

# Exploratory Data Analysis

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## Abstract

To conduct this analysis, we are using a random sample of 100,000 individuals per year created by a previous RA, Xian Na<sup>1</sup>, which includes years 2003 to 2015. We then complement it using a balanced sample of 5 mi./year retrieved from AWS, from 2010 to 2021<sup>2</sup>.

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<sup>1</sup>This was created by Xian using SBA/experian\_data/scripts/Rscripts/01\_experian Consolidate.R. For simplicity, we are working with a copy of it saved as SBA/\_octaviosCode/data/100k\_sample.csv

<sup>2</sup>This is saved as SBA/\_octaviosCode/data/aws\_50mi\_sample.csv

# 1 Probabilities of Approval by HH Income and Home Value

## 1.1 Mortgage Loans

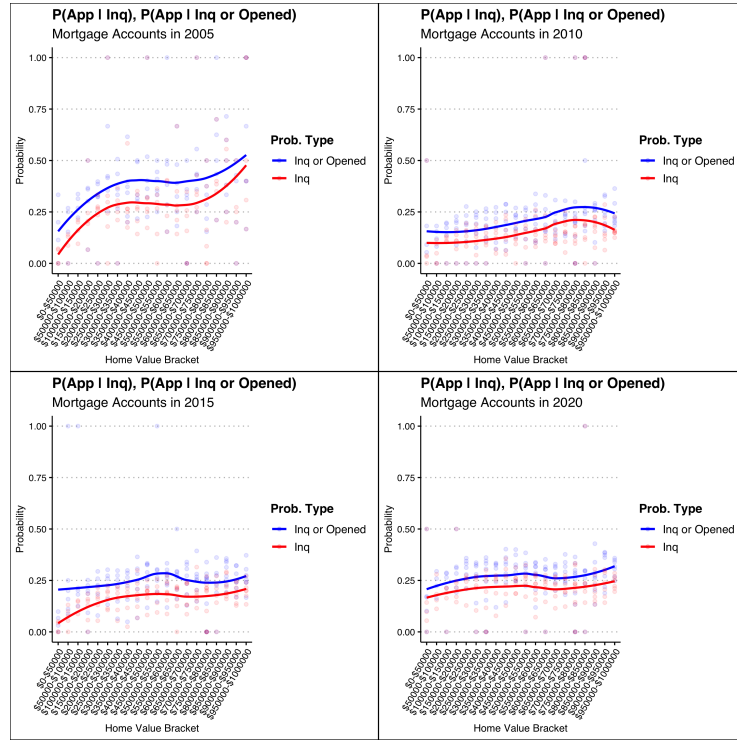


Figure 1:  $\Pr(\text{App} \mid \text{Inq})$  and  $\Pr(\text{App} \mid (\text{Inq or Open}))$

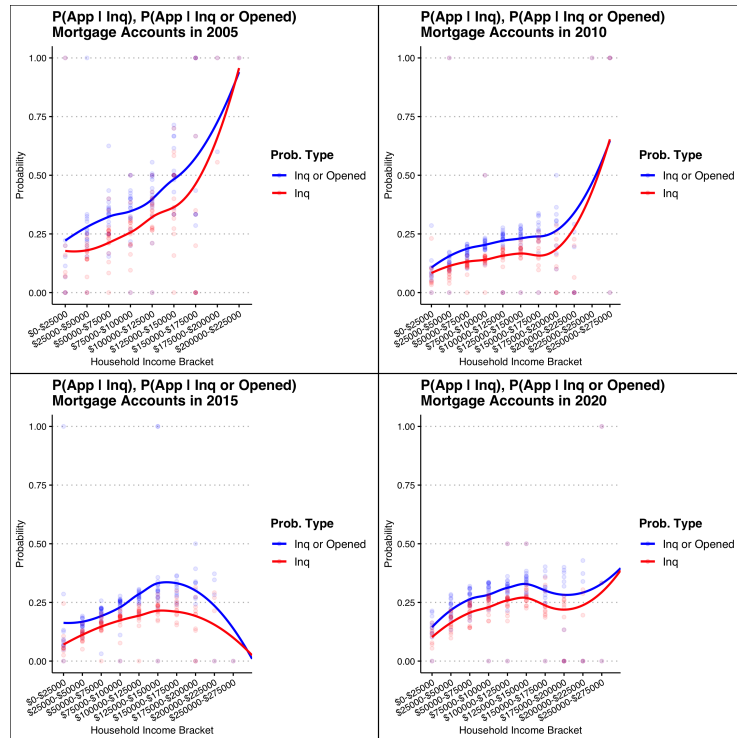


Figure 2:  $\Pr(\text{App} \mid \text{Inq})$  and  $\Pr(\text{App} \mid (\text{Inq or Open}))$

