My Community Finance
Affordability Recommendations

Team M8

6 September 2023

Background

Richard Carter
12 reviews · GB

★★★★★

Wow I can't believe these people...

Inclusive

FCA

Responsible

Affordability

Business Requirements

1. Create a data-driven model to derive **loan affordability heuristics**

2. Identify the **most effective measures** for assessing customers' ability to pay

3. Assess the **significant factors and correlations** that contribute to and/or affect future affordability

4. Identify the **demographic factors** that may have an effect on metrics, and the significance of their impact

Affordability

1   **ESTIMATED DISPOSABLE INCOME =**
INCOME
−
(MONTHLY SPEND + DEPENDANT SPEND + MORTAGE OR RENT SPEND)

2   **AFFORDABILITY =**
ESTIMATED DISPOSABLE INCOME
−
AFFORDABILITY CUSHION %
−
MONTHLY LOAN + INTEREST REPAYMENT

Recommendations:
1. Apply different affordability cushion based on segment
2. Review cushions regularly based on inflation or interest rate changes

Data Analysis Approach

01 Exploration
- Based on Applicant data set
- Multiple applications

02 Cleaning
- MCF boundaries
- Extreme outliers

03 De-duplication
- Retain most recent application

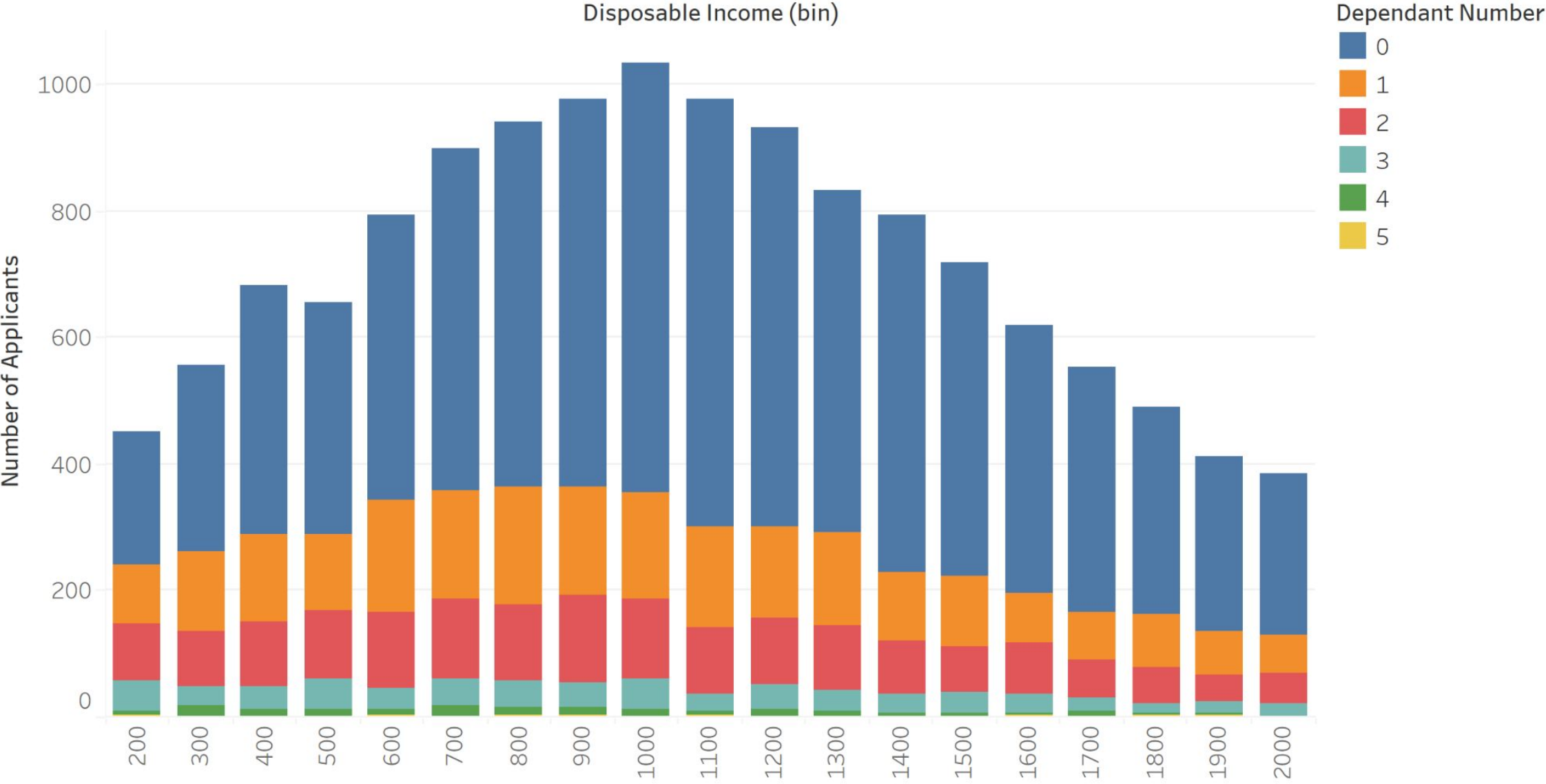**04 Analysis**
- Calculated columns - DTI, EDI
- Bureau data

