

630Project.R

Loyd

2020-11-16

```
# Sam Loyd
#
# Final Project
#
# The analysis of this data set will be performed in R.
#
# The data set was obtained as a compressed archive from Kaggle.

# Data Understanding

# LoanNr_ChkDgt Text Identifier - Primary key, I don't want this to confuse the model
# Name Text Borrower name - Remove for privacy concerns.
# City Text Borrower city
# State Text Borrower state
# Zip Text Borrower zip code
# Bank Text Bank name
# BankState Text Bank state
# NAICS Text North American industry classification system code
# ApprovalDate Date/Time Date SBA commitment issued
# ApprovalFY Text Fiscal year of commitment
# Term Number Loan term in months
# NoEmp Number Number of business employees
# NewExist Text 1 D Existing business, 2 D New business
# CreateJob Number Number of jobs created (Target variable)
# RetainedJob Number Number of jobs retained (*)
# FranchiseCode Text Franchise code, (00000 or 00001) D Nofranchise
# UrbanRural Text 1 D Urban, 2 D rural, 0 D undefined
# RevLineCr Text Revolving line of credit: Y D Yes, N D No
# LowDoc Text LowDoc Loan Program: Y D Yes, N D No
# ChgOffDate Date/Time The date when a loan is declared to be in default (*)
# DisbursementDate Date/Time Disbursement date (*)
# DisbursementGross Currency Amount disbursed (*)
# BalanceGross Currency Gross amount outstanding (*)
# MIS_Status Text Loan status charged off D CHGOFF, Paid in full D PIF (Target variable - Convert to Logical)
# ChgOffPrinGr Currency Charged-off amount (*)
# GrAppv Currency Gross amount of loan approved by bank
# SBA_Appv Currency SBA's guaranteed amount of approved loan
# * warning - future information - most will need to be removed

# Given the nature of this data set it is important that we not let future data
# be used for our model. For example, several fields are based on information after the
# loan was approved. Disbursement is an example.

library(readxl)
library(dplyr)
```

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

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

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

```
library(pastecs)
```

```
##  
## Attaching package: 'pastecs'
```

```
## The following objects are masked from 'package:dplyr':  
##  
##   first, last
```

```
library(psych)  
library(ggplot2)
```

```
##  
## Attaching package: 'ggplot2'
```

```
## The following objects are masked from 'package:psych':  
##  
##   %+%, alpha
```

```
library(corrplot)
```

```
## corrplot 0.84 loaded
```

```
library(purrr)  
library(tidyr)
```

```
##  
## Attaching package: 'tidyr'
```

```
## The following object is masked from 'package:pastecs':  
##  
##   extract
```

```
library(dummies)
```

```
## dummies-1.5.6 provided by Decision Patterns
```

```
library(mltools)
```

```
##  
## Attaching package: 'mltools'
```

```
## The following object is masked from 'package:tidyr':  
##  
##   replace_na
```

```
library(naniar)  
library(data.table)
```

```
##  
## Attaching package: 'data.table'
```

```
## The following object is masked from 'package:purrr':  
##  
##   transpose
```

```
## The following objects are masked from 'package:pastecs':  
##  
##   first, last
```

```
## The following objects are masked from 'package:dplyr':  
##  
##   between, first, last
```

```
library(binaryLogic)
```

```
##  
## Attaching package: 'binaryLogic'
```

```
## The following object is masked from 'package:purrr':  
##  
##   negate
```

```
library(reshape2)
```

```
##  
## Attaching package: 'reshape2'
```

```
## The following objects are masked from 'package:data.table':  
##  
##   dcast, melt
```

```
## The following object is masked from 'package:tidyr':  
##  
##   smiths
```

```
library(binaryLogic)
library(RColorBrewer)
library(superml)
```

```
## Warning: package 'superml' was built under R version 4.0.3
```

```
## Loading required package: R6
```

```
# Turn off scientinfic notation
```

```
options(scipen=999)
```

```
sbaloan_data <- read.csv('SBAnational.csv',na.strings=c("NA","NaN", " ", ""))
```

```
# glimpse(sbaloan_data)
```

```
summary(sbaloan_data)
```

```

## LoanNr_ChkDgt      Name      City      State
## Min.      :1000014003  Length:899164  Length:899164  Length:899164
## 1st Qu.:2589757508  Class :character  Class :character  Class :character
## Median :4361439006  Mode  :character  Mode  :character  Mode  :character
## Mean    :4772612311
## 3rd Qu.:6904626505
## Max.    :9996003010
##
##      Zip      Bank      BankState      NAICS
## Min.      :      0  Length:899164  Length:899164  Min.      :      0
## 1st Qu.:27587  Class :character  Class :character  1st Qu.:235210
## Median :55410  Mode  :character  Mode  :character  Median :445310
## Mean    :53804
## 3rd Qu.:83704
## Max.    :99999
##
## ApprovalDate      ApprovalFY      Term      NoEmp
## Length:899164  Length:899164  Min.      : 0.0  Min.      : 0.00
## Class :character  Class :character  1st Qu.: 60.0  1st Qu.: 2.00
## Mode  :character  Mode  :character  Median : 84.0  Median : 4.00
##
##                      Mean    :110.8  Mean    : 11.41
##                      3rd Qu.:120.0  3rd Qu.: 10.00
##                      Max.      :569.0  Max.      :9999.00
##
##      NewExist      CreateJob      RetainedJob      FranchiseCode
## Min.      :0.00  Min.      : 0.00  Min.      : 0.0  Min.      : 0
## 1st Qu.:1.00  1st Qu.: 0.00  1st Qu.: 0.0  1st Qu.: 1
## Median :1.00  Median : 0.00  Median : 1.0  Median : 1
## Mean    :1.28  Mean    : 8.43  Mean    : 10.8  Mean    : 2754
## 3rd Qu.:2.00  3rd Qu.: 1.00  3rd Qu.: 4.0  3rd Qu.: 1
## Max.    :2.00  Max.    :8800.00  Max.    :9500.0  Max.    :99999
## NA's      :136
##      UrbanRural      RevLineCr      LowDoc      ChgOfffDate
## Min.      :0.0000  Length:899164  Length:899164  Length:899164
## 1st Qu.:0.0000  Class :character  Class :character  Class :character
## Median :1.0000  Mode  :character  Mode  :character  Mode  :character
## Mean    :0.7577
## 3rd Qu.:1.0000
## Max.    :2.0000
##
## DisbursementDate      DisbursementGross      BalanceGross      MIS_Status
## Length:899164  Length:899164  Length:899164  Length:899164
## Class :character  Class :character  Class :character  Class :character
## Mode  :character  Mode  :character  Mode  :character  Mode  :character
##
##
##
## ChgOfffPrinGr      GrAppv      SBA_Appv
## Length:899164  Length:899164  Length:899164
## Class :character  Class :character  Class :character
## Mode  :character  Mode  :character  Mode  :character
##
##
##
##

```

```
# Clean up any non - unique data - None found  
sbaload_data <- sbaload_data %>% distinct()  
summary(sbaload_data)
```

```

## LoanNr_ChkDgt      Name      City      State
## Min.      :1000014003  Length:899164  Length:899164  Length:899164
## 1st Qu.:2589757508  Class :character  Class :character  Class :character
## Median :4361439006  Mode  :character  Mode  :character  Mode  :character
## Mean    :4772612311
## 3rd Qu.:6904626505
## Max.    :9996003010
##
##      Zip      Bank      BankState      NAICS
## Min.      :      0  Length:899164  Length:899164  Min.      :      0
## 1st Qu.:27587  Class :character  Class :character  1st Qu.:235210
## Median :55410  Mode  :character  Mode  :character  Median :445310
## Mean    :53804
## 3rd Qu.:83704
## Max.    :99999
##
## ApprovalDate      ApprovalFY      Term      NoEmp
## Length:899164  Length:899164  Min.      : 0.0  Min.      : 0.00
## Class :character  Class :character  1st Qu.: 60.0  1st Qu.: 2.00
## Mode  :character  Mode  :character  Median : 84.0  Median : 4.00
##
##                      Mean    :110.8  Mean    : 11.41
##                      3rd Qu.:120.0  3rd Qu.: 10.00
##                      Max.    :569.0  Max.    :9999.00
##
##      NewExist      CreateJob      RetainedJob      FranchiseCode
## Min.      :0.00  Min.      : 0.00  Min.      : 0.0  Min.      : 0
## 1st Qu.:1.00  1st Qu.: 0.00  1st Qu.: 0.0  1st Qu.: 1
## Median :1.00  Median : 0.00  Median : 1.0  Median : 1
## Mean    :1.28  Mean    : 8.43  Mean    : 10.8  Mean    : 2754
## 3rd Qu.:2.00  3rd Qu.: 1.00  3rd Qu.: 4.0  3rd Qu.: 1
## Max.    :2.00  Max.    :8800.00  Max.    :9500.0  Max.    :9999
## NA's      :136
##      UrbanRural      RevLineCr      LowDoc      ChgOfffDate
## Min.      :0.0000  Length:899164  Length:899164  Length:899164
## 1st Qu.:0.0000  Class :character  Class :character  Class :character
## Median :1.0000  Mode  :character  Mode  :character  Mode  :character
## Mean    :0.7577
## 3rd Qu.:1.0000
## Max.    :2.0000
##
## DisbursementDate      DisbursementGross      BalanceGross      MIS_Status
## Length:899164  Length:899164  Length:899164  Length:899164
## Class :character  Class :character  Class :character  Class :character
## Mode  :character  Mode  :character  Mode  :character  Mode  :character
##
##
##
## ChgOfffPrinGr      GrAppv      SBA_Appv
## Length:899164  Length:899164  Length:899164
## Class :character  Class :character  Class :character
## Mode  :character  Mode  :character  Mode  :character
##
##
##
##

```

```
# Get rid of $ sign and commas
sbaloan_data$GrAppv <- gsub('[^a-zA-Z0-9.]', '', sbaloan_data$GrAppv)
sbaloan_data$ApprovalFY <- gsub('[^a-zA-Z0-9.]', '', sbaloan_data$ApprovalFY)
```

```
# Do we have job creation data for each Year.
# unique(sbaloan_data$ApprovalFY)
```

```
CheckFY <- filter(sbaloan_data, `CreateJob` > 0)
```

```
NoCheckFY <- filter(sbaloan_data, `CreateJob` == 0)
```

```
CheckFY %>% count(ApprovalFY)
```

```
##      ApprovalFY      n
## 1          1986    648
## 2          1987   1188
## 3          1988    923
## 4          1989    998
## 5          1990   1319
## 6          1991   1277
## 7          1992   1715
## 8          1993   2102
## 9          1994   2991
## 10         1995   3187
## 11         1996   4994
## 12         1997   2872
## 13         1998   4185
## 14         1999  11131
## 15         2000  14449
## 16         2001  13246
## 17         2002  15497
## 18         2003  21099
## 19         2004  24802
## 20         2005  29310
## 21         2006  32442
## 22         2007  32314
## 23         2008  19516
## 24         2009   9084
## 25         2010   8033
## 26         2011   6322
## 27         2012   2989
## 28         2013   1174
## 29         2014    109
```

```
NoCheckFY %>% count(ApprovalFY)
```


##	ApprovalFY	n
## 1	1962	1
## 2	1965	1
## 3	1966	1
## 4	1967	2
## 5	1968	2
## 6	1969	4
## 7	1970	8
## 8	1971	20
## 9	1972	27
## 10	1973	52
## 11	1974	42
## 12	1975	30
## 13	1976	66
## 14	1976A	18
## 15	1977	137
## 16	1978	242
## 17	1979	352
## 18	1980	477
## 19	1981	630
## 20	1982	719
## 21	1983	1684
## 22	1984	2022
## 23	1985	1944
## 24	1986	1470
## 25	1987	1030
## 26	1988	975
## 27	1989	12250
## 28	1990	13540
## 29	1991	14389
## 30	1992	19170
## 31	1993	21203
## 32	1994	28607
## 33	1995	42571
## 34	1996	35118
## 35	1997	34876
## 36	1998	31831
## 37	1999	26232
## 38	2000	22932
## 39	2001	24104
## 40	2002	28894
## 41	2003	37094
## 42	2004	43488
## 43	2005	48215
## 44	2006	43598
## 45	2007	39562
## 46	2008	20024
## 47	2009	10042
## 48	2010	8815
## 49	2011	6286
## 50	2012	3008
## 51	2013	1284
## 52	2014	159

```
# How many unique banks
#unique(sbaload_data$Bank)
```

```
# Convert GrAppv to numeric
sbaload_data$GrAppv <- as.numeric(as.character(sbaload_data$GrAppv))
sbaload_data$SBA_Appv <- gsub('[^a-zA-Z0-9.]', '', sbaload_data$SBA_Appv)
sbaload_data$RevLineCr <- gsub('[^a-zA-Z0-9]', 'UNKNOWN', sbaload_data$RevLineCr)
```

```
# sbaload_data$RevLineCr
# unique(sbaload_data$RevLineCr)
```

```
# Convert GrAppv to numeric
sbaload_data$SBA_Appv <- as.numeric(as.character(sbaload_data$SBA_Appv))
```

```
# Domain Knowledge
# Retrieved from https://www.investopedia.com/terms/c/chargeoff.asp
# Quote:
# A charge-off refers to debt that a company believes it will no longer
# collect as the borrower has become delinquent on payments.
# This would be future knowledge as I am interested in loans that
# Retrieved from https://www.investopedia.com/terms/d/disbursement.asp
# Quote:
# A student loan disbursement is the paying out of loan proceeds to a borrower
# Retrieved from https://www.census.gov/eos/www/naics/faqs/faqs.html#q1
# Quote:
# The North American Industry Classification System (NAICS,
# pronounced Nakes) was developed under the direction
# and guidance of the Office of Management and Budget (OMB)
# as the standard for use by Federal statistical agencies
# in classifying business establishments for the collection,
# tabulation, presentation, and analysis of statistical
# data describing the U.S. economy. Use of the standard provides
# uniformity and comparability in the presentation of
# these statistical data. NAICS is based on a production-oriented
# concept, meaning that it groups establishments
# into industries according to similarity in the processes
# used to produce goods or services.
# NAICS replaced the Standard Industrial
# Classification (SIC) system in 1997.
```

```
head(sbaload_data)
```

##	LoanNr_ChkDgt	Name	City	State	Zip		
## 1	1000014003	ABC HOBBYCRAFT	EVANSVILLE	IN	47711		
## 2	1000024006	LANDMARK BAR & GRILLE (THE)	NEW PARIS	IN	46526		
## 3	1000034009	WHITLOCK DDS, TODD M.	BLOOMINGTON	IN	47401		
## 4	1000044001	BIG BUCKS PAWN & JEWELRY, LLC	BROKEN ARROW	OK	74012		
## 5	1000054004	ANASTASIA CONFECTIONS, INC.	ORLANDO	FL	32801		
## 6	1000084002	B&T SCREW MACHINE COMPANY, INC	PLAINVILLE	CT	6062		
##	Bank	BankState	NAICS	ApprovalDate	ApprovalFY	Term	
## 1	FIFTH THIRD BANK	OH	451120	28-Feb-97	1997	84	
## 2	1ST SOURCE BANK	IN	722410	28-Feb-97	1997	60	
## 3	GRANT COUNTY STATE BANK	IN	621210	28-Feb-97	1997	180	
## 4	1ST NATL BK & TR CO OF BROKEN	OK	0	28-Feb-97	1997	60	
## 5	FLORIDA BUS. DEVEL CORP	FL	0	28-Feb-97	1997	240	
## 6	TD BANK, NATIONAL ASSOCIATION	DE	332721	28-Feb-97	1997	120	
##	NoEmp	NewExist	CreateJob	RetainedJob	FranchiseCode	UrbanRural	RevLineCr
## 1	4	2	0	0	1	0	N
## 2	2	2	0	0	1	0	N
## 3	7	1	0	0	1	0	N
## 4	2	1	0	0	1	0	N
## 5	14	1	7	7	1	0	N
## 6	19	1	0	0	1	0	N
##	LowDoc	ChgOffDate	DisbursementDate	DisbursementGross	BalanceGross	MIS_Status	
## 1	Y	<NA>	28-Feb-99	\$60,000.00	\$0.00	P I F	
## 2	Y	<NA>	31-May-97	\$40,000.00	\$0.00	P I F	
## 3	N	<NA>	31-Dec-97	\$287,000.00	\$0.00	P I F	
## 4	Y	<NA>	30-Jun-97	\$35,000.00	\$0.00	P I F	
## 5	N	<NA>	14-May-97	\$229,000.00	\$0.00	P I F	
## 6	N	<NA>	30-Jun-97	\$517,000.00	\$0.00	P I F	
##	ChgOffPrinGr	GrAppv	SBA_Appv				
## 1	\$0.00	60000	48000				
## 2	\$0.00	40000	32000				
## 3	\$0.00	287000	215250				
## 4	\$0.00	35000	28000				
## 5	\$0.00	229000	229000				
## 6	\$0.00	517000	387750				

```
summary(sbaload_data)
```

```

## LoanNr_ChkDgt      Name      City      State
## Min.      :1000014003  Length:899164  Length:899164  Length:899164
## 1st Qu.:2589757508  Class :character  Class :character  Class :character
## Median :4361439006  Mode  :character  Mode  :character  Mode  :character
## Mean    :4772612311
## 3rd Qu.:6904626505
## Max.    :9996003010
##
##      Zip      Bank      BankState      NAICS
## Min.      :      0  Length:899164  Length:899164  Min.      :      0
## 1st Qu.:27587  Class :character  Class :character  1st Qu.:235210
## Median :55410  Mode  :character  Mode  :character  Median :445310
## Mean    :53804
## 3rd Qu.:83704
## Max.    :99999
##
## ApprovalDate      ApprovalFY      Term      NoEmp
## Length:899164  Length:899164  Min.      :  0.0  Min.      :  0.00
## Class :character  Class :character  1st Qu.: 60.0  1st Qu.:  2.00
## Mode  :character  Mode  :character  Median : 84.0  Median :   4.00
##
##                      Mean    :110.8  Mean    : 11.41
##                      3rd Qu.:120.0  3rd Qu.: 10.00
##                      Max.    :569.0  Max.    :9999.00
##
##      NewExist      CreateJob      RetainedJob      FranchiseCode
## Min.      :0.00  Min.      :  0.00  Min.      :  0.0  Min.      :  0
## 1st Qu.:1.00  1st Qu.:  0.00  1st Qu.:  0.0  1st Qu.:  1
## Median :1.00  Median :  0.00  Median :  1.0  Median :  1
## Mean    :1.28  Mean    :  8.43  Mean    : 10.8  Mean    : 2754
## 3rd Qu.:2.00  3rd Qu.:  1.00  3rd Qu.:  4.0  3rd Qu.:  1
## Max.    :2.00  Max.    :8800.00  Max.    :9500.0  Max.    :9999
## NA's      :136
##      UrbanRural      RevLineCr      LowDoc      ChgOfffDate
## Min.      :0.0000  Length:899164  Length:899164  Length:899164
## 1st Qu.:0.0000  Class :character  Class :character  Class :character
## Median :1.0000  Mode  :character  Mode  :character  Mode  :character
## Mean    :0.7577
## 3rd Qu.:1.0000
## Max.    :2.0000
##
## DisbursementDate      DisbursementGross      BalanceGross      MIS_Status
## Length:899164  Length:899164  Length:899164  Length:899164
## Class :character  Class :character  Class :character  Class :character
## Mode  :character  Mode  :character  Mode  :character  Mode  :character
##
##
##
## ChgOfffPrinGr      GrAppv      SBA_Appv
## Length:899164  Min.      :  200  Min.      :  100
## Class :character  1st Qu.: 35000  1st Qu.: 21250
## Mode  :character  Median : 90000  Median : 61250
##
##                      Mean    : 192687  Mean    : 149489
##                      3rd Qu.: 225000  3rd Qu.: 175000
##                      Max.    :5472000  Max.    :5472000
##
##

```

```

sbaloan_data$Month = substr(sbaloan_data$ApprovalDate,3,6)
sbaloan_data$Month <- gsub('^[a-zA-Z]', '', sbaloan_data$Month)
# sbaloan_data$Month

sbaloan_data$Day = substr(sbaloan_data$ApprovalDate,1,2)
sbaloan_data$Day <- gsub('^[[:alnum:]]', '', sbaloan_data$Day)
# sbaloan_data$Day

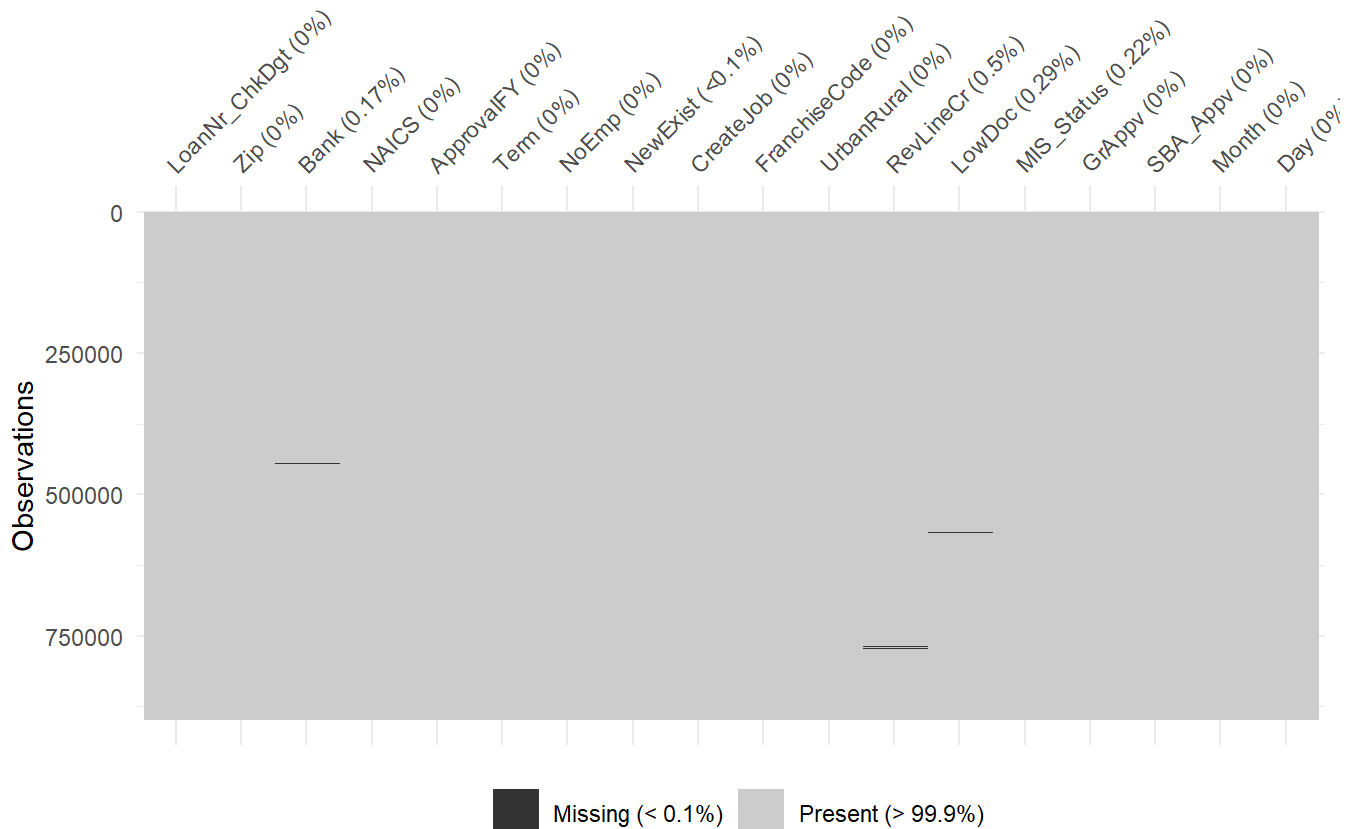
# Remove future data by dropping columns.
# Future data: BalanceGross, DisbursmentGross, DisbursementDate
#           ChgOffDate, ChgOffPrinGr, RetainedJob, and BalanceGross
#           ApprovalDate, ApprovalFY, DisbursmentGross, Disbursement Date
# Name - removed for privacy and security
# Approval Fiscal Date and Year removed as future data
# and to avoid problems with predictions at the beginning of a new year.
# City and state - removed as redundant with zip
# Domain Knowledge
# It is also illegal to use local zip in determining loans -
# can lead to racial bias
# Bank geographical information as well .... page 81 (Seigel, 2016)

# Column Removal
sbaloan_data <- subset(sbaloan_data, select = -c(`BankState`, `City`, `State`, `ApprovalDate`, `BalanceGross`, `
RetainedJob`, `Name`, `DisbursementGross`, `DisbursementDate`, `ChgOffDate`, `ChgOffPrinGr`))

vis_miss(sbaloan_data, warn_large_data=FALSE) + ggtitle("SMB Missingness Analysis")

```

SMB Missingness Analysis



```
# Data preparation
```

```
# I am going to keep most of these as categories
```

```
# Converting here as its a pain after they are factors
```

```
sbaloan_data[is.na(sbaloan_data)]<- 'UNKNOWN'
```

```
# sbaloan_data$Bank[is.na(sbaloan_data$Bank)] <- " "
```

```
# Convert variable as appropriate for analysis
```

```
sbaloan_data$Bank = as.factor(sbaloan_data$Bank)
```

```
sbaloan_data$NAICS = as.factor(sbaloan_data$NAICS)
```

```
sbaloan_data$FranchiseCode = as.factor(sbaloan_data$FranchiseCode)
```

```
sbaloan_data$UrbanRural = as.factor(sbaloan_data$UrbanRural)
```

```
sbaloan_data$RevLineCr = as.factor(sbaloan_data$RevLineCr)
```

```
sbaloan_data$ApprovalFY = as.factor(sbaloan_data$ApprovalFY)
```

```
sbaloan_data$Day = as.factor(sbaloan_data$Day)
```

```
sbaloan_data$RevLineCr = as.factor(sbaloan_data$RevLineCr)
```

```
sbaloan_data$LowDoc = as.factor(sbaloan_data$LowDoc)
```

```
sbaloan_data$MIS_Status = as.factor(sbaloan_data$MIS_Status)
```

```
sbaloan_data$NewExist = as.factor(sbaloan_data$NewExist)
```

```
sbaloan_data$ApprovalFY = as.integer(sbaloan_data$ApprovalFY)
```

```
sbaloan_data$Day = as.integer(sbaloan_data$Day)
```

```
# Remove Loans with unknown status as this is a target variable
```

```
sbaloan_data <- filter(sbaloan_data, `MIS_Status` == "CHGOFF" | `MIS_Status` == "P I F")
```

```
# df1$IS_PASS = as.factor(df1$IS_PASS)
```

```
#glimpse(sbaloan_data)
```

```
summary(sbaloan_data)
```

```

## LoanNr_ChkDgt      Zip      Bank
## Min. :1000014003   Min. : 0   BANK OF AMERICA NATL ASSOC : 86773
## 1st Qu.:2593070004   1st Qu.:27612   WELLS FARGO BANK NATL ASSOC : 63461
## Median :4363894001   Median :55416   JPMORGAN CHASE BANK NATL ASSOC: 48131
## Mean :4774981605   Mean :53857   U.S. BANK NATIONAL ASSOCIATION: 35112
## 3rd Qu.:6908644007   3rd Qu.:83706   CITIZENS BANK NATL ASSOC : 33770
## Max. :9996003010   Max. :99999   PNC BANK, NATIONAL ASSOCIATION: 27340
##                                     (Other) :602580
##
##      NAICS      ApprovalFY      Term      NoEmp
## 0 :201667   Min. : 3.00   Min. : 0.0   Min. : 0.00
## 722110 : 27941   1st Qu.:35.00   1st Qu.: 60.0   1st Qu.: 2.00
## 722211 : 19435   Median :40.00   Median : 84.0   Median : 4.00
## 811111 : 14539   Mean :39.14   Mean :110.8   Mean : 11.41
## 621210 : 14034   3rd Qu.:44.00   3rd Qu.:120.0   3rd Qu.: 10.00
## 624410 : 10092   Max. :52.00   Max. :569.0   Max. :9999.00
## (Other):609459
##      NewExist      CreateJob      FranchiseCode      UrbanRural
## 0 : 1028   Min. : 0.000   1 :637395   0:322826
## 1 :643446   1st Qu.: 0.000   0 :208040   1:469281
## 2 :252559   Median : 0.000   78760 : 3373   2:105060
## UNKNOWN: 134   Mean : 8.444   68020 : 1921
##                                     3rd Qu.: 1.000   50564 : 1034
##                                     Max. :8800.000   21780 : 1001
##                                     (Other): 44403
##      RevLineCr      LowDoc      MIS_Status      GrAppv
## N :419252   N :780997   CHGOFF :157558   Min. : 1000
## 0 :257431   Y :110171   P I F :739609   1st Qu.: 35000
## Y :200660   UNKNOWN: 2578   UNKNOWN: 0   Median : 90000
## T : 15239   0 : 1490   Mean : 193060
## UNKNOWN: 4534   C : 758   3rd Qu.: 225000
## 1 : 23   S : 603   Max. :5472000
## (Other): 28   (Other): 570
##      SBA_Appv      Month      Day
## Min. : 500   Length:897167   Min. : 1.00
## 1st Qu.: 21250   Class :character   1st Qu.: 8.00
## Median : 62050   Mode :character   Median :16.00
## Mean : 149781   Mean :16.01
## 3rd Qu.: 175000   3rd Qu.:23.00
## Max. :5472000   Max. :31.00
##

