Landing Club Case Study

Presented By:

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Unlocking Insights in Loan Defaults

❑Introduction

- In this case study, we delve into the world of banking and financial services, using Exploratory Data Analysis (EDA) to tackle real-world challenges.

❑Business

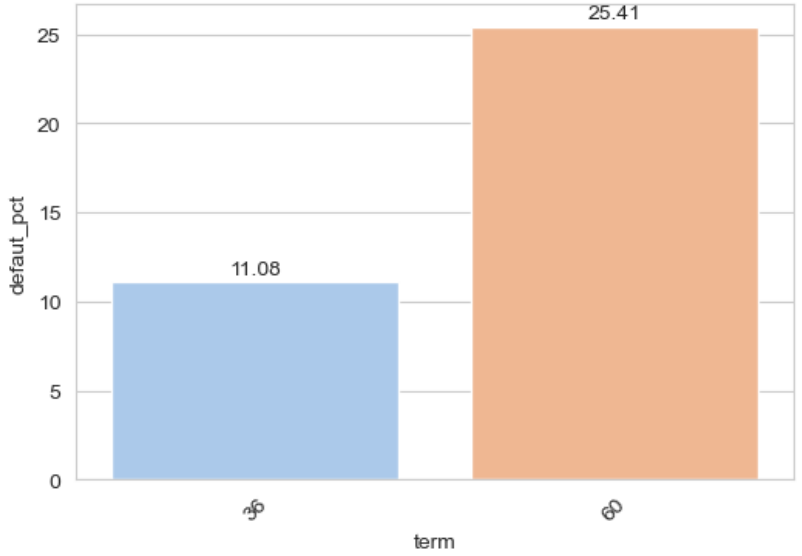
- We find ourselves at the heart of a critical issue in urban lending.
- Our challenge is to strike a balance between two pivotal risks in the loan approval process:
- Lost Business Opportunity: Refusing loans to capable applicants results in missed revenue.
- Default Risk: Approving loans to potential defaulters can lead to substantial financial losses

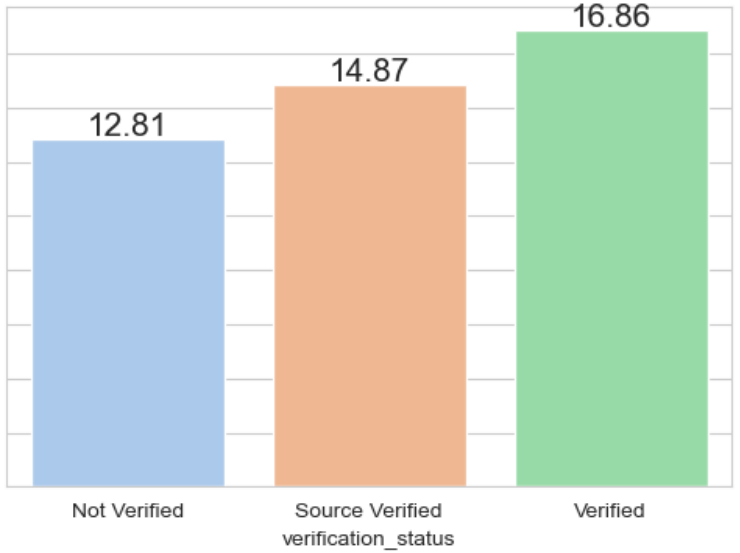
❑Objectives

- Our ultimate aim is to provide actionable insights for risk management, reducing loan defaults, and bolstering financial stability.
- By analyzing past loan data, we intend to uncover the key factors driving loan defaults, aiding in portfolio management and risk assessment

Verification status & term Default Analysis

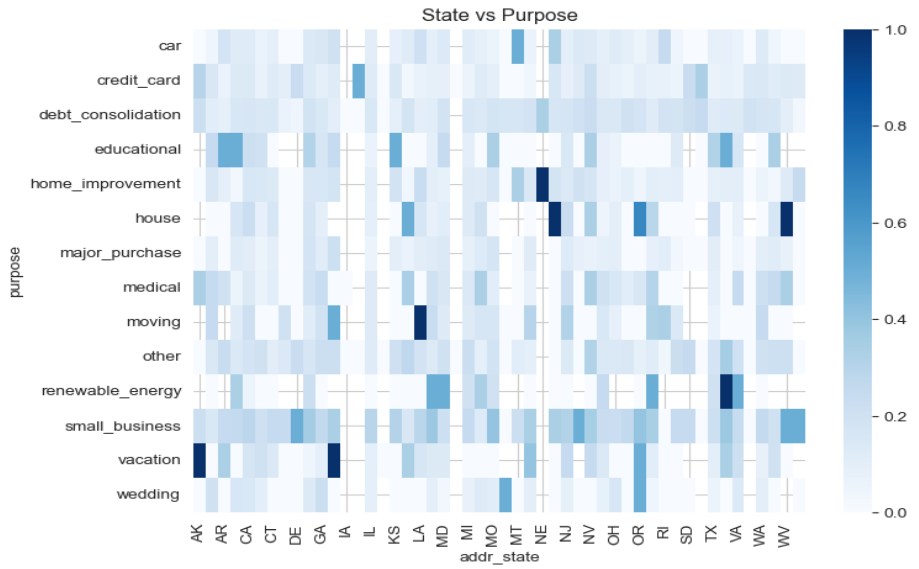
- We can clearly observe that borrowers whose sources of income are not fully verified tend to be more likely to fall into the category of defaulters
- Loans with a 60-month term exhibit the highest default rates

