

AeroFit Business Case Study

Basic Analysis

➤ **Types of Products**

There are 3 types of Treadmill that AiroFit sells:-

1. KP281 → Entry-level treadmill that sells for \$1,500.
2. KP481 → Mid-level runners that sell for \$1,750.
3. KP781 → Advanced features that sell for \$2,500.

➤ **Minimum and Maximum Age of buyers**

Age varies from 18 year to 50 year.

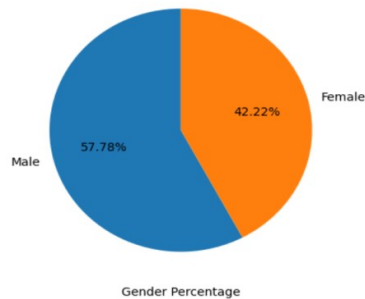
➤ **Minimum and Maximum Education of buyers**

Age varies from 12 year to 21 year.

➤ **Minimum and Maximum Income of buyers**

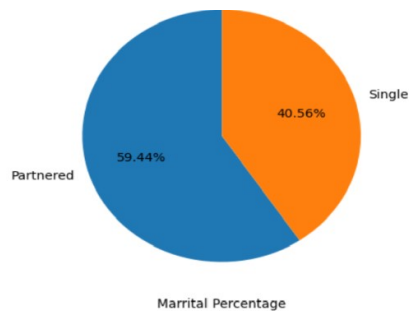
Income varies from \$29562 to \$104581

➤ **Ratio of buyers on basis of Gender**



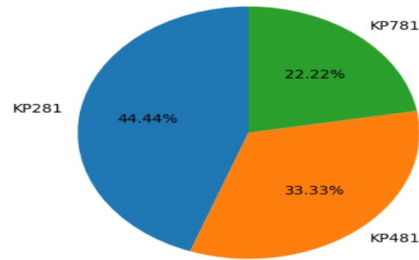
57.78 % of buyers are Male and 42.22% of buyers are Female.

➤ **Ratio of buyers on basis of Marital Status**



59.44 % of buyers are Married and 40.56% of buyers are Single.

➤ Ratio of Product bought

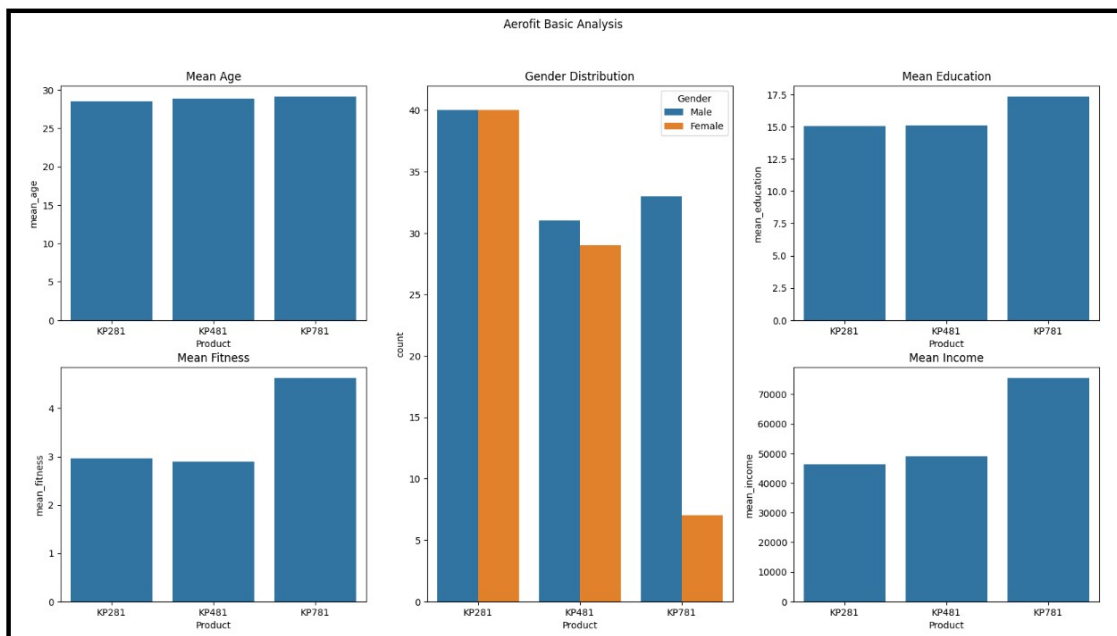


Product Category Sales Percentage

Product that is **Most bought** is **KP281** with 44.44% of total sales followed by KP481 with 33.33% and KP781 with 22.22%.

