

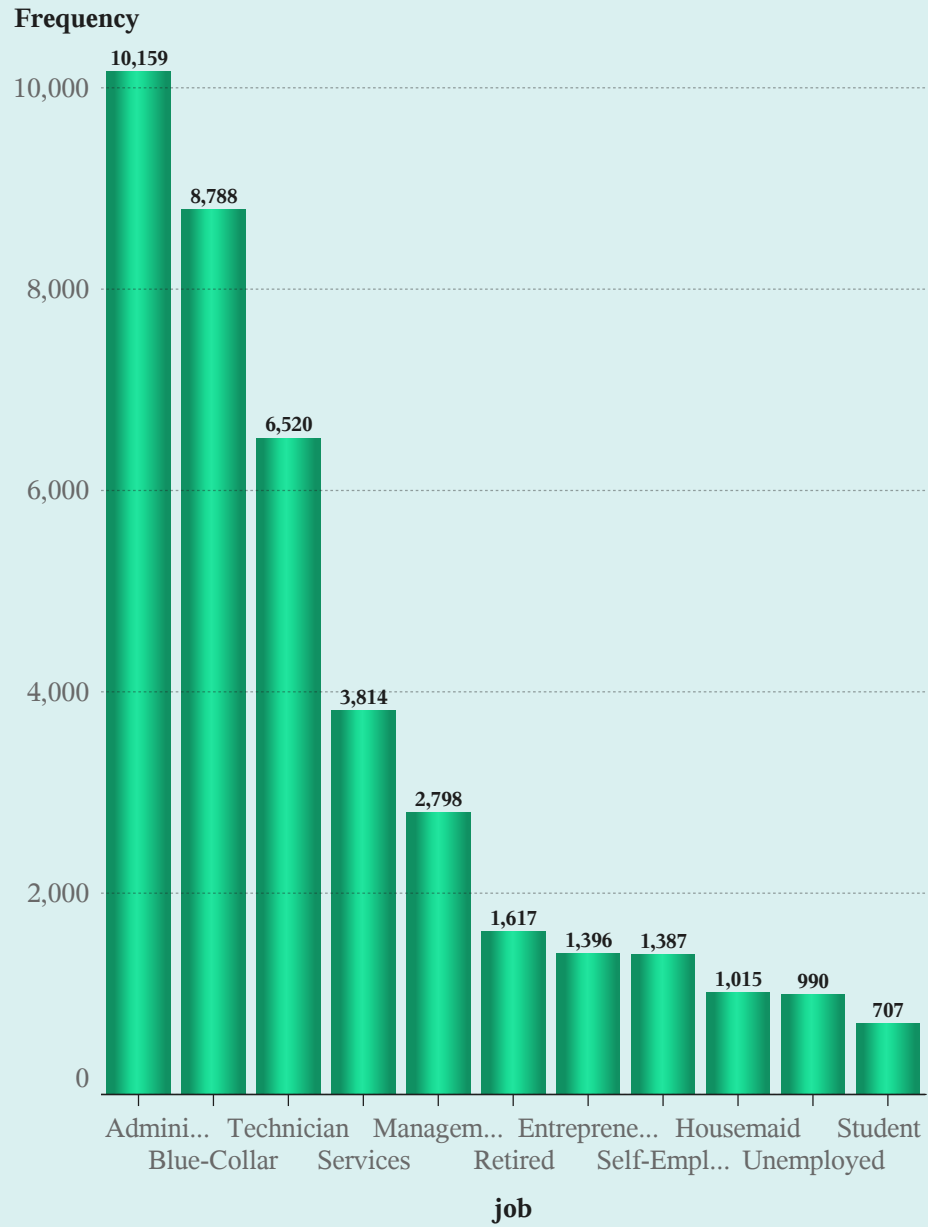
00000051428-Kelly Mae UAS IS429 BDA #B EDA and Modelling