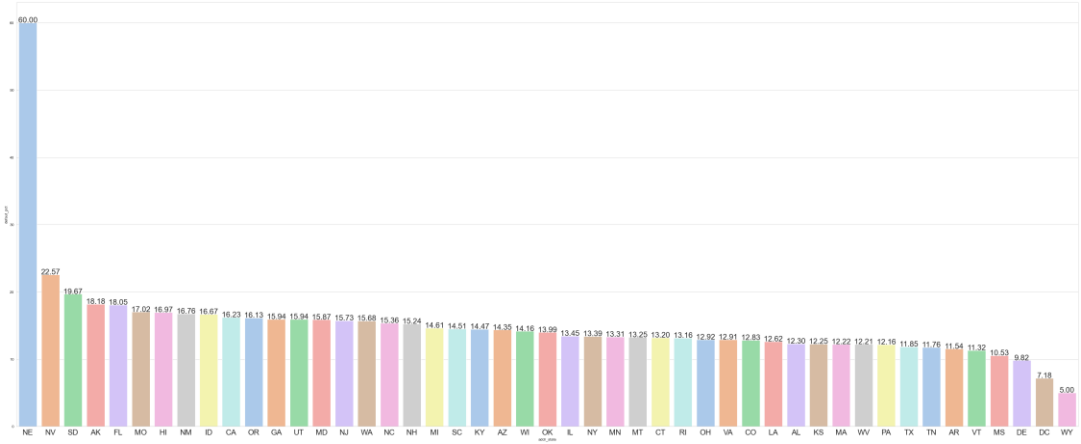




State vs Purpose Default Analysis

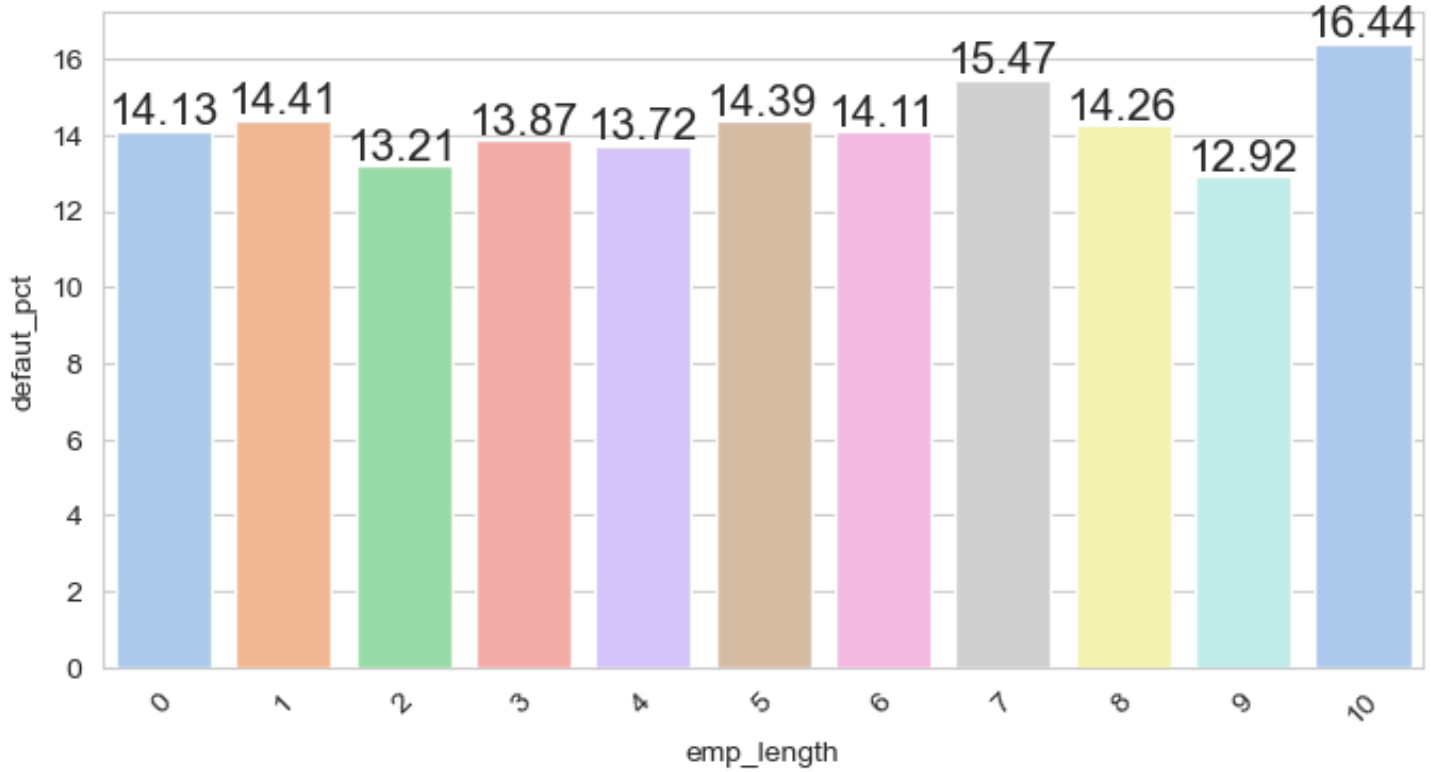
- We can observed that certain states, such as NE and NV, experience the highest number of loan defaults. Notably:
  - ➢ Loans taken for vacation purposes in states like AK or HI exhibit a notably high default rate.
  - ➢ House-related loans in states such as WV or NH also demonstrate a significant propensity for defaults.
  - ➢ Education loans in states like AR and AZ display a relatively elevated default rate.





