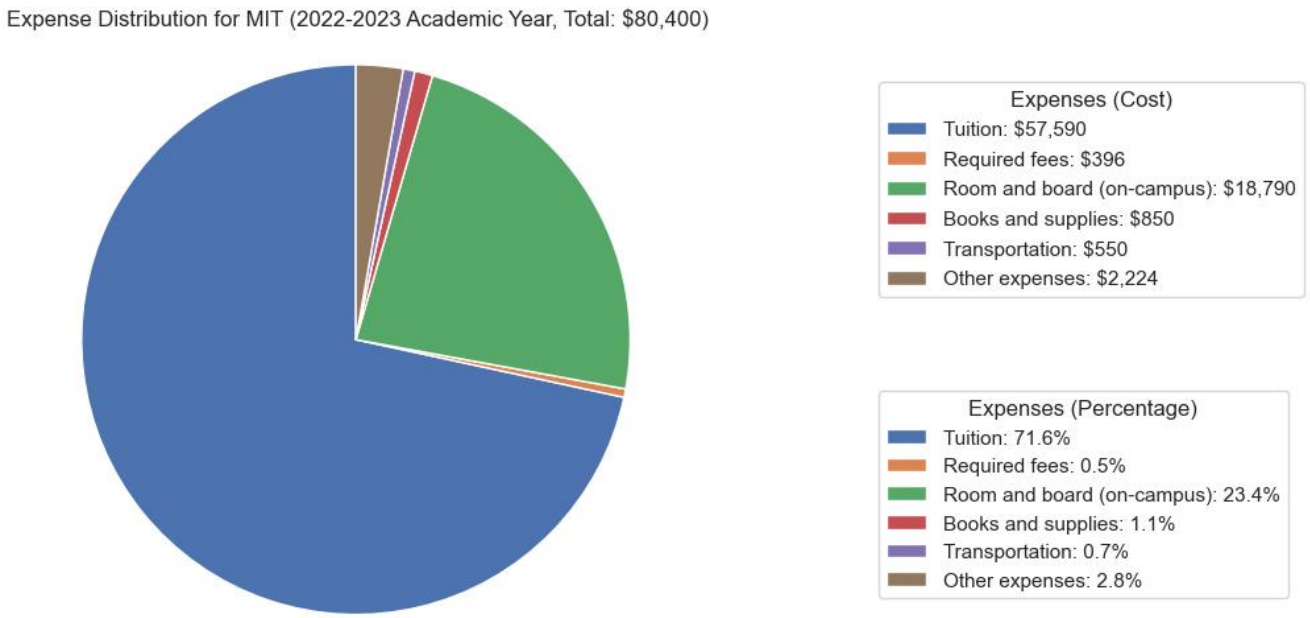
Exploratory Data Analysis of MIT's Institutional Characteristics

Introduction

In this document, I will be conducting an exploratory data analysis of MIT's institutional characteristics, focusing on various aspects such as cost, instructional faculty, class size, and degrees conferred. The purpose of this analysis is to gain a better understanding of MIT's academic environment and identify patterns, trends, or areas that may require improvement. By visualizing the data in different ways, such as pie charts, grouped bar charts, and horizontal bar charts, I aim to present the information in a clear and easily digestible manner, allowing for better interpretation and insights. Through this analysis, I hope to provide a comprehensive overview of MIT's institutional characteristics and contribute valuable information to those interested in understanding the academic landscape at this prestigious institution. The data used for this analysis is sourced from the MIT Institutional Research website: https://ir.mit.edu/cds-2022.

