

GVault QDMS Post Go-Live Survey

The analysis include exploratory data analysis, correlation analysis, tests of association, a multinomial logistic regression model and an ordinal logistic regression model.

Let's begin by loading RCurl package to retrieve dataset from Github repository.

```
require("RCurl")
```

```
## Loading required package: RCurl
```

```
## Loading required package: bitops
```

Load the data

```
#Raw dataset
```

```
newdata1<-getURL("https://raw.githubusercontent.com/watex95/R-FOR-DATA-SCIENCE/master/DATASETS/Gvault_survey_raw.csv")
```

```
df1<-read.csv(text=newdata1)
```

EXPLORATORY DATA ANALYSIS

Load package plotrix for plotting 3D pie charts

```
require("plotrix")
```

```
## Loading required package: plotrix
```

Lets explore the frequency of single choice questions.

1. How frequently do you use GVault QDMS?

```
mytable=table(df1$freq_use)
```

```
mytable
```

```
##
```

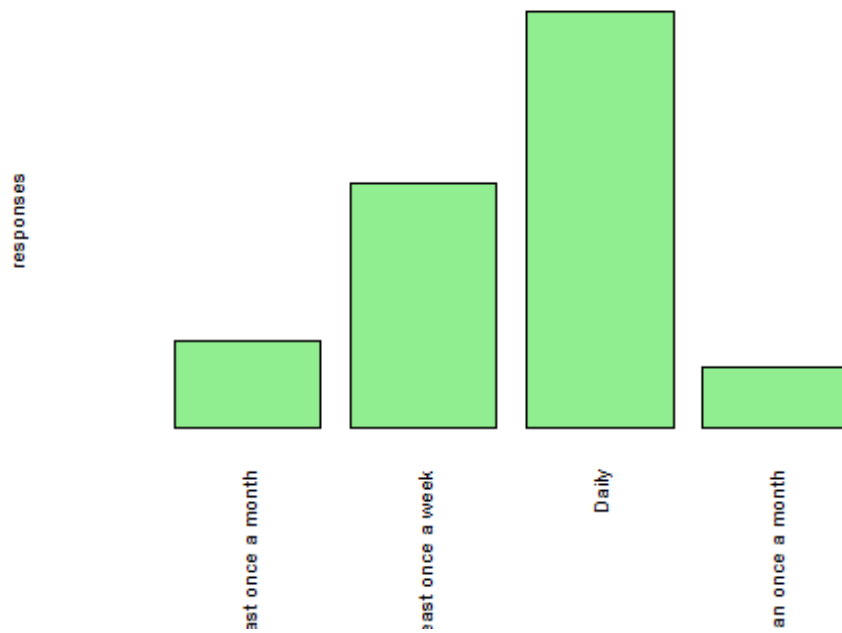
```
## At least once a month At least once a week Daily
```

```
## 51 144 245
```

```
## Less than once a month
```

```
## 35
```

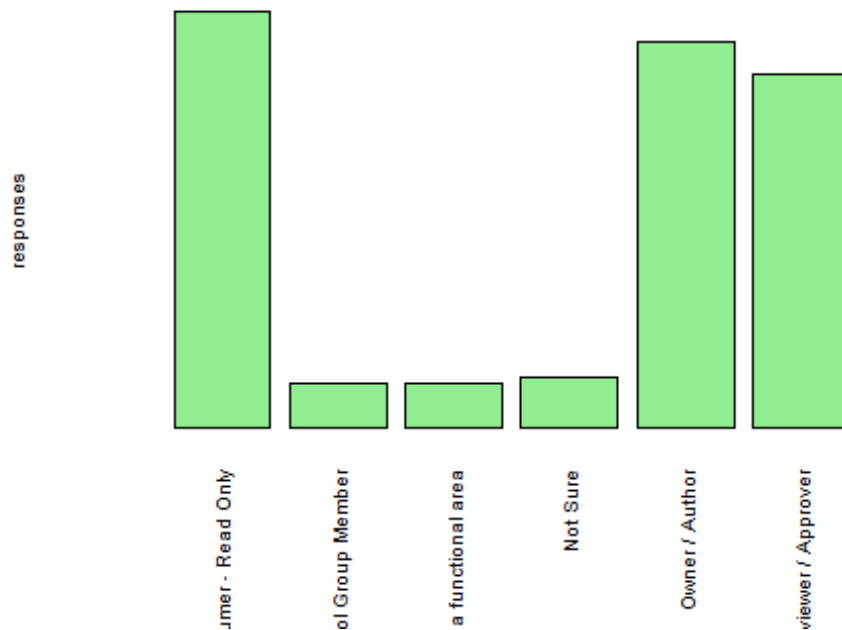
```
barplot(mytable,ylab = "responses",col = "light green",  
        ,srt=45,las=2,yaxt='n',cex.names = 0.65,cex.lab=0.65)
```



2. What is your role within GVault QDMS?

```
mytable=table(df1$role)
```

```
barplot(mytable,ylab = "responses",col = "light green",  
        srt=45,las=2,yaxt='n',cex.names = 0.65,cex.lab=0.65)
```