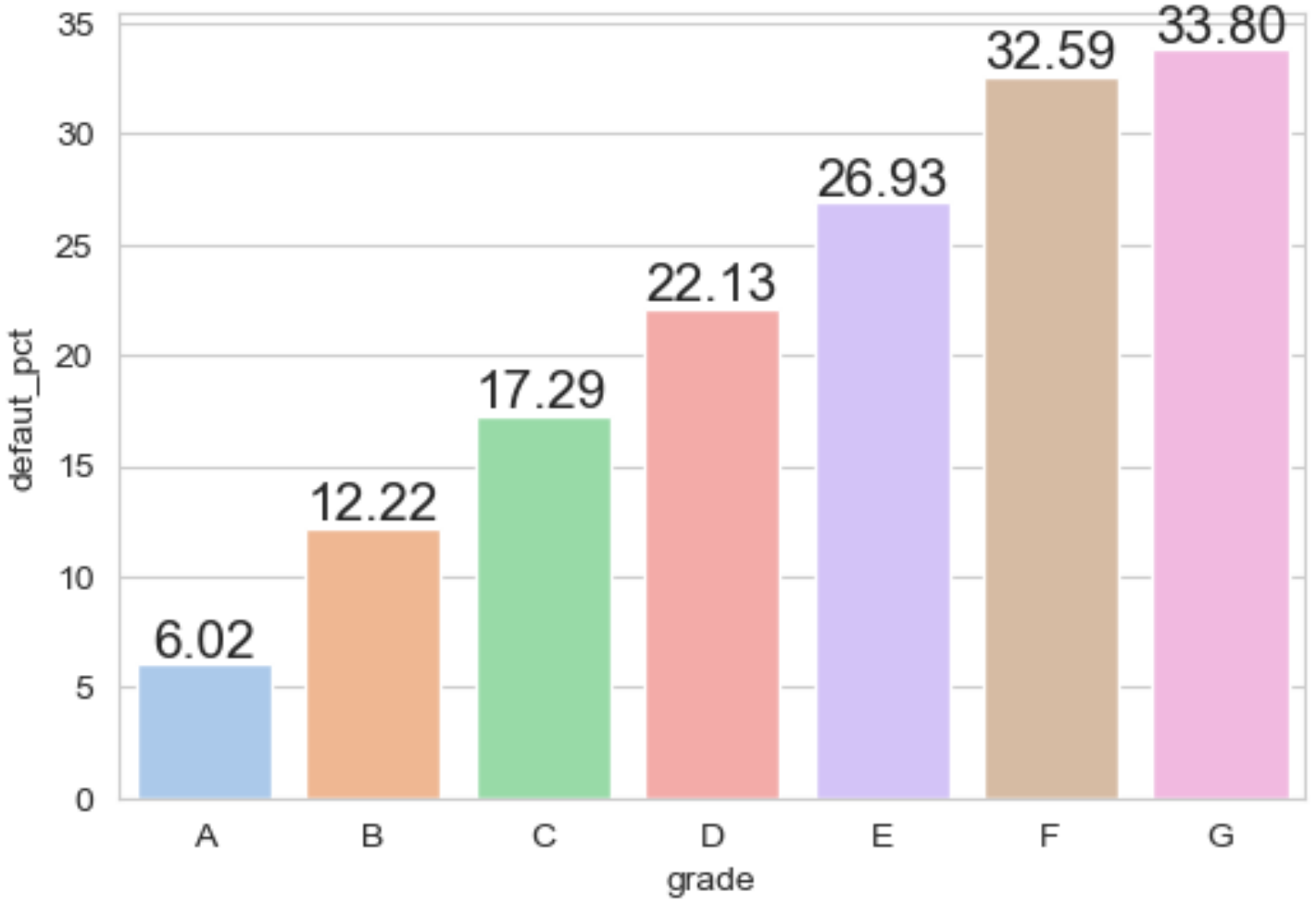
State-wise Default Analysis

- It's evident from our analysis that individuals who have been employed for a duration of 10 years or more tend to encounter a higher incidence of loan defaults



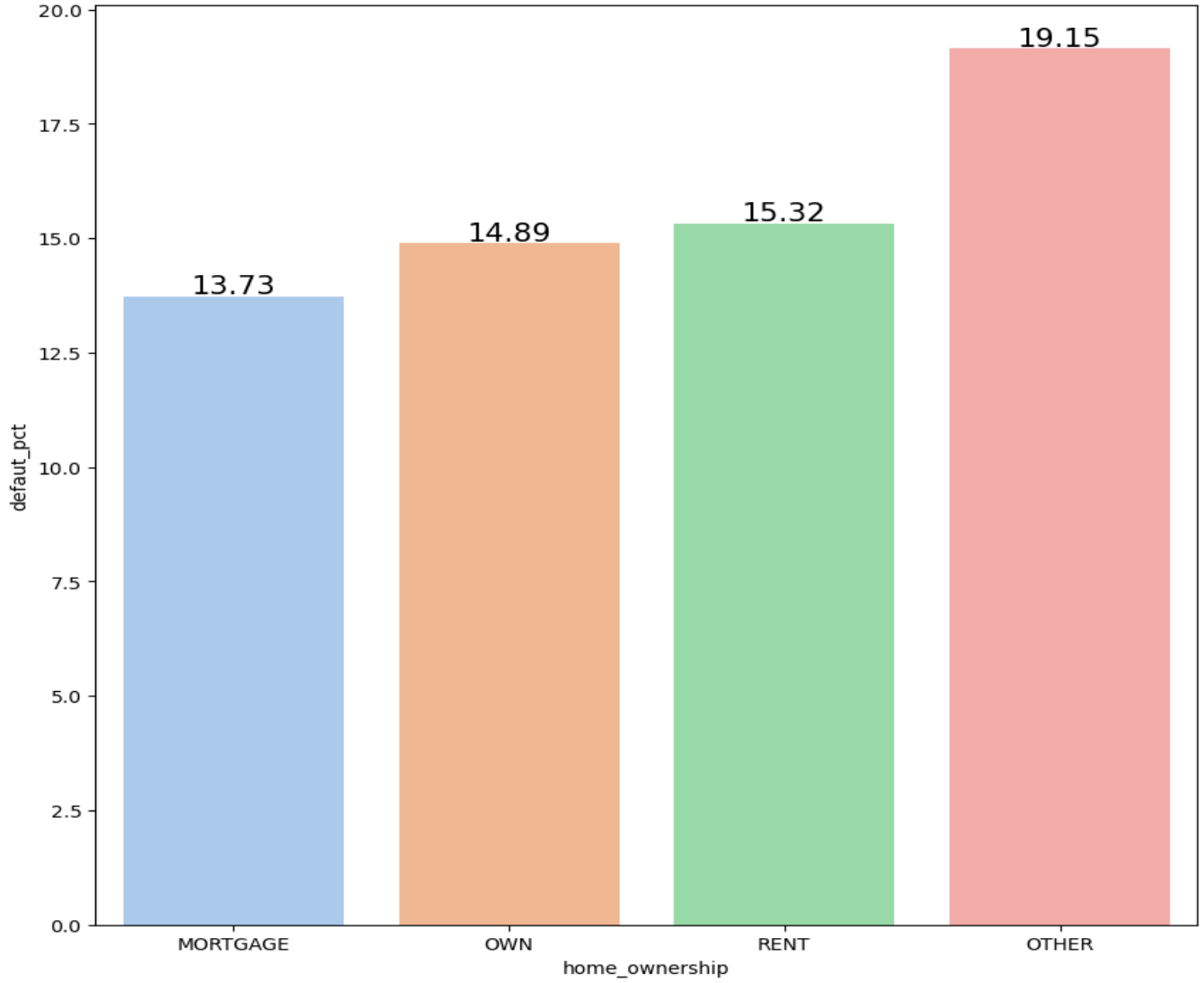
Grade-wise Default Analysis

- When we take a closer look at the data, it becomes apparent that loans categorized under Grade G exhibit the highest number of default cases.
- In contrast, loans classified as Grade A demonstrate the lowest instances of defaults



