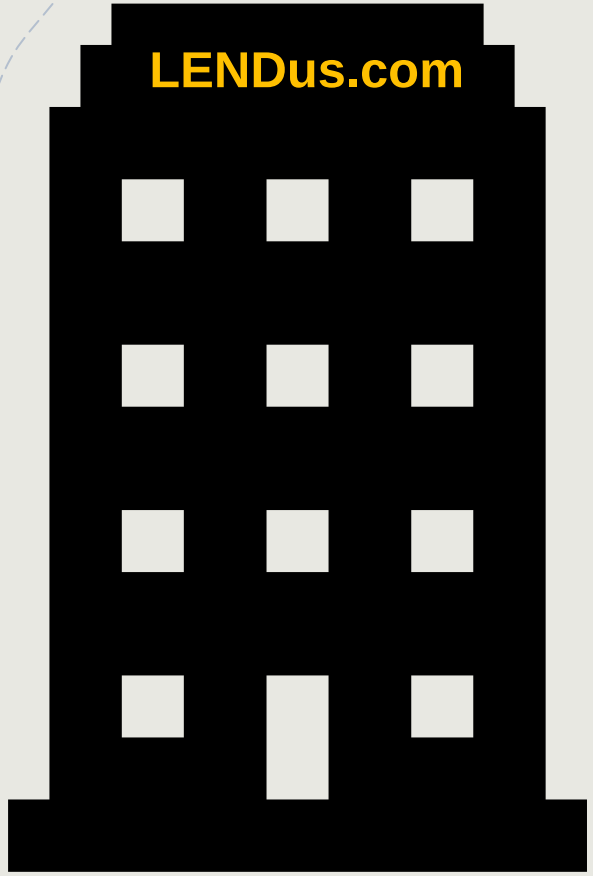
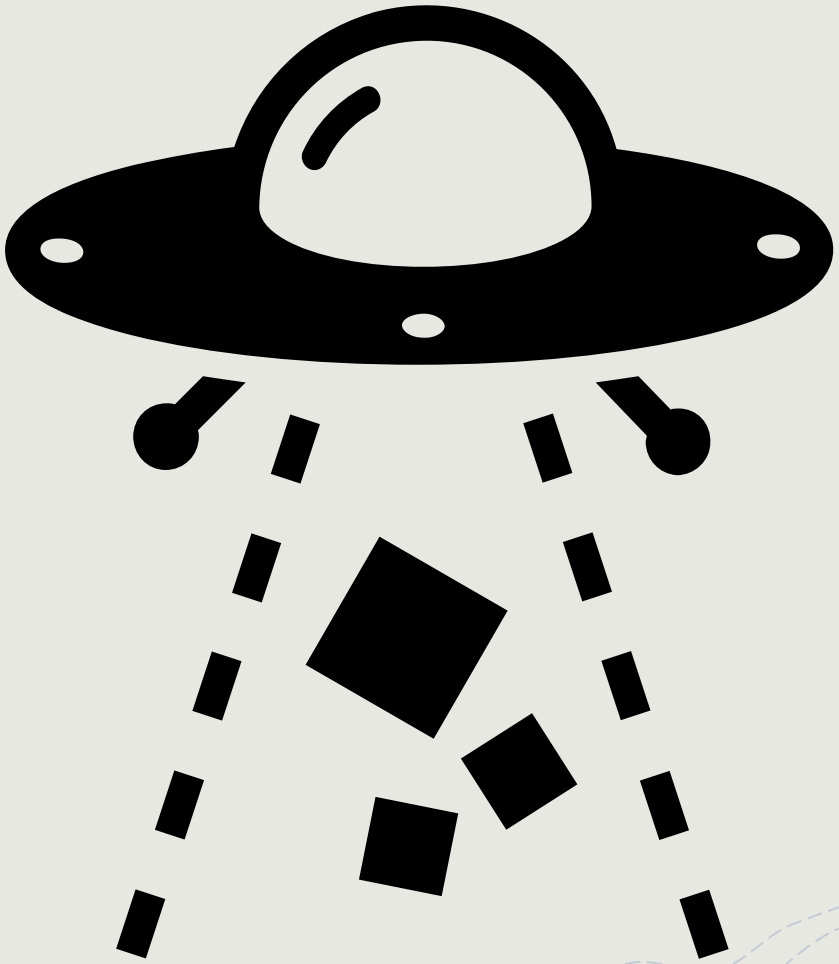


