

PREDICTIVE MODELLING FOR CORPORATE BANKRUPTCY RISK



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BUSINESS QUESTIONS

- Which financial variables are most predictive of bankruptcy risk?
- How does the likelihood of corporate bankruptcy vary during economic recessions?





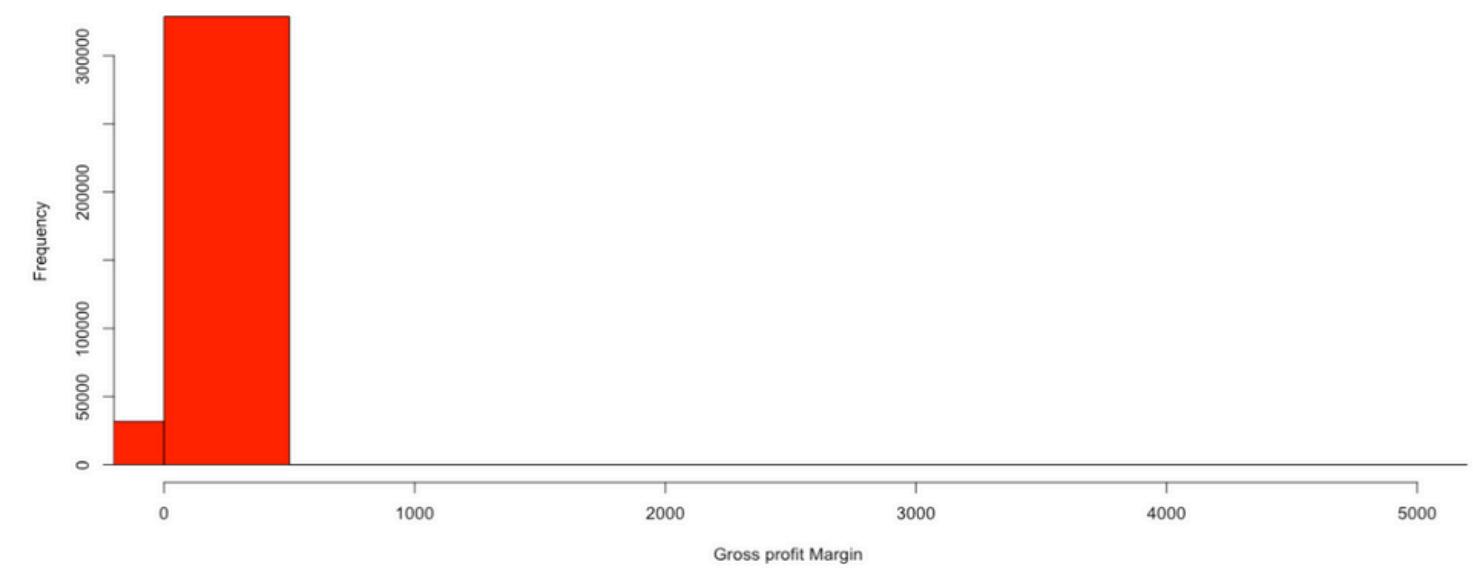
OUR DATA

- CUSIP Number
- Company Name
- Financial Year
- Financial Quarter
- Quarterly Current Total Assets
- Quarterly Total Assets
- Quarterly Total Common Equity
- Quarterly Cash Holdings
- Quarterly Cost of Goods Sold
- Debt Asset
- Net Profit Margin
- Current ratio
- Sales Growth
- Quarterly Long term Debt
- Quarterly Depreciation
- Quarterly Earnings per Share - EPSIQ
- Quarterly Total Current Liabilities
- Quarterly Total Liabilities
- Quarterly Net Income
- Quarterly Common Shared Traded
- Quarterly Closing Price
- NAICS
- Depreciation to assets ratio
- Cash holdings to revenue ratio
- Bankruptcy risk

