Socioeconomic Determinants of Buy Now, Pay Later (BNPL) Usage: An Empirical Analysis by Age, Income, and Education

1 Introduction

The expansion of digital financial technologies has accelerated the adoption of Buy Now, Pay Later (BNPL) services, which provide short-term installment-based financing at the point of sale. While BNPL is frequently positioned as a tool for enhancing consumer access to credit, its usage varies considerably across different sociodemographic groups. This study investigates the patterns of BNPL usage across three key dimensions—education, age, and income—using descriptive visualizations and predictive modeling to identify the primary drivers of adoption. The findings contribute to the ongoing discourse on financial inclusion, digital credit behavior, and the implications of emerging fintech products.

Data and Methodology

1.0.1 Data Source

This study utilizes a cross-sectional dataset comprising 11,400 individual-level observations collected through a nationally representative financial behavior survey conducted in 2024. The survey includes detailed demographic, socioeconomic, and behavioral indicators related to the adoption and use of Buy Now, Pay Later (BNPL) services. Key variables in the dataset include age, income, education, employment status, digital literacy indicators, and a binary outcome variable indicating whether the respo...

The dataset is cleaned for missing values and inconsistencies. Observations with incomplete responses on key covariates—particularly age group, income, and education—are excluded from the final analytic sample to ensure robustness and interpretability.

1.0.2 Variable Construction

- **Dependent Variable**: The binary variable `used_bnpl` takes the value 1 if the individual has used BNPL services in the past 12 months, and 0 otherwise.
- **Independent Variables**:
  - **Age Group**: Categorized into four groups: 18–29 (reference), 30–44, 45–59, and 60+.
  - **Income Group**: Divided into four brackets: ¿$100,000 (reference), $50,000–$100,000, $25,000–$50,000, and ¡$25,000.
  - **Education Level**: Classified into four groups: Bachelor's Degree (reference), Graduate Degree, Some College, and High School or Less.

All independent variables are included as categorical dummy variables in the model using one-hot encoding, with the most intuitive or demographically central group chosen as the reference category.

1.0.3 Econometric Model

To estimate the probability of BNPL usage, a **logistic regression model** is employed due to the binary nature of the dependent variable. The model is specified as follows:

$$logit(P_i) = \beta_0 + \sum_{j=1}^{J} \beta_j X_{ij} + \varepsilon_i$$

Where:

- P_i is the probability that individual i has used BNPL;
- X_{ij} represents the j-th independent variable for individual i;

- β_j are the coefficients to be estimated;
- ε_i is the error term.

Model estimation is conducted using **Maximum Likelihood Estimation (MLE)**. Statistical significance is assessed at the 1%, 5%, and 10% levels, and 95% confidence intervals are reported for all estimated coefficients.

1.0.4 Diagnostic Checks

- The model is evaluated for goodness-of-fit using the **Pseudo R^2** and **Likelihood Ratio Test**.
- Multicollinearity is assessed via the **Variance Inflation Factor (VIF)** for all regressors, ensuring that estimates are not unduly influenced by linear dependence.
- The assumption of independent observations is upheld, given the survey's sampling design.

2 Empirical Findings

2.1 Educational Attainment and BNPL Adoption

As illustrated in Figure 1, individuals with a **Bachelor's degree** exhibit the highest average BNPL usage rate among all educational groups. This is followed by those with **High School education or less**, while individuals with a **Graduate degree** demonstrate the lowest usage rates. Interestingly, users with **Some College education** fall in the middle, with slightly lower rates than their High School–educated counterparts.

This trend may be attributable to a confluence of lifestyle and risk-related factors. Bachelor's degree holders are likely to be early adopters of digital financial tools and more frequent users of e-commerce platforms. In contrast, Graduate degree holders may have access to more traditional and stable forms of credit, exhibit lower risk tolerance, or prioritize long-term financial planning, thereby reducing their reliance on BNPL schemes.

