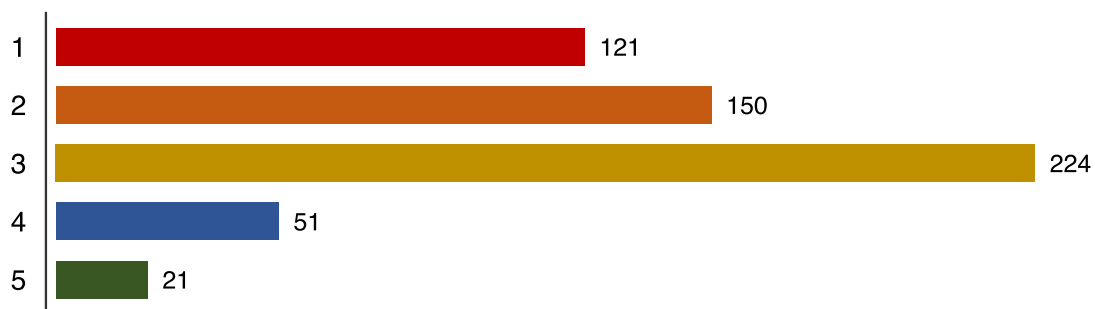
SDG 10



Frequency (N)

**SDG 11: Sustainable Cities and Communities (Item 14)**

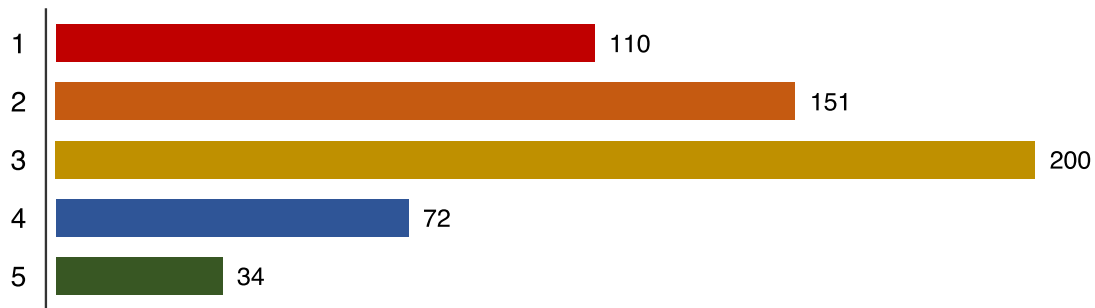
SDG 11



Frequency (N)

**SDG 12: Responsible Consumption and Production (Item 15)**

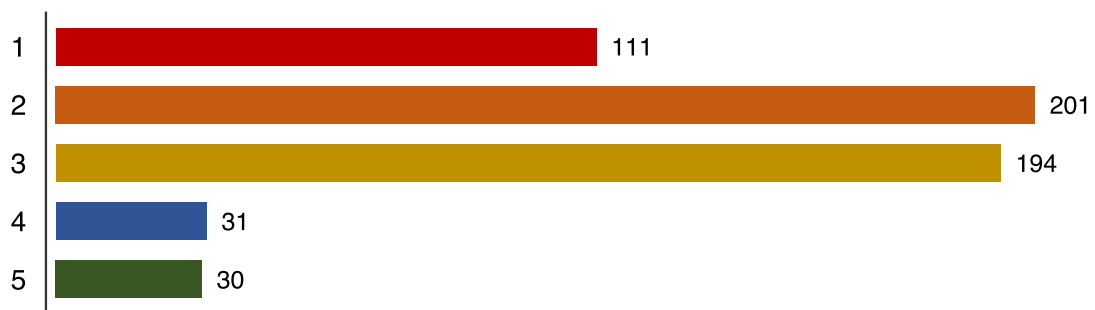
SDG 12



Frequency (N)

**SDG 13: Climate Action (Item 16)**

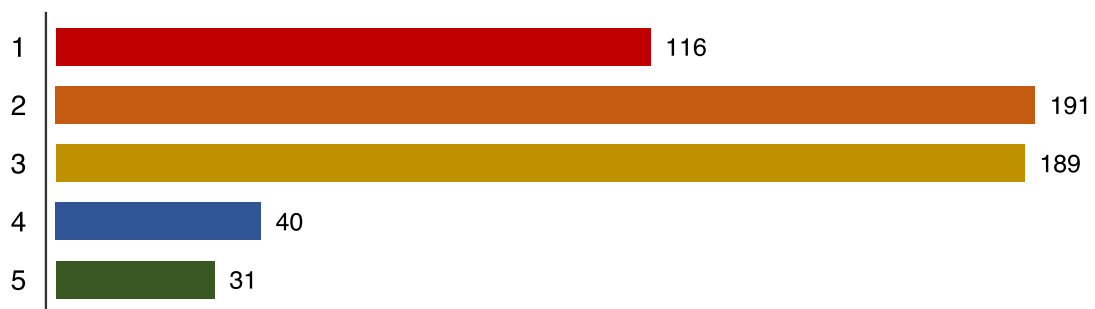
SDG 13



Frequency (N)

**SDG 14: Life Below Water (Item 17)**

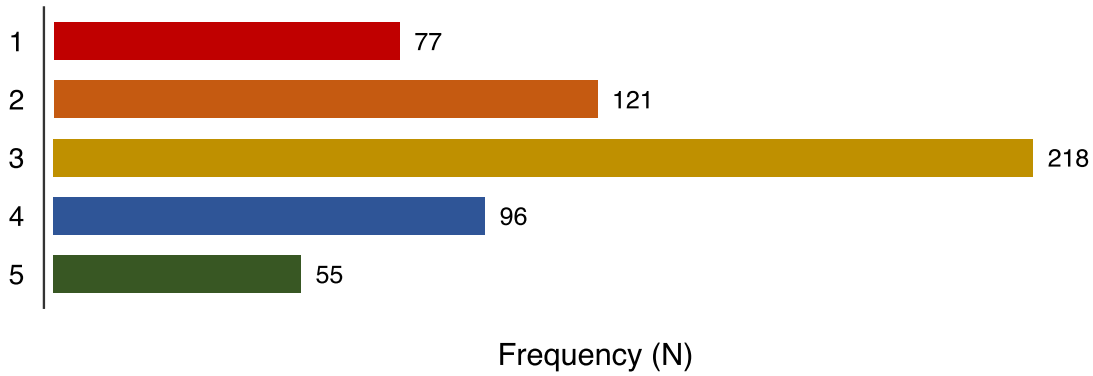
SDG 14



Frequency (N)

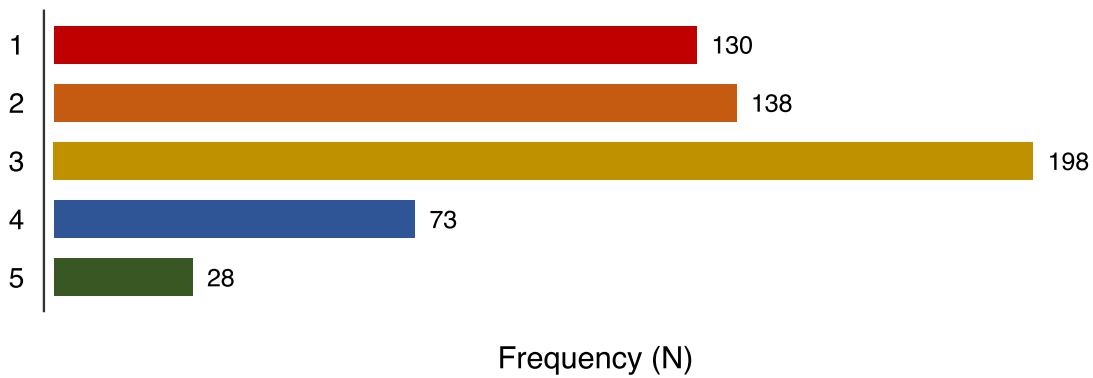
**SDG 15: Life on Land (Item 18)**

SDG 15



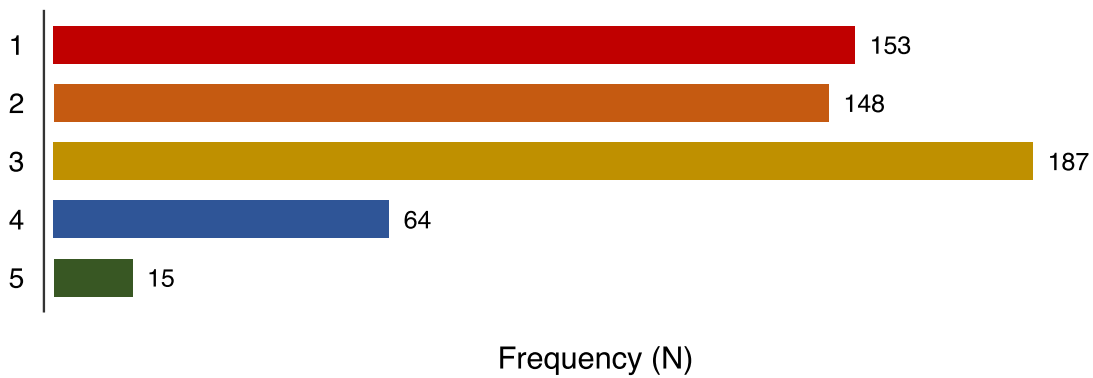
**SDG 16: Peace, Justice, and Strong Institutions (Item 19)**

SDG 16



**SDG 17: Partnerships for the Goals (Item 20)**

SDG 17



### OVERALL SDG AWARENESS BASED ON DEMOGRAPHICS

#### Gender

##### Contingency Tables

Gender		SDG					Total
		1	2	3	4	5	
Female	Observed	157	57	75	18	2	309
	% within row	50.8 %	18.4 %	24.3 %	5.8 %	0.6 %	100.0 %
	% within column	53.6 %	51.4 %	58.6 %	62.1 %	33.3 %	54.5 %
Male	Observed	136	54	53	11	4	258
	% within row	52.7 %	20.9 %	20.5 %	4.3 %	1.6 %	100.0 %
	% within column	46.4 %	48.6 %	41.4 %	37.9 %	66.7 %	45.5 %
Total	Observed	293	111	128	29	6	567
	% within row	51.7 %	19.6 %	22.6 %	5.1 %	1.1 %	100.0 %
	% within column	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

#### Age

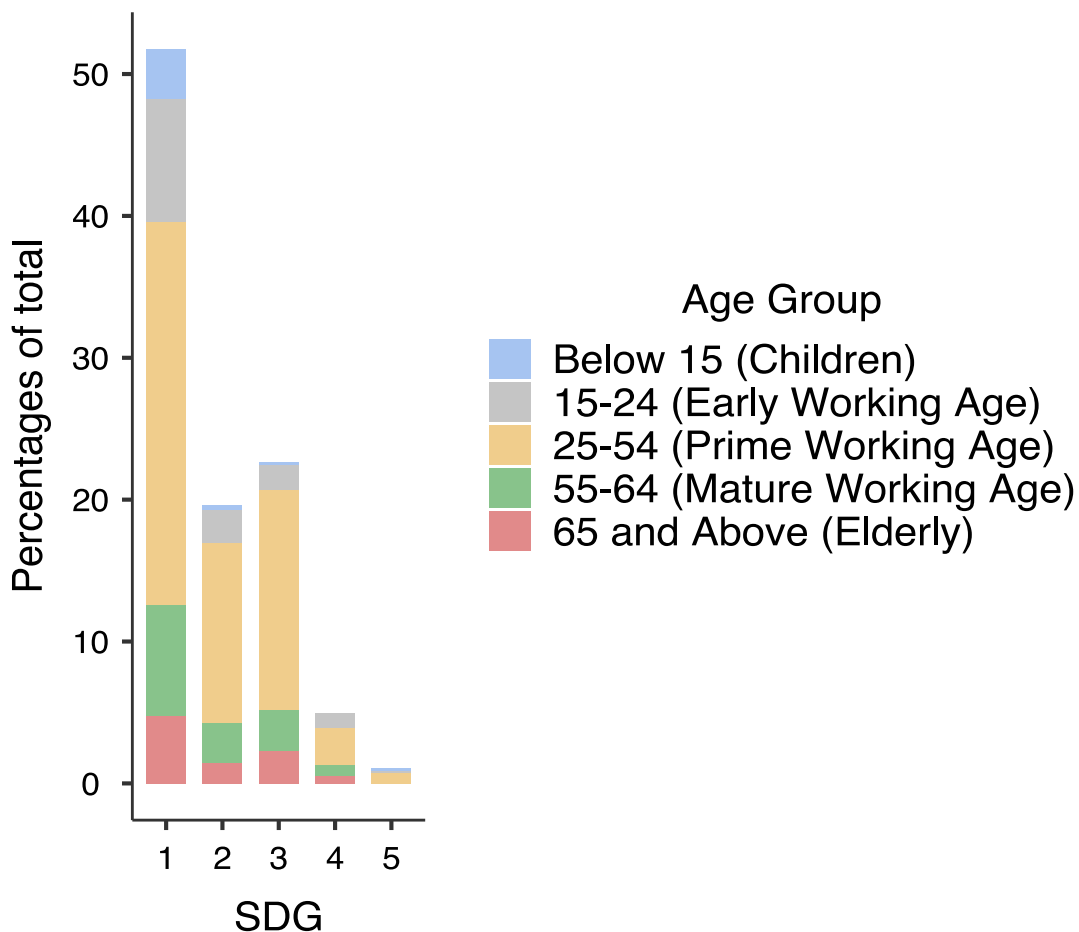
##### Contingency Tables

Age Group		SDG					Total
		1	2	3	4	5	
Below 15 (Children)	Observed	20	2	1	0	1	24
	% within row	83.3 %	8.3 %	4.2 %	0.0 %	4.2 %	100.0 %
	% within column	6.8 %	1.8 %	0.8 %	0.0 %	16.7 %	4.2 %
15-24 (Early Working Age)	Observed	49	13	10	6	1	79
	% within row	62.0 %	16.5 %	12.7 %	7.6 %	1.3 %	100.0 %
	% within column	16.7 %	11.7 %	7.8 %	21.4 %	16.7 %	14.0 %
25-54 (Prime Working Age)	Observed	153	72	88	15	4	332
	% within row	46.1 %	21.7 %	26.5 %	4.5 %	1.2 %	100.0 %
	% within column	52.2 %	64.9 %	68.8 %	53.6 %	66.7 %	58.7 %

Contingency Tables

Age Group		SDG					Total
		1	2	3	4	5	
55-64 (Mature Working Age)	Observed	44	16	16	4	0	80
	% within row	55.0 %	20.0 %	20.0 %	5.0 %	0.0 %	100.0 %
	% within column	15.0 %	14.4 %	12.5 %	14.3 %	0.0 %	14.1 %
65 and Above (Elderly)	Observed	27	8	13	3	0	51
	% within row	52.9 %	15.7 %	25.5 %	5.9 %	0.0 %	100.0 %
	% within column	9.2 %	7.2 %	10.2 %	10.7 %	0.0 %	9.0 %
Total	Observed	293	111	128	28	6	566
	% within row	51.8 %	19.6 %	22.6 %	4.9 %	1.1 %	100.0 %
	% within column	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %





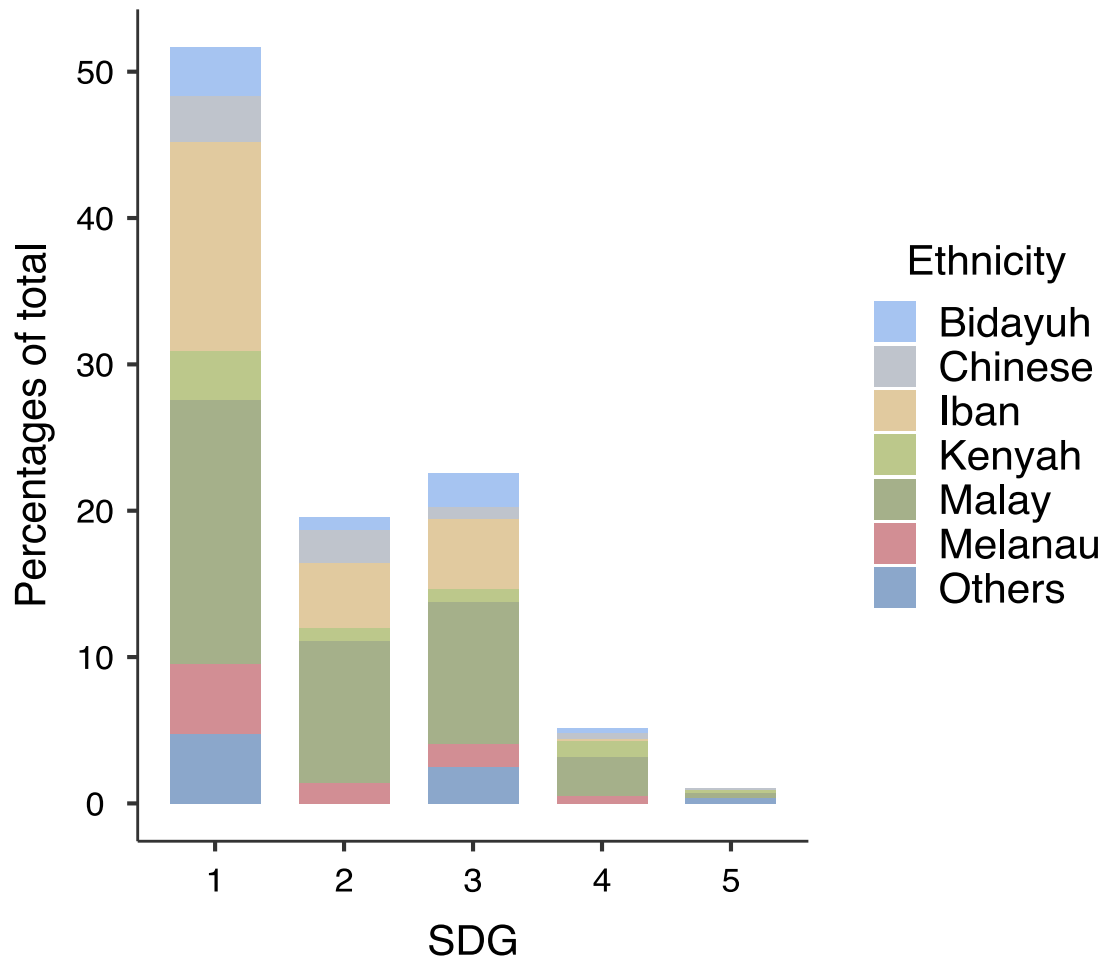
**Ethnicity**

Contingency Tables

Ethnicity		SDG					Total
		1	2	3	4	5	
Bidayuh	Observed	19	5	13	2	0	39
	% within row	48.7 %	12.8 %	33.3 %	5.1 %	0.0 %	100.0 %
	% within column	6.5 %	4.5 %	10.2 %	6.9 %	0.0 %	6.9 %
Chinese	Observed	18	13	5	2	1	39
	% within row	46.2 %	33.3 %	12.8 %	5.1 %	2.6 %	100.0 %
	% within column	6.1 %	11.7 %	3.9 %	6.9 %	16.7 %	6.9 %
Iban	Observed	81	25	27	1	0	134