1.Cost

1.Visualization

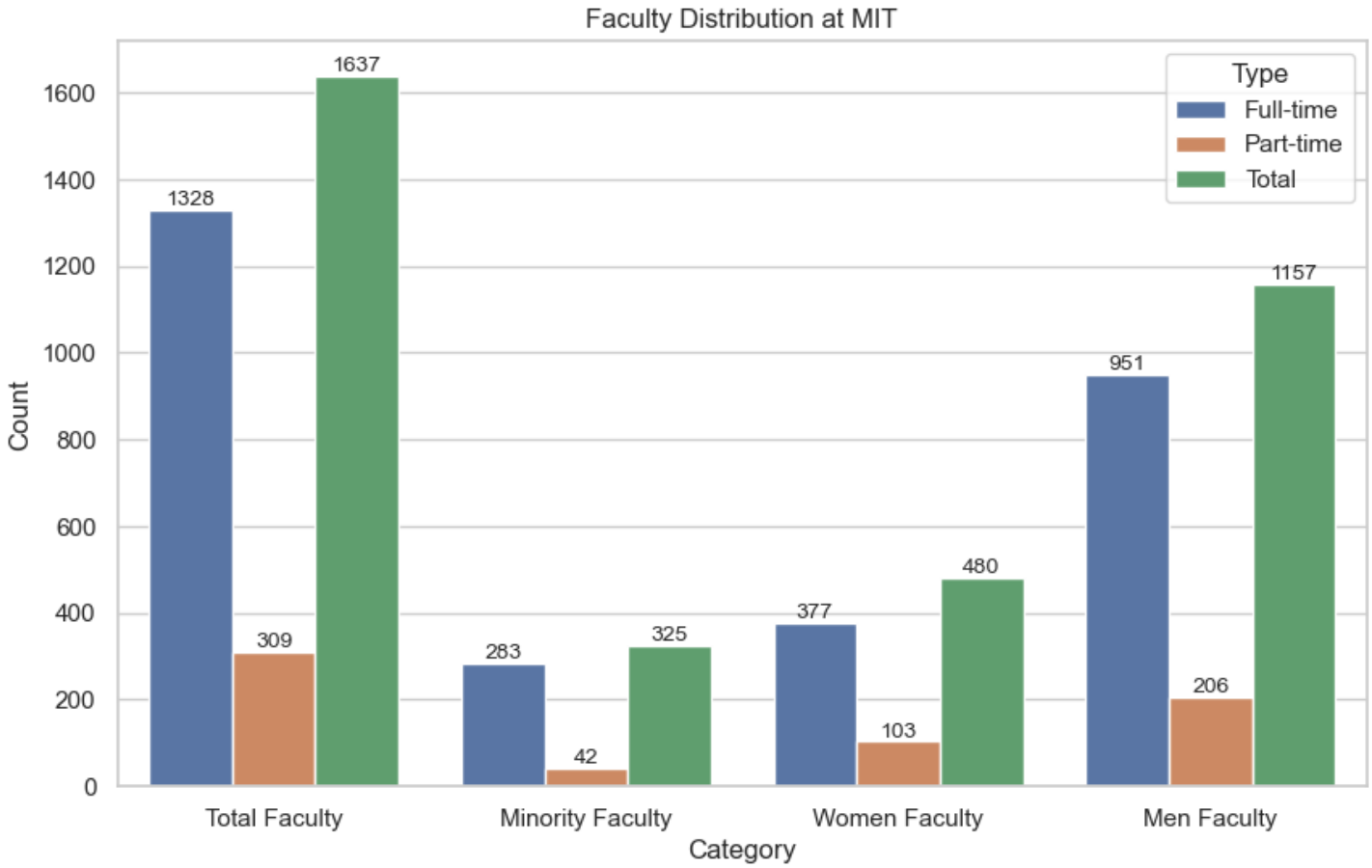


2.Results

The pie chart displays the distribution of expenses for the 2022-2023 academic year at MIT. The largest expense is tuition, accounting for 71.6% of the total expenses. The next highest expenses are room and board on campus (23.4%) and other expenses (2.8%). Required fees, books and supplies, and transportation make up a much smaller proportion of the total expenses. The chart is accompanied by two legends, one showing the actual cost of each expense, and the other displaying the percentage of the total expenses that each expense accounts for. This chart is a useful tool for visualizing the allocation of expenses and provides a quick overview of the main expenses that students can expect to incur while attending MIT.