General Analysis

➤ Sales in Terms of Average Criteria.



	Product	mean_age	mean_education	mean_fitness	mean_income
0	KP281	28.55	15.037500	2.9625	46418.025
1	KP481	28.90	15.116667	2.9000	48973.650
2	KP781	29.10	17.325000	4.6250	75441.575

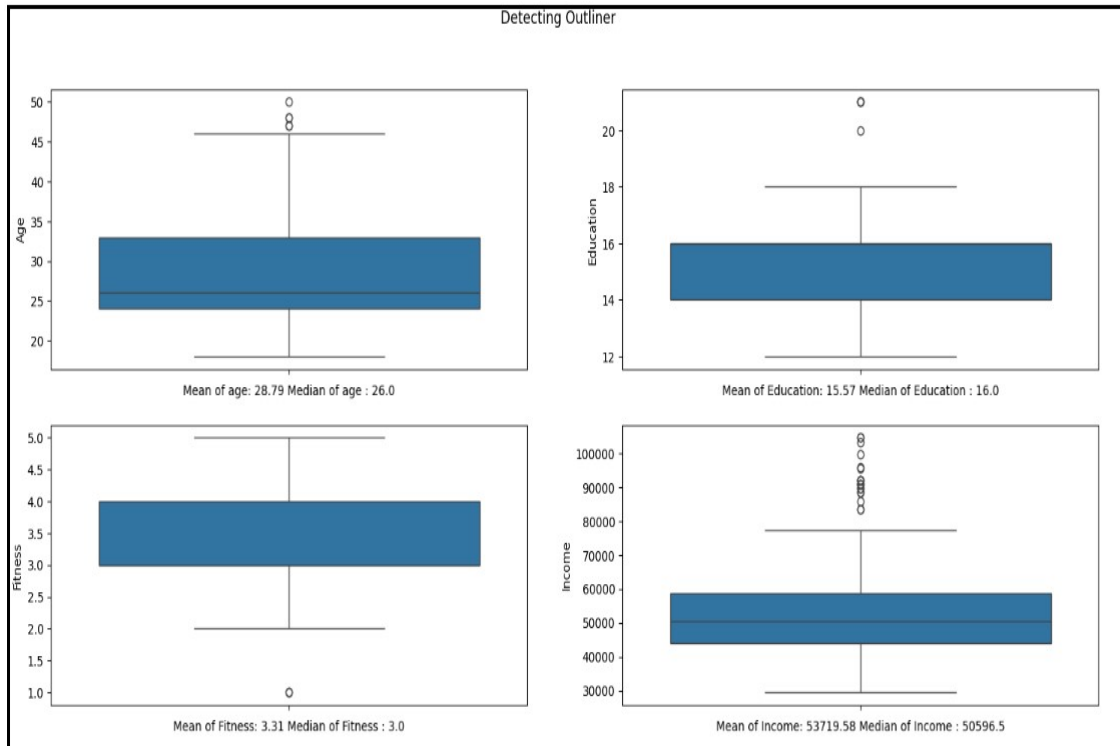
Insights:-

- Average Age of the buyer for all the product is around 28 years to 29 years.
- Average Educational Year for product KP281 and KP481 is around 15 years but for product KP781 is 17.32 years.
- Mean fitness for product KP281 and KP481 is approx to 3 but for KP781 it is more than 4.5.
- Average Income of the buyers who bought product KP281 and KP481 is \$46418 and \$48973 respectively but for product KP741 it is relatively higher that is \$75441.
- Gender distribution for products KP281 and KP481 is relatively balanced, product KP781 shows a significant skew, with males purchasing substantially more than females.