## 2 Probabilities of Approval by Race

### 2.1 Mortgage Loans

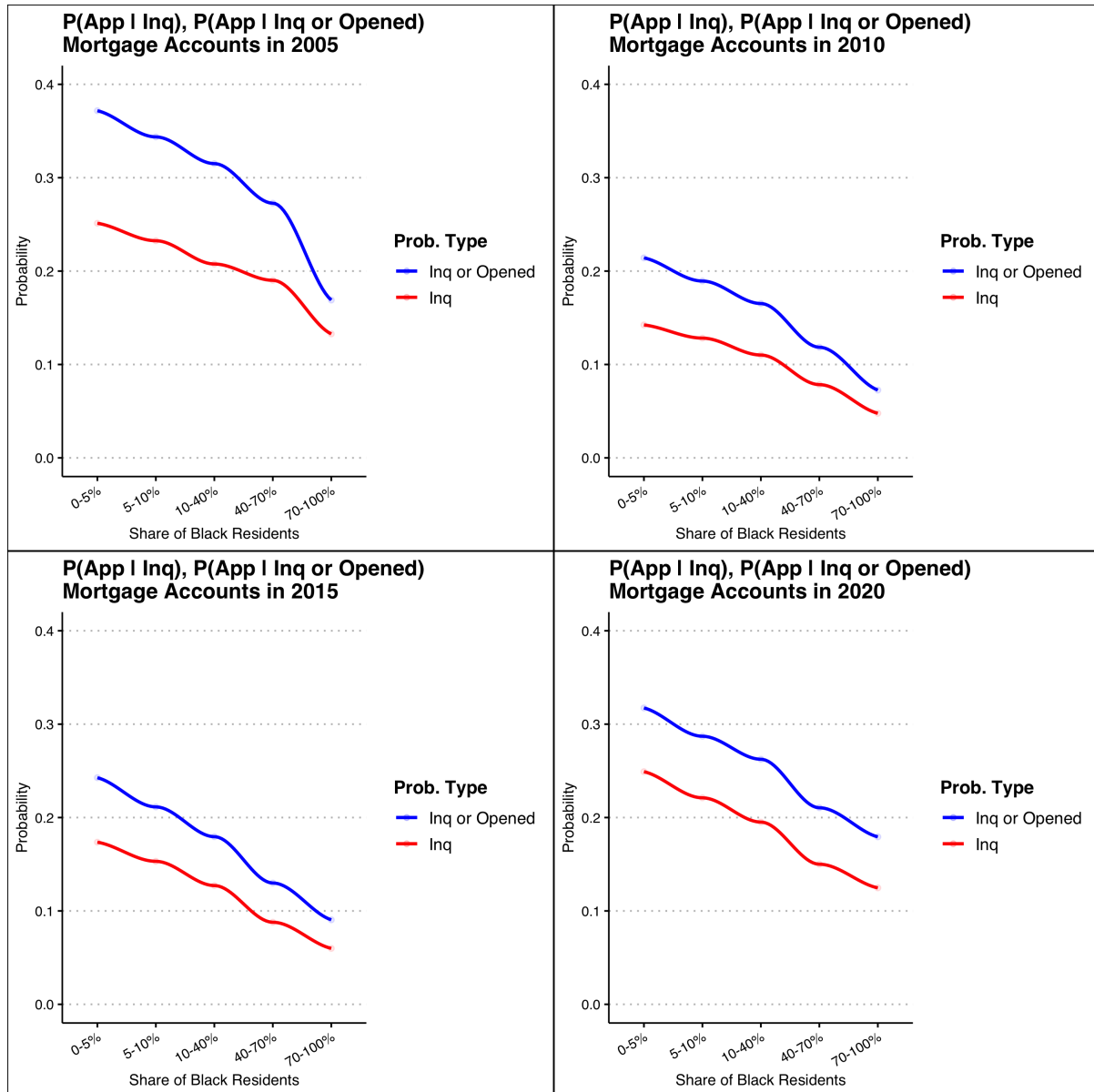


Figure 3:  $\Pr(\text{App} \mid \text{Inq})$  and  $\Pr(\text{App} \mid (\text{Inq or Open}))$

### 3 Probabilities of Approval Over Time

#### 3.1 Mortgage Loans

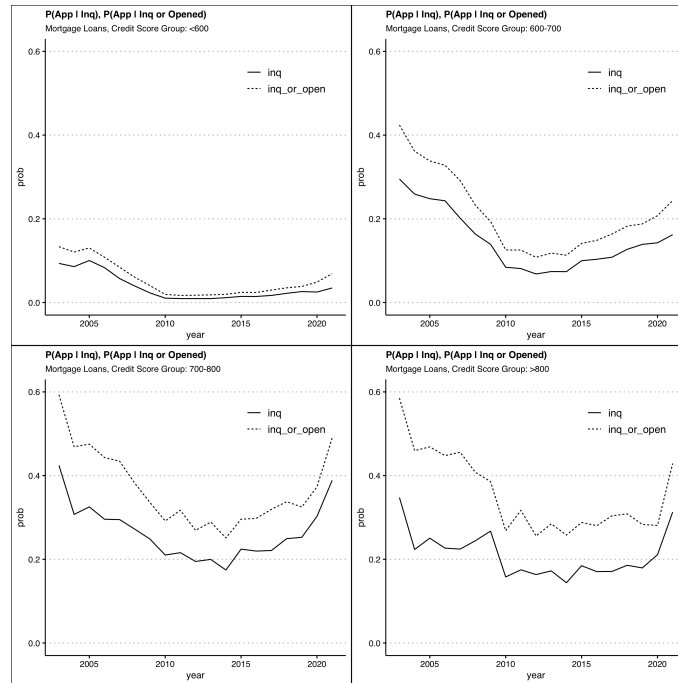


