"What If Data Could Tell You Where to Invest?"

Capstone Project – Advanced Business Analytics Specialization
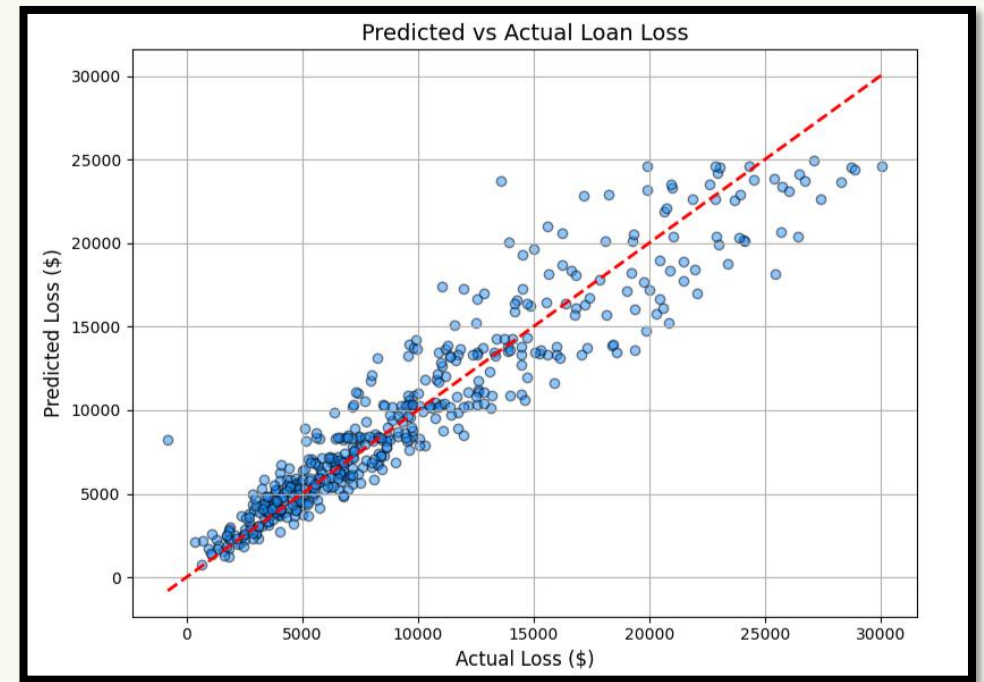Jean-François Jutras | June 2025

Investing $10M in Lending Club: Profitable Opportunity or Risk Trap?

- Lending Club offers peer-to-peer loans, with advertised returns of **5-7%**

- An investment fund is considering allocating **$10 million** into 36-month credit card loans from 2015.

- **Key question**: Can we build a strategy to **maximize return and control risk**?

- Our analytics project uses **predictive, descriptive, prescriptive, and optimization models** to guide investment decisions.

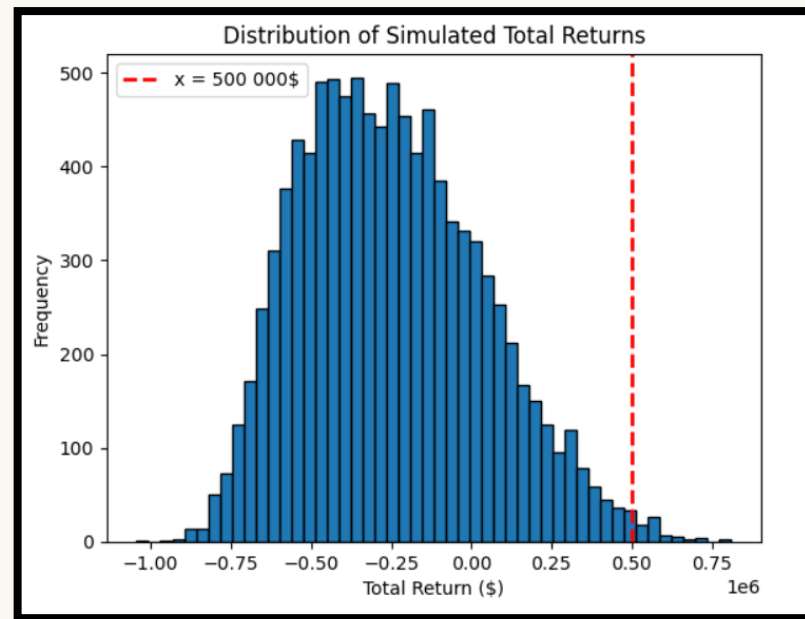# Best Predictive Model: Linear Regression for Loss Estimation