Recommendations:-

- Based on the data, the target buyers for products KP281 and KP481 are similar, whereas KP781 attracts a distinctly different audience. Therefore, it is recommended that Aerofit market KP781 separately, positioning it as a premium brand.
- Since the target buyers for products KP281 and KP481 are the same, it is advisable to increase the price gap between them. This strategy allows buyers who can afford a more expensive product to opt for KP481, while those who prefer the current price point can choose KP281. This approach will help prevent competition for the same customer base.

➤ Detecting Outliners



Insights:-

- The data for Age and Income shows a right skew, with outliers pulling the mean higher than the median.
- Age and Education have a few noticeable outliers, but they are not as numerous as those in Income.
- Skewness in Age and Income indicates that measures like the median might provide a better central tendency measure than the mean for these variables.

Recommendation:-

- Excluding outliers from the data to get a better analysis detail.

➤ Analysis on product KP281

Few Statistics related to Product KP281

Analysis related to Gender Male :-

```
percentage of male : 50.00
percentage of male above 27 : 45.00
percentage of male below 27 : 55.00
percentage of male below 27 and income above 47000 : 18.18
percentage of male below 27 and income below 47000 : 81.82
```

Analysis related to Gender Female:-

```
percentage of Female : 50.00
percentage of Female above 27 : 45.00
percentage of Female below 27 : 55.00
percentage of Female below 27 and above 47000 : 13.64
percentage of Female below 27 and below 47000 : 86.36
```

✚ What is the Probability of male who will buy Product KP281?

- Percentage of buyers who bought KP281 is 44.44%.
- Percentage of buyers who bought KP281 and is a male is 50%.

❖ Probability of male who will buy Product KP281 → 0.2222

✚ What is the Probability that a buyer is a male and above 27 yr. age will buy KP281?

- Percentage of buyers who bought KP281 is 44.44%.
- Percentage of buyers who bought KP281 and is a male is 50%.
- Percentage of buyer who bought KP281 and is a male and is above 27 yr. is 45 %

❖ Probability that a buyer is a male and above 27 yr. age will buy KP281 → 0.09

✚ What is the Probability that a buyer is a male and below or equal to 27 yr. age will buy KP281?

- Percentage of buyers who bought KP281 is 44.44%.
- Percentage of buyers who bought KP281 and is a male is 50%.
- Percentage of buyer who bought KP281 and is a male and is below 27 yr. is 55 %

❖ Probability that a buyer is a male and above 27 yr. age will buy KP281 → 0.1221

✚ What is the Probability of Female who will buy Product KP281?

- Percentage of buyers who bought KP281 is 44.44%.
- Percentage of buyers who bought KP281 and is a Female is 50%.

❖ Probability of Female who will buy Product KP281 → 0.2222

✚ What is the Probability that a buyer is a Female and above 27 yr. age will buy KP281?

- Percentage of buyers who bought KP281 is 44.44%.
- Percentage of buyers who bought KP281 and is a male is 50%.
- Percentage of buyer who bought KP281 and is a male and is above 27 yr. is 45 %

❖ Probability that a buyer is a Female and above 27 yr. age will buy KP281 → 0.09

✚ What is the Probability that a buyer is a Female and below or equal to 27 yr. age will buy KP281?

- Percentage of buyers who bought KP281 is 44.44%.
- Percentage of buyers who bought KP281 and is a Female is 50%.
- Percentage of buyer who bought KP281 and is a Female and is below 27 yr. is 55 %

❖ Probability that a buyer is a Female and below 27 yr. age will buy KP281 → 0.1221

✚ What is the Probability that a buyer is a Female and below or equal to 27 yr. age and Income less than \$47000 will buy KP281?