## Contingency Tables

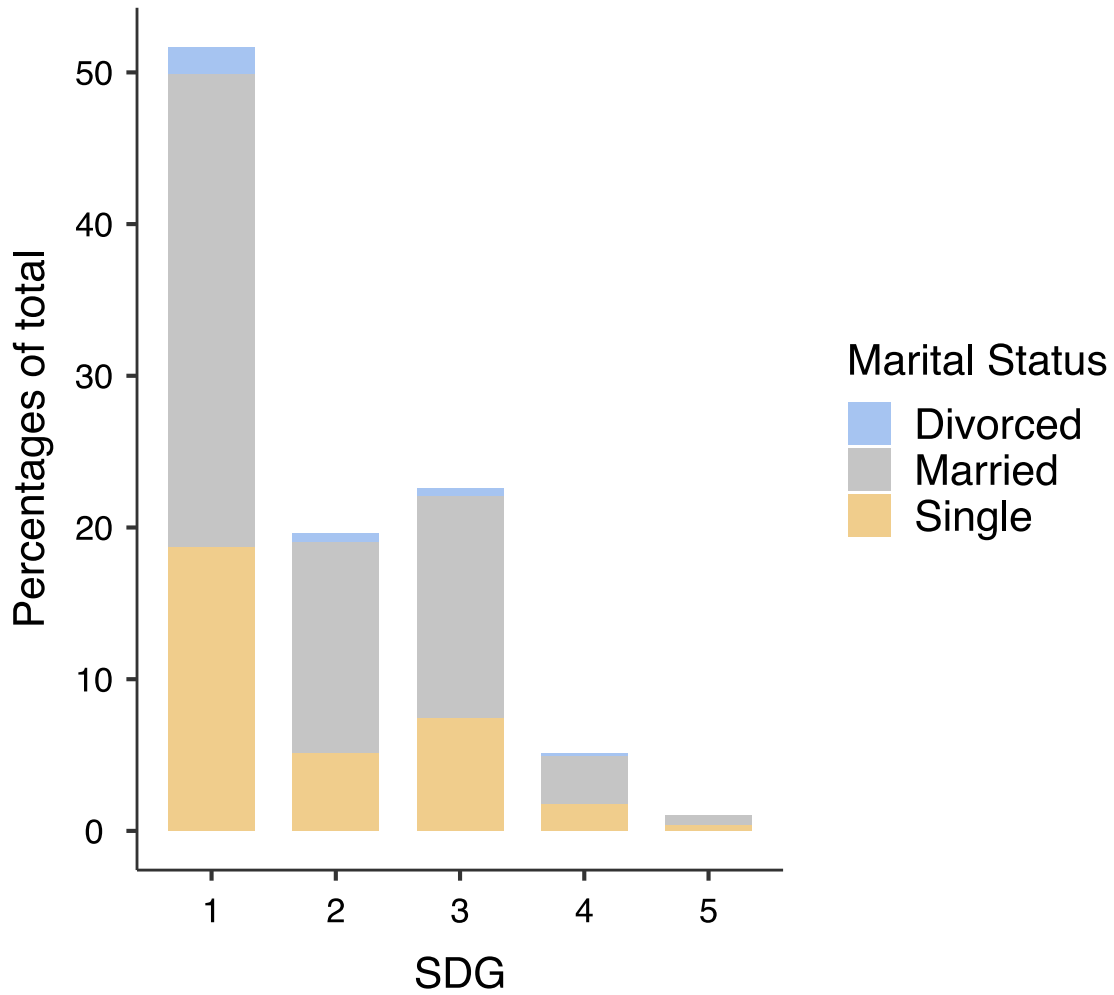
Ethnicity		SDG					Total
		1	2	3	4	5	
	% within row	60.4 %	18.7 %	20.1 %	0.7 %	0.0 %	100.0 %
	% within column	27.6 %	22.5 %	21.1 %	3.4 %	0.0 %	23.6 %
Kenyah	Observed	19	5	5	6	1	36
	% within row	52.8 %	13.9 %	13.9 %	16.7 %	2.8 %	100.0 %
	% within column	6.5 %	4.5 %	3.9 %	20.7 %	16.7 %	6.3 %
Malay	Observed	102	55	55	15	2	229
	% within row	44.5 %	24.0 %	24.0 %	6.6 %	0.9 %	100.0 %
	% within column	34.8 %	49.5 %	43.0 %	51.7 %	33.3 %	40.4 %
Melanau	Observed	27	8	9	3	0	47
	% within row	57.4 %	17.0 %	19.1 %	6.4 %	0.0 %	100.0 %
	% within column	9.2 %	7.2 %	7.0 %	10.3 %	0.0 %	8.3 %
Others	Observed	27	0	14	0	2	43
	% within row	62.8 %	0.0 %	32.6 %	0.0 %	4.7 %	100.0 %
	% within column	9.2 %	0.0 %	10.9 %	0.0 %	33.3 %	7.6 %
Total	Observed	293	111	128	29	6	567
	% within row	51.7 %	19.6 %	22.6 %	5.1 %	1.1 %	100.0 %
	% within column	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %



**Marital Status**

## Contingency Tables

Marital Status		SDG					Total
		1	2	3	4	5	
Divorced	Observed	10	3	3	1	0	17
	% within row	58.8 %	17.6 %	17.6 %	5.9 %	0.0 %	100.0 %
	% within column	3.4 %	2.7 %	2.3 %	3.4 %	0.0 %	3.0 %
Married	Observed	177	79	83	18	4	361
	% within row	49.0 %	21.9 %	23.0 %	5.0 %	1.1 %	100.0 %
	% within column	60.4 %	71.2 %	64.8 %	62.1 %	66.7 %	63.7 %
Single	Observed	106	29	42	10	2	189
	% within row	56.1 %	15.3 %	22.2 %	5.3 %	1.1 %	100.0 %
	% within column	36.2 %	26.1 %	32.8 %	34.5 %	33.3 %	33.3 %
Total	Observed	293	111	128	29	6	567
	% within row	51.7 %	19.6 %	22.6 %	5.1 %	1.1 %	100.0 %
	% within column	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %



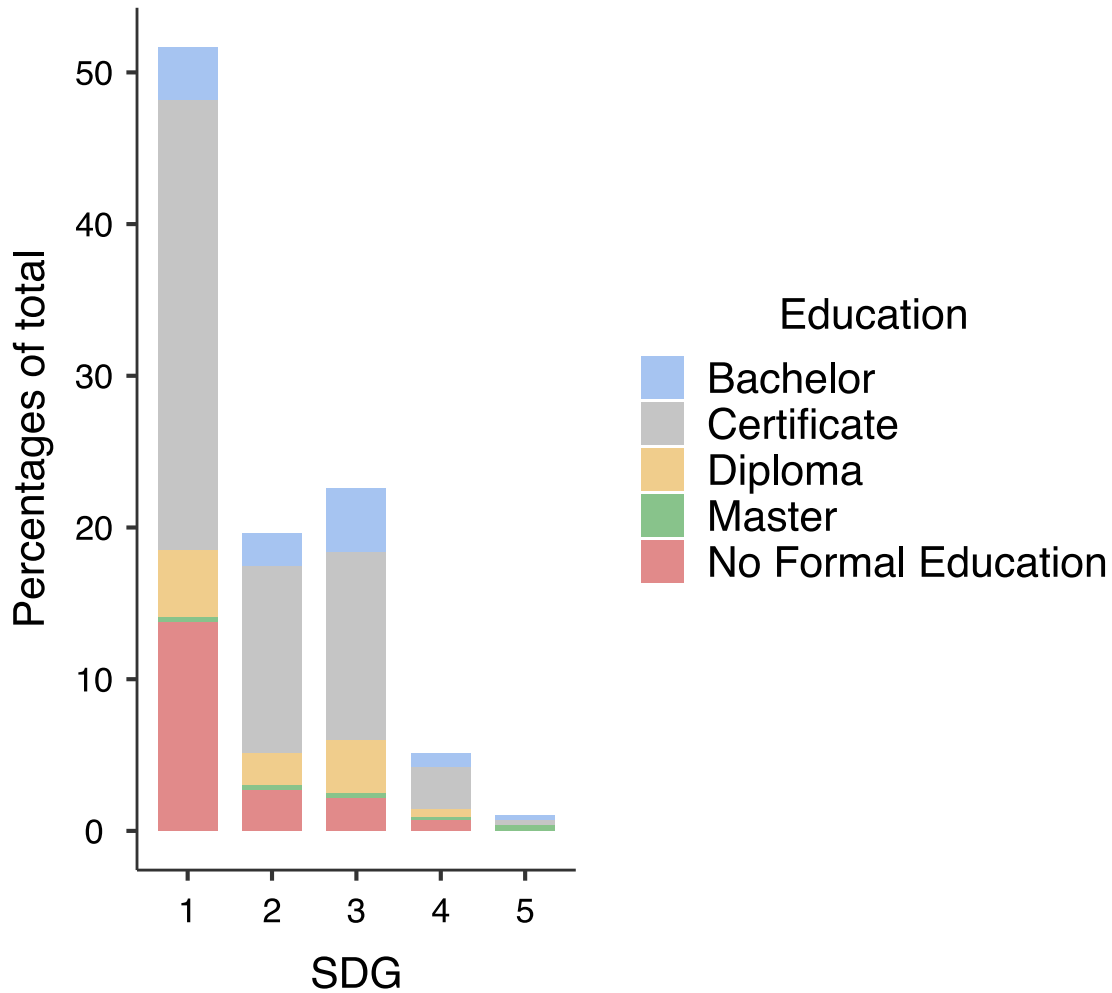
**Level of Education**

Contingency Tables

Education		SDG					Total
		1	2	3	4	5	
Bachelor	Observed	20	12	24	5	2	63
	% within row	31.7 %	19.0 %	38.1 %	7.9 %	3.2 %	100.0 %
	% within column	6.8 %	10.8 %	18.8 %	17.2 %	33.3 %	11.1 %
Certificate	Observed	168	70	70	16	2	326
	% within row	51.5 %	21.5 %	21.5 %	4.9 %	0.6 %	100.0 %
	% within column	57.3 %	63.1 %	54.7 %	55.2 %	33.3 %	57.5 %

## Contingency Tables

Education		SDG					Total
		1	2	3	4	5	
Diploma	Observed	25	12	20	3	0	60
	% within row	41.7 %	20.0 %	33.3 %	5.0 %	0.0 %	100.0 %
	% within column	8.5 %	10.8 %	15.6 %	10.3 %	0.0 %	10.6 %
Master	Observed	2	2	2	1	2	9
	% within row	22.2 %	22.2 %	22.2 %	11.1 %	22.2 %	100.0 %
	% within column	0.7 %	1.8 %	1.6 %	3.4 %	33.3 %	1.6 %
No Formal Education	Observed	78	15	12	4	0	109
	% within row	71.6 %	13.8 %	11.0 %	3.7 %	0.0 %	100.0 %
	% within column	26.6 %	13.5 %	9.4 %	13.8 %	0.0 %	19.2 %
Total	Observed	293	111	128	29	6	567
	% within row	51.7 %	19.6 %	22.6 %	5.1 %	1.1 %	100.0 %
	% within column	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %



**SDGs AWARENESS ACROSS GROUPS**

**Gender Differences**

The provided findings are the results of independent samples t-tests conducted to assess differences in a variable (SDG scores) between two gender groups, Male and Female. These t-tests were conducted for each specific SDG (Sustainable Development Goal), and the results are summarized as follows:

Independent Samples T-Test

		Statistic	df	p		Effect Size
SDG	Welch's t	0.71043	549	0.478	Cohen's d	0.05989
SDG 1	Welch's t	0.11812	548	0.906	Cohen's d	0.00996
<b>SDG 2</b>	<b>Welch's t</b>	<b>2.36618</b>	<b>545</b>	<b>0.018</b>	<b>Cohen's d</b>	<b>0.19963</b>
<b>SDG 3</b>	<b>Welch's t</b>	<b>2.14815</b>	<b>547</b>	<b>0.032</b>	<b>Cohen's d</b>	<b>0.18118</b>

## Independent Samples T-Test

		<b>Statistic</b>	<b>df</b>	<b>p</b>		<b>Effect Size</b>
SDG 4	Welch's t	0.67776	524	0.498	Cohen's d	0.05741
SDG 5	Welch's t	0.24570	541	0.806	Cohen's d	0.02075
SDG 6	Welch's t	-0.00178	538	0.999	Cohen's d	-1.51e-4
SDG 7	Welch's t	-1.19735	526	0.232	Cohen's d	-0.10139
SDG 8	Welch's t	-0.11188	541	0.911	Cohen's d	-0.00945
SDG 9	Welch's t	0.37083	540	0.711	Cohen's d	0.03132
SDG 10	Welch's t	0.32263	522	0.747	Cohen's d	0.02734
SDG 11	Welch's t	1.12891	541	0.259	Cohen's d	0.09534
SDG 12	Welch's t	1.49196	526	0.136	Cohen's d	0.12636
SDG 13	Welch's t	0.72865	542	0.467	Cohen's d	0.06152
SDG 14	Welch's t	-0.08408	537	0.933	Cohen's d	-0.00711
<b>SDG 15</b>	<b>Welch's t</b>	<b>2.40469</b>	<b>531</b>	<b>0.017</b>	<b>Cohen's d</b>	<b>0.20346</b>
SDG 16	Welch's t	0.11937	540	0.905	Cohen's d	0.01008
SDG 17	Welch's t	0.64380	554	0.520	Cohen's d	0.05420

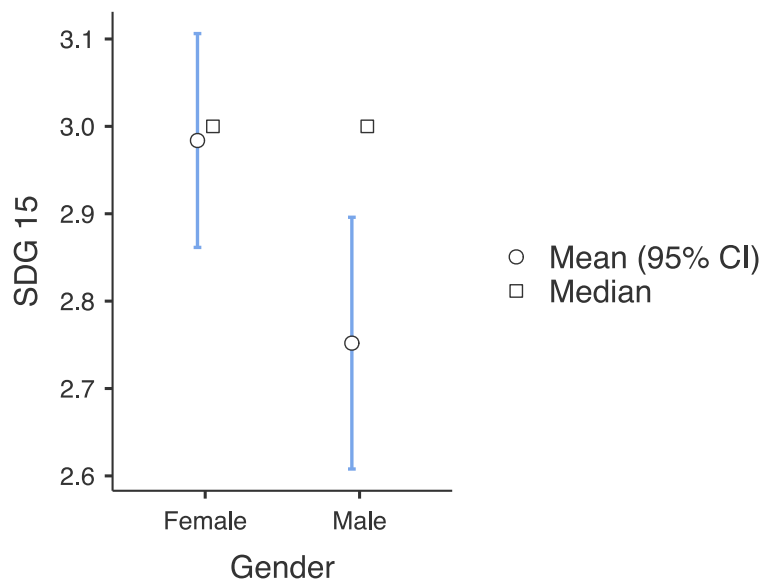
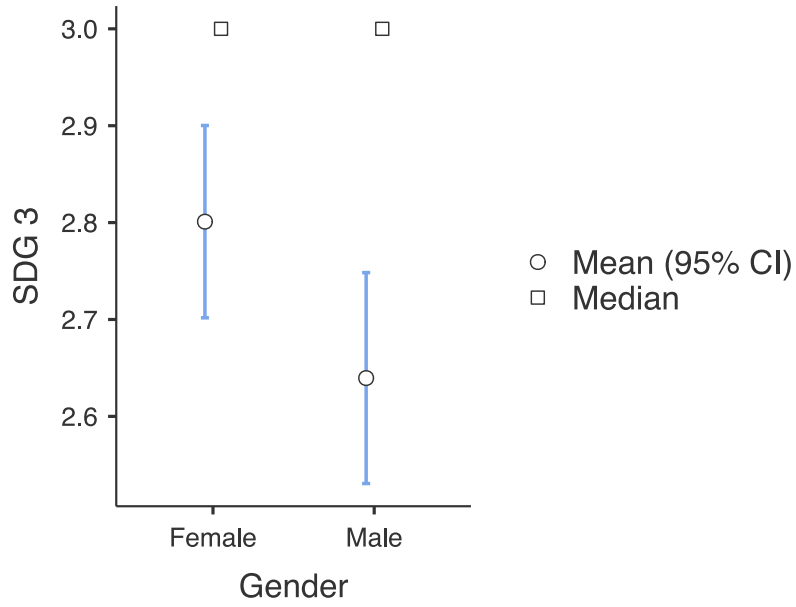
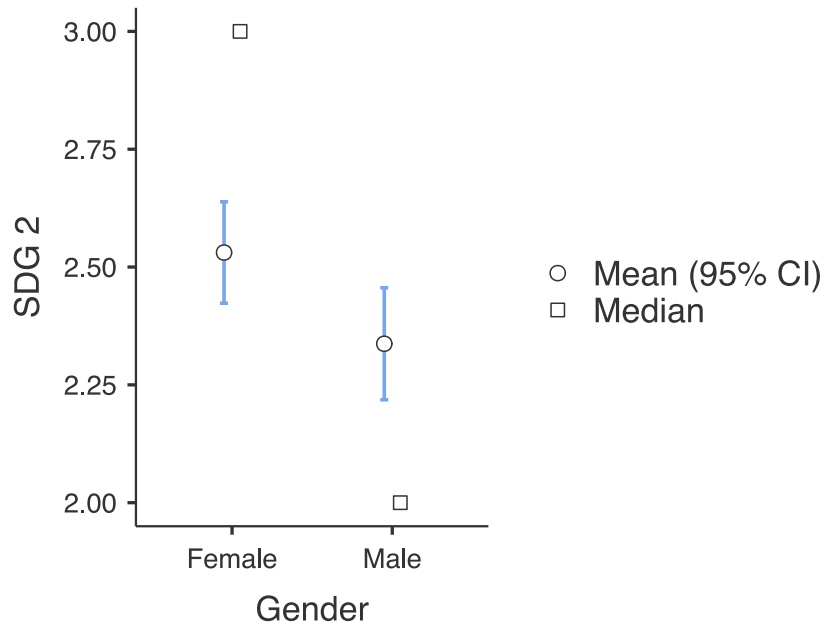
Note.  $H_a \mu_{\text{Female}} \neq \mu_{\text{Male}}$

For the overall SDG variable, the Welsch's t-test did not reveal a significant difference between the genders ( $p = 0.478$ ), with a small effect size (Cohen's  $d = 0.05989$ ), indicating that the difference between genders in SDG scores is not practically significant.