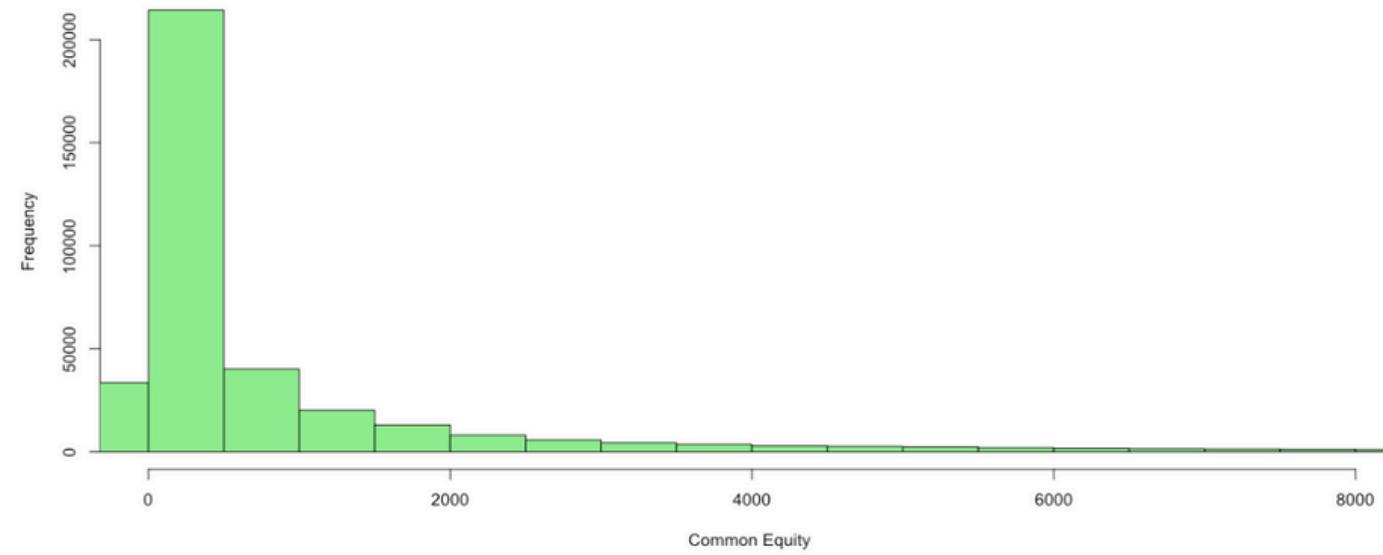




EXPLORATORY DATA ANALYSIS



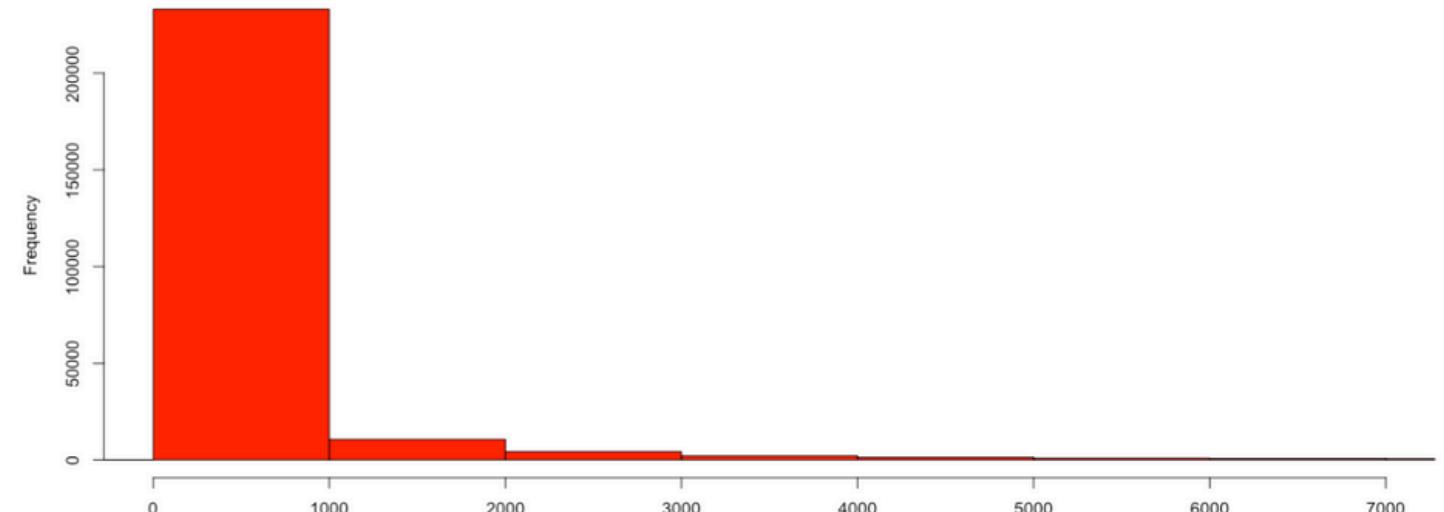
Distribution of gross profit margin



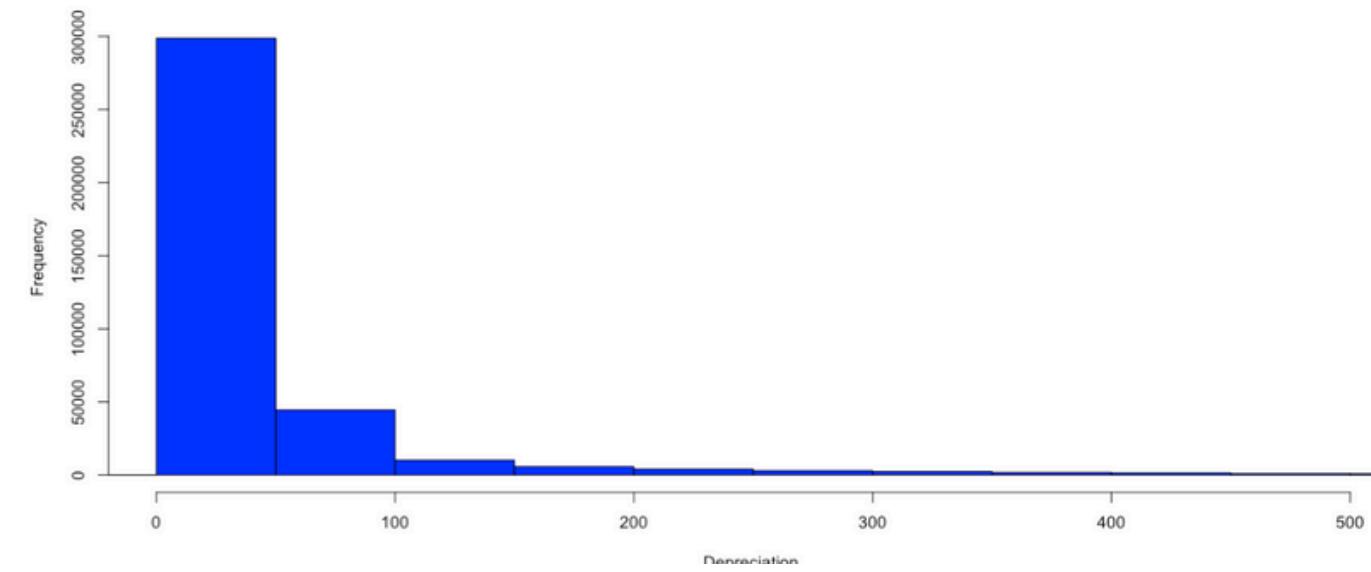
Distribution of common equity



EXPLORATORY DATA ANALYSIS



Distribution of Cash holdings

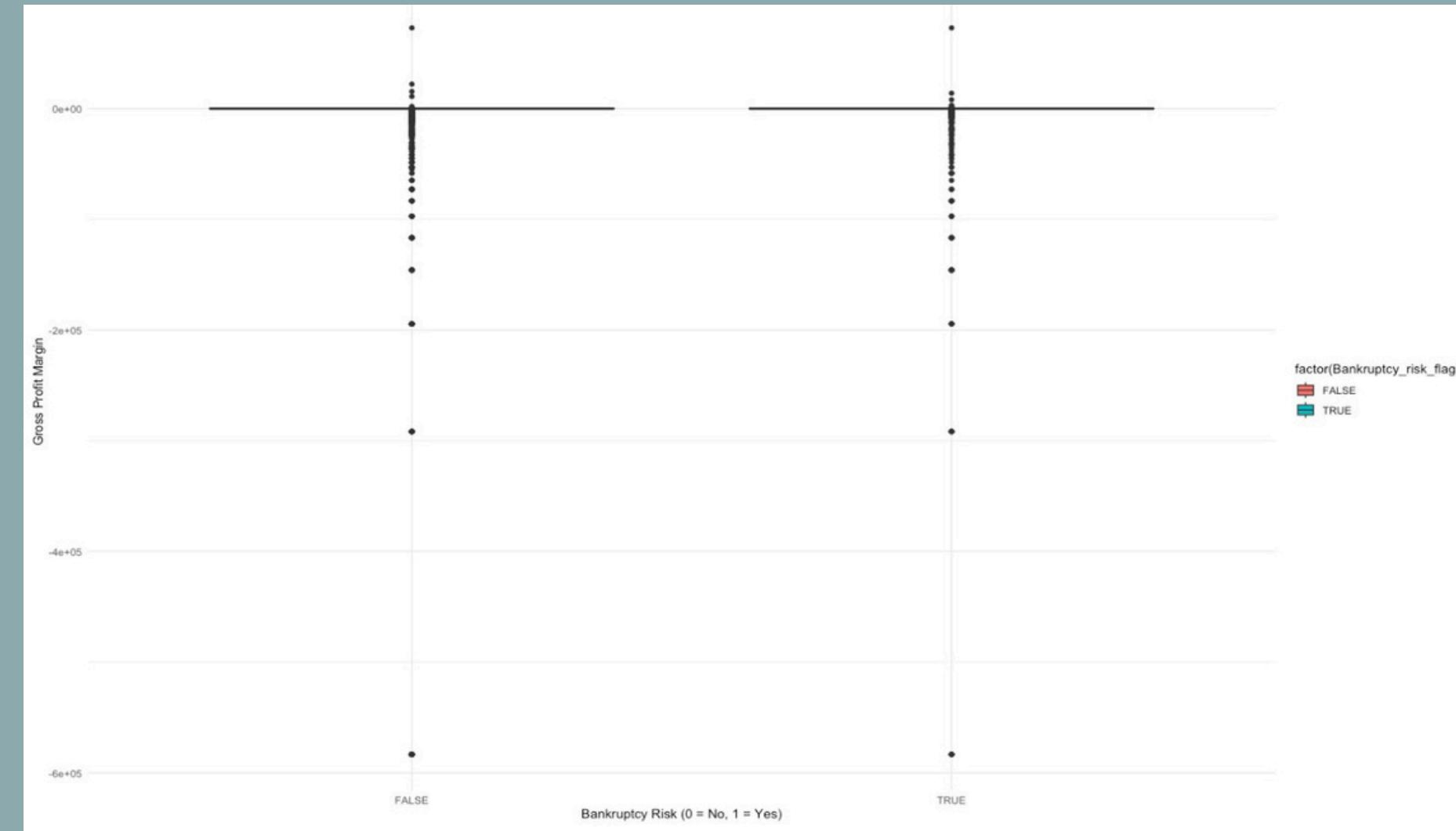


Distribution of depreciation



