

Explore ACR

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Libraries

```
#library(lubridate)
```

Data

read in

```
ACR.raw <- read.csv(file = "../data/ACR.csv",
                    stringsAsFactors = FALSE)
name <- c("SQA",
         "Application",
         "CRNumber",
         "CRDate",
         "CRApproved",
         "IENumber",
         "IEDate",
         "IEApproved",
         "Reason",
         "Comments")
```

```
names(ACR.raw) <- name
rm(name)
ACR <- ACR.raw
```

Format

factor

```
ACR$SQA <- as.factor(ACR$SQA)
ACR$Application <- as.factor(ACR$Application)
ACR$CRApproved <- as.factor(ACR$CRApproved)
ACR$IEApproved <- as.factor(ACR$IEApproved)
levels(ACR$IEApproved)[1] <- NA
ACR$Reason <- as.factor(ACR$Reason)
levels(ACR$Reason)[1] <- NA
```

Dates

```
ACR$CRDate <- as.Date(ACR$CRDate, format = "%d-%b-%y")
ACR$IEDate <- as.Date(ACR$IEDate, format = "%d-%b-%y")
ACR$CRmonth <- lubridate::month(ACR$CRDate, label = TRUE)
ACR$CRyear <- lubridate::year(ACR$CRDate)
ACR$IEMonth <- lubridate::month(ACR$IEDate, label = TRUE)
ACR$IEyear <- lubridate::year(ACR$IEDate)
```

Structure

```
str(ACR)
```

```
## 'data.frame': 118 obs. of 14 variables:
## $ SQA : Factor w/ 4 levels "Beilah","Liz",...: 1 1 1 1 2 2 2 2 4 4 ...
## $ Application: Factor w/ 11 levels "AFMS","ALMS",...: 9 11 11 9 5 5 5 7 2 2 ...
## $ CRNumber : chr "18-33882" "18-34518" "18-36023" "18-38261" ...
## $ CRDate : Date, format: "2018-10-12" "2018-10-17" ...
## $ CRApproved : Factor w/ 4 levels "", "A", "A-FP",...: 3 3 3 3 3 3 3 3 1 1 ...
## $ IENumber : chr "18-33882" "" "" "" ...
## $ IEDate : Date, format: "2018-11-07" NA ...
## $ IEApproved : Factor w/ 3 levels "A", "A-FP", "D": 2 NA NA NA NA NA NA NA 2 3 ...
## $ Reason : Factor w/ 3 levels "Inaccurate information",...: NA NA NA NA NA NA NA NA NA 1 ...
## $ Comments : chr "" "" "" "" ...
## $ CRmonth : Ord.factor w/ 12 levels "Jan"<"Feb"<"Mar"<...: 10 10 10 11 11 11 11 11 10 10 ...
## $ CRyear : num 2018 2018 2018 2018 2018 ...
## $ IEMonth : Ord.factor w/ 12 levels "Jan"<"Feb"<"Mar"<...: 11 NA NA NA NA NA NA NA 10 10 ...
## $ IEyear : num 2018 NA NA NA NA ...
```

Metrics

Select nomth

```
work <- subset(ACR,
  subset = (CRmonth == "Nov" & CRyear == 2018) |
  (subset = IEMonth == "Nov" & IEyear == 2018))
```

```
workCR <- subset(ACR,
  subset = CRmonth == "Nov" & CReyear == 2018)
workIE <- subset(ACR,
  subset = IEmonth == "Nov" & IEyear == 2018)
```

Counts

Data Changes Request Approved

```
nrow(subset(workCR,
  subset = (CRAproved == "A" |
    CRAproved == "A-FP")))
```

```
## [1] 50
```

Data Change Request Disapproved

```
nrow(subset(workCR,
  subset = (CRAproved == "D")))
```

```
## [1] 2
```

IE Approved

```
nrow(subset(workIE,
  subset = (IEAproved == "A" |
    IEAproved == "A-FP")))
```

```
## [1] 20
```

IE Disapproved

```
nrow(subset(workIE,
  subset = (CRAproved == "D")))
```

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

First pass acceptance

CR

```
nrow(subset(workCR,
  subset = CRAproved == "A-FP")) /
  nrow(workCR) * 100
```

```
## [1] 84.61538
```

IE

```
nrow(subset(workIE,
  subset = CRAproved == "A-FP")) /
  nrow(workIE) * 100
```

```
## [1] 80.95238
```