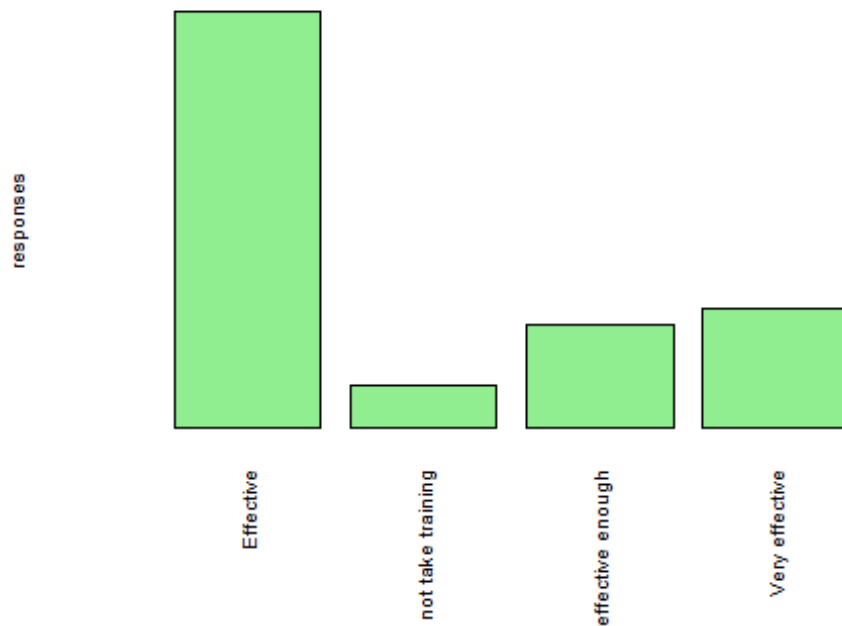


3. How would you describe the effectiveness of training you received?

```
table(df1$training_effectiveness)
```

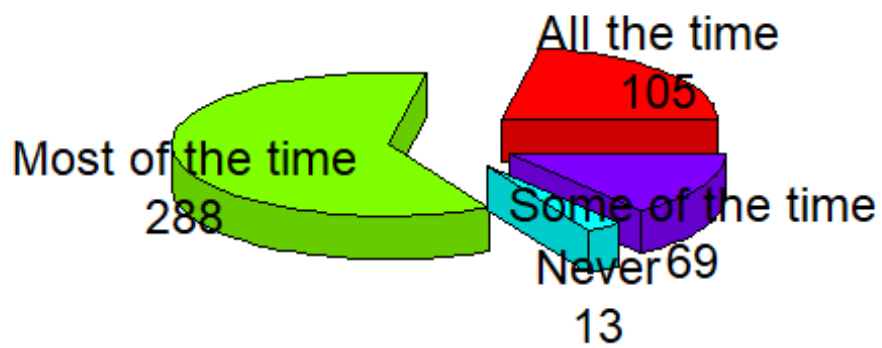
```
##
##           Effective I did not take training   Not effective enough
##           291                               29                      72
##      Very effective
##           83
```

```
barplot(table(df1$training_effectiveness),ylab = "responses",col = "light green",srt=45,las=2,yaxt='n',cex.names = 0.65,cex.lab=0.65)
```



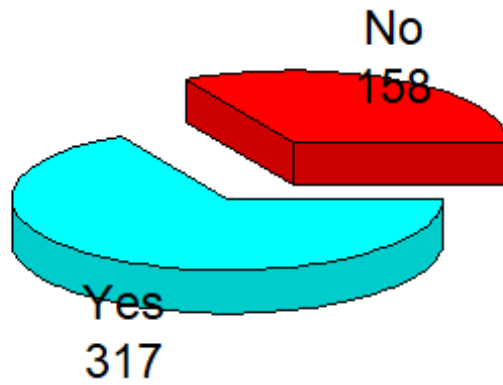
4. Are you able to complete work in the system without 'help' or 'intervention'?

```
require(plotrix)
mytable=table(df1$complete_without_help)
lbls <- paste(names(mytable), "\n", mytable, sep="")
pie3D(mytable, labels = lbls,explode=0.3)
```



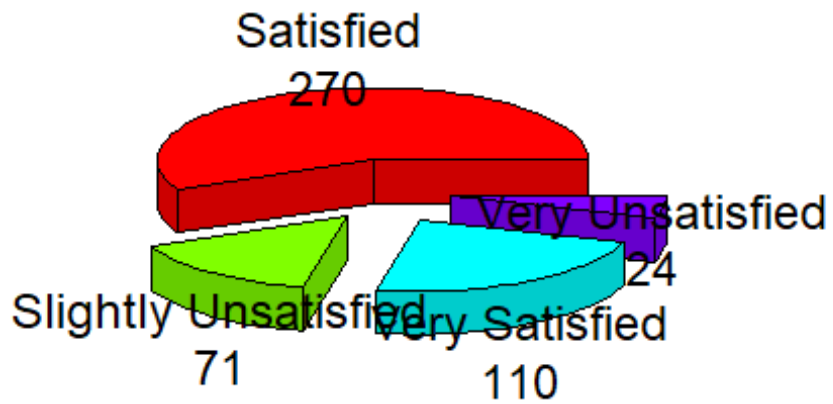
5. Do you find it easy to search for and access documents in GVault QDMS?

```
mytable=table(df1$easy_access_documents)
lbls <- paste(names(mytable), "\n", mytable, sep="")
pie3D(mytable, labels = lbls,explode=0.3)
```



6. How satisfied are you with the overall experience of GVault QDMS?

```
mytable=table(df1$satisfaction)
lbls <- paste(names(mytable), "\n", mytable, sep="")
pie3D(mytable, labels = lbls,explode=0.3)
```