Creation Date: Friday, June 10, 2022 12:02:08 AM

Author: kelly.mae@student.umn.ac.id

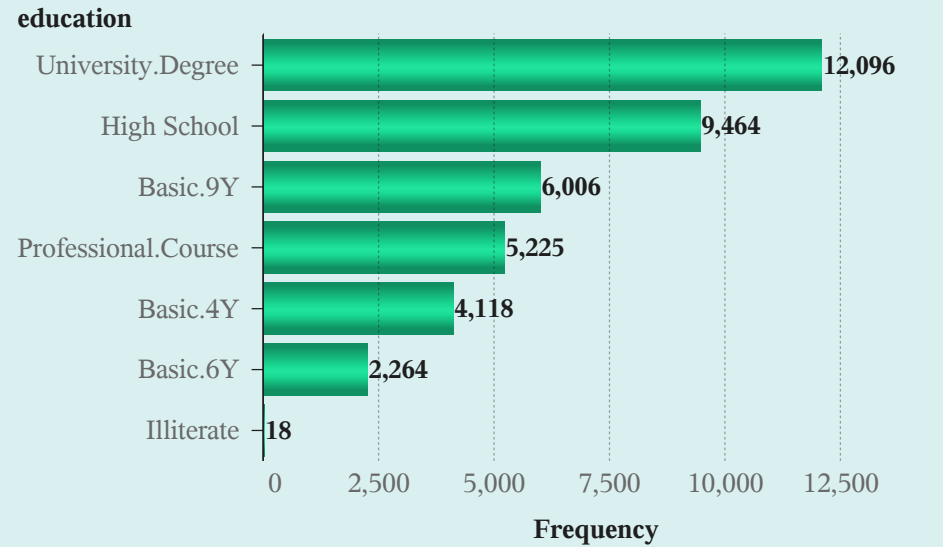
## EverBank Customer Data

### Frequency of Customer Jobs



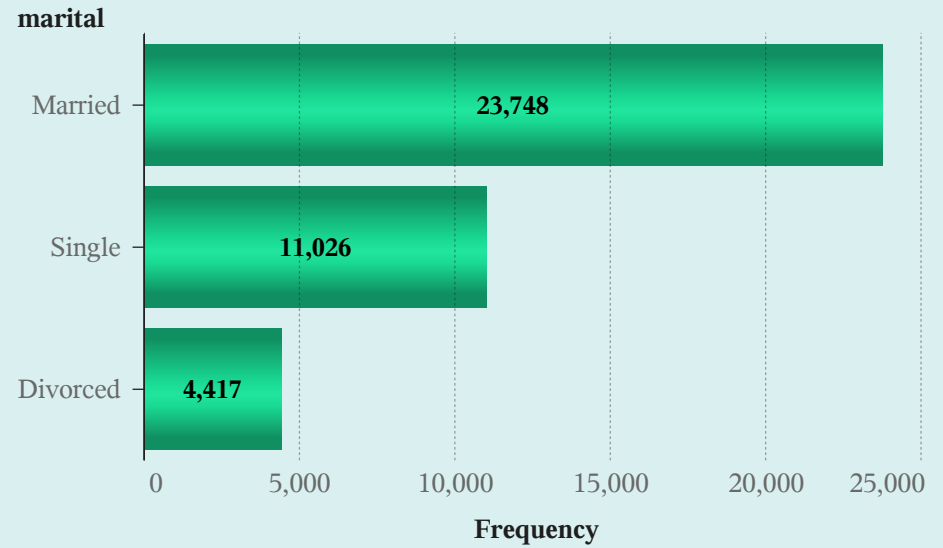
🔍 A1.1

### Frequency of Customer Education



🔍 A1.2

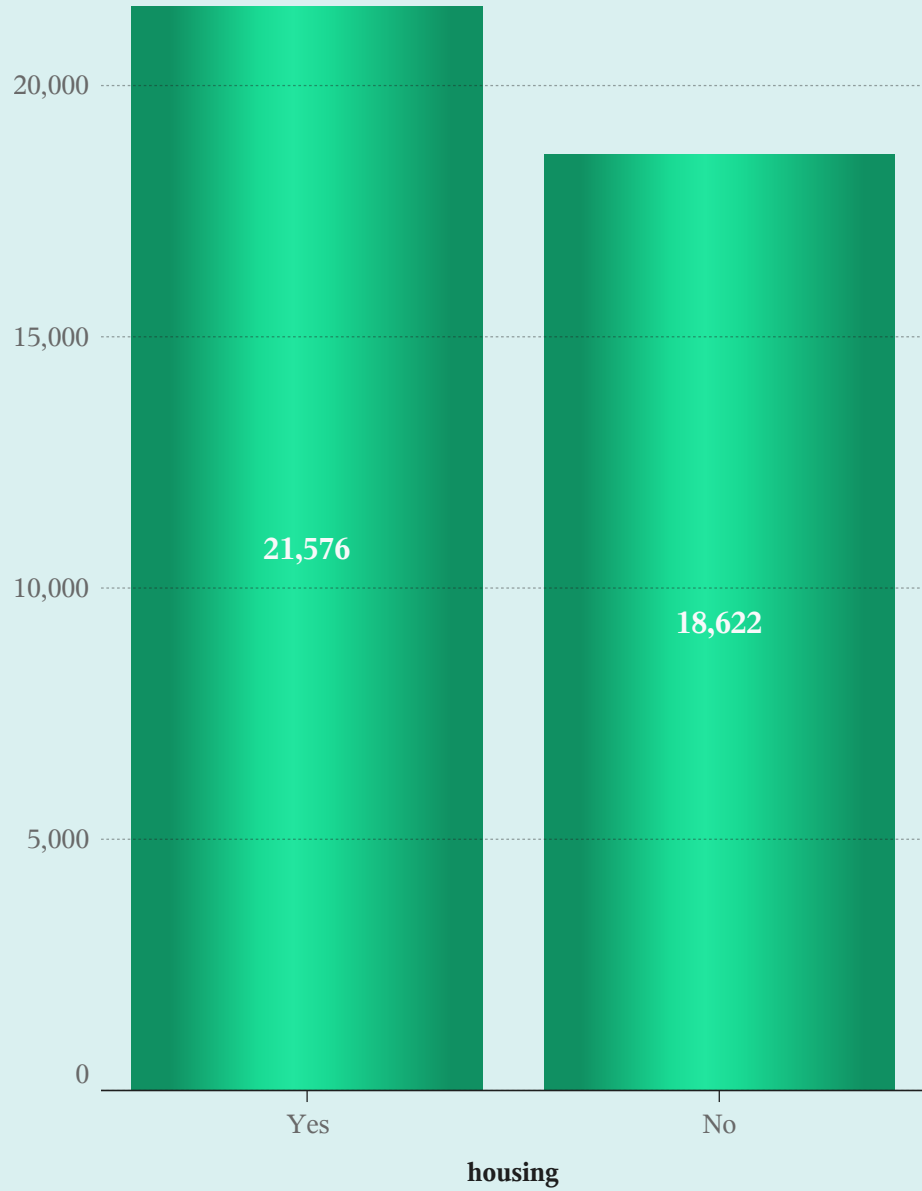
### Frequency of Customer Marital Status