```

```

# Domain Knowledge
# from https://www.sba.gov/sites/default/files/SDOLoanFactSheet_Oct_2011.pdf
# $5 million
# Quote:
# The exact percentage of the guaranty depends on a variety of factors such as size of
# loan and which SBA program is to be used. This will be worked out between the
# SBA and your bank. Amounts - The maximum loan amount is $5 million. The total
# SBA guarantee for any one borrower may not exceed $3,750,000.
# The data shows outliers. Given the information above anything with over 3,750,000 and be imputed
# as likely a data error.
# Correcting for this.
sum(sbaloan_data$SBA_Appv > 3750000)

```

```
# Given the large data set removing 57 rows should be acceptable
```

```
sbaloan_data <- filter(sbaloan_data, SBA_Appv < 3750001)
```

```
# Further validation
```

```
sum(sbaloan_data$GrAppv > 5000000)
```

```
## [1] 0
```

```
# Returned 0 so the above truncate took care of these as well
```

```
# Numeric only for statistics
```

```
num_sbaloan_data <- sbaloan_data[,c("Term", "NoEmp", "CreateJob", "SBA_Appv", "GrAppv")]
```

```
format(round(stat.desc(num_sbaloan_data,basic = TRUE, norm = FALSE), digits = 3), scientific=FALSE)
```

```
##                Term          NoEmp    CreateJob          SBA_Appv
## nbr.val         897110.000    897110.000    897110.000    897110.000
## nbr.null         806.000      6617.000    627597.000         0.000
## nbr.na           0.000         0.000         0.000         0.000
## min              0.000         0.000         0.000        500.000
## max              569.000      9999.000      8800.000    3750000.000
## range            569.000      9999.000      8800.000    3749500.000
## sum             99440200.000 10235833.000 7574913.000 134134716152.000
## median           84.000         4.000         0.000     62050.000
## mean            110.845        11.410         8.444    149518.695
## SE.mean          0.083         0.078         0.250     238.793
## CI.mean.0.95     0.163         0.153         0.490     468.027
## var              6224.705     5445.367     56148.933  51155277756.997
## std.dev           78.897       73.793      236.958   226175.325
## coef.var          0.712         6.467      28.063     1.513
##
##                GrAppv
## nbr.val         897110.000
## nbr.null         0.000
## nbr.na           0.000
## min              1000.000
## max              5000000.000
## range            4999000.000
## sum             172944830593.000
## median           90000.000
## mean            192779.961
## SE.mean          296.931
## CI.mean.0.95     581.975
## var              79096532668.695
## std.dev          281241.058
## coef.var          1.459
```

```
sample_num_sbaloan_data <- num_sbaloan_data[sample(1:nrow(num_sbaloan_data), 5000,
                                                    replace=FALSE),]
```

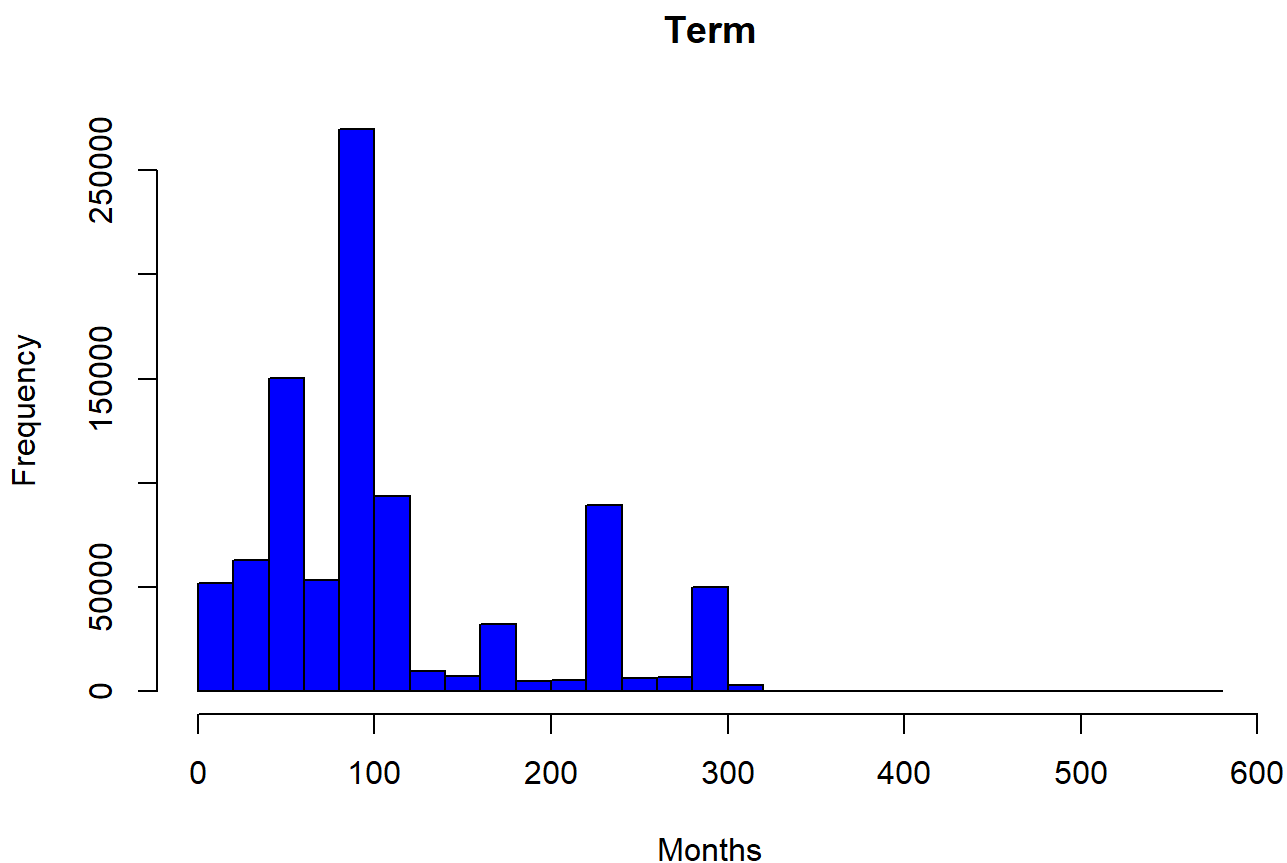
```
format(round(stat.desc(sample_num_sbaloan_data,basic = FALSE, norm = TRUE), digits = 3), scientific=FALSE)
```


##	Term	NoEmp	CreateJob	SBA_Appv	GrAppv
## median	84.000	4.000	0.000	60000.000	91000.000
## mean	111.014	10.677	7.100	150464.420	194755.538
## SE.mean	1.124	0.671	3.049	3337.626	4134.154
## CI.mean.0.95	2.203	1.315	5.978	6543.212	8104.756
## var	6314.018	2249.690	46492.891	55698750974.503	85456160857.650
## std.dev	79.461	47.431	215.622	236005.828	292328.857
## coef.var	0.716	4.442	30.369	1.569	1.501
## skewness	1.140	52.336	40.690	4.074	3.644
## skew.2SE	16.454	755.628	587.484	58.822	52.614
## kurtosis	0.205	3286.336	1656.234	29.163	20.016
## kurt.2SE	1.478	23728.937	11958.812	210.570	144.527
## normtest.W	0.835	0.103	0.010	0.603	0.613
## normtest.p	0.000	0.000	0.000	0.000	0.000

Significant skew and kurtosis. Do not use models that assume a normal distribution.

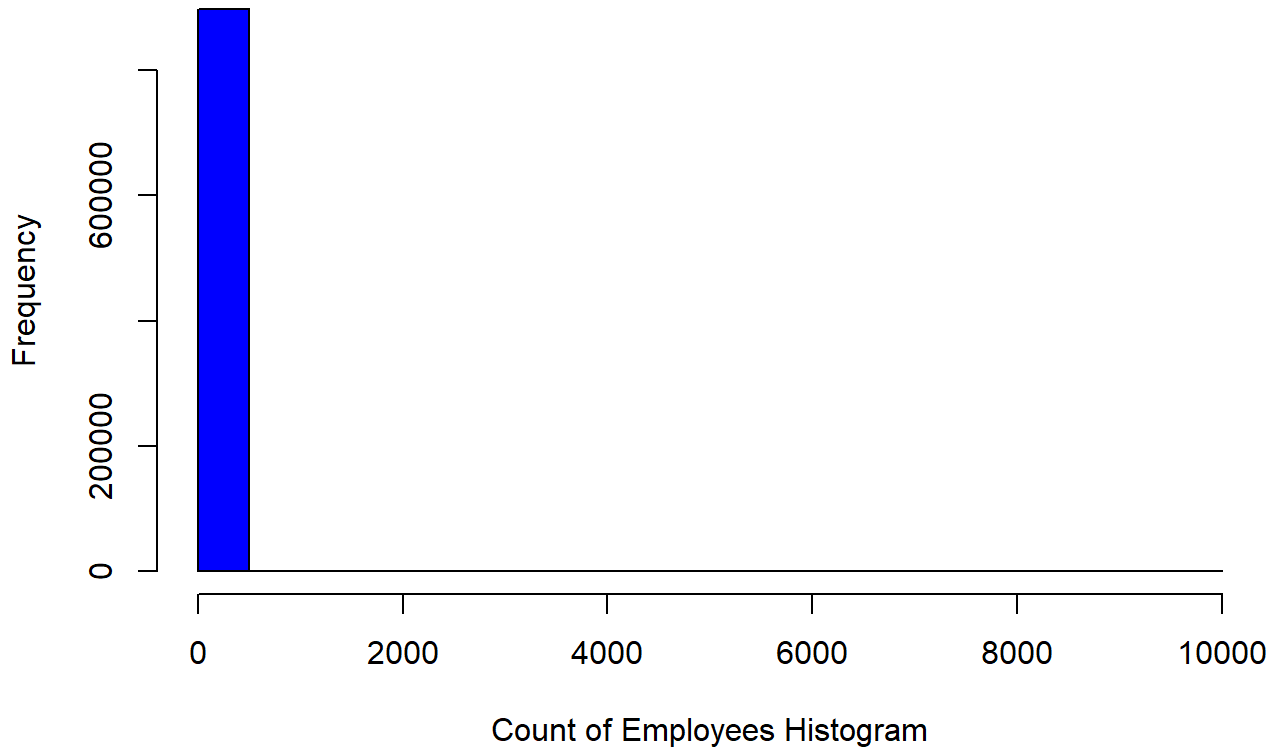
Histograms of numeric features

```
hist(sbaloan_data$Term,
      main="Term",
      xlab="Months",
      col="blue")
```



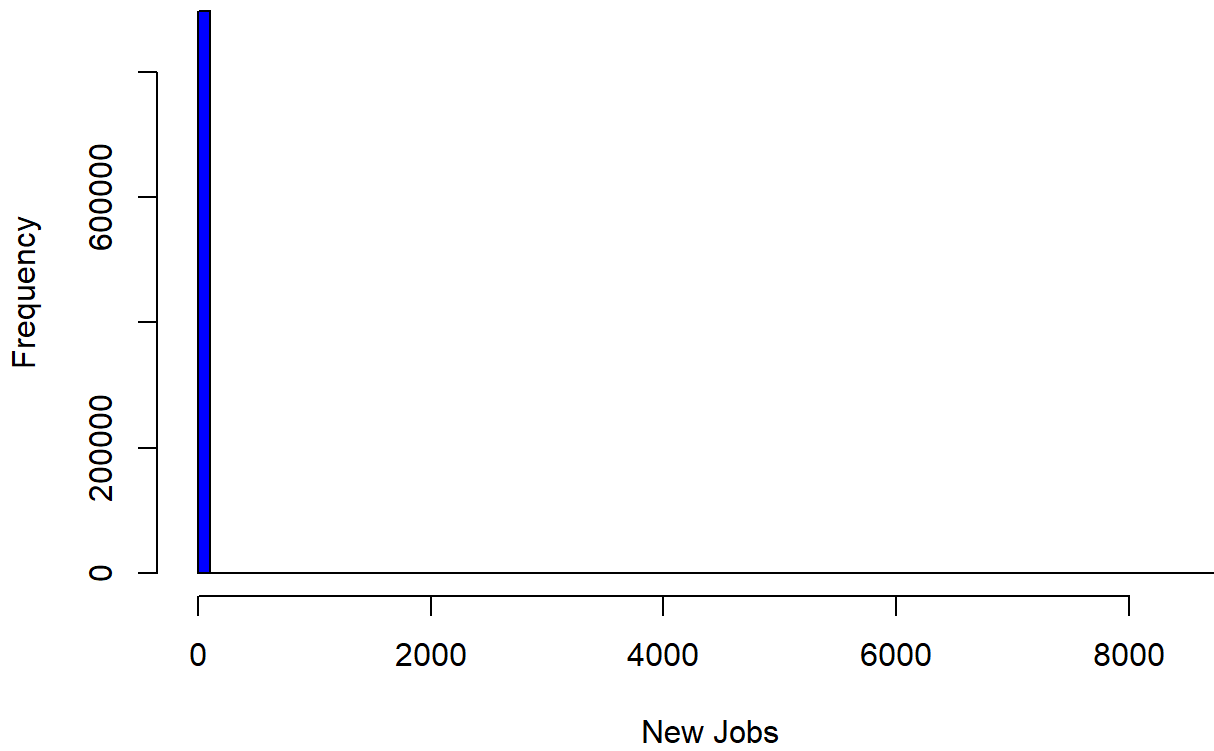
```
hist(sbaloan_data$NoEmp,
      main="Employees",
      xlab="Count of Employees Histogram",
      col="blue")
```

Employees



```
hist(sballoan_data$CreateJob,  
      main="Jobs Created Histogram",  
      xlab="New Jobs",  
      breaks = 100,  
      col="blue")
```

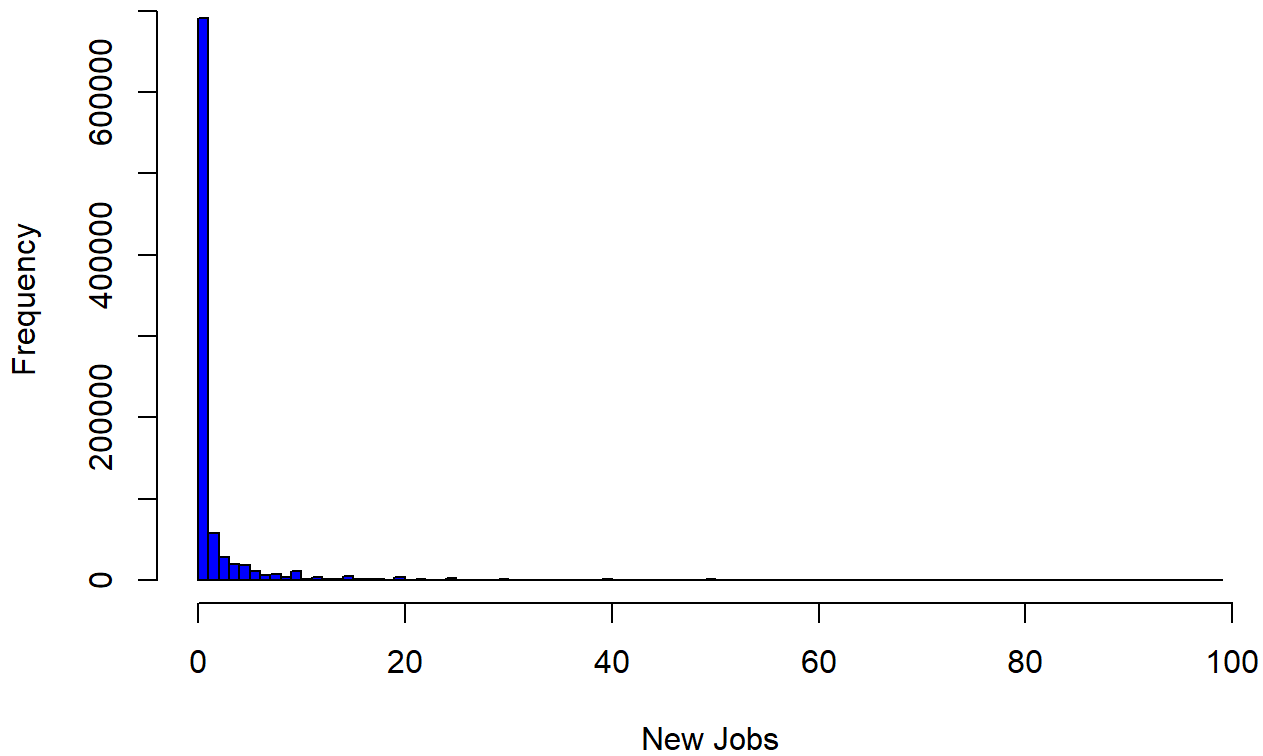
Jobs Created Histogram



```
# Lets filter out the extremes and look
CreateJobAnalysis <- filter(sbaload_data, `CreateJob` < 100)

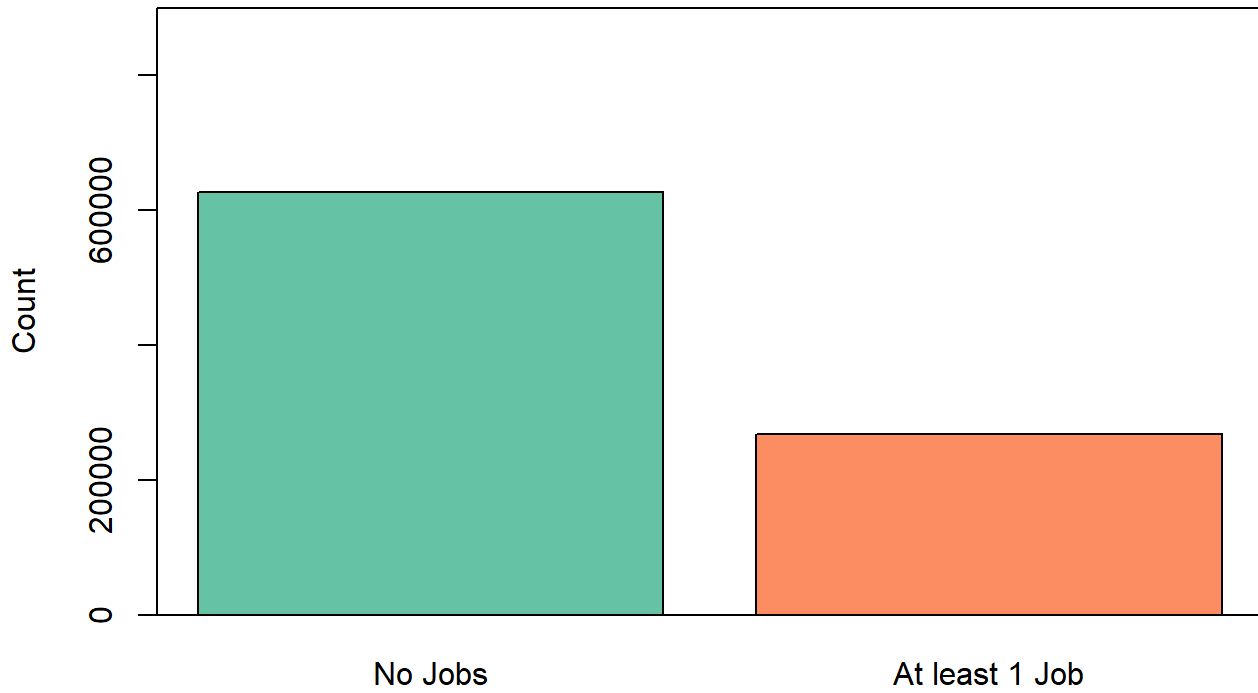
hist(CreateJobAnalysis$CreateJob,
      main="Histograms of Jobs Created Under 100",
      xlab="New Jobs",
      breaks = 100,
      col="blue")
```

Histograms of Jobs Created Under 100



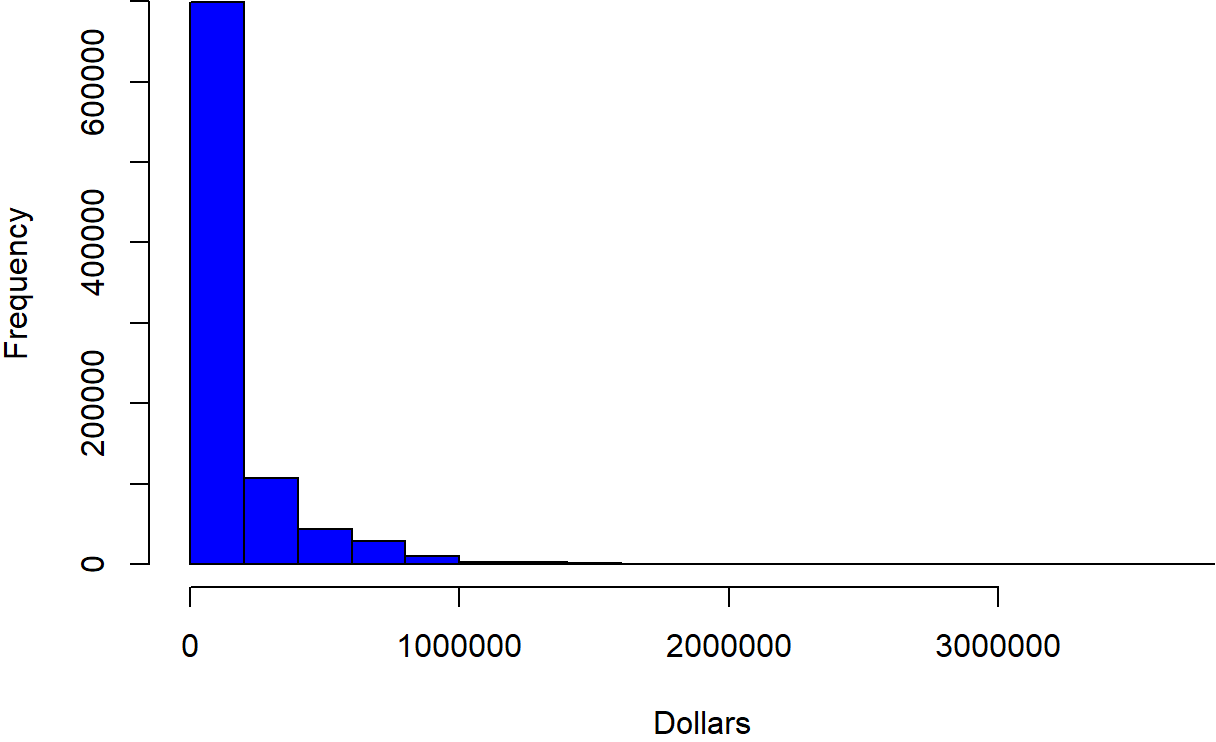
```
CreateJobAnalysis <- CreateJobAnalysis %>%  
  mutate(CreateJob = ifelse( CreateJob == 0,0,1))  
  
coul <- brewer.pal(5, "Set2")  
barplot(table(CreateJobAnalysis$CreateJob),names.arg=c("No Jobs", "At least 1 Job"), col=coul, main="SBA Loan Job Creation", ylab="Count",ylim=c(0,900000))  
box()
```

SBA Loan Job Creation



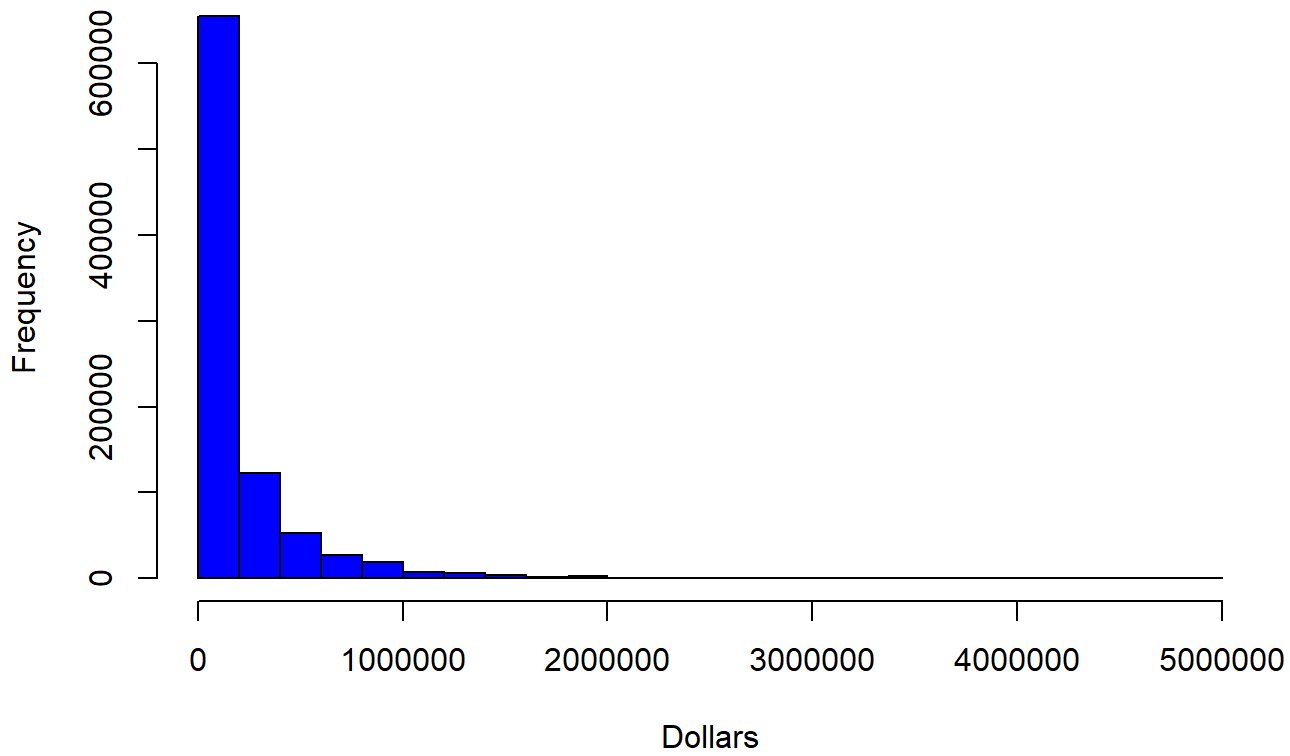
```
hist(sbaload_data$SBA_Appv,  
      main="SBA Approval Histogram",  
      xlab="Dollars",  
      col="blue")
```

SBA Approval Histogram



```
hist(sballoan_data$GrAppv,
      main="Granting Bank Approval Histogram",
      xlab="Dollars",
      col="blue")
```