Background & Goals

Process Flow

Collect data



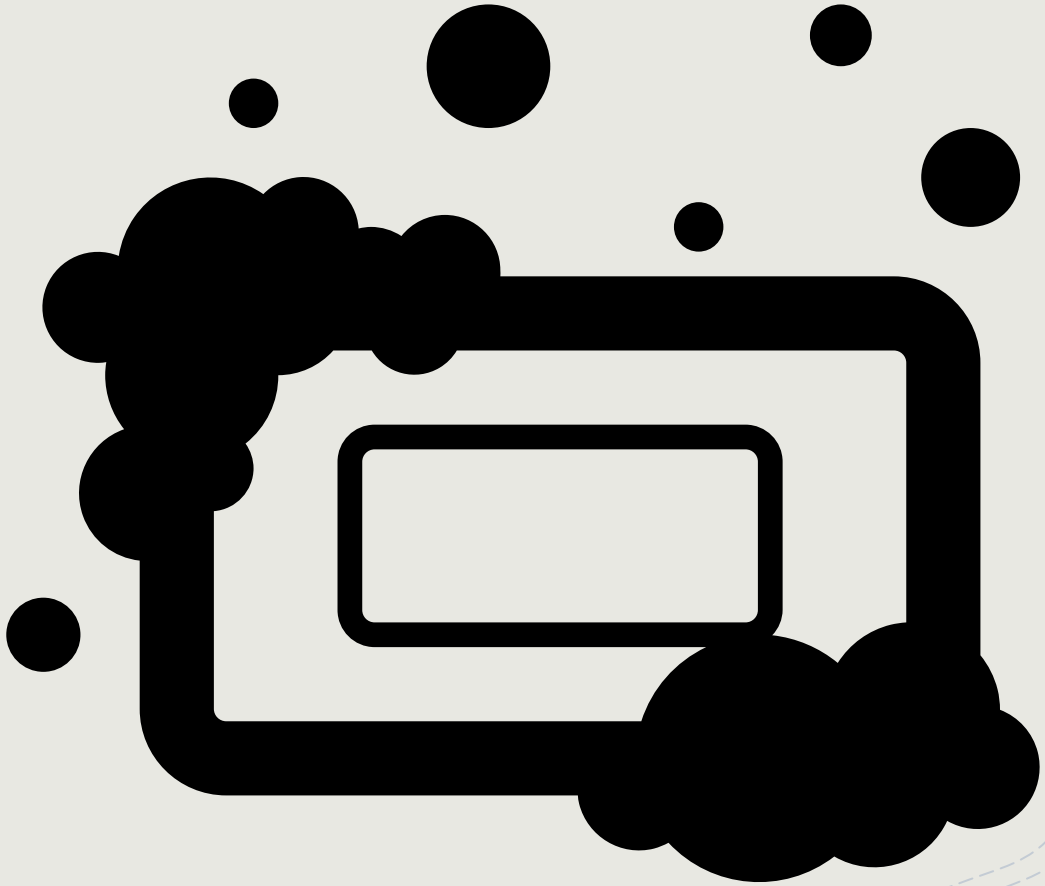
Loan Approval Data

(12 columns X 3000 rows)

Applicant name	Gender/Married	Children	Education level	Property Area	Purpose	Loan amount	Annual income	Debt ratio	Credit>2years	Credit score	Default
Bob	Male/no	2	associate	Urban	business funding	25,130	148,000	0.17	Yes	667	Yes
Alex	Male/yes	4	master's	Urban	medical	9,289	65,567	0.14	Yes	707	No
Alex	Male/yes	4	master's	Urban	medical	9,289	65,567	0.14	Yes	707	No
Sam	Male/yes	0	bachelor's	Urban	debt consolidation	3,722	$32,000.00	0.12	No	682	Yes
Tiffany	Female/yes	3	bachelor's	Urban	home improvement	6,885	9,067	0.76	No	712	Yes
Miranda	Female/no	0	doctorate	Semiurban	medical	12,096	81,823	0.15	Yes		Yes
Adam	Male/yes	2	associate	Rural	travel/vacation	16,558	85,567	0.19	No	727	No
Julia	Female/yes	0	associate	Urban	medical	1,800	45,000	0.04	Yes	737	Yes
Karl	Male/yes	3	master's	Semiurban	business funding	6,648	60,000	0.11	Yes	722	No
Steve	Male/yes	2	associate	Urban	wedding	15,525	90,000	0.17	Yes	682	Yes
Sara	Female/yes	1	doctorate	Semiurban	medical	2,700	27,000	0.10	No	7070	No