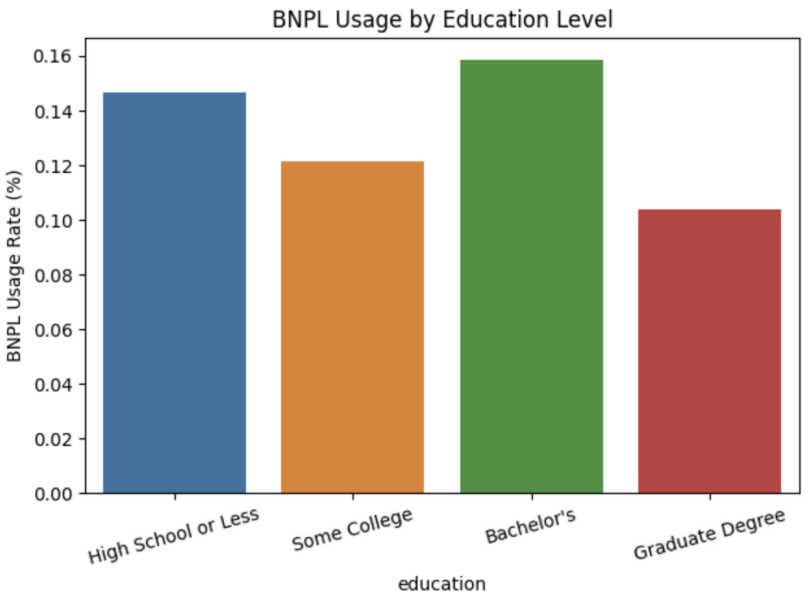

Figure 1: BNPL Usage by Education Level

2.2 Interaction Effects: Age, Income, and Education

A more granular decomposition (Figure 2) reveals that **age and income interact with education** to shape BNPL behavior in nuanced ways:

- **Young adults (18–29)** consistently exhibit the highest usage rates across most education and income combinations. Their usage peaks within the **$25,000–$50,000 income bracket**, particularly among those with a Bachelor's degree or Some College education.
- Among individuals with **High School education or less**, the **30–44 age group** emerges as the highest user cohort, particularly in the $50,000–100,000 income group.
- Usage among individuals aged **60 and above** remains uniformly low, regardless of income or education, suggesting lower digital adoption or a preference for conventional financial practices.

These findings imply that **BNPL use is highest in financially transitional stages**—when individuals are gaining financial autonomy, experimenting with spending tools, or navigating

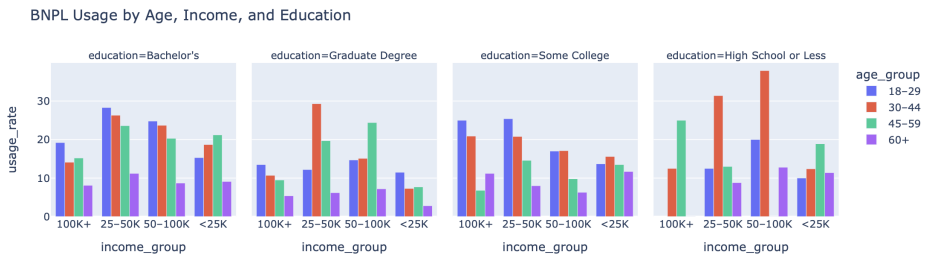

Figure 2: Decomposition of BNPL Usage

financial constraints in early or middle adulthood.

2.3 Regression Model

The logistic regression model evaluates the likelihood of an individual using Buy Now, Pay Later (BNPL) services based on their age group, income level, and educational attainment. The model includes 11,400 observations and demonstrates statistical significance overall, as indicated by the likelihood ratio (LLR) test ($p < 0.001$). The model's Pseudo R^2 value is 0.032, suggesting modest explanatory power—a common characteristic in behavioral and choice models.

Table 1: Logit Regression Results: BNPL Usage

Variable	**Coef.**	**Std. Err.**	**z**	**P>—z—**	**[0.025**	**0.975]**
Intercept	-1.6745	0.102	-16.424	0.000	-1.874	-1.475
C(age_group)[T.30–44]	0.0623	0.087	0.718	0.473	-0.108	0.232
C(age_group)[T.45–59]	-0.0779	0.089	-0.871	0.384	-0.253	0.097
C(age_group)[T.60+]	-0.8486	0.089	-9.548	0.000	-1.023	-0.674
C(income_group)[T.25–50K]	0.5477	0.089	6.161	0.000	0.373	0.722
C(income_group)[T.50–100K]	0.3799	0.077	4.948	0.000	0.229	0.530
C(income_group)[T.¡25K]	0.1469	0.099	1.485	0.138	-0.047	0.341
C(education)[T.Graduate Degree]	-0.4081	0.070	-5.835	0.000	-0.545	-0.271
C(education)[T.High School or Less]	-0.1069	0.133	-0.806	0.420	-0.367	0.153
C(education)[T.Some College]	-0.3019	0.081	-3.743	0.000	-0.460	-0.144

Note: N = 11,400, Log-Likelihood = -4212.0, LL-Null = -4353.2, Pseudo R^2 = 0.03244, LLR p-value = 1.369e-55.

2.3.1 Age Group

Relative to the reference category of young adults aged 18–29, individuals aged 30–44 and 45–59 do not show statistically significant differences in BNPL usage, indicating behavioral similarity in digital credit adoption across these younger and middle-aged cohorts. However, individuals aged 60 and above are significantly less likely to use BNPL services ($\beta = -0.849$, $p < 0.001$). This finding reflects the lower engagement of older adults with digital financial tools and may point to more conservative credit behavior, reduced online consumption, or limited technological literacy within this age group.