Granting Bank Approval Histogram

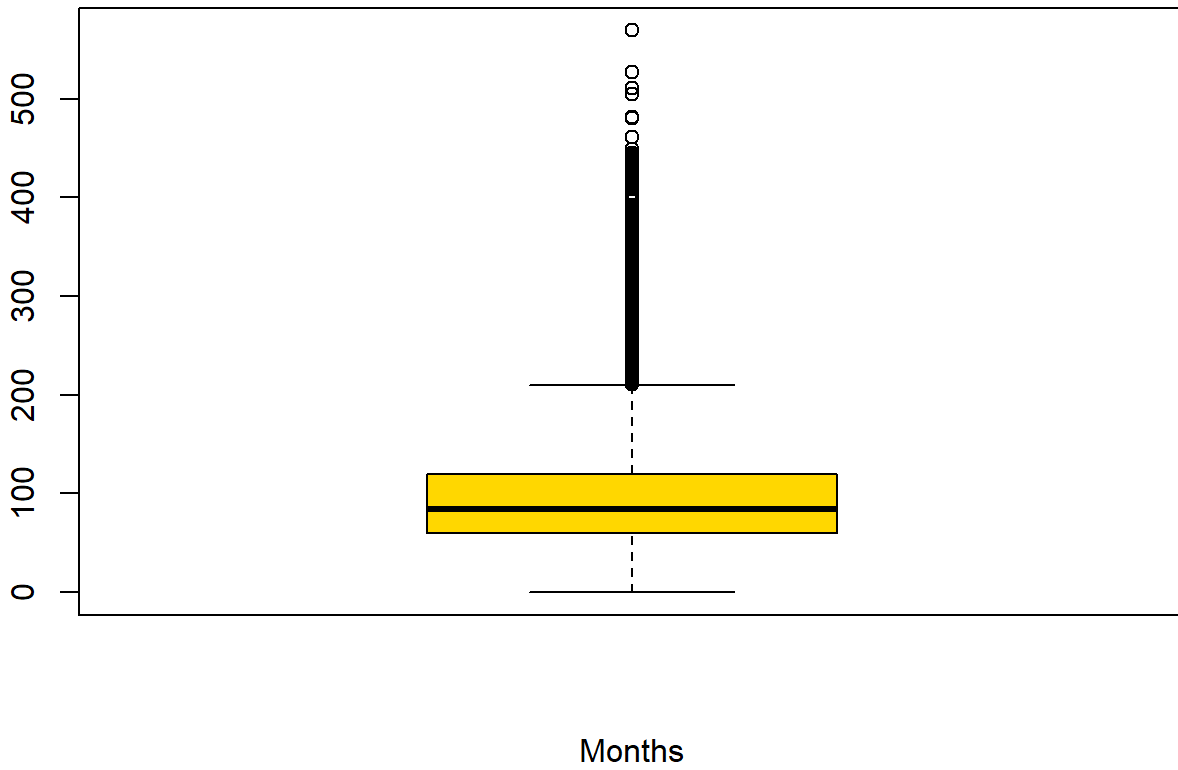


Skew and kurtosis confirmed by visuals

Box plots of one variable

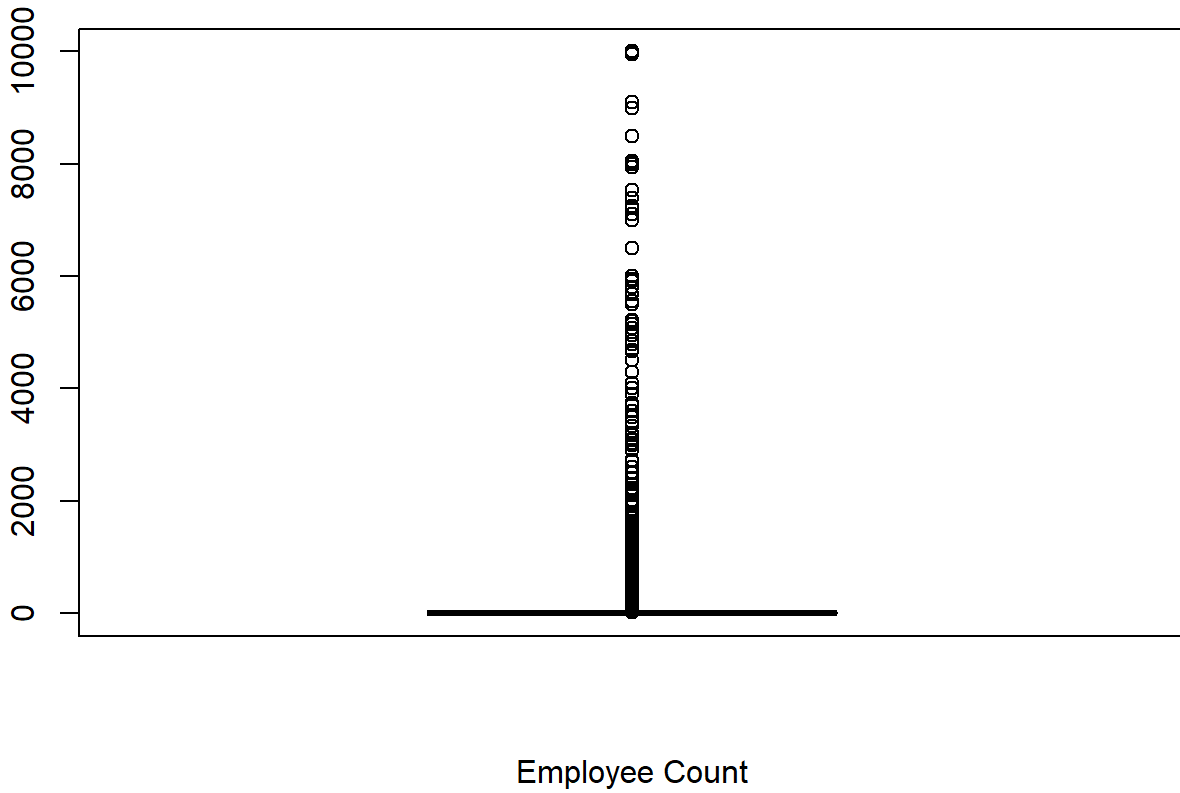
```
boxplot(sbaload_data$Term,  
        col=(c("gold","darkgreen")),  
        main="Loan Term Box Plot", xlab="Months")
```

Loan Term Box Plot



```
boxplot(sballoan_data$NoEmp,  
        col=(c("gold", "darkgreen")),  
        main="Number of Employees Box Plot", xlab="Employee Count"  
        )
```


Number of Employees Box Plot



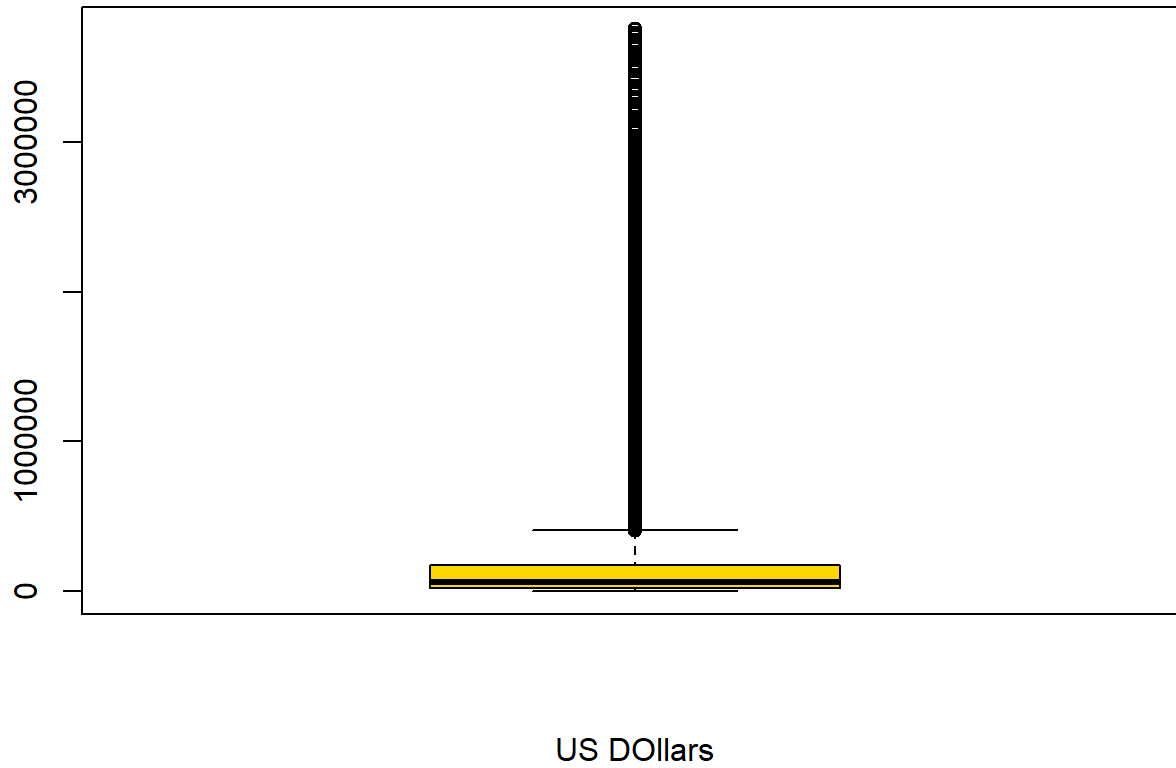
```
boxplot(sballoan_data$CreateJob,  
        col=(c("gold", "darkgreen")),  
        main="Jobs Created Box Plot", xlab="Employee Count")
```

Jobs Created Box Plot



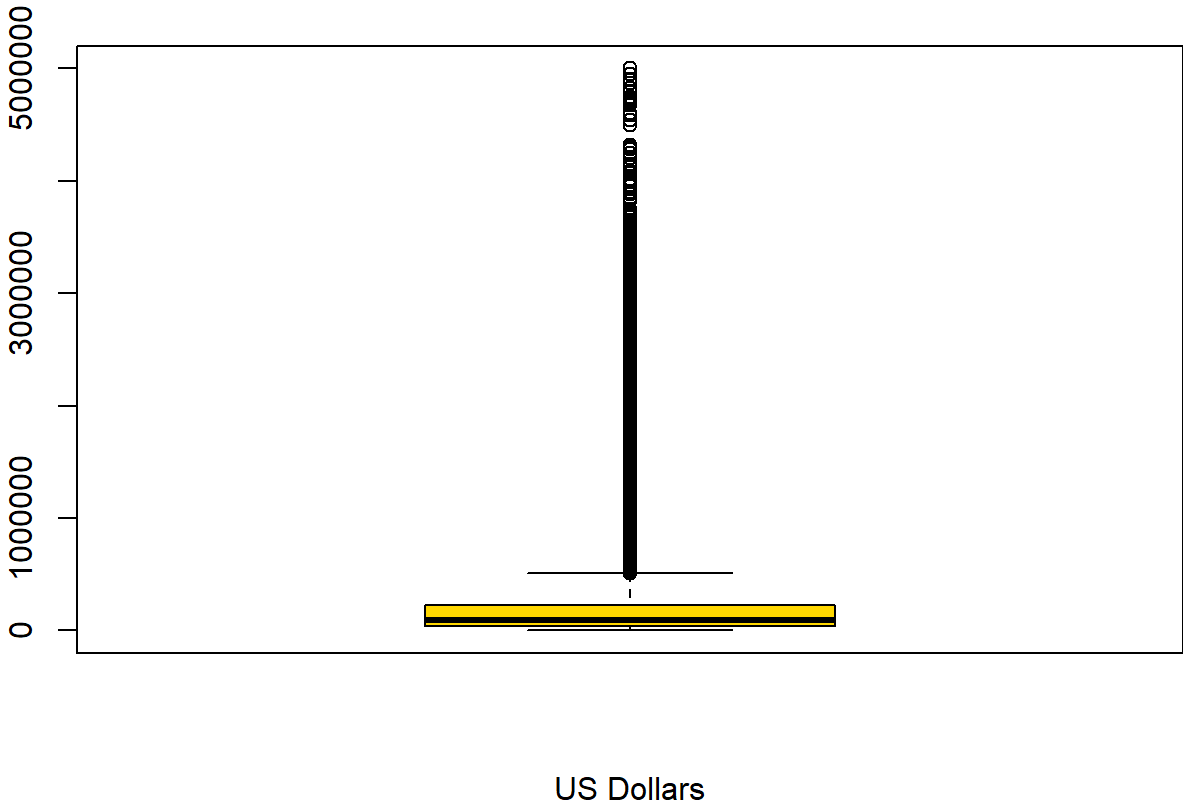
```
boxplot(sballoan_data$SBA_Appv,  
        col=(c("gold","darkgreen")),  
        main="SBA Approval Amount Box Plot", xlab="US Dollars")
```

SBA Approval Amount Box Plot



```
boxplot(sballoan_data$GrAppv,  
        col=(c("gold","darkgreen")),  
        main="Granting Bank Approval Amount Box Plot", xlab="US Dollars")
```

Granting Bank Approval Amount Box Plot



*# Data shows significant outliers but domain knowledge does not indicate justification for removal.
We would not want to not account for some of our largest loans in the model.*

```
# 1 Hot
encoded_sbaloan_data <- sbaloan_data %>% mutate(value = 1) %>% spread(NewExist, value, fill = 0 )
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == '0'] <- 'NewExist_0'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == '1'] <- 'NewExist_1'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == '2'] <- 'NewExist_2'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'UNKNOWN'] <- 'NewExist_U'

encoded_sbaloan_data <- encoded_sbaloan_data %>% mutate(value = 1) %>% spread(UrbanRural, value, fill = 0
)
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == '0'] <- 'UrbanRural_0'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == '1'] <- 'UrbanRural_1'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == '2'] <- 'UrbanRural_2'

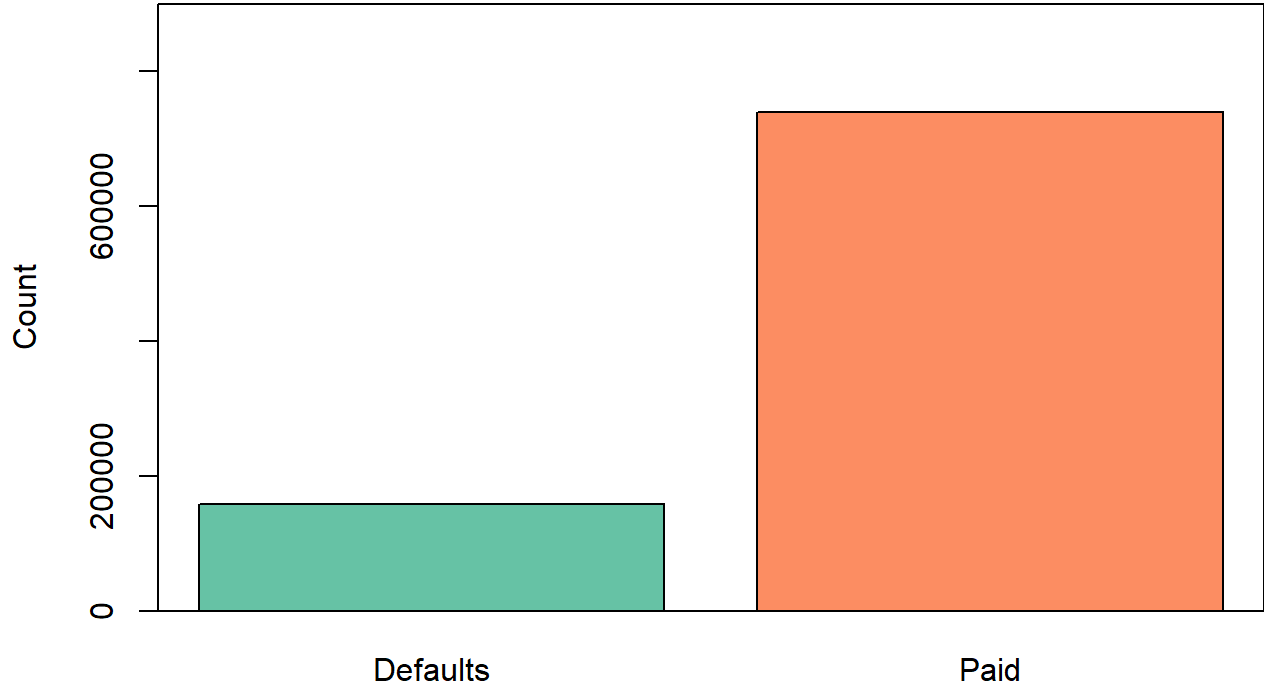
encoded_sbaloan_data <- encoded_sbaloan_data %>% mutate(value = 1) %>% spread(Month, value, fill = 0 )
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Jan'] <- 'Month_Jan'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Feb'] <- 'Month_Feb'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Mar'] <- 'Month_Mar'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Apr'] <- 'Month_Apr'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'May'] <- 'Month_May'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Jun'] <- 'Month_Jun'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Jul'] <- 'Month_Jul'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Aug'] <- 'Month_Aug'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Sep'] <- 'Month_Sep'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Oct'] <- 'Month_Oct'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Nov'] <- 'Month_Nov'
names(encoded_sbaloan_data)[names(encoded_sbaloan_data) == 'Dec'] <- 'Month_Dec'

# Create a new field that changes these to binary
encoded_sbaloan_data <- encoded_sbaloan_data %>%
  mutate(MIS_logical = ifelse( MIS_Status == "P I F",1,0))

# Bar Graph of Defaults to Paid

coul <- brewer.pal(5, "Set2")
barplot(table(encoded_sbaloan_data$MIS_logical),names.arg=c("Defaults", "Paid"), col=coul, main="SBA Loan D
efaults Versus Paid", ylab="Count",ylim=c(0,900000))
box()
```

SBA Loan Defaults Versus Paid



```
summary(encoded_sbaloan_data$MIS_logical)
```

##	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
##	0.0000	1.0000	1.0000	0.8244	1.0000	1.0000

```

# Label Encoding
sbaloan_data$Bank <- as.integer(sbaloan_data$Bank)
# sbaloan_data$Bank

# Binary Encoding when too many values
# This code segment was taken from https://www.r-bloggers.com/2020/02/a-guide-to-encoding-categorical-features-using-r/
encode_binary <- function(x, order = unique(x), name = "v_") {
  x <- as.numeric(factor(x, levels = order, exclude = NULL))
  x2 <- as.binary(x)
  maxlen <- max(sapply(x2, length))
  x2 <- lapply(x2, function(y) {
    l <- length(y)
    if (l < maxlen) {
      y <- c(rep(0, (maxlen - l)), y)
    }
    y
  })
  d <- as.data.frame(t(as.data.frame(x2)))
  rownames(d) <- NULL
  colnames(d) <- paste0(name, 1:maxlen)
  d
}

# Binary Encode calling function above
encoded_sbaloan_data <- cbind(encoded_sbaloan_data, encode_binary(encoded_sbaloan_data[["RevLineCr"]], name = "RevLineCr_"))
encoded_sbaloan_data <- cbind(encoded_sbaloan_data, encode_binary(encoded_sbaloan_data[["FranchiseCode"]], name = "FranchiseCode_"))
encoded_sbaloan_data <- cbind(encoded_sbaloan_data, encode_binary(encoded_sbaloan_data[["LowDoc"]], name = "LowDoc_"))
encoded_sbaloan_data <- cbind(encoded_sbaloan_data, encode_binary(encoded_sbaloan_data[["NAICS"]], name = "NAICS_"))
encoded_sbaloan_data <- cbind(encoded_sbaloan_data, encode_binary(encoded_sbaloan_data[["Bank"]], name = "Bank_"))

# Weak correlation and likely illegal for loan consideration so I am removing
# encoded_sbaloan_data <- cbind(encoded_sbaloan_data, encode_binary(encoded_sbaloan_data[["BankState"]], name = "BankState_"))
# encoded_sbaloan_data <- cbind(encoded_sbaloan_data, encode_binary(encoded_sbaloan_data[["Zip"]], name = "Zip_"))

# Remove columns
encoded_sbaloan_data <- subset(encoded_sbaloan_data, select = -c(`LoanNr_ChkDgt`, `Zip`, `NAICS`, `FranchiseCode`, `RevLineCr`, `LowDoc`))

# Remove original column
encoded_sbaloan_data <- subset(encoded_sbaloan_data, select = -c(`MIS_Status`))

# Remove Bank since it was encoded and Day as it was just a test and didn't help in later processing
encoded_sbaloan_data <- subset(encoded_sbaloan_data, select = -c(`Bank`, `Day`))
# encoded_sbaloan_data <- subset(encoded_sbaloan_data, select = -c(`Month`, `NewExist`))
# glimpse(encoded_sbaloan_data)
summary(encoded_sbaloan_data)

```

##	ApprovalFY	Term	NoEmp	CreateJob
##	Min. : 3.00	Min. : 0.0	Min. : 0.00	Min. : 0.000
##	1st Qu.:35.00	1st Qu.: 60.0	1st Qu.: 2.00	1st Qu.: 0.000
##	Median :40.00	Median : 84.0	Median : 4.00	Median : 0.000
##	Mean :39.14	Mean :110.8	Mean : 11.41	Mean : 8.444
##	3rd Qu.:44.00	3rd Qu.:120.0	3rd Qu.: 10.00	3rd Qu.: 1.000
##	Max. :52.00	Max. :569.0	Max. :9999.00	Max. :8800.000
##	GrAppv	SBA_Appv	NewExist_0	NewExist_1
##	Min. : 1000	Min. : 500	Min. :0.000000	Min. :0.0000
##	1st Qu.: 35000	1st Qu.: 21250	1st Qu.:0.000000	1st Qu.:0.0000
##	Median : 90000	Median : 62050	Median :0.000000	Median :1.0000
##	Mean : 192780	Mean : 149519	Mean :0.001146	Mean :0.7172
##	3rd Qu.: 225000	3rd Qu.: 175000	3rd Qu.:0.000000	3rd Qu.:1.0000
##	Max. :5000000	Max. :3750000	Max. :1.000000	Max. :1.0000
##	NewExist_2	NewExist_U	UrbanRural_0	UrbanRural_1
##	Min. :0.0000	Min. :0.0000000	Min. :0.0000	Min. :0.000
##	1st Qu.:0.0000	1st Qu.:0.0000000	1st Qu.:0.0000	1st Qu.:0.000
##	Median :0.0000	Median :0.0000000	Median :0.0000	Median :1.000
##	Mean :0.2815	Mean :0.0001471	Mean :0.3599	Mean :0.523
##	3rd Qu.:1.0000	3rd Qu.:0.0000000	3rd Qu.:1.0000	3rd Qu.:1.000
##	Max. :1.0000	Max. :1.0000000	Max. :1.0000	Max. :1.000
##	UrbanRural_2	Month_Apr	Month_Aug	Month_Dec
##	Min. :0.0000	Min. :0.0000	Min. :0.00000	Min. :0.00000
##	1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.00000	1st Qu.:0.00000
##	Median :0.0000	Median :0.0000	Median :0.00000	Median :0.00000
##	Mean :0.1171	Mean :0.0892	Mean :0.08762	Mean :0.07777
##	3rd Qu.:0.0000	3rd Qu.:0.0000	3rd Qu.:0.00000	3rd Qu.:0.00000
##	Max. :1.0000	Max. :1.0000	Max. :1.00000	Max. :1.00000
##	Month_Feb	Month_Jan	Month_Jul	Month_Jun
##	Min. :0.00000	Min. :0.00000	Min. :0.00000	Min. :0.00000
##	1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.00000
##	Median :0.00000	Median :0.00000	Median :0.00000	Median :0.00000
##	Mean :0.07376	Mean :0.07459	Mean :0.08509	Mean :0.08711
##	3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.00000
##	Max. :1.00000	Max. :1.00000	Max. :1.00000	Max. :1.00000
##	Month_Mar	Month_May	Month_Nov	Month_Oct
##	Min. :0.00000	Min. :0.00000	Min. :0.00000	Min. :0.0000
##	1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.0000
##	Median :0.00000	Median :0.00000	Median :0.00000	Median :0.0000
##	Mean :0.09299	Mean :0.08589	Mean :0.07608	Mean :0.0776
##	3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.0000
##	Max. :1.00000	Max. :1.00000	Max. :1.00000	Max. :1.0000
##	Month_Sep	MIS_logical	RevLineCr_1	RevLineCr_2
##	Min. :0.00000	Min. :0.0000	Min. :0.000000	Min. :0.00000
##	1st Qu.:0.00000	1st Qu.:1.0000	1st Qu.:0.000000	1st Qu.:0.00000
##	Median :0.00000	Median :1.0000	Median :0.000000	Median :0.00000
##	Mean :0.09231	Mean :0.8244	Mean :0.000029	Mean :0.02207
##	3rd Qu.:0.00000	3rd Qu.:1.0000	3rd Qu.:0.000000	3rd Qu.:0.00000
##	Max. :1.00000	Max. :1.0000	Max. :1.000000	Max. :1.00000
##	RevLineCr_3	RevLineCr_4	FranchiseCode_1	FranchiseCode_2
##	Min. :0.0000	Min. :0.000	Min. :0.000000	Min. :0.000000
##	1st Qu.:0.0000	1st Qu.:0.000	1st Qu.:0.000000	1st Qu.:0.000000
##	Median :1.0000	Median :1.000	Median :0.000000	Median :0.000000
##	Mean :0.5107	Mean :0.696	Mean :0.001716	Mean :0.005145
##	3rd Qu.:1.0000	3rd Qu.:1.000	3rd Qu.:0.000000	3rd Qu.:0.000000
##	Max. :1.0000	Max. :1.000	Max. :1.000000	Max. :1.000000
##	FranchiseCode_3	FranchiseCode_4	FranchiseCode_5	FranchiseCode_6
##	Min. :0.00000	Min. :0.00000	Min. :0.00000	Min. :0.00000