The t-tests for individual SDGs show varying results. For SDG 2, SDG 3, and SDG 15 the t-tests indicate statistically significant differences between genders, with positive effect sizes (Cohen's  $d$ ) implying that, on average, Male scored lower than Female on these goals. However, the effect sizes are relatively small, suggesting that the practical significance of these differences may be limited.

For the remaining SDGs the t-tests did not find significant differences between genders, with  $p$ -values exceeding 0.05 and small effect sizes.





**Level of Education Difference**

## Descriptives

	Education	Mean	Median	Mode	SD	Skewness	
						Skewness	SE
SDG	Bachelor	2.32	2	3.00	1.105	0.29583	0.302
	Certificate	1.82	1.00	1.00	0.975	0.85716	0.135
	Diploma	2.02	2.00	1.00	0.983	0.29834	0.309
	Master	2.89	3	1.00 <sup>a</sup>	1.537	0.23516	0.717
	No Formal Education	1.47	1	1.00	0.834	1.66390	0.231
SDG 1	Bachelor	2.33	2	3.00	1.000	0.27763	0.302
	Certificate	2.19	2.00	3.00	0.928	0.15489	0.135
	Diploma	2.23	2.00	3.00	0.871	-0.00201	0.309
	Master	2.33	2	2.00 <sup>a</sup>	0.707	-0.60609	0.717
	No Formal Education	1.84	2	1.00	0.925	0.60388	0.231
SDG 2	Bachelor	2.67	3	3.00	1.047	0.19337	0.302
	Certificate	2.45	3.00	3.00	0.936	0.04376	0.135
	Diploma	2.38	2.50	3.00	0.865	-0.19455	0.309
	Master	2.56	3	3.00	1.236	0.60310	0.717
	No Formal Education	2.30	3	3.00	1.059	0.08007	0.231
SDG 3	Bachelor	2.92	3.00	3.00	0.960	-0.24731	0.302
	Certificate	2.75	3.00	3.00	0.867	0.01648	0.135
	Diploma	2.81	3.00	3.00	0.677	-0.53111	0.309
	Master	3.00	3.00	3.00	1.000	0.96429	0.717
	No Formal Education	2.47	2.50	3.00	0.984	0.18751	0.231
SDG 4	Bachelor	3.16	3	3.00	1.081	-0.24724	0.302
	Certificate	2.66	3.00	3.00	1.066	0.29131	0.135
	Diploma	2.90	3.00	3.00	0.838	0.01432	0.309
	Master	3.67	3	3.00	0.866	0.82479	0.717
	No Formal Education	2.14	2	1.00	1.058	0.43612	0.231
SDG 5	Bachelor	2.37	2	2.00	0.903	0.55376	0.302
	Certificate	2.22	2.00	1.00	1.096	0.64582	0.135
	Diploma	2.28	2.00	2.00	0.904	0.68136	0.309
	Master	2.89	3	2.00	1.054	1.09437	0.717

## Descriptives

						Skewness	
	Education	Mean	Median	Mode	SD	Skewness	SE
SDG 6	No Formal Education	2.08	2	1.00	1.187	0.81833	0.231
	Bachelor	2.67	3.00	3.00	0.857	0.07507	0.302
	Certificate	2.60	2.50	3.00	1.018	0.55991	0.135
	Diploma	2.80	3.00	3.00	0.830	0.50957	0.309
	Master	3.22	3.00	3.00	0.972	0.50153	0.717
SDG 7	No Formal Education	2.34	2.00	3.00	1.043	0.63128	0.231
	Bachelor	2.41	2	2.00	0.994	0.30036	0.302
	Certificate	2.36	2.00	2.00	1.074	0.55839	0.135
	Diploma	2.50	3.00	3.00	0.930	0.00000	0.309
	Master	3.33	3	3.00	1.118	0.53666	0.717
SDG 8	No Formal Education	2.15	2	1.00	1.008	0.36298	0.231
	Bachelor	2.63	3	3.00	1.005	0.01036	0.302
	Certificate	2.36	2.00	3.00	1.086	0.43933	0.135
	Diploma	2.50	3.00	3.00	0.873	-0.39484	0.309
	Master	3.22	3	3.00	0.972	0.50153	0.717
SDG 9	No Formal Education	2.01	2	1.00	1.167	1.01555	0.231
	Bachelor	2.83	3	2.00	1.040	0.18461	0.302
	Certificate	2.39	2.00	3.00	1.166	0.49213	0.135
	Diploma	2.65	3.00	3.00	0.971	0.07666	0.309
	Master	3.22	3	3.00	0.972	0.50153	0.717
SDG 10	No Formal Education	1.94	2	1.00	1.030	0.59666	0.231
	Bachelor	2.70	3	2.00 <sup>a</sup>	1.072	0.07042	0.302
	Certificate	2.54	3.00	3.00	1.165	0.29083	0.135
	Diploma	2.63	3.00	3.00	1.025	-0.08014	0.309
	Master	3.22	3	2.00 <sup>a</sup>	1.093	0.18847	0.717
SDG 11	No Formal Education	2.20	2	1.00	1.120	0.35564	0.231
	Bachelor	2.68	3	2.00	0.895	0.26271	0.302
	Certificate	2.50	3.00	3.00	1.022	0.22582	0.135
	Diploma	2.57	3.00	3.00	0.851	0.12617	0.309
	Master	3.56	4	4.00	1.130	-0.17583	0.717
	No Formal Education	2.14	2	1.00	1.150	0.58051	0.231

## Descriptives

						Skewness	
	Education	Mean	Median	Mode	SD	Skewness	SE
SDG 12	Bachelor	2.60	2	2.00	1.086	0.54589	0.302
	Certificate	2.63	3.00	3.00	1.121	0.21579	0.135
	Diploma	2.62	3.00	3.00	0.865	0.35688	0.309
	Master	3.67	4	4.00	0.866	-0.65983	0.717
	No Formal Education	2.38	2	1.00 <sup>a</sup>	1.208	0.45696	0.231
SDG 13	Bachelor	2.52	2	2.00	0.840	0.42913	0.302
	Certificate	2.37	2.00	2.00	1.053	0.66199	0.135
	Diploma	2.43	2.50	3.00	0.945	0.50972	0.309
	Master	3.33	3	3.00 <sup>a</sup>	1.000	0.10714	0.717
	No Formal Education	2.39	2	3.00	1.089	0.51719	0.231
SDG 14	Bachelor	2.51	2	2.00	1.030	0.48143	0.302
	Certificate	2.43	2.00	2.00	1.055	0.61437	0.135
	Diploma	2.52	3.00	3.00	0.873	0.34240	0.309
	Master	3.11	3	3.00	1.167	-0.26739	0.717
	No Formal Education	2.31	2	3.00	1.168	0.53696	0.231
SDG 15	Bachelor	3.10	3	3.00	1.174	-0.06656	0.302
	Certificate	2.90	3.00	3.00	1.131	0.11038	0.135
	Diploma	2.88	3.00	3.00	1.010	0.24098	0.309
	Master	3.22	3	3.00	0.972	0.50153	0.717
	No Formal Education	2.66	3	3.00	1.211	0.10941	0.231
SDG 16	Bachelor	2.67	3	3.00	1.078	0.07099	0.302
	Certificate	2.51	3.00	3.00	1.125	0.30178	0.135
	Diploma	2.72	3.00	3.00	0.976	-0.07320	0.309
	Master	3.22	3	3.00	0.972	0.50153	0.717
	No Formal Education	2.32	2	1.00	1.201	0.46478	0.231
SDG 17	Bachelor	2.56	3	3.00	1.012	0.22906	0.302
	Certificate	2.39	2.00	3.00	1.092	0.25725	0.135
	Diploma	2.55	3.00	3.00	0.928	0.11209	0.309
	Master	3.44	3	2.00 <sup>a</sup>	1.333	0.15234	0.717
	No Formal Education	2.00	2	1.00	1.009	0.49552	0.231

## Descriptives

Education	Mean	Median	Mode	SD	Skewness	
					Skewness	SE

<sup>a</sup> More than one mode exists, only the first is reported

The Table above shows key findings for each Sustainable Development Goal (SDG) across different levels of education. It includes measures of central tendency (mean, median, mode), standard deviation (SD), skewness, and standard error (SE). The data illustrates how the mean scores for each SDG vary among individuals with different levels of education.

For instance, individuals with a Bachelor's degree tend to have higher mean scores for most SDGs compared to those with other education levels. However, there are variations across SDGs.

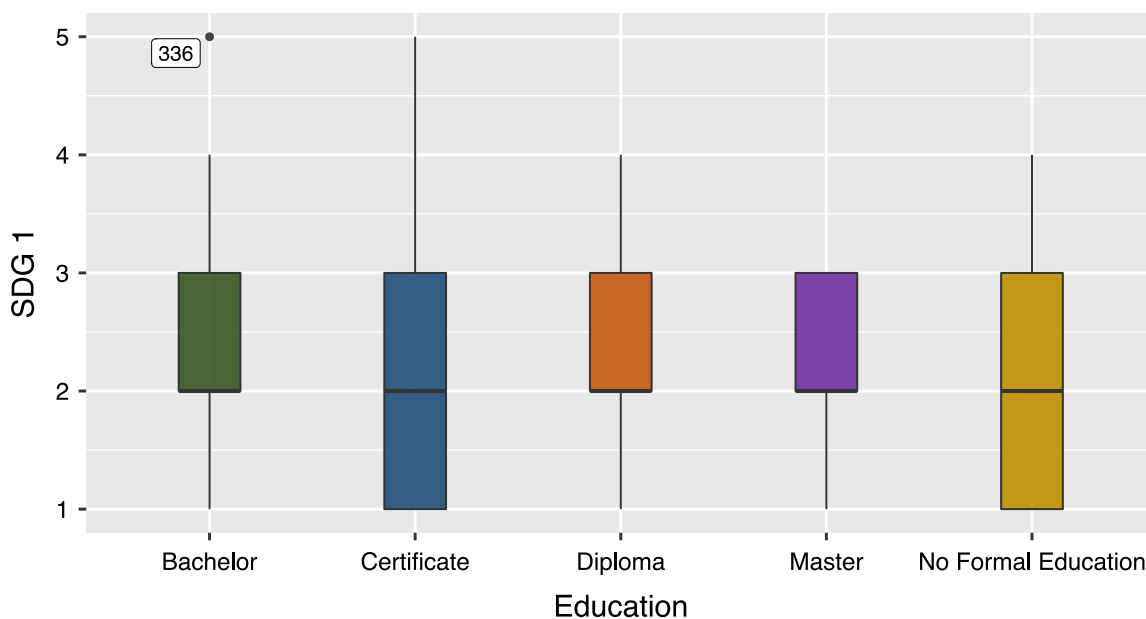
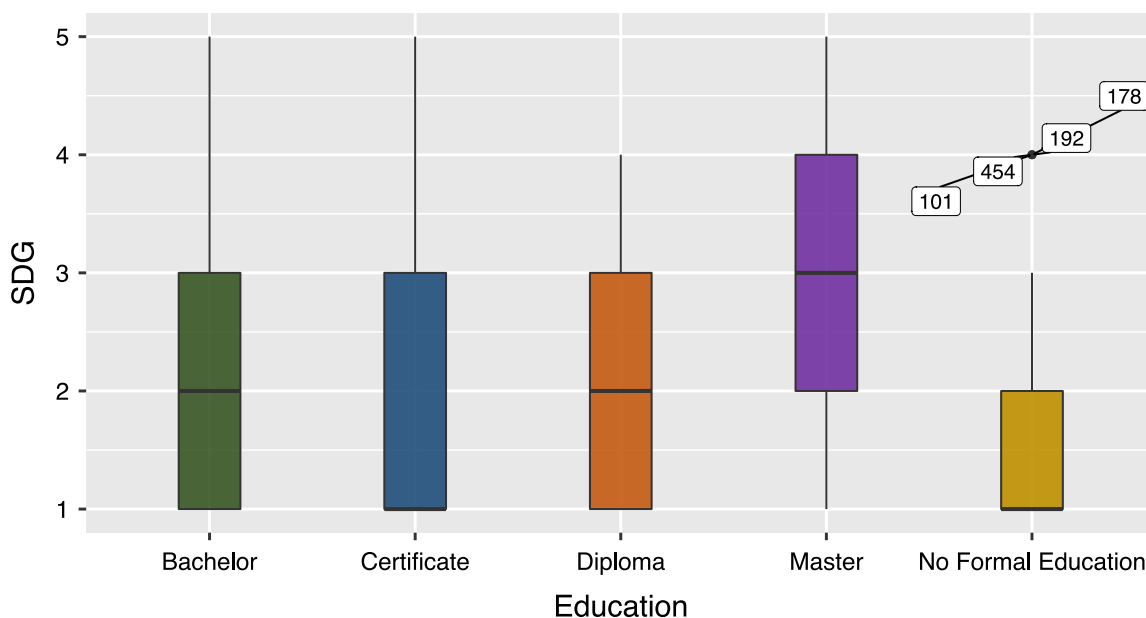
## One-Way ANOVA (Welch's)