2.3.2 Income Level

Income emerges as a significant predictor of BNPL adoption. Compared to individuals earning over \$100,000 (reference group), those in the \$25,000–\$50,000 and \$50,000–\$100,000 brackets are significantly more likely to utilize BNPL ($\beta = 0.548$ and $\beta = 0.380$, respectively, both $p < 0.001$). These findings suggest that BNPL is particularly attractive to middle-income consumers, who may use it as a tool for managing liquidity constraints or deferring short-term expenses. In contrast, individuals earning less than \$25,000 do not significantly differ from the highest income group, potentially due to greater financial exclusion or risk aversion within this cohort.

2.3.3 Educational Attainment

Educational attainment shows a nuanced effect. Relative to individuals with a Bachelor's degree, those holding a Graduate degree are significantly less likely to use BNPL services ($\beta = -0.408$, $p < 0.001$). This pattern may reflect greater financial literacy, preference for conventional credit instruments, or lower reliance on short-term financing among more highly educated individuals. Similarly, individuals with Some College education are also significantly less likely to use BNPL ($\beta = -0.302$, $p < 0.001$). Interestingly, individuals with a High School education or less do not exhibit a statistically significant difference from Bachelor's holders, suggesting that BNPL usage among lower-educated individuals may mirror that of more educated peers, possibly due to its perceived accessibility and minimal

barriers to entry.

2.3.4 Summary

The regression results underscore that BNPL adoption is most pronounced among younger and middle-aged individuals with moderate incomes and a Bachelor's degree. This demographic likely represents digitally active consumers with lifestyle-driven financial demands. In contrast, older individuals and those with advanced educational credentials are less inclined toward BNPL use, possibly due to greater financial stability or cautiousness in adopting alternative credit mechanisms. These patterns highlight the importance of socioeconomic segmentation in understanding the reach and risks associated with emerging financial technologies. """

2.4 Predicted Probabilities by Age and Income

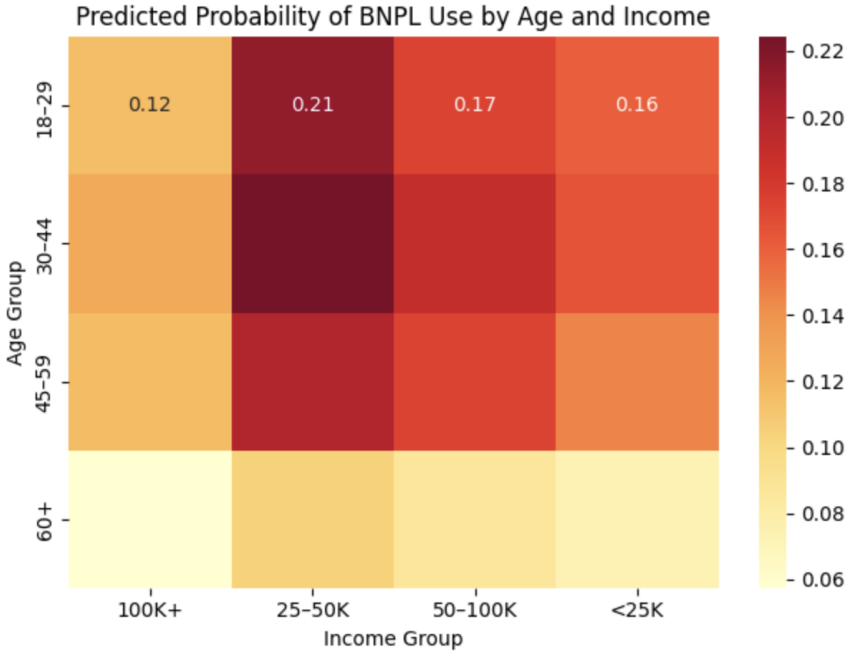

Figure 3: Predicted Probabilities of BNPL Usage

A predictive heatmap (Figure 3) further quantifies the likelihood of BNPL usage based on age and income group. The highest predicted probability of usage (22%) is observed among **individuals aged 30–44 with incomes between $25,000 and $50,000**, followed closely

by younger users in the same income range.

These findings affirm that **income volatility and digital exposure**—rather than income level alone—are key predictors of BNPL adoption. Notably, the \$25K–\$50K group shows the highest probability of usage across multiple age groups, reinforcing that BNPL is often utilized as a cash-flow management tool rather than a luxury spending vehicle.

3 Conclusion

The findings of this study highlight the multidimensional nature of BNPL usage. While education level serves as a broad indicator of financial behavior, its interaction with age and income yields more precise insights. Bachelor's degree holders, particularly young and mid-income earners, appear to be the most active adopters of BNPL, possibly due to lifestyle demands and higher digital engagement. Conversely, Graduate degree holders may display a more risk-averse profile.

From a policy and regulatory perspective, these insights underscore the need for **targeted financial literacy interventions**, especially for groups with high adoption rates but limited credit literacy. Fintech providers, too, must consider these patterns when designing inclusive, transparent, and sustainable BNPL products. Future research should explore the long-term credit outcomes and behavioral changes associated with BNPL use to inform policy frameworks that balance innovation with consumer protection.