



# Saving Your Credit Score: Analysis of Small Business Loans

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Kaggle:  
Should This Loan be Approved or  
Denied?

- A large and rich dataset from the U.S. Small Business Administration (SBA)
- SBA loans from 1970-2014

## Dataset Size

Rows: 899164

Columns: 27

## 27 Columns


Name of business, bank, state, gross amount, term, approval date, default date...

# Data Set

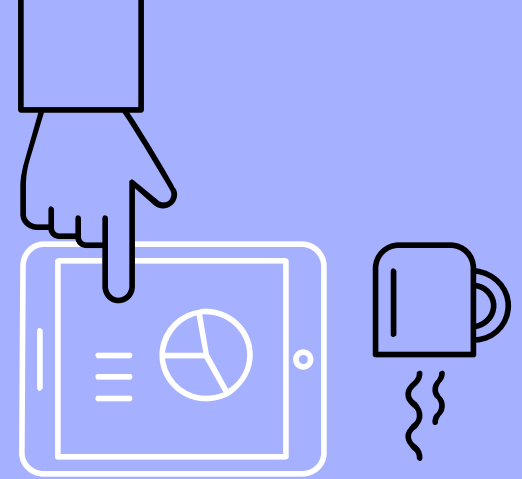
	loannr_chkdgt	name	city	state	zip	bank	bankstate	approvaldate	approvalfy	term	noemp	newexist	createjob
0	1000014003	ABC HOBBYCRAFT	EVANSVILLE	IN	47711	FIFTH THIRD BANK	OH	1997-02-28	1997	84	4	2.0	0
1	1000024006	LANDMARK BAR & GRILLE (THE)	NEW PARIS	IN	46526	1ST SOURCE BANK	IN	1997-02-28	1997	60	2	2.0	0
2	1000034009	WHITLOCK DDS, TODD M.	BLOOMINGTON	IN	47401	GRANT COUNTY STATE BANK	IN	1997-02-28	1997	180	7	1.0	0
3	1000044001	BIG BUCKS PAWN & JEWELRY, LLC	BROKEN ARROW	OK	74012	1ST NATL BK & TR CO OF BROKEN	OK	1997-02-28	1997	60	2	1.0	0
4	1000054004	ANASTASIA CONFECTIONS, INC.	ORLANDO	FL	32801	FLORIDA BUS. DEVEL CORP	FL	1997-02-28	1997	240	14	1.0	7

# Goals

- What factors tend to cause a loan to be defaulted on.
- Create a model to predict which approved loan applications will default on their loan.



Hi, I have a small business. How can I get a loan and not default on it?



# What is SBA ?

## Requirements and Tips

### The Small Business Administration

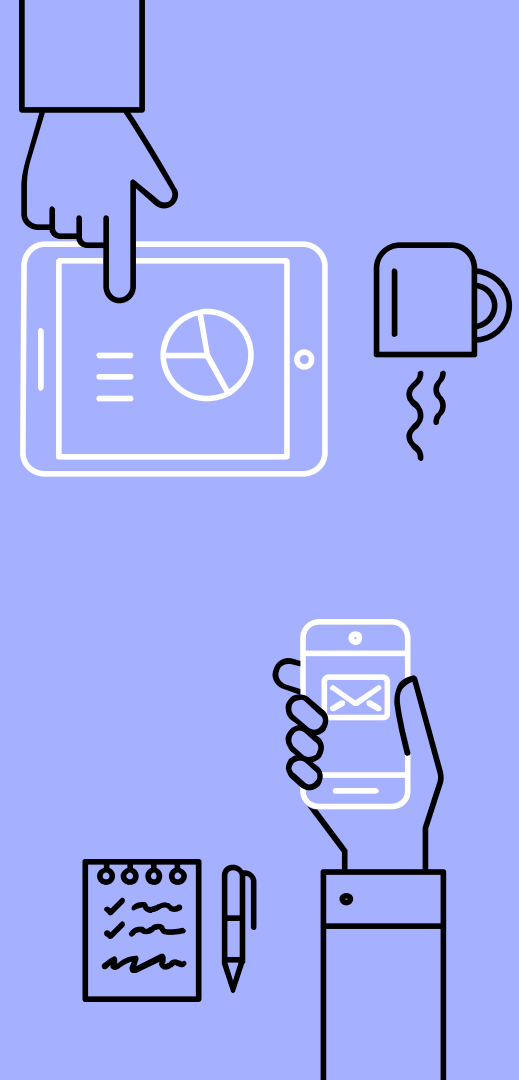
- ▶ Provides support to small businesses and entrepreneurs.
- ▶ Connects businesses with lenders to help grow their business.