Figure 4:  $\Pr(\text{Approval} \mid \text{Inquiry})$  and  $\Pr(\text{Approval} \mid (\text{Inquiry or Acct Opened}))$

#### 3.2 Card Loans

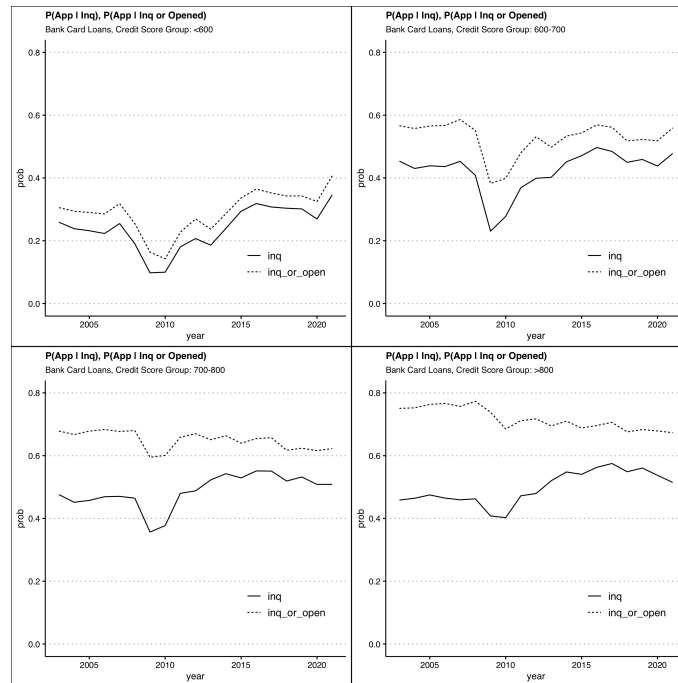


Figure 5:  $\Pr(\text{Approval} \mid \text{Inquiry})$  and  $\Pr(\text{Approval} \mid (\text{Inquiry or Acct Opened}))$