🔍 A1.3

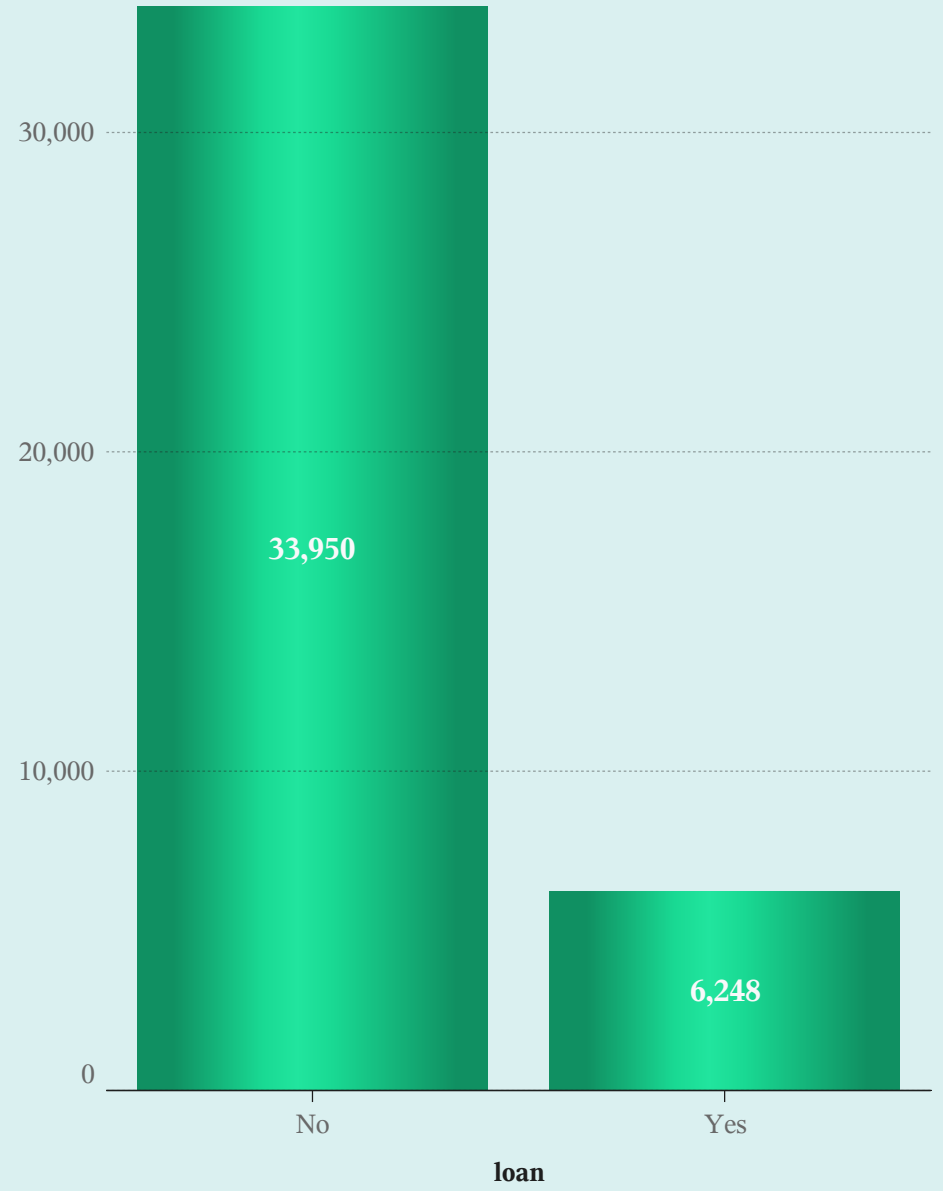
## EverBank Customer Loan

Frequency of Housing Loan  
Frequency



🔊 A2.1

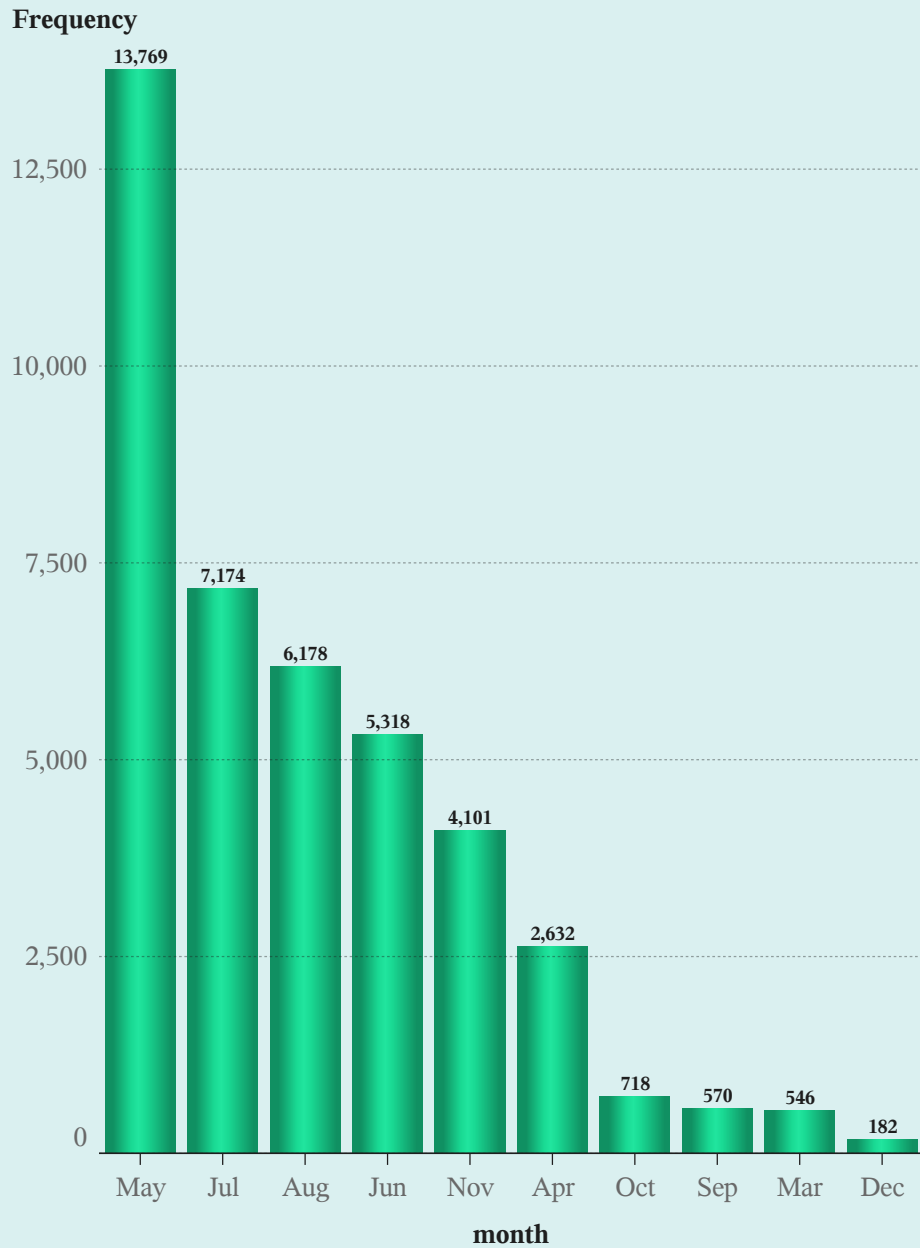
Frequency of Personal Loan  
Frequency



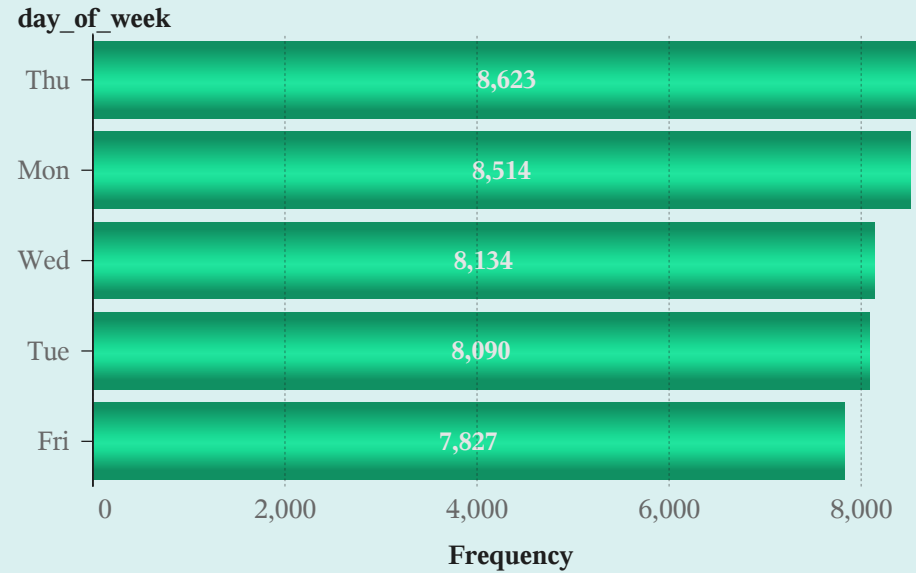
🔊 A2.2

## EverBank Previous Campaign Details

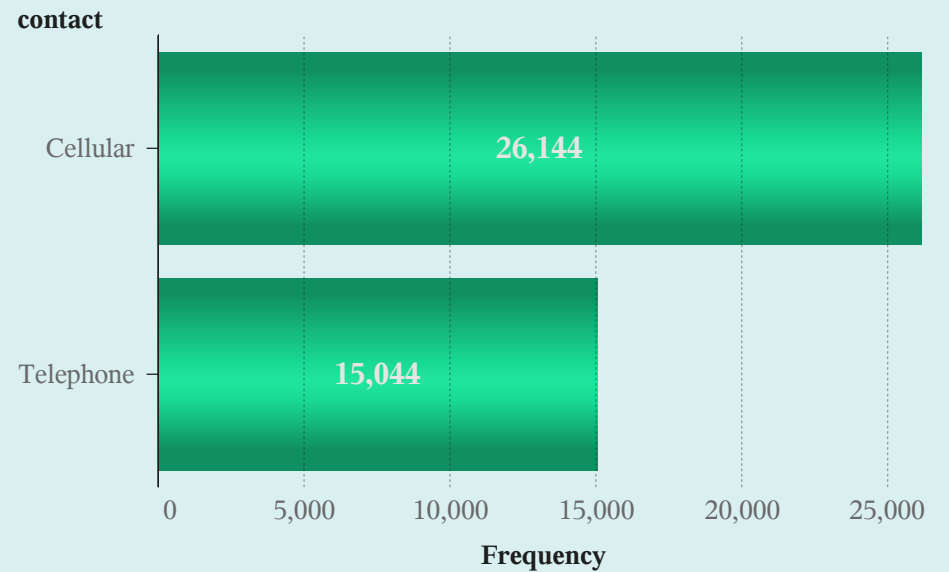
### Frequency of Month during Previous Campaign