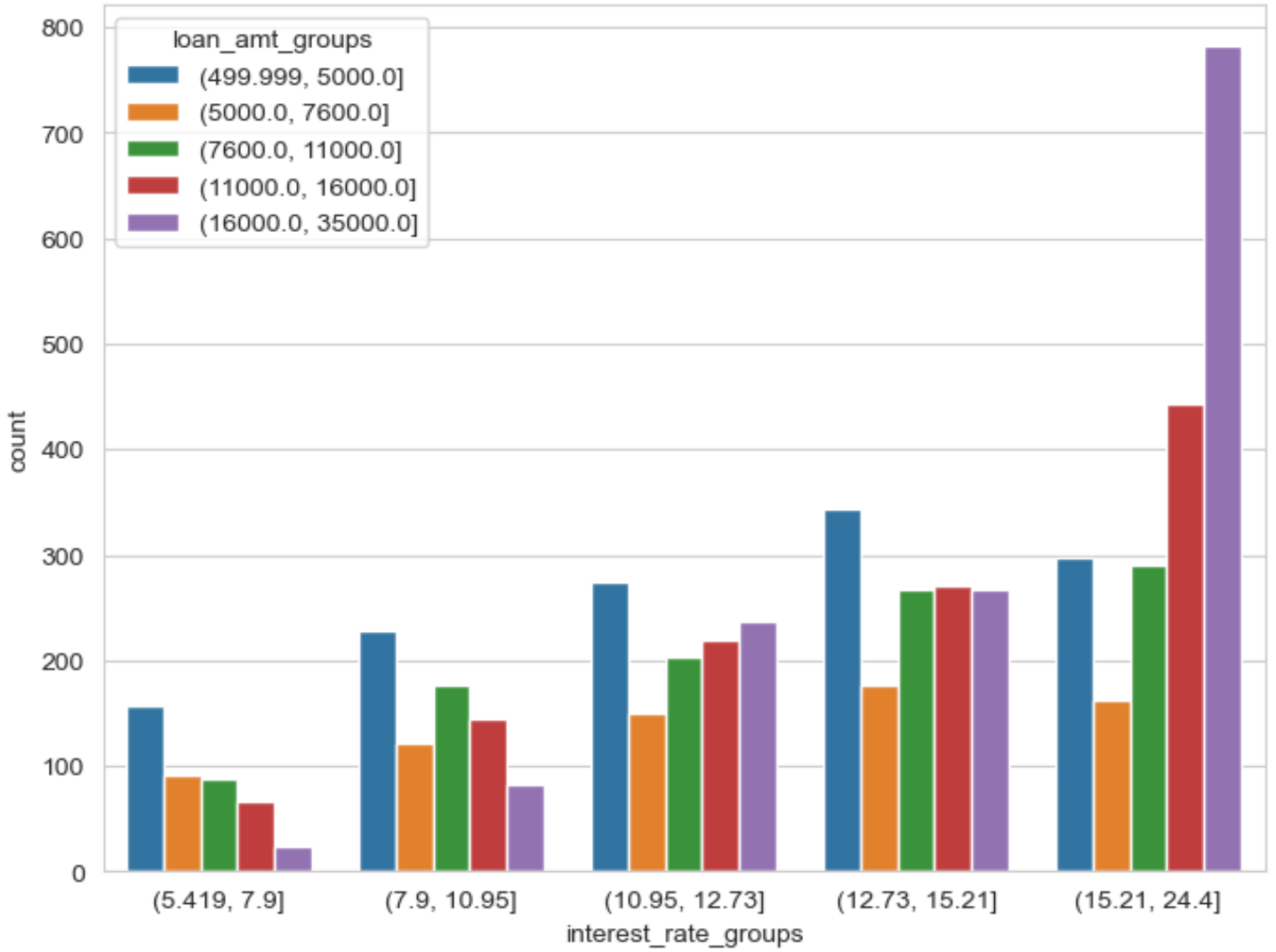
Home Ownership Default Analysis

- Borrowers who have ownership categorized as Rent or Mortgage have the highest number of defaulters, although this count is lower than those classified as 'Other.'
- This suggests the possibility of the need for improved loan categorization for more precise analysis