2.Instructional Faculty

1.Visualization

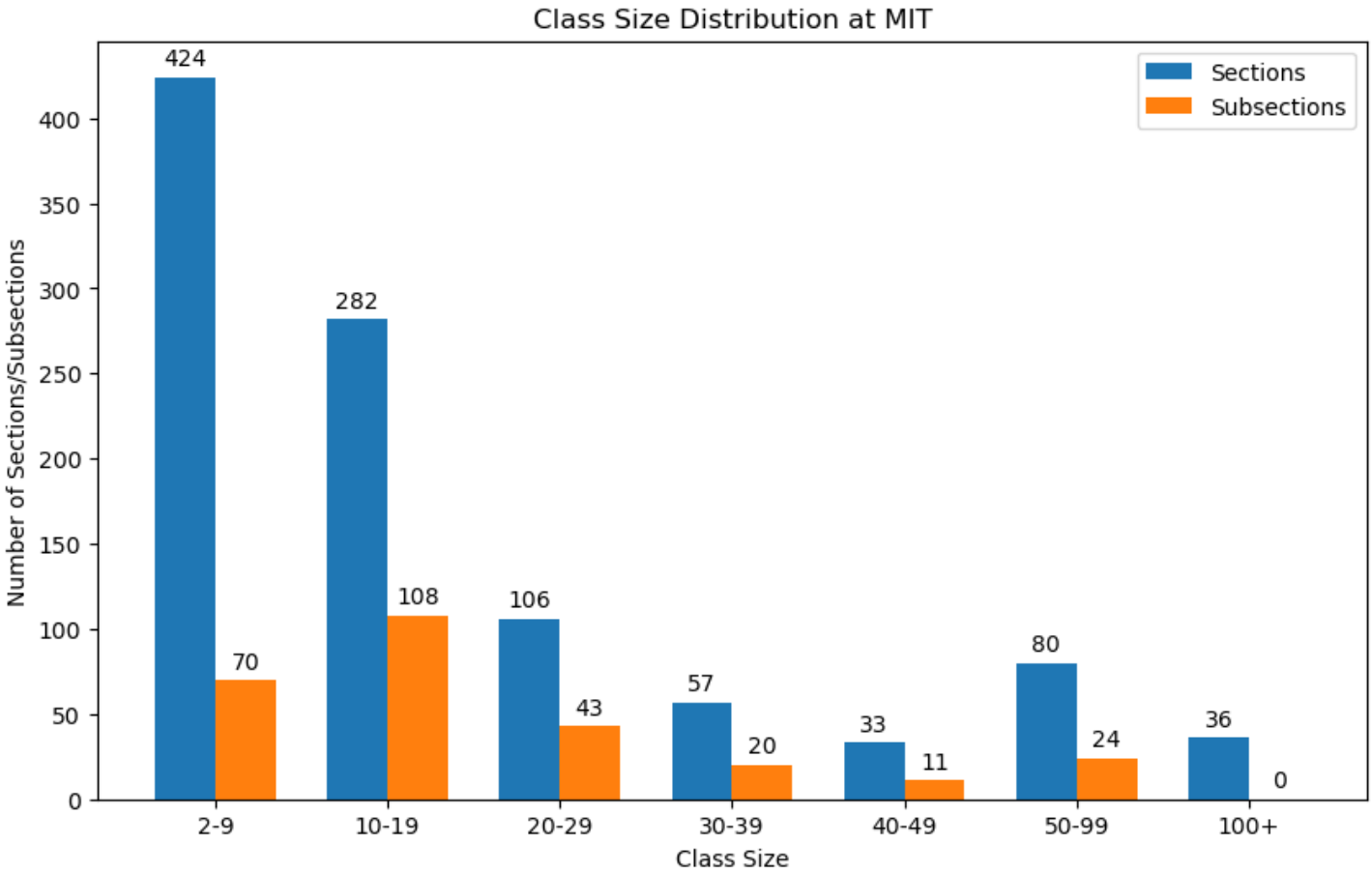


2.Results

The grouped bar chart shows the distribution of faculty at MIT based on their category, with a focus on the full-time and part-time faculty as well as minority and women faculty. The chart highlights that out of the total 1637 faculty members at MIT, only 283 (17.3%) are classified as minority faculty, whereas 480 (29.3%) are women faculty. It is also evident that the majority of the faculty members are full-time, with 1328 (81.1%) in that category, while 309 (18.9%) are part-time. The data labels on top of the bars provide a clear view of the total count for each category and type, making it easy to compare the different categories and types of faculty members. This chart provides a comprehensive overview of the distribution of faculty at MIT and could help in identifying areas that require improvement in terms of diversity and gender equality among the faculty members.