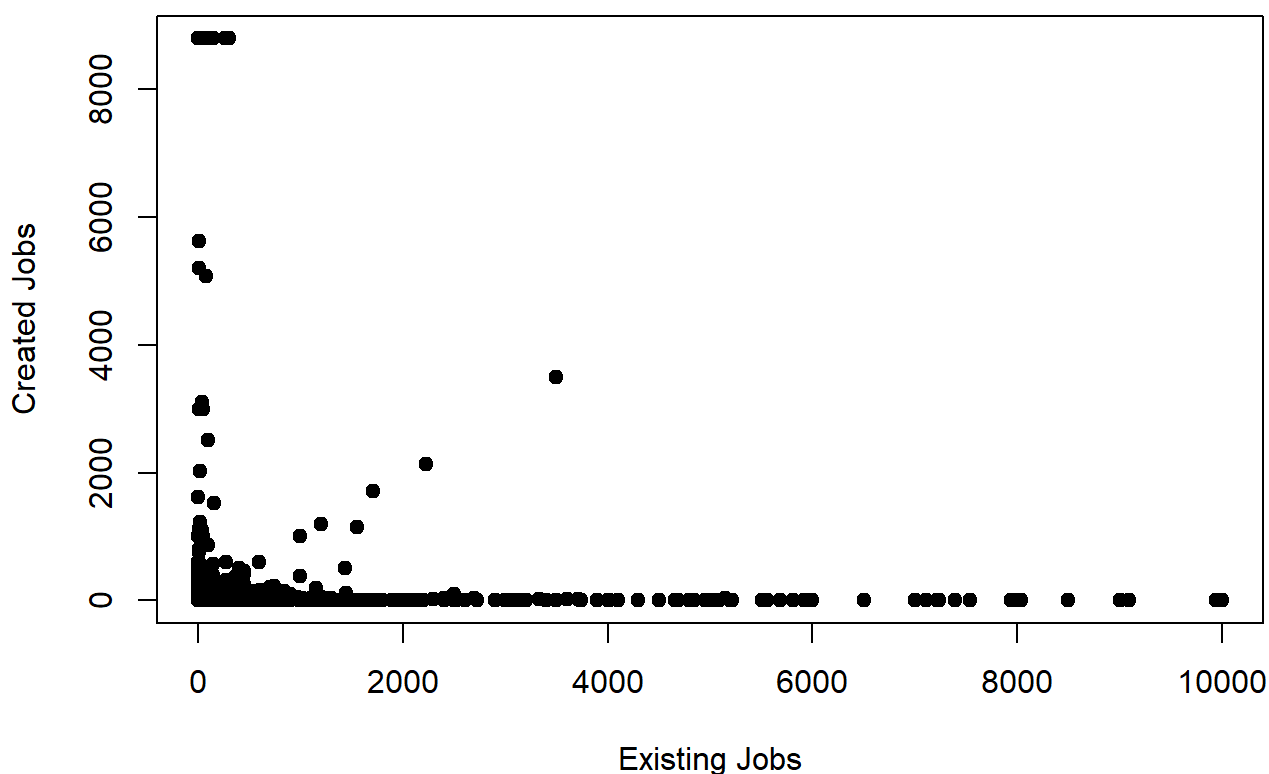
## 1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.00000
## Median :0.00000	Median :0.00000	Median :0.00000	Median :0.00000
## Mean :0.01001	Mean :0.01568	Mean :0.01845	Mean :0.02627
## 3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.00000
## Max. :1.00000	Max. :1.00000	Max. :1.00000	Max. :1.00000
## FranchiseCode_7	FranchiseCode_8	FranchiseCode_9	FranchiseCode_10
## Min. :0.00000	Min. :0.00000	Min. :0.00000	Min. :0.00000
## 1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.00000	1st Qu.:0.00000
## Median :0.00000	Median :0.00000	Median :0.00000	Median :0.00000
## Mean :0.02538	Mean :0.03061	Mean :0.02547	Mean :0.02789
## 3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.00000	3rd Qu.:0.00000
## Max. :1.00000	Max. :1.00000	Max. :1.00000	Max. :1.00000
## FranchiseCode_11	FranchiseCode_12	LowDoc_1	LowDoc_2
## Min. :0.0000	Min. :0.0000	Min. :0.000000	Min. :0.000000
## 1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.000000	1st Qu.:0.000000
## Median :0.0000	Median :1.0000	Median :0.000000	Median :0.000000
## Mean :0.2591	Mean :0.7405	Mean :0.002213	Mean :0.003629
## 3rd Qu.:1.0000	3rd Qu.:1.0000	3rd Qu.:0.000000	3rd Qu.:0.000000
## Max. :1.0000	Max. :1.0000	Max. :1.000000	Max. :1.000000
## LowDoc_3	LowDoc_4	NAICS_1	NAICS_2
## Min. :0.0000	Min. :0.0000	Min. :0.000000	Min. :0.00000
## 1st Qu.:1.0000	1st Qu.:0.0000	1st Qu.:0.000000	1st Qu.:0.00000
## Median :1.0000	Median :0.0000	Median :0.000000	Median :0.00000
## Mean :0.8721	Mean :0.1283	Mean :0.009581	Mean :0.07659
## 3rd Qu.:1.0000	3rd Qu.:0.0000	3rd Qu.:0.000000	3rd Qu.:0.00000
## Max. :1.0000	Max. :1.0000	Max. :1.000000	Max. :1.00000
## NAICS_3	NAICS_4	NAICS_5	NAICS_6
## Min. :0.0000	Min. :0.0000	Min. :0.0000	Min. :0.0000
## 1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000
## Median :0.0000	Median :0.0000	Median :0.0000	Median :0.0000
## Mean :0.1853	Mean :0.2745	Mean :0.3007	Mean :0.3595
## 3rd Qu.:0.0000	3rd Qu.:1.0000	3rd Qu.:1.0000	3rd Qu.:1.0000
## Max. :1.0000	Max. :1.0000	Max. :1.0000	Max. :1.0000
## NAICS_7	NAICS_8	NAICS_9	NAICS_10
## Min. :0.0000	Min. :0.0000	Min. :0.0000	Min. :0.0000
## 1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000
## Median :0.0000	Median :0.0000	Median :1.0000	Median :0.0000
## Mean :0.3927	Mean :0.3908	Mean :0.6294	Mean :0.3923
## 3rd Qu.:1.0000	3rd Qu.:1.0000	3rd Qu.:1.0000	3rd Qu.:1.0000
## Max. :1.0000	Max. :1.0000	Max. :1.0000	Max. :1.0000
## NAICS_11	Bank_1	Bank_2	Bank_3
## Min. :0.000	Min. :0.000000	Min. :0.00000	Min. :0.00000
## 1st Qu.:0.000	1st Qu.:0.000000	1st Qu.:0.00000	1st Qu.:0.00000
## Median :0.000	Median :0.000000	Median :0.00000	Median :0.00000
## Mean :0.341	Mean :0.007908	Mean :0.04277	Mean :0.07864
## 3rd Qu.:1.000	3rd Qu.:0.000000	3rd Qu.:0.00000	3rd Qu.:0.00000
## Max. :1.000	Max. :1.000000	Max. :1.00000	Max. :1.00000
## Bank_4	Bank_5	Bank_6	Bank_7
## Min. :0.0000	Min. :0.0000	Min. :0.0000	Min. :0.0000
## 1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000
## Median :0.0000	Median :0.0000	Median :0.0000	Median :0.0000
## Mean :0.1407	Mean :0.1674	Mean :0.2415	Mean :0.2897
## 3rd Qu.:0.0000	3rd Qu.:0.0000	3rd Qu.:0.0000	3rd Qu.:1.0000
## Max. :1.0000	Max. :1.0000	Max. :1.0000	Max. :1.0000
## Bank_8	Bank_9	Bank_10	Bank_11
## Min. :0.0000	Min. :0.0000	Min. :0.0000	Min. :0.0000
## 1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000	1st Qu.:0.0000
## Median :0.0000	Median :0.0000	Median :0.0000	Median :1.0000


```
## Mean :0.4432 Mean :0.3277 Mean :0.4854 Mean :0.5921
## 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:1.0000 3rd Qu.:1.0000
## Max. :1.0000 Max. :1.0000 Max. :1.0000 Max. :1.0000
## Bank_12 Bank_13
## Min. :0.0000 Min. :0.0000
## 1st Qu.:0.0000 1st Qu.:0.0000
## Median :1.0000 Median :0.0000
## Mean :0.5339 Mean :0.4879
## 3rd Qu.:1.0000 3rd Qu.:1.0000
## Max. :1.0000 Max. :1.0000
```

Plot did not exhibit strong linear correlation

```
plot(encoded_sbaloan_data$NoEmp, encoded_sbaloan_data$CreateJob, main="Scatterplot Existing & Created Jobs"
,
      xlab="Existing Jobs", ylab="Created Jobs", pch=19)
```

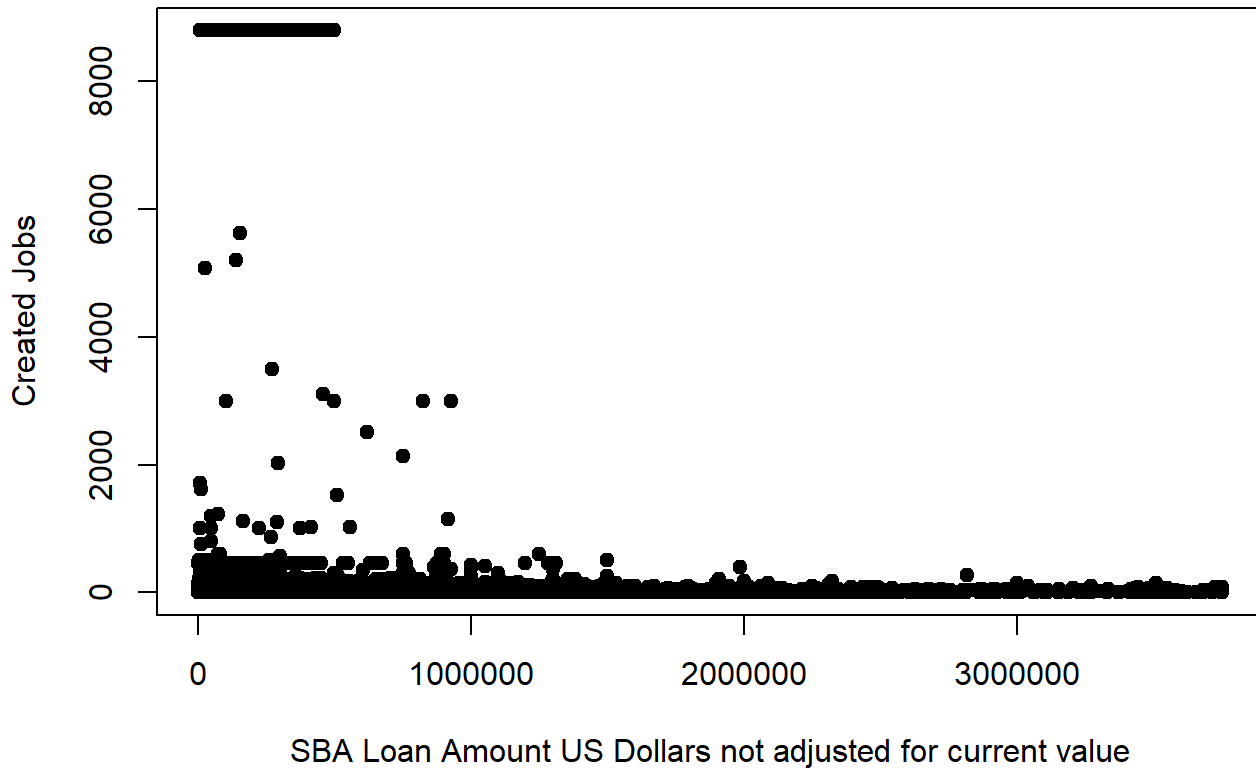
Scatterplot Existing & Created Jobs



Plot did not exhibit strong linear correlation

```
plot(encoded_sbaloan_data$SBA_Appv, encoded_sbaloan_data$CreateJob, main="Scatterplot SBA Loan Amount & Created Jobs",
      xlab="SBA Loan Amount US Dollars not adjusted for current value", ylab="Created Jobs", pch=19)
```

Scatterplot SBA Loan Amount & Created Jobs



```
# Spearman was selected for correlation analysis due to non-parametric data.  
cor_matrix <- cor(encoded_sbaloan_data,method="spearman")  
cor_matrix
```

##	ApprovalFY	Term	NoEmp	CreateJob
## ApprovalFY	1.000000000	-0.2975540854	-0.2266582014	0.26825670677
## Term	-0.297554085	1.0000000000	0.2000181362	0.08170546871
## NoEmp	-0.226658201	0.2000181362	1.0000000000	0.03324919241
## CreateJob	0.268256707	0.0817054687	0.0332491924	1.00000000000
## GrAppv	-0.300102047	0.5586998889	0.4552783418	0.09287671888
## SBA_Appv	-0.365956519	0.5900153629	0.4492230170	0.07715639761
## NewExist_0	-0.015948138	0.0132296332	0.0137857836	-0.00617220990
## NewExist_1	-0.040903803	0.0258256608	0.2509116761	-0.05021807117
## NewExist_2	0.041624655	-0.0267430456	-0.2522598381	0.05063830829
## NewExist_U	0.019865914	-0.0042179375	-0.0014105795	0.00422521655
## UrbanRural_0	-0.817757457	0.2389624586	0.1899842392	-0.27040140835
## UrbanRural_1	0.629919668	-0.1995424945	-0.1455363156	0.24427035840
## UrbanRural_2	0.242156573	-0.0467326265	-0.0575150117	0.02418230672
## Month_Apr	-0.004489658	-0.0049399012	-0.0040606367	-0.00469918625
## Month_Aug	-0.018296953	0.0009635989	-0.0004313507	0.00433227228
## Month_Dec	0.029019410	0.0049812940	0.0095403763	0.00201208317
## Month_Feb	0.014732303	-0.0125160718	-0.0066671652	0.00051092898
## Month_Jan	-0.002022039	0.0016546407	0.0027154138	-0.00684322196
## Month_Jul	-0.031494479	0.0124291736	0.0070716811	0.00025604536
## Month_Jun	-0.006021791	0.0031167864	0.0004193811	-0.00305610585
## Month_Mar	0.006777759	-0.0088988392	-0.0069071128	0.00005666003
## Month_May	0.004500833	-0.0008309832	-0.0027592533	0.00308700118
## Month_Nov	0.023151878	-0.0010967079	-0.0028325278	-0.00330250629
## Month_Oct	0.027839267	-0.0095941216	-0.0063044880	-0.00213157669
## Month_Sep	-0.037893251	0.0137030536	0.0099467667	0.00896437896
## MIS_logical	-0.254442841	0.4095440146	0.1172885360	-0.05298354204
## RevLineCr_1	-0.001159820	-0.0023404040	0.0030756543	-0.00227384267
## RevLineCr_2	0.038623064	-0.0621413194	-0.0222321839	-0.01004172577
## RevLineCr_3	0.358668757	-0.1671006744	-0.1479900442	0.13761624902
## RevLineCr_4	-0.060466438	-0.1121855591	0.0330839502	-0.11919802277
## FranchiseCode_1	-0.011842112	0.0029270347	-0.0005392370	0.00205622368
## FranchiseCode_2	0.002470894	0.0089064877	0.0018015381	0.02583714299
## FranchiseCode_3	-0.020018014	0.0174966087	0.0115199688	0.01867759859
## FranchiseCode_4	-0.017916261	0.0353674552	0.0186020741	0.02564405966
## FranchiseCode_5	-0.019400311	0.0388384933	0.0218034231	0.02496911615
## FranchiseCode_6	-0.022313673	0.0541147679	0.0342136268	0.04157128547
## FranchiseCode_7	-0.023453912	0.0494486587	0.0200193564	0.02950087023
## FranchiseCode_8	-0.027381201	0.0582603467	0.0427057818	0.03022927514
## FranchiseCode_9	-0.019250604	0.0471930544	0.0244415916	0.03364175690
## FranchiseCode_10	-0.015836241	0.0582585168	0.03724448431	0.04697751948
## FranchiseCode_11	0.479294498	-0.1660584172	-0.1121809168	0.09414100374
## FranchiseCode_12	-0.475529037	0.1646226465	0.1042401712	-0.09244115814
## LowDoc_1	-0.022893694	0.0262209607	0.0146708633	-0.01236786888
## LowDoc_2	0.093453572	-0.0191041567	-0.0283968100	0.03673347338
## LowDoc_3	0.205540519	0.0648330083	0.0855241414	0.23262897285
## LowDoc_4	-0.207314102	-0.0629233162	-0.0833439260	-0.23108531814
## NAICS_1	0.010375955	-0.0063840308	0.0182468259	0.00866380586
## NAICS_2	0.074420096	-0.0266939522	0.0226025762	0.02460811604
## NAICS_3	0.237419273	-0.1095225617	-0.0438148355	0.05864375284
## NAICS_4	0.257404726	-0.0779872194	-0.0893402998	0.06963121059
## NAICS_5	0.208141167	-0.0949831999	-0.0732930382	0.04364803752
## NAICS_6	0.272952248	-0.0750232360	-0.0298934906	0.09051561020
## NAICS_7	0.279255923	-0.0845543431	-0.0877147258	0.07511635711
## NAICS_8	0.244023349	-0.0821289427	-0.0776176599	0.06993075215
## NAICS_9	-0.186231291	0.0520798225	0.0998218256	-0.03201787613
## NAICS_10	0.277742737	-0.0999946369	-0.0651992065	0.07429525336
## NAICS_11	0.224633000	-0.0469184774	-0.0495617736	0.07753281594

## Bank_1	-0.000407382	0.0044492209	0.0004641475	-0.02276568156
## Bank_2	0.044666445	0.0162219258	-0.0013904408	-0.01169646713
## Bank_3	-0.017052827	0.0302603212	0.0358119459	-0.01812546835
## Bank_4	-0.045838416	0.0988020620	0.0646883458	0.01223580329
## Bank_5	-0.060359983	0.0961315907	0.0710146998	0.02228836297
## Bank_6	-0.067370091	0.1240652513	0.0921348632	0.04174401967
## Bank_7	-0.015577221	0.0646429356	0.0606738063	0.03446587934
## Bank_8	-0.006330909	0.0924822666	0.0317551401	0.03784256031
## Bank_9	0.011582148	0.0722120806	0.0271831421	0.06642574192
## Bank_10	0.018341586	-0.0817164126	-0.0328188798	-0.01672675651
## Bank_11	0.018079479	-0.0625911354	-0.0444994167	-0.03870753632
## Bank_12	0.044802986	0.0266545037	-0.0182784512	0.02897162994
## Bank_13	0.002814403	-0.0171138310	-0.0135431489	0.01609211827
##	GrAppv	SBA_Appv	NewExist_0	NewExist_1
## ApprovalFY	-0.3001020467	-0.3659565187	-0.01594813833	-0.0409038035
## Term	0.5586998889	0.5900153629	0.01322963323	0.0258256608
## NoEmp	0.4552783418	0.4492230170	0.01378578361	0.2509116761
## CreateJob	0.0928767189	0.0771563976	-0.00617220990	-0.0502180712
## GrAppv	1.0000000000	0.9862679376	0.02134597651	0.0680899910
## SBA_Appv	0.9862679376	1.0000000000	0.02363108781	0.0467723744
## NewExist_0	0.0213459765	0.0236310878	1.0000000000	-0.0539373546
## NewExist_1	0.0680899910	0.0467723744	-0.05393735464	1.0000000000
## NewExist_2	-0.0697438329	-0.0485435474	-0.02120164110	-0.9968131533
## NewExist_U	-0.0017303223	-0.0026536394	-0.00041088355	-0.0193180387
## UrbanRural_0	0.2323353487	0.2977865365	0.00947843650	0.0148479675
## UrbanRural_1	-0.2030643466	-0.2615493444	-0.01145792095	0.0122335252
## UrbanRural_2	-0.0313697495	-0.0382190140	0.00365003728	-0.0411663897
## Month_Apr	-0.0029264718	-0.0026262892	-0.00077443201	0.0022906354
## Month_Aug	0.0002877778	0.0003703754	0.00045699896	-0.0042313801
## Month_Dec	0.0095604836	0.0082552315	0.00000676814	0.0042670917
## Month_Feb	-0.0123545075	-0.0126008269	-0.00212130799	-0.0038080755
## Month_Jan	0.0003320294	0.0013829044	0.00066756422	-0.0013271816
## Month_Jul	0.0143369039	0.0157252840	0.00100756019	0.0014580986
## Month_Jun	0.0061223326	0.0052512312	0.00016955746	0.0004998961
## Month_Mar	-0.0090076604	-0.0092308954	-0.00052087128	0.0020814292
## Month_May	-0.0003357150	-0.0014391073	-0.00050452860	0.0033162957
## Month_Nov	-0.0067773644	-0.0070318165	0.00059569641	-0.0019261696
## Month_Oct	-0.0153740298	-0.0157479214	-0.00157341396	-0.0056234112
## Month_Sep	0.0146067225	0.0160877591	0.00240291218	0.0023441493
## MIS_logical	0.1897064707	0.2066286927	0.01017837715	0.0187636569
## RevLineCr_1	0.0053211725	0.0056295925	-0.00018234455	0.0020013933
## RevLineCr_2	-0.0815014073	-0.0915091059	-0.00284513643	0.0177723249
## RevLineCr_3	-0.1928120890	-0.2475133239	-0.02873385495	0.0333977162
## RevLineCr_4	-0.1320096891	-0.1320211751	0.01787090073	0.0330335291
## FranchiseCode_1	0.0117330484	0.0140964109	0.00178060057	-0.0319230246
## FranchiseCode_2	0.0291485287	0.0315314820	-0.00105433134	-0.0512174609
## FranchiseCode_3	0.0441679497	0.0477189305	0.00221929040	-0.0665850654
## FranchiseCode_4	0.0610953933	0.0646998940	0.00129366653	-0.0727538650
## FranchiseCode_5	0.0673742280	0.0709067160	0.00049834540	-0.0760639332
## FranchiseCode_6	0.0912716342	0.0945627979	0.00041015287	-0.0985115312
## FranchiseCode_7	0.0819691382	0.0859267368	0.00019090632	-0.0983636873
## FranchiseCode_8	0.0907601662	0.0951714272	0.00144120346	-0.0906130129
## FranchiseCode_9	0.0820478104	0.0862526847	0.00079806174	-0.0986376847
## FranchiseCode_10	0.0941310576	0.0979856219	0.00066648831	-0.1034402757
## FranchiseCode_11	-0.2035657293	-0.2279094977	-0.01349023894	-0.0865941403
## FranchiseCode_12	0.2008610309	0.2250942433	0.01373444425	0.0818139275
## LowDoc_1	0.0309543767	0.03033331680	-0.00089378331	0.0033914336
## LowDoc_2	-0.0379397809	-0.0280337638	-0.00204423860	-0.0274593501

## LowDoc_3	0.1351895166	0.0690762133	0.00054014172	0.1611418221
## LowDoc_4	-0.1329778561	-0.0670324723	-0.00018327683	-0.1607779261
## NAICS_1	0.0319381266	0.0310444805	0.00309518953	0.0134353575
## NAICS_2	0.0234887683	0.0156066043	0.00077649170	0.0318531156
## NAICS_3	-0.0781079781	-0.0994387868	-0.00385611341	0.0275654072
## NAICS_4	-0.0792103014	-0.0981860828	-0.00532656247	0.0128598624
## NAICS_5	-0.0930978068	-0.1122616319	-0.00223564743	0.0458391398
## NAICS_6	-0.0545295628	-0.0760004817	-0.00107098194	0.0196313550
## NAICS_7	-0.0706563007	-0.0925336859	-0.00146359694	0.0185036022
## NAICS_8	-0.0848334603	-0.1021486272	-0.00133039981	0.0061246094
## NAICS_9	0.0546296750	0.0691922548	0.00354329097	-0.0281036966
## NAICS_10	-0.0930247265	-0.1152553325	-0.00218135605	0.0206431830
## NAICS_11	-0.0148975319	-0.0347456194	-0.00191285864	0.0202576428
## Bank_1	0.0181955346	0.0247028769	0.00776378405	-0.0132937672
## Bank_2	-0.0023951647	0.0110987397	0.00651884856	-0.0352999225
## Bank_3	0.0683635458	0.0842777916	0.00638499890	-0.0330935107
## Bank_4	0.1138561907	0.1375464954	0.01026237166	-0.0268856189
## Bank_5	0.1407531254	0.1661261777	0.01198926890	-0.0410229526
## Bank_6	0.1830914004	0.2017533085	0.00844620993	-0.0323392208
## Bank_7	0.1126794049	0.1268050121	0.00698488752	-0.0161620499
## Bank_8	0.1039872640	0.1126910666	0.00340942461	-0.0329606715
## Bank_9	0.0686383306	0.0889587621	0.00611342788	-0.0132050472
## Bank_10	-0.1254549069	-0.1329880352	0.00065908082	0.0435677607
## Bank_11	-0.1315151818	-0.1388046969	-0.00373447028	0.0545729539
## Bank_12	-0.0111803192	-0.0052729280	-0.00098326115	-0.0045883377
## Bank_13	0.0089171228	0.0129090139	-0.00228128422	-0.0108194878
##	NewExist_2	NewExist_U	UrbanRural_0	UrbanRural_1
## ApprovalFY	0.0416246551	0.01986591392	-0.8177574567	0.6299196685
## Term	-0.0267430456	-0.00421793745	0.2389624586	-0.1995424945
## NoEmp	-0.2522598381	-0.00141057946	0.1899842392	-0.1455363156
## CreateJob	0.0506383083	0.00422521655	-0.2704014083	0.2442703584
## GrAppv	-0.0697438329	-0.00173032235	0.2323353487	-0.2030643466
## SBA_Appv	-0.0485435474	-0.00265363943	0.2977865365	-0.2615493444
## NewExist_0	-0.0212016411	-0.00041088355	0.0094784365	-0.0114579209
## NewExist_1	-0.9968131533	-0.01931803871	0.0148479675	0.0122335252
## NewExist_2	1.0000000000	-0.00759351522	-0.0153363523	-0.0115670587
## NewExist_U	-0.0075935152	1.00000000000	-0.0090952987	0.0066161416
## UrbanRural_0	-0.0153363523	-0.00909529865	1.0000000000	-0.7851537811
## UrbanRural_1	-0.0115670587	0.00661614159	-0.7851537811	1.0000000000
## UrbanRural_2	0.0408601274	0.00329910420	-0.2730514985	-0.3813796382
## Month_Apr	-0.0021940483	-0.00153945343	0.0164613359	-0.0157959695
## Month_Aug	0.0041990903	0.00014091268	-0.0120460395	0.0151601003
## Month_Dec	-0.0043173582	0.00162477953	-0.0063253006	0.0041417567
## Month_Feb	0.0038945967	0.00290528914	0.0021432586	-0.0061663337
## Month_Jan	0.0012867888	-0.00029581444	0.0163355445	-0.0149952202
## Month_Jul	-0.0014983338	-0.00139372094	0.0077597378	-0.0028460891
## Month_Jun	-0.0004825978	-0.00114014293	-0.0175035599	0.0143588763
## Month_Mar	-0.0020769393	0.00117897768	0.0024089169	-0.0054307992
## Month_May	-0.0032976685	0.00054547307	0.0009684161	-0.0012294797
## Month_Nov	0.0018750836	0.00033204671	-0.0019138733	0.0006689351
## Month_Oct	0.0057703821	-0.00077069630	-0.0074868243	0.0025015417
## Month_Sep	-0.0024923421	-0.00132850011	-0.0004617422	0.0085613811
## MIS_logical	-0.0196152539	0.00221791784	0.2058133512	-0.1903660183
## RevLineCr_1	-0.0019887002	-0.00006530797	-0.0018792973	-0.0002484299
## RevLineCr_2	-0.0175507566	-0.00119670261	-0.0351917421	0.0402771765
## RevLineCr_3	-0.0311468010	-0.00503842722	-0.4430693121	0.3777353132
## RevLineCr_4	-0.0346346600	0.00781705156	0.1797173191	-0.1392876477
## FranchiseCode_1	0.0318470649	-0.00050288116	0.0070257971	-0.0033959957

