

Code Outputs

Xandre Clementsmith and Jacob Mattox

10/15/2017

Using Customer Data to Individualize Credit Card Rewards

The customer data are displayed as spending in different categories over a six month period in both categorical and histogram form (uses masked_ID 1 initially, but can be changed to show any individual or group as needed).

```
## randomForest 4.6-10
```

```
## Type rfNews() to see new features/changes/bug fixes.
```

```
##  
## Attaching package: 'randomForest'
```

```
## The following object is masked from 'package:ggplot2':  
##  
##     margin
```

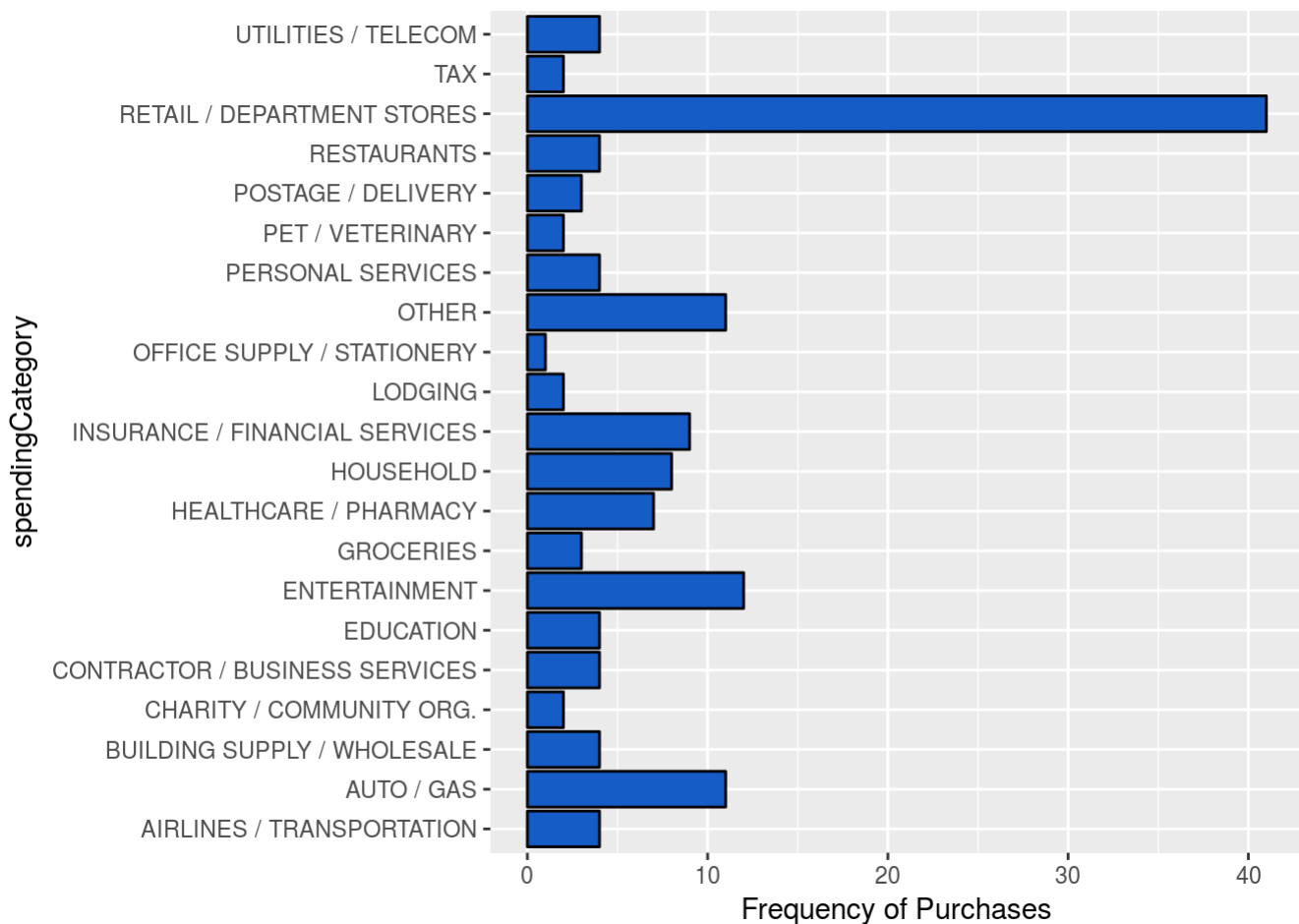
```
##  
## Attaching package: 'dplyr'
```

```
## The following object is masked from 'package:randomForest':  
##  
##     combine
```

```
## The following objects are masked from 'package:stats':  
##  
##     filter, lag
```

```
## The following objects are masked from 'package:base':  
##  
##     intersect, setdiff, setequal, union
```

```
##           spendingCategory Freq
## 1      AIRLINES / TRANSPORTATION 4
## 2              AUTO / GAS      11
## 3    BUILDING SUPPLY / WHOLESALE 4
## 4        CHARITY / COMMUNITY ORG. 2
## 5    CONTRACTOR / BUSINESS SERVICES 4
## 6              EDUCATION      4
## 7          ENTERTAINMENT      12
## 8              GROCERIES      3
## 9    HEALTHCARE / PHARMACY      7
## 10             HOUSEHOLD      8
## 11  INSURANCE / FINANCIAL SERVICES 9
## 12             LODGING      2
## 13    OFFICE SUPPLY / STATIONERY 1
## 14              OTHER      11
## 15        PERSONAL SERVICES      4
## 16          PET / VETERINARY      2
## 17        POSTAGE / DELIVERY      3
## 18             RESTAURANTS      4
## 19    RETAIL / DEPARTMENT STORES 41
## 20                TAX      2
## 21    UTILITIES / TELECOM      4
```