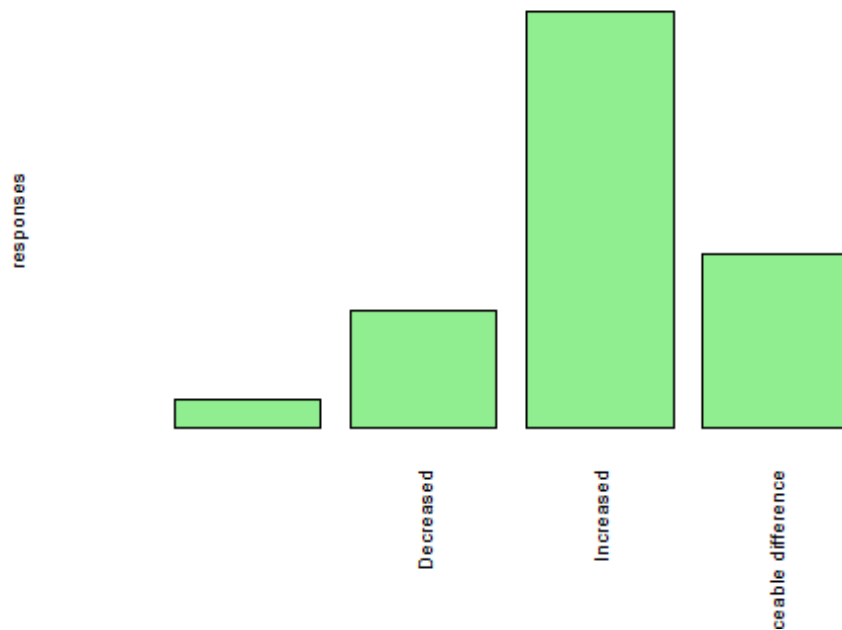


7. How would you describe your efficiency with GVault as compared to GDocs?

```
table(df1$Gvault_efficiency)
```

```
##
##                               Decreased                               Increased
##                               18                               270
## No noticeable difference
##                               112
```

```
barplot(table(df1$Gvault_efficiency),ylab = "responses",col = "light green",s
rt=45,las=2,yaxt='n',cex.names = 0.65,cex.lab=0.65)
```



8. Do you find GVault has improved features and functionality compared to GDocs?

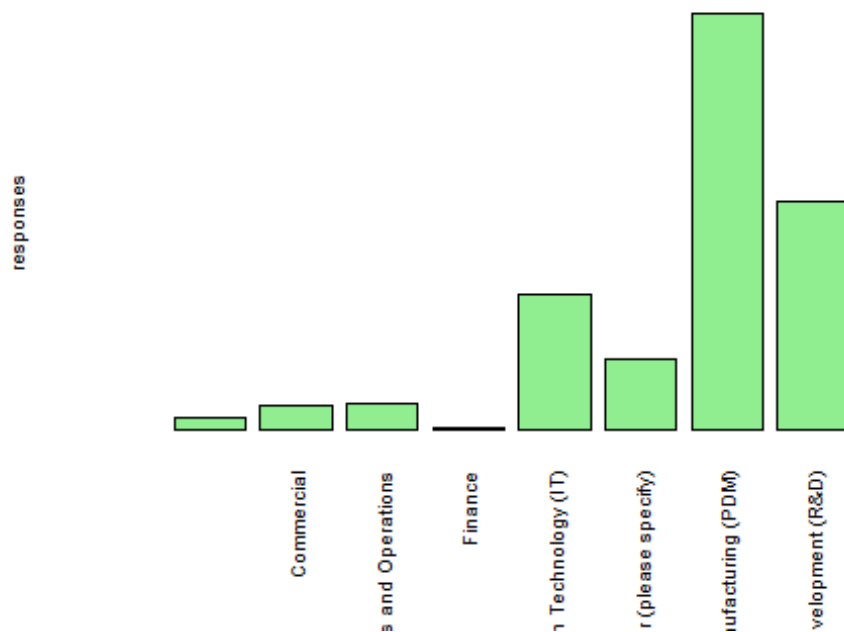
```
table(df1$Gvault_improved)
```

```
##
```

```
##      No Yes
```

```
##  28  81 366
```

```
barplot(table(df1$Gvault_improved),ylab="responses",
        col="light green",las=2, yaxt='n',cex.names = 0.65,cex.lab=0.65)
```