Total Process

```
nrow(subset(work,
             subset = (CRApproved == "A-FP" & IEApproved == "A-FP"))) /
nrow(work) * 100

## [1] 40.67797
```

Time to complete a data change

This is the interval between CR approval and IE approval

```
work.all <- subset(ACR,
                  subset = ((CRApproved == "A" | CRApproved == "A-FP") &
                             (IEApproved == "A" | IEApproved == "A-FP")))
work.all <- subset(work.all,
                  subset = (IEmonth == "Nov" & IEyear == 2018))

nrow(work.all)

## [1] 20

work.all$Interval <- as.numeric(work.all$IEDate - work.all$CRDate)
table(work.all$Application)

##
##          AFMS          ALMS          CMSNext          DaVinci
##           0           11           5           0
##    eNovator    GDSN/GS1          iQ Metrics Library
##           0           0           0           3
##          PEAR          QPI          RSLMS
##           1           0           0

summary(work.all$Interval)

##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      1.00   3.75   11.00   13.85   15.25   78.00

sd(work.all$Interval)

## [1] 16.77804

table(work.all$Interval)

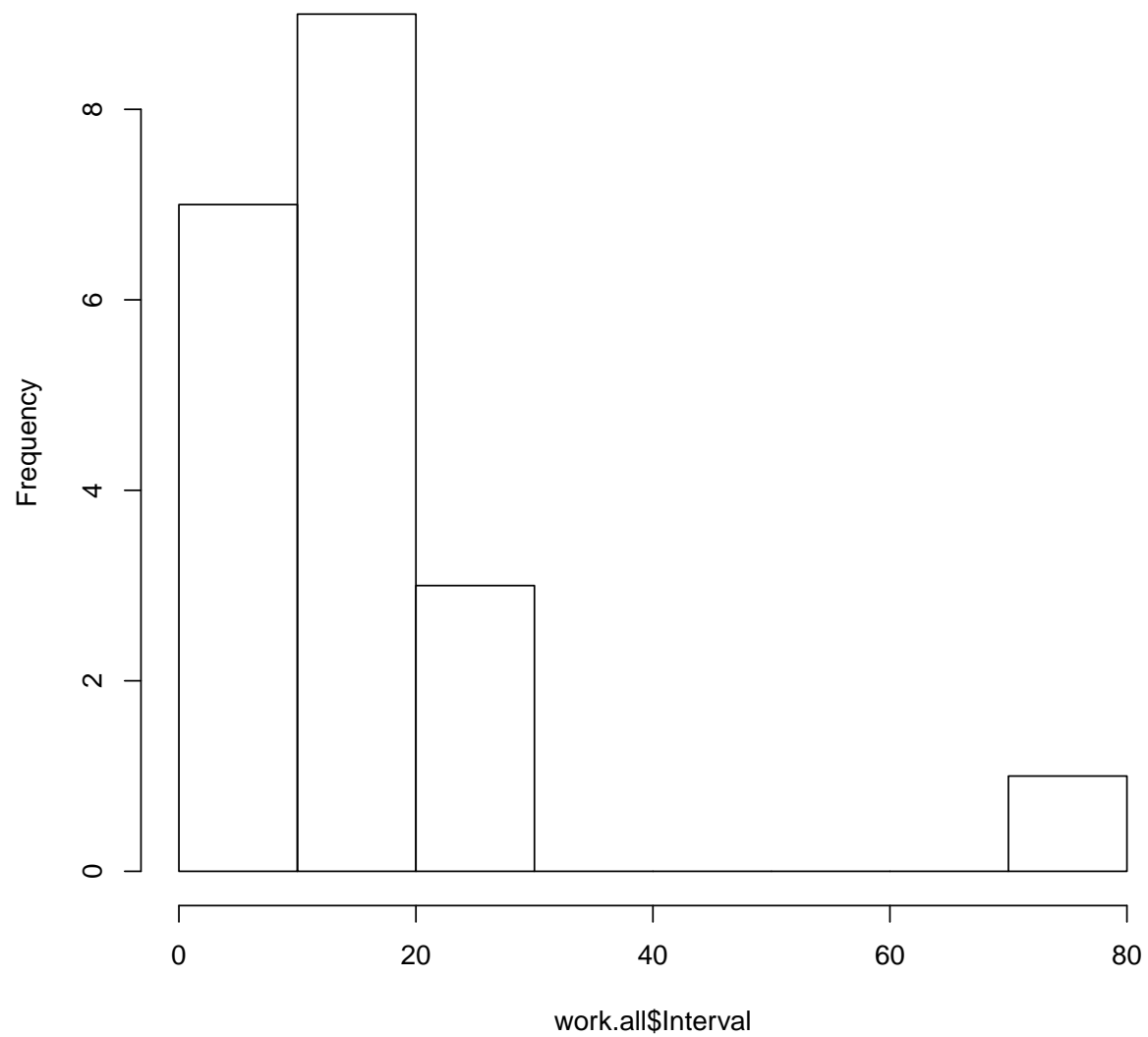
##
##  1  3  4 11 12 13 15 16 21 22 26 78
##  3  2  2  4  1  2  1  1  1  1  1  1

quantile(work.all$Interval)

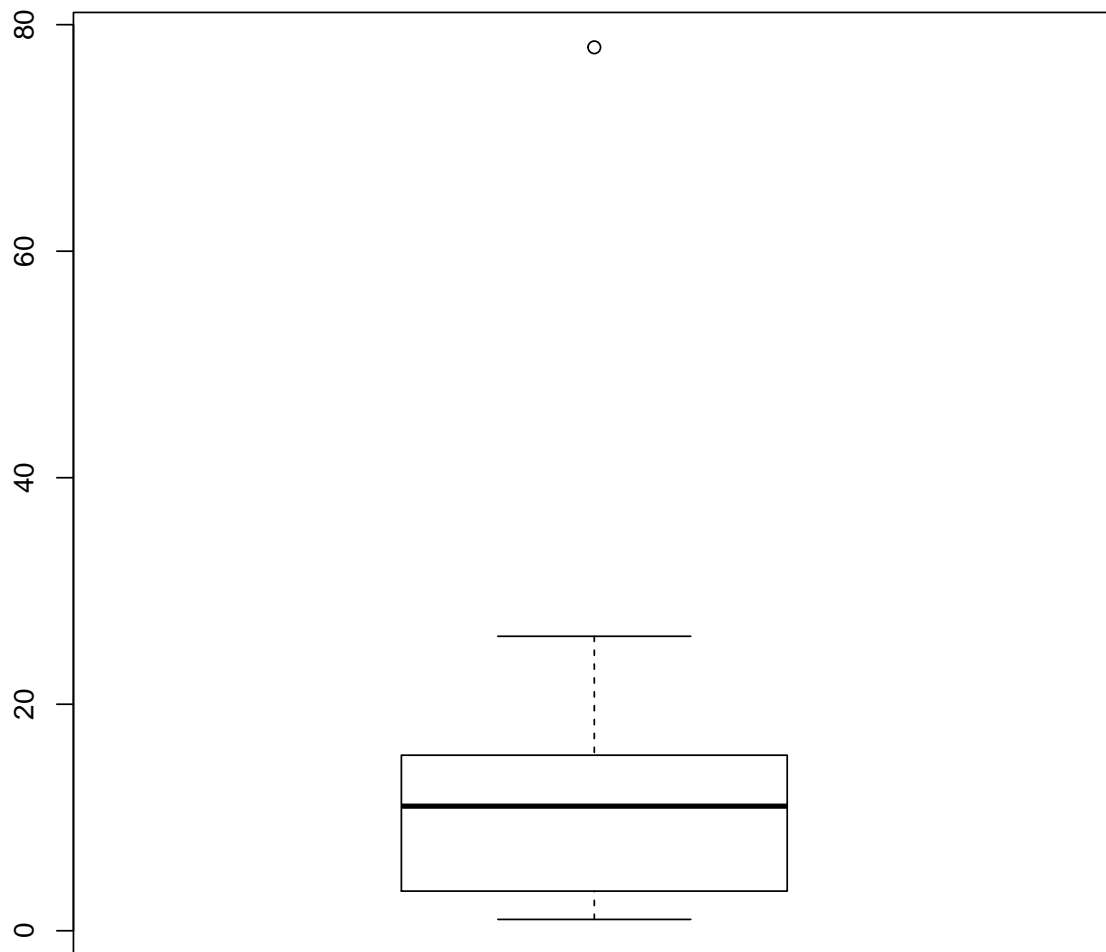
##      0%      25%      50%      75%     100%
##      1.00      3.75     11.00     15.25     78.00

hist(work.all$Interval)
```

Histogram of work.all\$Interval



```
boxplot(work.all$Interval)
```



```
boxplot(work.all$Interval,  
        outline = FALSE)
```

