ROI on Hand Picked Stocks 2007-2020

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2/17/2020

```
portfolio <- read.csv('all_portfolio_prices.csv', header=TRUE,
na.strings=c('',' '),
                      row.names=1)

portfolio$Date <- row.names(portfolio)

Vol <- grep('Volume', colnames(portfolio))
close <- grep('Close',colnames(portfolio))
Close <- portfolio[,close]
Volume <- portfolio[,Vol]
colnames(Close)
```

```
##  [1] "TGT.Close"    "FTR.Close"    "UBSI.Close"   "HD.Close"
"JPM.Close"
##  [6] "XOM.Close"    "CVX.Close"    "NSANY.Close"  "GNBT.Close"
"MGM.Close"
## [11] "TEVA.Close"   "HST.Close"    "FCAU.Close"   "WFC.Close"
"WWE.Close"
## [16] "INO.Close"    "QSR.Close"    "GRPN.Close"   "SCE.PB.Close"
"FFIN.Close"
## [21] "GOOG.Close"   "WM.Close"     "ONCY.Close"   "S.Close"
"GM.Close"
## [26] "F.Close"      "ASCCY.Close"  "ARWR.Close"   "COST.Close"
"AAL.Close"
## [31] "JWN.Close"    "CSSEP.Close"  "NUS.Close"    "AMC.Close"
"ADDYY.Close"
## [36] "KSS.Close"    "MSFT.Close"   "LUV.Close"    "HMC.Close"
"PCG.Close"
## [41] "DLTR.Close"   "KGJI.Close"   "NKE.Close"    "AMZN.Close"
"ROST.Close"
## [46] "TMUS.Close"   "WMT.Close"    "TJX.Close"    "TM.Close"
"PBYI.Close"
## [51] "T.Close"      "JNJ.Close"    "C.Close"      "EPD.Close"
"VZ.Close"
## [56] "HRB.Close"    "NFLX.Close"   "AAP.Close"    "HOFT.Close"
"SIG.Close"
## [61] "SDC.Close"    "RRGB.Close"   "M.Close"      "JBLU.Close"
"YELP.Close"
```

Remove NAs from the data. The colSums(is.na(Close)) isn't returning the columns with NAs, so this must be done manually.

```
Close_noNAs <- Close[,-c(9,13,17,18,25,27,32,34,46,50,61,65)]
Volume_noNAs <- Volume[,-c(9,13,17,18,25,27,32,34,46,50,61,65)]

Close_noNAs$SCE.PB.Close <- as.numeric(Close_noNAs$SCE.PB.Close)
Volume_noNAs$SCE.PB.Volume <- as.numeric(Volume_noNAs$SCE.PB.Volume)
```

Add in a value of the portfolio column for each day's closing price of all stock that don't have NAs.

```
Close_noNAs$DailyValue <- rowSums(Close_noNAs,na.rm=TRUE)
```

Add in a daily change column of the portfolio closing prices.

```
dayVal <- as.data.frame(Close_noNAs$DailyValue)
colnames(dayVal) <- 'previousDayValue'
zero <- as.data.frame(as.numeric(dayVal$previousDayValue[1]))
colnames(zero) <- 'previousDayValue'
prevDay <- rbind(zero,dayVal)
Close_noNAs$prevDay <- prevDay[1:3303,1]
dailyChange <- as.data.frame(Close_noNAs$DailyValue-Close_noNAs$prevDay)
colnames(dailyChange) <- 'dailyValueChange'

Close1 <- cbind(Close_noNAs,dailyChange)
```

Add a column that gives the return in dollars on initial dollars invested.

```
Close1$ROI_dollars <- Close1$DailyValue-Close1$DailyValue[1]
```

Add some date fields to look at the values by date, day of the week, month, and year in analyzing this data.

```
Close1$Date <- as.Date.character(row.names(Close1))

Close1$DayOfWeek <- weekdays(as.Date(Close1$Date))

month <- month(as.Date(Close1$Date))
Month <- month.abb[month]
Close1$Month <- Month
```

Add in the year of the Date column.

```
Year <- year(as.Date(Close1$Date))

Close1$Year <- Year

Close1$MonthYear <- paste(Close1$Month, Close1$Year, sep='-')
Close1$MonthYear <- as.factor(Close1$MonthYear)
```

Add in some unemployment information as a column to see how the portfolio is doing by date.

```
ue <- read.delim('BLS_unemploymentRates2007-2020.txt', sep=',',header=TRUE,
                 na.strings=c('',' '))
UE <- ue[,-14]#remove the empty 'Annual' column
```

Use tidyr to gather the month fields with their respective unemployment rates per month.

```
gatherMonths <- gather(UE, 'UE_Month', 'UE_monthlyRate',2:13)

gatherMonths$MonthYear <- paste(gatherMonths$UE_Month, gatherMonths$Year,
sep='-')
gatherMonths$MonthYear <- as.factor(gatherMonths$MonthYear)

UE2 <- gatherMonths[,3:4]
Close2 <- merge(Close1, UE2, by.x='MonthYear', by.y='MonthYear')
row.names(Close2) <- row.names(Close1)

write.csv(Close2, 'ROI_UE_2007_2020.csv', row.names=FALSE)
```