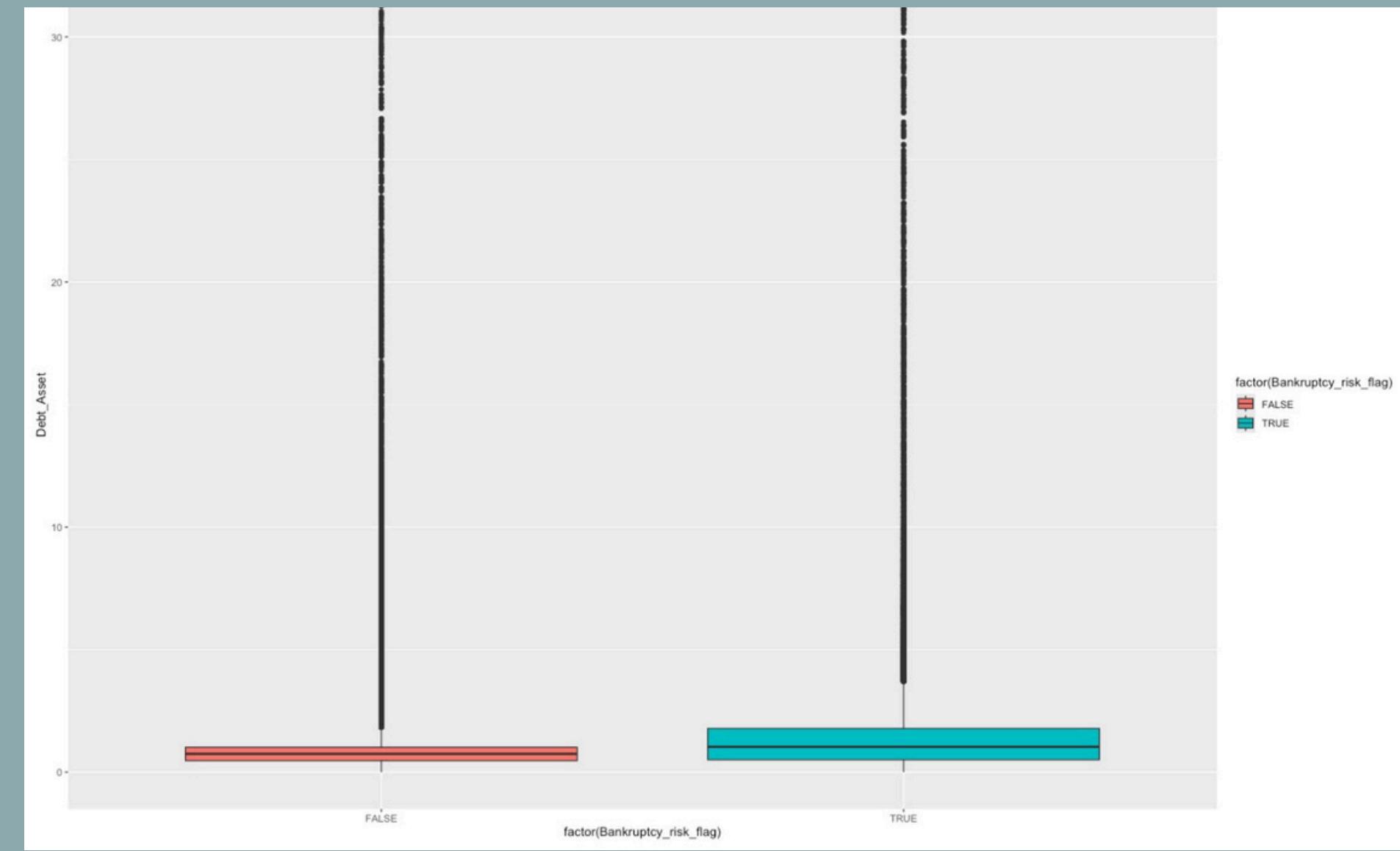
EXPLORATORY DATA ANALYSIS

Gross Profit Margin v/s Bankruptcy risk

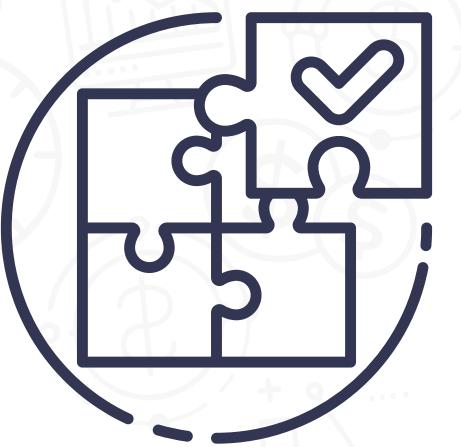




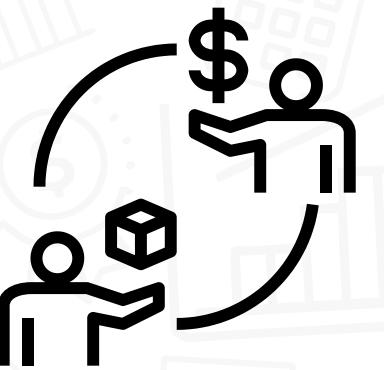
EXPLORATORY DATA ANALYSIS



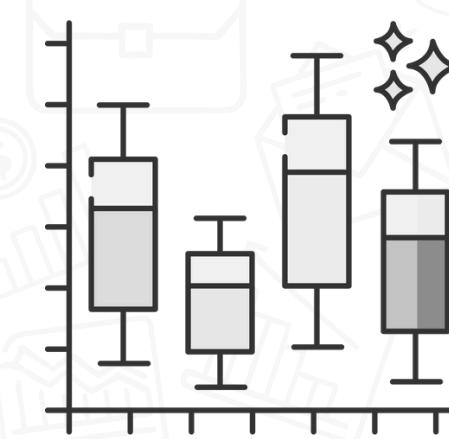
DATA CLEANING



IMPUTATION OF
MISSING VALUES



FILTERING BASED ON
TRADE ACTIVITY



OUTLIER
REMOVAL