- Percentage of buyers who bought KP281 is 44.44%.
- Percentage of buyers who bought KP281 and is a Female is 50%.
- Percentage of buyer who bought KP281 and is a Female and is below 27 yr. is 55 %
- Percentage of buyer that is Female age ≤ 27 years and income $< \$47000$

❖ Probability that a buyer that is Female age ≤ 27 years and income $< \$47000$ → 0.105

➤ Analysis on Product KP481

Analysis related to Gender Male:-

percentage of male : 51.67
percentage of male above 27 yr. : 41.94
percentage of male below 27 yr. : 58.06
percentage of male below 27 yr. and above \$47000 : 27.78
percentage of male below 27 yr. and below \$47000 : 72.22

Analysis related to Gender Female:-

percentage of Female : 48.33
percentage of Female above 27 yr. : 51.72
percentage of Female below 27 yr.: 48.28
percentage of Female below 27 yr. and above \$47000 : 21.43
percentage of Female below 27 yr. and below \$47000 : 78.57

📊 What is the Probability of male who will buy Product KP481?

- Percentage of buyers who bought KP481 is 33.33%.
- Percentage of buyers who bought KP481 and is a male is 51.67%.

❖ Probability of male who will buy Product KP481 → 0.1705

📊 What is the Probability that a buyer is a male and above 27 yr. age will buy KP481?

- Percentage of buyers who bought KP481 is 33.33%.
- Percentage of buyers who bought KP481 and is a male is 51.67%.
- Percentage of buyer who bought KP481 and is a male and is above 27 yr. is 41.94 %.

❖ Probability that a buyer is a male and above 27 yr. age will buy KP281 → 0.07

📊 What is the Probability that a buyer is a male and below or equal to 27 yr. age will buy KP481?

- Percentage of buyers who bought KP481 is 33.33%.
- Percentage of buyers who bought KP481 and is a male is 51.67%.
- Percentage of buyer who bought KP481 and is a male and is below 27 yr. is 58.06 %

❖ Probability that a buyer is a male and below 27 yr. age will buy KP481 → 0.0989

What is the Probability of Female who will buy Product KP481?

- Percentage of buyers who bought KP481 is 33.33%.
- Percentage of buyers who bought KP481 and is a Female is 48.33%.

❖ Probability of Female who will buy Product KP481 $\rightarrow 0.1594$

What is the Probability that a buyer is a Female and above 27 yr. age will buy KP481?

- Percentage of buyers who bought KP481 is 33.33%.
- Percentage of buyers who bought KP481 and is a Female is 48.33%.
- Percentage of buyer who bought KP481 and is a Female and is above 27 yr. is 51.72 %.

❖ Probability that a buyer is a Female and above 27 yr. age will buy KP481 $\rightarrow 0.082$

What is the Probability that a buyer is a Female and below or equal to 27 yr. age will buy KP481?

- Percentage of buyers who bought KP481 is 33.33%.
- Percentage of buyers who bought KP481 and is a male is 48.33%.
- Percentage of buyer who bought KP481 and is a Female and is below 27 yr. is 48.28 %

❖ Probability that a buyer is a Female and below 27 yr. age will buy KP481 $\rightarrow 0.0769$

What is the Probability that a buyer is a Female and below or equal to 27 yr. age and Income less than \$47000 will buy KP481?

- Percentage of buyers who bought KP481 is 33.33%.
- Out of buyers who bought KP481 and is a Female is 48.33%.
- Out of buyer who bought KP481 and is a Female and is below 27 yr. is 48.28 %
- Out of buyer that is Female age ≤ 27 years and income $< \$47000$ is 78.57

❖ Probability that a buyer that is Female age ≤ 27 years and income $< \$47000 \rightarrow 0.06$

➤ Analysis on Product KP781

Analysis related to Gender Male:-

percentage of male : 82.50
percentage of male above 27 : 45.45
percentage of male below 27 : 54.55
percentage of male below 27 and above 47000 : 100.00
percentage of male below 27 and below 47000 : 0.00

Analysis related to Gender Female:-

percentage of Female : 17.50
percentage of Female above 27 : 42.86
percentage of Female below 27 : 57.14
percentage of Female below 27 and above 47000 : 100.00
percentage of Female below 27 and below 47000 : 0.00

📊 What is the Probability of male who will buy Product KP781?

- Percentage of buyers who bought KP781 is 22.22%.
- Out of buyers who bought KP781 and is a Male is 82.5%.