05 Affordability Models
- Factors
- Scorecard

Applicant Estimated Disposable Income(EDI) and Employment Status

Applicant Estimated Disposable Income(EDI) and Dependant Number

Modelling

AFFORDABILITY FACTORS

01

Which applicant features have the highest impact on affordability

SCORECARD

02

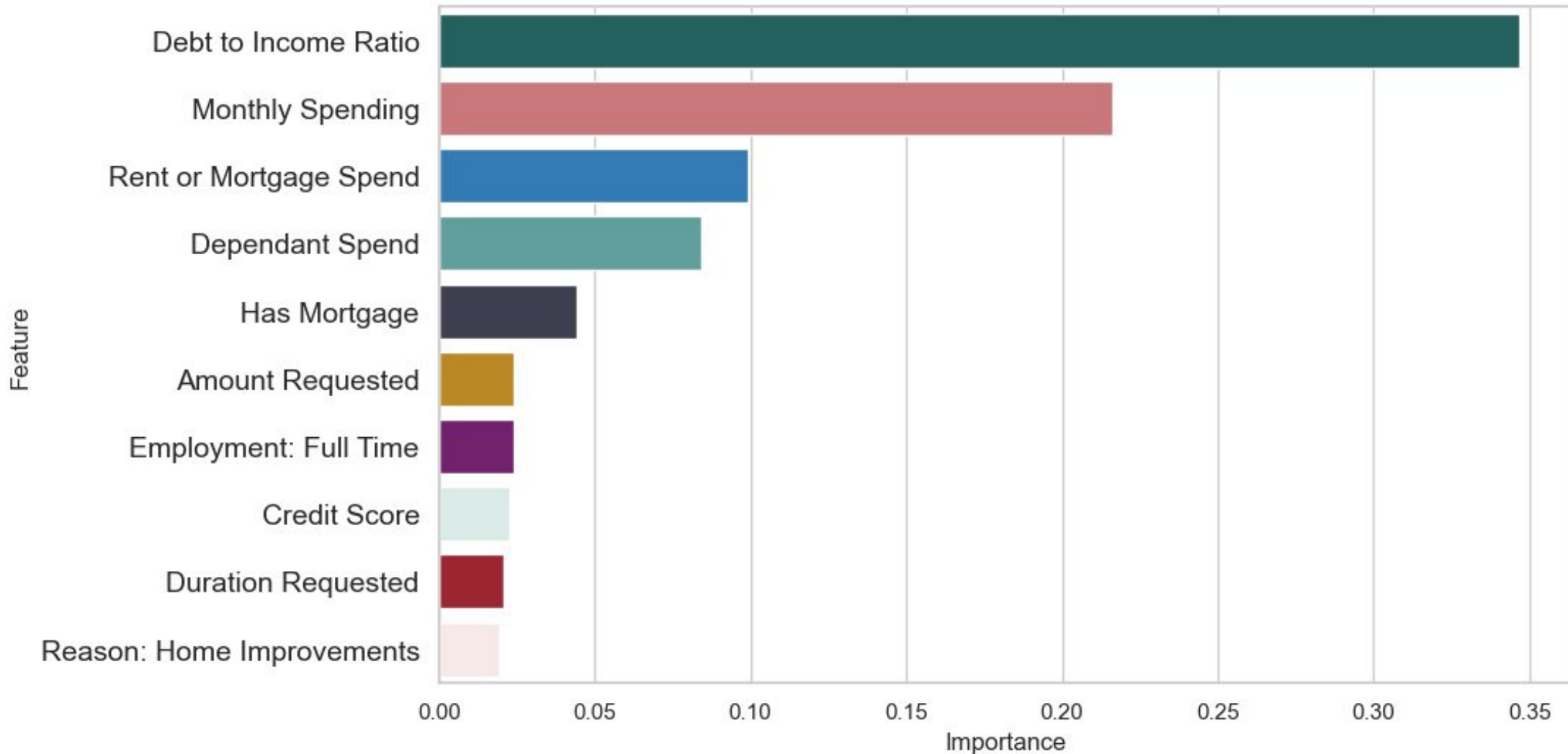Weighted scorecard based on most important features for each applicant