- We tested linear and logistic regressions, decision trees, and neural networks.

- Applied to *Charged-Off* loans only

- Predicting loan losses using many features

- Target variable : loss = loan_amnt – total_pymnt
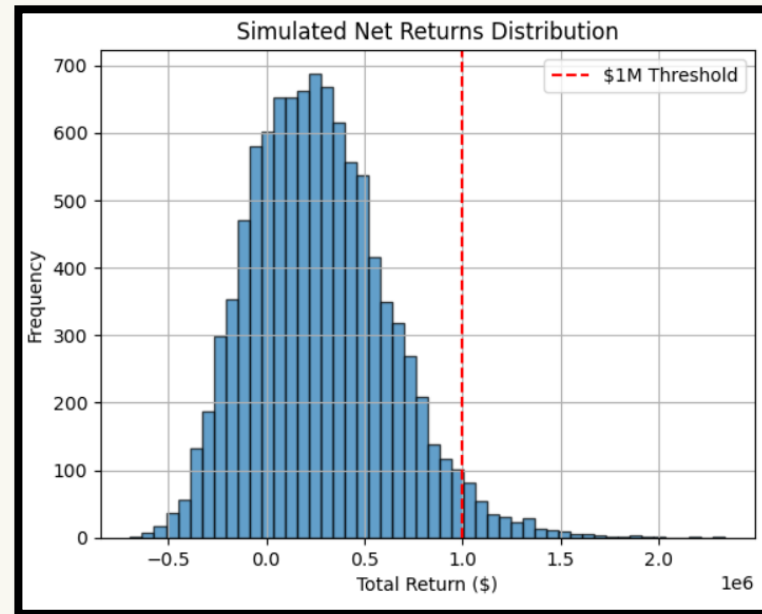
Adjusted R-squared

0,8933

Equal Allocation Across Clusters: Risky and Unprofitable

- We simulated a $2M investment in each of the 5 clusters (total $10M).
- Used **lognormal, normal, and beta distributions** to model interest, default, and loss rates:

  - **Results from 10,000 simulations**:
  - **Expected return ≈ –$250,000**
  - **Probability of return > $500,000: 0.5%**

- Equal allocation strategy exposes the fund to **high average loss and minimal upside**.

Distribution of Simulated Total Returns

Sharpe Ratio Optimization: Better Return, Less Risk

- Built a **simulation-based optimization model** to allocate funds and maximize the **Sharpe ratio**.

- Optimization considered risk-adjusted returns across all clusters.

  - **Optimized allocation results**:
  - **Expected return ≈ $246,808**
  - **Chance of return > $1M: 22%**

- Data-driven allocation improves outcomes and **aligns risk with expected reward**.

Recommendation: Invest Strategically with Analytics

- A naive equal investment strategy leads to **expected losses**.

- Our approach combines:

  - Predictive modeling (AUC = 0.8933)
  - Clustering for segmentation
  - Monte Carlo simulation
  - Optimization via Sharpe ratio

Recommendation

Invest selectively using these tools to **balance risk and return**.

Analytics are not just helpful—they're **essential for informed investment decisions.**

Thank you!

⟸ Questions or feedback are welcome

https://www.linkedin.com/
in/jean-fran%C3%A7ois-
jutras-13a4801b4/

«Let data guide the decision»