### Requirements

- ▶ Must be a legally operating business in the USA.
- ▶ Cannot be funded by another lender.

### Deciding factors

- ▶ How you get your income
- ▶ Business location
- ▶ Business size
- ▶ New or existing



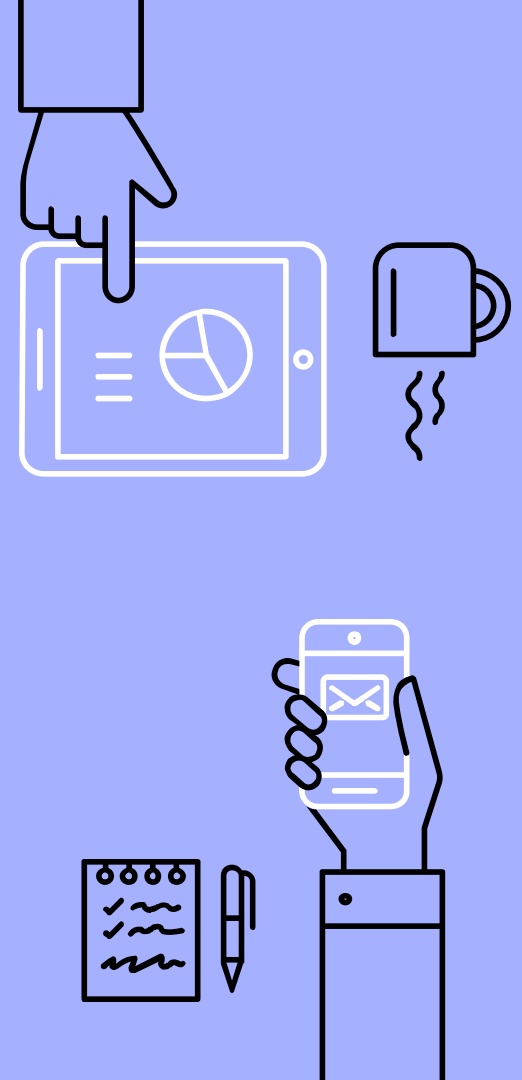
# How to get a loan?