CASH FLOW
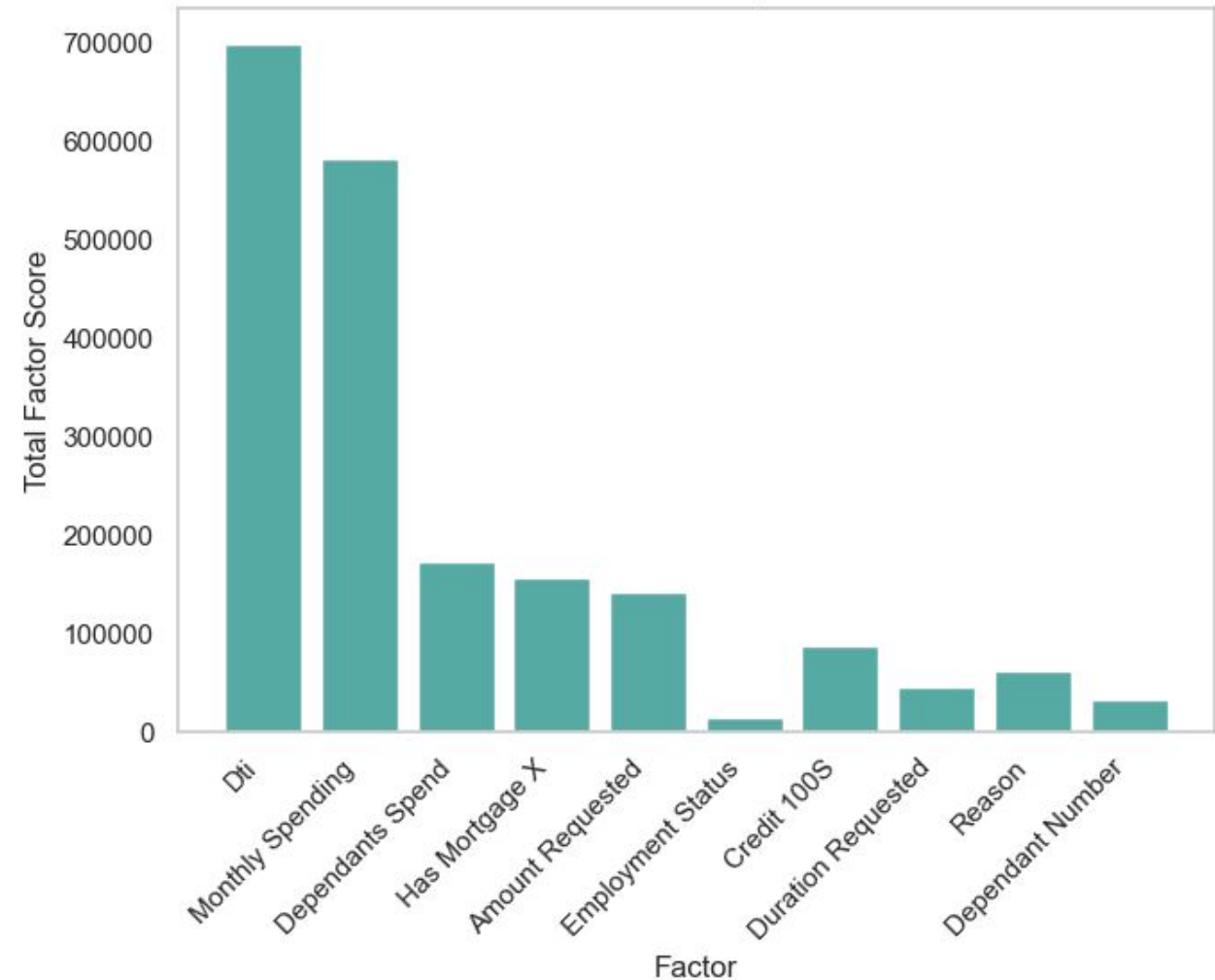
03

Applicant's bank account forecast including inflation.