Clean data

- Irrelevant columns
- Empty cells
- Wrong format
- Wrong data points
- Outliers
- Duplicate rows



Explore data

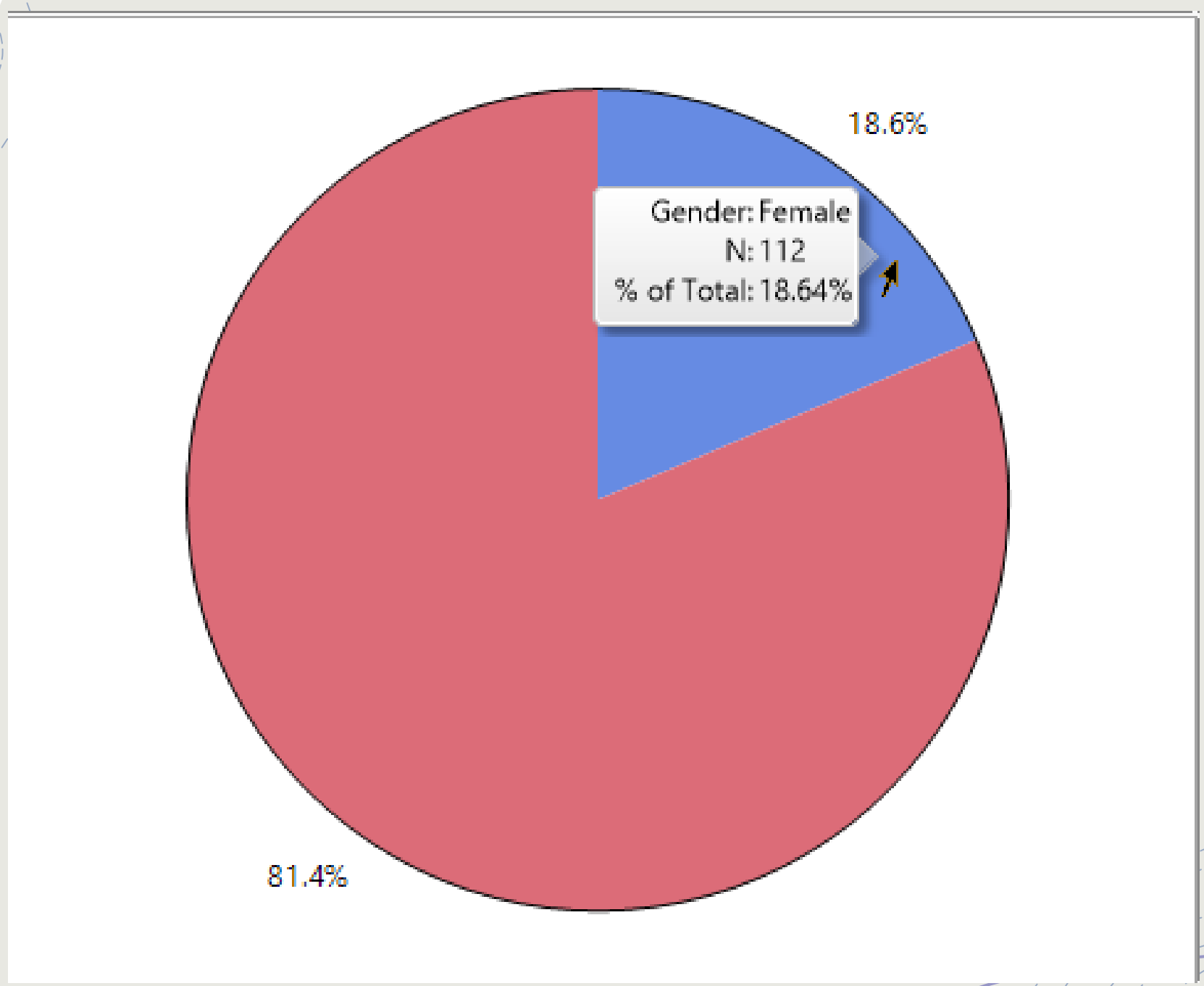
(visual & non-visual)