## FranchiseCode_2	0.0513915756	-0.00087242141	-0.0042872141	0.0051034253
## FranchiseCode_3	0.0665436816	-0.00122002641	0.0127236286	-0.0089110561
## FranchiseCode_4	0.0727791397	-0.00079153554	0.0098932997	-0.0077557006
## FranchiseCode_5	0.0761403101	-0.00029718797	0.0115371375	-0.0104062415
## FranchiseCode_6	0.0986560104	-0.00141809089	0.0086876684	-0.0051103523
## FranchiseCode_7	0.0984917231	-0.00020447443	0.0125267566	-0.0113416848
## FranchiseCode_8	0.0906312744	-0.00002149768	0.0136696256	-0.0130518966
## FranchiseCode_9	0.0987363425	-0.00079455292	0.0052833110	-0.0060012691
## FranchiseCode_10	0.1035292880	0.00017789716	0.0007036553	-0.0006255201
## FranchiseCode_11	0.0871989039	0.01967216014	-0.2649130181	0.2324631676
## FranchiseCode_12	-0.0824195378	-0.02007526487	0.2603173189	-0.2287202870
## LowDoc_1	-0.0033135116	-0.00057126088	0.0557401173	-0.0452769499
## LowDoc_2	0.0275062235	0.00538081273	-0.0433587435	0.0305045098
## LowDoc_3	-0.1615097214	0.00382001218	-0.1968538693	0.2006540349
## LowDoc_4	0.1611187118	-0.00382883780	0.1952200149	-0.1994144316
## NAICS_1	-0.0137564876	0.00258061773	-0.0235778353	0.0092421048
## NAICS_2	-0.0319548320	-0.00003788775	-0.0763601057	0.0465035540
## NAICS_3	-0.0273745647	0.00225716739	-0.2208110570	0.1708297693
## NAICS_4	-0.0125480036	0.00263027986	-0.2612105064	0.1996447055
## NAICS_5	-0.0458499232	0.00427043335	-0.2165592028	0.1761369021
## NAICS_6	-0.0197565200	0.00661532101	-0.2787677769	0.2051961041
## NAICS_7	-0.0185520418	0.00492371750	-0.2871106065	0.2203448813
## NAICS_8	-0.0060859821	0.00196257102	-0.2486154057	0.1819391538
## NAICS_9	0.0279228892	-0.00172893334	0.1950925714	-0.1457446094
## NAICS_10	-0.0206713236	0.00606267721	-0.2798737950	0.2218080922
## NAICS_11	-0.0201994074	0.00213091266	-0.2368367222	0.1830564468
## Bank_1	0.0127014778	0.00099213268	0.0042535202	-0.0204978369
## Bank_2	0.0348053251	0.00197777381	-0.0142574677	-0.0232272191
## Bank_3	0.0325706691	0.00328453878	0.0267935852	-0.0779913050
## Bank_4	0.0260838928	0.00248992580	0.0550071571	-0.0993642953
## Bank_5	0.0401389998	0.00145148608	0.0612252920	-0.1134859750
## Bank_6	0.0317134192	0.00131398598	0.0664474610	-0.1110671817
## Bank_7	0.0156112556	0.00177409552	0.0155594638	-0.0635459956
## Bank_8	0.0326727329	0.00286740181	0.0384440134	-0.0530453641
## Bank_9	0.0128229986	-0.00220467811	0.0079621119	-0.0419332957
## Bank_10	-0.0436081724	-0.00258798720	-0.0570703561	0.0691989031
## Bank_11	-0.0542915127	-0.00283501580	-0.0349550474	0.0522978849
## Bank_12	0.0046064814	0.00230659436	0.0025063217	-0.0002827914
## Bank_13	0.0109189293	0.00323421787	0.0438336554	-0.0425865406
##	UrbanRural_2	Month_Apr	Month_Aug	Month_Dec
## ApprovalFY	0.24215657326	-0.00448965793	-0.01829695318	0.02901940987
## Term	-0.04673262648	-0.00493990120	0.00096359888	0.00498129399
## NoEmp	-0.05751501173	-0.00406063668	-0.00043135068	0.00954037635
## CreateJob	0.02418230672	-0.00469918625	0.00433227228	0.00201208317
## GrAppv	-0.03136974952	-0.00292647176	0.00028777778	0.00956048358
## SBA_Appv	-0.03821901403	-0.00262628918	0.00037037545	0.00825523145
## NewExist_0	0.00365003728	-0.00077443201	0.00045699896	0.00000676814
## NewExist_1	-0.04116638974	0.00229063544	-0.00423138008	0.00426709175
## NewExist_2	0.04086012737	-0.00219404827	0.00419909031	-0.00431735818
## NewExist_U	0.00329910420	-0.00153945343	0.00014091268	0.00162477953
## UrbanRural_0	-0.27305149849	0.01646133590	-0.01204603954	-0.00632530056
## UrbanRural_1	-0.38137963822	-0.01579596950	0.01516010026	0.00414175675
## UrbanRural_2	1.00000000000	-0.00003463593	-0.00556825616	0.00300800057
## Month_Apr	-0.00003463593	1.00000000000	-0.09698459841	-0.09087723277
## Month_Aug	-0.00556825616	-0.09698459841	1.00000000000	-0.08999230581
## Month_Dec	0.00300800057	-0.09087723277	-0.08999230581	1.00000000000
## Month_Feb	0.00637935754	-0.08831534082	-0.08745536056	-0.08194807515
## Month_Jan	-0.00109072447	-0.08884733815	-0.08798217751	-0.08244171710

## Month_Jul	-0.00716180050	-0.09543630163	-0.09450698024	-0.08855563648
## Month_Jun	0.00382267195	-0.09667190078	-0.09573054762	-0.08970215272
## Month_Mar	0.00484026198	-0.10020325899	-0.09922751883	-0.09297891081
## Month_May	0.00046429291	-0.09592607332	-0.09499198273	-0.08901009714
## Month_Nov	0.00181770243	-0.08980148878	-0.08892703699	-0.08332707638
## Month_Oct	0.00728963522	-0.09077337733	-0.08988946167	-0.08422889474
## Month_Sep	-0.01260970436	-0.09979749500	-0.09882570602	-0.09260240117
## MIS_logical	-0.01150599356	0.00400304765	-0.00233146646	-0.00114977875
## RevLineCr_1	0.00319109303	-0.00168479227	-0.00020376049	-0.00079014945
## RevLineCr_2	-0.01003506248	-0.00990120584	-0.01005573874	-0.00792106695
## RevLineCr_3	0.07460076929	0.00089712534	0.00398460831	0.00257232509
## RevLineCr_4	-0.05189623032	0.00015629771	-0.00196051267	-0.00592535144
## FranchiseCode_1	-0.00521205641	0.00063486435	0.00068071915	0.00013234519
## FranchiseCode_2	-0.00152803301	-0.00430479018	0.00080031567	-0.00098752722
## FranchiseCode_3	-0.00515020608	-0.00083668833	0.00094504914	-0.00244918806
## FranchiseCode_4	-0.00272011549	0.00056710824	0.00168832065	0.00173833945
## FranchiseCode_5	-0.00105658695	-0.00218815320	0.00468196823	-0.00241427525
## FranchiseCode_6	-0.00502968068	-0.00015870497	0.00021408319	-0.00002550070
## FranchiseCode_7	-0.00108068876	-0.00208531621	0.00115430322	0.00149446075
## FranchiseCode_8	-0.00013004649	-0.00046308888	0.00079905142	0.00122226179
## FranchiseCode_9	0.00143585623	-0.00013070173	0.00122050059	-0.00113568463
## FranchiseCode_10	-0.00007867270	-0.00054021339	-0.00134758947	0.00086796365
## FranchiseCode_11	0.03433075273	-0.00673803918	0.00391156395	-0.00130731874
## FranchiseCode_12	-0.03328489512	0.00614478883	-0.00361001259	0.00136966671
## LowDoc_1	-0.01287063706	-0.01149122138	-0.01006291827	0.01759570957
## LowDoc_2	0.01733616905	-0.00080910624	0.00155332404	0.00033147633
## LowDoc_3	-0.01784868405	-0.00528587355	0.00216753449	0.00380938771
## LowDoc_4	0.01836195257	0.00536147925	-0.00245299527	-0.00370667547
## NAICS_1	0.02083783316	-0.00010803914	-0.00198851939	0.00254616654
## NAICS_2	0.04174433634	0.00016336929	-0.00080819849	0.00575585809
## NAICS_3	0.06423968036	-0.00143085971	-0.00200886440	0.00321912656
## NAICS_4	0.07978308999	-0.00230604687	-0.00315199791	0.00354671824
## NAICS_5	0.04964911203	0.00056404026	-0.00205798168	0.00400902999
## NAICS_6	0.09736715053	-0.00055516723	-0.00305935040	0.00645298902
## NAICS_7	0.08628877261	-0.00346937015	-0.00007726086	0.00705768893
## NAICS_8	0.08848578481	-0.00004171581	-0.00397755396	0.00224541177
## NAICS_9	-0.06481656526	0.00474401731	0.00064094805	-0.00390726661
## NAICS_10	0.07321362422	-0.00341751009	-0.00304820843	0.00739883195
## NAICS_11	0.06916840759	-0.00226116556	-0.00094483274	0.00511576160
## Bank_1	0.02549144639	-0.00007942799	-0.00091733164	0.00067282091
## Bank_2	0.05736216625	0.00045243705	0.00060259513	0.00055827891
## Bank_3	0.08115458618	0.00288026984	-0.00092981953	-0.00043465147
## Bank_4	0.07224075411	0.00288086380	-0.00095986915	-0.00069516074
## Bank_5	0.08489516711	0.00446458695	-0.00187742056	-0.00143894116
## Bank_6	0.07334286990	0.00172410887	0.00395559143	-0.00226402519
## Bank_7	0.07548472555	-0.00064217055	-0.00050003492	-0.00083084797
## Bank_8	0.02501409784	0.00192438910	0.00085357331	0.00478982901
## Bank_9	0.05325276489	-0.00536783626	0.00315346586	0.00152148088
## Bank_10	-0.02230323314	-0.00059095951	0.00264511403	-0.00361591968
## Bank_11	-0.02906090345	-0.00124147053	-0.00161367855	-0.00175335789
## Bank_12	-0.00330186050	-0.00060955821	-0.00287850913	0.00772115758
## Bank_13	0.00072272640	-0.00310177522	-0.00250816897	0.00753514846
##	Month_Feb	Month_Jan	Month_Jul	Month_Jun
## ApprovalFY	0.01473230332	-0.00202203932	-0.0314944791	-0.00602179133
## Term	-0.01251607183	0.00165464066	0.0124291736	0.00311678641
## NoEmp	-0.00666716516	0.00271541375	0.0070716811	0.00041938110
## CreateJob	0.00051092898	-0.00684322196	0.0002560454	-0.00305610585
## GrAppv	-0.01235450748	0.00033202942	0.0143369039	0.00612233261

## SBA_Appv	-0.01260082691	0.00138290442	0.0157252840	0.00525123120
## NewExist_0	-0.00212130799	0.00066756422	0.0010075602	0.00016955746
## NewExist_1	-0.00380807546	-0.00132718161	0.0014580986	0.00049989606
## NewExist_2	0.00389459669	0.00128678882	-0.0014983338	-0.00048259779
## NewExist_U	0.00290528914	-0.00029581444	-0.0013937209	-0.00114014293
## UrbanRural_0	0.00214325858	0.01633554454	0.0077597378	-0.01750355986
## UrbanRural_1	-0.00616633369	-0.01499522016	-0.0028460891	0.01435887631
## UrbanRural_2	0.00637935754	-0.00109072447	-0.0071618005	0.00382267195
## Month_Apr	-0.08831534082	-0.08884733815	-0.0954363016	-0.09667190078
## Month_Aug	-0.08745536056	-0.08798217751	-0.0945069802	-0.09573054762
## Month_Dec	-0.08194807515	-0.08244171710	-0.0885556365	-0.08970215272
## Month_Feb	1.00000000000	-0.08011762816	-0.0860591919	-0.08717338709
## Month_Jan	-0.08011762816	1.00000000000	-0.0865775986	-0.08769850548
## Month_Jul	-0.08605919194	-0.08657759859	1.00000000000	-0.09420227095
## Month_Jun	-0.08717338709	-0.08769850548	-0.0942022709	1.00000000000
## Month_Mar	-0.09035777111	-0.09090207171	-0.0976434153	-0.09890758958
## Month_May	-0.08650084103	-0.08702190811	-0.0934754968	-0.09468570969
## Month_Nov	-0.08097802856	-0.08146582711	-0.0875073740	-0.08864031854
## Month_Oct	-0.08185442404	-0.08234750185	-0.0884544342	-0.08959964017
## Month_Sep	-0.08999187553	-0.09053397204	-0.0972480171	-0.09850707230
## MIS_logical	-0.00528961627	-0.00110390310	0.0054692167	-0.00014717279
## RevLineCr_1	0.00244156623	-0.00074028209	0.0028110169	-0.00019447267
## RevLineCr_2	0.06196961324	-0.00674748820	-0.0116245650	-0.00800541059
## RevLineCr_3	-0.00432361182	-0.01497782305	-0.0112249403	0.01183887393
## RevLineCr_4	0.00748485654	0.00667132242	0.0060521907	-0.01236787002
## FranchiseCode_1	-0.00036295027	0.00073904273	0.0010671190	-0.00086557621
## FranchiseCode_2	-0.00187710750	0.00170193264	0.0005721160	-0.00094466738
## FranchiseCode_3	-0.00036911839	-0.00119435818	-0.0004543357	-0.00009951652
## FranchiseCode_4	-0.00006106549	-0.00018386395	-0.0006452738	-0.00173541492
## FranchiseCode_5	0.00016522519	0.00004924832	0.0003514041	-0.00319206704
## FranchiseCode_6	-0.00033611494	-0.00061139271	0.0001133049	-0.00143774094
## FranchiseCode_7	-0.00044400365	-0.00021997832	0.0008093397	-0.00211697031
## FranchiseCode_8	-0.00102675370	0.00078516506	0.0008961727	-0.00022823441
## FranchiseCode_9	-0.00220594444	-0.00087104379	0.0022517506	-0.00068888753
## FranchiseCode_10	0.00045351827	0.00071822698	0.0009280419	-0.00298644920
## FranchiseCode_11	0.00509247669	-0.00241626171	0.0071948100	-0.00893593329
## FranchiseCode_12	-0.00508557402	0.00171585499	-0.0066118496	0.00840236151
## LowDoc_1	0.00695037188	0.01679006358	-0.0117248492	-0.01227520267
## LowDoc_2	-0.00015417455	-0.00076620416	0.0019241203	-0.00109308628
## LowDoc_3	-0.00616420896	-0.00310105151	0.0115711895	0.00243267900
## LowDoc_4	0.00604449341	0.00309640301	-0.0115757469	-0.00193633595
## NAICS_1	0.00100701802	-0.00113624173	-0.0008739716	-0.00104320811
## NAICS_2	0.00213045930	-0.00258169173	-0.0018636156	0.00114252110
## NAICS_3	0.00173452050	-0.00381205448	-0.0046879823	0.00172573155
## NAICS_4	0.00158726954	-0.00190163553	-0.0070689806	0.00199325394
## NAICS_5	0.00379221364	-0.00169081335	-0.0062415331	-0.00227103543
## NAICS_6	0.00134535818	-0.00022694883	-0.0083037979	-0.00244061452
## NAICS_7	-0.00087653034	-0.00199799022	-0.0068311527	0.00003930412
## NAICS_8	0.00433363573	-0.00196814430	-0.0080827662	-0.00016808501
## NAICS_9	-0.00139887355	0.00276548917	0.0034196167	-0.00098773877
## NAICS_10	0.00325976535	-0.00118265316	-0.0062821778	-0.00119223424
## NAICS_11	0.00048939668	-0.00220107047	-0.0041117741	0.00176715137
## Bank_1	0.00032362443	0.00171823432	-0.0015605043	-0.00138153726
## Bank_2	0.00092245458	0.00102994305	0.0006191435	-0.00330769818
## Bank_3	0.00006894714	0.00235115561	0.0010040669	0.00140752030
## Bank_4	0.00011612139	0.00095553230	0.0043075025	0.00124298547
## Bank_5	0.00162632812	0.00090315634	0.0019114340	0.00030227873
## Bank_6	-0.00301175682	-0.00342982545	0.0031981914	0.00317726100

## Bank_7	0.00061219548	0.00238245982	0.0022320970	0.00204501817
## Bank_8	-0.00099084804	0.00046651698	-0.0029987494	-0.00106382080
## Bank_9	-0.00345439597	0.00007470168	0.0001704811	0.00057156979
## Bank_10	-0.00068759149	-0.00290998327	-0.0008945162	0.00149950066
## Bank_11	0.00141347431	0.00293289704	-0.0013113038	-0.00290042398
## Bank_12	-0.00446017131	-0.00056001427	-0.0028665705	-0.00299174826
## Bank_13	-0.00026784812	0.00266969540	0.0002360149	-0.00143595945
##	Month_Mar	Month_May	Month_Nov	Month_Oct
## ApprovalFY	0.006777759219	0.00450083320	0.02315187810	0.02783926724
## Term	-0.008898839228	-0.00083098320	-0.00109670790	-0.00959412158
## NoEmp	-0.006907112838	-0.00275925327	-0.00283252778	-0.00630448796
## CreateJob	0.000056660028	0.00308700118	-0.00330250629	-0.00213157669
## GrAppv	-0.009007660396	-0.00033571502	-0.00677736436	-0.01537402980
## SBA_Appv	-0.009230895444	-0.00143910734	-0.00703181646	-0.01574792139
## NewExist_0	-0.000520871285	-0.00050452860	0.00059569641	-0.00157341396
## NewExist_1	0.002081429204	0.00331629571	-0.00192616956	-0.00562341119
## NewExist_2	-0.002076939350	-0.00329766847	0.00187508357	0.00577038214
## NewExist_U	0.001178977683	0.00054547307	0.00033204671	-0.00077069630
## UrbanRural_0	0.002408916899	0.00096841614	-0.00191387327	-0.00748682426
## UrbanRural_1	-0.005430799239	-0.00122947974	0.00066893514	0.00250154166
## UrbanRural_2	0.004840261979	0.00046429291	0.00181770243	0.00728963522
## Month_Apr	-0.100203258985	-0.09592607332	-0.08980148878	-0.09077337733
## Month_Aug	-0.099227518831	-0.09499198273	-0.08892703699	-0.08988946167
## Month_Dec	-0.092978910809	-0.08901009714	-0.08332707638	-0.08422889474
## Month_Feb	-0.090357771106	-0.08650084103	-0.08097802856	-0.08185442404
## Month_Jan	-0.090902071707	-0.08702190811	-0.08146582711	-0.08234750185
## Month_Jul	-0.097643415265	-0.09347549678	-0.08750737400	-0.08845443419
## Month_Jun	-0.098907589581	-0.09468570969	-0.08864031854	-0.08959964017
## Month_Mar	1.000000000000	-0.09814451369	-0.09187828856	-0.09287265355
## Month_May	-0.098144513694	1.000000000000	-0.08795645505	-0.08890837548
## Month_Nov	-0.091878288556	-0.08795645505	1.000000000000	-0.08323184934
## Month_Oct	-0.092872653548	-0.08890837548	-0.08323184934	1.000000000000
## Month_Sep	-0.102105468052	-0.09774708641	-0.09150623579	-0.09249657419
## MIS_logical	-0.001816510561	0.00165185790	-0.00410538626	-0.00590098724
## RevLineCr_1	-0.000297793958	0.00056677929	-0.00076381394	-0.00001369423
## RevLineCr_2	0.033656020528	-0.00926925616	-0.00999109403	-0.00990708037
## RevLineCr_3	0.001009729267	0.01088589216	0.00051801481	0.00106680149
## RevLineCr_4	0.002959702743	-0.00674568128	0.00407734326	0.00210604855
## FranchiseCode_1	0.000082757189	-0.00165138442	0.00009329258	0.00015786181
## FranchiseCode_2	-0.001568113894	-0.00063659552	0.00298708962	0.00313183142
## FranchiseCode_3	0.000951951082	0.00005945411	0.00032113671	0.00145985439
## FranchiseCode_4	-0.000470835545	0.00024568184	0.00005683645	-0.00079828328
## FranchiseCode_5	-0.000226557150	0.00078610791	-0.00131435392	0.00116600264
## FranchiseCode_6	0.001110709920	-0.00003303162	0.00052248965	-0.00041983975
## FranchiseCode_7	0.000316148464	-0.00079331494	0.00064070662	-0.00012721303
## FranchiseCode_8	-0.000119062032	-0.00120876073	-0.00107360857	0.00009872470
## FranchiseCode_9	0.000395546647	-0.00074465399	-0.00097001284	0.00002001495
## FranchiseCode_10	-0.000033890168	-0.00117851285	0.00083351628	-0.00039386315
## FranchiseCode_11	-0.002102440244	-0.00127097975	0.01079988720	0.01105346857
## FranchiseCode_12	0.001583684697	0.00152348608	-0.01062160835	-0.01015976834
## LowDoc_1	0.004935585122	-0.01164037403	0.02353264456	0.00168090276
## LowDoc_2	-0.004836008988	-0.00037338813	0.00190836889	0.00279365455
## LowDoc_3	-0.004345210430	0.00119245965	-0.00215731788	-0.00385664030
## LowDoc_4	0.004417344812	-0.00114169084	0.00187094685	0.00372630486
## NAICS_1	-0.001348651703	-0.00127372672	0.00151595136	0.00307933974
## NAICS_2	0.001299202996	-0.00071866240	-0.00142392981	0.00003147767
## NAICS_3	0.003631729292	0.00349226814	0.00132631078	0.00585200869
## NAICS_4	0.002587356956	0.00182199823	0.00285102885	0.00438431967

## NAICS_5	0.002368580111	0.00164581393	0.00183219311	0.00356954265
## NAICS_6	0.002374891398	0.00152944486	0.00352538161	0.00288948627
## NAICS_7	-0.001861474159	0.00174362170	0.00431145584	0.00526203980
## NAICS_8	0.005646422335	0.00458477282	0.00055147968	0.00327602929
## NAICS_9	-0.001952742399	-0.00180033269	-0.00284245352	-0.00455349933
## NAICS_10	0.002538425987	0.00165821707	0.00500398846	0.00271014869
## NAICS_11	0.000728454854	0.00246155024	0.00146239931	0.00070088797
## Bank_1	-0.000288314863	-0.00216823313	0.00096425300	0.00369159032
## Bank_2	-0.002500898654	-0.00171747248	-0.00049828654	0.00422994031
## Bank_3	-0.002478358108	-0.00044062868	-0.00041889425	-0.00160277684
## Bank_4	-0.000085929926	0.00046775662	-0.00472212814	-0.00310766123
## Bank_5	-0.000497483785	0.00060102753	-0.00236544763	-0.00359824418
## Bank_6	0.000004441382	-0.00094611073	-0.00573120267	-0.00717715583
## Bank_7	-0.001340054158	-0.00293415940	-0.00361512662	0.00041365028
## Bank_8	-0.000275174530	0.00206557940	0.00098998531	-0.00391838484
## Bank_9	-0.004066116657	-0.00220599986	-0.00021726481	0.00375242892
## Bank_10	0.000399504878	-0.00071182959	-0.00141170955	0.00436131622
## Bank_11	0.000821189153	0.00014210860	0.00217506266	-0.00009304474
## Bank_12	0.000215409954	-0.00009005945	0.00465541584	0.00176941793
## Bank_13	-0.003375021632	-0.00330941966	0.00437488734	0.00543138416
##	Month_Sep	MIS_logical	RevLineCr_1	RevLineCr_2
## ApprovalFY	-0.03789325090	-0.2544428406	-0.00115982003	0.038623063606
## Term	0.01370305362	0.4095440146	-0.00234040404	-0.062141319412
## NoEmp	0.00994676673	0.1172885360	0.00307565435	-0.022232183930
## CreateJob	0.00896437896	-0.0529835420	-0.00227384267	-0.010041725768
## GrAppv	0.01460672254	0.1897064707	0.00532117247	-0.081501407329
## SBA_Appv	0.01608775906	0.2066286927	0.00562959254	-0.091509105928
## NewExist_0	0.00240291218	0.0101783771	-0.00018234455	-0.002845136434
## NewExist_1	0.00234414934	0.0187636569	0.00200139328	0.017772324866
## NewExist_2	-0.00249234206	-0.0196152539	-0.00198870020	-0.017550756648
## NewExist_U	-0.00132850011	0.0022179178	-0.00006530797	-0.001196702609
## UrbanRural_0	-0.00046174215	0.2058133512	-0.00187929731	-0.035191742147
## UrbanRural_1	0.00856138106	-0.1903660183	-0.00024842990	0.040277176522
## UrbanRural_2	-0.01260970436	-0.0115059936	0.00319109303	-0.010035062483
## Month_Apr	-0.09979749500	0.0040030476	-0.00168479227	-0.009901205842
## Month_Aug	-0.09882570602	-0.0023314665	-0.00020376049	-0.010055738739
## Month_Dec	-0.09260240117	-0.0011497787	-0.00079014945	-0.007921066954
## Month_Feb	-0.08999187553	-0.0052896163	0.00244156623	0.061969613236
## Month_Jan	-0.09053397204	-0.0011039031	-0.00074028209	-0.006747488200
## Month_Jul	-0.09724801714	0.0054692167	0.00281101687	-0.011624565002
## Month_Jun	-0.09850707230	-0.0001471728	-0.00019447267	-0.008005410594
## Month_Mar	-0.10210546805	-0.0018165106	-0.00029779396	0.033656020528
## Month_May	-0.09774708641	0.0016518579	0.00056677929	-0.009269256157
## Month_Nov	-0.09150623579	-0.0041053863	-0.00076381394	-0.009991094034
## Month_Oct	-0.09249657419	-0.0059009872	-0.00001369423	-0.009907080369
## Month_Sep	1.00000000000	0.0094875560	-0.00100143379	-0.010416757568
## MIS_logical	0.00948755600	1.00000000000	0.00194070914	-0.063755585994
## RevLineCr_1	-0.00100143379	0.0019407091	1.00000000000	0.004829295909
## RevLineCr_2	-0.01041675757	-0.0637555860	0.00482929591	1.000000000000
## RevLineCr_3	-0.00338174984	-0.0529065312	0.00154215275	-0.153043036008
## RevLineCr_4	-0.00147641158	-0.0180740543	-0.00409491690	-0.152512992293
## FranchiseCode_1	-0.00065677937	0.0013656886	-0.00022317185	0.000006981254
## FranchiseCode_2	0.00144889374	-0.0058265066	-0.00038716881	-0.006560986220
## FranchiseCode_3	0.00146287791	-0.0051588056	-0.00054143120	-0.008705837623
## FranchiseCode_4	-0.00036088187	0.0035583979	-0.00067953417	-0.010166642889
## FranchiseCode_5	0.00198458029	0.0040851829	0.00080067901	-0.010387746406
## FranchiseCode_6	0.00094775903	0.0086185927	0.00041023921	-0.014617860769
## FranchiseCode_7	0.00140760487	0.0049274860	0.00044785965	-0.013046677049

## FranchiseCode_8	0.00029932994	0.0201290845	0.00024544291	-0.013829849843
## FranchiseCode_9	0.00246443692	0.0053199722	0.00044390530	-0.014171358259
## FranchiseCode_10	0.00277419228	0.0053562359	-0.00091185165	-0.014613671371
## FranchiseCode_11	-0.01338024733	-0.2303500801	-0.00271146591	0.019996033618
## FranchiseCode_12	0.01348628342	0.2281632708	0.00271421904	-0.020141733206
## LowDoc_1	-0.01018139329	0.0087051061	-0.00025351784	0.034106112874
## LowDoc_2	-0.00009900541	-0.0351312481	-0.00032492193	-0.002126382346
## LowDoc_3	0.00316692068	-0.0792941045	0.00144163605	0.000997824241
## LowDoc_4	-0.00316314084	0.0802291330	-0.00144586890	-0.001187526008
## NAICS_1	0.00002514388	0.0140000593	0.00159613388	-0.002389092033
## NAICS_2	-0.00292674307	-0.0043724376	0.00234260077	0.002989789925
## NAICS_3	-0.00852393836	-0.0685242023	0.00063026029	0.023454207292
## NAICS_4	-0.00379043226	-0.0750045659	0.00132898333	0.016690867488
## NAICS_5	-0.00486241350	-0.0434673903	0.00008214275	0.019726495592
## NAICS_6	-0.00282530974	-0.0591624644	0.00028141906	0.009857023734
## NAICS_7	-0.00251953997	-0.0650409488	-0.00008909888	0.012861692537
## NAICS_8	-0.00595957892	-0.0551749485	-0.00006780143	0.014200396963
## NAICS_9	0.00525080913	0.0237353174	-0.00015665340	-0.008672423420
## NAICS_10	-0.00639608559	-0.0567249520	0.00076295464	0.013470792316
## NAICS_11	-0.00288685676	-0.0338774566	0.00267964300	0.008943805609
## Bank_1	-0.00055711919	0.0118707908	0.00185711292	-0.006043701988
## Bank_2	0.00002547066	-0.0300616443	0.00500209074	-0.019414807216
## Bank_3	-0.00128299570	0.0407011745	0.00381202315	-0.019895291160
## Bank_4	-0.00076022318	0.0501583655	0.00496618911	-0.030837514629
## Bank_5	-0.00024667227	0.0848044368	0.00146759510	-0.031925551365
## Bank_6	0.00898227477	0.1004254178	0.00228369283	-0.027645120218
## Bank_7	0.00612863186	0.0466169073	0.00249554864	-0.033681105235
## Bank_8	-0.00177046956	0.0422451512	0.00061570670	-0.034150770557
## Bank_9	0.00607381148	-0.0095395656	0.00153469887	-0.049904537325
## Bank_10	0.00155716426	-0.0553247004	0.00098574324	0.032874565394
## Bank_11	0.00170452204	-0.0224396764	-0.00185183900	0.040341349850
## Bank_12	0.00045365477	-0.0089791167	-0.00036624615	-0.049821048086
## Bank_13	-0.00491452882	-0.0364658652	0.00137253833	-0.049607330110
##	RevLineCr_3	RevLineCr_4	FranchiseCode_1	FranchiseCode_2
## ApprovalFY	0.3586687569	-0.0604664384	-0.011842111631	0.0024708936
## Term	-0.1671006744	-0.1121855591	0.002927034728	0.0089064877
## NoEmp	-0.1479900442	0.0330839502	-0.000539236956	0.0018015381
## CreateJob	0.1376162490	-0.1191980228	0.002056223677	0.0258371430
## GrAppv	-0.1928120890	-0.1320096891	0.011733048361	0.0291485287
## SBA_Appv	-0.2475133239	-0.1320211751	0.014096410898	0.0315314820
## NewExist_0	-0.0287338549	0.0178709007	0.001780600571	-0.0010543313
## NewExist_1	0.0333977162	0.0330335291	-0.031923024609	-0.0512174609
## NewExist_2	-0.0311468010	-0.0346346600	0.031847064923	0.0513915756
## NewExist_U	-0.00050384272	0.0078170516	-0.000502881164	-0.0008724214
## UrbanRural_0	-0.4430693121	0.1797173191	0.007025797080	-0.0042872141
## UrbanRural_1	0.3777353132	-0.1392876477	-0.003395995690	0.0051034253
## UrbanRural_2	0.0746007693	-0.0518962303	-0.005212056412	-0.0015280330
## Month_Apr	0.0008971253	0.0001562977	0.000634864350	-0.0043047902
## Month_Aug	0.0039846083	-0.0019605127	0.000680719146	0.0008003157
## Month_Dec	0.0025723251	-0.0059253514	0.000132345187	-0.0009875272
## Month_Feb	-0.0043236118	0.0074848565	-0.000362950270	-0.0018771075
## Month_Jan	-0.0149778230	0.0066713224	0.000739042729	0.0017019326
## Month_Jul	-0.0112249403	0.0060521907	0.001067118979	0.0005721160
## Month_Jun	0.0118388739	-0.0123678700	-0.000865576208	-0.0009446674
## Month_Mar	0.0010097293	0.0029597027	0.000082757189	-0.0015681139
## Month_May	0.0108858922	-0.0067456813	-0.001651384416	-0.0006365955
## Month_Nov	0.0005180148	0.0040773433	0.000093292585	0.0029870896
## Month_Oct	0.0010668015	0.0021060485	0.000157861806	0.0031318314