3.Class Size

1.Visualization

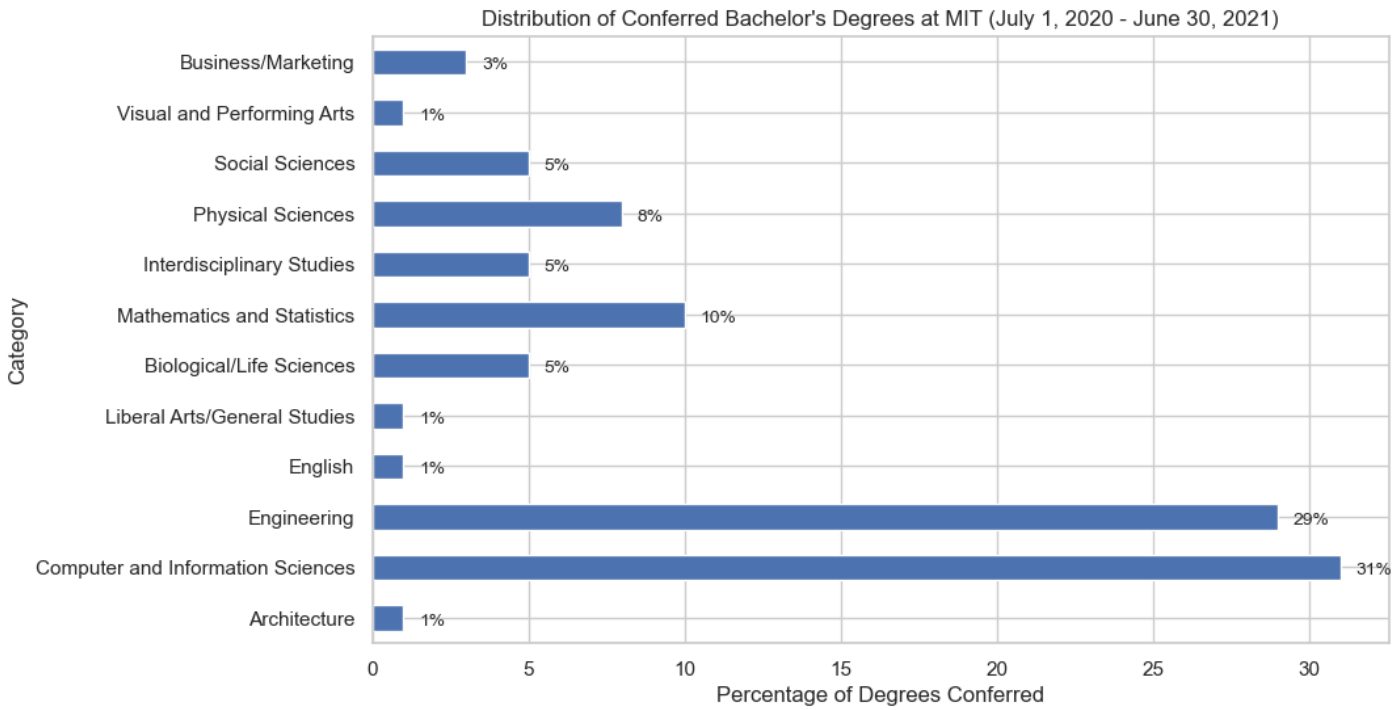


2.Results

This grouped bar chart depicts the distribution of class sizes at MIT in terms of sections and subsections. It shows that smaller class sizes (2-9 students) are the most common for sections, with 424 sections falling into this category. However, for subsections, the 10-19 student range is the most prevalent, with 108 instances. As class sizes increase, the number of sections and subsections generally decrease. For instance, there are 106 sections and 43 subsections in the 20-29 students range, but only 33 sections and 11 subsections in the 40-49 students range. Interestingly, there is a slight increase in sections for class sizes of 50-99 students, with 80 sections in this range compared to 57 sections in the 30-39 students range. No subsections exist for class sizes larger than 100 students. The chart effectively illustrates the prevalence of smaller class sizes at MIT, particularly for sections, while also highlighting the differences in distribution between sections and subsections.

4.Degrees Conferred

1.Visualization



2.Results

The horizontal bar chart shows the distribution of conferred bachelor's degrees at MIT for the academic year between July 1, 2020, and June 30, 2021, based on different categories. The x-axis of the chart represents the percentage of bachelor's degrees conferred, while the y-axis shows the different categories. The chart highlights that computer and information sciences, engineering, and mathematics and statistics are the most popular categories of bachelor's degrees conferred, accounting for 31%, 29%, and 10% of the total degrees, respectively. Other categories such as social sciences, biological/life sciences, and physical sciences are also well-represented, with 5-8% of the total degrees conferred. Meanwhile, categories such as architecture, English, liberal arts/general studies, and visual and performing arts have a relatively lower percentage of degrees conferred, with less than 3% in each category. This chart provides a useful overview of the distribution of conferred bachelor's degrees at MIT and can be helpful in making informed decisions on educational programs and resource allocation.

Conclusions

In conclusion, this exploratory data analysis provides valuable insights into MIT's institutional characteristics, including cost, instructional faculty, class size, and degrees conferred. The visualizations used throughout the analysis, such as pie charts, grouped bar charts, and horizontal bar charts, effectively convey the data in a clear and easily digestible manner. Key findings include the prominent expenses faced by students, the need for improvement in faculty diversity and gender equality, the prevalence of smaller class sizes, and the popularity of certain degree categories. Overall, this comprehensive analysis offers a deeper understanding of MIT's academic landscape and can contribute to informed decision-making and resource allocation for the institution