### 3.3 All Loans

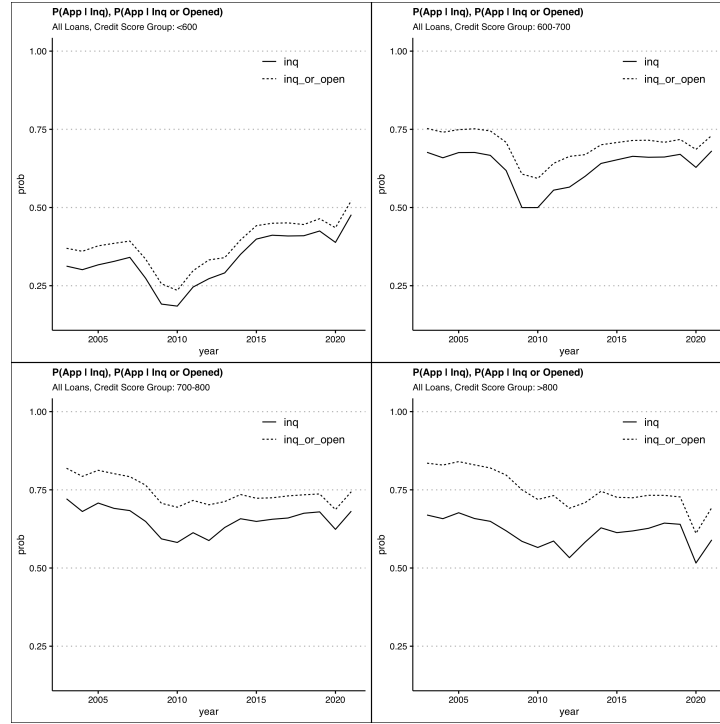


Figure 6:  $\Pr(\text{Approval} \mid \text{Inquiry})$  and  $\Pr(\text{Approval} \mid (\text{Inquiry or Acct Opened}))$

### 3.4 Car Loans

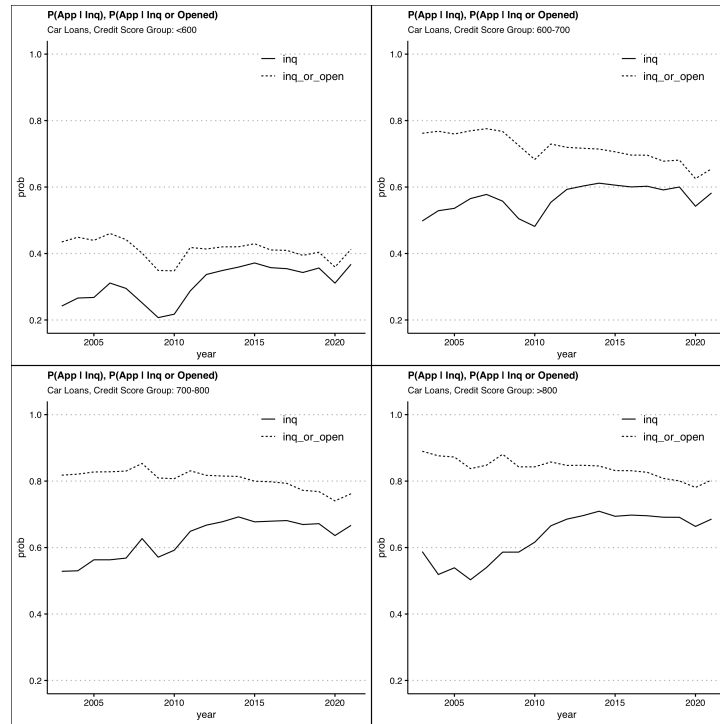


Figure 7:  $\Pr(\text{Approval} \mid \text{Inquiry})$  and  $\Pr(\text{Approval} \mid (\text{Inquiry or Acct Opened}))$

