Business Summary Report: Predictive Insights for Collections Strategy

# Summary of Predictive Insights

**Based on our exploratory data analysis (EDA) and predictive modeling, we have identified several key factors that strongly influence customer delinquency. These insights provide a data-driven foundation for a more proactive and targeted collections strategy.**

* **High Missed Payments: A consistent finding is the strong correlation between the number of missed payments and a delinquent account. Customers with a high number of missed payments are the most at-risk segment.**
* **High Credit Utilization: Customers who use a significant portion of their available credit are highly susceptible to financial stress and subsequent delinquency. A credit utilization rate exceeding 70% is a primary early warning sign.**
* **Low Credit Score: A customer’s credit score is a crucial indicator. Our findings show that customers with a low credit score (below 500) have a substantially higher risk of a delinquent account.**

| **Key Insights Summary Table** |  |
| --- | --- |
| **Key Insight** | **High Credit Utilization is a strong predictor of delinquency.** |
| **Customer Segment** | **Customers with credit utilization rates above 70%.** |
| **Influencing Variables** | **Credit\_Utilization, Missed\_Payments, Loan\_Balance.** |
| **Potential Impact** | **Targeted interventions for this segment can reduce the number of delinquent accounts and improve the overall health of our loan portfolio.** |

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**2. Recommendation Framework**

**Based on the insight that high credit utilization is a leading indicator of delinquency, we propose a targeted intervention strategy to proactively engage this at-risk segment before they become delinquent.**

**Restated Insight: High credit utilization directly increases the likelihood of delinquency.**

**Proposed Recommendation:**

* **Specific: Implement a personalized communication campaign to provide financial guidance and support to customers with a credit utilization rate above 70%.**
* **Measurable: Reduce the delinquency rate within this customer segment by 15% over the next six months.**
* **Actionable: The collections team will use the model's output to identify at-risk customers and deploy automated, tailored messages.**
* **Relevant: This recommendation directly addresses a key predictive finding and aligns with Geldium’s goals of improving loan portfolio health.**
* **Time-bound: The campaign will be executed and measured over a six-month period.**

**Justification and Business Rationale: This proactive strategy offers a significant return on investment. Instead of waiting for an account to become delinquent, which is costly to resolve, we are intervening earlier to prevent it. By targeting a specific, data-identified risk segment, we can allocate resources more efficiently, reduce collection-related expenses, and foster a more positive and long-term relationship with our customers.**

**3. Ethical and Responsible AI Considerations**

**Our approach to predictive modeling is guided by a commitment to using AI responsibly, ensuring fairness and transparency in all our recommendations.**

**Fairness and Bias Risks & Mitigation:**

1. **Bias Against Demographic Groups: The model could potentially learn and amplify existing biases in the data, leading to a disproportionate flagging of customers from specific age groups or locations as high-risk.**
   * **Mitigation: We will regularly audit the model's performance to detect any "disparate impact" across protected demographic groups. If bias is found, we will re-evaluate our input features or apply bias-mitigation techniques.**
2. **Lack of Explainability ("Black Box" Predictions): Using a complex model might make it difficult to explain to a customer *why* they were classified as high-risk, which can erode trust and is an ethical concern.**
   * **Mitigation: Our chosen Logistic Regression model provides clear explainability. Additionally, we will develop a dashboard that translates model predictions into plain language, ensuring transparency for both our team and the customer.**

**Our recommendation is not designed to punish customers. Instead, it is built to support them. By identifying at-risk individuals early, we can offer proactive assistance that empowers them to make better financial decisions, helping them avoid the negative consequences of delinquency. This aligns our business goals with a more ethical and customer-centric financial strategy.**