Top 10 Factors: Affordability

Scorecard

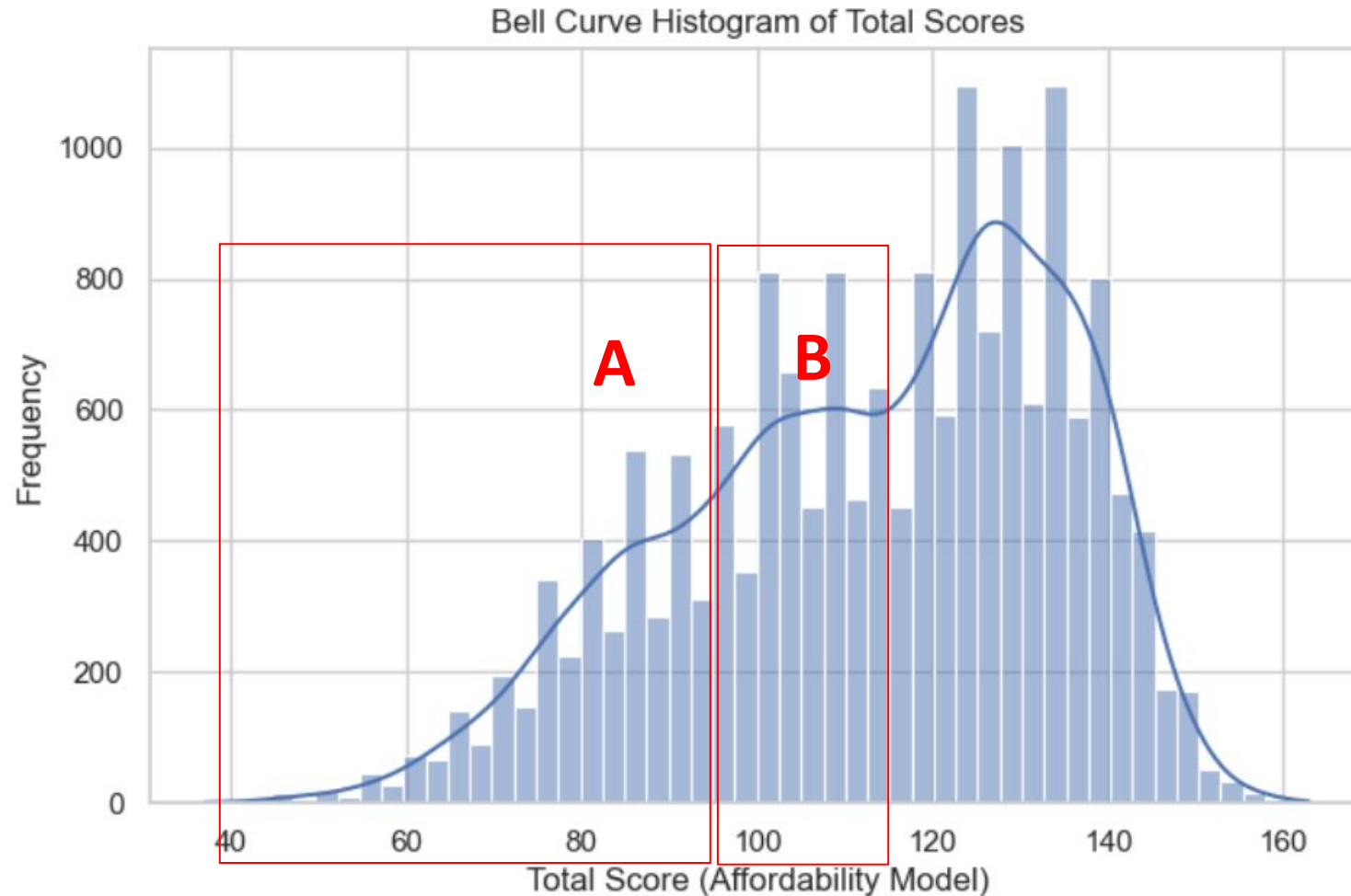Contribution of Each Affordability Factor to Total Score