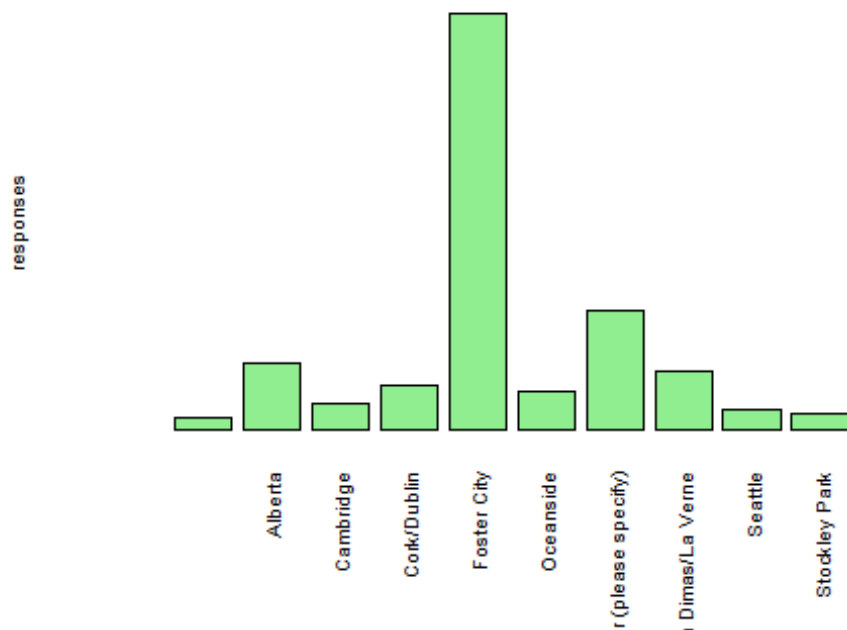



2. What is your office location?

```
table(df1$office_location)
```

```
##
##               Alberta               Cambridge
##               6               39               15
##      Cork/Dublin      Foster City      Oceanside
##               25               244               22
## Other (please specify) San Dimas/La Verne      Seattle
##               70               34               11
##      Stockley Park
##               9
```

```
barplot(table(df1$office_location),ylab = "responses",col = "light green",srt
=45,las=2,yaxt='n',cex.names = 0.65,cex.lab=0.65)
```

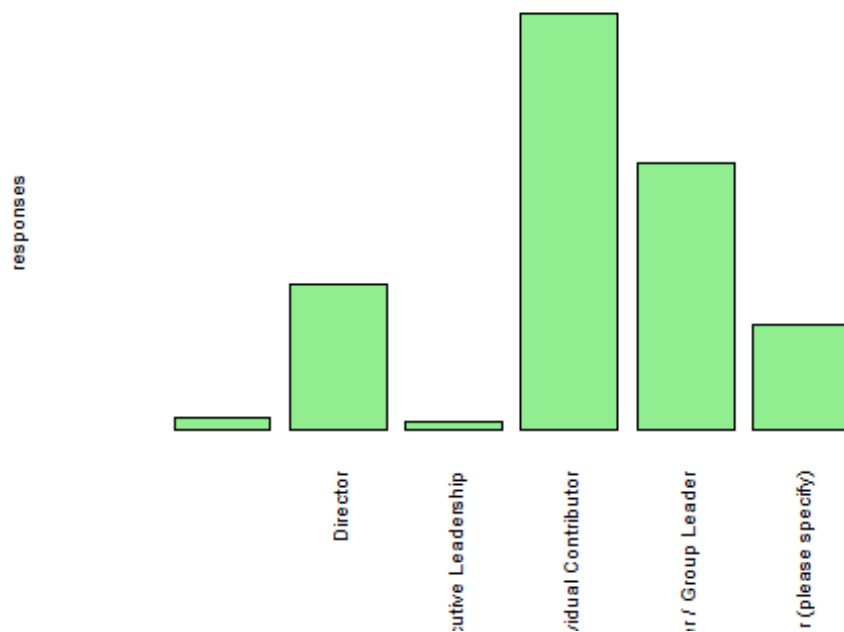


3. What is your Job Level?

```
table(df1$job_level)
```

```
##
##                               Director  Executive Leadership
##                               6          72                   4
## Individual Contributor Manager / Group Leader Other (please specify)
##                               208        133                   52
```

```
barplot(table(df1$job_level),ylab = "responses",col = "light green",
        srt=45,las=2,yaxt='n',cex.names = 0.65,cex.lab=0.65)
```

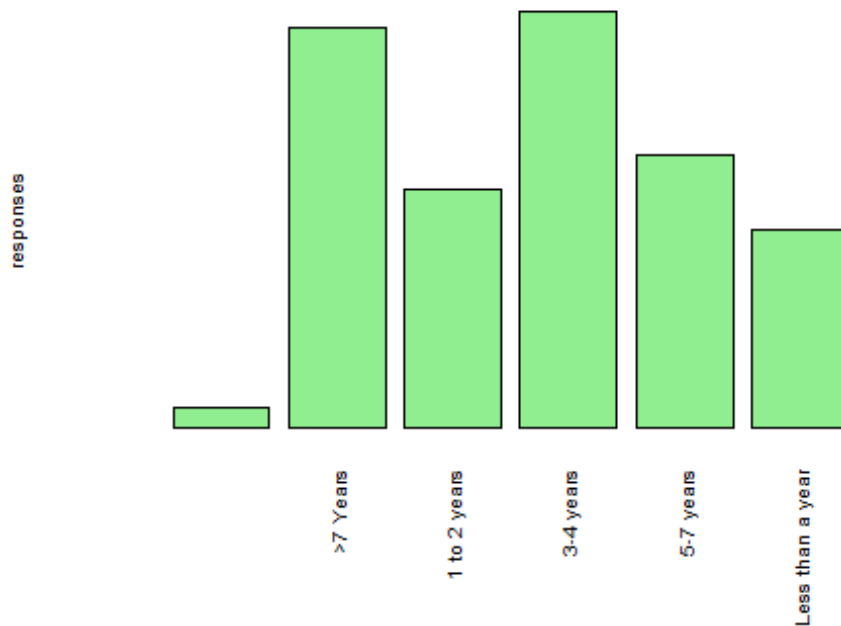


4. How long have you worked at Gilead?

```
table(df1$time_worked_Glead)
```

```
##
##              >7 Years      1 to 2 years      3-4 years
##              6            123             73          128
##      5-7 years Less than a year
##              84             61
```

```
barplot(table(df1$time_worked_Glead),ylab = "responses",col = "light green",srt=45,las=2,yaxt='n',cex.names = 0.65,cex.lab=0.65)
```



Correlation analysis: Spearman's Rank test

The variables involved are made up of ordered data and thus Spearman's rank correlation test would be the best correlation type to use.

```
require("pspearman")
```

```
## Loading required package: pspearman
```

Decision rule: If the p-value < 0.05 then the null hypothesis is rejected, else it is upheld.