Determining the Quantity Spent on a Given Category

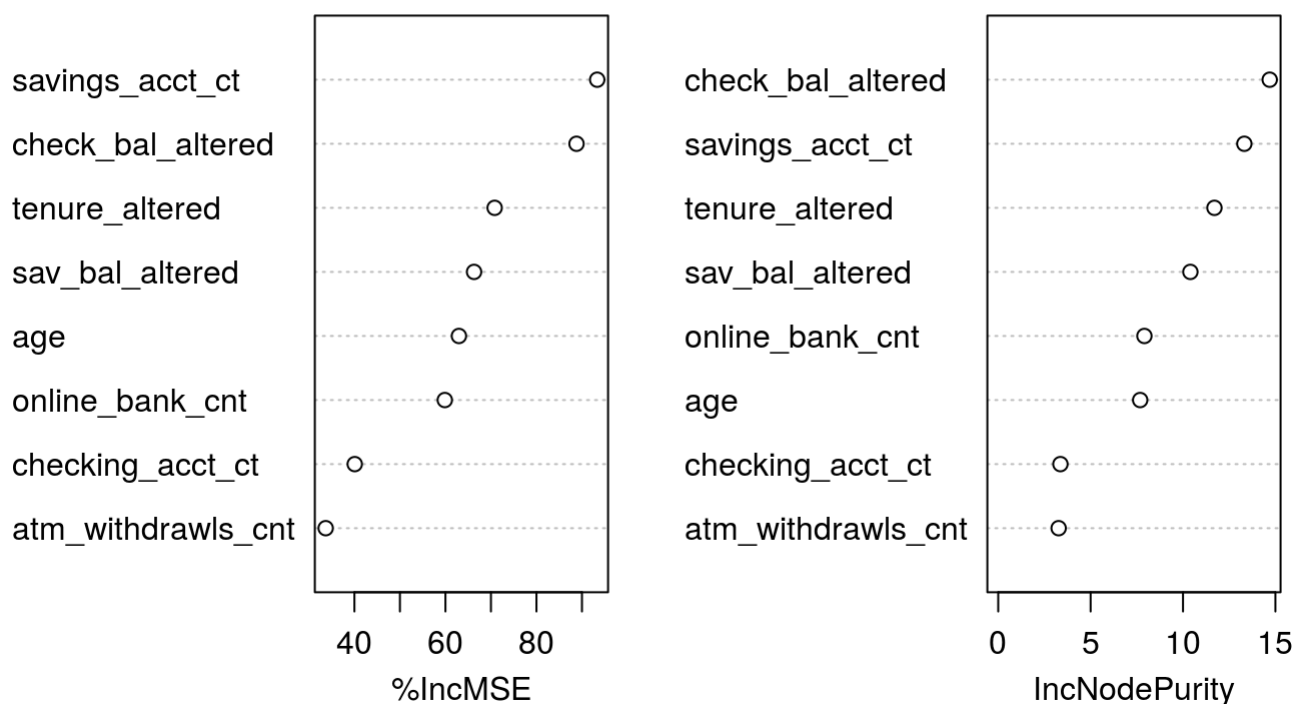
This segment allows another way for the user to see the spending in an individual category (Auto/Gas used as default) for an inputted masked_ID.

```
## [1] "Number of times masked Id 1 spent money on AUTO / GAS : 11"
```