Factor	High Affordability Risk	Medium Affordability Risk	Low Affordability Risk
1. Debt to Income	0	20	60
2. Monthly Spending	10	15/25	40
3. Rent / Mortgage Spend			
4. Dependant Spend			
5. Has Mortgage			
6. Amount requested			
7. F/T Employed			
8. Credit Score			
9. Duration Requested	0	4	8
10. Reason: Home Imp.	0	4	8

Scoring system

Distribution of Scores

Bell Curve Histogram of Total Scores

A = Model correct in prediction

B = Use score instead of model

Scorecard Results

Total Loan Value: £46m	Total Loan Value: £43m	Total Loan Value: £62m
<95	95-114	>=115
Fail Affordability	**Borderline Affordability**	**Good Affordability**
Score below 95 3,912 applicants 22% of sample **Recommendations**: Reject loan application	**Score 95-114** 4,578 applicants 26% of sample **Recommendations:** Use Open Banking data for cash flow affordability check	**Score over 115** 9,118 applicants 52% of sample **Recommendations:** Accept with budgeting advice letter. Review sample of Open Banking data

Clusters

Good Scores: 61%:
- Excellent score low debt 25%
- High score low debt 20%
- High score moderate debt 16%

Moderate scores: 25%:
- Moderate score low debt 18%
- Moderate score high debt 7%

Low Scores: 14%:
- Low score moderate debt 5%
- Low score high debt 9%

Cash flow checks

Select Open Banking data:

	uuid	amount_requested	duration_requested	interest_rate
0	c126ee34-8b2b-42ca-9025-b5d17e4affad	20000	60	24.6
1	c1322aef-bd4f-4eef-843d-61eba1cbf374	6000	48	24.6
2	594e1623-b3f0-44d5-ac8d-bf11e3f01d83	10000	36	24.6

Bank of England

6.8%

Current inflation rate
Target: 2%

CASH FLOW ANALYSIS INCLUDING LOAN REPAYMENT
6 month historic + 24 month forward

LIST of references failing check (overdrawn > 7 times)
LIST of excessive gamblers (gambling > total income)
LIST of applicants whose grocery & utility spend has dropped by > 25%

Demographic Affordability Insights

Avg Annual Salary:

	Avg. Annual Salary	Avg. Monthly Spending
Good Affordability	£36,924	£713
Borderline	£41,811	£1,145
Fail Affordability	£36,866	£1,283

Dependant Number:

	0	1	2	3	4	5	6
Good Affordability	67%	17%	12%	4%	1%	0%	
Borderline	58%	19%	16%	6%	2%	0%	0%
Fail Affordability	53%	19%	18%	7%	2%	0%	0%

