

BIKE PURCHASE IN EUROPE, NORTH AMERICA AND THE PACIFIC

This report is part of a Microsoft Excel project completed
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1. EXECUTIVE SUMMARY

This report analyzes a dataset of 1,000 customers sampled from Kaggle, covering Europe, North America, and the Pacific. The objective is to understand the demographic, financial, and occupation factors that influence bike purchase behavior. Key findings indicate that bike purchases are most strongly influenced by age, income level, occupation, and commute distance. Young adults and professionals emerge as the most active buyers, with higher income levels showing a positive association with purchase likelihood. Short commute distances significantly increase the probability of bike purchases, while long-distance commuters are least likely to buy bikes. Regionally, North America dominates the dataset and largely drives overall trends, with Europe also showing strong purchase behavior. Overall, the analysis highlights clear customer segments that can be targeted to improve bike sales and marketing strategies.

2. DATA OVERVIEW

The dataset comprises 1,000 records and includes columns such as ID, marital status, gender, income, number of children, education, occupation, home ownership, cars owned, commute distance, region, age, age brackets, and whether a bike was purchased. The data was cleaned to remove duplicates and text columns were trimmed and adjusted to improve the layout of the data. Age was categorized into brackets, namely Young Adults (18–24), Adults (25–45), and Seniors (46 and above), to facilitate analysis across different life stages. Also, income was categorized into ranges, namely Low earners (>\$50,000), Middle income earners (<=\$60,000 – \$90,000) and High Earners (<\$100,000). Region names were also standardized to ensure consistency.

3. METHODOLOGY

The analysis was performed Microsoft Excel, leveraging both descriptive and comparative analytical techniques. Descriptive statistics were applied to understand the distribution of gender, age, income, and other demographic variables. Comparative analysis was conducted across regions, income brackets, and age groups to identify patterns and trends in bike purchasing behavior. Visualizations such as bar charts, pie charts, area chart, and line charts were used to present the insights clearly and intuitively.

4. ANALYSIS & FINDINGS

4.1. Demographics & Lifestyle

- Gender Distribution: 51% (511) Males, 49% (489) Females
- Marital Status: 53.8% (538) Married, 46.2% (462) Single
- Age Brackets: Young Adult (<31 years) = 70.1%, Adult (>=31 years) = 18.9%, Old (>54 years) = 11.0%
- Home Ownership: 31.7% of participants were not home owners with 68.3% were home owners

- Children: Individuals with no children formed the majority of response received (281) immediately followed by individuals with 2 children as the second majority (209). The entries were 5 kinds with a total entry of 81
- Total participants per region-North America had been the highest with 508 entries with the least coming from the pacific
- Male married men and Female single women were the highest with 299 and 250 respectively
- Education level by Home Ownership: Bachelor's degree holders were the highest home owners in the dataset (435) with Partial College individuals owning more houses (392) than individuals with graduate degrees (126).

Insight:

The dataset shows a balanced gender distribution, which minimizes gender bias in the analysis, while the slight dominance of married individuals suggests a largely stable household population. The age distribution is heavily skewed toward young adults, indicating that most insights and behavioral patterns will primarily reflect younger consumers. A high level of home ownership points to overall financial stability within the dataset, which may positively influence purchasing power. Regionally, North America accounts for the largest share of participants, with the Pacific contributing the fewest entries, indicating that regional insights will be most representative of the North American market. Male married individuals and female single individuals emerge as the most prominent demographic combinations in the dataset, highlighting distinct household patterns by gender and marital status. In terms of education and housing, individuals with a bachelor's degree represent the highest number of homeowners, while those with partial college education own more homes than individuals with graduate degrees, suggesting that home ownership is not strictly tied to higher academic attainment.

4.2. Income & Occupation

- **MIN/MAX income:** the minimum income was \$10,000 with the maximum income being \$170,000. The average income is \$56,360
- Professionals formed the majority of occupation entered 27.6% (276) with Manual labor employees forming a minority of 11.9%. (119)
- **Income Brackets by Children:** Middle level earner had the highest number of children totaling 1035 children birthed by this group. This is followed by low earns who totaled 646 and high earns having the lowest birth (217).
- **Bike Purchased by Average Income:** The average income of participants who purchased a bike was slightly higher (57,962.6) than those who did not make a purchase (54,874.8)
- **Occupation by Income:** Manual labor had the lowest average income (19,090.9) while professionals seem to have a higher average income (75,266.7) with a difference in percentage of about **294.25%**
- **Gender by Average Income and Bike purchase**

Bike purchases are predominantly made by males, who also record the highest average income among purchasers at 60,123.96, compared to 55,774.05 for female purchasers. A similar pattern is observed among non-purchasers, where males remain the majority and have a higher average income of 56,208.17, while females who did not purchase bikes record the lowest average income at 53,440.