Amount Vs Interest Rate Default Analysis

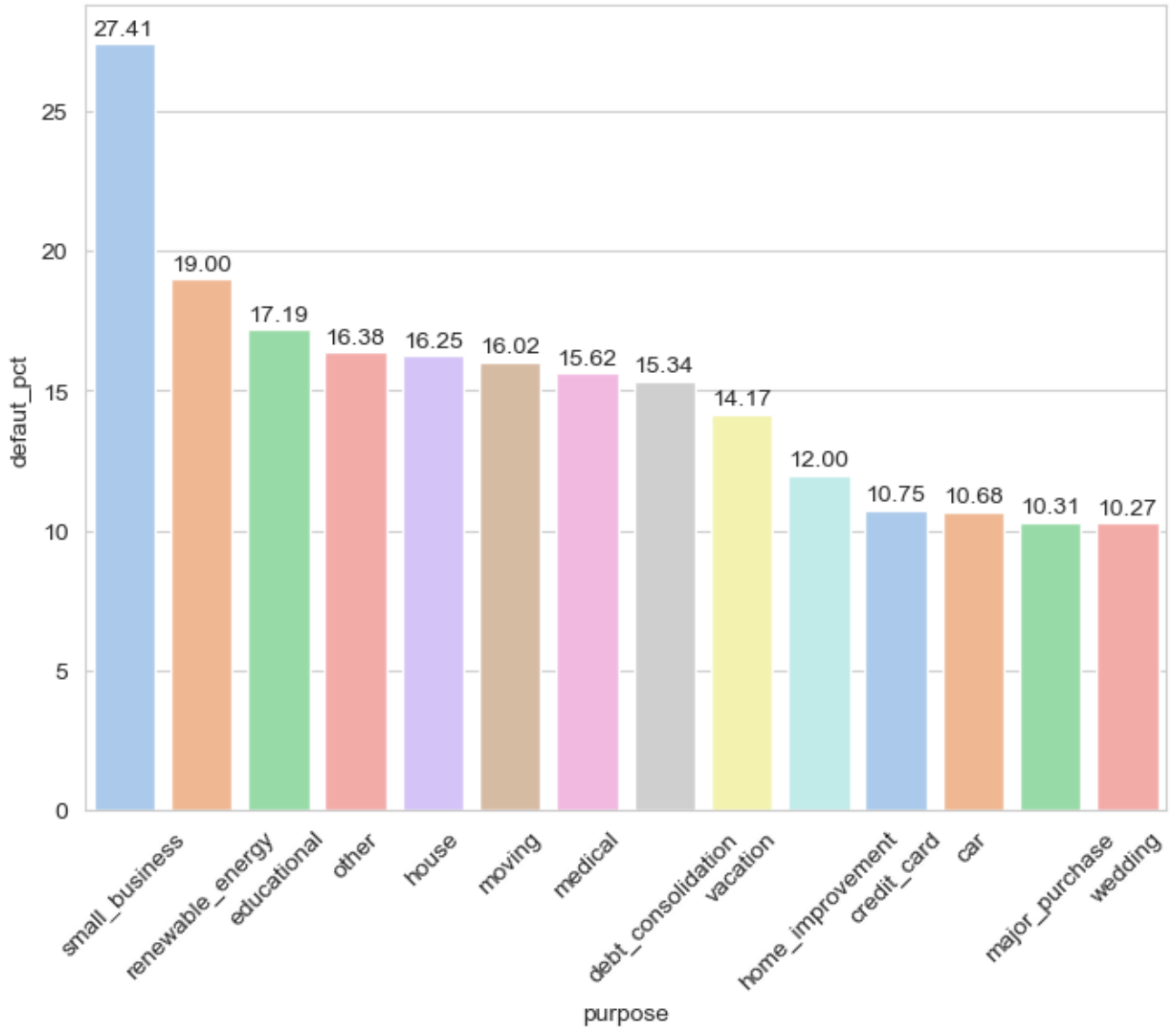
- Borrowers who have taken larger loan amounts and the highest interest rates experience the highest rate of defaults.
- As the loan amount or interest rate increases, the default ratio also increases



Annual Income vs Purpose Default Analysis

Loans associated with specific purposes, namely Small Business, Renewable Energy, and Education, tend to have the highest default rates. Additionally, when examining the relationship between income and loan purposes:

- Small Business Loans for individuals with an income ranging from 0-65K exhibit a higher prevalence of defaults
- Education and Medical loans for those with an income ranging from 65-87K also display an elevated default rate
- House loans are more prone to defaults among individuals with an income between 4-37K