### Frequency of Day of Week during Previous Campaign

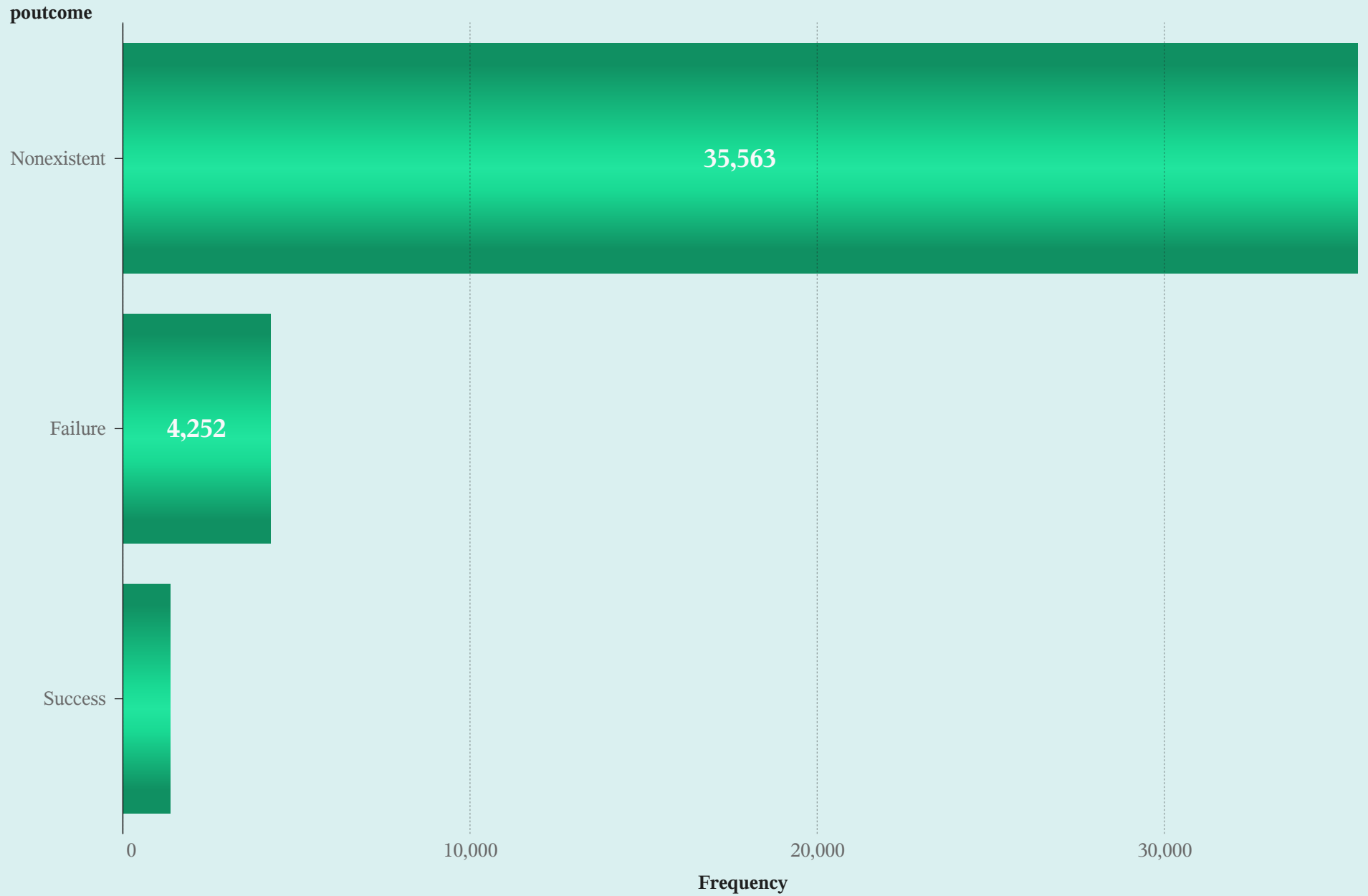


### Frequency of Contact Type during Previous Campaign



## EverBank Previous Campaign Results

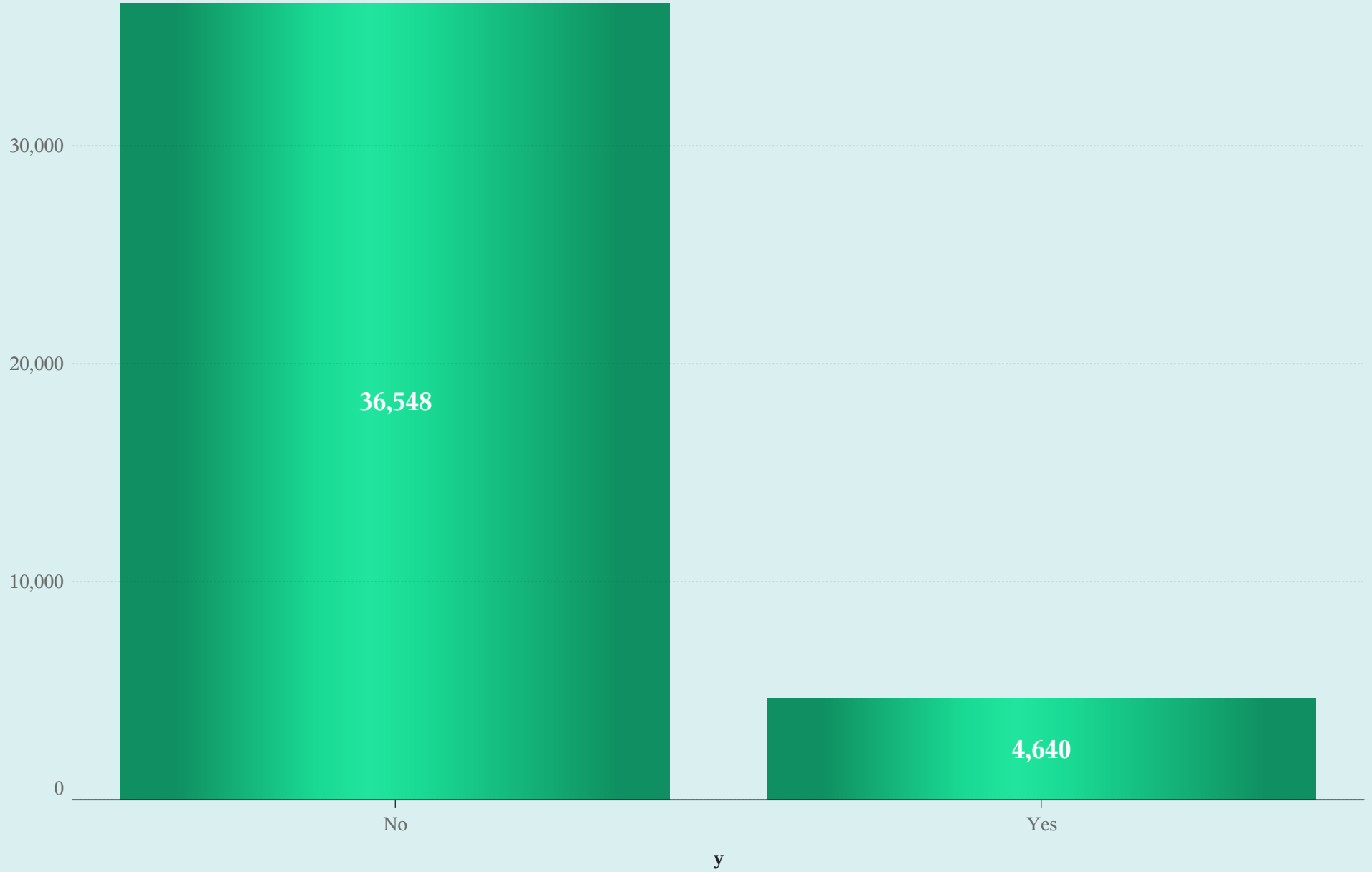
Frequency of Previous Campaign Outcome



## EverBank Customer Subscriptions

Frequency of y (Customer Subscriptions to EverBank Long-Term Deposit)

Frequency

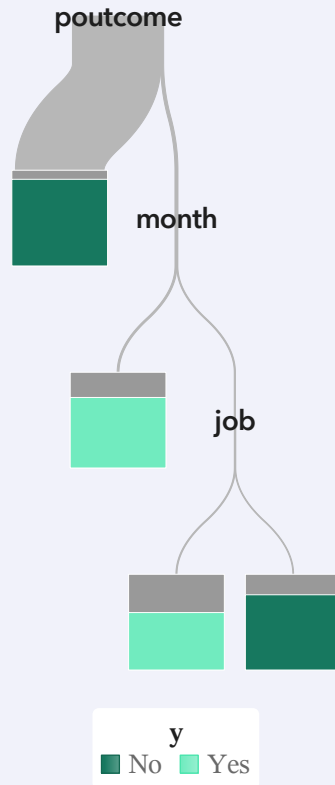