## Personal

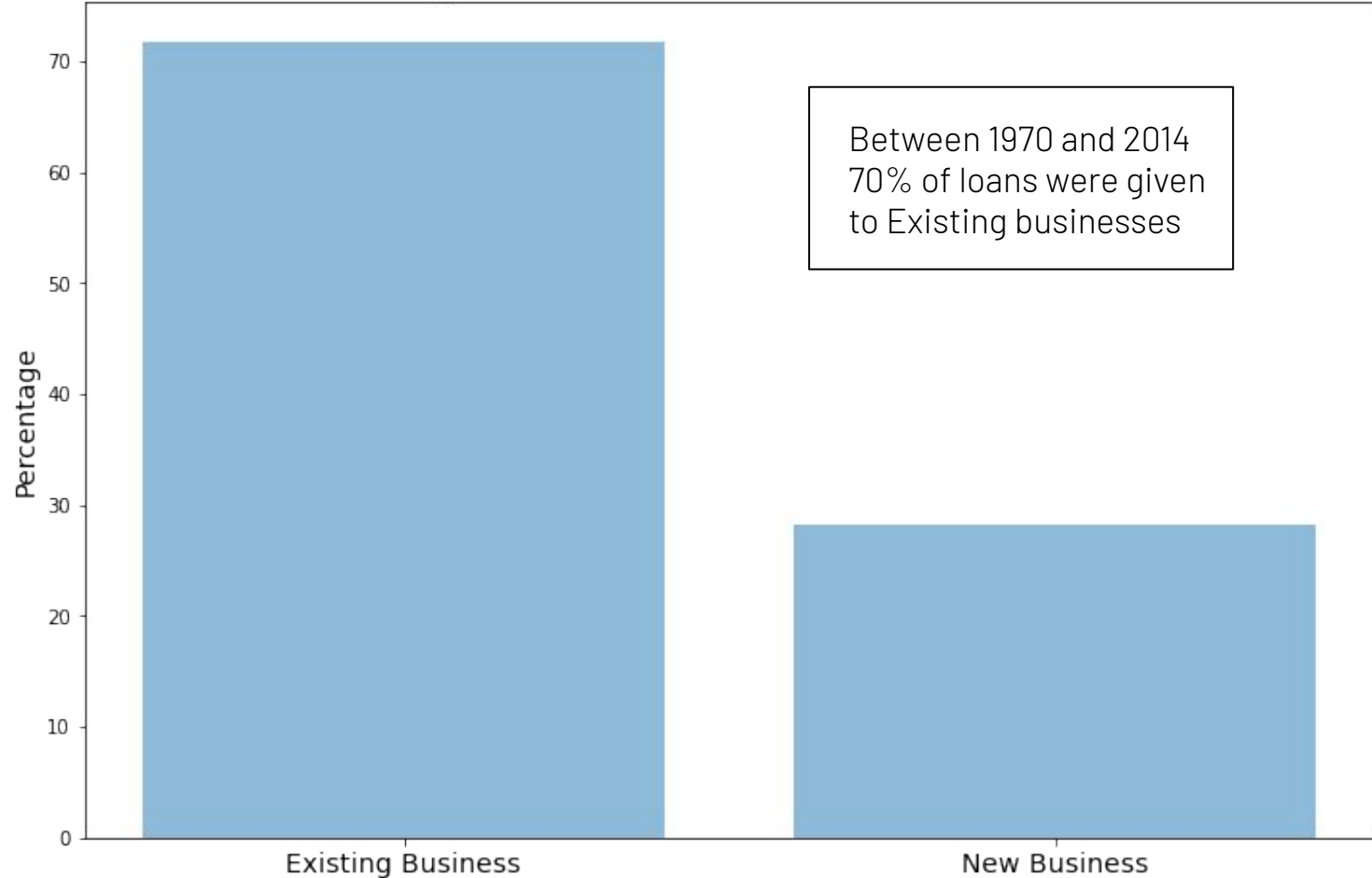
- Credit Score
- Interview with the banks
- Personal Record

## Business

- Existing or New
- Bank
- Industry
- Loan Terms
- Loan Amounts



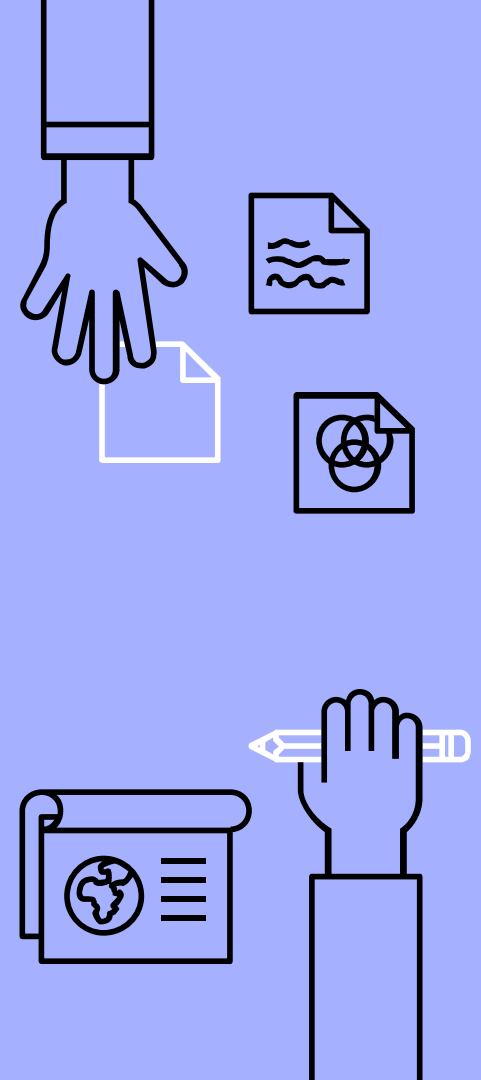
## Existing vs New Businesses with SBA Loans