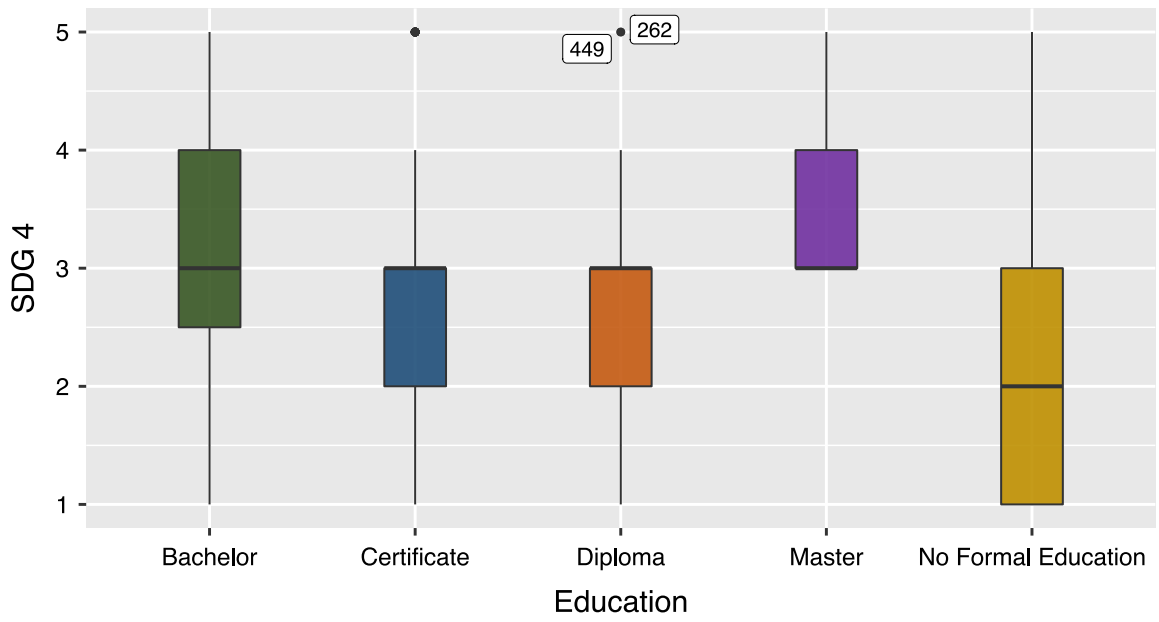
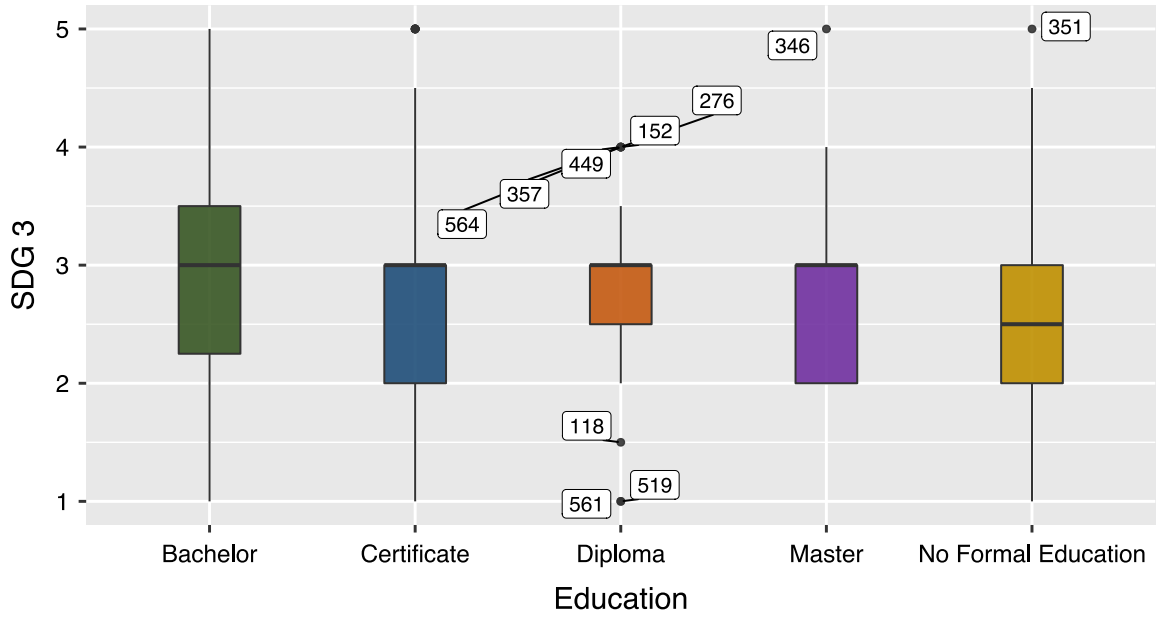
	F	df1	df2	p
<b>SDG</b>	<b>9.29</b>	<b>4</b>	<b>51.1</b>	<b>&lt; .001</b>
<b>SDG 1</b>	<b>3.78</b>	<b>4</b>	<b>52.9</b>	<b>0.009</b>
SDG 2	1.25	4	51.4	0.302
<b>SDG 3</b>	<b>2.86</b>	<b>4</b>	<b>51.9</b>	<b>0.032</b>
<b>SDG 4</b>	<b>13.72</b>	<b>4</b>	<b>52.9</b>	<b>&lt; .001</b>
SDG 5	1.62	4	52.5	0.182
<b>SDG 6</b>	<b>3.45</b>	<b>4</b>	<b>52.5</b>	<b>0.014</b>
<b>SDG 7</b>	<b>3.18</b>	<b>4</b>	<b>52.1</b>	<b>0.021</b>
<b>SDG 8</b>	<b>5.56</b>	<b>4</b>	<b>52.6</b>	<b>&lt; .001</b>
<b>SDG 9</b>	<b>10.39</b>	<b>4</b>	<b>52.8</b>	<b>&lt; .001</b>
<b>SDG 10</b>	<b>3.63</b>	<b>4</b>	<b>52.4</b>	<b>0.011</b>
<b>SDG 11</b>	<b>5.21</b>	<b>4</b>	<b>52.1</b>	<b>0.001</b>
<b>SDG 12</b>	<b>4.24</b>	<b>4</b>	<b>53.1</b>	<b>0.005</b>
SDG 13	2.22	4	52.5	0.079
SDG 14	1.22	4	52.0	0.313
SDG 15	1.66	4	52.5	0.173
<b>SDG 16</b>	<b>2.67</b>	<b>4</b>	<b>52.6</b>	<b>0.042</b>
<b>SDG 17</b>	<b>5.99</b>	<b>4</b>	<b>51.9</b>	<b>&lt; .001</b>

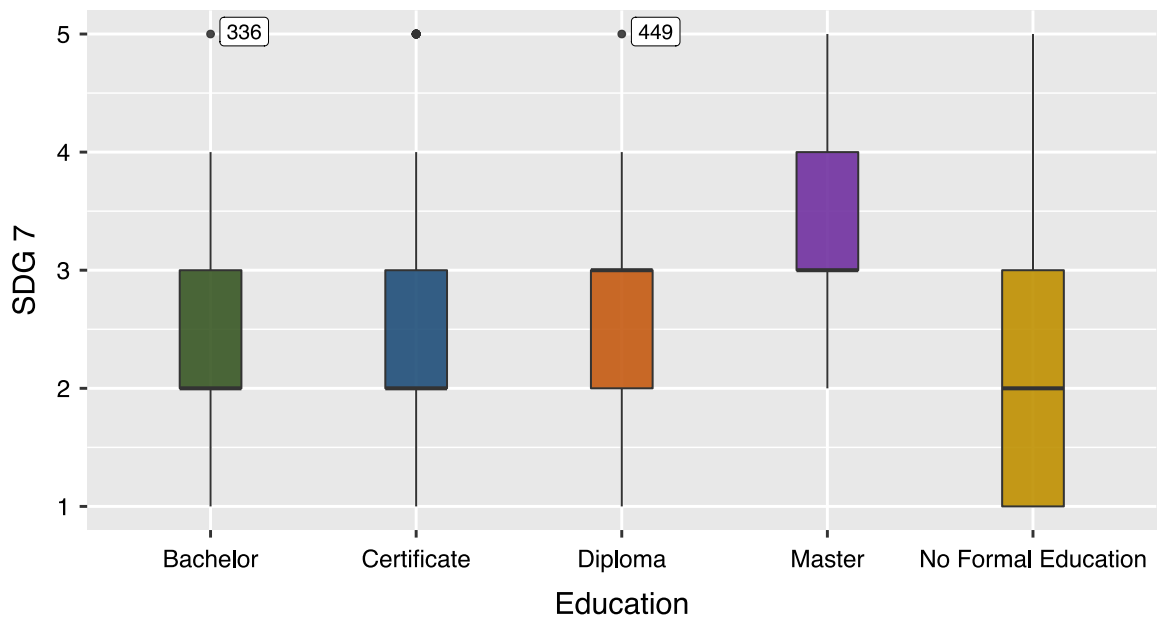
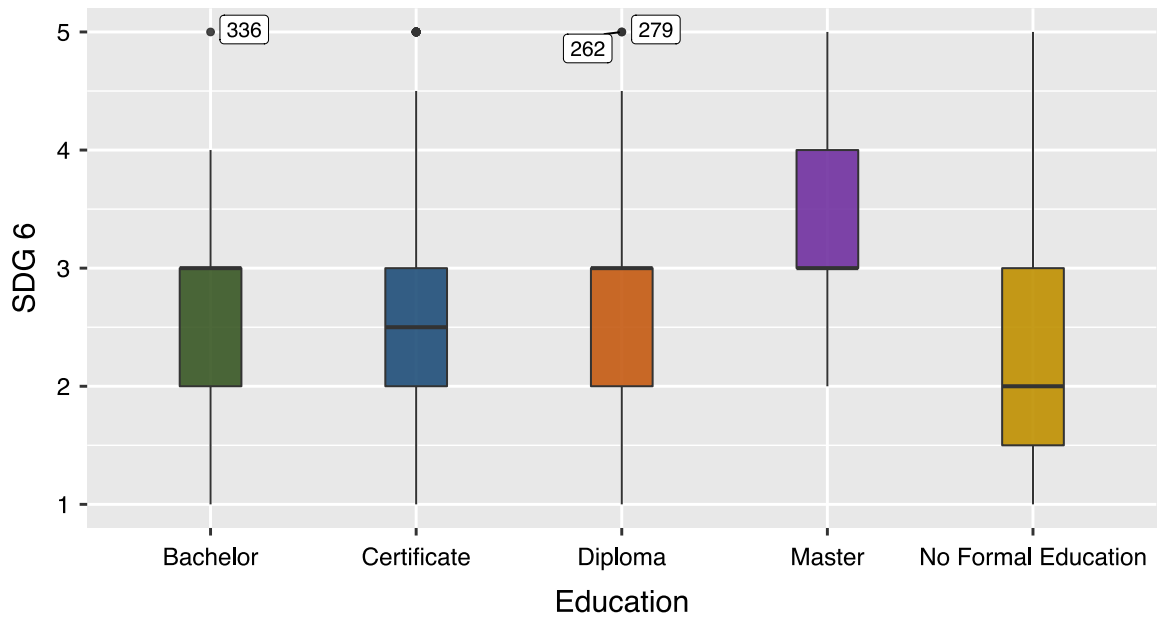
The provided One-Way ANOVA results above indicate significant differences in the level of understanding and awareness of the Sustainable Development Goals (SDGs) in general and across various SDGs and different education levels. Here are the key findings:

- **Significant Differences:** The P-values for 12 SDGs (SDG 1, SDG 3, SDG 4, SDG 6, SDG 7, SDG 8, SDG 9, SDG 10, SDG 11, SDG 12, SDG16, and SDG 17) are statistically significant with p-values less than 0.05. This suggests that there are notable differences in awareness and understanding of these SDGs across education levels.
- **No Significant Differences:** For the other SDGs (SDG 2, SDG 5, SDG 13, SDG 14, and SDG 15), the ANOVA results show no statistically significant differences in awareness and understanding across education levels, as their p-values are greater than 0.05.

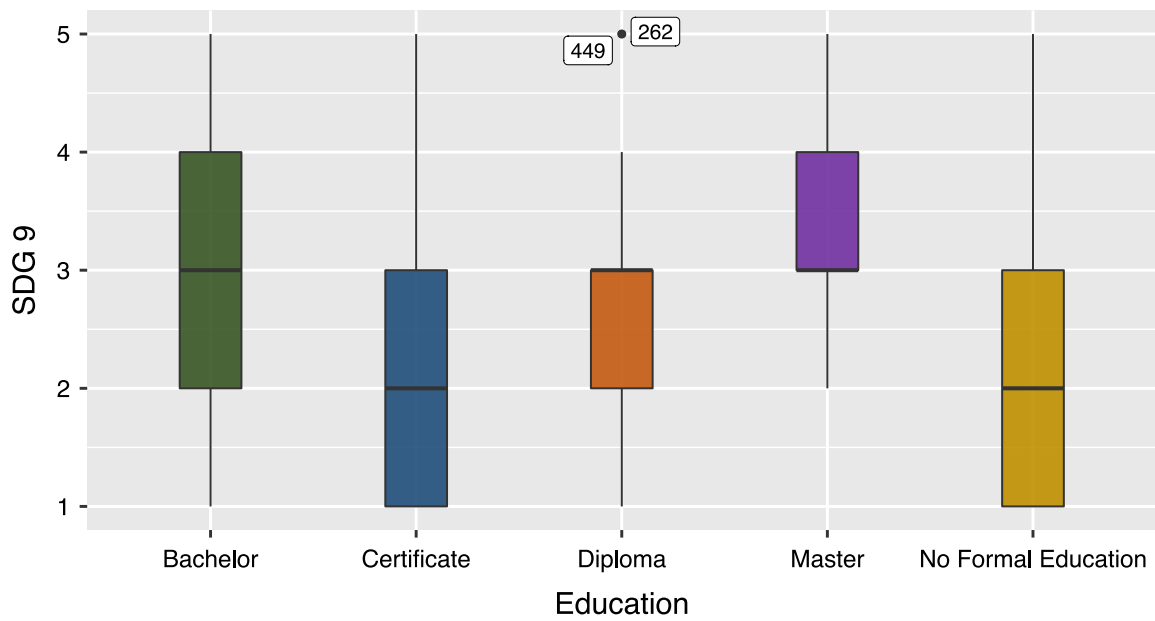
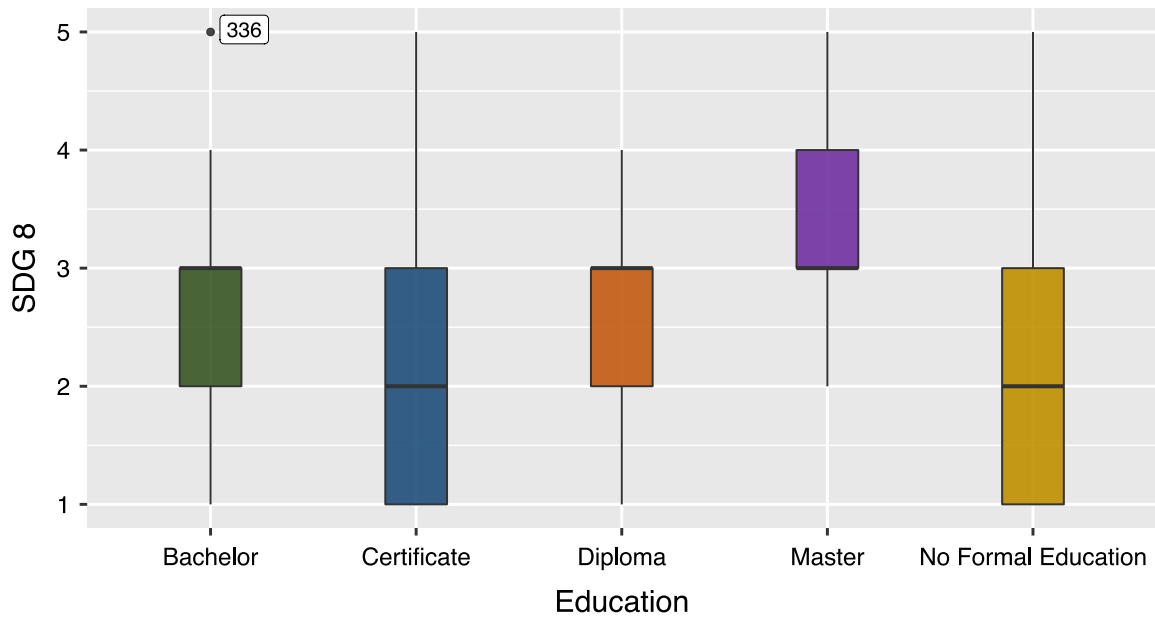
In summary, the ANOVA results suggest that education levels have a significant impact on the awareness and understanding of certain SDGs, while for others, education level does not seem to be a significant factor. This information can be valuable for tailoring educational and awareness campaigns related to specific SDGs to different educational backgrounds.

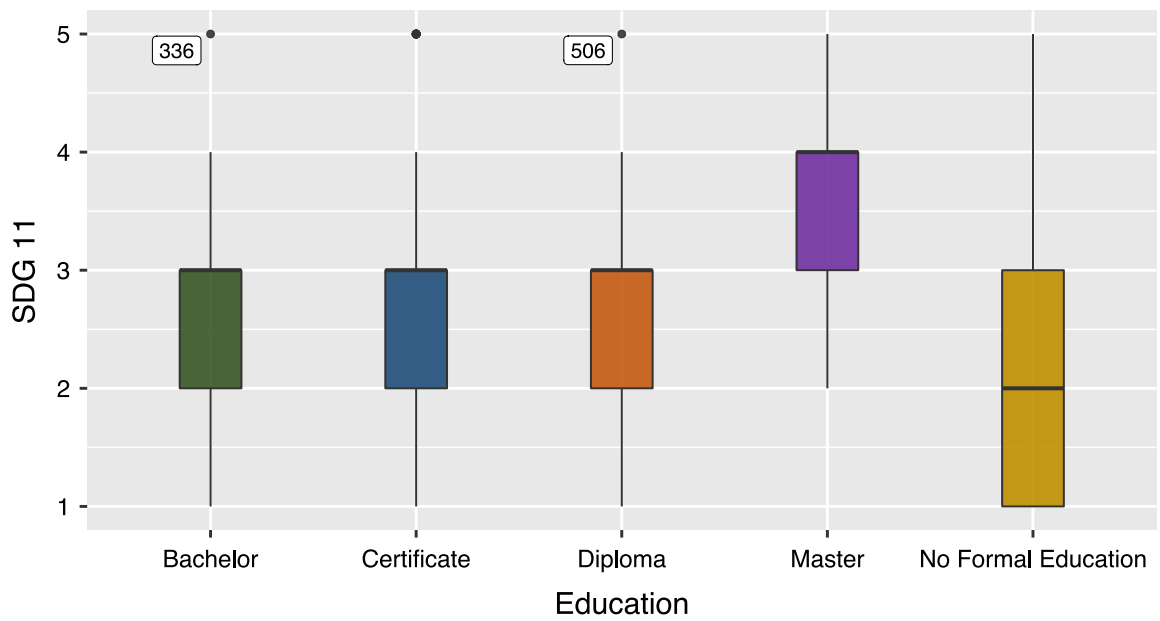
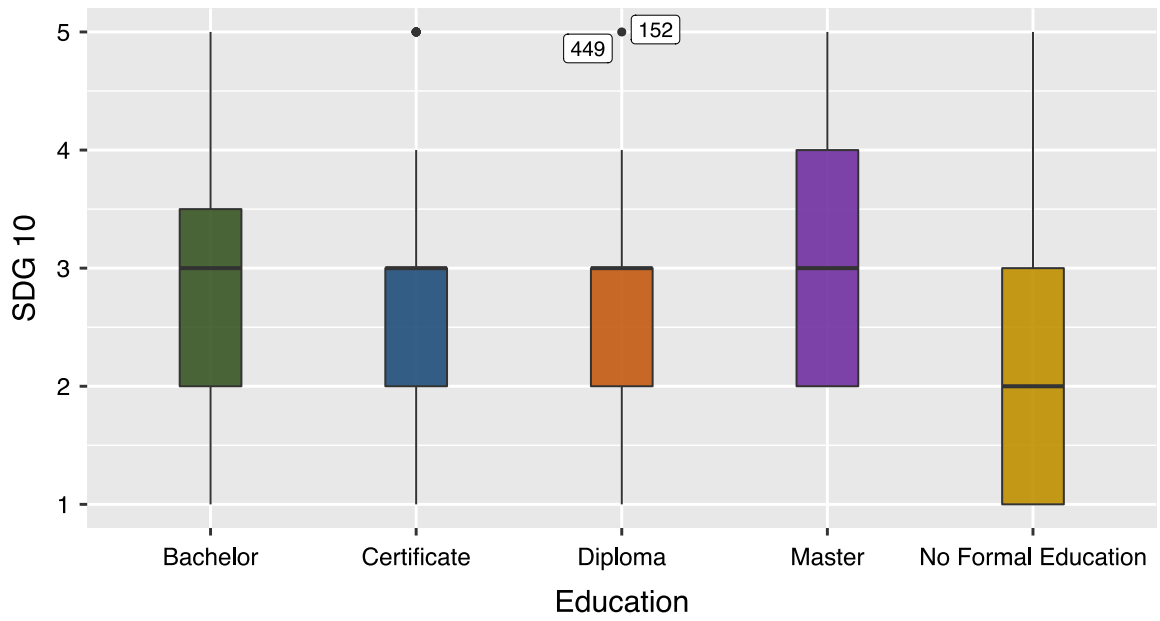