## Month_Sep	-0.0033817498	-0.0014764116	-0.000656779371	0.0014488937
## MIS_logical	-0.0529065312	-0.0180740543	0.001365688648	-0.0058265066
## RevLineCr_1	0.0015421527	-0.0040949169	-0.000223171852	-0.0003871688
## RevLineCr_2	-0.1530430360	-0.1525129923	0.000006981254	-0.0065609862
## RevLineCr_3	1.0000000000	-0.5730450598	-0.006352466854	0.0016467194
## RevLineCr_4	-0.5730450598	1.0000000000	-0.007330549624	-0.0224176357
## FranchiseCode_1	-0.0063524669	-0.0073305496	1.000000000000	-0.0029812579
## FranchiseCode_2	0.0016467194	-0.0224176357	-0.002981257895	1.0000000000
## FranchiseCode_3	-0.0031618661	-0.0292902936	0.074827970050	0.2498657088
## FranchiseCode_4	0.0017346888	-0.0415136855	0.103599844543	0.2222803627
## FranchiseCode_5	0.0009566160	-0.0438734584	0.131032621350	0.2411505720
## FranchiseCode_6	0.0107482726	-0.0674422809	0.111579389162	0.1899161044
## FranchiseCode_7	0.0059693753	-0.0597464783	0.127758029616	0.2153509436
## FranchiseCode_8	0.0050232842	-0.0659415938	0.101156673247	0.1855716872
## FranchiseCode_9	0.0112751034	-0.0661436273	0.133149414953	0.1995008006
## FranchiseCode_10	0.0143152297	-0.0725282726	0.121397864007	0.2000571561
## FranchiseCode_11	-0.1092364770	0.2915160185	0.024477328849	0.0396026919
## FranchiseCode_12	0.1129736233	-0.2942970798	-0.025483171558	-0.0378659414
## LowDoc_1	-0.0232847270	0.0063640720	0.000340928537	0.0022502193
## LowDoc_2	-0.0286147442	0.0356542586	-0.001158186230	0.0023955979
## LowDoc_3	0.0439506983	0.1186855601	-0.014450701168	-0.0039018906
## LowDoc_4	-0.0471006745	-0.1155145393	0.014466808831	0.0033039615
## NAICS_1	0.0026772872	-0.0005554083	0.001453150301	-0.0043543135
## NAICS_2	0.0238906129	0.0057463361	-0.008393539688	-0.0128026191
## NAICS_3	0.0952533730	0.0146322611	-0.001813055989	-0.0057050135
## NAICS_4	0.1187978252	-0.0266082038	-0.004671344640	-0.0101910588
## NAICS_5	0.1095021988	-0.0132823051	-0.012204440191	-0.0185170949
## NAICS_6	0.1247428670	-0.0355069373	-0.003554215295	-0.0038829630
## NAICS_7	0.1379449739	-0.0442066921	-0.008679567609	-0.0071364801
## NAICS_8	0.1161319224	-0.0357937410	-0.001621942091	0.0006785479
## NAICS_9	-0.0913727803	0.0277320404	0.009609410151	0.0166625049
## NAICS_10	0.1378594140	-0.0423986254	-0.008485182354	-0.0124456715
## NAICS_11	0.1151713430	-0.0446065178	-0.004816182785	-0.0021999159
## Bank_1	-0.0398925675	0.0213796555	0.005118240319	0.0071236745
## Bank_2	-0.0622574501	0.0130340427	0.002020502948	0.0053573061
## Bank_3	-0.0703327721	0.0044655303	0.004300960955	0.0075834359
## Bank_4	-0.1092371533	0.0017744259	0.004135880560	0.0122007080
## Bank_5	-0.0990436630	-0.0123340188	0.004855117168	0.0117281493
## Bank_6	-0.0736648244	-0.0361851145	0.003480383534	0.0104161816
## Bank_7	-0.0827018694	-0.0290645333	0.001788598132	0.0101542454
## Bank_8	-0.0017782410	-0.0311681428	0.003141459050	0.0108594482
## Bank_9	-0.0575135356	-0.0865763564	0.001527785521	0.0041887605
## Bank_10	0.0145691427	0.0138849353	-0.005230336482	-0.0068785487
## Bank_11	0.0322375626	0.0196596777	-0.005441347697	-0.0118959706
## Bank_12	0.0128882947	0.0080814940	-0.004143057569	-0.0042366586
## Bank_13	-0.0314877165	-0.0382079898	0.000757106370	0.0035731129
##	FranchiseCode_3	FranchiseCode_4	FranchiseCode_5	
## ApprovalFY	-0.02001801408	-0.01791626105	-0.01940031086	
## Term	0.01749660873	0.03536745516	0.03883849333	
## NoEmp	0.01151996882	0.01860207405	0.02180342311	
## CreateJob	0.01867759859	0.02564405966	0.02496911615	
## GrAppv	0.04416794967	0.06109539329	0.06737422796	
## SBA_Appv	0.04771893054	0.06469989395	0.07090671602	
## NewExist_0	0.00221929040	0.00129366653	0.00049834540	
## NewExist_1	-0.06658506540	-0.07275386499	-0.07606393320	
## NewExist_2	0.06654368160	0.07277913971	0.07614031010	
## NewExist_U	-0.00122002641	-0.00079153554	-0.00029718797	
## UrbanRural_0	0.01272362863	0.00989329970	0.01153713753	

## UrbanRural_1	-0.00891105609	-0.00775570063	-0.01040624146
## UrbanRural_2	-0.00515020608	-0.00272011549	-0.00105658695
## Month_Apr	-0.00083668833	0.00056710824	-0.00218815320
## Month_Aug	0.00094504914	0.00168832065	0.00468196823
## Month_Dec	-0.00244918806	0.00173833945	-0.00241427525
## Month_Feb	-0.00036911839	-0.00006106549	0.00016522519
## Month_Jan	-0.00119435818	-0.00018386395	0.00004924832
## Month_Jul	-0.00045433567	-0.00064527378	0.00035140407
## Month_Jun	-0.00009951652	-0.00173541492	-0.00319206704
## Month_Mar	0.00095195108	-0.00047083555	-0.00022655715
## Month_May	0.00005945411	0.00024568184	0.00078610791
## Month_Nov	0.00032113671	0.00005683645	-0.00131435392
## Month_Oct	0.00145985439	-0.00079828328	0.00116600264
## Month_Sep	0.00146287791	-0.00036088187	0.00198458029
## MIS_logical	-0.00515880558	0.00355839786	0.00408518293
## RevLineCr_1	-0.00054143120	-0.00067953417	0.00080067901
## RevLineCr_2	-0.00870583762	-0.01016664289	-0.01038774641
## RevLineCr_3	-0.00316186615	0.00173468881	0.00095661597
## RevLineCr_4	-0.02929029364	-0.04151368551	-0.04387345840
## FranchiseCode_1	0.07482797005	0.10359984454	0.13103262135
## FranchiseCode_2	0.24986570882	0.22228036272	0.24115057203
## FranchiseCode_3	1.00000000000	0.28683284747	0.29787635756
## FranchiseCode_4	0.28683284747	1.00000000000	0.38606260377
## FranchiseCode_5	0.29787635756	0.38606260377	1.00000000000
## FranchiseCode_6	0.28390488381	0.36877039171	0.37947463538
## FranchiseCode_7	0.31664391841	0.30223034399	0.42389755052
## FranchiseCode_8	0.25153516157	0.34356896798	0.35641382496
## FranchiseCode_9	0.29932481230	0.34581092531	0.40618901984
## FranchiseCode_10	0.29839773588	0.35426685779	0.38469008092
## FranchiseCode_11	0.06048211031	0.06533936720	0.07949895615
## FranchiseCode_12	-0.05298052961	-0.07283877111	-0.06406385507
## LowDoc_1	0.00193565342	0.00016613432	0.00235893713
## LowDoc_2	-0.00160170118	-0.00105367230	-0.00235099429
## LowDoc_3	-0.01163675100	-0.01299294409	-0.01129434322
## LowDoc_4	0.01130871247	0.01299635142	0.01115148260
## NAICS_1	-0.00724809253	-0.00799368312	-0.00965703106
## NAICS_2	-0.01936524294	-0.02717534607	-0.02727193796
## NAICS_3	-0.01805032157	-0.02278593773	-0.02529578808
## NAICS_4	-0.01365959854	-0.00465101902	-0.01166253769
## NAICS_5	-0.02852023390	-0.03465923757	-0.03438590079
## NAICS_6	-0.01268436119	-0.01183945468	-0.00098811916
## NAICS_7	-0.02066976440	-0.02336613013	-0.01097722009
## NAICS_8	0.00017897583	0.00670036637	0.01118671586
## NAICS_9	0.02762698563	0.03158871681	0.03107603765
## NAICS_10	-0.02222759423	-0.03285080415	-0.03620791901
## NAICS_11	-0.00887953711	0.00124610298	-0.00770837389
## Bank_1	0.00555736503	0.00362099673	0.00375301978
## Bank_2	0.00530086026	0.00089900986	0.00180805707
## Bank_3	0.00730441684	0.00812191167	0.01063506625
## Bank_4	0.00729857634	0.01341254083	0.01533316100
## Bank_5	0.00985996900	0.01406156591	0.01408271156
## Bank_6	0.01191327371	0.01727406736	0.01669995232
## Bank_7	0.00842710060	0.00959097314	0.01156172018
## Bank_8	0.01315859246	0.01345163838	0.01619611166
## Bank_9	0.00348236777	0.00822209402	0.00822505587
## Bank_10	-0.01311456354	-0.01845823145	-0.02356128026
## Bank_11	-0.01269008609	-0.01724415795	-0.01674843700
## Bank_12	-0.00508010054	-0.00564650397	-0.00484307297

## Bank_13	0.00277226931	0.00348341673	0.00491329194
##	FranchiseCode_6	FranchiseCode_7	FranchiseCode_8
## ApprovalFY	-0.02231367326	-0.02345391165	-0.02738120133
## Term	0.05411476793	0.04944865870	0.05826034668
## NoEmp	0.03421362681	0.02001935638	0.04270578183
## CreateJob	0.04157128547	0.02950087023	0.03022927514
## GrAppv	0.09127163425	0.08196913824	0.09076016623
## SBA_Appv	0.09456279793	0.08592673676	0.09517142720
## NewExist_0	0.00041015287	0.00019090632	0.00144120346
## NewExist_1	-0.09851153123	-0.09836368728	-0.09061301288
## NewExist_2	0.09865601037	0.09849172309	0.09063127436
## NewExist_U	-0.00141809089	-0.00020447443	-0.00002149768
## UrbanRural_0	0.00868766841	0.01252675662	0.01366962559
## UrbanRural_1	-0.00511035230	-0.01134168478	-0.01305189662
## UrbanRural_2	-0.00502968068	-0.00108068876	-0.00013004649
## Month_Apr	-0.00015870497	-0.00208531621	-0.00046308888
## Month_Aug	0.00021408319	0.00115430322	0.00079905142
## Month_Dec	-0.00002550070	0.00149446075	0.00122226179
## Month_Feb	-0.00033611494	-0.00044400365	-0.00102675370
## Month_Jan	-0.00061139271	-0.00021997832	0.00078516506
## Month_Jul	0.00011330493	0.00080933969	0.00089617271
## Month_Jun	-0.00143774094	-0.00211697031	-0.00022823441
## Month_Mar	0.00111070992	0.00031614846	-0.00011906203
## Month_May	-0.00003303162	-0.00079331494	-0.00120876073
## Month_Nov	0.00052248965	0.00064070662	-0.00107360857
## Month_Oct	-0.00041983975	-0.00012721303	0.00009872470
## Month_Sep	0.00094775903	0.00140760487	0.00029932994
## MIS_logical	0.00861859268	0.00492748601	0.02012908454
## RevLineCr_1	0.00041023921	0.00044785965	0.00024544291
## RevLineCr_2	-0.01461786077	-0.01304667705	-0.01382984984
## RevLineCr_3	0.01074827256	0.00596937534	0.00502328421
## RevLineCr_4	-0.06744228094	-0.05974647830	-0.06594159382
## FranchiseCode_1	0.11157938916	0.12775802962	0.10115667325
## FranchiseCode_2	0.18991610442	0.21535094362	0.18557168719
## FranchiseCode_3	0.28390488381	0.31664391841	0.25153516157
## FranchiseCode_4	0.36877039171	0.30223034399	0.34356896798
## FranchiseCode_5	0.37947463538	0.42389755052	0.35641382496
## FranchiseCode_6	1.00000000000	0.41396436883	0.41322530421
## FranchiseCode_7	0.41396436883	1.00000000000	0.44097702837
## FranchiseCode_8	0.41322530421	0.44097702837	1.00000000000
## FranchiseCode_9	0.44069309089	0.52815403315	0.46806336845
## FranchiseCode_10	0.51763466258	0.45142947454	0.42773227661
## FranchiseCode_11	0.09905640915	0.08395284901	0.05440977325
## FranchiseCode_12	-0.08327305256	-0.11134296113	-0.08932539114
## LowDoc_1	0.00294381256	0.00190431580	0.00196153710
## LowDoc_2	-0.00493065804	-0.00231379623	-0.00437551250
## LowDoc_3	-0.00915116441	-0.01341764541	-0.01813947273
## LowDoc_4	0.00899745568	0.01330496388	0.01801459573
## NAICS_1	-0.01279328120	-0.01208738247	-0.01342440455
## NAICS_2	-0.03711244843	-0.03527861201	-0.04110030532
## NAICS_3	-0.03672015505	-0.02505346765	-0.04331666549
## NAICS_4	-0.02501834937	-0.01903693839	-0.02719504611
## NAICS_5	-0.04544756757	-0.04326159106	-0.06053764038
## NAICS_6	-0.01715403921	-0.01089228758	-0.02187845993
## NAICS_7	-0.03323494891	-0.02208310360	-0.03611050634
## NAICS_8	0.02102190626	0.00853510271	0.01526699047
## NAICS_9	0.04515420332	0.04118868435	0.04905795514
## NAICS_10	-0.05811241607	-0.04811193073	-0.06403043947

## NAICS_11	0.00167963290	-0.01049544205	0.00804334096
## Bank_1	0.00162224554	0.00239803544	0.00320481260
## Bank_2	-0.00096711370	-0.00009578998	-0.00074868449
## Bank_3	0.00431226946	0.01063008221	0.00778311520
## Bank_4	0.00865111360	0.01364939369	0.01165514992
## Bank_5	0.01624410128	0.01284654185	0.01670921333
## Bank_6	0.01747803070	0.02010936929	0.02098786865
## Bank_7	0.00952992925	0.01118646658	0.01069328570
## Bank_8	0.02204109657	0.02057384535	0.02423688227
## Bank_9	0.00990912130	0.01047285094	0.01292980725
## Bank_10	-0.02538034427	-0.02068155004	-0.02437962677
## Bank_11	-0.02531779629	-0.02450141718	-0.02877292790
## Bank_12	-0.00486018152	-0.01075756328	-0.00880002652
## Bank_13	0.00340321853	0.00606762768	0.00280242416
##	FranchiseCode_9	FranchiseCode_10	FranchiseCode_11
## ApprovalFY	-0.01925060431	-0.01583624135	0.479294498
## Term	0.04719305436	0.05825851682	-0.166058417
## NoEmp	0.02444159160	0.03724484310	-0.112180917
## CreateJob	0.03364175690	0.04697751948	0.094141004
## GrAppv	0.08204781039	0.09413105764	-0.203565729
## SBA_Appv	0.08625268466	0.09798562193	-0.227909498
## NewExist_0	0.00079806174	0.00066648831	-0.013490239
## NewExist_1	-0.09863768469	-0.10344027570	-0.086594140
## NewExist_2	0.09873634247	0.10352928802	0.087198904
## NewExist_U	-0.00079455292	0.00017789716	0.019672160
## UrbanRural_0	0.00528331098	0.00070365534	-0.264913018
## UrbanRural_1	-0.00600126914	-0.00062552007	0.232463168
## UrbanRural_2	0.00143585623	-0.00007867270	0.034330753
## Month_Apr	-0.00013070173	-0.00054021339	-0.006738039
## Month_Aug	0.00122050059	-0.00134758947	0.003911564
## Month_Dec	-0.00113568463	0.00086796365	-0.001307319
## Month_Feb	-0.00220594444	0.00045351827	0.005092477
## Month_Jan	-0.00087104379	0.00071822698	-0.002416262
## Month_Jul	0.00225175056	0.00092804191	0.007194810
## Month_Jun	-0.00068888753	-0.00298644920	-0.008935933
## Month_Mar	0.00039554665	-0.00003389017	-0.002102440
## Month_May	-0.00074465399	-0.00117851285	-0.001270980
## Month_Nov	-0.00097001284	0.00083351628	0.010799887
## Month_Oct	0.00002001495	-0.00039386315	0.011053469
## Month_Sep	0.00246443692	0.00277419228	-0.013380247
## MIS_logical	0.00531997225	0.00535623589	-0.230350080
## RevLineCr_1	0.00044390530	-0.00091185165	-0.002711466
## RevLineCr_2	-0.01417135826	-0.01461367137	0.019996034
## RevLineCr_3	0.01127510339	0.01431522968	-0.109236477
## RevLineCr_4	-0.06614362729	-0.07252827257	0.291516018
## FranchiseCode_1	0.13314941495	0.12139786401	0.024477329
## FranchiseCode_2	0.19950080058	0.20005715609	0.039602692
## FranchiseCode_3	0.29932481230	0.29839773588	0.060482110
## FranchiseCode_4	0.34581092531	0.35426685779	0.065339367
## FranchiseCode_5	0.40618901984	0.38469008092	0.079498956
## FranchiseCode_6	0.44069309089	0.51763466258	0.099056409
## FranchiseCode_7	0.52815403315	0.45142947454	0.083952849
## FranchiseCode_8	0.46806336845	0.42773227661	0.054409773
## FranchiseCode_9	1.00000000000	0.45001512921	0.077111044
## FranchiseCode_10	0.45001512921	1.00000000000	0.093760572
## FranchiseCode_11	0.07711104379	0.09376057155	1.000000000
## FranchiseCode_12	-0.12416294401	-0.10334996524	-0.924087422
## LowDoc_1	0.00021693767	0.00167731466	-0.022058014

## LowDoc_2	-0.00563945495	-0.00380568001	0.097478606	
## LowDoc_3	-0.01560527363	-0.01407250045	0.174279459	
## LowDoc_4	0.01559516982	0.01396647425	-0.174602928	
## NAICS_1	-0.01219637111	-0.01325341593	-0.007948779	
## NAICS_2	-0.03437429569	-0.03801120803	0.008146106	
## NAICS_3	-0.02598114549	-0.03545233116	0.096112455	
## NAICS_4	-0.01671661598	-0.01891277447	0.090060337	
## NAICS_5	-0.04983427792	-0.05873046339	0.059391098	
## NAICS_6	-0.00699295242	-0.01350295319	0.082157847	
## NAICS_7	-0.02831137658	-0.03121778851	0.083242694	
## NAICS_8	0.01880916810	0.02131996012	0.079292912	
## NAICS_9	0.03974977143	0.04833439483	-0.039077840	
## NAICS_10	-0.04609323852	-0.06452777513	0.075888489	
## NAICS_11	-0.00551120604	0.00527237770	0.059314346	
## Bank_1	0.00401884102	0.00261093152	0.010213993	
## Bank_2	-0.00018478235	-0.00147390805	0.036522177	
## Bank_3	0.00812661040	0.00788765536	-0.025825520	
## Bank_4	0.01314341997	0.01383648311	-0.031459074	
## Bank_5	0.01233304817	0.01629417844	-0.071265843	
## Bank_6	0.01987463765	0.02169265739	-0.067225085	
## Bank_7	0.00952827884	0.01451365503	-0.038655103	
## Bank_8	0.02467083594	0.02045469387	0.019684070	
## Bank_9	0.01204903363	0.01118527536	-0.027758671	
## Bank_10	-0.02203634991	-0.02421275271	-0.009430971	
## Bank_11	-0.02741148639	-0.02470412134	0.004869054	
## Bank_12	-0.00793476843	-0.00753963946	0.049797854	
## Bank_13	0.00306322609	0.00513387973	0.014966329	
##	FranchiseCode_12	LowDoc_1	LowDoc_2	LowDoc_3
## ApprovalFY	-0.475529037	-0.0228936941	0.09345357243	0.2055405189
## Term	0.164622646	0.0262209607	-0.01910415668	0.0648330083
## NoEmp	0.104240171	0.0146708633	-0.02839681001	0.0855241414
## CreateJob	-0.092441158	-0.0123678689	0.03673347338	0.2326289728
## GrAppv	0.200861031	0.0309543767	-0.03793978085	0.1351895166
## SBA_Appv	0.225094243	0.0303331680	-0.02803376379	0.0690762133
## NewExist_0	0.013734444	-0.0008937833	-0.00204423860	0.0005401417
## NewExist_1	0.081813927	0.0033914336	-0.02745935008	0.1611418221
## NewExist_2	-0.082419538	-0.0033135116	0.02750622345	-0.1615097214
## NewExist_U	-0.020075265	-0.0005712609	0.00538081273	0.0038200122
## UrbanRural_0	0.260317319	0.0557401173	-0.04335874351	-0.1968538693
## UrbanRural_1	-0.228720287	-0.0452769499	0.03050450979	0.2006540349
## UrbanRural_2	-0.033284895	-0.0128706371	0.01733616905	-0.0178486841
## Month_Apr	0.006144789	-0.0114912214	-0.00080910624	-0.0052858736
## Month_Aug	-0.003610013	-0.0100629183	0.00155332404	0.0021675345
## Month_Dec	0.001369667	0.0175957096	0.00033147633	0.0038093877
## Month_Feb	-0.005085574	0.0069503719	-0.00015417455	-0.0061642090
## Month_Jan	0.001715855	0.0167900636	-0.00076620416	-0.0031010515
## Month_Jul	-0.006611850	-0.0117248492	0.00192412030	0.0115711895
## Month_Jun	0.008402362	-0.0122752027	-0.00109308628	0.0024326790
## Month_Mar	0.001583685	0.0049355851	-0.00483600899	-0.0043452104
## Month_May	0.001523486	-0.0116403740	-0.00037338813	0.0011924596
## Month_Nov	-0.010621608	0.0235326446	0.00190836889	-0.0021573179
## Month_Oct	-0.010159768	0.0016809028	0.00279365455	-0.0038566403
## Month_Sep	0.013486283	-0.0101813933	-0.00009900541	0.0031669207
## MIS_logical	0.228163271	0.0087051061	-0.03513124810	-0.0792941045
## RevLineCr_1	0.002714219	-0.0002535178	-0.00032492193	0.0014416360
## RevLineCr_2	-0.020141733	0.0341061129	-0.00212638235	0.0009978242
## RevLineCr_3	0.112973623	-0.0232847270	-0.02861474422	0.0439506983
## RevLineCr_4	-0.294297080	0.0063640720	0.03565425863	0.1186855601

## FranchiseCode_1	-0.025483172	0.0003409285	-0.00115818623	-0.0144507012
## FranchiseCode_2	-0.037865941	0.0022502193	0.00239559795	-0.0039018906
## FranchiseCode_3	-0.052980530	0.0019356534	-0.00160170118	-0.0116367510
## FranchiseCode_4	-0.072838771	0.0001661343	-0.00105367230	-0.0129929441
## FranchiseCode_5	-0.064063855	0.0023589371	-0.00235099429	-0.0112943432
## FranchiseCode_6	-0.083273053	0.0029438126	-0.00493065804	-0.0091511644
## FranchiseCode_7	-0.111342961	0.0019043158	-0.00231379623	-0.0134176454
## FranchiseCode_8	-0.089325391	0.0019615371	-0.00437551250	-0.0181394727
## FranchiseCode_9	-0.124162944	0.0002169377	-0.00563945495	-0.0156052736
## FranchiseCode_10	-0.103349965	0.0016773147	-0.00380568001	-0.0140725005
## FranchiseCode_11	-0.924087422	-0.0220580144	0.09747860615	0.1742794587
## FranchiseCode_12	1.000000000	0.0215956469	-0.09689063385	-0.1768353740
## LowDoc_1	0.021595647	1.00000000000	-0.00284215210	-0.1229696493
## LowDoc_2	-0.096890634	-0.0028421521	1.00000000000	-0.1200290477
## LowDoc_3	-0.176835374	-0.1229696493	-0.12002904771	1.00000000000
## LowDoc_4	0.177201869	0.0876454651	0.12385847745	-0.9933737312
## NAICS_1	0.008354600	-0.0004914172	0.00414926871	0.0069640757
## NAICS_2	-0.008111468	-0.0018758011	0.00610792466	0.0326987215
## NAICS_3	-0.097177950	-0.0066426100	0.02164643723	0.0763663532
## NAICS_4	-0.089106170	-0.0106217955	0.01488625988	0.0778383207
## NAICS_5	-0.056253654	-0.0085300401	0.01050734535	0.0639301776
## NAICS_6	-0.077102351	-0.0095746198	0.01681753284	0.0834435913
## NAICS_7	-0.079262332	-0.0115376874	0.01569056433	0.0733363644
## NAICS_8	-0.074411752	-0.0087839286	0.01351263236	0.0567900209
## NAICS_9	0.035181906	0.0052346660	-0.01107101940	-0.0546133973
## NAICS_10	-0.075160760	-0.0089786400	0.01873627048	0.0697462500
## NAICS_11	-0.052050269	-0.0070480736	0.00980667350	0.0756948892
## Bank_1	-0.010893396	-0.0015257941	0.00842406834	-0.0424582123
## Bank_2	-0.036031790	0.0035294231	0.08737353694	-0.0765040040
## Bank_3	0.024982790	-0.0002725285	0.00591975281	-0.1061645404
## Bank_4	0.031023654	-0.0029589796	0.04540010510	-0.0923768887
## Bank_5	0.070880944	0.0027714360	0.00475574273	-0.1054741864
## Bank_6	0.066772037	0.0028592600	0.00868838337	-0.0703505142
## Bank_7	0.039450378	-0.0013122616	-0.00512107488	-0.0686182101
## Bank_8	-0.020177051	0.0024486938	0.01749988672	-0.0144523101
## Bank_9	0.027385496	-0.0022513375	-0.00415005019	-0.0178826513
## Bank_10	0.010587128	-0.0097564241	-0.01945285197	0.0318324686
## Bank_11	-0.005640196	0.0014306705	-0.02534494337	0.0415727307
## Bank_12	-0.051101721	0.0021940485	0.01885796708	0.0271929203
## Bank_13	-0.014341629	0.0147330109	0.01232080966	-0.0221780986
##	LowDoc_4	NAICS_1	NAICS_2	NAICS_3
## ApprovalFY	-0.2073141016	0.01037595452	0.07442009627	0.2374192733
## Term	-0.0629233162	-0.00638403083	-0.02669395220	-0.1095225617
## NoEmp	-0.0833439260	0.01824682588	0.02260257623	-0.0438148355
## CreateJob	-0.2310853181	0.00866380586	0.02460811604	0.0586437528
## GrAppv	-0.1329778561	0.03193812659	0.02348876828	-0.0781079781
## SBA_Appv	-0.0670324723	0.03104448054	0.01560660435	-0.0994387868
## NewExist_0	-0.0001832768	0.00309518953	0.00077649170	-0.0038561134
## NewExist_1	-0.1607779261	0.01343535747	0.03185311556	0.0275654072
## NewExist_2	0.1611187118	-0.01375648765	-0.03195483202	-0.0273745647
## NewExist_U	-0.0038288378	0.00258061773	-0.00003788775	0.0022571674
## UrbanRural_0	0.1952200149	-0.02357783526	-0.07636010568	-0.2208110570
## UrbanRural_1	-0.1994144316	0.00924210484	0.04650355396	0.1708297693
## UrbanRural_2	0.0183619526	0.02083783316	0.04174433634	0.0642396804
## Month_Apr	0.0053614792	-0.00010803914	0.00016336929	-0.0014308597
## Month_Aug	-0.0024529953	-0.00198851939	-0.00080819849	-0.0020088644
## Month_Dec	-0.0037066755	0.00254616654	0.00575585809	0.0032191266
## Month_Feb	0.0060444934	0.00100701802	0.00213045930	0.0017345205