# Factors that play a role in defaultness

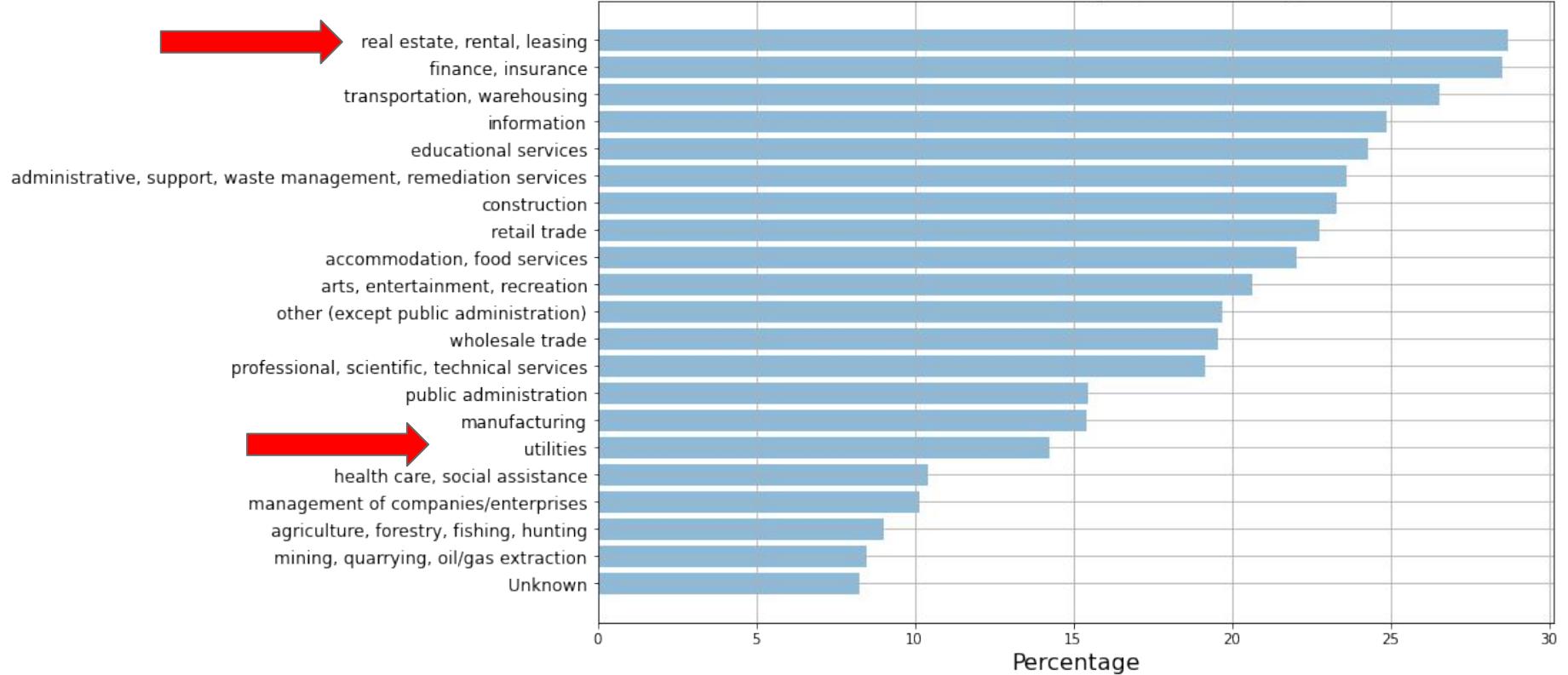
- Identified 5 factors from the SBA website as well as Business.org
- Analyzed 15 different features
- Our findings are consistent with these sites