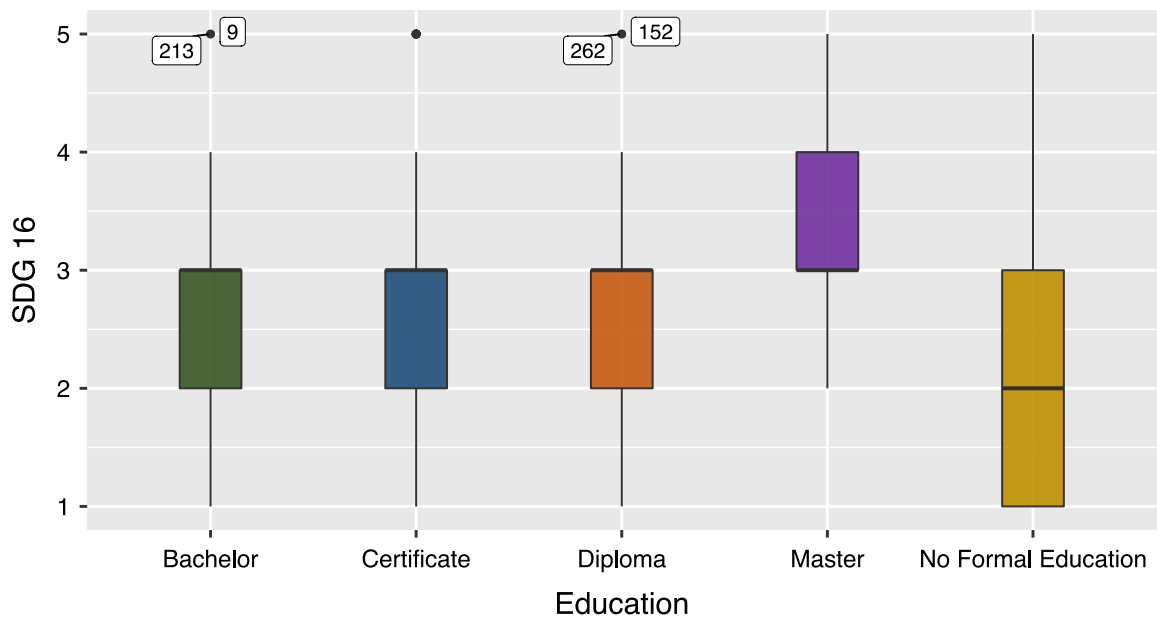
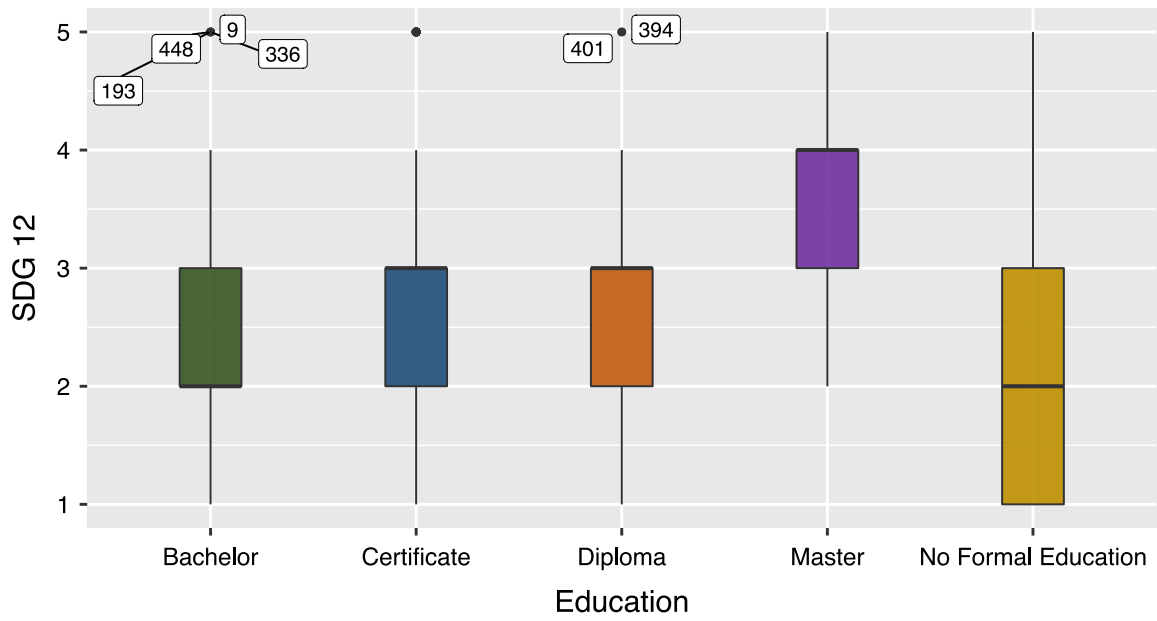


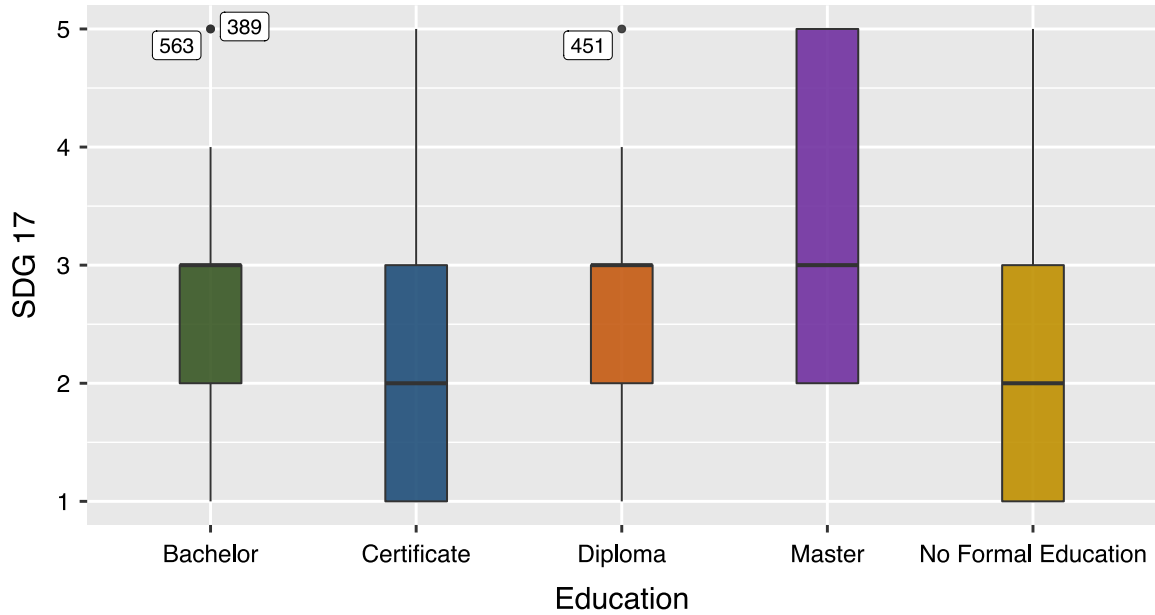












**Age Group Difference**

One-Way ANOVA (Welch's)

	F	df1	df2	p
SDG	3.00	4	106	0.022

Tukey Post-Hoc Test – SDG

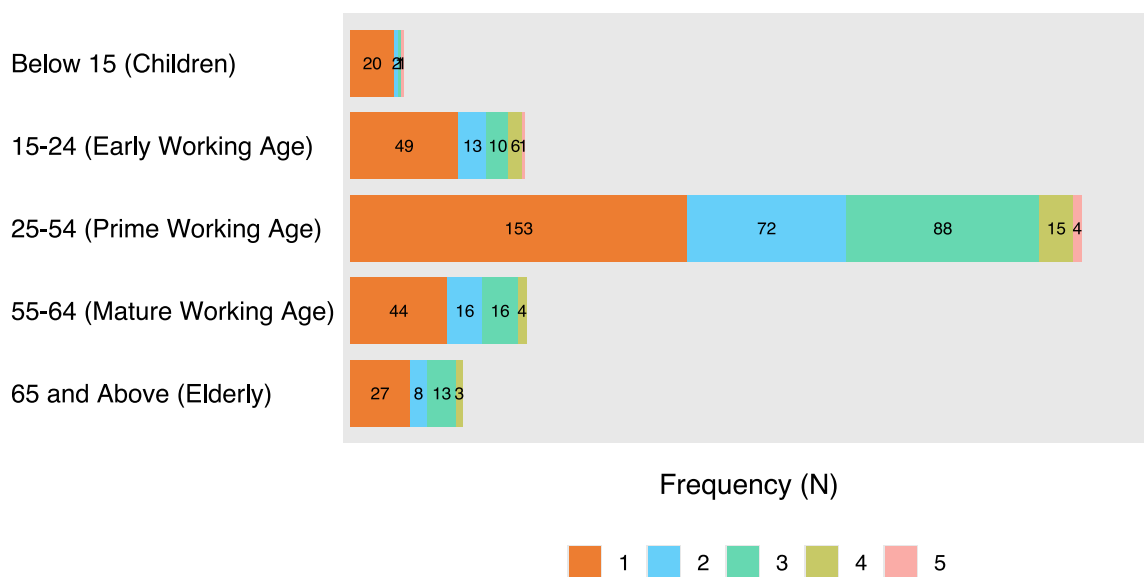
		Below 15 (Children)	15-24 (Early Working Age)	25-54 (Prime Working Age)	55-64 (Mature Working Age)	65 and Above (Elderly)
Below 15 (Children)	Mean difference	—	-0.363	-0.597	-0.4167	-0.5098
	p-value	—	0.526	0.039	0.380	0.240
15-24 (Early Working Age)	Mean difference	—	—	-0.235	-0.0538	-0.1469
	p-value	—	—	0.333	0.997	0.925
25-54 (Prime Working Age)	Mean difference	—	—	—	0.1807	0.0876

Tukey Post-Hoc Test – SDG

		Below 15 (Children)	15-24 (Early Working Age)	25-54 (Prime Working Age)	55-64 (Mature Working Age)	65 and Above (Elderly)
	p-value			—	0.595	0.978
55-64 (Mature Working Age)	Mean difference				—	-0.0931
	p-value				—	0.985
65 and Above (Elderly)	Mean difference					—
	p-value					—

The One-Way ANOVA (Welch's) test revealed a statistically significant difference among the age groups. The Tukey Post-Hoc Test indicates that the Below 15 (Children) and 25-54 (Prime Working Age) groups have a significant mean difference with a p-value of 0.039, suggesting that these two age groups differ in a meaningful way. The other age group pairs did not show significant differences.

SDG

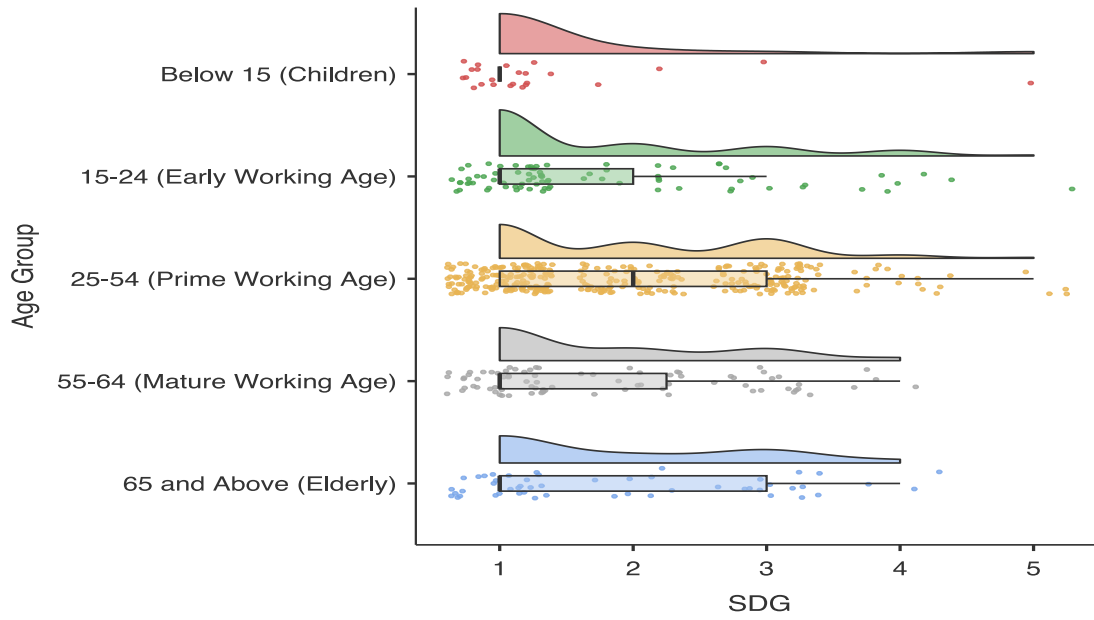


One-Way ANOVA (Welch's)

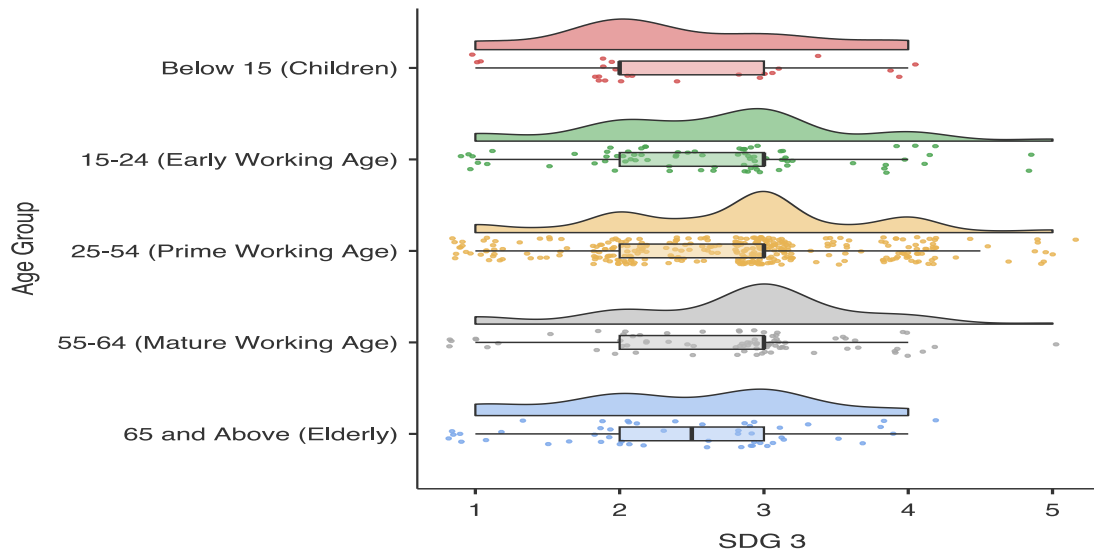
	<b>F</b>	<b>df1</b>	<b>df2</b>	<b>p</b>
SDG	3.002	4	106	0.022
SDG 1	3.739	4	106	0.007
SDG 2	1.425	4	106	0.231
SDG 3	2.748	4	106	0.032
SDG 4	2.733	4	105	0.033
SDG 5	1.427	4	104	0.230
SDG 6	2.197	4	105	0.074
SDG 7	0.891	4	106	0.472
SDG 8	4.027	4	104	0.004
SDG 9	3.482	4	105	0.010
SDG 10	2.837	4	106	0.028
SDG 11	2.829	4	103	0.028
SDG 12	0.760	4	104	0.554
SDG 13	1.036	4	106	0.392
SDG 14	1.304	4	105	0.273
SDG 15	5.029	4	106	< .001
SDG 16	1.299	4	104	0.275
SDG 17	3.724	4	106	0.007

In this One-Way ANOVA (Welch's) analysis, in this analysis, nine SDGs (1, 3, 4, 8, 9, 10, 11, 15, 17) show statistically significant differences in their means compared to other SDGs. This suggests that there are meaningful variations in the variable being measured among these specific SDGs. The other eight SDGs, with p-values greater than 0.05, do not show significant differences from the rest of the groups.

