**Business Summary Report: Predictive Insights for Collections Strategy**

**1. Summary of Predictive Insights**

Key findings from our Decision Tree model and EDA highlight high-risk segments and top predictors of delinquency:

**Top 3 Risk Factors**

* **Missed Payments:**  
  Customers with 3+ missed payments are the most likely to default.
* **High Credit Utilization:**  
  Usage above 70% signals over-dependence on credit and elevated risk.
* **Low Credit Score & Short Tenure:**  
  Scores <600 and <12 months account history link to financial instability.

**Key Insights Summary Table**

| **Key Insight** | **Customer Segment** | **Influencing Variables** | **Potential Impact** |
| --- | --- | --- | --- |
| Missed payments are the strongest delinquency signal | 3+ missed payments in last 6 months | Missed\_Payments | Prioritize for reminders, restructuring, or outreach |
| High utilization increases risk—even with high income | Utilization >70% | Credit\_Utilization, Income | Offer credit counseling or review limits |
| New, young customers with low scores are vulnerable | Aged 18–25, <12 months history | Age, Account\_Tenure, Credit\_Score | Provide early financial literacy and close monitoring |

**2. Recommendation Framework**

**Restated Insight:**

High credit utilization is a strong indicator of future delinquency.

**SMART Recommendation:**

**Introduce automated alerts** for customers exceeding 75% utilization.

* **Specific:** Notify users when credit usage crosses 75%.
* **Measurable:** Target a 10% drop in delinquency in this segment in 3 months.
* **Actionable:** Leverage existing SMS/email systems for notifications.
* **Relevant:** Directly addresses one of the top predictors.
* **Time-bound:** Launch by end of next month; monitor quarterly.

**Business Rationale:**

A cost-efficient, timely intervention that encourages responsible borrowing, builds customer trust, and reduces default risk—aligning with Geldium’s financial and ethical goals.

**3. Ethical and Responsible AI Considerations**

Our model is designed for fairness, transparency, and trust.

**Fairness Risks & Mitigations**

* **Demographic Bias:**  
  *Risk:* Younger customers or specific regions may be over-penalized.  
  *Fix:* Apply reweighing and monitor segment-level errors.
* **Proxy Bias:**  
  *Risk:* Income or tenure may unintentionally reflect age or class.  
  *Fix:* Use SHAP and adjust or drop indirectly biased features.

**Explainability**

Decision Trees allow clear rule-based explanations.  
Example: “High credit use + missed payments = high risk.”  
This supports confident decision-making by loan officers and customer teams.

**Responsible Use**

* Supports human review, not full automation
* Focuses on behavior, not assumptions
* Enables early, ethical customer engagement

**Ethical Principles Applied**

* **Transparency:** Model logic is traceable
* **Accountability:** Logs and audits ensure oversight
* **Privacy:** Only essential data used
* **Monitoring:** Regular fairness and performance checks