Features
Industry
Year
Loan Term
Loan Amount
Bank

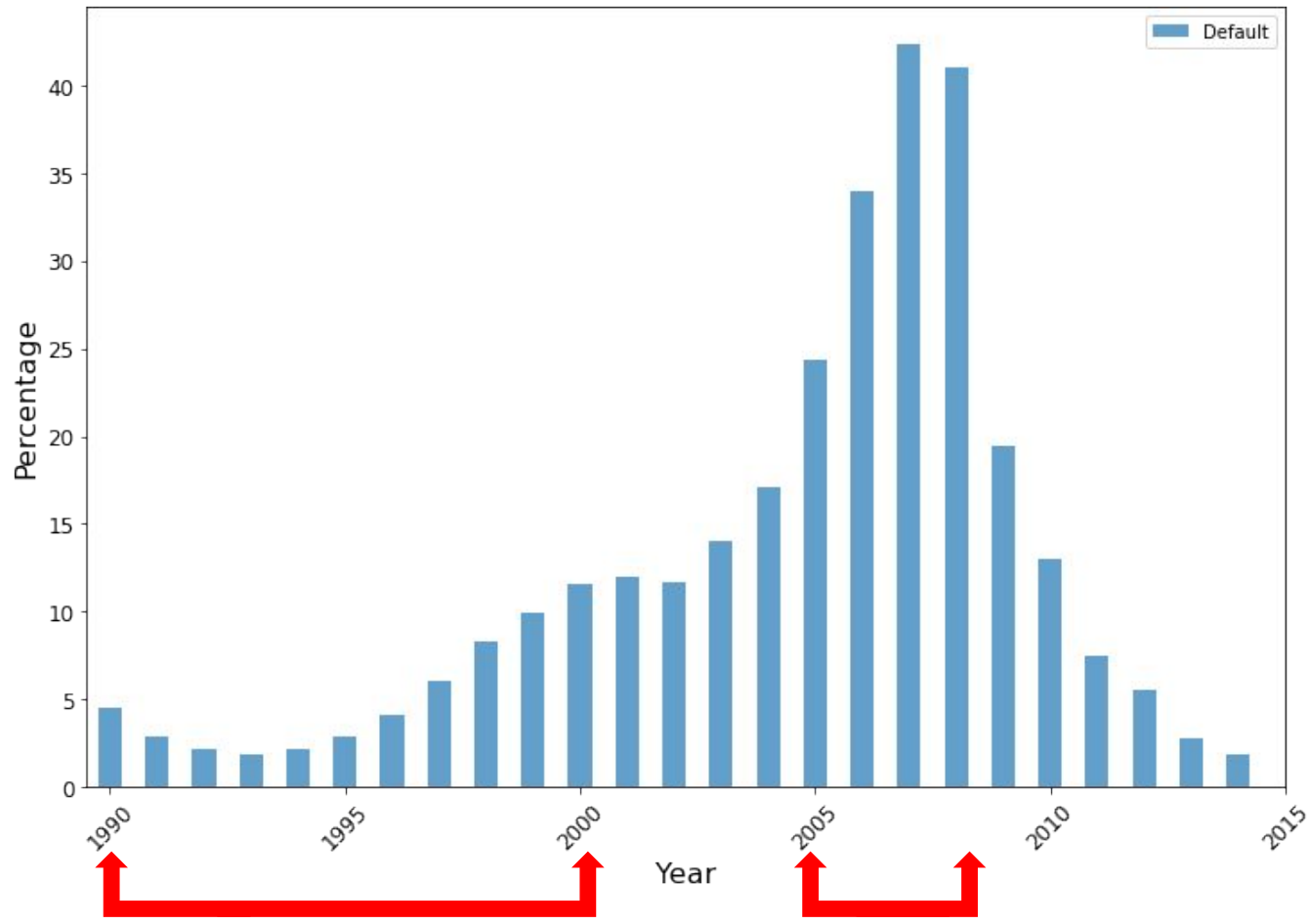




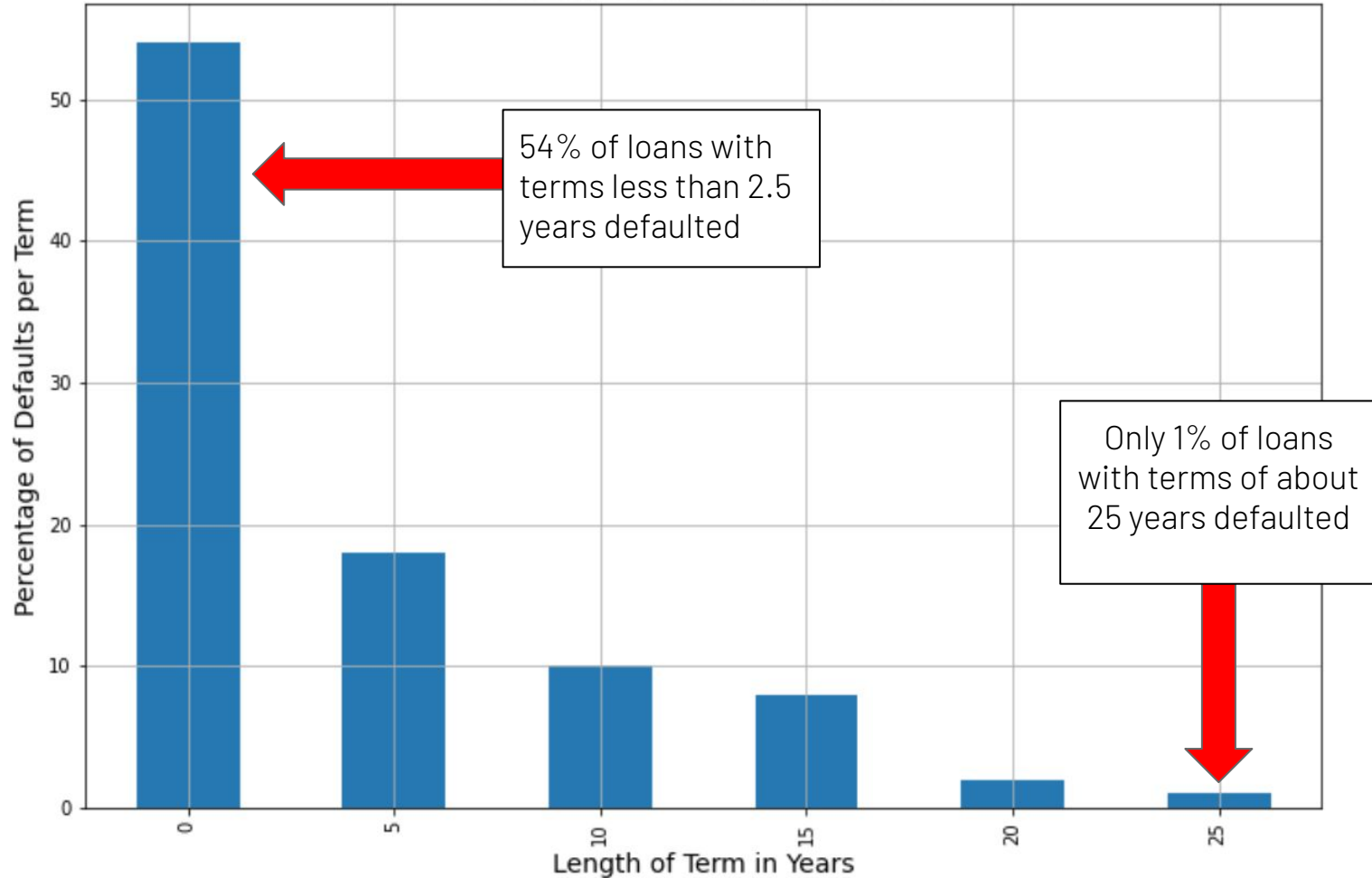
Default Percentage per Industry



Defaults Percentage Per Loan Approval Year



Percentage of Defaults by Term in Years