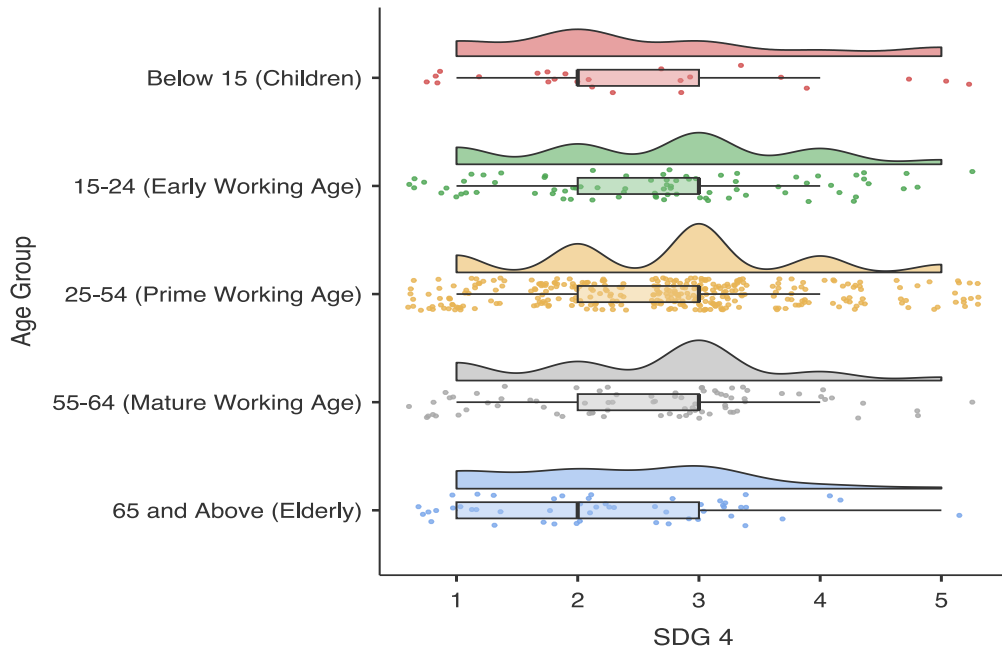
SDG



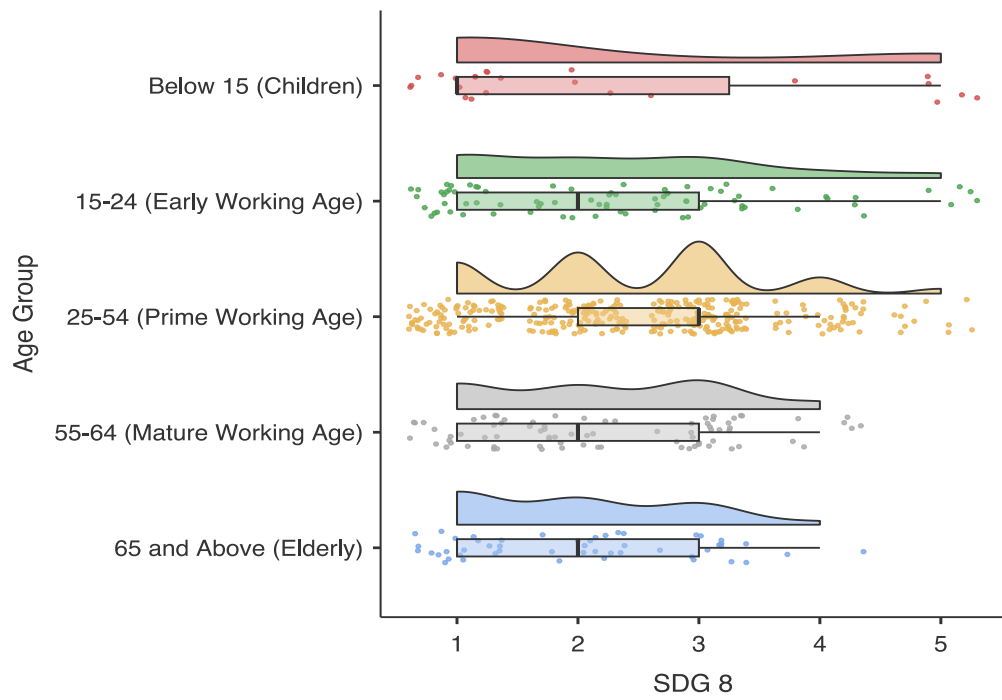
SDG 3



SDG 4

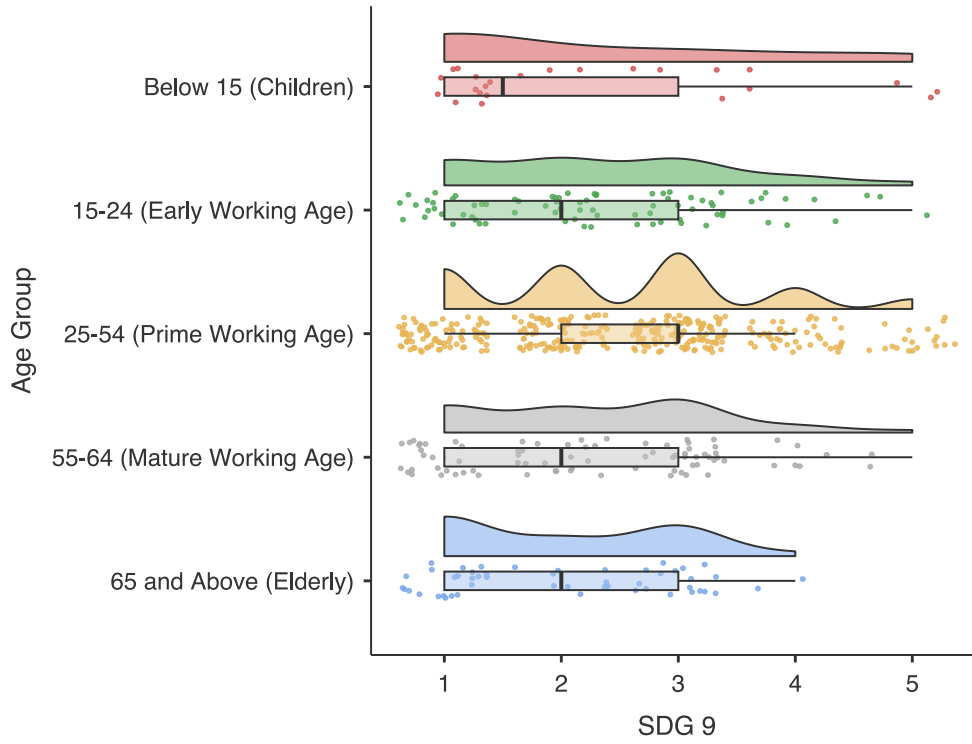


SDG 8

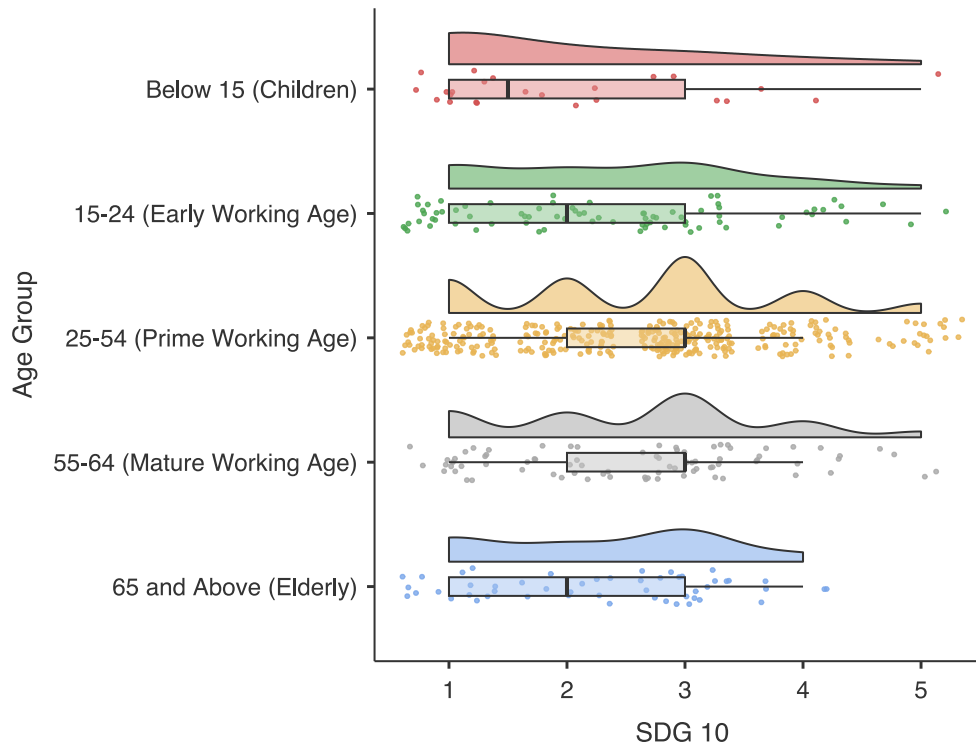




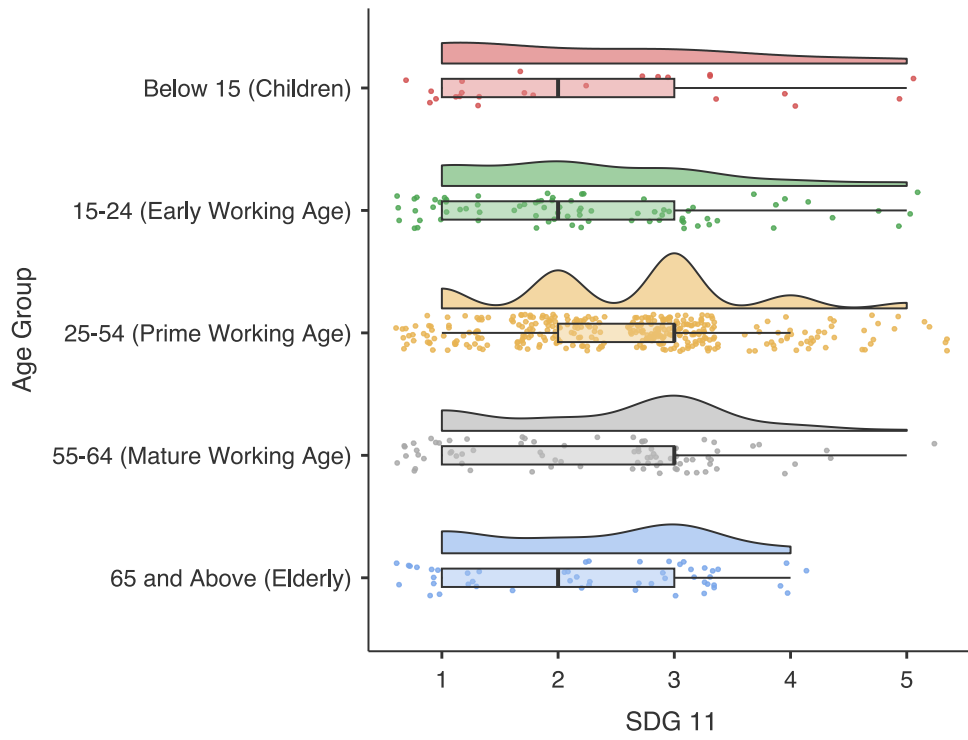
SDG 9



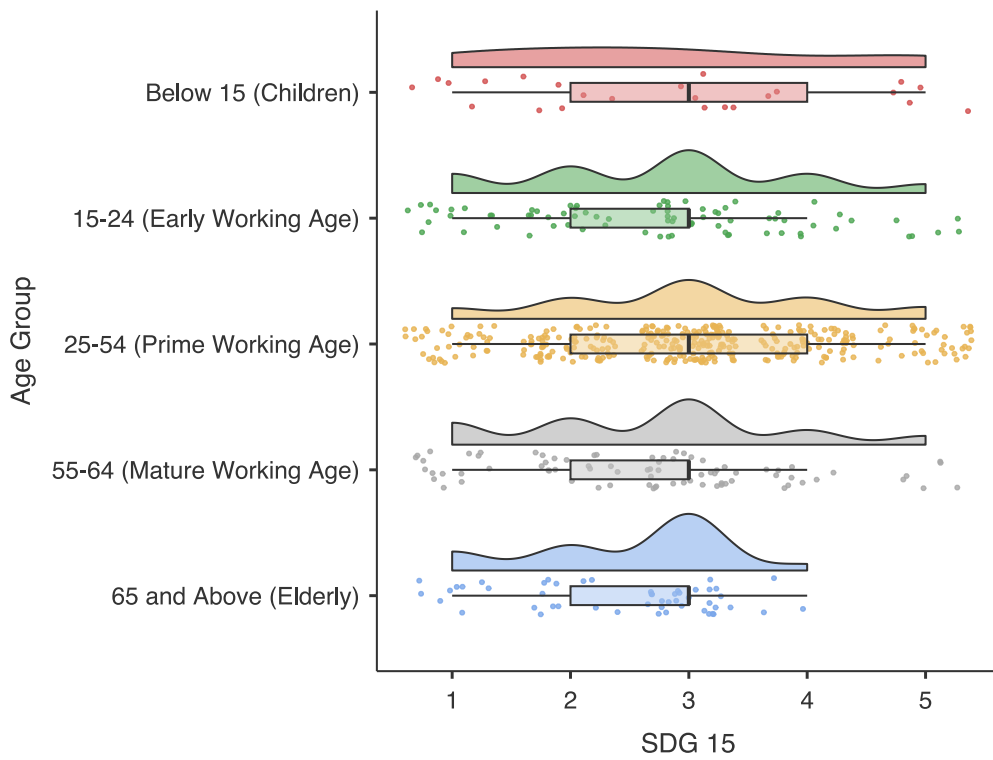
SDG 10



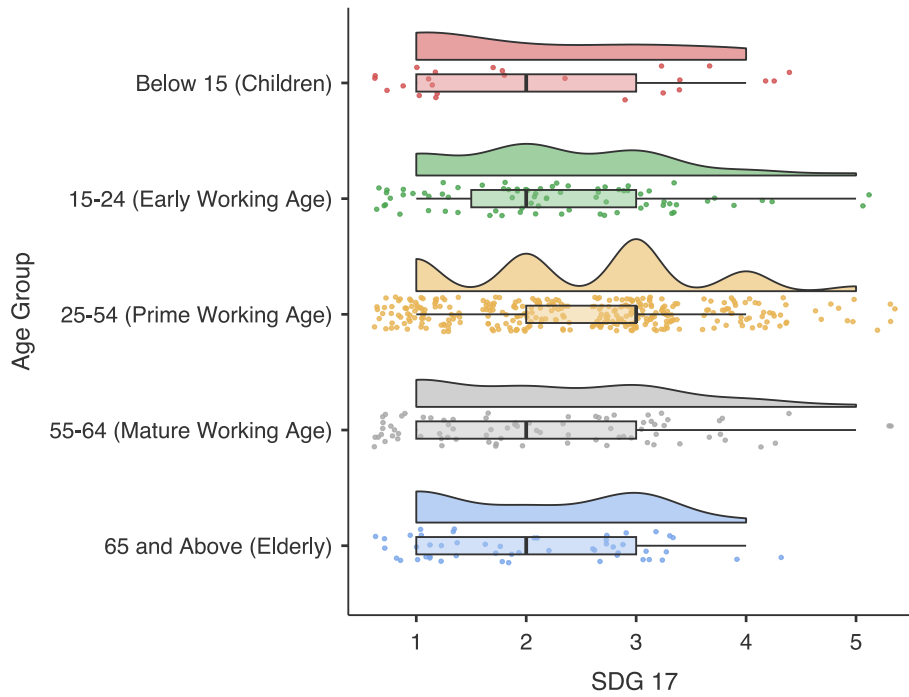
### SDG 11



### SDG 15



SDG 17



**Marital Status**

There is no significant difference in the overall understanding and awareness of the Sustainable Development Goals (SDGs) and individual awareness levels across all 17 SDGs based on marital status (single, married, divorced).

One-Way ANOVA (Welch's)

	F	df1	df2	p
SDG	0.4879	2	43.4	0.617
SDG 1	1.8145	2	42.6	0.175
SDG 2	2.6698	2	43.1	0.081
SDG 3	1.5768	2	44.5	0.218
SDG 4	1.1025	2	44.8	0.341
SDG 5	2.8677	2	43.8	0.068
SDG 6	0.7218	2	43.9	0.492
SDG 7	0.3949	2	45.6	0.676
SDG 8	0.2550	2	43.6	0.776
SDG 9	0.0749	2	43.8	0.928
SDG 10	2.0332	2	46.0	0.143
SDG 11	1.2169	2	42.5	0.306
SDG 12	1.4916	2	42.9	0.236

## One-Way ANOVA (Welch's)

	F	df1	df2	p
SDG 13	0.4521	2	42.6	0.639
SDG 14	0.1244	2	42.7	0.883
SDG 15	0.3457	2	44.5	0.710
SDG 16	1.1569	2	43.1	0.324
SDG 17	0.4632	2	44.0	0.632