Employment Status:
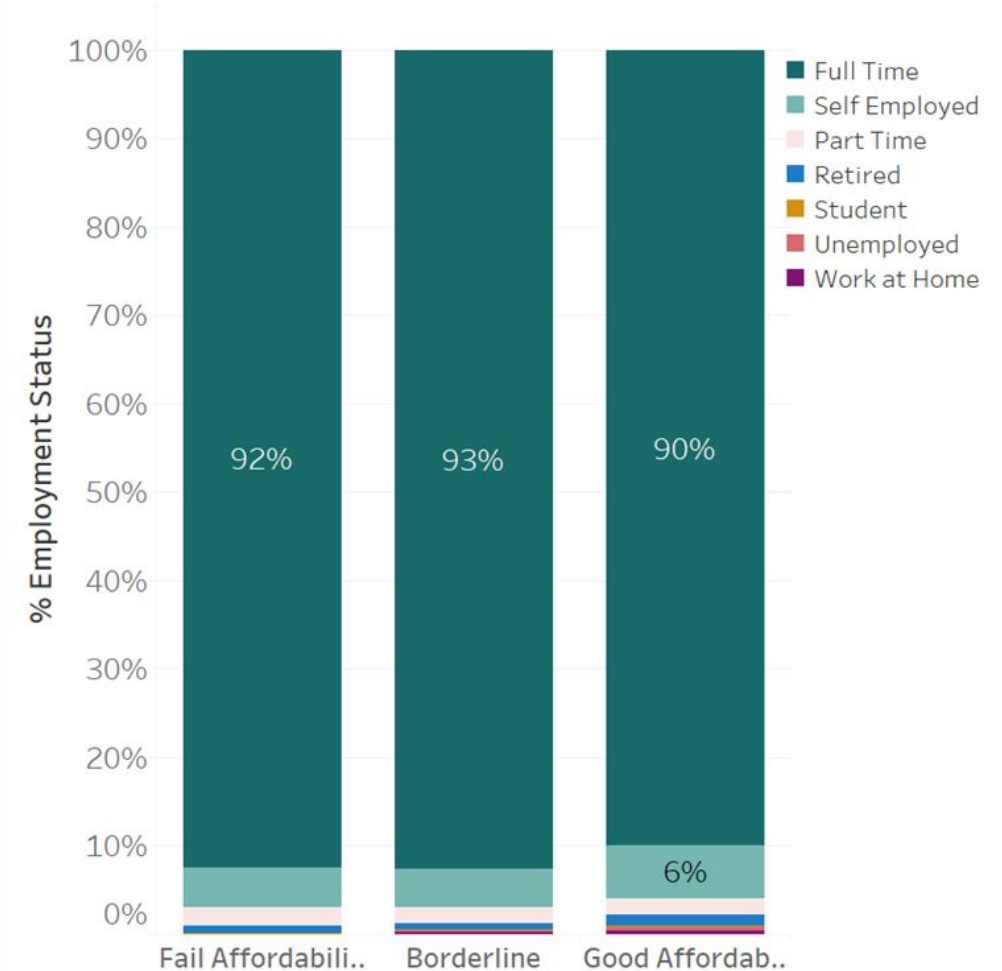
Recommendations

Forecasting Affordability:

1. Base Estimated Disposable Income on applicant declared Income minus Monthly Spend, Dependant Spend + Mortgage or Rent Spend

2. Add a minimum 10% cushion (review based on inflation / interest rate changes).

3. Weight the top 10 factors to create an individual applicant score

4. Reject applicants scoring under 95

5. Borderline applicants 95-114 should be reviewed with a cash flow forecast model
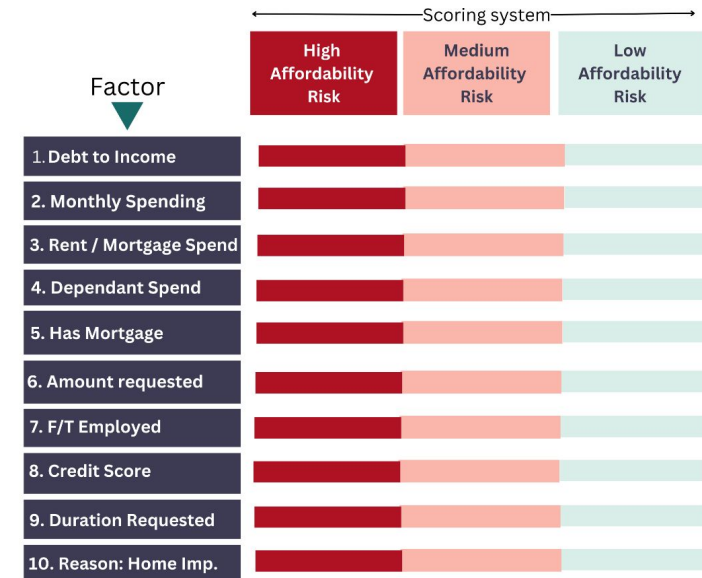
Recommendations