Default Percentage per Bank

Average term was 5.5 years



CAPITAL ONE NATL ASSOC

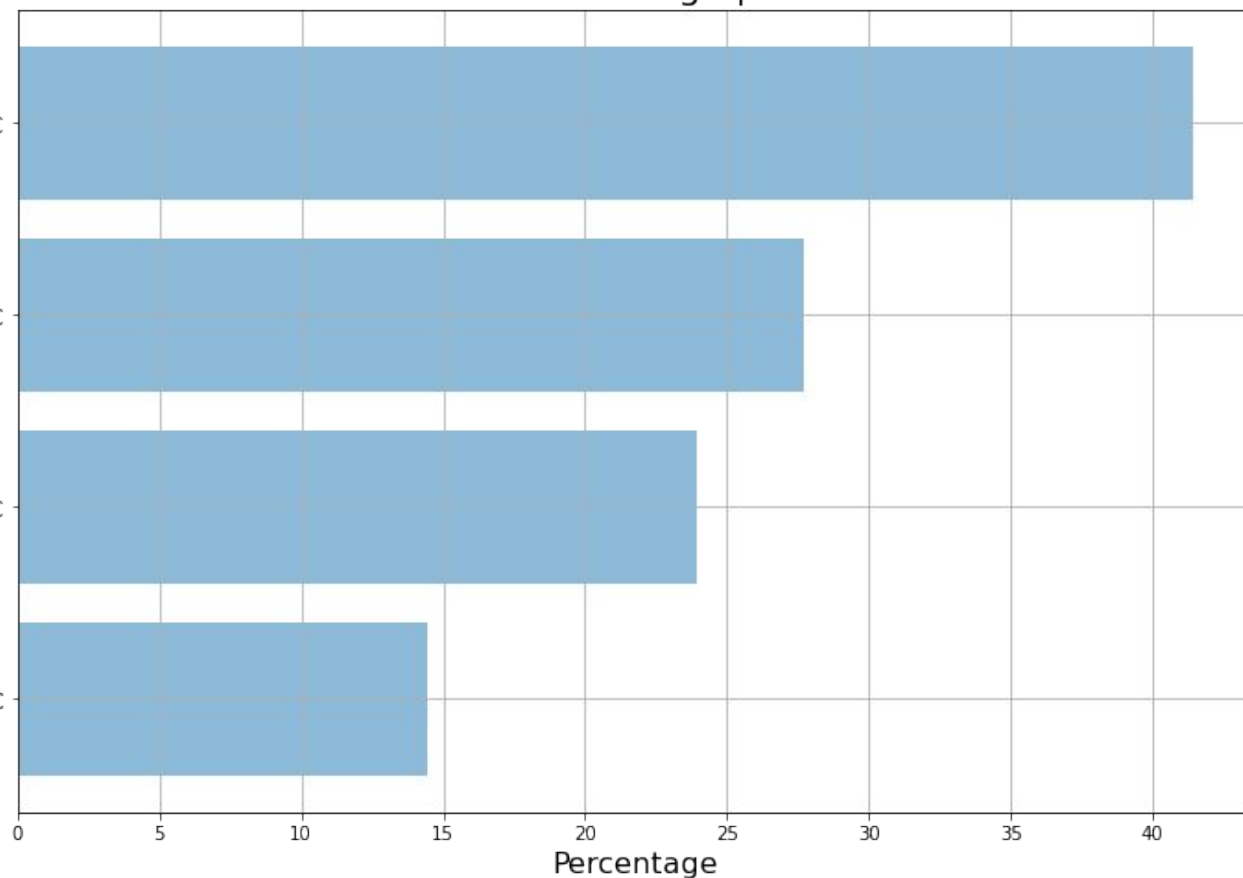
JPMORGAN CHASE BANK NATL ASSOC

BANK OF AMERICA NATL ASSOC

Average term was 10 years



WELLS FARGO BANK NATL ASSOC



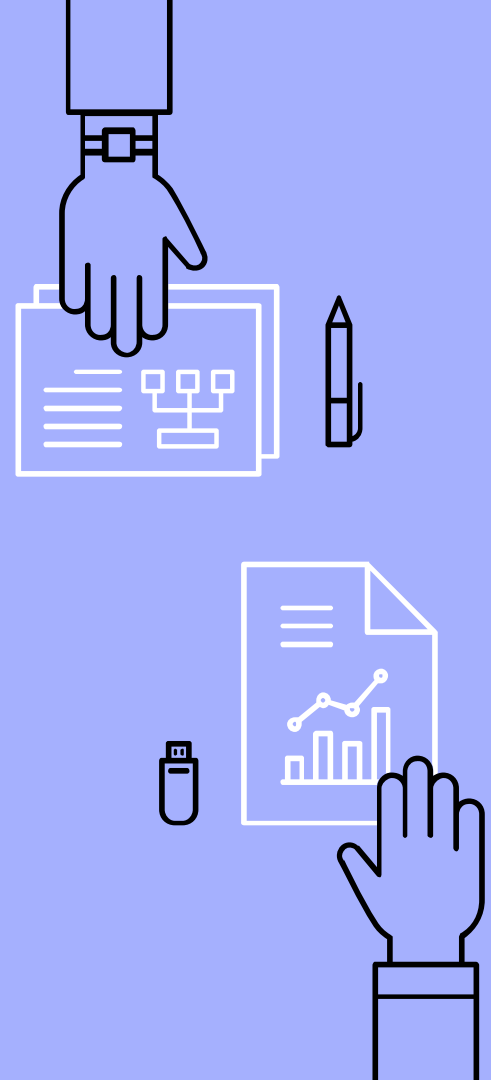
# Model (XGBoost)

- Decision tree-based model
- Decision trees can capture non-linearity in data
- In XGBoost, multiple decision trees are built subsequently (called “boosting”)
- Builds current decision tree based on where previous decision tree did poorly