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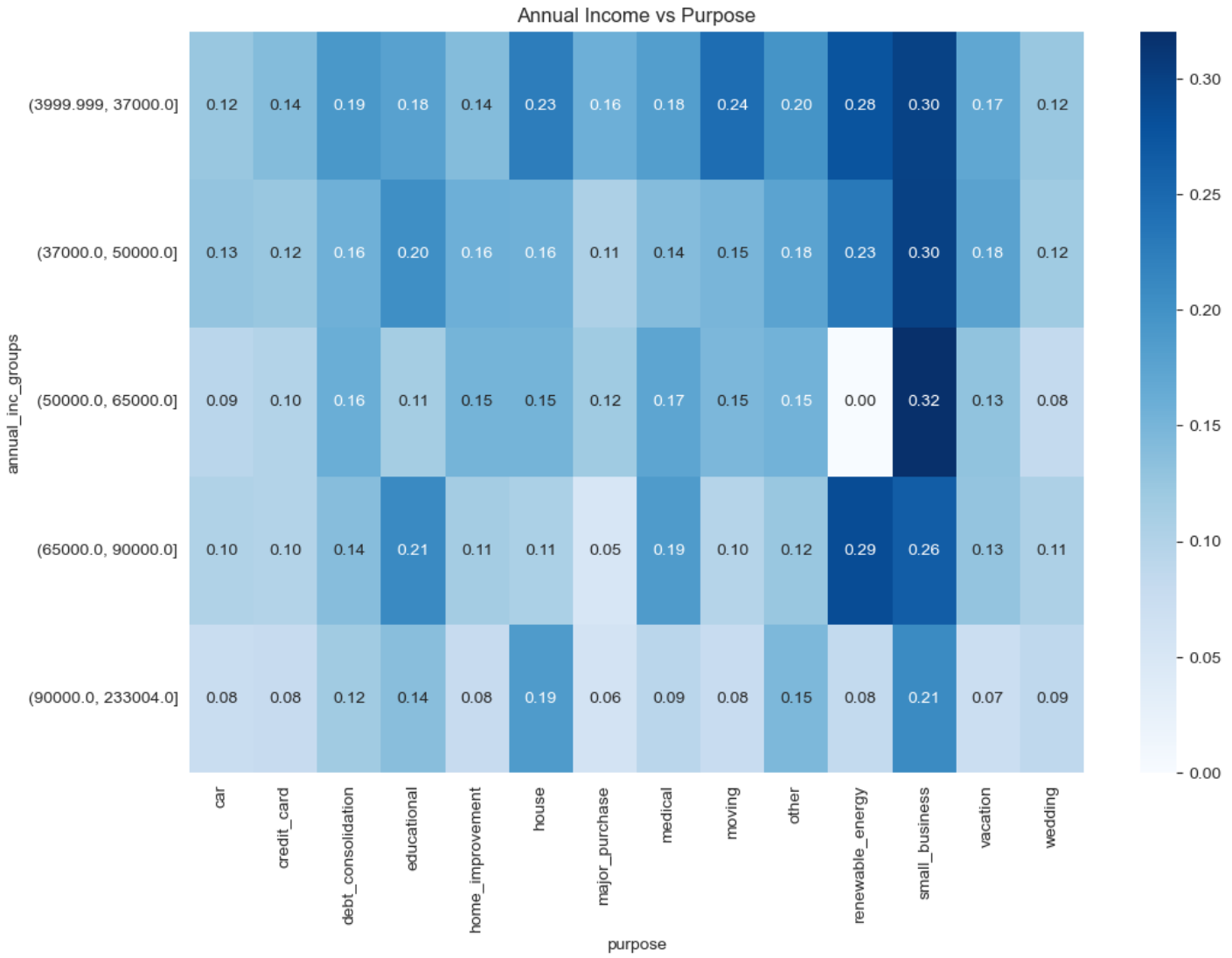
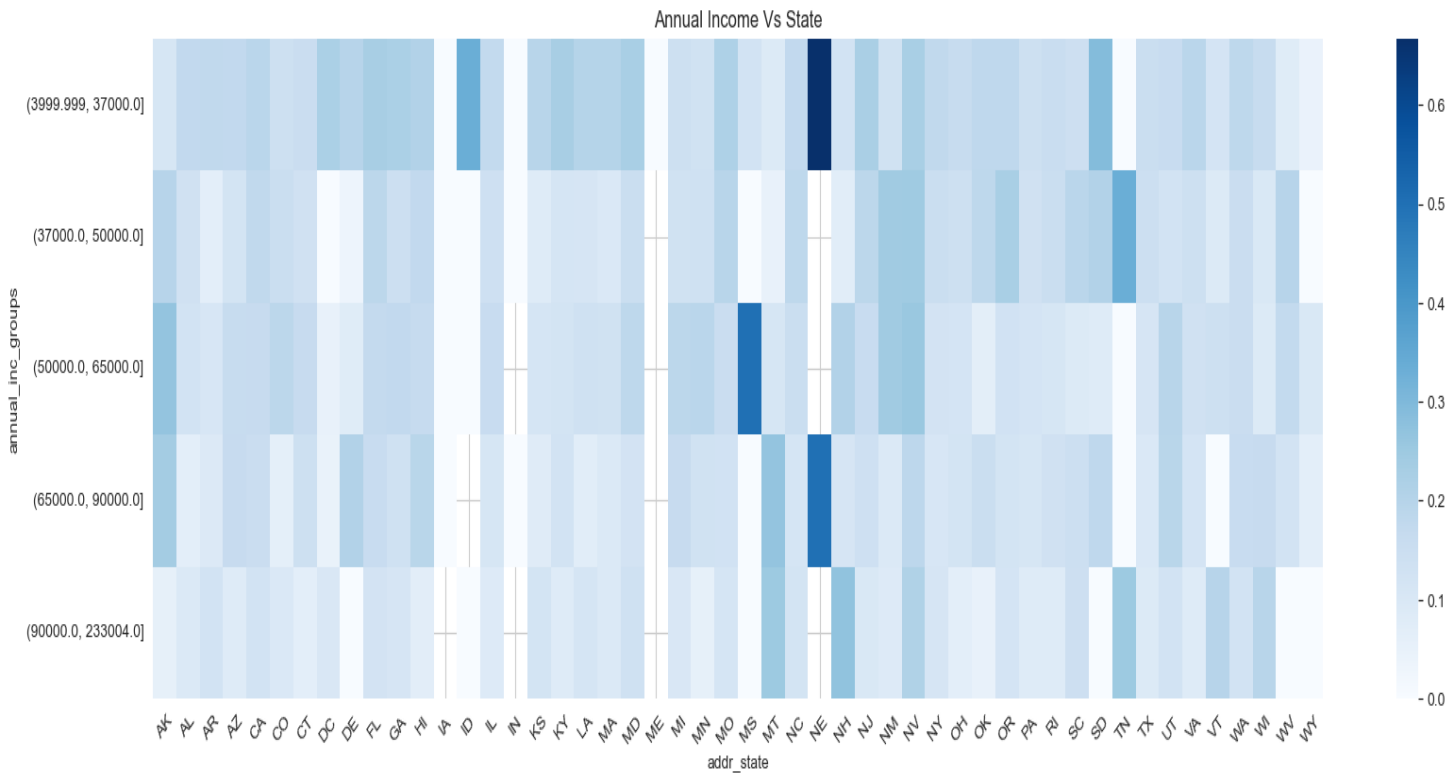