# Decision Tree

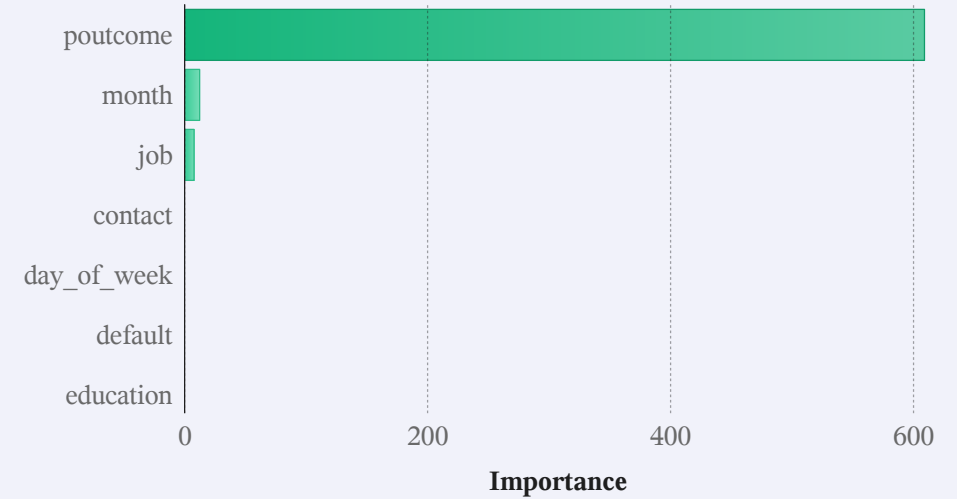
## Decision Tree Model

Decision Tree y (event=Yes) Misclassification Rate 0.1019 Observations Used 41,188

### Tree



### Variable Importance



### Confusion Matrix

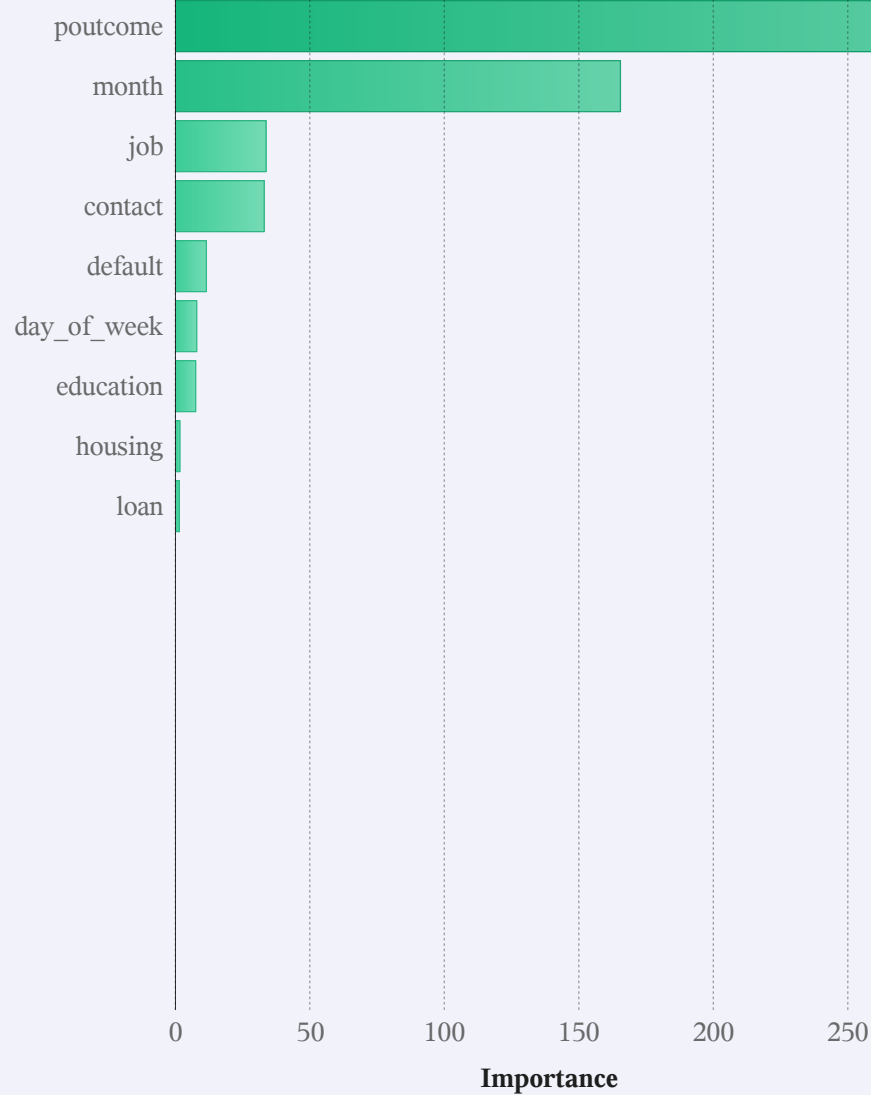
		Observed			
		Training		Validation	
Predicted	No	25,266	288	10,832	162
	Yes	2,649	629	1,105	257
Partition		Training		Validation	