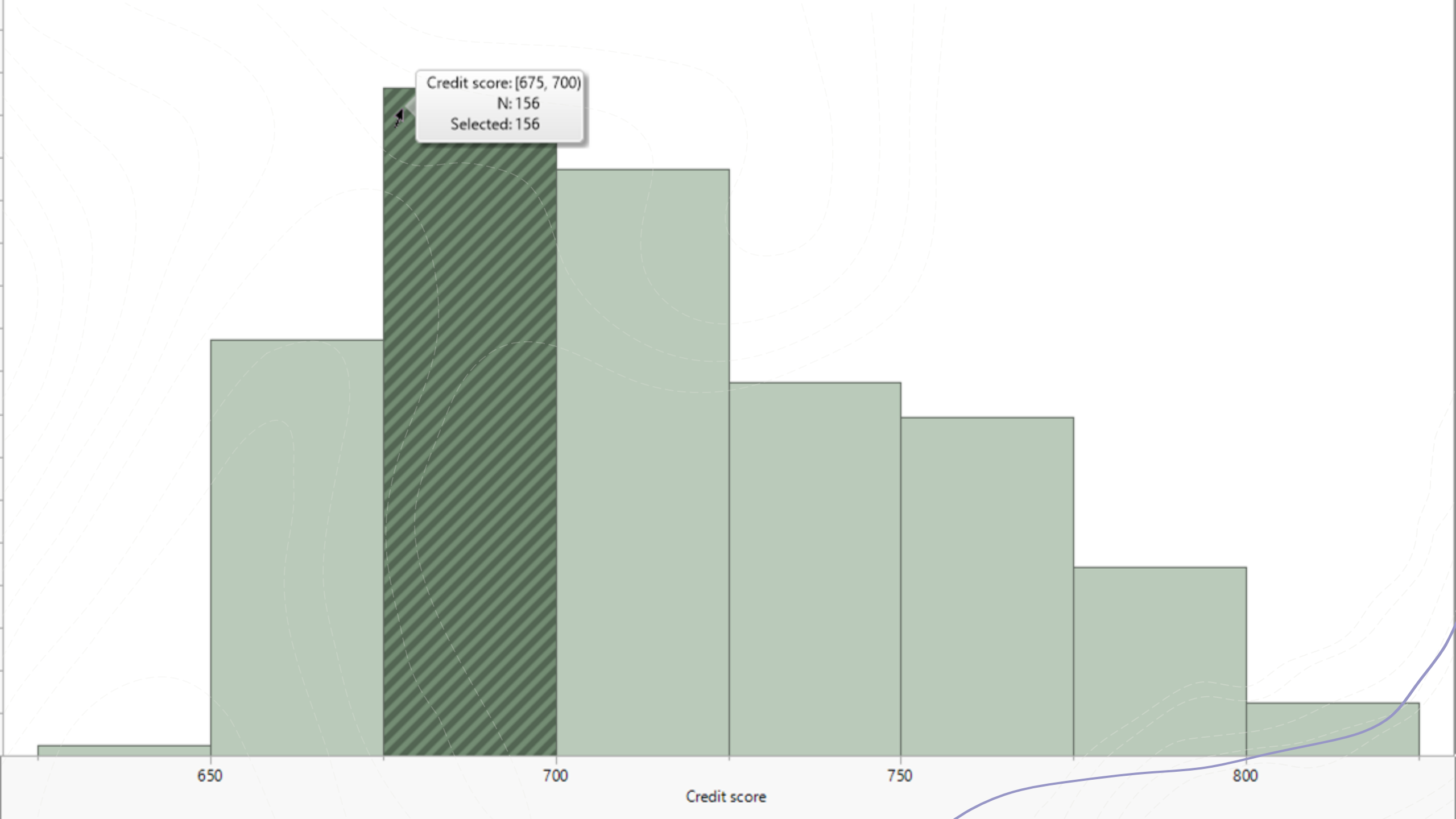
- Type of each variable
- Characteristics of variables
- Shape/pattern of variables
- Trends
- Relationship between the variables

Variable data type

- Children(0,1,4 ,...)
- Education level(associate, master's, ...)
- Property Area(Urban, Semiurban, ...)
- Annual income(23,000, 9000, ...)

