



# BankRate Case Study

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# BankRate Background



- Founded in 1976 as Bank Rate Monitor
- Specializes in is personal loans
- Goal: Match the best lending partner for each individual customer

The Bankrate logo, featuring the word "Bankrate" in a bold, blue, sans-serif font, centered within a white square.

Bankrate

# Case

**Question:** They want to know if they can increase **revenue per application** by matching certain groups of customers to specific lenders.

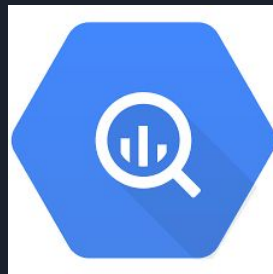
**Goal:** show the appropriate lender to each customer to maximize **approval rate** and **revenue**

**Three** lending partners, “A”, “B”, and “C”, each providing the same offer

- For each approval
  - Lender A pays \$250
  - Lender B pays \$350
  - Lender C pays \$150

**Sample Size:** 100,000 customers

Software/Language Choice: BigQuery SQL, Tableau





# Exploring Variables Relationship with Approvability

10,976 Applications Approved/ 100,000 Applications

- Lender Rates
- Employment Status/ Sector
- Monthly Gross Income
- FICO Score/ Grouping
- Reason
- Loan Amount

# Lender Approval Rates

## Lender A:

- Received 55,000 applications
- Approved 6,031
- 11% approval rate
- Revenue: \$1,507,750

## Lender B:

- Received 27,500 applications
- Approved 1,960
- 7% approval rate
- Revenue: \$686,000

## Lender C:

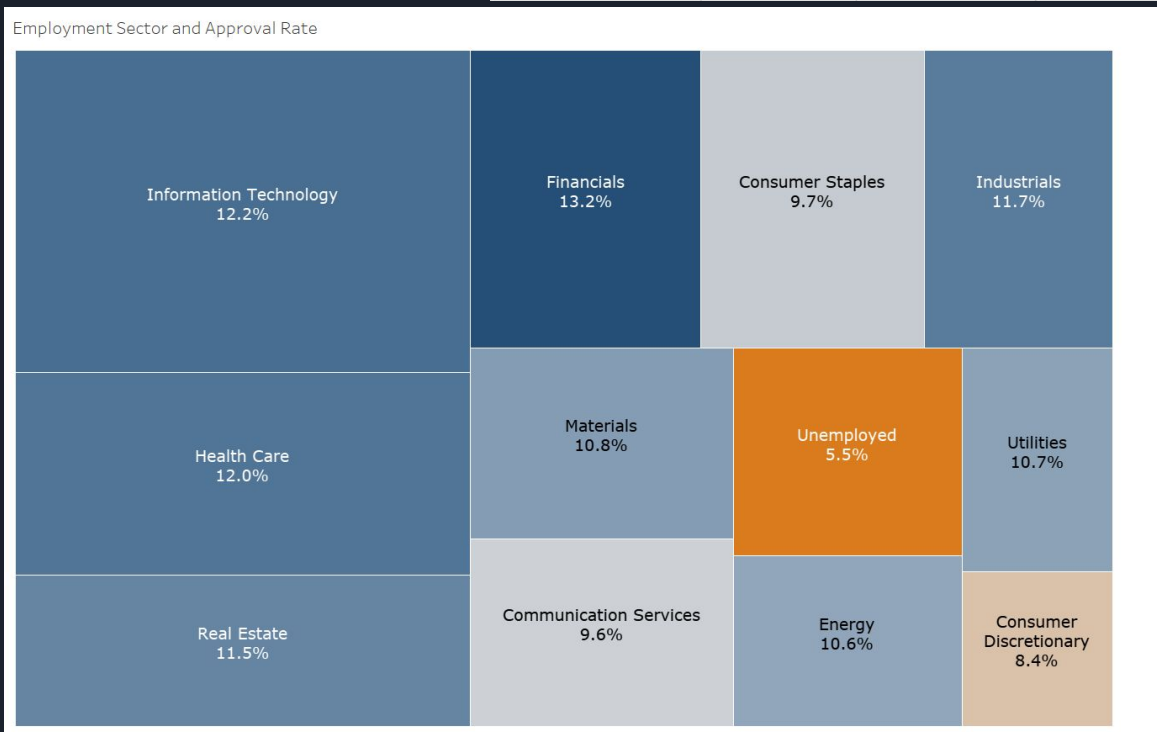
- Received 17,500 applications
- Approved 2,985
- 17% approval rate
- Revenue: \$447,750



# Employment Status/ Sector

Employment_Status ▾	Total_Applications //	Approved_Application //	Approval_Rate //
unemployed	6406	352	0.054948...
full_time	76530	9238	0.120710...
part_time	17064	1386	0.081223...