# Random Forest

## Random Forest Model

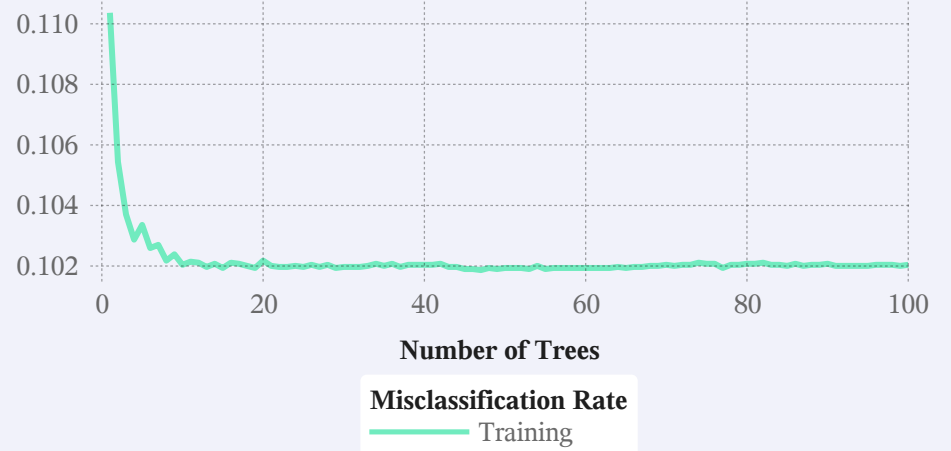
Forest y (event=Yes) Misclassification Rate 0.1020 Observations Used 41,188

### Variable Importance



### Error Plot

#### Misclassification Rate



### Confusion Matrix

		Observed			
		Training		Validation	
Predicted	No	25,259	295	10,834	160
	Yes	2,647	631	1,104	258
Partition		Training		Validation	

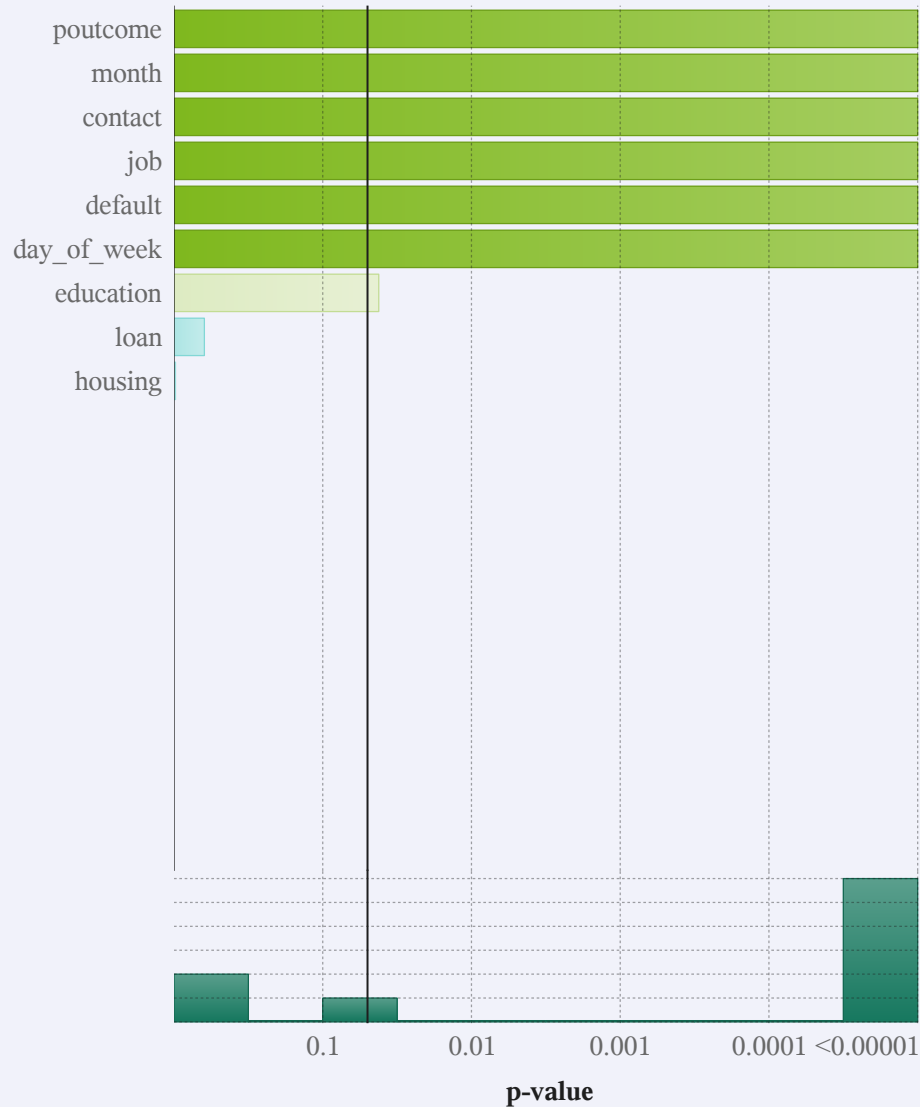


# Logistic Regression

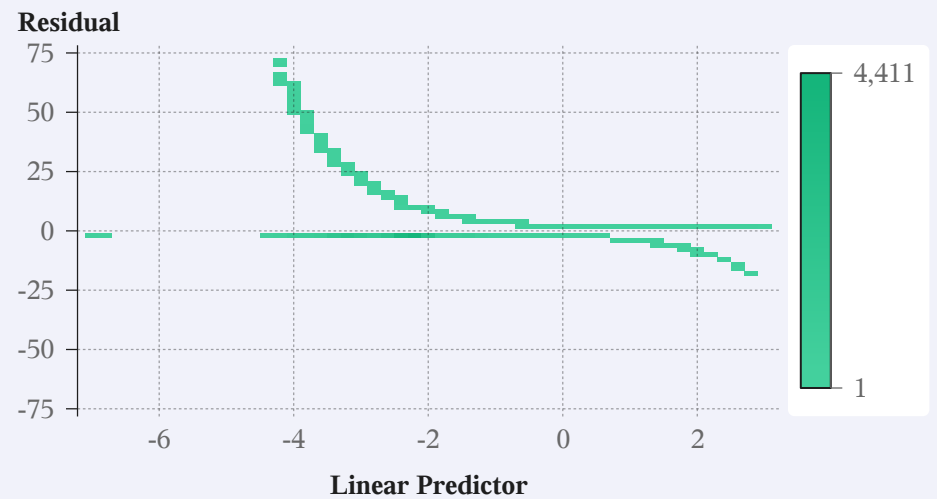
## Logistic Regression Model

Logistic Regression y (event=Yes) Misclassification Rate (Event) **0.1035** Observations Used **41,188**