## Month_Jan	0.0030964030	-0.00113624173	-0.00258169173	-0.0038120545
## Month_Jul	-0.0115757469	-0.00087397156	-0.00186361560	-0.0046879823
## Month_Jun	-0.0019363359	-0.00104320811	0.00114252110	0.0017257315
## Month_Mar	0.0044173448	-0.00134865170	0.00129920300	0.0036317293
## Month_May	-0.0011416908	-0.00127372672	-0.00071866240	0.0034922681
## Month_Nov	0.0018709468	0.00151595136	-0.00142392981	0.0013263108
## Month_Oct	0.0037263049	0.00307933974	0.00003147767	0.0058520087
## Month_Sep	-0.0031631408	0.00002514388	-0.00292674307	-0.0085239384
## MIS_logical	0.0802291330	0.01400005929	-0.00437243760	-0.0685242023
## RevLineCr_1	-0.0014458689	0.00159613388	0.00234260077	0.0006302603
## RevLineCr_2	-0.0011875260	-0.00238909203	0.00298978993	0.0234542073
## RevLineCr_3	-0.0471006745	0.00267728720	0.02389061289	0.0952533730
## RevLineCr_4	-0.1155145393	-0.00055540829	0.00574633613	0.0146322611
## FranchiseCode_1	0.0144668088	0.00145315030	-0.00839353969	-0.0018130560
## FranchiseCode_2	0.0033039615	-0.00435431349	-0.01280261914	-0.0057050135
## FranchiseCode_3	0.0113087125	-0.00724809253	-0.01936524294	-0.0180503216
## FranchiseCode_4	0.0129963514	-0.00799368312	-0.02717534607	-0.0227859377
## FranchiseCode_5	0.0111514826	-0.00965703106	-0.02727193796	-0.0252957881
## FranchiseCode_6	0.0089974557	-0.01279328120	-0.03711244843	-0.0367201551
## FranchiseCode_7	0.0133049639	-0.01208738247	-0.03527861201	-0.0250534677
## FranchiseCode_8	0.0180145957	-0.01342440455	-0.04110030532	-0.0433166655
## FranchiseCode_9	0.0155951698	-0.01219637111	-0.03437429569	-0.0259811455
## FranchiseCode_10	0.0139664742	-0.01325341593	-0.03801120803	-0.0354523312
## FranchiseCode_11	-0.1746029279	-0.00794877944	0.00814610572	0.0961124552
## FranchiseCode_12	0.1772018686	0.00835460019	-0.00811146797	-0.0971779496
## LowDoc_1	0.0876454651	-0.00049141718	-0.00187580105	-0.0066426100
## LowDoc_2	0.1238584774	0.00414926871	0.00610792466	0.0216464372
## LowDoc_3	-0.9933737312	0.00696407566	0.03269872155	0.0763663532
## LowDoc_4	1.0000000000	-0.00696289369	-0.03241645691	-0.0766165448
## NAICS_1	-0.0069628937	1.00000000000	-0.02832524289	-0.0428391508
## NAICS_2	-0.0324164569	-0.02832524289	1.00000000000	0.0956332455
## NAICS_3	-0.0766165448	-0.04283915083	0.09563324550	1.0000000000
## NAICS_4	-0.0780417256	0.02438800448	0.07847542634	0.0999099027
## NAICS_5	-0.0641923984	0.00879698315	0.07567405154	0.0668036995
## NAICS_6	-0.0834771387	0.03066273214	0.08202372695	0.1155987667
## NAICS_7	-0.0734903200	0.02654314164	0.07254889674	0.0542123998
## NAICS_8	-0.0570833488	0.01940522691	0.04220280597	0.1025592361
## NAICS_9	0.0548111201	-0.03414343856	-0.09640975568	-0.1597834691
## NAICS_10	-0.0698424575	0.00796423130	0.10884293560	0.1211957401
## NAICS_11	-0.0754849731	0.04261463725	0.09120250131	0.0665168200
## Bank_1	0.0422300165	0.00698093231	0.00627905530	0.0023191257
## Bank_2	0.0752492781	0.01206853517	0.01274823068	0.0095688540
## Bank_3	0.1057297523	0.01552244927	0.01158709298	-0.0094953466
## Bank_4	0.0926136339	0.01290930552	0.01162920208	-0.0191839592
## Bank_5	0.1052153747	0.01354013237	0.00668047423	-0.0182646733
## Bank_6	0.0706900165	0.01096565138	0.00773395292	-0.0281955999
## Bank_7	0.0685668766	0.01061651923	0.01304663019	0.0023708978
## Bank_8	0.0140523958	0.00621524837	0.00463693472	-0.0110856604
## Bank_9	0.0178311189	0.00958480377	0.00695027478	-0.0075199620
## Bank_10	-0.0322336538	0.00304271934	0.00418819498	0.0177552393
## Bank_11	-0.0407473100	-0.00322012983	-0.00306666425	0.0086542093
## Bank_12	-0.0269144638	-0.00053187604	0.00177522620	-0.0106051828
## Bank_13	0.0220907643	-0.00018092695	-0.00507202419	-0.0155461025
##	NAICS_4	NAICS_5	NAICS_6	NAICS_7
## ApprovalFY	0.2574047261	0.20814116729	0.2729522480	0.27925592332
## Term	-0.0779872194	-0.09498319992	-0.0750232360	-0.08455434308
## NoEmp	-0.0893402998	-0.07329303822	-0.0298934906	-0.08771472582
## CreateJob	0.0696312106	0.04364803752	0.0905156102	0.07511635711

## GrAppv	-0.0792103014	-0.09309780677	-0.0545295628	-0.07065630067
## SBA_Appv	-0.0981860828	-0.11226163185	-0.0760004817	-0.09253368589
## NewExist_0	-0.0053265625	-0.00223564743	-0.0010709819	-0.00146359694
## NewExist_1	0.0128598624	0.04583913984	0.0196313550	0.01850360220
## NewExist_2	-0.0125480036	-0.04584992318	-0.0197565200	-0.01855204184
## NewExist_U	0.0026302799	0.00427043335	0.0066153210	0.00492371750
## UrbanRural_0	-0.2612105064	-0.21655920275	-0.2787677769	-0.28711060648
## UrbanRural_1	0.1996447055	0.17613690207	0.2051961041	0.22034488131
## UrbanRural_2	0.0797830900	0.04964911203	0.0973671505	0.08628877261
## Month_Apr	-0.0023060469	0.00056404026	-0.0005551672	-0.00346937015
## Month_Aug	-0.0031519979	-0.00205798168	-0.0030593504	-0.00007726086
## Month_Dec	0.0035467182	0.00400902999	0.0064529890	0.00705768893
## Month_Feb	0.0015872695	0.00379221364	0.0013453582	-0.00087653034
## Month_Jan	-0.0019016355	-0.00169081335	-0.0002269488	-0.00199799022
## Month_Jul	-0.0070689806	-0.00624153309	-0.0083037979	-0.00683115266
## Month_Jun	0.0019932539	-0.00227103543	-0.0024406145	0.00003930412
## Month_Mar	0.0025873570	0.00236858011	0.0023748914	-0.00186147416
## Month_May	0.0018219982	0.00164581393	0.0015294449	0.00174362170
## Month_Nov	0.0028510289	0.00183219311	0.0035253816	0.00431145584
## Month_Oct	0.0043843197	0.00356954265	0.0028894863	0.00526203980
## Month_Sep	-0.0037904323	-0.00486241350	-0.0028253097	-0.00251953997
## MIS_logical	-0.0750045659	-0.04346739028	-0.0591624644	-0.06504094876
## RevLineCr_1	0.0013289833	0.00008214275	0.0002814191	-0.00008909888
## RevLineCr_2	0.0166908675	0.01972649559	0.0098570237	0.01286169254
## RevLineCr_3	0.1187978252	0.10950219881	0.1247428670	0.13794497388
## RevLineCr_4	-0.0266082038	-0.01328230511	-0.0355069373	-0.04420669208
## FranchiseCode_1	-0.0046713446	-0.01220444019	-0.0035542153	-0.00867956761
## FranchiseCode_2	-0.0101910588	-0.01851709488	-0.0038829630	-0.00713648014
## FranchiseCode_3	-0.0136595985	-0.02852023390	-0.0126843612	-0.02066976440
## FranchiseCode_4	-0.0046510190	-0.03465923757	-0.0118394547	-0.02336613013
## FranchiseCode_5	-0.0116625377	-0.03438590079	-0.0009881192	-0.01097722009
## FranchiseCode_6	-0.0250183494	-0.04544756757	-0.0171540392	-0.03323494891
## FranchiseCode_7	-0.0190369384	-0.04326159106	-0.0108922876	-0.02208310360
## FranchiseCode_8	-0.0271950461	-0.06053764038	-0.0218784599	-0.03611050634
## FranchiseCode_9	-0.0167166160	-0.04983427792	-0.0069929524	-0.02831137658
## FranchiseCode_10	-0.0189127745	-0.05873046339	-0.0135029532	-0.03121778851
## FranchiseCode_11	0.0900603375	0.05939109764	0.0821578474	0.08324269409
## FranchiseCode_12	-0.0891061696	-0.05625365411	-0.0771023508	-0.07926233160
## LowDoc_1	-0.0106217955	-0.00853004006	-0.0095746198	-0.01153768739
## LowDoc_2	0.0148862599	0.01050734535	0.0168175328	0.01569056433
## LowDoc_3	0.0778383207	0.06393017761	0.0834435913	0.07333636442
## LowDoc_4	-0.0780417256	-0.06419239835	-0.0834771387	-0.07349032003
## NAICS_1	0.0243880045	0.00879698315	0.0306627321	0.02654314164
## NAICS_2	0.0784754263	0.07567405154	0.0820237270	0.07254889674
## NAICS_3	0.0999099027	0.06680369950	0.1155987667	0.05421239985
## NAICS_4	1.0000000000	0.13434008902	0.1719345738	0.14996838003
## NAICS_5	0.1343400890	1.00000000000	0.2136410398	0.24228832086
## NAICS_6	0.1719345738	0.21364103980	1.0000000000	0.33524093982
## NAICS_7	0.1499683800	0.24228832086	0.3352409398	1.00000000000
## NAICS_8	0.0804022079	0.18396561629	0.1347737751	0.18530057798
## NAICS_9	-0.1858175444	-0.14011767621	0.0081802844	-0.14371337238
## NAICS_10	0.0866923152	0.17567166131	0.2389707730	0.24718360693
## NAICS_11	0.1959436681	0.20005729870	0.1473511782	0.18660829208
## Bank_1	-0.0020022897	-0.00222670978	0.0030025510	-0.00156677839
## Bank_2	0.0028439731	-0.00377701102	0.0083021219	0.00309757111
## Bank_3	-0.0144545443	-0.01553830910	-0.0007432659	-0.00677431783
## Bank_4	-0.0191463019	-0.02319607324	-0.0108487841	-0.01760243672
## Bank_5	-0.0188889559	-0.02840451554	-0.0058298384	-0.01427010702

## Bank_6	-0.0278292059	-0.02795111078	-0.0162509292	-0.01704124446
## Bank_7	-0.0107438019	-0.01923633719	0.0032478642	-0.00219912327
## Bank_8	-0.0169132340	-0.02496433683	-0.0134809610	-0.01584998521
## Bank_9	0.0025966830	-0.01104895017	0.0076175320	0.00527115767
## Bank_10	0.0226916033	0.03286934214	0.0165186578	0.02275828700
## Bank_11	0.0109018218	0.02571034210	0.0120694191	0.01424229637
## Bank_12	0.0001910884	0.00437503231	0.0047850085	0.00823539291
## Bank_13	-0.0124699368	-0.01549424383	-0.0134903670	-0.01154974493
##	NAICS_8	NAICS_9	NAICS_10	NAICS_11
## ApprovalFY	0.24402334873	-0.1862312910	0.2777427369	0.2246330002
## Term	-0.08212894268	0.0520798225	-0.0999946369	-0.0469184774
## NoEmp	-0.07761765990	0.0998218256	-0.0651992065	-0.0495617736
## CreateJob	0.06993075215	-0.0320178761	0.0742952534	0.0775328159
## GrAppv	-0.08483346025	0.0546296750	-0.0930247265	-0.0148975319
## SBA_Appv	-0.10214862717	0.0691922548	-0.1152553325	-0.0347456194
## NewExist_0	-0.00133039981	0.0035432910	-0.0021813560	-0.0019128586
## NewExist_1	0.00612460936	-0.0281036966	0.0206431830	0.0202576428
## NewExist_2	-0.00608598207	0.0279228892	-0.0206713236	-0.0201994074
## NewExist_U	0.00196257102	-0.0017289333	0.0060626772	0.0021309127
## UrbanRural_0	-0.24861540567	0.1950925714	-0.2798737950	-0.2368367222
## UrbanRural_1	0.18193915380	-0.1457446094	0.2218080922	0.1830564468
## UrbanRural_2	0.08848578481	-0.0648165653	0.0732136242	0.0691684076
## Month_Apr	-0.00004171581	0.0047440173	-0.0034175101	-0.0022611656
## Month_Aug	-0.00397755396	0.0006409481	-0.0030482084	-0.0009448327
## Month_Dec	0.00224541177	-0.0039072666	0.0073988319	0.0051157616
## Month_Feb	0.00433363573	-0.0013988736	0.0032597654	0.0004893967
## Month_Jan	-0.00196814430	0.0027654892	-0.0011826532	-0.0022010705
## Month_Jul	-0.00808276624	0.0034196167	-0.0062821778	-0.0041117741
## Month_Jun	-0.00016808501	-0.0009877388	-0.0011922342	0.0017671514
## Month_Mar	0.00564642233	-0.0019527424	0.0025384260	0.0007284549
## Month_May	0.00458477282	-0.0018003327	0.0016582171	0.0024615502
## Month_Nov	0.00055147968	-0.0028424535	0.0050039885	0.0014623993
## Month_Oct	0.00327602929	-0.0045534993	0.0027101487	0.0007008880
## Month_Sep	-0.00595957892	0.0052508091	-0.0063960856	-0.0028868568
## MIS_logical	-0.05517494854	0.0237353174	-0.0567249520	-0.0338774566
## RevLineCr_1	-0.00006780143	-0.0001566534	0.0007629546	0.0026796430
## RevLineCr_2	0.01420039696	-0.0086724234	0.0134707923	0.0089438056
## RevLineCr_3	0.11613192240	-0.0913727803	0.1378594140	0.1151713430
## RevLineCr_4	-0.03579374105	0.0277320404	-0.0423986254	-0.0446065178
## FranchiseCode_1	-0.00162194209	0.0096094102	-0.0084851824	-0.0048161828
## FranchiseCode_2	0.00067854788	0.0166625049	-0.0124456715	-0.0021999159
## FranchiseCode_3	0.00017897583	0.0276269856	-0.0222275942	-0.0088795371
## FranchiseCode_4	0.00670036637	0.0315887168	-0.0328508042	0.0012461030
## FranchiseCode_5	0.01118671586	0.0310760377	-0.0362079190	-0.0077083739
## FranchiseCode_6	0.02102190626	0.0451542033	-0.0581124161	0.0016796329
## FranchiseCode_7	0.00853510271	0.0411886844	-0.0481119307	-0.0104954421
## FranchiseCode_8	0.01526699047	0.0490579551	-0.0640304395	0.0080433410
## FranchiseCode_9	0.01880916810	0.0397497714	-0.0460932385	-0.0055112060
## FranchiseCode_10	0.02131996012	0.0483343948	-0.0645277751	0.0052723777
## FranchiseCode_11	0.07929291221	-0.0390778400	0.0758884890	0.0593143464
## FranchiseCode_12	-0.07441175182	0.0351819061	-0.0751607602	-0.0520502694
## LowDoc_1	-0.00878392860	0.0052346660	-0.0089786400	-0.0070480736
## LowDoc_2	0.01351263236	-0.0110710194	0.0187362705	0.0098066735
## LowDoc_3	0.05679002092	-0.0546133973	0.0697462500	0.0756948892
## LowDoc_4	-0.05708334877	0.0548111201	-0.0698424575	-0.0754849731
## NAICS_1	0.01940522691	-0.0341434386	0.0079642313	0.0426146373
## NAICS_2	0.04220280597	-0.0964097557	0.1088429356	0.0912025013
## NAICS_3	0.10255923613	-0.1597834691	0.1211957401	0.0665168200

## NAICS_4	0.08040220792	-0.1858175444	0.0866923152	0.1959436681
## NAICS_5	0.18396561629	-0.1401176762	0.1756716613	0.2000572987
## NAICS_6	0.13477377506	0.0081802844	0.2389707730	0.1473511782
## NAICS_7	0.18530057798	-0.1437133724	0.2471836069	0.1866082921
## NAICS_8	1.00000000000	-0.1630833897	0.1119608449	0.1528084450
## NAICS_9	-0.16308338967	1.00000000000	-0.1415742564	-0.1618701491
## NAICS_10	0.11196084490	-0.1415742564	1.00000000000	0.1486170256
## NAICS_11	0.15280844497	-0.1618701491	0.1486170256	1.00000000000
## Bank_1	-0.00077518496	0.0016356317	-0.0026874455	-0.0021469447
## Bank_2	0.00452672055	-0.0015045992	0.0042340920	-0.0007765974
## Bank_3	-0.00691889229	0.0074540813	-0.0110486367	-0.0082642978
## Bank_4	-0.01624090430	0.0142424664	-0.0254761416	-0.0160934981
## Bank_5	-0.01375632894	0.0098170704	-0.0302088748	-0.0174100236
## Bank_6	-0.02116225333	0.0186062906	-0.0278809362	-0.0137871097
## Bank_7	0.00038517982	0.0020443697	-0.0141280988	-0.0010393225
## Bank_8	-0.00675687507	0.0124271773	-0.0200491661	-0.0061477912
## Bank_9	-0.00024552224	-0.0052516893	-0.0052292336	0.0006427202
## Bank_10	0.01124383956	-0.0114732600	0.0188899630	0.0067571218
## Bank_11	0.00908130916	-0.0127452555	0.0246013786	0.0103547939
## Bank_12	-0.00192896440	-0.0068880710	0.0126523134	0.0060504668
## Bank_13	-0.01459904571	0.0077047549	-0.0045403182	-0.0056289795
##	Bank_1	Bank_2	Bank_3	Bank_4
## ApprovalFY	-0.00040738205	0.04466644526	-0.01705282694	-0.04583841649
## Term	0.00444922091	0.01622192577	0.03026032121	0.09880206201
## NoEmp	0.00046414749	-0.00139044084	0.03581194590	0.06468834580
## CreateJob	-0.02276568156	-0.01169646713	-0.01812546835	0.01223580329
## GrAppv	0.01819553461	-0.00239516471	0.06836354578	0.11385619072
## SBA_Appv	0.02470287685	0.01109873972	0.08427779156	0.13754649536
## NewExist_0	0.00776378405	0.00651884856	0.00638499890	0.01026237166
## NewExist_1	-0.01329376716	-0.03529992250	-0.03309351068	-0.02688561891
## NewExist_2	0.01270147779	0.03480532509	0.03257066911	0.02608389278
## NewExist_U	0.00099213268	0.00197777381	0.00328453878	0.00248992580
## UrbanRural_0	0.00425352021	-0.01425746766	0.02679358519	0.05500715714
## UrbanRural_1	-0.02049783689	-0.02322721910	-0.07799130499	-0.09936429531
## UrbanRural_2	0.02549144639	0.05736216625	0.08115458618	0.07224075411
## Month_Apr	-0.00007942799	0.00045243705	0.00288026984	0.00288086380
## Month_Aug	-0.00091733164	0.00060259513	-0.00092981953	-0.00095986915
## Month_Dec	0.00067282091	0.00055827891	-0.00043465147	-0.00069516074
## Month_Feb	0.00032362443	0.00092245458	0.00006894714	0.00011612139
## Month_Jan	0.00171823432	0.00102994305	0.00235115561	0.00095553230
## Month_Jul	-0.00156050435	0.00061914347	0.00100406686	0.00430750252
## Month_Jun	-0.00138153726	-0.00330769818	0.00140752030	0.00124298547
## Month_Mar	-0.00028831486	-0.00250089865	-0.00247835811	-0.00008592993
## Month_May	-0.00216823313	-0.00171747248	-0.00044062868	0.00046775662
## Month_Nov	0.00096425300	-0.00049828654	-0.00041889425	-0.00472212814
## Month_Oct	0.00369159032	0.00422994031	-0.00160277684	-0.00310766123
## Month_Sep	-0.00055711919	0.00002547066	-0.00128299570	-0.00076022318
## MIS_logical	0.01187079076	-0.03006164431	0.04070117447	0.05015836554
## RevLineCr_1	0.00185711292	0.00500209074	0.00381202315	0.00496618911
## RevLineCr_2	-0.00604370199	-0.01941480722	-0.01989529116	-0.03083751463
## RevLineCr_3	-0.03989256754	-0.06225745013	-0.07033277214	-0.10923715329
## RevLineCr_4	0.02137965548	0.01303404272	0.00446553033	0.00177442589
## FranchiseCode_1	0.00511824032	0.00202050295	0.00430096096	0.00413588056
## FranchiseCode_2	0.00712367448	0.00535730606	0.00758343590	0.01220070801
## FranchiseCode_3	0.00555736503	0.00530086026	0.00730441684	0.00729857634
## FranchiseCode_4	0.00362099673	0.00089900986	0.00812191167	0.01341254083
## FranchiseCode_5	0.00375301978	0.00180805707	0.01063506625	0.01533316100
## FranchiseCode_6	0.00162224554	-0.00096711370	0.00431226946	0.00865111360

## FranchiseCode_7	0.00239803544	-0.00009578998	0.01063008221	0.01364939369
## FranchiseCode_8	0.00320481260	-0.00074868449	0.00778311520	0.01165514992
## FranchiseCode_9	0.00401884102	-0.00018478235	0.00812661040	0.01314341997
## FranchiseCode_10	0.00261093152	-0.00147390805	0.00788765536	0.01383648311
## FranchiseCode_11	0.01021399270	0.03652217706	-0.02582552035	-0.03145907382
## FranchiseCode_12	-0.01089339638	-0.03603179019	0.02498278994	0.03102365380
## LowDoc_1	-0.00152579415	0.00352942306	-0.00027252852	-0.00295897963
## LowDoc_2	0.00842406834	0.08737353694	0.00591975281	0.04540010510
## LowDoc_3	-0.04245821229	-0.07650400404	-0.10616454037	-0.09237688871
## LowDoc_4	0.04223001651	0.07524927807	0.10572975228	0.09261363386
## NAICS_1	0.00698093231	0.01206853517	0.01552244927	0.01290930552
## NAICS_2	0.00627905530	0.01274823068	0.01158709298	0.01162920208
## NAICS_3	0.00231912569	0.00956885398	-0.00949534659	-0.01918395918
## NAICS_4	-0.00200228973	0.00284397311	-0.01445454430	-0.01914630193
## NAICS_5	-0.00222670978	-0.00377701102	-0.01553830910	-0.02319607324
## NAICS_6	0.00300255101	0.00830212190	-0.00074326588	-0.01084878406
## NAICS_7	-0.00156677839	0.00309757111	-0.00677431783	-0.01760243672
## NAICS_8	-0.00077518496	0.00452672055	-0.00691889229	-0.01624090430
## NAICS_9	0.00163563172	-0.00150459917	0.00745408132	0.01424246640
## NAICS_10	-0.00268744547	0.00423409202	-0.01104863665	-0.02547614159
## NAICS_11	-0.00214694468	-0.00077659744	-0.00826429777	-0.01609349807
## Bank_1	1.00000000000	-0.01887147413	0.05980720966	0.04721146467
## Bank_2	-0.01887147413	1.00000000000	0.17537747938	0.21227699624
## Bank_3	0.05980720966	0.17537747938	1.00000000000	0.19550353153
## Bank_4	0.04721146467	0.21227699624	0.19550353153	1.00000000000
## Bank_5	0.06799015806	0.13560054190	0.18762651409	0.23339639922
## Bank_6	0.04071480071	0.07452834227	0.14600614968	0.17974169046
## Bank_7	0.03422729867	0.06505451826	0.14501245592	0.15171812092
## Bank_8	0.01342802542	0.05441161453	0.01968574837	0.05245528112
## Bank_9	0.03147922379	0.05080052148	0.09178431798	0.12942179485
## Bank_10	0.00499826994	-0.02325524376	0.01709135206	0.01724615641
## Bank_11	-0.02032081003	-0.07329303679	-0.05407652044	-0.11121093861
## Bank_12	-0.00864693580	0.01313506504	-0.01175976188	-0.04042278889
## Bank_13	0.00079321641	0.04073455672	0.00996492814	0.00725174113
##	Bank_5	Bank_6	Bank_7	Bank_8
## ApprovalFY	-0.0603599833	-0.067370091299	-0.0155772210	-0.0063309087
## Term	0.0961315907	0.124065251333	0.0646429356	0.0924822666
## NoEmp	0.0710146998	0.092134863154	0.0606738063	0.0317551401
## CreateJob	0.0222883630	0.041744019671	0.0344658793	0.0378425603
## GrAppv	0.1407531254	0.183091400447	0.1126794049	0.1039872640
## SBA_Appv	0.1661261777	0.201753308489	0.1268050121	0.1126910666
## NewExist_0	0.0119892689	0.008446209926	0.0069848875	0.0034094246
## NewExist_1	-0.0410229526	-0.032339220777	-0.0161620499	-0.0329606715
## NewExist_2	0.0401389998	0.031713419180	0.0156112556	0.0326727329
## NewExist_U	0.0014514861	0.001313985978	0.0017740955	0.0028674018
## UrbanRural_0	0.0612252920	0.066447461050	0.0155594638	0.0384440134
## UrbanRural_1	-0.1134859750	-0.111067181684	-0.0635459956	-0.0530453641
## UrbanRural_2	0.0848951671	0.073342869903	0.0754847255	0.0250140978
## Month_Apr	0.0044645870	0.001724108871	-0.0006421706	0.0019243891
## Month_Aug	-0.0018774206	0.003955591428	-0.0005000349	0.0008535733
## Month_Dec	-0.0014389412	-0.002264025185	-0.0008308480	0.0047898290
## Month_Feb	0.0016263281	-0.003011756820	0.0006121955	-0.0009908480
## Month_Jan	0.0009031563	-0.003429825450	0.0023824598	0.0004665170
## Month_Jul	0.0019114340	0.003198191433	0.0022320970	-0.0029987494
## Month_Jun	0.0003022787	0.003177260996	-0.0020450182	-0.0010638208
## Month_Mar	-0.0004974838	0.000004441382	-0.0013400542	-0.0002751745
## Month_May	0.0006010275	-0.000946110727	-0.0029341594	0.0020655794
## Month_Nov	-0.0023654476	-0.005731202671	-0.0036151266	0.0009899853