Correlation test between frequency of use and effectiveness of training

Null hypothesis: There was no statistically significant relationship between median frequency of use and the median satisfaction.

Alternative hypothesis: There was statistically significant relationship between median frequency of use and the median satisfaction.

```
# Spearman test
```

```
library(pspearman)
```

```
spearman.test(df1$satisfaction, df1$freq_use, alternative = c("two.sided", "less", "greater"), approximation = c("exact", "AS89", "t-distribution"))
```

```
## Warning in spearman.test(df1$satisfaction, df1$freq_use, alternative =  
## c("two.sided", : Cannot compute exact p-values with ties
```

```
##
## Spearman's rank correlation rho
##
## data: df1$satisfaction and df1$freq_use
## S = 18549741, p-value = 0.4022
## alternative hypothesis: true rho is not equal to 0
## sample estimates:
##      rho
## -0.03850882
```

Correlation test between satisfaction and effectiveness of training

Null hypothesis: There was no statistically significant relationship between median training effectiveness and the median satisfaction.

Alternative hypothesis: There was statistically significant relationship between median training effectiveness and the median satisfaction.

```
library(pspearman)
spearman.test(df1$satisfaction, df1$training_effectiveness, alternative = c("two.sided", "less", "greater"), approximation = c("exact", "AS89", "t-distribution"))

## Warning in spearman.test(df1$satisfaction, df1$training_effectiveness,
## alternative = c("two.sided", : Cannot compute exact p-values with ties

##
## Spearman's rank correlation rho
##
## data: df1$satisfaction and df1$training_effectiveness
## S = 12718507, p-value = 1.946e-10
## alternative hypothesis: true rho is not equal to 0
## sample estimates:
##      rho
## 0.2879533
```

Correlation test between satisfaction and the extend by which users complete work in the system without help/intervention

Null hypothesis:

There was no statistically significant relationship between median of the rank in completing workwithout help and the median rank in satisfaction. ##### Alternative hypothesis:

There was statistically significant relationship between median of the rank in completing workwithout help and the median rank in satisfaction.

```
library(pspearman)
spearman.test(df1$satisfaction, df1$complete_without_help, alternative = c("two.sided", "less", "greater"), approximation = c("exact", "AS89", "t-distribution"))
```

```
## Warning in spearman.test(df1$satisfaction, df1$complete_without_help,
## alternative = c("two.sided", : Cannot compute exact p-values with ties

##
## Spearman's rank correlation rho
##
## data: df1$satisfaction and df1$complete_without_help
## S = 19443695, p-value = 0.05378
## alternative hypothesis: true rho is not equal to 0
## sample estimates:
## rho
## -0.08855691
```

Test of Association: Chi-square test of independence

The variables that were tested for association with the satisfaction variable had nominal data, thus Chi-square test of independence was the best test to use.

Decision rule: If the p-value < 0.05 then the null hypothesis is rejected, else it is upheld.

Test of association between satisfction and the role of a user in Gvault.

Null hypothesis:

There was no association between ease of a user to search for and access documents in Gvault and satisfaction of the user with Gvault. ##### Alternative hypothesis: There was association between role of a user in Gvault and satisfaction of the user with Gvault.

```
chisq.test(df1$satisfaction,df1$role)

## Warning in chisq.test(df1$satisfaction, df1$role): Chi-squared approximat
## ion may
## be incorrect

##
## Pearson's Chi-squared test
##
## data: df1$satisfaction and df1$role
## X-squared = 20.391, df = 15, p-value = 0.1574
```

Test of association between satisfction and the ease of a user to search and access documents in Gvault.

Null hypothesis:

There was no association between satisfction and the ease of a user to search and access documents in Gvault.

Alternative hypothesis:

There was association between satisfction and the ease of a user to search and access documents in Gvault.

```
chisq.test(df1$satisfaction,df1$easy_access_documents)

##
## Pearson's Chi-squared test
##
## data: df1$satisfaction and df1$easy_access_documents
## X-squared = 148.79, df = 3, p-value < 2.2e-16
```

Findings and Summary of the correlation and association tests

Finding 1

There was a significant relationship between effectiveness of training and satisfaction of users, whereas frequency of use and the extent of completing work without help were not related to satisfaction. This is because their p-values were greater than 0.05 while that of effective training was less than 0.05

Finding 2

The role of a user was in any way related to satisfaction whereas the ease of access to documents in Gvault has a high association with satisfaction. This is also attributed to the size of their p-values.

Multinomial logistic regression

This model is selected when the response variable is categorical with more than one class/level. In our case the satisfaction variable is categorical with 4 classes. Thus we fit a multinomial logistic regression model.