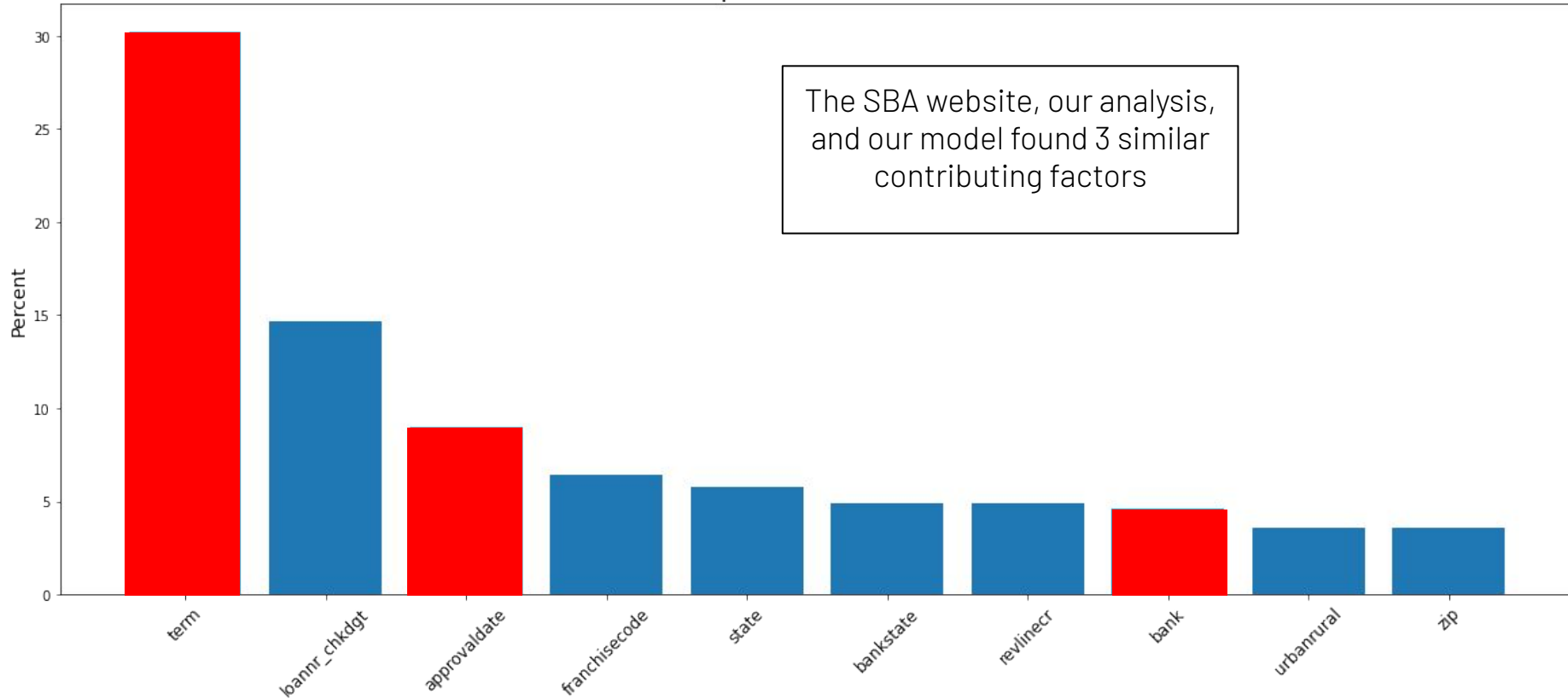


# Model (XGBoost)

- Predicts whether a loan will default or not based on the SBA Loan dataset from 1970-2014
- Model will help US economy come out of the recession by making sure loans given out won't default
- 90% precision on predicting defaulted loans



## Important Columns



# In summary, if you're looking to get a loan:

- ▶ Be aware that some industries are riskier than others
- ▶ The current pandemic can increase your likelihood of defaulting
- ▶ Go for a longer term loan (ideally 20-25 years) if possible
- ▶ Wells Fargo is the safest bet out of popular banks







\$200,000

Average loan amount given by the SBA

20,000

Average amount of SBA loans given  
yearly

\$400,000,000

Saved using our model

# THANKS!

Any questions?