❖ Probability of Male who will buy Product KP781 → 0.183

📊 What is the Probability that a buyer is a male and above 27 yr. age will buy KP781?

- Percentage of buyers who bought KP781 is 22.22%.
- Percentage of buyers who bought KP781 and is a Male is 82.5%.
- Percentage of buyer who bought KP781 and is a male and is above 27 yr. is 45.45 %.

❖ Probability that a buyer is a male and above 27 yr. age will buy KP781 → 0.08

📊 What is the Probability that a buyer is a male and below or equal to 27 yr. age will buy KP781?

- Percentage of buyers who bought KP781 is 22.22%.
- Out of buyers who bought KP781 and is a male is 82.5%.
- Out of buyer who bought KP781 and is a male and is below 27 yr. is 54.55%

❖ Probability that a buyer is a male and below 27 yr. age will buy KP781 → 0.0217

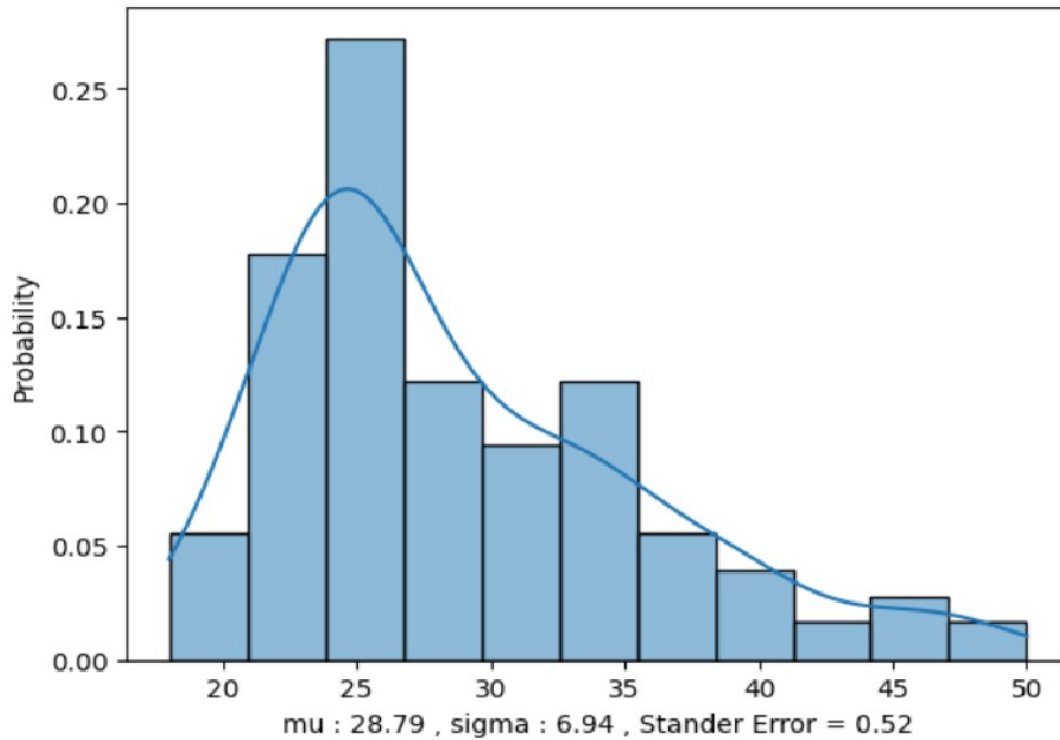
Common Analysis

- Probability of a buyer will buy a product if its age is greater than 27 yr. is 0.4536
- Probability of a buyer will buy a product if its age is greater than 27 yr. is 0.5463
- Probability of a buyer will buy a product if its Income is less than \$47000 and age is less than 27 years is 0.3372
- Probability of a buyer will buy a product if its Income is less than \$47000 and age is less than 27 years is 0.6628

