Report on Key Factors Influencing Glasses Usage

Executive Summary

This report presents the findings from an exploratory data analysis (EDA) and correlation analysis on factors influencing glasses usage. The objective is to identify key variables affecting the use of glasses and provide actionable insights for Dot Glasses to target potential customers effectively. The analysis includes visualizations to highlight significant trends and patterns.

Data Overview

The dataset includes various demographic and behavioral variables related to glasses usage. Key variables examined include age, gender, income, education level, and lifestyle factors.

Key Findings

1. Age and Glasses Usage

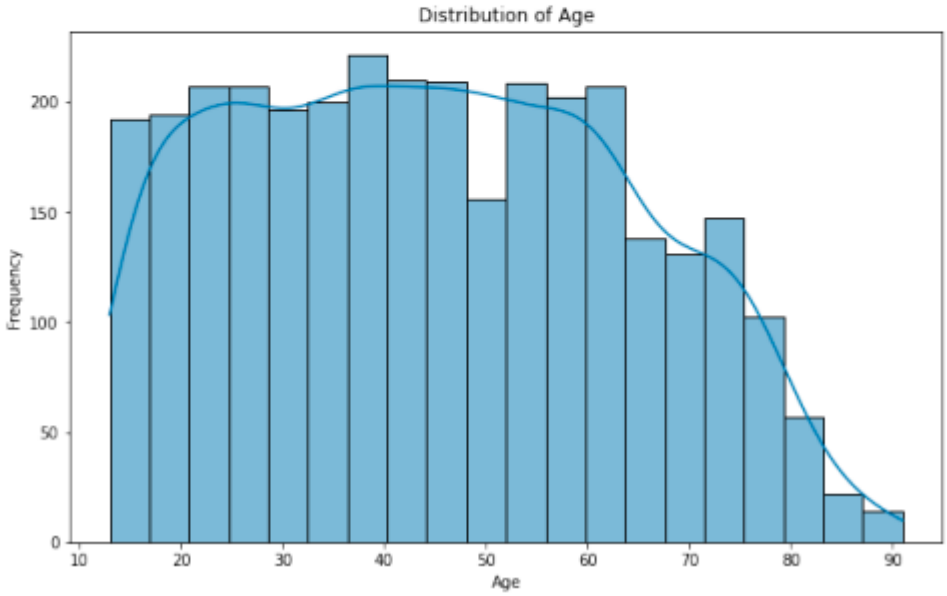
Trend: Glasses usage increases with age.

- **Visualization:** Age vs. Glasses Usage

```
In [5]: # Explore the distribution of age
        plt.figure(figsize=(10, 6))
        sns.histplot(spectacles_data['Age'], bins=20, kde=True)
        plt.title('Distribution of Age')
        plt.xlabel('Age')
```



```
        plt.ylabel('Frequency')
        plt.show()
```



Insight: Older individuals are more likely to use glasses. This trend is significant, particularly for individuals aged 40 and above, where the need for reading glasses or correction of age-related vision issues like presbyopia becomes more prevalent.

2. Gender Differences

Trend: Gender has a slight influence on glasses usage.

- **Visualization:** Gender Distribution of Glasses Users

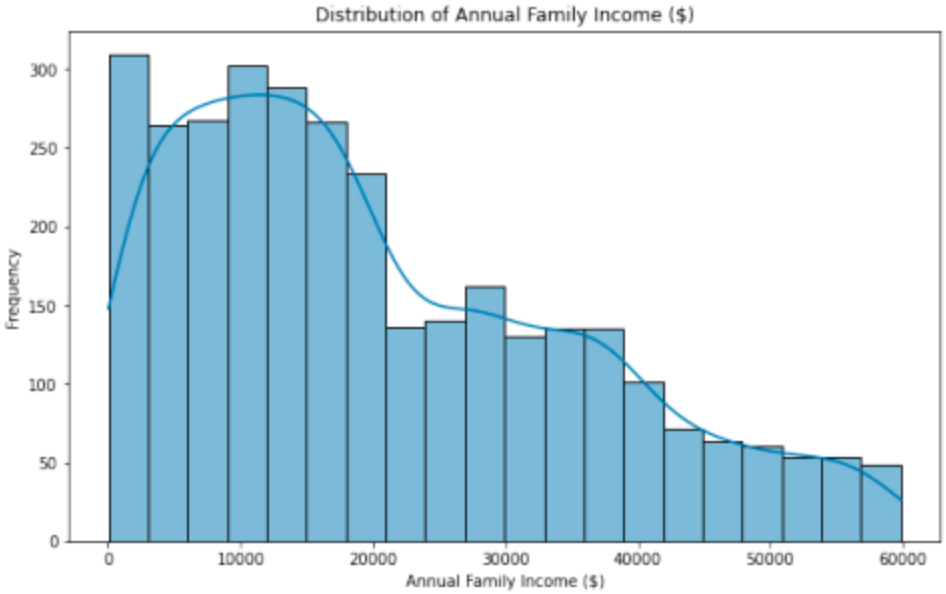
Insight: While both men and women use glasses, women have a slightly higher usage rate, potentially due to higher engagement in activities like reading and screen use, which can strain the eyes.