### Fit Summary



### Residual Plot



### Confusion Matrix

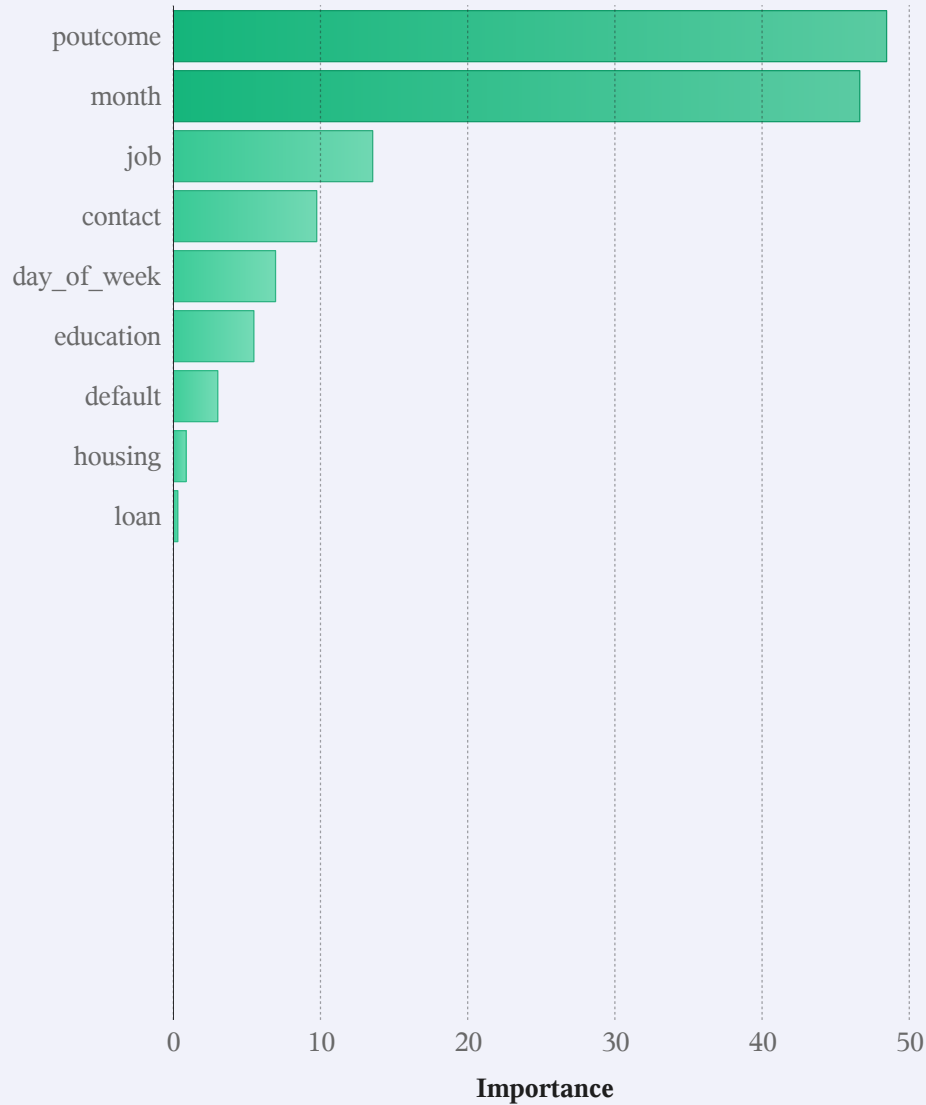
		Observed			
		Training		Validation	
Predicted Partition	No	25,212	342	10,825	169
	Yes	2,641	637	1,103	259

# Gradient Boosting

## Gradient Boosting Model

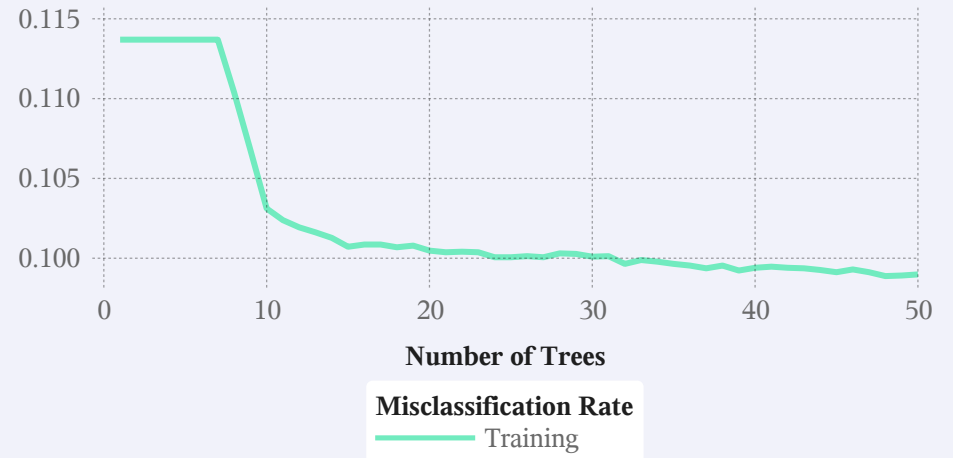
Gradient Boosting y (event=Yes) Misclassification Rate **0.0990** Observations Used **41,188**

### Variable Importance



### Iteration Plot

#### Misclassification Rate



### Confusion Matrix

		Observed			
		Training		Validation	
Predicted	No	25,259	295	10,820	174
	Yes	2,559	719	1,082	280
Partition		Training		Validation	