Variable shape and characteristics


18.6%
Gender: Female
N: 112
% of Total: 18.64%
81.4%


Credit score: [675, 700)
N: 156
Selected: 156
650
700
750
800
Credit score

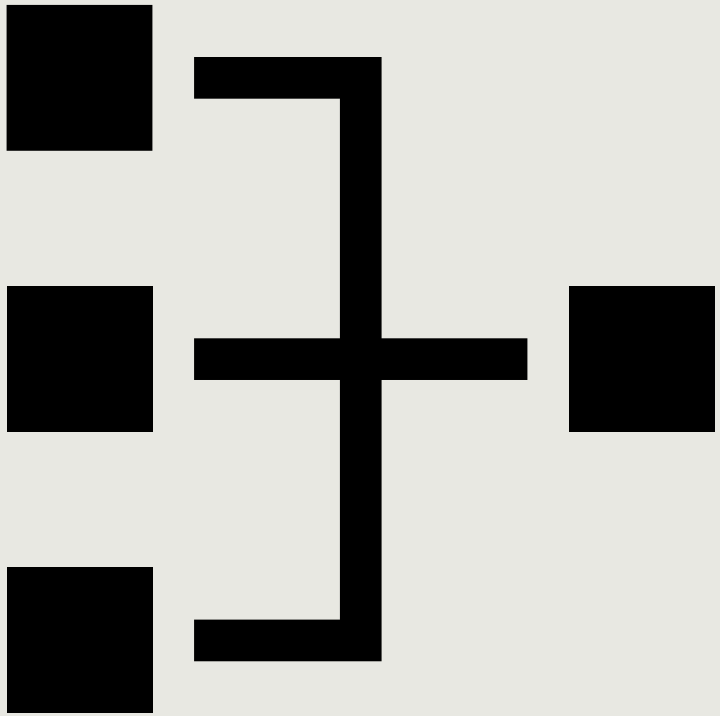
Credit Score	Descriptive Stats	
	Mean(avg)	715
	Std Dev	39
	Min	627
	Max	822

Relationship between variables

Variables	Correlation(-1,1)	Shape
Annual income, Credit score	+0.8	↑↑
Children, Loan amount	-0.7	↑↓

Model & Interpret

1) A model that predicts whether an applicant will default or not.
2) A model that Puts past applicants into groups.



Features

Target

Applicant name	Gender/Married	Children	Education level	Property Area	Purpose	Loan amount	Annual income	Debt ratio	Credit>2years	Credit score	Default
Bob	Male/no	2	associate	Urban	business funding	25,130	148,000	0.17	Yes	667	Yes
Alex	Male/yes	4	master's	Urban	medical	9,289	65,567	0.14	Yes	707	No
Alex	Male/yes	4	master's	Urban	medical	9,289	65,567	0.14	Yes	707	No
Sam	Male/yes	0	bachelor's	Urban	debt consolidation	3,722	$32,000.00	0.12	No	682	Yes
Tiffany	Female/yes	3	bachelor's	Urban	home improvement	6,885	9,067	0.76	No	712	Yes
Miranda	Female/no	0	doctorate	Semiurban	medical	12,096	81,823	0.15	Yes		Yes
Adam	Male/yes	2	associate	Rural	travel/vacation	16,558	85,567	0.19	No	727	No
Julia	Female/yes	0	associate	Urban	medical	1,800	45,000	0.04	Yes	737	Yes
Karl	Male/yes	3	master's	Semiurban	business funding	6,648	60,000	0.11	Yes	722	No
Steve	Male/yes	2	associate	Urban	wedding	15,525	90,000	0.17	Yes	682	Yes
Sara	Female/yes	1	doctorate	Semiurban	medical	2,700	27,000	0.10	No	7070	No

