Analysis of the data for Weekdays vs. Weekends sales data of the University Canteen

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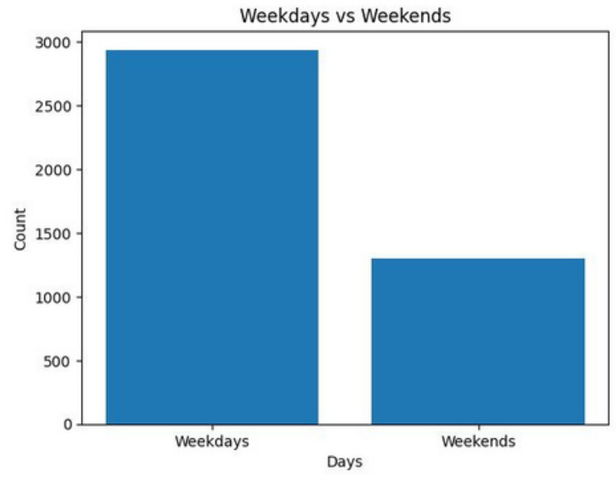
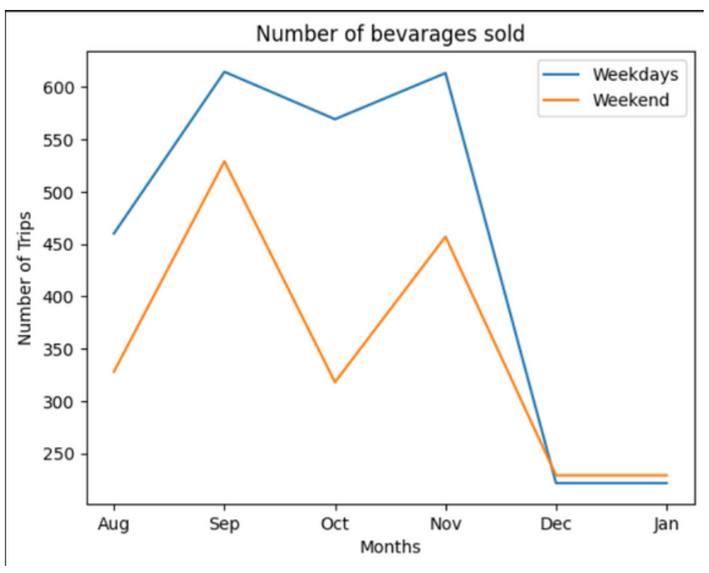
ABSTRACT

Ahmedabad University' canteen provides a variety of cuisines to the students. There are four types of counter that the university Canteen has: 1) Cafe Declice 2) Truly Indian 3) Global Bistro 4) Greens and grains. Here, the maximum busy counter is Cafe Delice as it provides the Fast food and beverages in the canteen. So we have analyzed the data for the same. We would like to analyze and find out if there is any association between weekday's food sales and weekend's food sales.

DATA COLLECTION

The data was collected from the officials of the university canteen manually with permission of the head of the canteen. The head of the university canteen and the head chef were consulted by our team, to find out their views for the project and the analysis. The data has been filtered and normalized for each month by the team for 5 weekdays and for the weekends as well, for 2 days, so that the analysis can be made easy.





HYPOTHESIS TESTING, RESULTS AND INFERENCES

Null hypothesis: There is no statistically significant association between the type of day(weekdays vs weekends) and the sales of different items in the university canteen.

Alternative hypothesis: There is a statistically significant association between the type of day(weekdays vs weekends) and the sales of different items in the university canteen.

Now, As the dataset is categorical, where the columns we have in the dataset are:

- Name of the food items
- Weekends food sales count
- Weekdays food sales count

We use two different statistical tests to find out, if Null hypothesis can be accepted or not.

- Chi - Square Test
- Anova Test

RESULTS

Chi - square test	Anova test
Chi-square value: 97.59	F-value: 10.06
p-value: 7.53e-8	p-value: 6.09e-16

Result: As it is very small than the significance level (α=0.05), the null hypothesis is rejected.

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CONCLUSION

The number of sales on weekends is affected by factors such as the absence of lectures and limited item availability. In August, there are 118 items on weekdays and 75 on weekends. December and January sales are influenced by university events.

REFERENCES

1. Armstrong, R. A., & Hilton, A. C. (2010). One-way analysis of variance (Anova). Statistical analysis in microbiology: Statnotes, 33-37.
2. Matsumoto K. [Statistical analysis of pharmacological data: use of cumulative chi-squared statistic]. Nihon Yakurigaku Zasshi. 1997 Dec;110(6):341-6. Japanese. doi: 10.1254/fpj.110.341. PMID: 9503392.