Business Summary Report: Predictive Insights for Collections Strategy

## ****1. Summary of Predictive Insights****

Our predictive model, trained on customer financial and behavioral data, identifies key risk segments and predictors of credit delinquency. Insights are drawn from Exploratory Data Analysis (Task 1) and Predictive Modeling (Task 2).

* **Top 3 Risk Factors:**
  1. **High Credit Utilization (> 65%)** – Customers over-leveraging credit limits show higher likelihood of missed payments and eventual delinquency.
  2. **Low Credit Score (< 400)** – A key indicator of weak repayment history and elevated credit risk.
  3. **Recent Missed or Late Payments (past 3 months)** – Strong behavioral predictor of upcoming delinquency.
* **High-Risk Customer Segments:**
  1. **Unemployed or Self-Employed Customers** with high debt-to-income ratios.
  2. Customers with a **Debt-to-Income Ratio > 0.4** are more likely to struggle with repayment.
  3. Accounts with **tenure < 1 year** and multiple "Missed" statuses in the last 6 months signal instability.

### ****Key Insights Summary Table****

| **Key Insight** | **Customer Segment** | **Influencing Variables** | **Potential Impact** |
| --- | --- | --- | --- |
| High Credit Utilization raises risk | High spenders nearing limit | Credit Utilization, Debt-to-Income Ratio | Prioritize for credit counseling outreach |
| Recent missed payments signal risk | New borrowers with erratic payments | Month\_1 to Month\_6, Missed\_Payments, Credit Score | Flag for proactive repayment plan offers |
| Low Credit Score correlates with risk | Customers under 30 or self-employed | Credit Score, Employment Status, Account Tenure | Use to adjust internal risk score thresholds |

## ****2. Recommendation Framework****

**Restated Insight:**  
High credit utilization is a leading indicator of customer delinquency, especially when combined with weak credit scores and recent missed payments.

**Proposed Recommendation:**  
Implement a proactive **“Credit Usage Alert & Guidance”** program targeting high-utilization customers.

* **Specific:** Identify customers with credit utilization above 65% and send personalized financial guidance or limit-adjustment options.
* **Measurable:** Reduce delinquency in this group by at least 10% within 3 months.
* **Actionable:** Use model outputs to segment and auto-flag high-risk profiles in the collections dashboard.
* **Relevant:** Aligns directly with Geldium’s goal to lower delinquency rates and improve customer engagement.
* **Time-bound:** Launch pilot within 30 days; assess outcomes after 90 days.

**Justification and Business Rationale:**  
By engaging high-risk customers early, Geldium can reduce default rates, strengthen customer relationships, and minimize long-term financial losses. This also demonstrates a customer-first approach that is ethically responsible and operationally scalable.

## ****3. Ethical and Responsible AI Considerations****

**Fairness Risks & Mitigation:**

* **Risk 1: Income or Employment Bias** – Self-employed or unemployed customers may be disproportionately labeled high-risk.
  + Mitigation: Regularly audit model outputs for demographic bias; avoid overreliance on employment status alone.
* **Risk 2: Recency Bias from Short-Term Payment History** – Customers with brief delinquency may be unfairly flagged.
  + Mitigation: Incorporate account tenure and total missed payments to give better context.

**Explainability:**  
To non-technical stakeholders, model predictions can be explained as “based on patterns in credit usage, past payment behavior, and financial stress indicators.” Use decision trees or risk scorecards to visually support explanations.

**Responsible AI Practices:**

* Transparent variable selection and documentation.
* Regular fairness audits to avoid systemic bias.
* Data privacy and customer consent maintained in all touchpoints.