## 4 Credit Score Distribution

### 4.1 Car, Mortgage, Card, All Loans

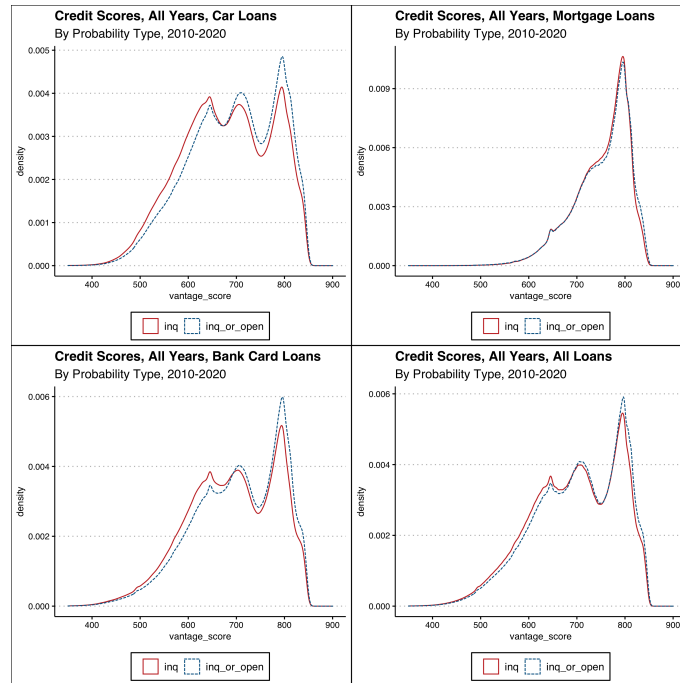


Figure 8: Score Distribution by Probability of Being Approved

### 4.2 Unconditional

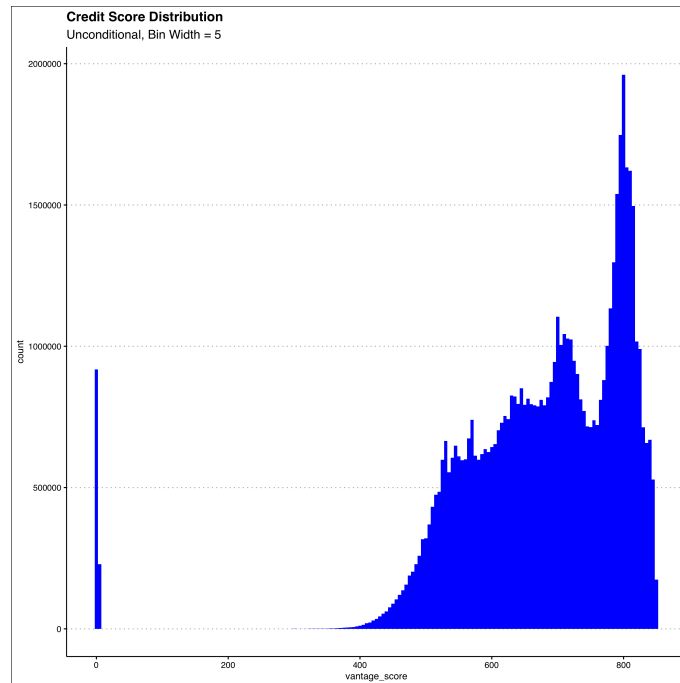


Figure 9: Score Distribution, Unconditional

## 5 Balance Over Time

### 5.1 Mortgage Loans

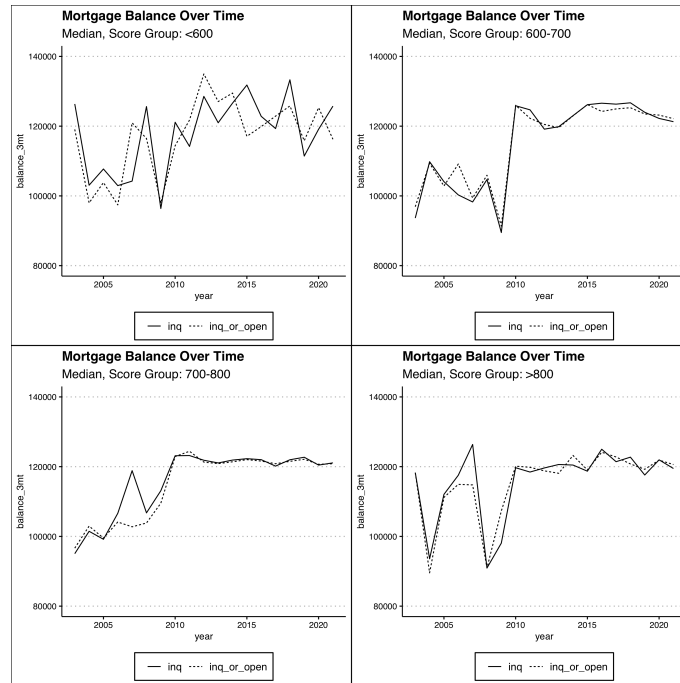