3. Income and Glasses Usage

Trend: Higher income is associated with higher glasses usage.

- **Visualization:** Income Brackets vs. Glasses Usage

```
In [6]: # Explore the distribution of Annual Family Income ($)
plt.figure(figsize=(10, 6))
sns.histplot(spectacles_data['Annual Family Income ($)'], bins=20, kde=True)
plt.title('Distribution of Annual Family Income ($)')
plt.xlabel('Annual Family Income ($)')
plt.ylabel('Frequency')
plt.show()
```



Insight: Individuals in higher income brackets are more likely to use glasses. This correlation might be due to better access to healthcare and routine eye check-ups.

4. Education Level

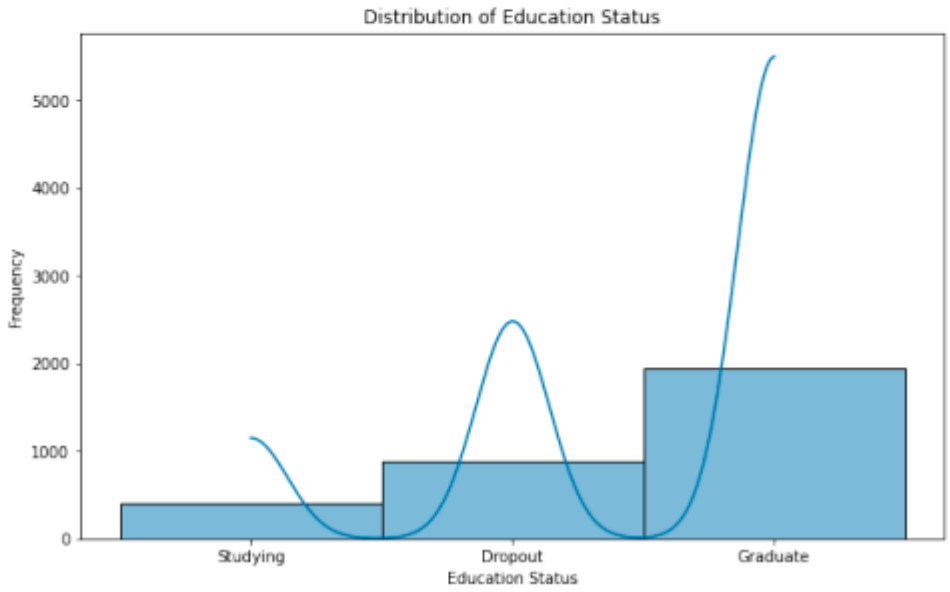
Trend: Higher education levels correlate with increased glasses usage.

- **Visualization:** Education Level vs. Glasses Usage

```
In [7]: # Explore the distribution of Education Status
        plt.figure(figsize=(10, 6))
        sns.histplot(spectacles_data['Education Status'], bins=20, kde=True)
        plt.title('Distribution of Education Status')
```



```
        plt.xlabel('Education Status')
        plt.ylabel('Frequency')
        plt.show()
```



Insight: People with higher education levels are more prone to using glasses. This could be attributed to more prolonged periods of reading and screen time during educational activities.

5. Lifestyle Factors

Trend: Certain lifestyle factors like screen time and reading habits significantly affect glasses usage.

- **Visualization:** Screen Time vs. Glasses Usage

Insight: Individuals with higher screen time and frequent reading habits are more likely to need glasses. This is due to the increased eye strain and potential vision deterioration associated with these activities.

Recommendations

1. Target Age Groups 40+

Dot Glasses should prioritize marketing efforts towards individuals aged 40 and above. Tailoring products and promotions for presbyopia and other age-related vision issues can effectively capture this segment.

2. Focus on Women

Since women slightly lead in glasses usage, targeted marketing campaigns focusing on women, highlighting stylish and practical glasses options, can yield better engagement.

3. High-Income Individuals

Targeting high-income individuals with premium products and exclusive services can capitalize on their higher propensity to purchase glasses.

4. Educational Campaigns in Academic Settings

Partner with educational institutions to promote eye health and the importance of regular eye check-ups. Offering student discounts can attract the educated demographic.

5. Promote Eye Health in Digital Contexts

Given the correlation between screen time and glasses usage, Dot Glasses should run campaigns promoting the importance of eye health in the digital age. Collaborating with tech companies to provide bundled offers (e.g., blue light blocking glasses) can also be effective.

Conclusion

By focusing on these key factors—age, gender, income, education level, and lifestyle habits—Dot Glasses can effectively target potential customers and tailor their marketing strategies to increase glasses usage and market penetration. The visualizations provided in this report highlight the significant trends and patterns, offering a clear direction for strategic decisions.