Load required packages first.

```
require(foreign)
## Loading required package: foreign

require(nnet)
## Loading required package: nnet

require(ggplot2)
## Loading required package: ggplot2

require(reshape2)
## Loading required package: reshape2
```

First, we need to choose the level of our outcome that we wish to use as our baseline and specify this in the relevel function. Then, we run our model using multinom. The multinom package does not include p-value calculation for the regression coefficients, so we calculate p-values using Wald tests (here z-tests).


```

#Render the variables available in R environment
attach(df1)

#Specify the reference level in satisfaction variable
df1$satisfaction2 <- relevel(df1$satisfaction, ref="Very Unsatisfied")

#Fit the model to the data
test <- multinom(satisfaction2 ~ freq_use + role + training_instructor_led +
training_web_based + training_read + no_training + training_effectiveness + s
upport_Gnet + support_inapplication + support_ref_doc + support_SOP + support
_contacted + support_IT + complete_without_help + easy_access_documents + eas
y_access_documents + Gvault_efficiency + Gvault_improved, data =df1)

## # weights: 128 (93 variable)
## initial value 658.489822
## iter 10 value 337.842690
## iter 20 value 309.507455
## iter 30 value 301.419694
## iter 40 value 299.085269
## iter 50 value 298.178512
## iter 60 value 297.619233
## iter 70 value 297.205100
## iter 80 value 297.104932
## iter 90 value 297.086290
## iter 100 value 297.085792
## final value 297.085792
## stopped after 100 iterations

#Explore the model
summary(test)

## Call:
## multinom(formula = satisfaction2 ~ freq_use + role + training_instructor_l
ed +
## training_web_based + training_read + no_training + training_effectiven
ess +
## support_Gnet + support_inapplication + support_ref_doc +
## support_SOP + support_contacted + support_IT + complete_without_help +
## easy_access_documents + easy_access_documents + Gvault_efficiency +
## Gvault_improved, data = df1)
##
## Coefficients:
## (Intercept) freq_useAt least once a week freq_useDail
y
## Satisfied 29.892912 -1.0464241 -1.609296
5
## Slightly Unsatisfied 27.152910 0.6649767 -0.680778
5
## Very Satisfied 2.992459 -1.5161025 -2.620016
0

```

##	freq_use	Less than once a month		
##	Satisfied		-1.1521884	
##	Slightly Unsatisfied		-0.1639594	
##	Very Satisfied		-1.0590008	
##	role	Document Control Group Member		
##	Satisfied		19.70286	
##	Slightly Unsatisfied		19.68529	
##	Very Satisfied		20.57107	
##	role	Document Steward for a functional area		
##	Satisfied		11.45632	1.93300
19				
##	Slightly Unsatisfied		11.71621	0.47352
76				
##	Very Satisfied		12.76773	2.58375
12				
##	role	Owner / Author		
##	Satisfied		-0.9555552	-0.2080407
##	Slightly Unsatisfied		-0.5883840	0.2050369
##	Very Satisfied		-0.3767514	0.4511106
##	training_instructor_led	Instructor Led		
##	Satisfied		0.2892213	
##	Slightly Unsatisfied		0.7384314	
##	Very Satisfied		0.6642465	
##	training_web_based	Web/Computer Based		
##	Satisfied		0.08344278	
##	Slightly Unsatisfied		0.36701806	
##	Very Satisfied		-0.08024619	
##	training_read	Read & Understood of Procedural Document		
(s)				
##	Satisfied			0.5999
787				
##	Slightly Unsatisfied			0.7867
855				
##	Very Satisfied			1.2945
777				
##	no_training	I did not take training		
##	Satisfied		12.82061	
##	Slightly Unsatisfied		13.32519	
##	Very Satisfied		-12.06418	
##	training_effectiveness	I did not take training		
##	Satisfied		-14.95071	
##	Slightly Unsatisfied		-15.10639	
##	Very Satisfied		10.66035	
##	training_effectiveness	Not effective enough		
##	Satisfied		-0.9414354	
##	Slightly Unsatisfied		-0.0181524	
##	Very Satisfied		-0.3874174	
##	training_effectiveness	Very effective support		
##	Satisfied		-1.4728986	0.7208296