Figure 10: Mortgage Loan Balance Over Time by Credit Score

### 5.2 Car Loans

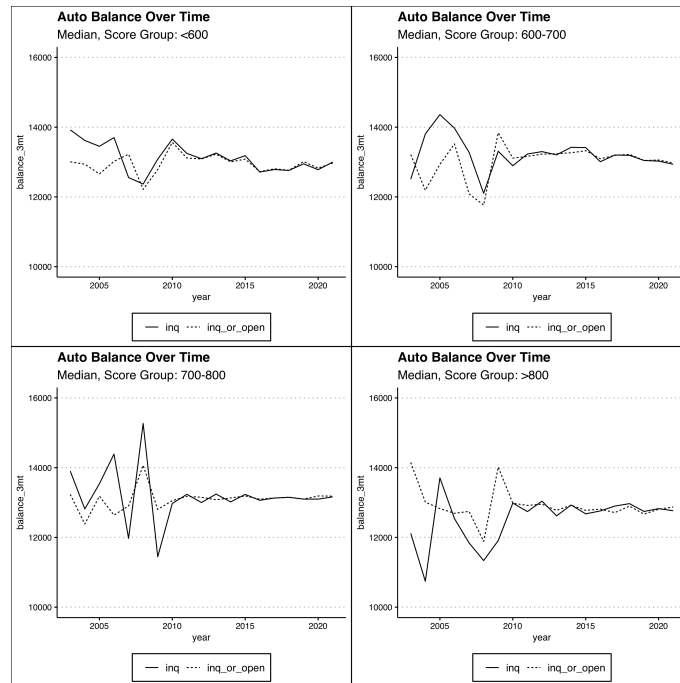


Figure 11: Auto Loan Balance Over Time by Credit Score

## 6 Credit Limits Over Time

### 6.1 Bank Card Loans

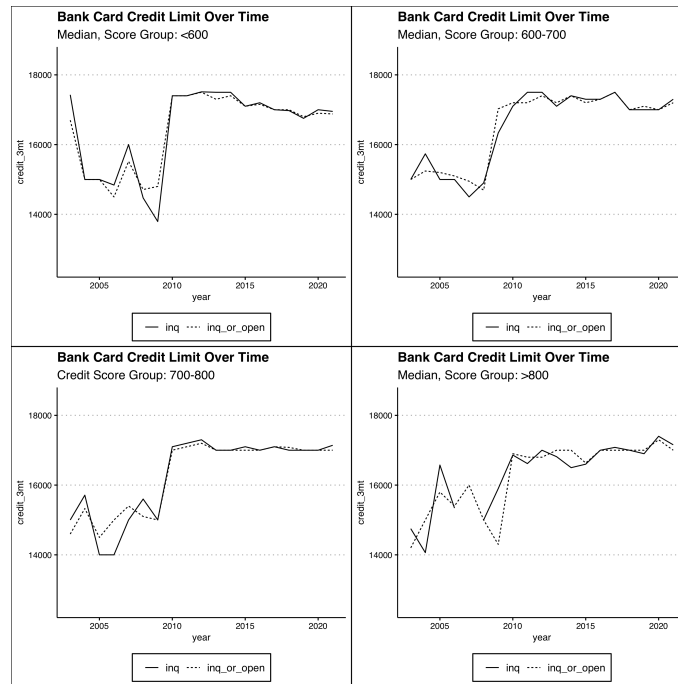


Figure 12: Bank Card Credit Limit Over Time by Credit Score