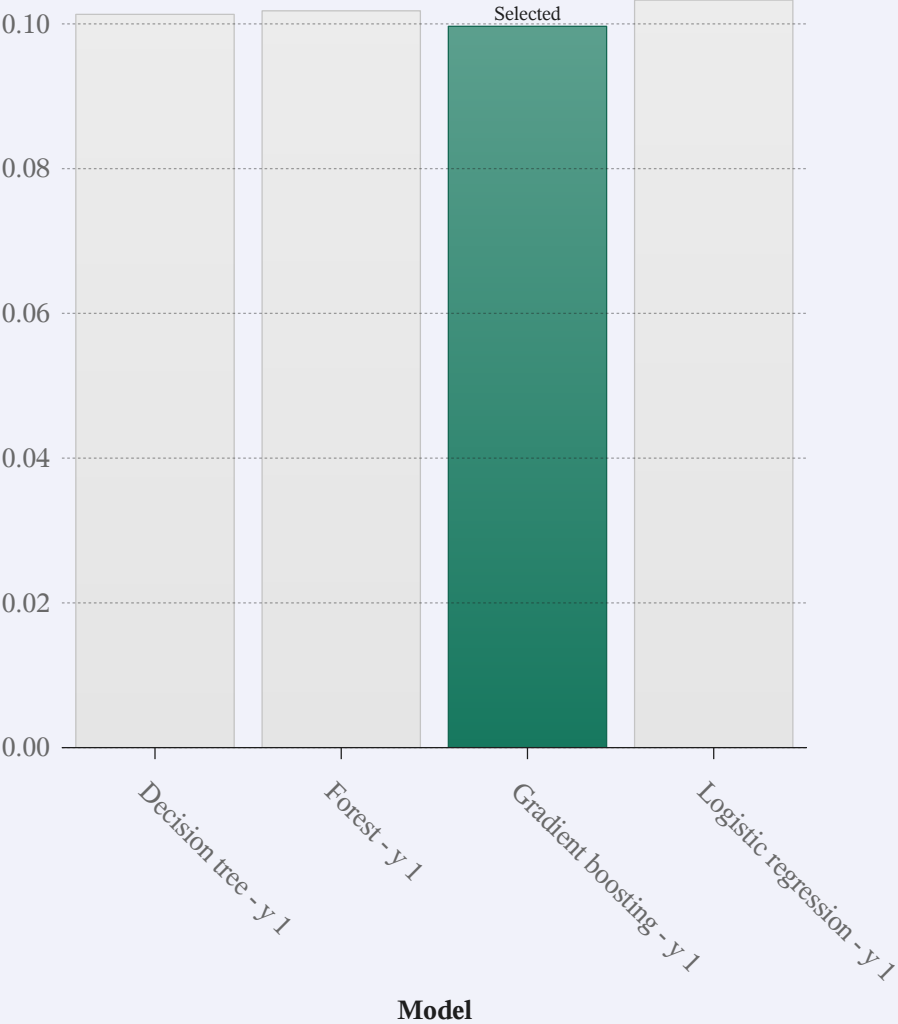
Model Comparison

Model Comparison between Decision Tree, Random Forest, Logistic Regression, and Gradient Boosting

Model Comparison y (event=Yes)

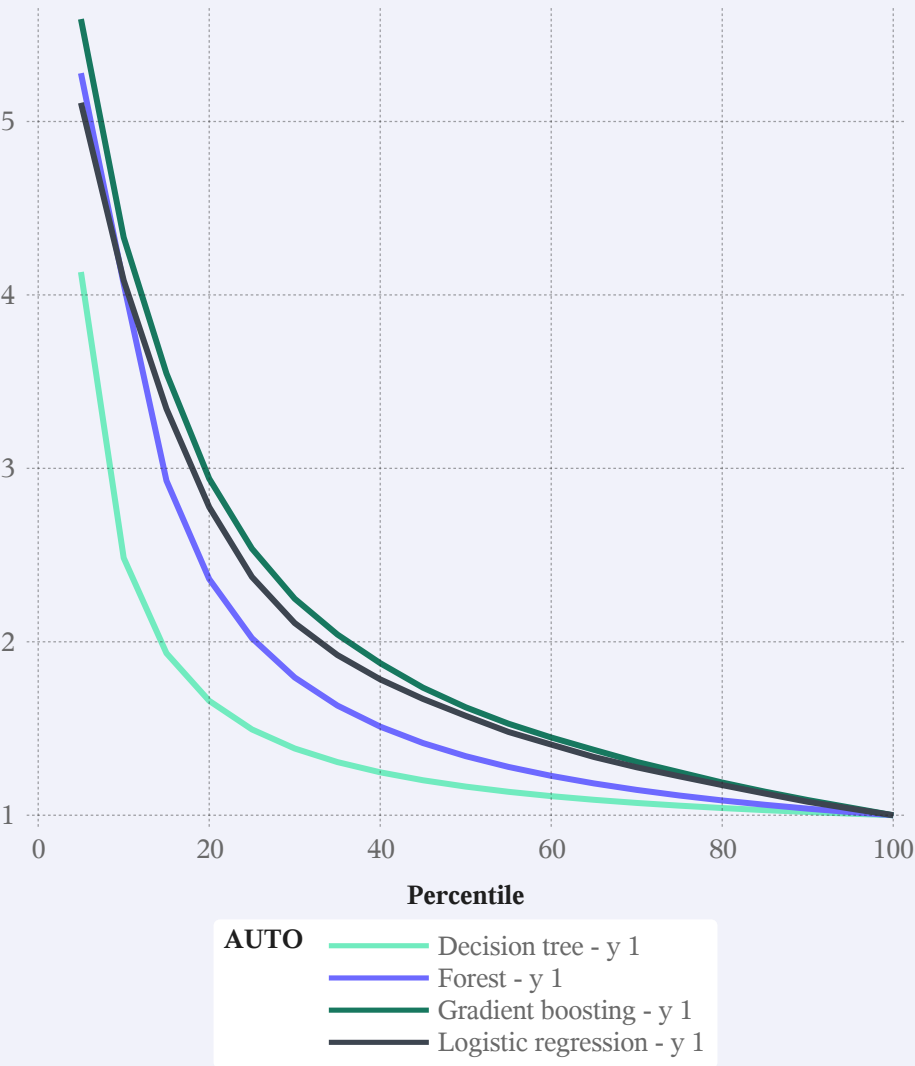
Fit Statistic

Misclassification Rate (Event)



Lift

Cumulative Lift



## Appendix

### A1.1 Frequency of Customer Jobs

---

Filters: ( job IN { 'Administrative'; 'Blue-Collar'; 'Entrepreneur'; 'Housemaid'; 'Management'; 'Retired'; 'Self-Employed'; 'Services'; 'Student'; 'Technician'; 'Unemployed' } ) OR job MISSING  
( education IN { 'Basic.4Y'; 'Basic.6Y'; 'Basic.9Y'; 'High School'; 'Illiterate'; 'Professional.Course'; 'University.Degree' } ) OR education MISSING  
( marital IN { 'Divorced'; 'Married'; 'Single' } ) OR marital MISSING

### A1.2 Frequency of Customer Education

---

Filters: ( job IN { 'Administrative'; 'Blue-Collar'; 'Entrepreneur'; 'Housemaid'; 'Management'; 'Retired'; 'Self-Employed'; 'Services'; 'Student'; 'Technician'; 'Unemployed' } ) OR job MISSING  
( education IN { 'Basic.4Y'; 'Basic.6Y'; 'Basic.9Y'; 'High School'; 'Illiterate'; 'Professional.Course'; 'University.Degree' } ) OR education MISSING  
( marital IN { 'Divorced'; 'Married'; 'Single' } ) OR marital MISSING

### A1.3 Frequency of Customer Marital Status

---

Filters: ( marital IN { 'Divorced'; 'Married'; 'Single' } ) OR marital MISSING  
( education IN { 'Basic.4Y'; 'Basic.6Y'; 'Basic.9Y'; 'High School'; 'Illiterate'; 'Professional.Course'; 'University.Degree' } ) OR education MISSING  
( job IN { 'Administrative'; 'Blue-Collar'; 'Entrepreneur'; 'Housemaid'; 'Management'; 'Retired'; 'Self-Employed'; 'Services'; 'Student'; 'Technician'; 'Unemployed' } ) OR job MISSING

### A2.1 Frequency of Housing Loan

---

Filters: ( housing IN { 'No'; 'Yes' } ) OR housing MISSING  
( loan IN { 'No'; 'Yes' } ) OR loan MISSING

### A2.2 Frequency of Personal Loan

---

Filters: ( loan IN { 'No'; 'Yes' } ) OR loan MISSING  
( housing IN { 'No'; 'Yes' } ) OR housing MISSING