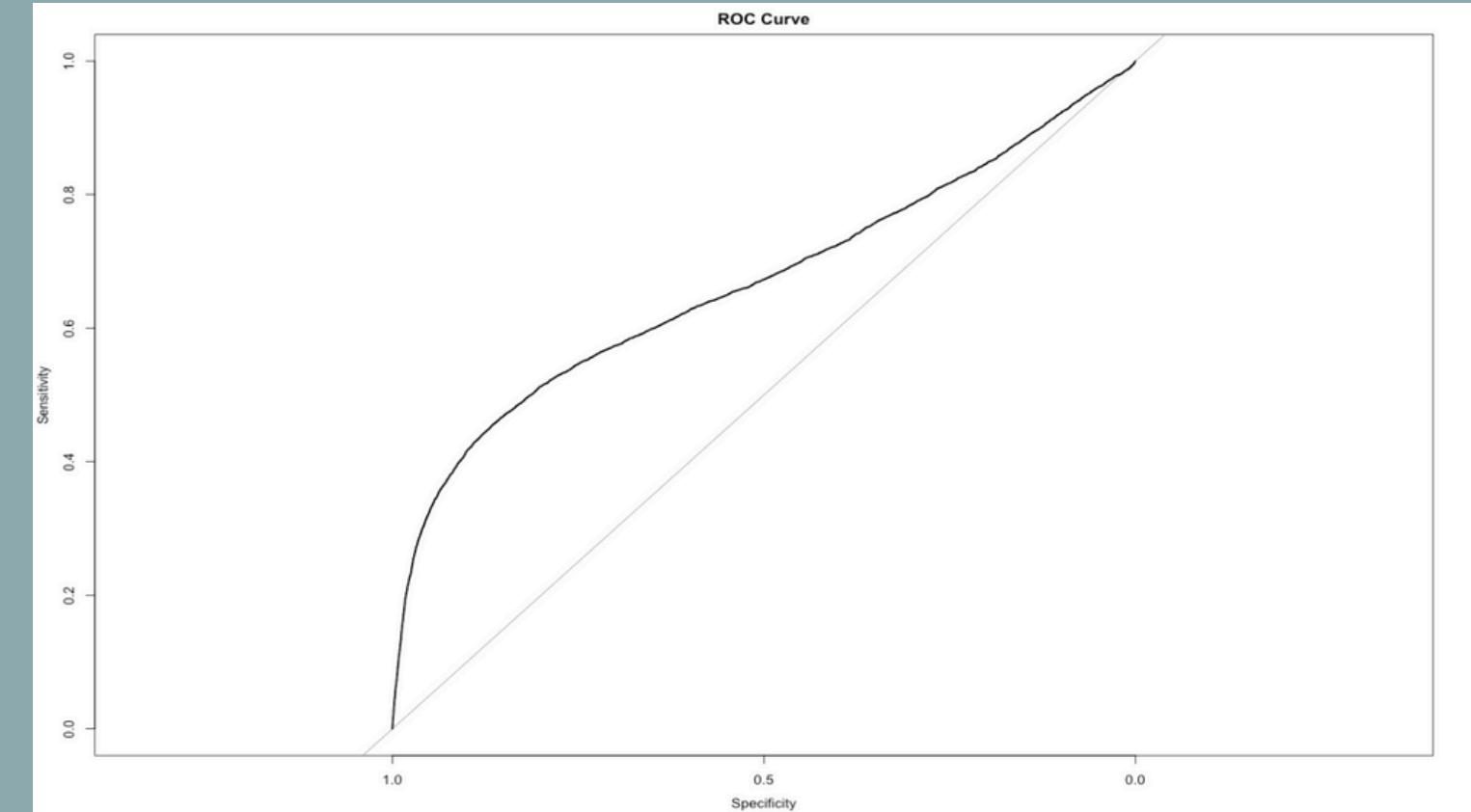


LOGISTIC REGRESSION

Model: P (Bankruptcy risk | Debt Asset, Net profit margin, depreciation to assets ratio, cash holding to revenue ratio, Current ratio, Sales Growth)

**ACCURACY
88.4%**

**AUC
66.7%**





INTERPRETATION

VARIABLE	COEFFICIENT	EXP(COEFFICIENT)
DEBT ASSET RATIO	4.795E-01	1.615267
NET PROFIT MARGIN	1.082E-04	1.000025