- 12 Sectors
- Most applications from Informations Technology Employees
- Highest approval ratings to finance employees
- Could be due to higher income
- Full Time applicants
  - Make up 84% of approved apps
  - 12% approval rate



Box size indicates the total amount of applications  
Percentage gives us the approval rates

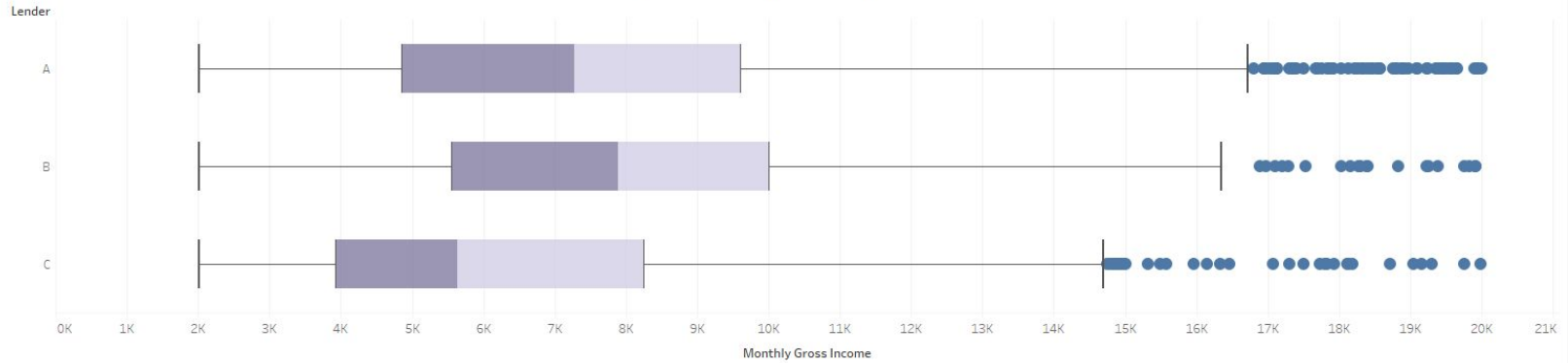
# Employment Status

Employment_Status ▾	Lender ▾	Approved_Count ▾
unemployed	A	89
full_time	A	5238
part_time	A	704
unemployed	B	27
full_time	B	1757
part_time	B	176
unemployed	C	236
full_time	C	2243
part_time	C	506

Employment_Status ▾	Total_Applications	Approved_Application	Approval_Rate
unemployed	6406	352	0.054948...
full_time	76530	9238	0.120710...
part_time	17064	1386	0.081223...

- Full Time applicants
  - Make up 84% of approved apps
  - 12% approval rate
- Highest approval rate for Unemployed & Part-Time applicants
  - Lender C, 4%
- 90% of Lender B's approvals are Full-Time