Lets add in the volume of trades per day from the Volume_noNAs data set. But lets add in some fields for total portfolio trades per day,

```
Volume1 <- Volume_noNAs
Volume1$DailyVolume <- rowSums(Volume1, na.rm=TRUE)

dayVol <- as.data.frame(Volume1$DailyVolume)
colnames(dayVol) <- 'previousDayVolume'
zero <- as.data.frame(as.numeric(dayVol$previousDayVolume[1]))
colnames(zero) <- 'previousDayVolume'
prevDay1 <- rbind(zero,dayVol)
Volume1$prevDayVolume <- prevDay1[1:3303,1]

dailyVolumeChange <- as.data.frame(Volume1$DailyVolume-Volume1$prevDayVolume)
colnames(dailyVolumeChange) <- 'dailyVolumeChange'

Volume2 <- cbind(Volume1,dailyVolumeChange)
Volume2$VolumeRatioDaily2Initial <-
Volume2$DailyVolume/Volume2$prevDayVolume[1]

stocks <- cbind(Close2, Volume2)

Stocks <- stocks[,c(2:54,64:116,1,55:63,117:120)]
colnames(Stocks)
```

```
##   [1] "TGT.Close"                "FTR.Close"
##   [3] "UBSI.Close"               "HD.Close"
##   [5] "JPM.Close"                "XOM.Close"
##   [7] "CVX.Close"                "NSANY.Close"
##   [9] "MGM.Close"                "TEVA.Close"
##  [11] "HST.Close"                "WFC.Close"
##  [13] "WWE.Close"                "INO.Close"
##  [15] "SCE.PB.Close"             "FFIN.Close"
```

```
##  [17] "GOOG.Close"             "WM.Close"
##  [19] "ONCY.Close"             "S.Close"
##  [21] "F.Close"                "ARWR.Close"
##  [23] "COST.Close"             "AAL.Close"
##  [25] "JWN.Close"              "NUS.Close"
##  [27] "ADDYY.Close"            "KSS.Close"
##  [29] "MSFT.Close"             "LUV.Close"
##  [31] "HMC.Close"              "PCG.Close"
##  [33] "DLTR.Close"             "KGJI.Close"
##  [35] "NKE.Close"              "AMZN.Close"
##  [37] "ROST.Close"             "WMT.Close"
##  [39] "TJX.Close"              "TM.Close"
##  [41] "T.Close"                "JNJ.Close"
##  [43] "C.Close"                "EPD.Close"
##  [45] "VZ.Close"               "HRB.Close"
##  [47] "NFLX.Close"             "AAP.Close"
##  [49] "HOFT.Close"             "SIG.Close"
##  [51] "RRGB.Close"             "M.Close"
##  [53] "JBLU.Close"             "TGT.Volume"
##  [55] "FTR.Volume"             "UBSI.Volume"
##  [57] "HD.Volume"              "JPM.Volume"
##  [59] "XOM.Volume"             "CVX.Volume"
##  [61] "NSANY.Volume"           "MGM.Volume"
##  [63] "TEVA.Volume"            "HST.Volume"
##  [65] "WFC.Volume"             "WWE.Volume"
##  [67] "INO.Volume"             "SCE.PB.Volume"
##  [69] "FFIN.Volume"            "GOOG.Volume"
##  [71] "WM.Volume"              "ONCY.Volume"
##  [73] "S.Volume"               "F.Volume"
##  [75] "ARWR.Volume"            "COST.Volume"
##  [77] "AAL.Volume"             "JWN.Volume"
##  [79] "NUS.Volume"             "ADDYY.Volume"
##  [81] "KSS.Volume"             "MSFT.Volume"
##  [83] "LUV.Volume"             "HMC.Volume"
##  [85] "PCG.Volume"             "DLTR.Volume"
##  [87] "KGJI.Volume"            "NKE.Volume"
##  [89] "AMZN.Volume"            "ROST.Volume"
##  [91] "WMT.Volume"             "TJX.Volume"
##  [93] "TM.Volume"              "T.Volume"
##  [95] "JNJ.Volume"             "C.Volume"
##  [97] "EPD.Volume"             "VZ.Volume"
##  [99] "HRB.Volume"             "NFLX.Volume"
## [101] "AAP.Volume"             "HOFT.Volume"
## [103] "SIG.Volume"             "RRGB.Volume"
## [105] "M.Volume"               "JBLU.Volume"
## [107] "MonthYear"              "DailyValue"
## [109] "prevDay"                "dailyValueChange"
## [111] "ROI_dollars"            "Date"
## [113] "DayOfWeek"              "Month"
## [115] "Year"                   "UE_monthlyRate"
```

```
## [117] "DailyVolume"                "prevDayVolume"
## [119] "dailyVolumeChange"          "VolumeRatioDaily2Initial"
```

Add a value of stock daily to the initial value as a ratio.

```
Stocks$ValueRatioDaily2Initial <- Stocks$DailyValue/Stocks$DailyValue[1]
```

Add a field that multiplies the daily value and daily volume ratios compared to the initial value and volume by the unemployment rate.

```
Stocks$DailyRatios_X_UE <-
Stocks$ValueRatioDaily2Initial*Stocks$VolumeRatioDaily2Initial*Stocks$UE_mont
hlyRate
```

Add an exponential calculation field based on the unemployment rate for rate, and using numeric day of the month for t, and k as the month.

```
dayOfMonth <- day(Stocks$Date)
ue1 <- Stocks$UE_monthlyRate

Stocks$poisson <- (exp(-(ue1))*(ue1)^dayOfMonth)/(factorial(dayOfMonth))

write.csv(Stocks, 'StocksStats.csv', row.names=TRUE)
```