## Month_Oct	-0.0035982442	-0.007177155834	0.0004136503	-0.0039183848
## Month_Sep	-0.0002466723	0.008982274773	0.0061286319	-0.0017704696
## MIS_logical	0.0848044368	0.100425417849	0.0466169073	0.0422451512
## RevLineCr_1	0.0014675951	0.002283692835	0.0024955486	0.0006157067
## RevLineCr_2	-0.0319255514	-0.027645120218	-0.0336811052	-0.0341507706
## RevLineCr_3	-0.0990436630	-0.073664824430	-0.0827018694	-0.0017782410
## RevLineCr_4	-0.0123340188	-0.036185114484	-0.0290645333	-0.0311681428
## FranchiseCode_1	0.0048551172	0.003480383534	0.0017885981	0.0031414590
## FranchiseCode_2	0.0117281493	0.010416181585	0.0101542454	0.0108594482
## FranchiseCode_3	0.0098599690	0.011913273714	0.0084271006	0.0131585925
## FranchiseCode_4	0.0140615659	0.017274067355	0.0095909731	0.0134516384
## FranchiseCode_5	0.0140827116	0.016699952317	0.0115617202	0.0161961117
## FranchiseCode_6	0.0162441013	0.017478030704	0.0095299293	0.0220410966
## FranchiseCode_7	0.0128465419	0.020109369294	0.0111864666	0.0205738453
## FranchiseCode_8	0.0167092133	0.020987868654	0.0106932857	0.0242368823
## FranchiseCode_9	0.0123330482	0.019874637655	0.0095282788	0.0246708359
## FranchiseCode_10	0.0162941784	0.021692657387	0.0145136550	0.0204546939
## FranchiseCode_11	-0.0712658435	-0.067225084728	-0.0386551032	0.0196840699
## FranchiseCode_12	0.0708809435	0.066772037267	0.0394503778	-0.0201770509
## LowDoc_1	0.0027714360	0.002859259995	-0.0013122616	0.0024486938
## LowDoc_2	0.0047557427	0.008688383373	-0.0051210749	0.0174998867
## LowDoc_3	-0.1054741864	-0.070350514228	-0.0686182101	-0.0144523101
## LowDoc_4	0.1052153747	0.070690016475	0.0685668766	0.0140523958
## NAICS_1	0.0135401324	0.010965651380	0.0106165192	0.0062152484
## NAICS_2	0.0066804742	0.007733952918	0.0130466302	0.0046369347
## NAICS_3	-0.0182646733	-0.028195599938	0.0023708978	-0.0110856604
## NAICS_4	-0.0188889559	-0.027829205906	-0.0107438019	-0.0169132340
## NAICS_5	-0.0284045155	-0.027951110782	-0.0192363372	-0.0249643368
## NAICS_6	-0.0058298384	-0.016250929238	0.0032478642	-0.0134809610
## NAICS_7	-0.0142701070	-0.017041244461	-0.0021991233	-0.0158499852
## NAICS_8	-0.0137563289	-0.021162253335	0.0003851798	-0.0067568751
## NAICS_9	0.0098170704	0.018606290566	0.0020443697	0.0124271773
## NAICS_10	-0.0302088748	-0.027880936160	-0.0141280988	-0.0200491661
## NAICS_11	-0.0174100236	-0.013787109710	-0.0010393225	-0.0061477912
## Bank_1	0.0679901581	0.040714800708	0.0342272987	0.0134280254
## Bank_2	0.1356005419	0.074528342270	0.0650545183	0.0544116145
## Bank_3	0.1876265141	0.146006149684	0.1450124559	0.0196857484
## Bank_4	0.2333963992	0.179741690458	0.1517181209	0.0524552811
## Bank_5	1.0000000000	0.230132328964	0.1855045917	0.0337236469
## Bank_6	0.2301323290	1.000000000000	0.1801349142	0.0169667310
## Bank_7	0.1855045917	0.180134914173	1.0000000000	0.0309525908
## Bank_8	0.0337236469	0.016966730957	0.0309525908	1.0000000000
## Bank_9	0.1375806383	0.148139856221	0.1824186509	0.0570783492
## Bank_10	-0.0092735335	0.009272974885	0.0476362512	-0.2433127755
## Bank_11	-0.0862967815	-0.087471518181	-0.0366486121	-0.2423502785
## Bank_12	-0.0627670574	-0.017059262218	-0.1260605072	0.0291829246
## Bank_13	-0.0589523453	-0.060428813073	0.0132864854	0.0937001963
##	Bank_9	Bank_10	Bank_11	Bank_12
## ApprovalFY	0.01158214785	0.0183415861	0.01807947864	0.04480298626
## Term	0.07221208061	-0.0817164126	-0.06259113541	0.02665450367
## NoEmp	0.02718314210	-0.0328188798	-0.04449941674	-0.01827845117
## CreateJob	0.06642574192	-0.0167267565	-0.03870753632	0.02897162994
## GrAppv	0.06863833058	-0.1254549069	-0.13151518185	-0.01118031919
## SBA_Appv	0.08895876209	-0.1329880352	-0.13880469686	-0.00527292804
## NewExist_0	0.00611342788	0.0006590808	-0.00373447028	-0.00098326115
## NewExist_1	-0.01320504724	0.0435677607	0.05457295389	-0.00458833766
## NewExist_2	0.01282299858	-0.0436081724	-0.05429151268	0.00460648138
## NewExist_U	-0.00220467811	-0.0025879872	-0.00283501580	0.00230659436

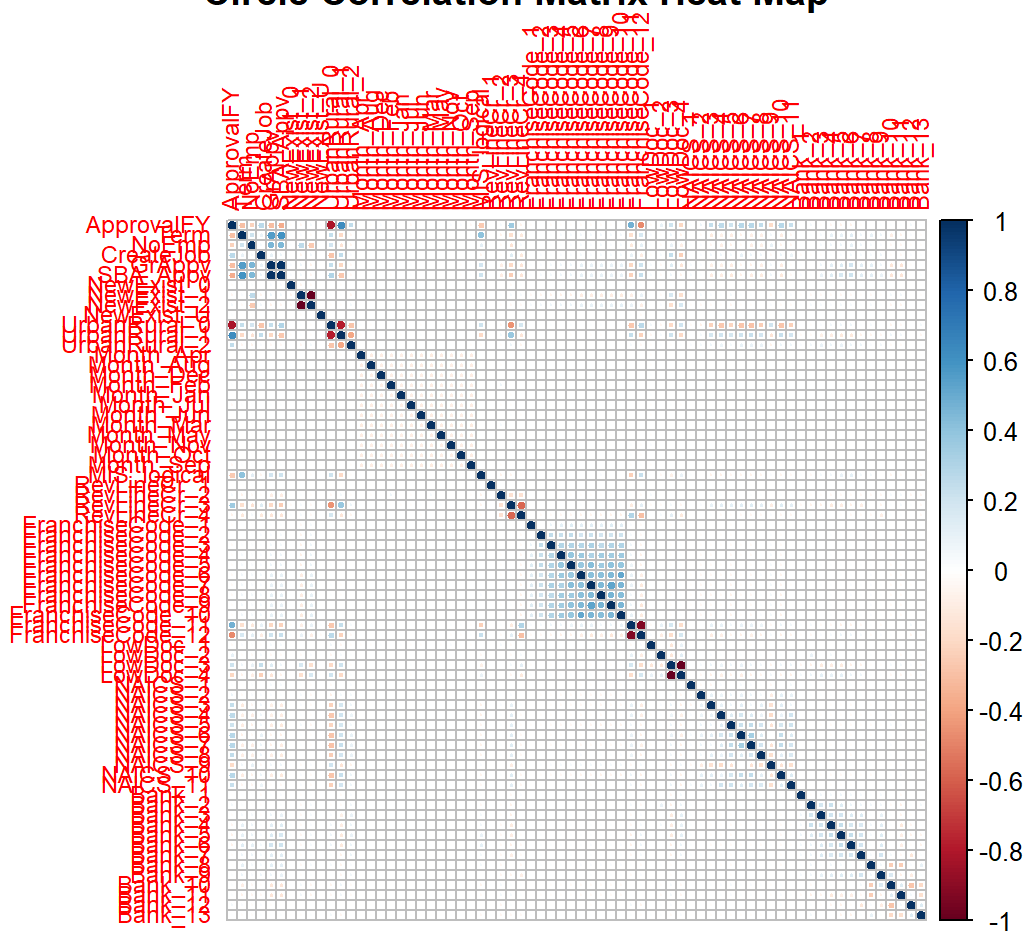
## UrbanRural_0	0.00796211195	-0.0570703561	-0.03495504744	0.00250632175
## UrbanRural_1	-0.04193329572	0.0691989031	0.05229788492	-0.00028279143
## UrbanRural_2	0.05325276489	-0.0223032331	-0.02906090345	-0.00330186050
## Month_Apr	-0.00536783626	-0.0005909595	-0.00124147053	-0.00060955821
## Month_Aug	0.00315346586	0.0026451140	-0.00161367855	-0.00287850913
## Month_Dec	0.00152148088	-0.0036159197	-0.00175335789	0.00772115758
## Month_Feb	-0.00345439597	-0.0006875915	0.00141347431	-0.00446017131
## Month_Jan	0.00007470168	-0.0029099833	0.00293289704	-0.00056001427
## Month_Jul	0.00017048106	-0.0008945162	-0.00131130378	-0.00286657047
## Month_Jun	0.00057156979	0.0014995007	-0.00290042398	-0.00299174826
## Month_Mar	-0.00406611666	0.0003995049	0.00082118915	0.00021540995
## Month_May	-0.00220599986	-0.0007118296	0.00014210860	-0.00009005945
## Month_Nov	-0.00021726481	-0.0014117096	0.00217506266	0.00465541584
## Month_Oct	0.00375242892	0.0043613162	-0.00009304474	0.00176941793
## Month_Sep	0.00607381148	0.0015571643	0.00170452204	0.00045365477
## MIS_logical	-0.00953956563	-0.0553247004	-0.02243967639	-0.00897911673
## RevLineCr_1	0.00153469887	0.0009857432	-0.00185183900	-0.00036624615
## RevLineCr_2	-0.04990453732	0.0328745654	0.04034134985	-0.04982104809
## RevLineCr_3	-0.05751353563	0.0145691427	0.03223756259	0.01288829470
## RevLineCr_4	-0.08657635644	0.0138849353	0.01965967770	0.00808149398
## FranchiseCode_1	0.00152778552	-0.0052303365	-0.00544134770	-0.00414305757
## FranchiseCode_2	0.00418876050	-0.0068785487	-0.01189597055	-0.00423665861
## FranchiseCode_3	0.00348236777	-0.0131145635	-0.01269008609	-0.00508010054
## FranchiseCode_4	0.00822209402	-0.0184582314	-0.01724415795	-0.00564650397
## FranchiseCode_5	0.00822505587	-0.0235612803	-0.01674843700	-0.00484307297
## FranchiseCode_6	0.00990912130	-0.0253803443	-0.02531779629	-0.00486018152
## FranchiseCode_7	0.01047285094	-0.0206815500	-0.02450141718	-0.01075756328
## FranchiseCode_8	0.01292980725	-0.0243796268	-0.02877292790	-0.00880002652
## FranchiseCode_9	0.01204903363	-0.0220363499	-0.02741148639	-0.00793476843
## FranchiseCode_10	0.01118527536	-0.0242127527	-0.02470412134	-0.00753963946
## FranchiseCode_11	-0.02775867055	-0.0094309710	0.00486905447	0.04979785359
## FranchiseCode_12	0.02738549556	0.0105871285	-0.00564019592	-0.05110172136
## LowDoc_1	-0.00225133746	-0.0097564241	0.00143067049	0.00219404855
## LowDoc_2	-0.00415005019	-0.0194528520	-0.02534494337	0.01885796708
## LowDoc_3	-0.01788265129	0.0318324686	0.04157273069	0.02719292035
## LowDoc_4	0.01783111892	-0.0322336538	-0.04074730999	-0.02691446384
## NAICS_1	0.00958480377	0.0030427193	-0.00322012983	-0.00053187604
## NAICS_2	0.00695027478	0.0041881950	-0.00306666425	0.00177522620
## NAICS_3	-0.00751996201	0.0177552393	0.00865420929	-0.01060518278
## NAICS_4	0.00259668303	0.0226916033	0.01090182178	0.00019108845
## NAICS_5	-0.01104895017	0.0328693421	0.02571034210	0.00437503231
## NAICS_6	0.00761753199	0.0165186578	0.01206941911	0.00478500853
## NAICS_7	0.00527115767	0.0227582870	0.01424229637	0.00823539291
## NAICS_8	-0.00024552224	0.0112438396	0.00908130916	-0.00192896440
## NAICS_9	-0.00525168934	-0.0114732600	-0.01274525555	-0.00688807099
## NAICS_10	-0.00522923357	0.0188899630	0.02460137861	0.01265231336
## NAICS_11	0.00064272021	0.0067571218	0.01035479389	0.00605046676
## Bank_1	0.03147922379	0.0049982699	-0.02032081003	-0.00864693580
## Bank_2	0.05080052148	-0.0232552438	-0.07329303679	0.01313506504
## Bank_3	0.09178431798	0.0170913521	-0.05407652044	-0.01175976188
## Bank_4	0.12942179485	0.0172461564	-0.11121093861	-0.04042278889
## Bank_5	0.13758063829	-0.0092735335	-0.08629678149	-0.06276705738
## Bank_6	0.14813985622	0.0092729749	-0.08747151818	-0.01705926222
## Bank_7	0.18241865091	0.0476362512	-0.03664861206	-0.12606050718
## Bank_8	0.05707834921	-0.2433127755	-0.24235027849	0.02918292464
## Bank_9	1.00000000000	0.1515821459	-0.07665922729	-0.09450518299
## Bank_10	0.15158214594	1.00000000000	0.13080087022	-0.27802663500
## Bank_11	-0.07665922729	0.1308008702	1.00000000000	0.04485676700

## Bank_12	-0.09450518299	-0.2780266350	0.04485676700	1.00000000000
## Bank_13	0.01591447821	-0.1954014137	-0.16938884921	0.14967887818
##	Bank_13			
## ApprovalFY	0.0028144030			
## Term	-0.0171138310			
## NoEmp	-0.0135431489			
## CreateJob	0.0160921183			
## GrAppv	0.0089171228			
## SBA_Appv	0.0129090139			
## NewExist_0	-0.0022812842			
## NewExist_1	-0.0108194878			
## NewExist_2	0.0109189293			
## NewExist_U	0.0032342179			
## UrbanRural_0	0.0438336554			
## UrbanRural_1	-0.0425865406			
## UrbanRural_2	0.0007227264			
## Month_Apr	-0.0031017752			
## Month_Aug	-0.0025081690			
## Month_Dec	0.0075351485			
## Month_Feb	-0.0002678481			
## Month_Jan	0.0026696954			
## Month_Jul	0.0002360149			
## Month_Jun	-0.0014359594			
## Month_Mar	-0.0033750216			
## Month_May	-0.0033094197			
## Month_Nov	0.0043748873			
## Month_Oct	0.0054313842			
## Month_Sep	-0.0049145288			
## MIS_logical	-0.0364658652			
## RevLineCr_1	0.0013725383			
## RevLineCr_2	-0.0496073301			
## RevLineCr_3	-0.0314877165			
## RevLineCr_4	-0.0382079898			
## FranchiseCode_1	0.0007571064			
## FranchiseCode_2	0.0035731129			
## FranchiseCode_3	0.0027722693			
## FranchiseCode_4	0.0034834167			
## FranchiseCode_5	0.0049132919			
## FranchiseCode_6	0.0034032185			
## FranchiseCode_7	0.0060676277			
## FranchiseCode_8	0.0028024242			
## FranchiseCode_9	0.0030632261			
## FranchiseCode_10	0.0051338797			
## FranchiseCode_11	0.0149663286			
## FranchiseCode_12	-0.0143416292			
## LowDoc_1	0.0147330109			
## LowDoc_2	0.0123208097			
## LowDoc_3	-0.0221780986			
## LowDoc_4	0.0220907643			
## NAICS_1	-0.0001809270			
## NAICS_2	-0.0050720242			
## NAICS_3	-0.0155461025			
## NAICS_4	-0.0124699368			
## NAICS_5	-0.0154942438			
## NAICS_6	-0.0134903670			
## NAICS_7	-0.0115497449			
## NAICS_8	-0.0145990457			
## NAICS_9	0.0077047549			

```
## NAICS_10      -0.0045403182
## NAICS_11      -0.0056289795
## Bank_1        0.0007932164
## Bank_2        0.0407345567
## Bank_3        0.0099649281
## Bank_4        0.0072517411
## Bank_5       -0.0589523453
## Bank_6       -0.0604288131
## Bank_7        0.0132864854
## Bank_8        0.0937001963
## Bank_9        0.0159144782
## Bank_10      -0.1954014137
## Bank_11      -0.1693888492
## Bank_12       0.1496788782
## Bank_13       1.0000000000
```

```
eROUT_CIR <- corrplot(cor_matrix, method = "circle", title = "Circle Correlation Matrix Heat Map", mar=c(0,
0,1,0), tl.cex=.75)
```

Circle Correlation Matrix Heat Map



```

# Too much to Look at, I want a quick scan of relevant
# The following code does that

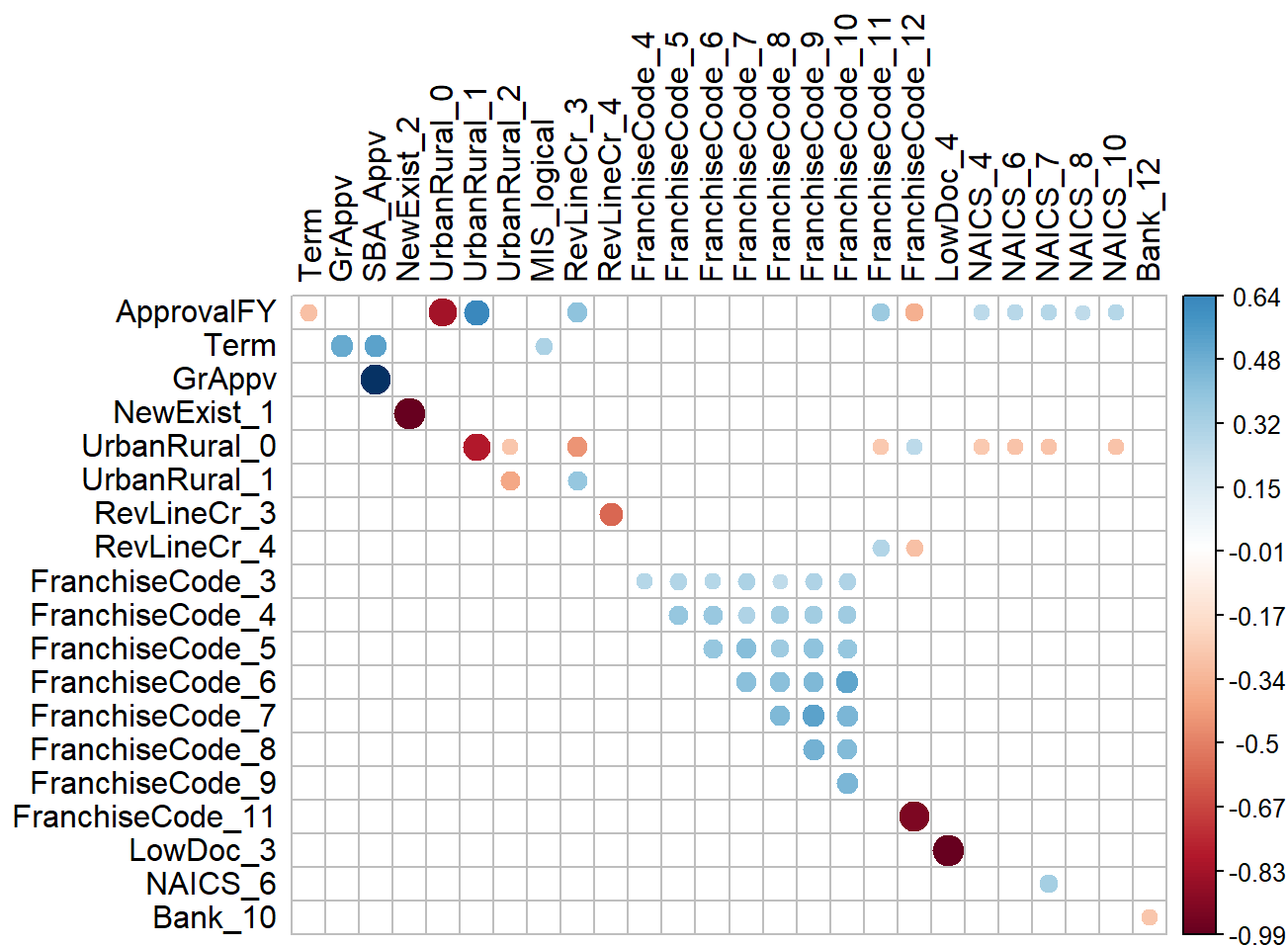
# Code modified slightly from
# https://towardsdatascience.com/how-to-create-a-correlation-matrix-with-too-many-variables-309cc0c0a57
# Look at highest values
corr_simple <- function(data=encoded_sbaloan_data,sig=0.25){
  #convert data to numeric in order to run correlations
  #convert to factor first to keep the integrity of the data - each value will
  #become a number rather than turn into NA
  df_cor <- data %>% mutate_if(is.character, as.factor)
  df_cor <- df_cor %>% mutate_if(is.factor, as.numeric)
  #run a correlation and drop the insignificant ones
  corr <- cor(df_cor)
  #prepare to drop duplicates and correlations of 1
  corr[lower.tri(corr,diag=TRUE)] <- NA
  #drop perfect correlations
  corr[corr == 1] <- NA
  #turn into a 3-column table
  corr <- as.data.frame(as.table(corr))
  #remove the NA values from above
  corr <- na.omit(corr)
  #select significant values
  corr <- subset(corr, abs(Freq) > sig)
  #sort by highest correlation
  corr <- corr[order(-abs(corr$Freq)),]
  #print table
  print(corr)
  #turn corr back into matrix in order to plot with corrplot
  mtx_corr <- reshape2::acast(corr, Var1~Var2, value.var="Freq")

  #plot correlations visually
  corrplot(mtx_corr, is.corr=FALSE, tl.col="black", na.label=" ")
}
corr_simple()

```

##	Var1	Var2	Freq
## 568	NewExist_1	NewExist_2	-0.9968132
## 3195	LowDoc_3	LowDoc_4	-0.9933737
## 355	GrAppv	SBA_Appv	0.9740971
## 2911	FranchiseCode_11	FranchiseCode_12	-0.9240874
## 701	ApprovalFY	UrbanRural_0	-0.8321875
## 781	UrbanRural_0	UrbanRural_1	-0.7851538
## 771	ApprovalFY	UrbanRural_1	0.6438458
## 2059	RevLineCr_3	RevLineCr_4	-0.5730451
## 352	Term	SBA_Appv	0.5295493
## 2697	FranchiseCode_7	FranchiseCode_9	0.5281540
## 2766	FranchiseCode_6	FranchiseCode_10	0.5176347
## 282	Term	GrAppv	0.5057383
## 2698	FranchiseCode_8	FranchiseCode_9	0.4680634
## 2767	FranchiseCode_7	FranchiseCode_10	0.4514295
## 2769	FranchiseCode_9	FranchiseCode_10	0.4500151
## 1971	UrbanRural_0	RevLineCr_3	-0.4430693
## 2627	FranchiseCode_7	FranchiseCode_8	0.4409770
## 2696	FranchiseCode_6	FranchiseCode_9	0.4406931
## 2768	FranchiseCode_8	FranchiseCode_10	0.4277323
## 2555	FranchiseCode_5	FranchiseCode_7	0.4238976
## 2556	FranchiseCode_6	FranchiseCode_7	0.4139644
## 2626	FranchiseCode_6	FranchiseCode_8	0.4132253
## 2695	FranchiseCode_5	FranchiseCode_9	0.4061890
## 1961	ApprovalFY	RevLineCr_3	0.4041849
## 2414	FranchiseCode_4	FranchiseCode_5	0.3860626
## 2765	FranchiseCode_5	FranchiseCode_10	0.3846901
## 852	UrbanRural_1	UrbanRural_2	-0.3813796
## 2485	FranchiseCode_5	FranchiseCode_6	0.3794746
## 1972	UrbanRural_1	RevLineCr_3	0.3777353
## 2484	FranchiseCode_4	FranchiseCode_6	0.3687704
## 2801	ApprovalFY	FranchiseCode_11	0.3598823
## 2625	FranchiseCode_5	FranchiseCode_8	0.3564138
## 2871	ApprovalFY	FranchiseCode_12	-0.3560775
## 2764	FranchiseCode_4	FranchiseCode_10	0.3542669
## 2694	FranchiseCode_4	FranchiseCode_9	0.3458109
## 2624	FranchiseCode_4	FranchiseCode_8	0.3435690
## 3692	NAICS_6	NAICS_7	0.3352409
## 2553	FranchiseCode_3	FranchiseCode_7	0.3166439
## 1752	Term	MIS_logical	0.3141285
## 2554	FranchiseCode_4	FranchiseCode_7	0.3022303
## 2693	FranchiseCode_3	FranchiseCode_9	0.2993248
## 2763	FranchiseCode_3	FranchiseCode_10	0.2983977
## 2413	FranchiseCode_3	FranchiseCode_5	0.2978764
## 2900	RevLineCr_4	FranchiseCode_12	-0.2942971
## 71	ApprovalFY	Term	-0.2927300
## 2830	RevLineCr_4	FranchiseCode_11	0.2915160
## 3651	UrbanRural_0	NAICS_7	-0.2871106
## 2343	FranchiseCode_3	FranchiseCode_4	0.2868328
## 3641	ApprovalFY	NAICS_7	0.2860179
## 2483	FranchiseCode_3	FranchiseCode_6	0.2839049
## 3851	ApprovalFY	NAICS_10	0.2833578
## 3861	UrbanRural_0	NAICS_10	-0.2798738
## 3581	UrbanRural_0	NAICS_6	-0.2787678
## 4827	Bank_10	Bank_12	-0.2780266
## 3571	ApprovalFY	NAICS_6	0.2775135
## 851	UrbanRural_0	UrbanRural_2	-0.2730515
## 2811	UrbanRural_0	FranchiseCode_11	-0.2649130

```
## 3441      UrbanRural_0      NAICS_4 -0.2612105
## 2881      UrbanRural_0 FranchiseCode_12 0.2603173
## 3431      ApprovalFY      NAICS_4 0.2593809
## 2623      FranchiseCode_3 FranchiseCode_8 0.2515352
## 3711      ApprovalFY      NAICS_8 0.2510739
```



```
# Term had the strongest correlation to loan repayment
# None were noticeable for Jobs Created
```

```
# Write out for python
write.csv(encoded_sbaloan_data,"sbapython.csv", row.names = FALSE)

summary(sbaloan_data$CreateJob)
```

```
##      Min.   1st Qu.   Median     Mean   3rd Qu.    Max.
##      0.000     0.000     0.000    8.444     1.000   8800.000
```