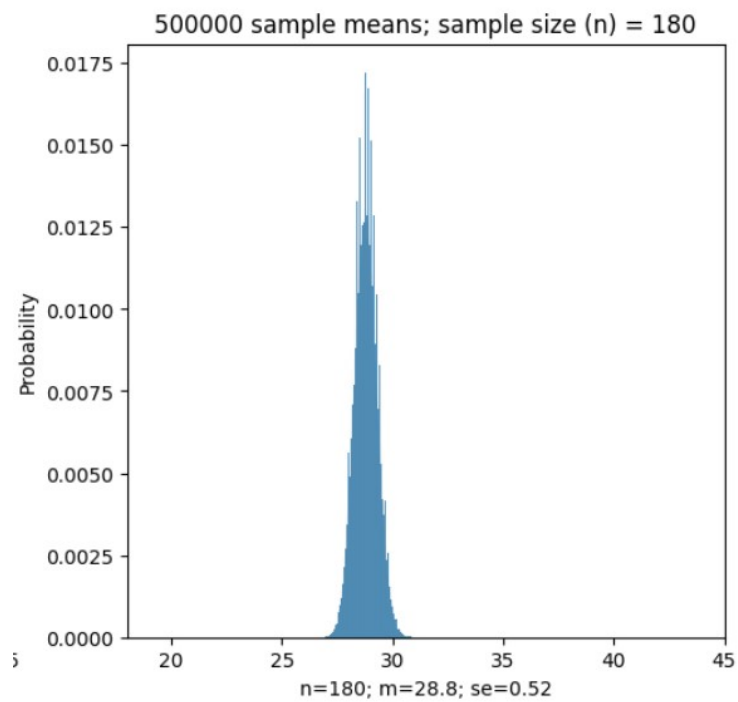
Recommendations:-

- Since a significant proportion of males are inclined towards buying KP481, consider targeted advertising campaigns focusing on male buyers.
- Younger males under 27 years show a good probability of purchasing KP481. Utilize social media platforms and influencers that attract a younger audience to boost the visibility and desirability of KP481 among this group.
- There is a substantial probability that females will buy KP281. Ensure your marketing campaigns include elements that appeal to female buyers, such as lifestyle benefits and design.
- Older males have a fair probability of buying KP781. Highlight the premium aspects of KP781 and how it suits their needs. Position it as a high-value product.
- Buyers with lower incomes and younger ages still form a significant market segment. Ensure that your product pricing, promotions, and financing options make the products accessible to them.
- Younger females with an income below \$47,000 have a lower but significant probability of buying KP481. Offer promotions or financing options to make KP481 more accessible to this demographic.

Analysis on basis of Age



The above graph doesn't have a normal distribution that is why we will apply Centre line theorem to derive our analysis.



Insights:-

- The 95th percentile age for buyers is **29.23 years**.

```
mu = 28.8
SE = 0.52

z = norm.cdf(0.95)

age = mu + (z*SE)
age
```

- Probability of 97% that buyer will fall in age category is 27.76 yrs. to 31.32 yrs.

```
age1 = mu - (2*SE)
age2 = mu + (2*SE)
```

- Probability that buyer age below age 29 yrs. Is 0.649

```
mu = 28.8
SE = 0.52
x = 29

z = (x-mu)/SE

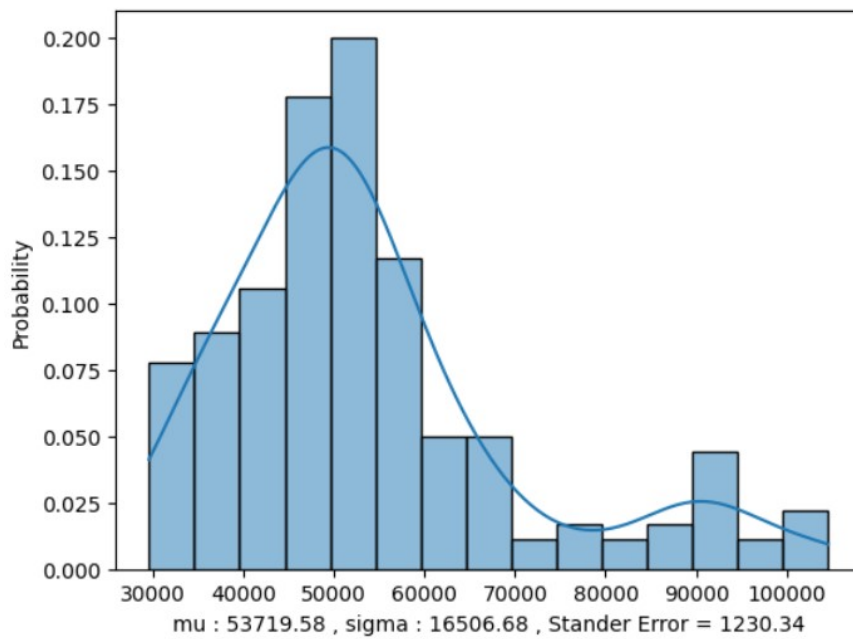
norm.cdf(z)

0.6497388029480752
```