DEPRECIATION-ASSETS RATIO	-2.140E+00	0.9413032
CASH HOLDING- REVENUE RATIO	-4.108E+01	1.000048
CURRENT RATIO	8.095E-02	1.017125
SALES GROWTH	-1.069E-04	1.000107



INDUSTRY SPECIFIC

Manufacturing Industry

- Cash holding revenue ratio
- Net profit margin
- Current ratio

Health care industry

- Debt to asset ratio
- Cash holding revenue ratio
- Net profit margin

Retail Trade

- Current ratio
- Cash holding revenue ratio



TIME PERIOD SPECIFICS

TIME PERIOD	ACCURACY	AUC
PRE RECESSION	91.6	69.5
GREAT RECESSION	90.6	57.4
PRE PANDEMIC	86.9	58.3
PANDEMIC	84.3	62.8



RECOMMENDATIONS

Manage Debt Levels Carefully

- Avoid excessive debt and maintain a balanced debt-to-asset ratio.

Improve Profitability

- Control costs and optimize operations to boost net profit margin.

Build Cash Reserves

- Maintain strong cash reserves to ensure liquidity during challenges.

Strategic Reinvestment

- Use cash and profits to reinvest in growth and operational improvements.

Profit Diversification

- Higher profit margins should be accompanied by strong liquidity management and risk diversification strategies.





THANK YOU