## Slightly Unsatisfied	-1.5851626	0.2303046
## Very Satisfied	0.1450811	0.9290451
## support_inapplicationIn-Application (GVault)		
## Satisfied	-0.6718196	
## Slightly Unsatisfied	-0.4475563	
## Very Satisfied	0.1815383	
## support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc)		
## Satisfied		
0.11819454		
## Slightly Unsatisfied		
-0.07655518		
## Very Satisfied		
0.96082149		
## support_SOPSOPs and Work Instructions		
## Satisfied	-0.4793529	
## Slightly Unsatisfied	-0.3922151	
## Very Satisfied	-0.3325414	
## support_contactedContacted my Document Control or Training Group		
## Satisfied		
1.874356		
## Slightly Unsatisfied		
1.462219		
## Very Satisfied		
1.693343		
## support_ITIT Support / SPARC		
## Satisfied	-0.2496686	
## Slightly Unsatisfied	-0.9914639	
## Very Satisfied	-0.6146530	
## complete_without_helpMost of the time		
## Satisfied	1.2276585	
## Slightly Unsatisfied	1.0496848	
## Very Satisfied	-0.1389349	
## complete_without_helpNever		
## Satisfied	-3.018073	
## Slightly Unsatisfied	-1.500685	
## Very Satisfied	-32.441409	
## complete_without_helpSome of the time		
## Satisfied	-1.1918894	
## Slightly Unsatisfied	-0.2484145	
## Very Satisfied	-3.4083083	
## easy_access_documentsYes Gvault_efficiencyDecreased		
## Satisfied	2.03196332	1.074572
## Slightly Unsatisfied	0.02590678	2.951201
## Very Satisfied	3.66650136	-6.852901
## Gvault_efficiencyIncreased		
## Satisfied	3.445498	
## Slightly Unsatisfied	3.858661	
## Very Satisfied	27.117674	

```

##          Gvault_efficiencyNo noticeable difference
## Satisfied          3.483958
## Slightly Unsatisfied 4.154464
## Very Satisfied      26.211835
##          Gvault_improvedNo Gvault_improvedYes
## Satisfied          -31.60827      -28.98872
## Slightly Unsatisfied -30.64266      -30.12729
## Very Satisfied      -31.49416      -28.38447
##
## Std. Errors:
##          (Intercept) freq_useAt least once a week freq_useDail
y
## Satisfied          2.284162          1.498719      1.53261
5
## Slightly Unsatisfied 2.286368          1.510786      1.53938
4
## Very Satisfied      1.205757          1.576585      1.61005
5
##          freq_useLess than once a month
## Satisfied          1.670606
## Slightly Unsatisfied 1.729525
## Very Satisfied      1.830170
##          roleDocument Control Group Member
## Satisfied          0.7085796
## Slightly Unsatisfied 1.3096088
## Very Satisfied      0.8333562
##          roleDocument Steward for a functional area roleNot Su
re
## Satisfied          0.5229938      1.8001
96
## Slightly Unsatisfied 0.9094240      2.0562
29
## Very Satisfied      0.6437218      2.0360
11
##          roleOwner / Author roleReviewer / Approver
## Satisfied          0.9168420      0.9595108
## Slightly Unsatisfied 0.8688543      0.9171351
## Very Satisfied      1.0136123      1.0472881
##          training_instructor_ledInstructor Led
## Satisfied          0.7540379
## Slightly Unsatisfied 0.7134694
## Very Satisfied      0.8394642
##          training_web_basedWeb/Computer Based
## Satisfied          0.7445177
## Slightly Unsatisfied 0.7030741
## Very Satisfied      0.8086001
##          training_readRead & Understood of Procedural Document
(s)
## Satisfied          0.6990
999

```

## Slightly Unsatisfied		0.6611
094		
## Very Satisfied		0.7807
743		
##	no_trainingI did not take training	
## Satisfied		1.2780961
## Slightly Unsatisfied		1.2856852
## Very Satisfied		0.8086589
##	training_effectivenessI did not take training	
## Satisfied		1.2837610
## Slightly Unsatisfied		1.3219892
## Very Satisfied		0.8086589
##	training_effectivenessNot effective enough	
## Satisfied		0.7688629
## Slightly Unsatisfied		0.7046490
## Very Satisfied		0.9881175
##	training_effectivenessVery effective support_GnetGNet	
## Satisfied		1.548623 0.7834088
## Slightly Unsatisfied		1.636743 0.7691871
## Very Satisfied		1.569124 0.8379164
##	support_inapplicationIn-Application (GVault)	
## Satisfied		0.9089550
## Slightly Unsatisfied		0.8632206
## Very Satisfied		0.9511169
##	support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc)	
## Satisfied		0.7841996
## Slightly Unsatisfied		0.7653153
## Very Satisfied		0.8401476
##	support_SOPSOPs and Work Instructions	
## Satisfied		0.7380242
## Slightly Unsatisfied		0.6987684
## Very Satisfied		0.7936987
##	support_contactedContacted my Document Control or Training Group	
## Satisfied		0.8070249
## Slightly Unsatisfied		0.7660060
## Very Satisfied		0.8642395
##	support_ITIT Support / SPARC	
## Satisfied		1.119987
## Slightly Unsatisfied		1.118713
## Very Satisfied		1.204909
##	complete_without_helpMost of the time	
## Satisfied		1.111132

```
## Slightly Unsatisfied 1.084986
## Very Satisfied 1.153693
## complete_without_helpNever
## Satisfied 1.613816e+00
## Slightly Unsatisfied 1.558665e+00
## Very Satisfied 1.445581e-11
## complete_without_helpSome of the time
## Satisfied 1.191318
## Slightly Unsatisfied 1.117069
## Very Satisfied 1.421814
## easy_access_documentsYes Gvault_efficiencyDecreased
## Satisfied 0.8232154 1.940619e+00
## Slightly Unsatisfied 0.8389209 2.101728e+00
## Very Satisfied 1.0033443 1.135371e-12
## Gvault_efficiencyIncreased
## Satisfied 2.0890273
## Slightly Unsatisfied 2.2479712
## Very Satisfied 0.9066254
## Gvault_efficiencyNo noticeable difference
## Satisfied 2.1016647
## Slightly Unsatisfied 2.2471119
## Very Satisfied 0.8108819
## Gvault_improvedNo Gvault_improvedYes
## Satisfied 1.077606 0.915121
## Slightly Unsatisfied 1.179640 1.045968
## Very Satisfied 1.610290 1.164006
##
## Residual Deviance: 594.1716
## AIC: 780.1716
```

P-values to show which predictors were significant in explaining variation in the model

```
z <- summary(test)$coefficients/summary(test)$standard.errors
# 2-tailed z test
p <- (1 - pnorm(abs(z), 0, 1)) * 2
p

## (Intercept) freq_useAt least once a week freq_useDail
y
## Satisfied 0.00000000 0.4850445 0.293702
9
## Slightly Unsatisfied 0.00000000 0.6598265 0.658315
0
## Very Satisfied 0.01307175 0.3362318 0.103676
9
## freq_useLess than once a month
## Satisfied 0.4903936
## Slightly Unsatisfied 0.9244735
## Very Satisfied 0.5628354
## roleDocument Control Group Member
## Satisfied 0
```

