

On applying CLT to the purchase amounts we can observe different means(μ) i.e. mean expenditure in different categories like genders, age groups, city categories etc.

Based on the mean values following inferences can be made-

1. Mean expenditure of males (approx. 9423.2) is higher than that of females (approx. 8739.07).
2. Mean expenditure of married and unmarried people is almost same, approx. 9262.31 for unmarried people and approx. 9255.4 for married people.
3. The highest purchasing age group is 50+ age group based on the mean values and lowest purchasing group is the 0-17 age group.
 - Mean expenditure for 0-17 age group: 8941.05
 - Mean expenditure for 18-25 age group: 9172.33
 - Mean expenditure for 26-35 age group: 9256.59
 - Mean expenditure for 36-50 age group: 9304.86
 - Mean expenditure for 50+ age group: 9466.78

All the mean distributions follow normal distribution.

4. Confidence interval for male's purchase: **[8951.3,9894.57]**
Confidence interval for female's purchase: **[8183.80,9294.33]**

These are all 95% confidence interval and are overlapping. But for the most part they aren't overlapping and seeing the CIs it is evident that males have higher expenditure than females.

5. Confidence interval for married people's purchase: **[8673.08,9851.54]**
Confidence interval for unmarried people's purchase: **[8673.58, 9837.38]**

These are again 95% confidence intervals and are overlapping with being similar to an extent. Therefore, the difference between these 2 groups is statistically insignificant.

6. These are again 95% Confidence Interval and are overlapping with being similar to an extent. Therefore, the difference between all these age groups is statistically insignificant.

- Confidence Interval for 0-17 age group: **[8377.60,9504.5]**
- Confidence Interval for 18-25 age group: **[8590.36,9754.3]**
- Confidence Interval for 26-35 age group: **[8687.81,9825.38]**
- Confidence Interval for 36-50 age group: **[8725.83,9883.8]**
- Confidence Interval for 50+ age group: **[8881.82,10052.44]**

Final Insights:

- 1) Males have higher purchase than females in both married and unmarried categories. An unmarried male is the highest spending one while an unmarried woman is the lowest spending comparatively although the difference isn't much between all the categories.
- 2) Mean expenditure of all the age groups isn't very varying but in value the highest purchasing age group is 50-55 age group. Among males and females differently also this age group spends the most.
- 3) The highest mean expenditure is of people living in city category "C" followed by "B" and then closely followed by "A".
- 4) The highest spending occupation is 17th numbered occupation with mean expenditure of 9821.47 and the lowest spending occupation is 9th numbered with mean expenditure of 8637.743.

5) People spend the most on product category number 10 and the least amount on product category 19.

Recommendations:

- 1) The product which is sold in less amount can be promoted with some offers on them or by stocking some other variants of them in the store.
- 2) The people in low purchase amount cities can be attracted to the store more by putting offers on top selling products and on premium products.
- 3) Mean expenditure increases with increasing age. So, the store can introduce products that are attractive to younger people to balance the mean expenditure across the age groups.
- 4) Walmart can collab with companies that employ highest spending occupations and introduce some offers or retail cards for them through the company so that they can have some exclusive offers for being loyal customers.