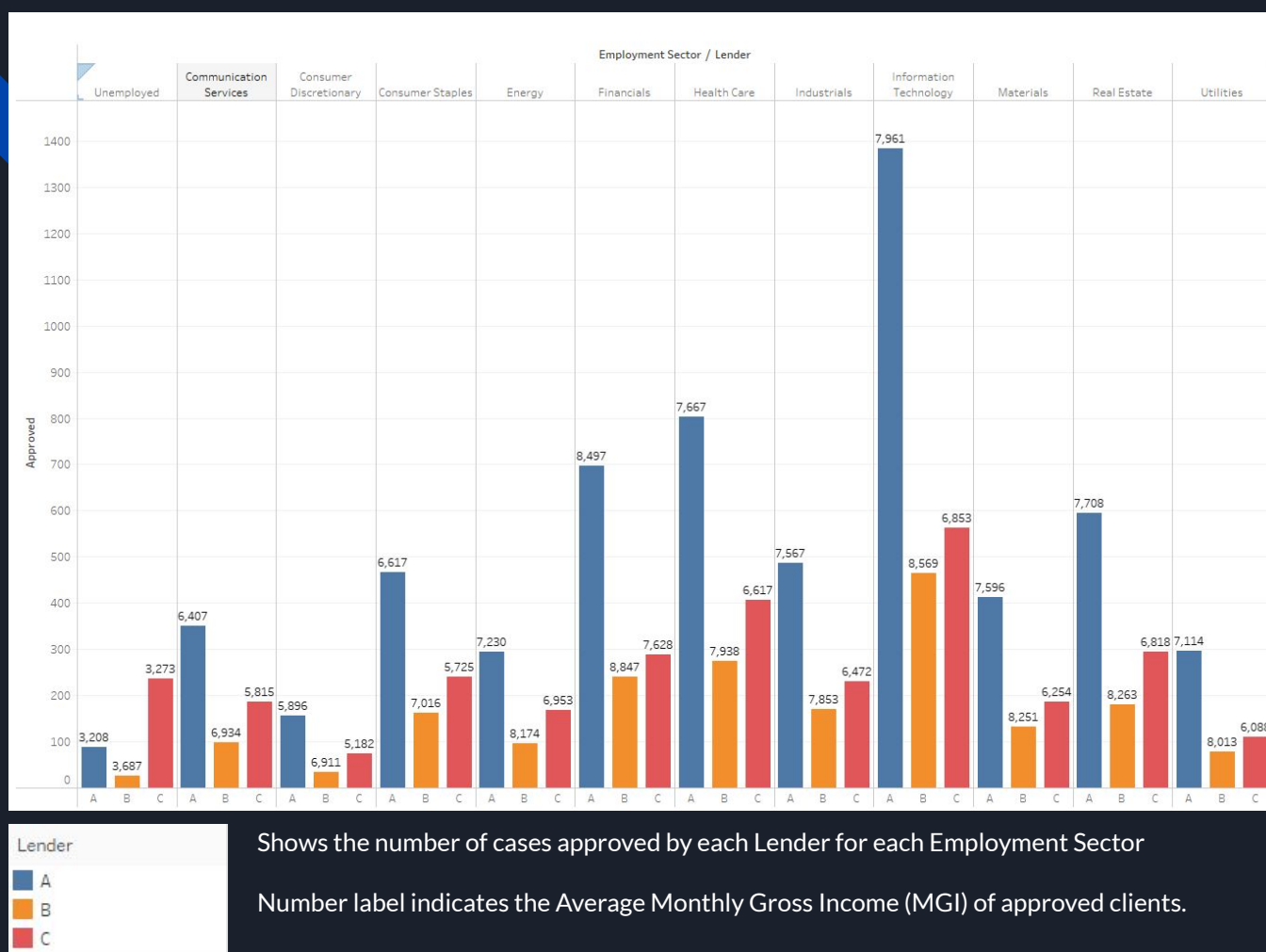
# Monthly Income of Approved Applications



Lender	Avg. Monthly Gross Income	Median Monthly Gross Income
A	7,507	7,272
B	8,054	7,892
C	6,322	5,634

Boxplot gives us a general idea of the monthly gross income range that Lenders approve