Approved loans:

1. Supply applicants with a welcome budget ("My Budget") - income, spend including loan repayment, cushion & inflation

2. Use Open Banking data to flag EDI changes

Thank you!
We'd love your questions & feedback

Appendices

Scorecard predictions

Boxplot of Total Score for False Positives and True Positives
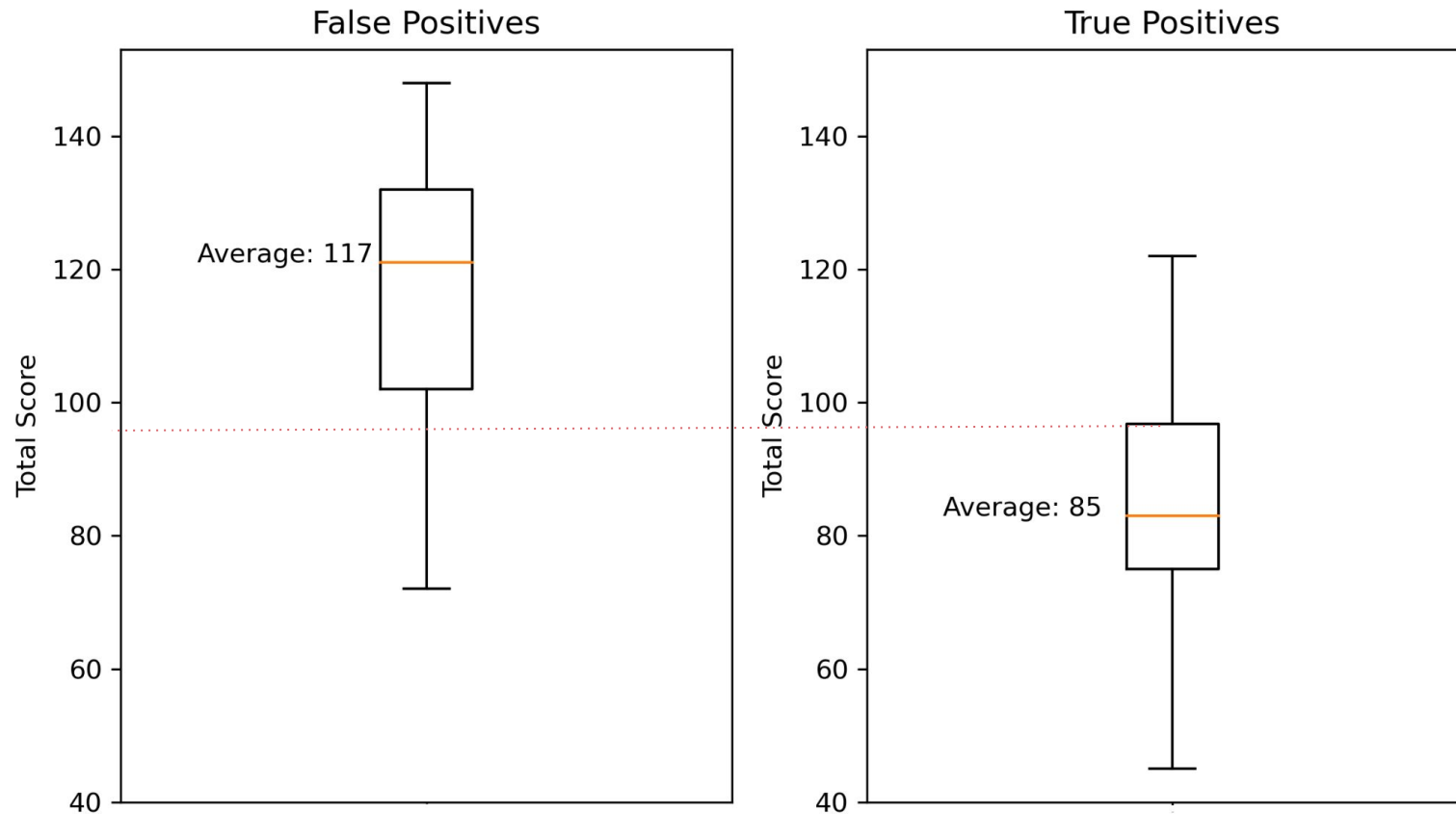
False Positives: model predicted affordability issues however applicant was ok.