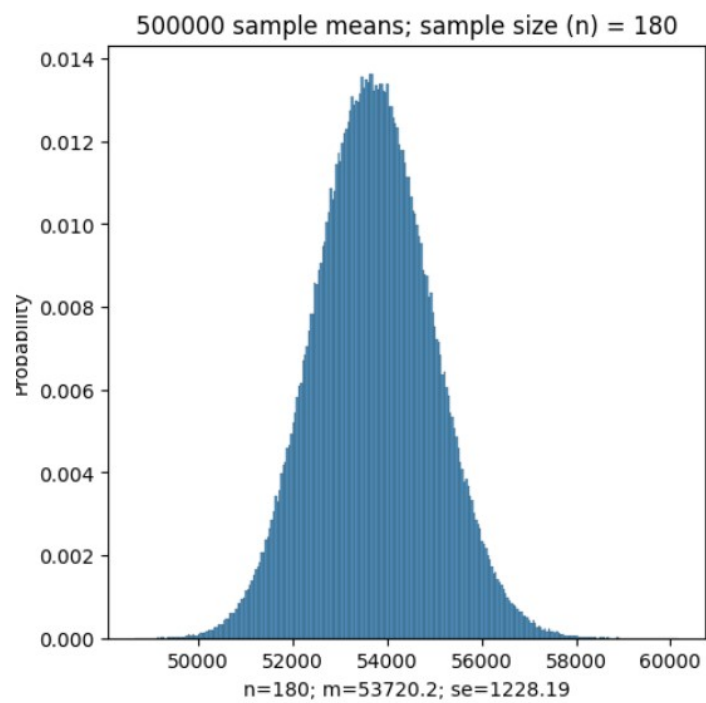
Recommendations:-

- Since most buyers are below 29.23 years, AiroFit should focus marketing efforts on young buyers. Use platforms and channels popular among this age group, such as social media.
- Since 97% of Targeted buyers fall in age group of 27 to 31-year. Highlight features and benefits that appeal to the interests and lifestyle of individuals in this age range, such as career-oriented, fitness-focused, or tech-savvy features.
- Implement dynamic pricing strategies and special promotions for the young buyers.

Analysis on basis of Income



The above graph doesn't have a normal distribution that is why we will apply Centre line theorem to derive our analysis.



Insights

- The 95th percentile Income for buyers is \$ 54738.60

```
mu = 53719
SE = 1230

z = norm.cdf(0.95)

Income = mu + (z*SE)
Income
```

- Probability of 97% that buyer will fall in Income category is \$51259 to \$54951

```
Income1 = mu - (2*SE)
Income2 = mu + (2*SE)
```

- Probability that buyer Income below age \$52500 is 0.16

Recommendations:-

- Since the 95th percentile income is relatively high, consider targeting high-income customers with premium products and exclusive offers. Highlight quality, luxury, and unique features that justify a higher price point
- Since a smaller portion of buyers have incomes below \$52,500 , consider offering more affordable product options or financing plans to make your products accessible to this segment.
- Provide more affordable product alternatives or flexible payment options for lower-income buyers (below \$52,500).



Link:-

<https://colab.research.google.com/drive/1qzn7SLwvC7lvesGqmYozvfWqQGfih2B#scrollTo=Wf5KrEb6vrkR>