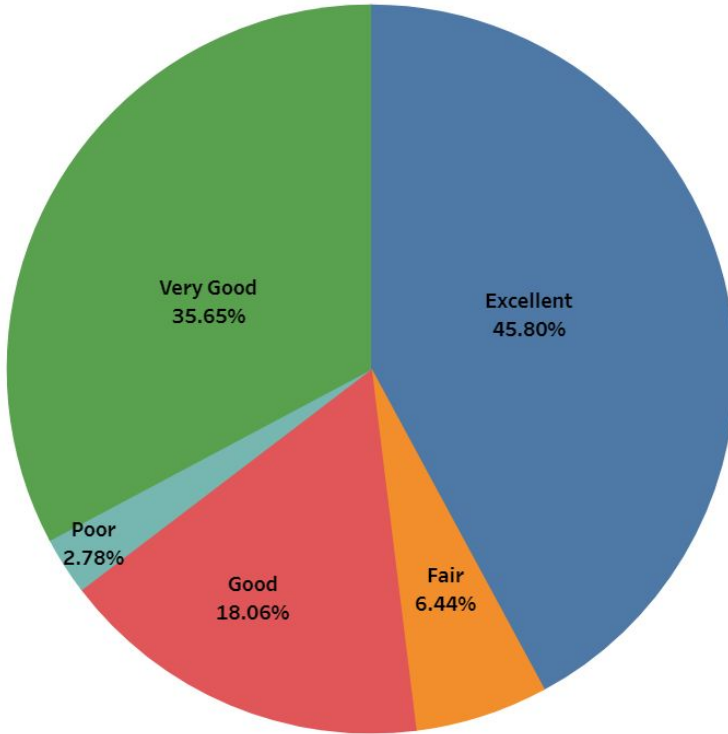




- Lender A has the most overall approvals
  - Most being in IT
- Least amount of approval for those Unemployed
- Highest (MGI) in Finance (\$24,972)
- Lowest (MGI) in Unemployed (\$10,168)
- Low relationship between Monthly Gross Income and approval

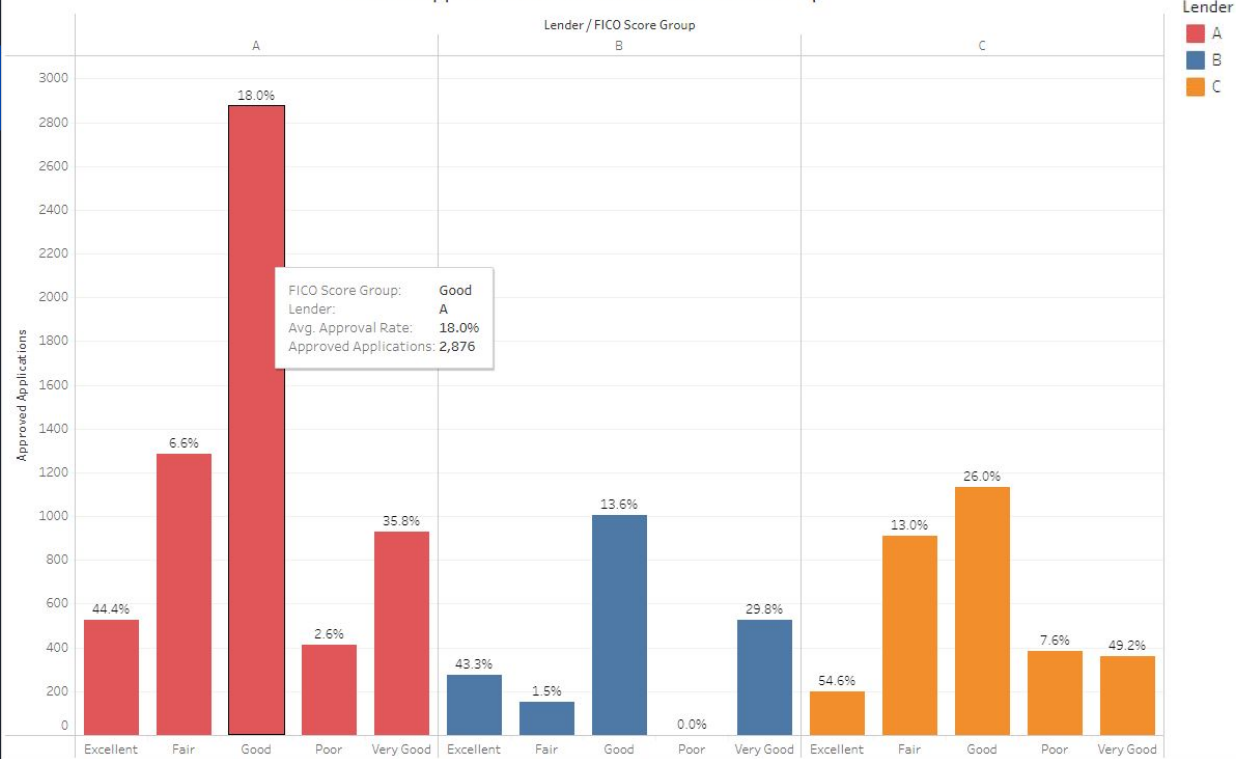
# FICO Score

Average Approval Rate Based on FICO Score Group



- Average FICO Score - 629
- Average **Approved** FICO Score - 697
- Lender A average **Approved** FICO score
  - 697
- Lender B average **Approved** FICO score
  - 732
- Lender C average **Approved** FICO score
  - 675
- Highest approval rates are in a Very Good or Excellent FICO Score Group
  - 81.45% total rate