Using Regression to Find Identifying Factors of Credit Card Usage

Shows an output of important identifying factors for determining with 89.75% accuracy whether someone would be a good fit for a credit card.

regression



```
##
## Call:
## randomForest(formula = cc_flag ~ savings_acct_ct + checking_acct_ct +      age + atm_withdra
wls_cnt + online_bank_cnt + tenure_altered +      check_bal_altered + sav_bal_altered, data = mo
nth_end_bal,      importance = TRUE, ntree = 2000)
##           Type of random forest: regression
##           Number of trees: 2000
## No. of variables tried at each split: 2
##
##           Mean of squared residuals: 0.02587064
##           % Var explained: 89.65
```

Show Which Users Spend More Than Average (and what do they spend it on)

Using a previously created vector for all spending in Auto/Gas we determine who spends more than average in the chosen category. This makes for an excellent target for credit card rewards.

```
## [1] "Id1 spends more often in AUTO / GAS than the majority of users."
```

Searching Web Data for a Keyword

In this last code, we're searching their web data for the keyword: "Credit". Glancing at this output can put perspective on interests and future spending habits.

```
## Source: local data frame [35 x 1]
##
##                                     wf_page
##                                     (chr)
## 1      Financial Education/You and Your Family/Credit Management
## 2      Financial Education/You and Your Family/Credit Management
## 3      Financial Education/You and Your Family/Credit Management
## 4 Accounts and Services/Credit Cards/Account preference set or maintained
## 5      Accounts and Services/Credit Cards/Account or service maintained
## 6      Mortgage Loans/Your Financial Goals /Borrowing and Credit
## 7      Mortgage Loans/Personal Lines and Loans/Credit Cards
## 8      Mortgage Loans/Your Financial Goals /Borrowing and Credit
## 9      Accounts and Services/Credit Cards/Account or service maintained
## 10     Mortgage Loans/Personal Lines and Loans/Credit Cards
## ..                                     ...
```

Determining What Methods By Which the User Communicates

This code can be used to determine which means of communication the user uses frequently, and which they never use. As a result, you can reach the user by their preferred mean. This will help in preventing customer dissatisfaction and ensure that both the credit card advertisement and customer support can easily reach the user.

```
## Source: local data frame [1 x 6]
##
##   masked_id Call Access  Online Access  Contact by Mail  Contact by Email
##   (dbl)      (dbl)      (dbl)          (dbl)          (dbl)
## 1      1      0      234              5              72
## Variables not shown: Contact by Phone (dbl)
```