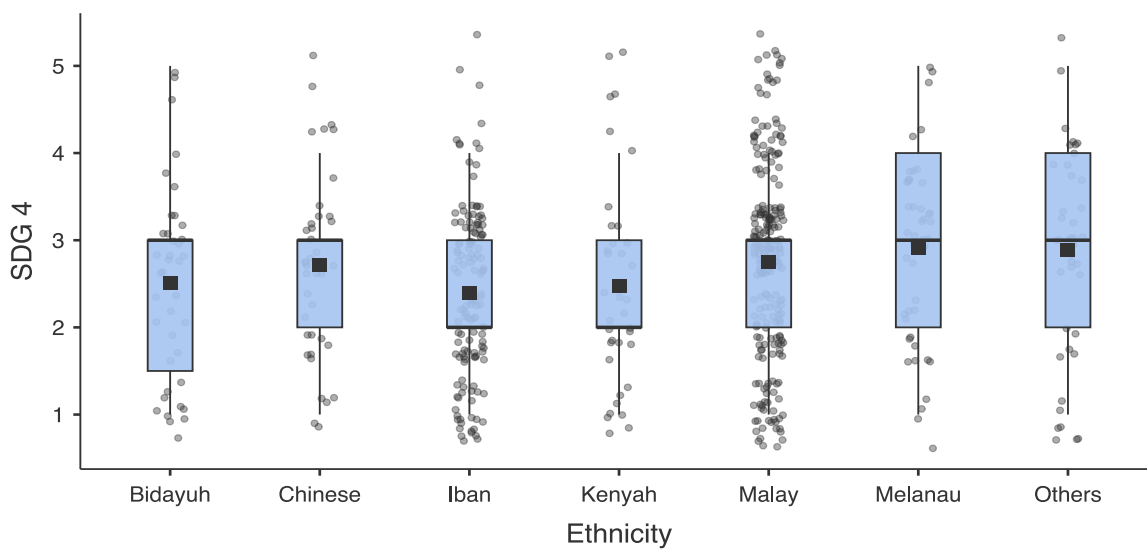
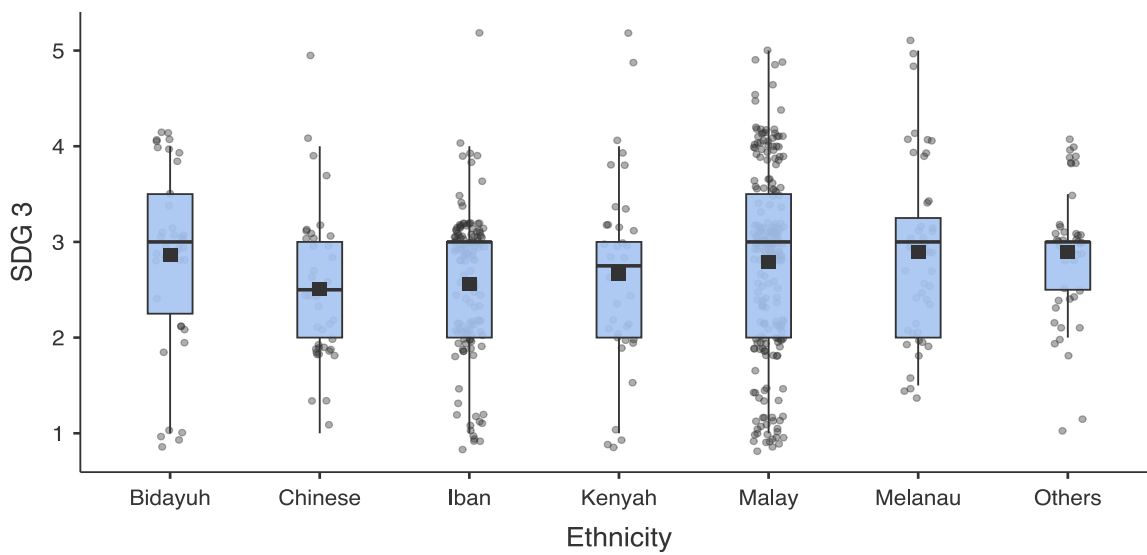
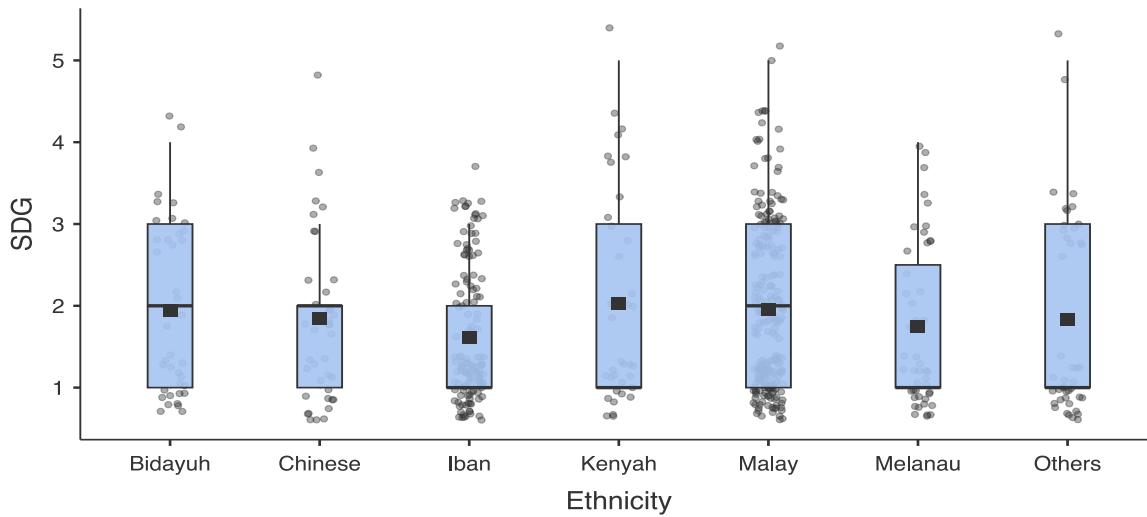
**Ethnicity**

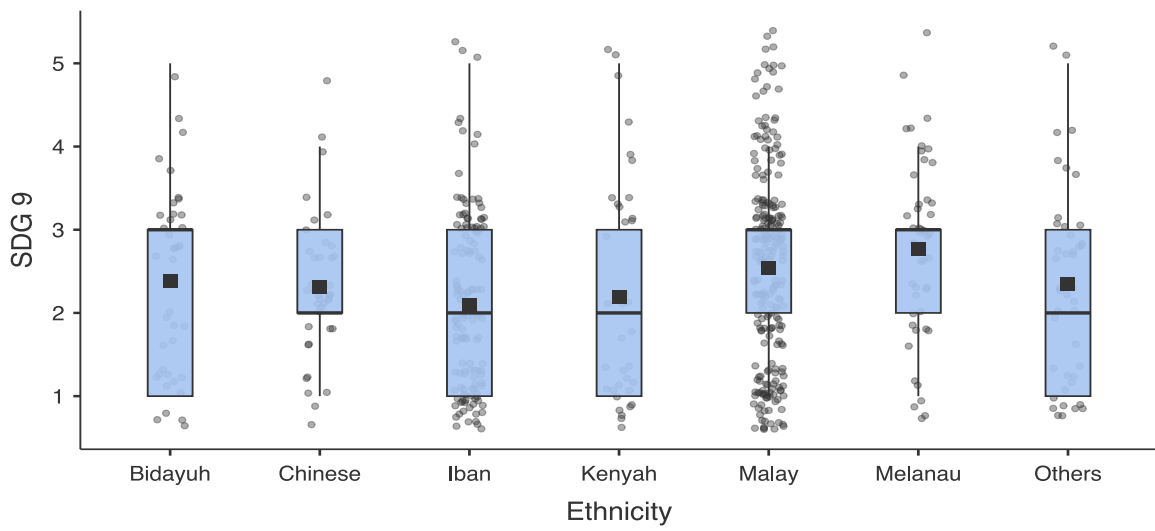
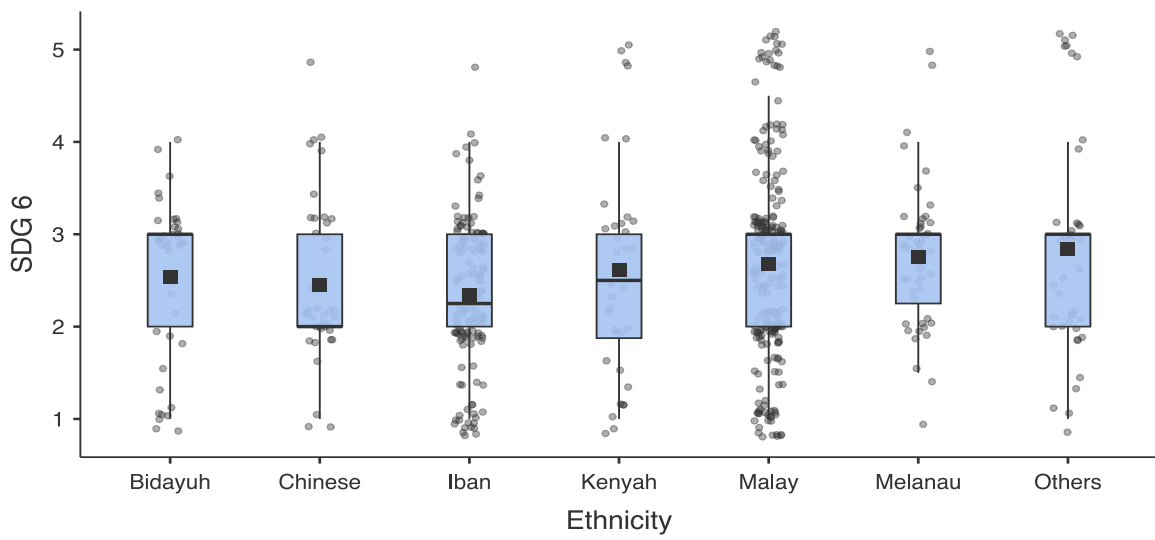
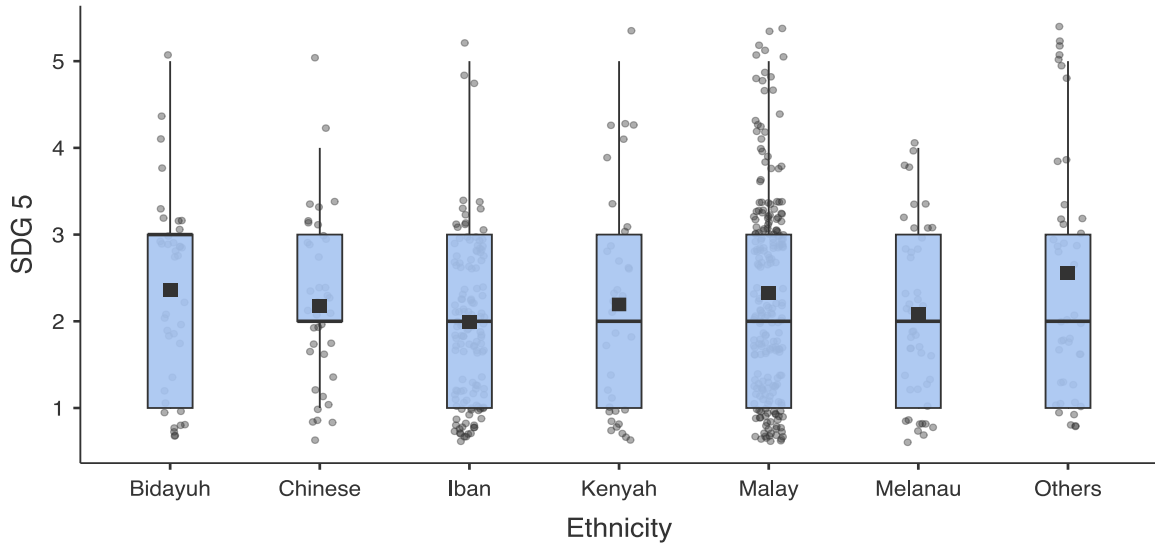
Differences are observed in the awareness and understanding of Sustainable Development Goals (SDGs), specifically in the context of various ethnicities. Notably, distinctions exist for Overall SDG, SDG 3, SDG 4, SDG 5, SDG 6, SDG 9, SDG 10, SDG 14, and SDG 17.

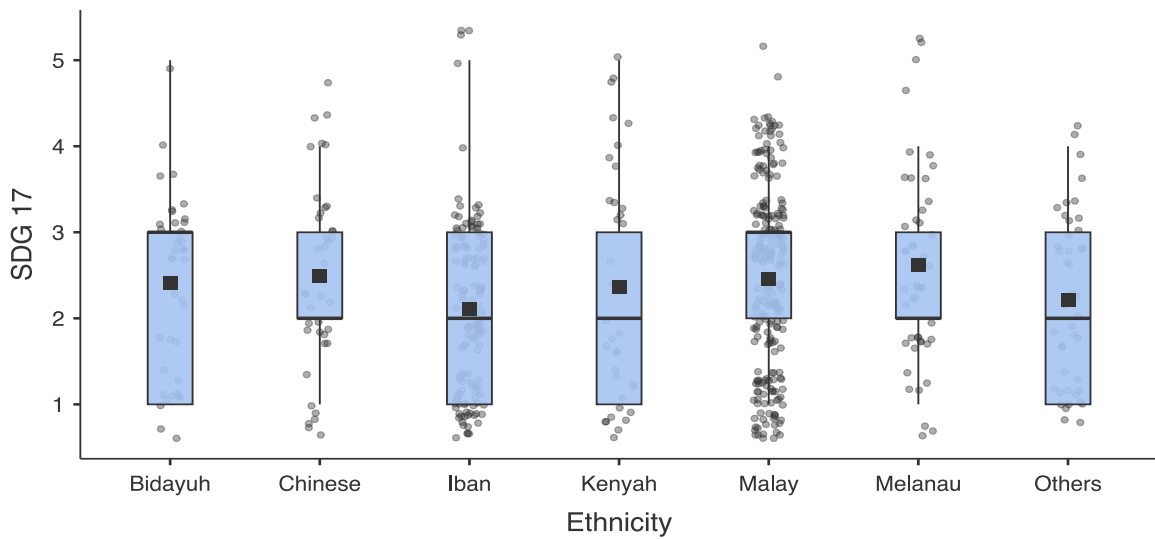
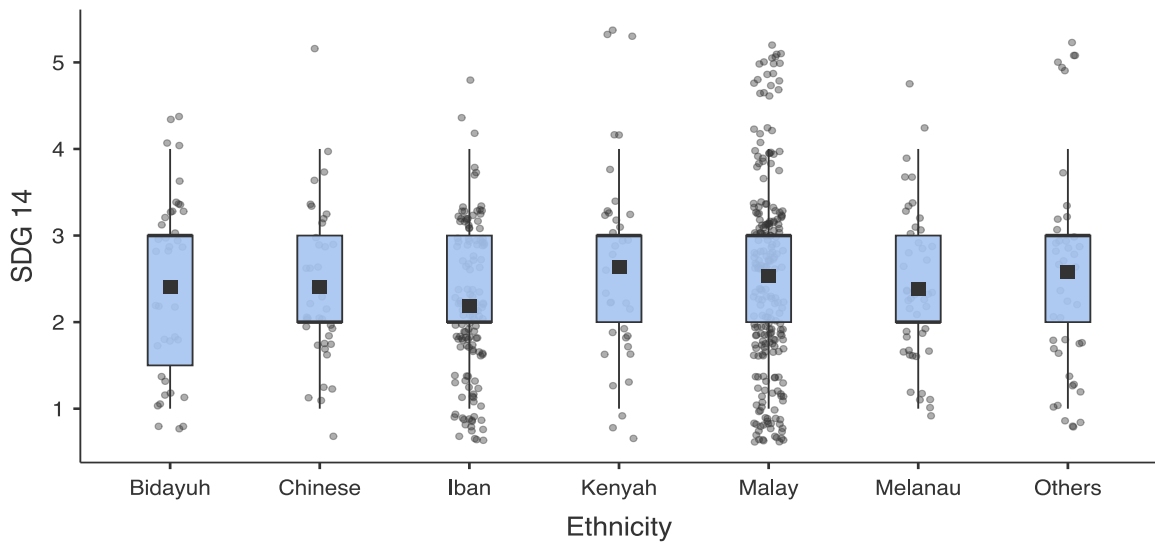
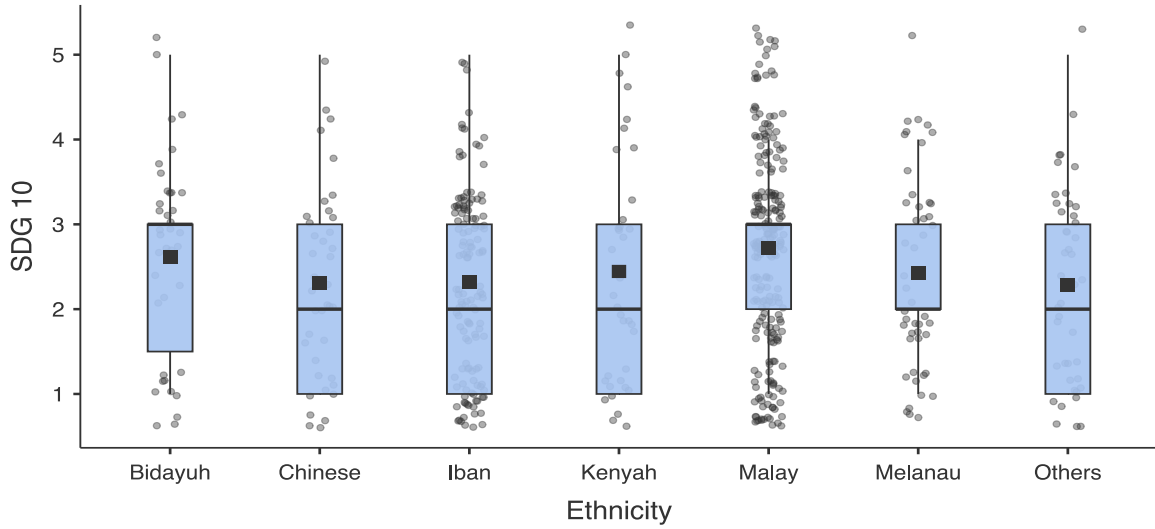
## One-Way ANOVA (Welch's)

	F	df1	df2	p
<b>SDG</b>	<b>2.300</b>	<b>6</b>	<b>136</b>	<b>0.038</b>
SDG 1	1.898	6	139	0.085
SDG 2	1.292	6	138	0.265
<b>SDG 3</b>	<b>2.490</b>	<b>6</b>	<b>139</b>	<b>0.026</b>
<b>SDG 4</b>	<b>2.893</b>	<b>6</b>	<b>138</b>	<b>0.011</b>
<b>SDG 5</b>	<b>2.362</b>	<b>6</b>	<b>138</b>	<b>0.033</b>
<b>SDG 6</b>	<b>2.966</b>	<b>6</b>	<b>139</b>	<b>0.009</b>
SDG 7	1.992	6	138	0.071
<b>SDG 8</b>	<b>2.325</b>	<b>6</b>	<b>139</b>	<b>0.036</b>
<b>SDG 9</b>	<b>3.601</b>	<b>6</b>	<b>140</b>	<b>0.002</b>
<b>SDG 10</b>	<b>2.524</b>	<b>6</b>	<b>138</b>	<b>0.024</b>
SDG 11	1.276	6	138	0.272
SDG 12	0.623	6	138	0.712
SDG 13	1.674	6	137	0.132
<b>SDG 14</b>	<b>2.283</b>	<b>6</b>	<b>139</b>	<b>0.039</b>
SDG 15	1.756	6	140	0.112
SDG 16	2.023	6	139	0.067
<b>SDG 17</b>	<b>2.366</b>	<b>6</b>	<b>138</b>	<b>0.033</b>

The box plots below illustrate observed variations in awareness and understanding across different ethnicities for SDG, SDG 3, SDG 4, SDG 5, SDG 6, SDG 9, SDG 10, SDG 14, and SDG 17. The square dots represent the mean values.