## Lender Approval Rate Based on FICO Score Group



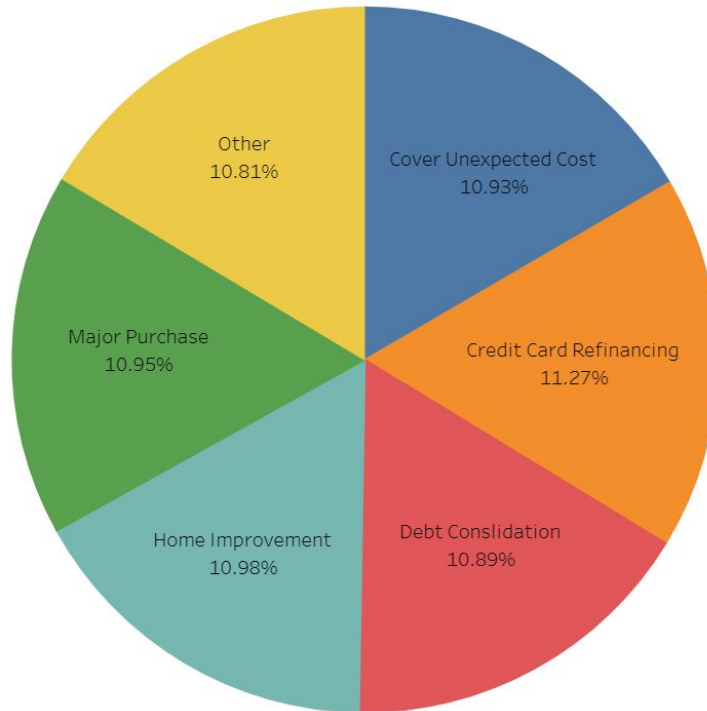
- Most approved applications in **Good** FSG
- Lender B did not approve any Poor FSG
- Lender C had the highest MAX approval rate
  - 49.2%

Chart shows the number of approved applications based on FICO Score Group (FSG)  
 Percentage indicates the average approval rate by the lender within FICO Score Groups (FSG)

No significance relationship between the Reason and approval rate

- All reasons have a around an 11% rate of approval

Reasons Average Approval Rate



# Loan

- Average Loan amount: \$45,234
- MIN Loan amount: \$5,000
- MAX Loan amount: \$100,000
- **AVG approved** Loan Amount: \$41,957
- Lender A: AVG approved Loan Amount - \$42,418
- Lender B: AVG approved Loan Amount - \$41,791
- Lender C: AVG approved Loan Amount - \$41,136





# Key Takeaways

- Variables that have a great effect on approval rates are
  - Employment Status, Employment Sector, and FICO Score Groups
- Lender A should be matched with
  - Applicants with an Monthly Gross Income range of \$6,500 - \$7,500 and \$17,000 - \$20,000
  - Applicants looking for higher loan amounts as their average approved loan amount is higher
- Lender B should be matched with
  - Applicants with an Monthly Gross Income range of \$7,000 - \$8,000
  - IT, Healthcare, and Finance workers with a Monthly Gross Income range of \$7,500 - \$8,500
- Lender C should be matched with
  - Unemployed and Part-Time applicants due to their higher approval rate non-Full-Time applicants
    - 4% approval rate for these (about 3% higher than Lender A and B)
  - Applicants with poor FICO Score Groups

# Maximizing Revenue

- Based on analysis and findings we learned how to increase approval rates
  - To decrease rejection rates and opportunity costs
  - Maximizing revenue
- Decreasing rejected applications to Lender B (having the lowest approval rating of 7%) and diverting them to either Lender A or C can significantly increase approval rates
  - Which could increase revenue by \$150 - \$250 if approved by lenders A or C vs. a rejected application from Lender B yielding in \$0 revenue
- Appropriately matching Employment Sector and Monthly Gross Income to Lenders can allow a Lender B to approve more applications
  - This could maximize revenue because Lender B pays the most per approval (\$350)



Thank You!