- **Bikes purchased by Occupation**

Professionals recorded the highest number of bike purchases, with 150 individuals purchasing bikes compared to 126 who did not, making them the only occupation group with a clear positive purchase trend. In contrast, all other occupations show a higher number of non-purchasers than purchasers, indicating lower overall adoption rates. Clerical workers stand out as an exception among these groups, displaying a nearly balanced response, with bike purchases slightly exceeding non-purchases, suggesting moderate but promising purchase behavior within this occupation category.

Insight: The income and occupation analysis shows a wide income range across participants, with professionals dominating both representation and earning power in the dataset. Average income level comparisons suggest that participants who bought bikes earn slightly more on average than those who did not. Middle-income earners account for the highest number of children, suggesting greater family concentration within this group, while high-income earners show lower household sizes. Occupational differences are pronounced, with professionals earning significantly more than other groups and standing out as the only occupation where bike purchases exceed non-purchases. Gender-based analysis further reinforces the income–purchase relationship, as males not only represent the majority of bike purchasers but also have higher average incomes among both purchasers and non-purchasers, indicating that income and occupation play a stronger role in purchase behavior than gender alone.

4.3. Purchase Dashboard

- **Income Bracket by Bike Purchased:** Majority of bike purchased were from low earners (<5,000) and this same income group also recorded the highest number of non-purchases. The responses show a split of 223 purchasers to 253 non-purchasers, indicating mixed purchase behavior within this income category.
- **Customer Age Brackets by Purchased Bike:** Individuals in the young adult age bracket had the lowest no response to bike purchase (71) with individuals in the adult age brackets having the highest response to no bike purchase (318). However young adults also emerged highest in yes response to bike purchase (383) with the lowest yes response coming from young adults.
- **Customer Commute by Bike Purchased:** Individuals with a commute distance of 0–1 mile account for the highest number of bike purchases, while those commuting more than 10 miles record the lowest purchase count at 33. Additionally, participants with a commute distance of 2–5 miles show a higher number of positive bike purchase responses than

non-purchases, indicating a stronger inclination toward biking among short- to mid-distance commuters.

Insight: The analysis shows that low-income earners account for the largest share of both bike purchases and non-purchases, indicating high engagement but mixed purchasing outcomes within this group. Age-based results highlight young adults as the most active buyers, recording the highest number of bike purchases and the lowest non-purchase responses, while adults and old people being more likely not to purchase bikes. Commute distance strongly influences purchase behavior, with shorter commute distances, particularly 0–1 mile and 2–5 miles, showing higher bike adoption, whereas long-distance commuters are the least likely to purchase bikes.

5. KEY INSIGHTS FOR THE STUDY

- The dataset is demographically balanced by gender, with a slight dominance of married individuals, indicating a largely stable household population.
- Young adults dominate the dataset and drive most behavioral patterns, making them the most influential segment in the analysis.
- High home ownership rates suggest overall financial stability, which supports stronger purchasing power across the sample.
- North America contributes the majority of records, meaning most insights are most representative of this region, while the Pacific is underrepresented.
- Male married individuals and female single individuals are the most prominent demographic groups, highlighting distinct household and lifestyle patterns.
- Home ownership is most common among individuals with bachelor's degrees, while partial college holders own more homes than those with graduate degrees, showing that higher education does not directly translate to higher home ownership.
- Income levels vary widely, but professionals dominate both representation and earning power within the dataset.
- Participants who purchased bikes earn slightly more on average than those who did not, indicating a positive relationship between income and purchase likelihood.
- Middle-income earners have the highest number of children, while high-income earners tend to have smaller households.
- Professionals are the only occupation group where bike purchases exceed non-purchases, making them the strongest purchasing segment.
- Males account for the majority of bike purchases and also record higher average incomes among both purchasers and non-purchasers, suggesting income and occupation outweigh gender as purchase drivers.
- Low-income earners show the highest engagement, accounting for the largest number of both purchases and non-purchases, but with mixed outcomes.
- Young adults are the most active bike buyers, while adults and older individuals are more likely not to purchase bikes.

- Commute distance is a strong predictor of bike purchases, with short-distance commuters (0–1 mile and 2–5 miles) showing higher adoption, and long-distance commuters being the least likely to purchase bikes.