True Positives: model was correct in its prediction of applicant having affordability issues.

Clusters

This was the original presented clusters slide. After feedback from the employer in the presentation we have replaced it with the clusters slide in the main body of the presentation.
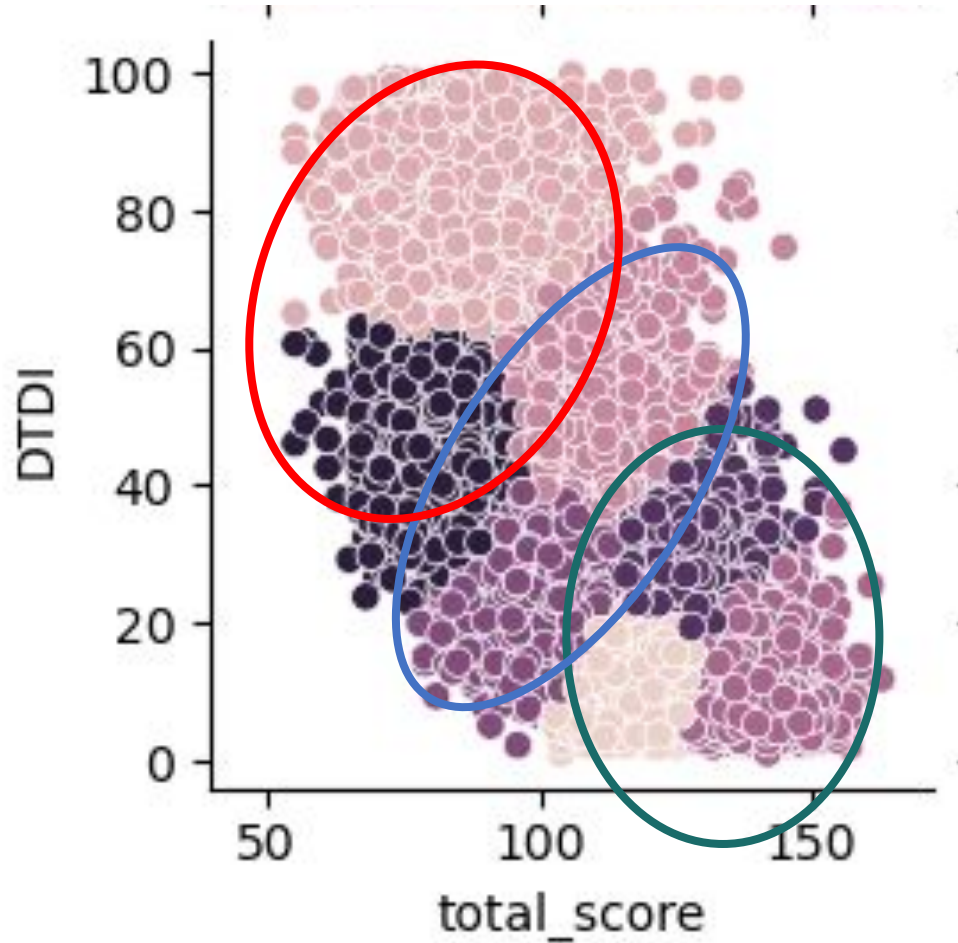
Relative size of each groups

Great score low debt 25%
High score low debt 20% } 61%
High score moderate debt 16%

Moderate score low debt 18% } 25%
Moderate score low debt 7%

Low score moderate debt 5% } 14%
Low score high debt 9%