Annual Income vs State Default Analysis

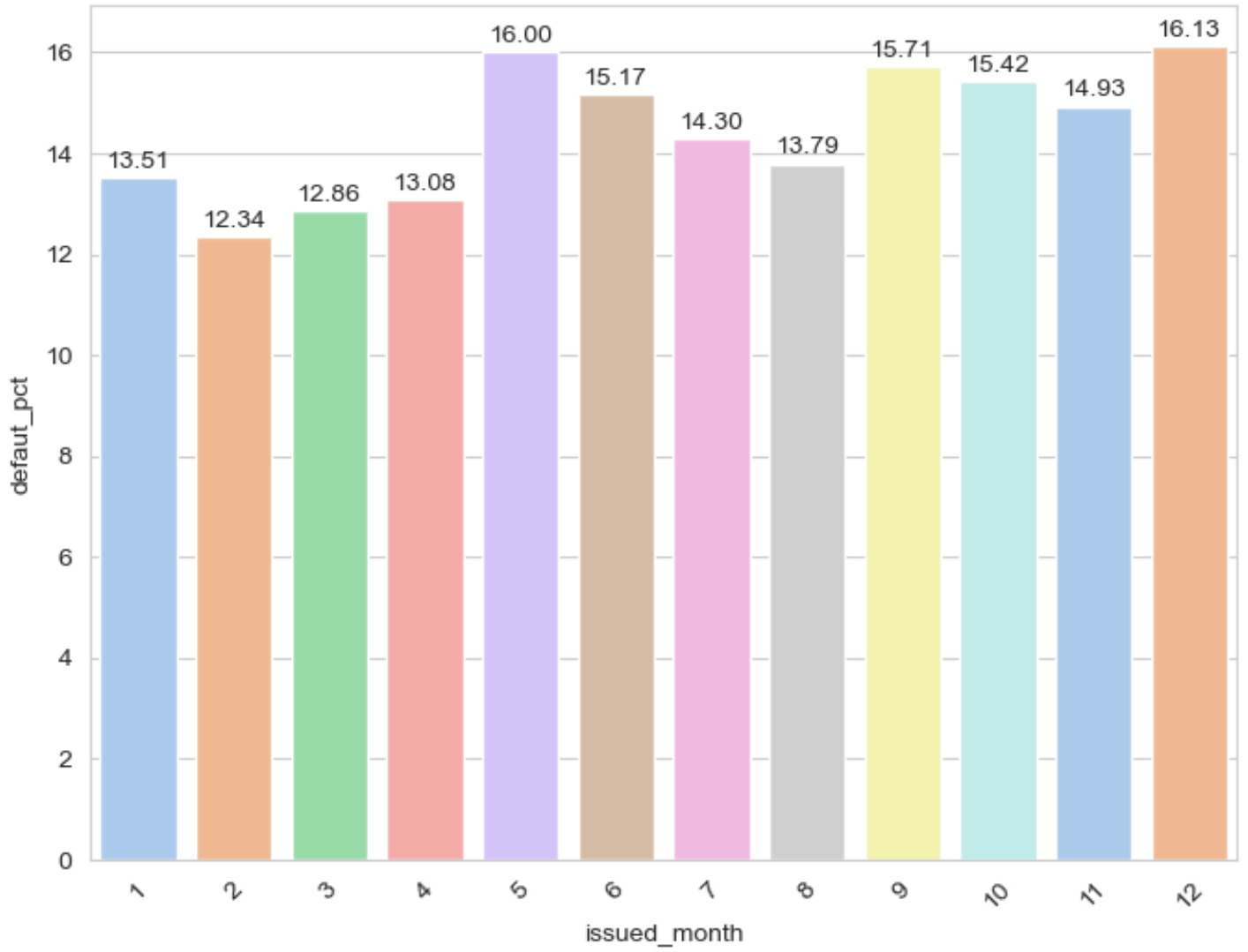
When examining the combination of income and state:

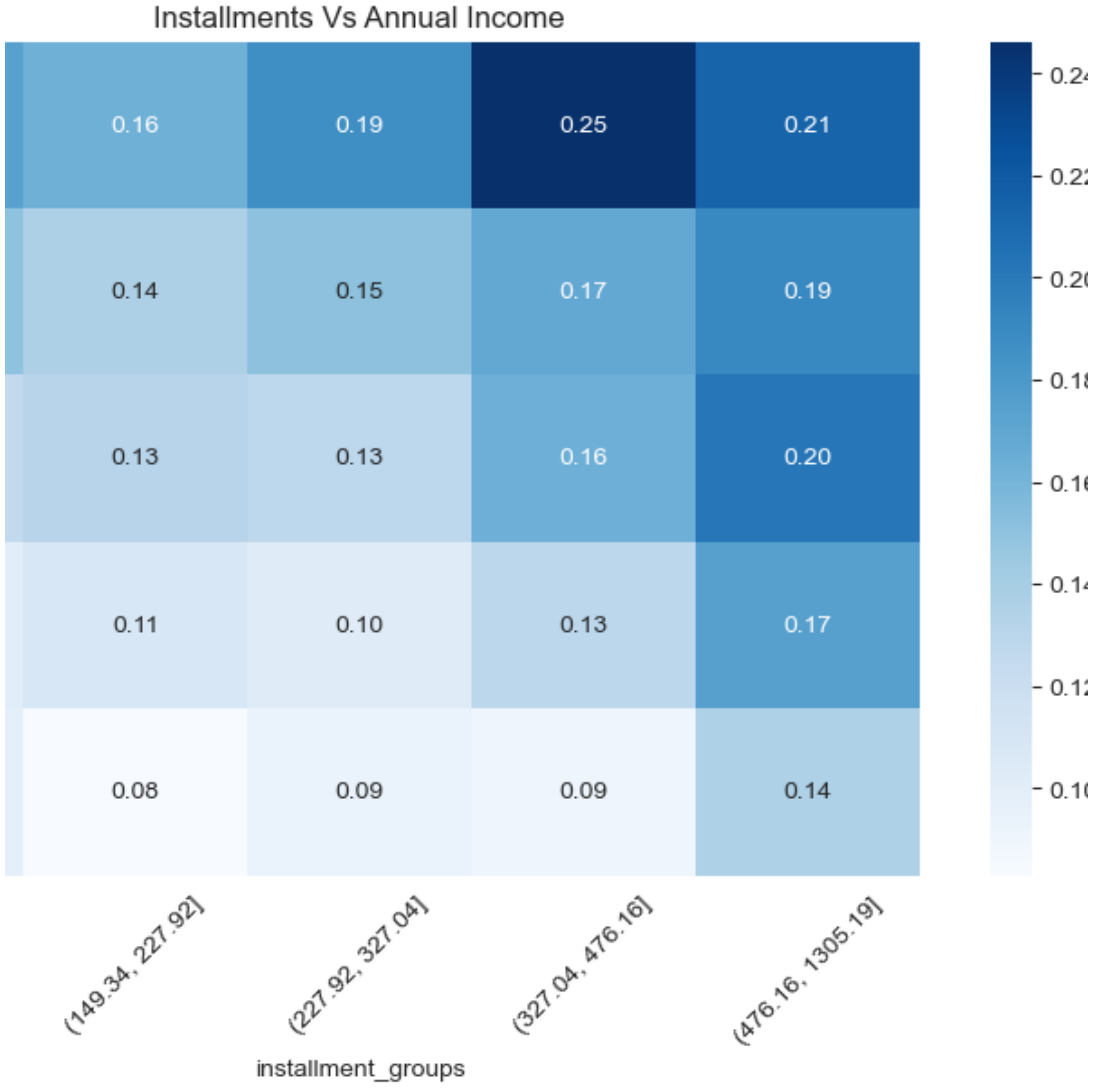
- The state of Mississippi (MS) experiences a higher number of defaults within the income range of 50-65K.
- Idaho (ID) and Nebraska (NE) show a higher prevalence of defaults within the income range of 4-37K.
- Texas (TX) exhibits a higher occurrence of defaults within the income range of 37-50K