**Network Analysis on SDGs**

Network analysis is employed to visually represent and analyze the relationships between all 17 Sustainable Development Goals (SDGs). In this context, a network consists of nodes and edges, each carrying specific significance.

- **Nodes:** In the context of SDGs, nodes represent individual goals. Each SDG is assigned a node, creating a point in the network.
- **Edges:** Edges in the network represent connections or relationships between SDGs. The presence of an edge between two nodes indicates an interaction or interdependence between the corresponding goals. The strength of the edge may vary, reflecting the degree of influence or correlation.

**Interpretation:**

- **Density:** The overall density of the network reflects the interconnectedness of the SDGs. A denser network suggests stronger relationships and dependencies between the goals.
- **Centrality:** Nodes with higher centrality (e.g., degree centrality, betweenness centrality) are more crucial in connecting various SDGs.
- **Clusters:** Clusters or groups of tightly connected nodes may emerge, indicating subsets of SDGs that are closely related. Understanding these clusters can help identify themes or areas of synergy.
- **Isolation:** Isolated nodes without edges suggest SDGs that may not have direct relationships with others in the network. This isolation may indicate areas where targeted interventions or awareness efforts are needed.
- **Edge Attributes:** The characteristics of edges, such as weight or direction, provide additional information. A weighted edge represents the strength of the relationship.

Interpreting the network allows policymakers, researchers, and stakeholders to gain insights into the complex web of relationships between the SDGs. It helps identify areas of intersection and integration, guiding comprehensive strategies for sustainable development that account for the interconnected nature of these global goals.

**Weights Matrix**

**Weights matrix**

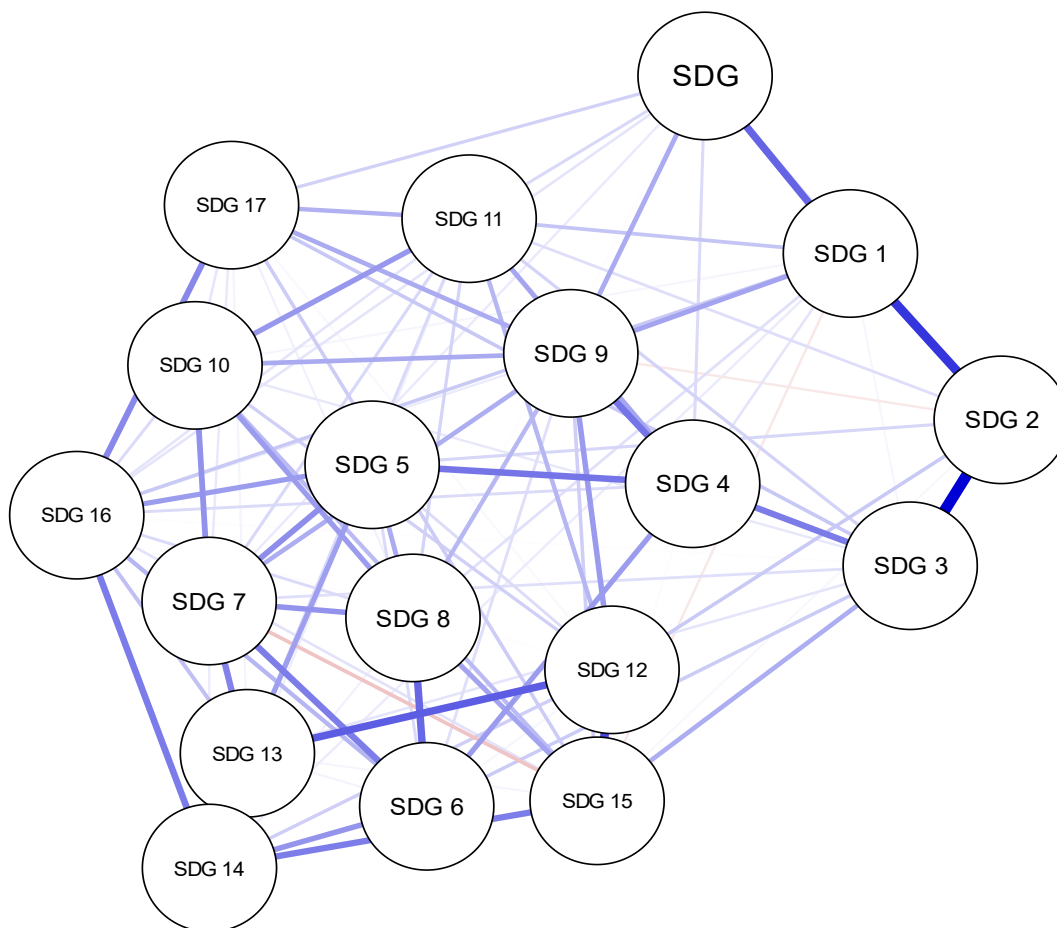
Variable	Network																
	SDG 1	SDG 2	SDG 3	SDG 4	SDG 5	SDG 6	SDG 7	SDG 8	SDG 9	SDG 10	SDG 11	SDG 12	SDG 13	SDG 14	SDG 15	SDG 16	SDG 17
SDG 1	0.000	0.310	0.012	0.049	0.000	0.000	0.000	0.050	0.181	0.018	0.099	0.000	0.000	0.036	-0.075	0.091	0.000
SDG 2	0.310	0.000	0.364	0.000	0.061	0.000	0.000	0.000	-0.072	0.000	0.052	0.080	0.004	0.000	0.030	0.000	0.000
SDG 3	0.012	0.364	0.000	0.184	0.000	0.074	0.052	0.000	0.009	0.027	0.057	0.000	0.035	-0.013	0.119	0.001	0.083
SDG 4	0.049	0.000	0.184	0.000	0.193	0.139	0.000	0.000	0.203	0.000	0.130	0.000	0.000	0.000	0.007	0.051	0.000
SDG 5	0.000	0.061	0.000	0.193	0.000	0.049	0.162	0.115	0.000	0.000	0.000	0.047	0.132	0.000	0.000	0.140	0.000
SDG 6	0.000	0.000	0.074	0.139	0.049	0.000	0.185	0.215	0.046	0.000	0.000	0.014	0.012	0.153	0.000	0.108	-0.021
SDG 7	0.000	0.000	0.052	0.000	0.162	0.185	0.000	0.159	0.125	0.158	0.059	0.000	0.179	0.036	-0.131	0.000	0.042
SDG 8	0.050	0.000	0.000	0.000	0.115	0.215	0.159	0.000	0.097	0.135	0.058	0.000	0.000	0.011	0.142	0.047	0.022
SDG 9	0.181	-0.072	0.009	0.203	0.000	0.046	0.125	0.097	0.000	0.117	0.000	0.145	0.000	0.000	0.084	0.028	0.132
SDG 10	0.018	0.000	0.027	0.000	0.000	0.000	0.158	0.135	0.117	0.000	0.147	0.061	0.000	0.000	0.105	0.047	0.034
SDG 11	0.099	0.052	0.057	0.130	0.000	0.000	0.059	0.058	0.000	0.147	0.000	0.104	0.050	0.024	0.000	0.040	0.119
SDG 12	0.000	0.080	0.000	0.000	0.047	0.014	0.000	0.000	0.145	0.061	0.104	0.000	0.228	0.065	0.261	0.000	0.010
SDG 13	0.000	0.004	0.035	0.000	0.132	0.012	0.179	0.000	0.000	0.000	0.050	0.228	0.000	0.331	0.020	0.086	0.016
SDG 14	0.036	0.000	-0.013	0.000	0.000	0.153	0.036	0.011	0.000	0.000	0.024	0.065	0.331	0.000	0.192	0.185	-0.006
SDG 15	-0.075	0.030	0.119	0.007	0.000	0.000	-0.131	0.142	0.084	0.105	0.000	0.261	0.020	0.192	0.000	0.046	0.077
SDG 16	0.091	0.000	0.001	0.051	0.140	0.108	0.000	0.047	0.028	0.047	0.040	0.000	0.086	0.185	0.046	0.000	0.178
SDG 17	0.000	0.000	0.083	0.000	0.000	-0.021	0.042	0.022	0.132	0.034	0.119	0.010	0.016	-0.006	0.077	0.178	0.000

In network analysis, a weight matrix is a representation of the strength or intensity of connections between nodes in a graph. Each entry in the matrix corresponds to the weight of the edge between



two nodes. Here's a general guide on how to interpret the weight matrix. The values in the matrix indicate the strength or intensity of connections. The interpretation of these values depends on the context of your specific network analysis. Larger values usually indicate stronger connections, while smaller values may represent weaker connections or the absence of a connection.

### Network Structure



- SDG 1: No Poverty (Item 2)
- SDG 2: Zero Hunger (Item 3)
- SDG 3: Good Health and Well-being (Item 4 & 5)
- SDG 4: Quality Education (Item 6)
- SDG 5: Gender Equality (Item 7)
- SDG 6: Clean Water and Sanitation (Item 8 & 9)
- SDG 7: Affordable and Clean Energy (Item 10)
- SDG 8: Decent Work and Economic Growth (Item 11)
- SDG 9: Industry, Innovation, and Infrastructure (Item 12)
- SDG 10: Reduced Inequality (Item 13)
- SDG 11: Sustainable Cities and Communities (Item 14)

SDG 12: Responsible Consumption and Production (Item 15)

SDG 13: Climate Action (Item 16)

SDG 14: Life Below Water (Item 17)

SDG 15: Life on Land (Item 18)

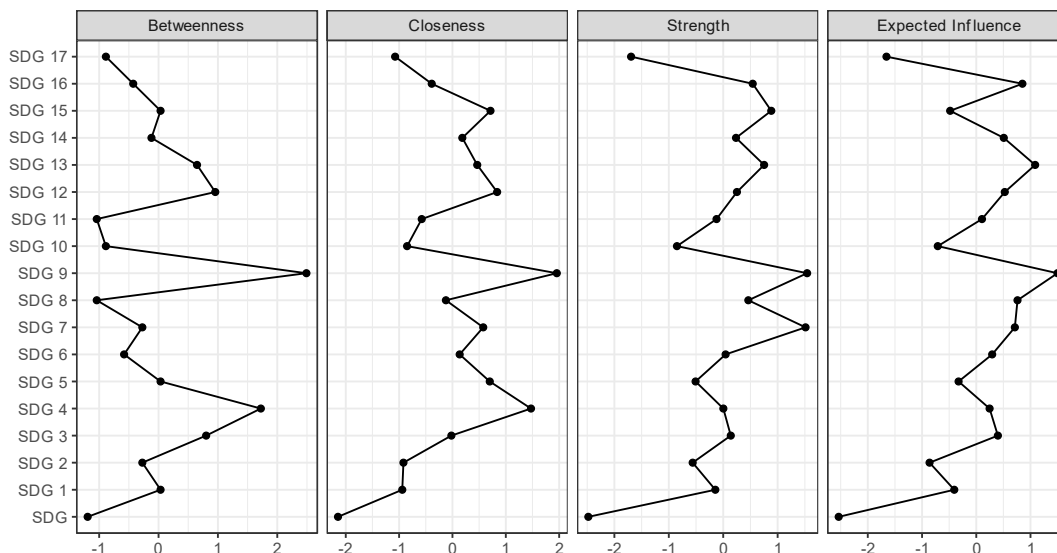
SDG 16: Peace, Justice, and Strong Institutions (Item 19)

SDG 17: Partnerships for the Goals (Item 20)

### Centrality Measures per Variable

Centrality measures per variable				
Variable	Network			
	Betweenness	Closeness	Strength	Expected influence
SDG	-1.194	-2.146	-2.479	-2.537
SDG 1	0.034	-0.941	-0.146	-0.406
SDG 2	-0.273	-0.919	-0.561	-0.861
SDG 3	0.802	-0.020	0.139	0.399
SDG 4	1.723	1.472	0.002	0.246
SDG 5	0.034	0.699	-0.508	-0.327
SDG 6	-0.580	0.135	0.044	0.293
SDG 7	-0.273	0.577	1.513	0.711
SDG 8	-1.041	-0.123	0.461	0.760
SDG 9	2.491	1.955	1.542	1.497
SDG 10	-0.887	-0.850	-0.850	-0.710
SDG 11	-1.041	-0.576	-0.123	0.105
SDG 12	0.955	0.837	0.251	0.525
SDG 13	0.648	0.464	0.751	1.086
SDG 14	-0.119	0.185	0.235	0.507
SDG 15	0.034	0.713	0.883	-0.481
SDG 16	-0.427	-0.389	0.541	0.850
SDG 17	-0.887	-1.075	-1.694	-1.656

### Centrality Graphs



Based on the values for centrality indices, SDG 9 (Industry, Innovation, and Infrastructure) has the highest values for Betweenness, Closeness, Strength, and Expected Influence in a network analysis, it implies the following:

- **Betweenness Centrality:** SDG 9 acts as a crucial intermediary or bridge between other Sustainable Development Goals (SDGs). It plays an important role in facilitating communication, cooperation, and the flow of influence between different goals in the network. SDG 9's high betweenness centrality suggests that it is strategically positioned to connect and impact a wide range of other goals.
- **Closeness Centrality:** SDG 9 is, on average, closer to all other SDGs in the network. This indicates that achieving progress in SDG 9 could have a more direct and immediate impact on the overall network. The high closeness centrality suggests that SDG 9 is well-connected and accessible, making it a key player in the network.
- **Strength:** SDG 9 has the highest Strength, meaning it has strong connections or relationships with other SDGs. The high strength implies that achieving the objectives of SDG 9 may positively influence or be influenced by multiple other goals. SDG 9 is a central node with substantial influence on the entire network.
- **Expected Influence:** The highest Expected Influence for SDG 9 indicates that, based on the network structure and relationships, achieving the targets of SDG 9 is expected to have a significant impact on the entire network. This metric accounts for the potential ripple effects and the overall influence that SDG 9 might have in driving positive change across the SDGs.

In summary, SDG 9 is critical and having a central role in the interconnected web of Sustainable Development Goals. It suggests that progress in Industry, Innovation, and Infrastructure has the potential to significantly influence and contribute to the achievement of broader sustainability objectives across the SDG framework.

## RECOMMENDATIONS

### 1. Deeper focus on SDG 9 (Industry, Innovation, and Infrastructure)

- Allocate additional resources and efforts to enhance awareness and understanding of SDG 9 (Industry, Innovation, and Infrastructure).
- Implement targeted initiatives and collaborations with industry leaders to promote engagement and investment in sustainable innovation.

- Continue to expand effective infrastructure network across the state to increase general wellbeing and quality of life.
  - Innovation is a big part of development. Industry-driven innovation competitions in school and higher education institutes help bridge the gap between academia and the industry.
  - Sustainable industrial practices can significantly reduce adverse environmental impact.
- 2. Educational Initiatives:**
    - Develop and implement educational programs targeting demographics with lower awareness levels, focusing on specific SDGs.
    - Collaborate with educational institutions to integrate SDGs into curricula at various levels.
    - Adopt student-centered sustainability initiatives.
  - 3. Awareness Campaigns:**
    - Launch targeted awareness campaigns using diverse channels, including social media, community events, and collaborations with local influencers.
    - Tailor campaigns to address the specific needs and interests of different demographic groups.
  - 4. Institutional Collaboration:**
    - Encourage collaboration between governmental bodies, NGOs, and private sectors to amplify the reach and impact of awareness initiatives.
    - Establish partnerships with community leaders and organizations to foster grassroots engagement.
  - 5. Continuous Monitoring:**
    - Implement a continuous monitoring system to track changes in awareness over time.
    - Regularly assess the effectiveness of awareness programs and adjust strategies accordingly.
    - Expand the study to cover more demographics and areas in Sarawak.
  - 6. Inclusive Strategies:**
    - Ensure inclusivity in awareness initiatives, considering diverse demographics, cultural backgrounds, and languages.
    - Collect feedback from the community to make ongoing improvements.
  - 7. Engagement Platforms:**
    - Establish offline/online platforms and forums for discussions, sharing success stories, and fostering a sense of community around SDGs.
    - Leverage technology to reach a wider audience and facilitate ongoing engagement.
  - 8. Policy Integration:**
    - Advocate for the integration of SDGs into local and national policies, ensuring a supportive environment for sustainable development initiatives.
    - Engage with policymakers to emphasize the importance of SDGs in the broader socio-economic context.

### **Recommended Topics for Future Research on SDG Awareness in Sarawak**

1. In-depth analysis of awareness disparities for different demographics
2. Impact of awareness on behavioral change
3. Effectiveness of different awareness strategies
4. Regional and cultural variations in SDG awareness
5. The use of technology in promoting awareness
6. Community-based interventions to mitigate SDG related issues (Action Research)
7. Impact of integration of SDGs in educational curricula in schools and higher educational institutes in Sarawak
8. Do corporate social responsibility (CSR) initiatives significantly increase specific SDG awareness?
9. Long-term trends in awareness (Longitudinal study on SDG awareness)
10. Policy implications of awareness research

Moreover, network analysis has significant potential for a deeper understanding of SDG awareness to guide policies regarding SDGs. Among the suggested topics related to network analysis are:

1. Network analysis of SDG interactions
2. Influence of key stakeholders in SDG networks
3. Identifying central SDGs in interconnected networks
4. Community detection in SDG-related networks
5. Dynamics of SDG collaborations over time
6. Network-based assessment of SDG progress
7. Mapping knowledge diffusion in SDG networks
8. Role of social media in shaping SDG networks
9. Identifying critical nodes and pathways for SDG achievement
10. Comparing global and regional patterns in SDG networks

### CONCLUSION

In conclusion, the study has provided valuable insights into the current state of awareness and understanding of Sustainable Development Goals (SDGs) among the participants. The analysis of demographic factors, overall scores, and individual SDGs highlights areas of strength and areas that require attention. Understanding the baseline awareness is crucial for developing effective strategies to promote SDG awareness and engagement.

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