Alex

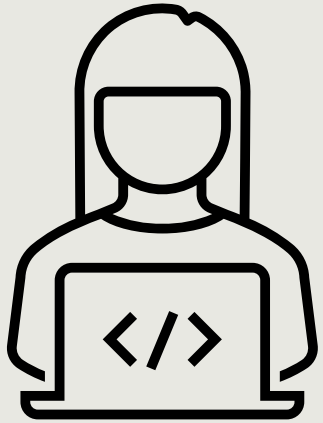
Annual Income: $32,000

Loan amount: $120,000

Children: 3

Default: Yes

Rejected



Jessica

Annual Income: $44,000

Loan amount: $90,000

Children : 0

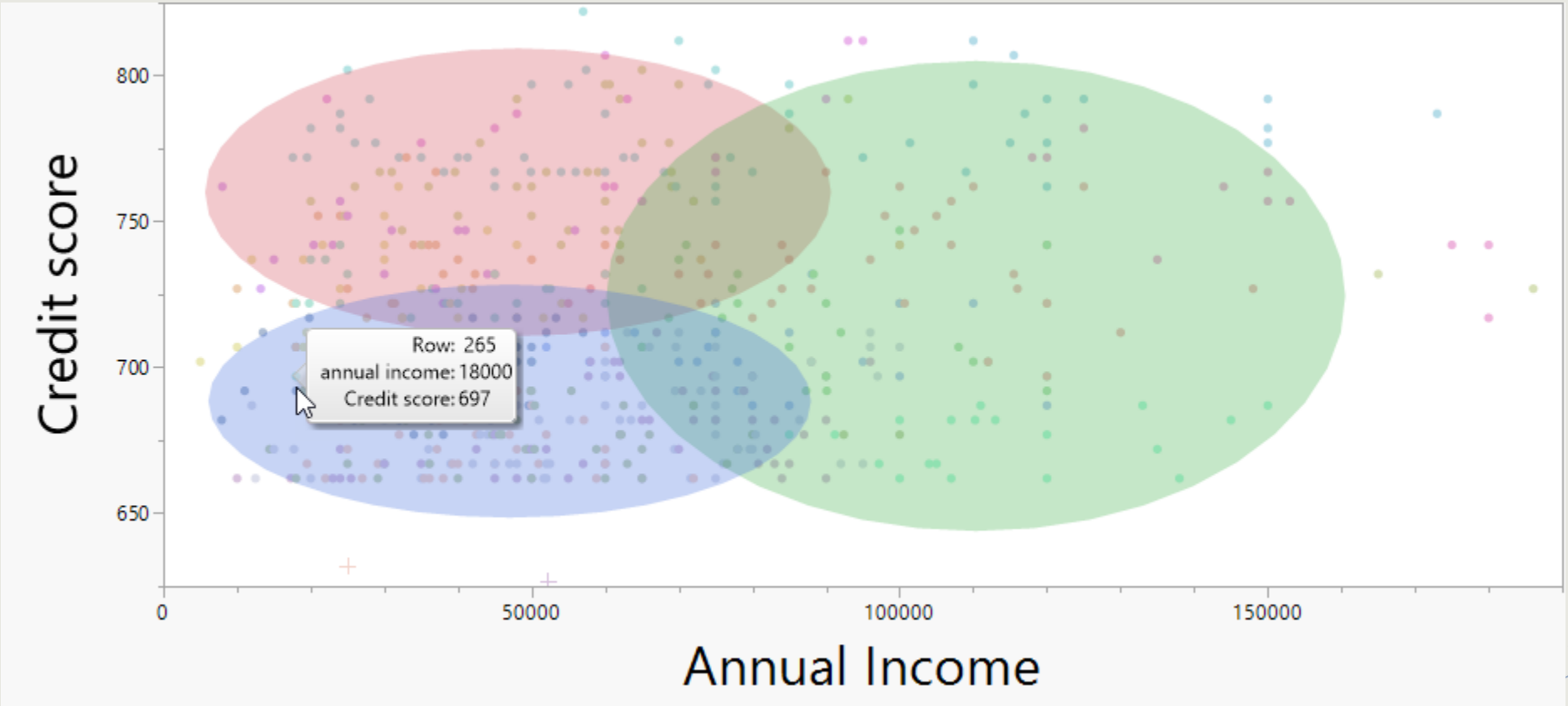
Default: No

Approved

Model Training

Applicant name	Gender/Married	Children	Education level	Property Area	Purpose	Loan amount	Annual income	Debt ratio	Credit>2years	Credit score	Default
Bob	Male/no	2	associate	Urban	business funding	25,130	148,000	0.17	Yes	667	Yes
Alex	Male/yes	4	master's	Urban	medical	9,289	65,567	0.14	Yes	707	No
Alex	Male/yes	4	master's	Urban	medical	9,289	65,567	0.14	Yes	707	No
Sam	Male/yes	0	bachelor's	Urban	debt consolidation	3,722	[illegible].00	0.12	No	682	Yes
Tiffany	Female/yes	3	bachelor's	Urban	home improvement	6,885	9,067	0.76	No	712	Yes
Miranda	Female/no	0	doctorate	Semiurban	medical	12,096	81,823	0.15	Yes		Yes
Adam	Male/yes	2	associate	Rural	travel/vacation	16,558	85,567	0.19	No	727	No
Julia	Female/yes	0	associate	Urban	medical	1,800	45,000	0.04	Yes	737	Yes
Karl	Male/yes	3	master's	Semiurban	business funding	6,648	60,000	0.11	Yes	722	No
Steve	Male/yes	2	associate	Urban	wedding	15,525	90,000	0.17	Yes	682	Yes
Sara	Female/yes	1	doctorate	Semiurban	medical	2,700	27,000	0.10	No	7070	No

Grouping applicants



Process Flow