Seasonal Trends Default Analysis

- We've observed that the months of December and May consistently exhibit the highest default rates.
- It's worth noting that December, characterized by the Christmas holidays, stands out with particularly elevated default numbers



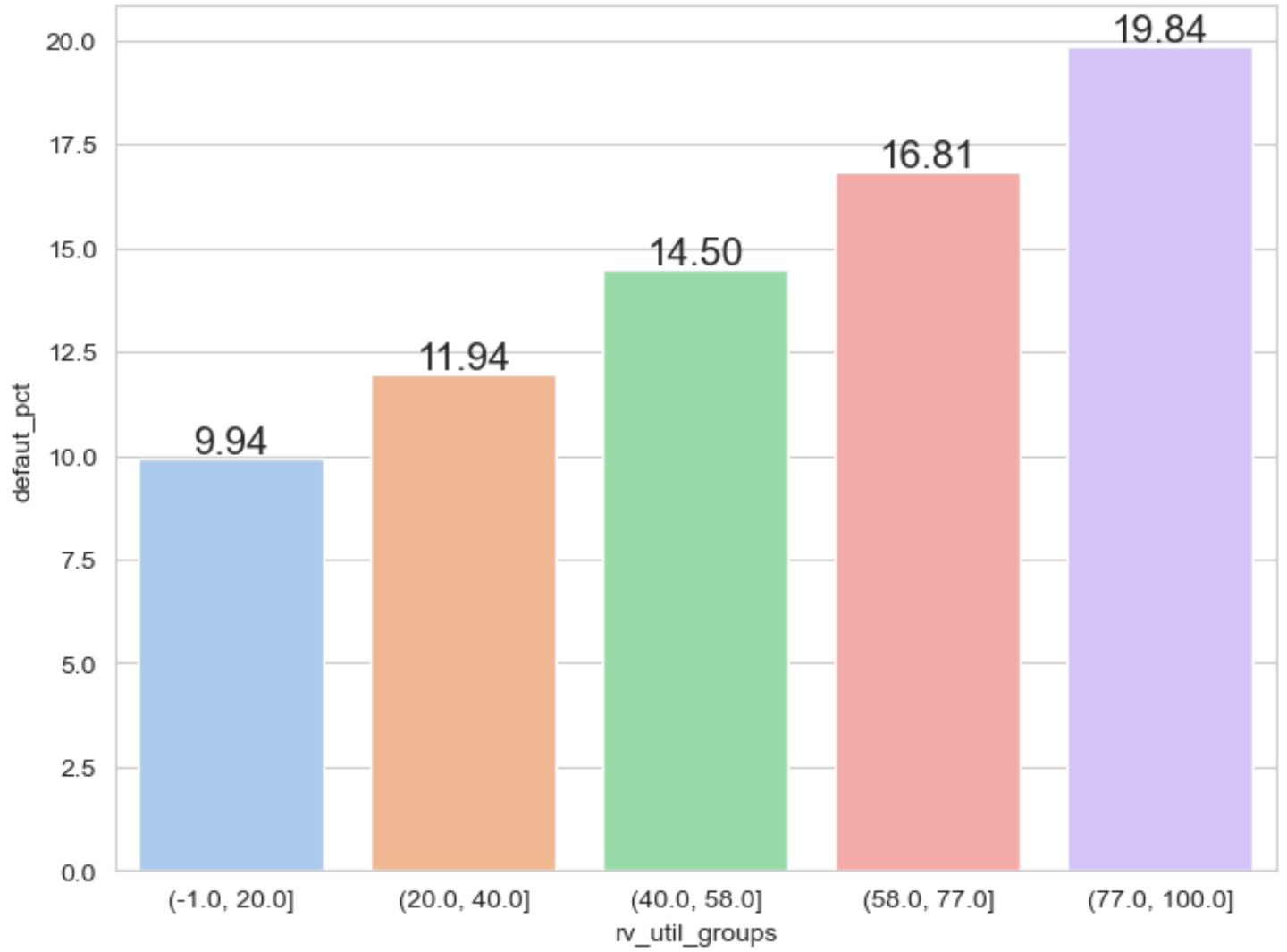


Installment vs. Annual Income Default Analysis

- When analyzing the relationship between installment payments and annual income, we observe a clear trend: as annual income increases, the default ratio decreases.
- This phenomenon suggests that individuals with higher incomes have a greater capacity and affordability to take out loans and successfully repay them

Revolving Line Utilization on Loan Default Analysis

- Higher utilization of revolving lines of credit corresponds to an increase in loan defaults



Conclusion-Factors Leading to Loan Defaults

The goal of our classification task is to identify whether a customer(who is requesting a loan) will be able to repay the loan in an timely manner and for that here some attributes that can used to affirm the same:

- ❑ Loan Verification process has scope of improvement since Verified Borrowers tend to be defaulting more.
- ❑ Key Factors that can be considered are
  - State has an good co-relation with the Purpose which can be another factor to be considered. While approving loans this combination can be taken into consideration
  - Higher Annual Income tends to default less
  - Higher Interest rate or Higher Loan Amount among Low Income group tend to have more defaults
  - Loan Grades are another good factor to consider especially among Low Income Groups
  - Employment Length and Annual Income combination is also another factor that can be looked into. If the Employment Length is higher but their Annual Income is less than the median then their defaulting is higher which could mean that their living expenses are significantly more thus leading to more defaults.
  - Borrowers Home Ownership is also another important factor to understand their monthly expenses which can lead to higher defaults

Thank you !!