

# Identifying Loyal Customers of Pilgrim Bank

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# Overview

- Objective: Identify profiles of customers who would likely be retained, year over year, by Pilgrim Bank
- Approach:
  - Exploratory Graphs & Statistics
  - Analytic Models : Logistic Regression, Discriminant Analysis

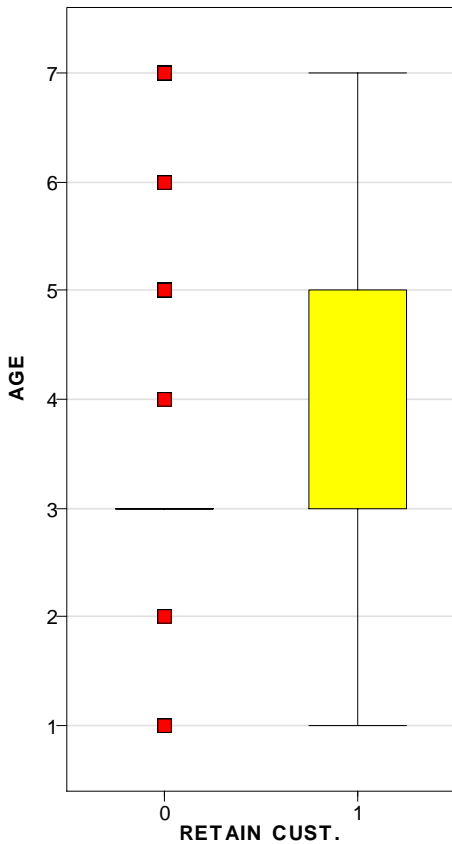
# Data

- Sources: P.K. Kannan, HBS
- Size: 31,633
- Characteristics: Customer data
- Variables:
  - Response Variable: Retained or not
  - Numerical: Profit1999, Age, Income, Tenure, District,
  - Categorical: Online, Billpay1999, Retain\_customer

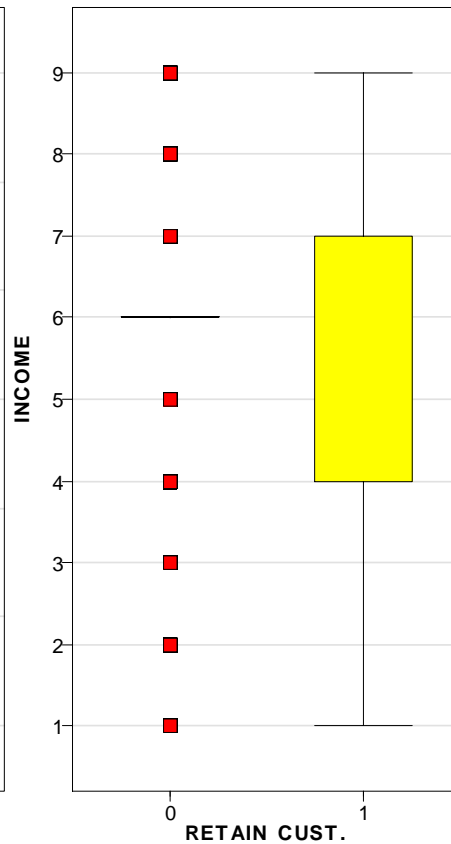
# Graphs

- Only numerical Variables showed a relevance with customers 'retained or not'

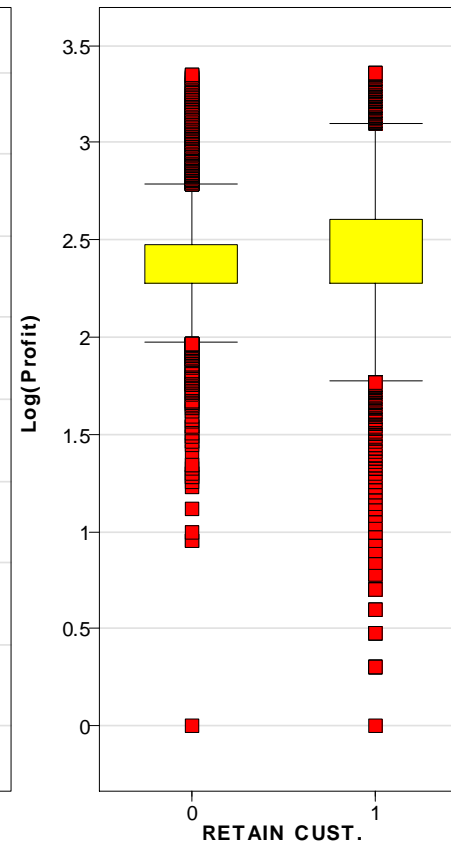
<Age>



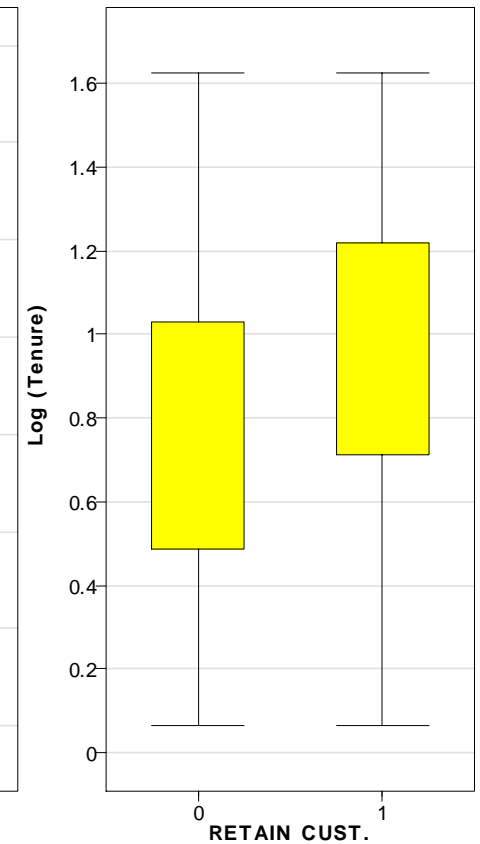
<Income>



<Log(Profit)>



<Log(Tenure)>



# Analysis Result

## Logistic Regression Model

- 'Multiple R-squared' is about 5.4%
- At the 5% significance level, Age, Income, and Log(Tenure) have a relevant impact on retention

Input variables	Coefficient	Std. Error	p-value	Odds
Constant term	-0.64380628	0.25709355	0.01227386	*
Log(Profit)	0.29747277	0.10401043	0.00423603	1.34645176
Online	0.42755309	0.09118895	0.00000275	1.53350055
AGE	0.25735554	0.02353481	0	1.29350495
INCOME	-0.05267424	0.0145958	0.00030754	0.94868898
Log (Tenure)	1.06416845	0.08408901	0	2.89842772

Residual df	9994
Residual Dev.	8347.935547
% Success in training data	83.92
# Iterations used	10
Multiple R-squared	0.05350931

Error Report			
Class	# Cases	# Errors	% Error
1	8392	0	0.00
0	1608	1608	100.00
<b>Overall</b>	<b>10000</b>	<b>1608</b>	<b>16.08</b>

# Result

## ■ Graphs

- Numeric variables 'Age', 'Income', 'Log(Profit)', and 'Log(Tenure) showed a relationship with a response variable

## ■ Logistic Regression

- Very low multiple R-sqaure
- Income, Age, and Log(Tenure)



# Recommendations

- Tainted by lack of managerial insight!
  - Target lower income groups
  - Provide customized services to most profitable groups
  - Encourage customers to use online banking