## Slightly Unsatisfied	0	
## Very Satisfied	0	
##	roleDocument Steward for a functional area	roleNot Sure
## Satisfied	0	0.28292
45		
## Slightly Unsatisfied	0	0.81786
70		
## Very Satisfied	0	0.20443
18		
##	roleOwner / Author	roleReviewer / Approver
## Satisfied	0.2973076	0.8283490
## Slightly Unsatisfied	0.4982821	0.8230979
## Very Satisfied	0.7101223	0.6666563
##	training_instructor_led	Instructor Led
## Satisfied	0.7013021	
## Slightly Unsatisfied	0.3006751	
## Very Satisfied	0.4287839	
##	training_web_based	Web/Computer Based
## Satisfied	0.9107629	
## Slightly Unsatisfied	0.6016571	
## Very Satisfied	0.9209470	
##	training_read	Read & Understood of Procedural Document (s)
## Satisfied		0.39077
322		
## Slightly Unsatisfied		0.23400
755		
## Very Satisfied		0.09730
353		
##	no_training	I did not take training
## Satisfied	0	
## Slightly Unsatisfied	0	
## Very Satisfied	0	
##	training_effectiveness	I did not take training
## Satisfied		0
## Slightly Unsatisfied		0
## Very Satisfied		0
##	training_effectiveness	Not effective enough
## Satisfied	0.2207819	
## Slightly Unsatisfied	0.9794480	
## Very Satisfied	0.6950019	
##	training_effectiveness	Very effective support_GnetGNet
## Satisfied	0.3415527	0.3575104
## Slightly Unsatisfied	0.3328017	0.7646250
## Very Satisfied	0.9263326	0.2675353
##	support_inapplication	In-Application (GVault)
## Satisfied	0.4598390	
## Slightly Unsatisfied	0.6041286	
## Very Satisfied	0.8486286	

```

##          support_ref_docReference Document (User Manual, Refer
ence Guide, Training Material, etc)
## Satisfied
0.8801966
## Slightly Unsatisfied
0.9203198
## Very Satisfied
0.2527754
##          support_SOPSOPs and Work Instructions
## Satisfied
0.5160098
## Slightly Unsatisfied
0.5745966
## Very Satisfied
0.6752330
##          support_contactedContacted my Document Control or Tra
ining Group
## Satisfied
0.02020329
## Slightly Unsatisfied
0.05627660
## Very Satisfied
0.05007249
##          support_ITIT Support / SPARC
## Satisfied
0.8235970
## Slightly Unsatisfied
0.3754806
## Very Satisfied
0.6099646
##          complete_without_helpMost of the time
## Satisfied
0.2692150
## Slightly Unsatisfied
0.3333123
## Very Satisfied
0.9041455
##          complete_without_helpNever
## Satisfied
0.06146341
## Slightly Unsatisfied
0.33564727
## Very Satisfied
0.00000000
##          complete_without_helpSome of the time
## Satisfied
0.31707837
## Slightly Unsatisfied
0.82401754
## Very Satisfied
0.01652291
##          easy_access_documentsYes Gvault_efficiencyDecreased
## Satisfied
0.0135746959
0.5797659
## Slightly Unsatisfied
0.9753643855
0.1602658
## Very Satisfied
0.0002579043
0.00000000
##          Gvault_efficiencyIncreased
## Satisfied
0.09907975
## Slightly Unsatisfied
0.08606904
## Very Satisfied
0.00000000
##          Gvault_efficiencyNo noticeable difference
## Satisfied
0.09737530
## Slightly Unsatisfied
0.06448645
## Very Satisfied
0.00000000
##          Gvault_improvedNo Gvault_improvedYes
## Satisfied
0
0

```


## Slightly Unsatisfied	0	0
## Very Satisfied	0	0

Finding from the p-values

The variable Gvault_improved was significant in predicting the odds of a user being very satisfied. Document steward for a functional area and Document control group member were the roles that influence the odds of satisfaction.

Most predictor variables had an effect on the odds of a user being very satisfied vs being very unsatisfied.

ODDS Ratios

Extract the coefficients from the model and exponentiate to get the ODD ratios

```
exp(coef(test))
```

##	(Intercept)	freq_useAt least once a week	freq_useDai
ly			
## Satisfied	9.601223e+12	0.3511913	0.20002
83			
## Slightly Unsatisfied	6.199533e+11	1.9444452	0.50622
28			
## Very Satisfied	1.993463e+01	0.2195660	0.07280
17			
##	freq_useLess than once a month		
## Satisfied	0.3159446		
## Slightly Unsatisfied	0.8487765		
## Very Satisfied	0.3468022		
##	roleDocument Control Group Member		
## Satisfied	360449230		
## Slightly Unsatisfied	354170382		
## Very Satisfied	858820739		
##	roleDocument Steward for a functional area	roleNot Su	
re			
## Satisfied		94496.95	6.9102
23			
## Slightly Unsatisfied		122542.28	1.6056
48			
## Very Satisfied		350715.56	13.2467
36			
##	roleOwner / Author	roleReviewer / Approver	
## Satisfied	0.3845986	0.812174	
## Slightly Unsatisfied	0.5552238	1.227570	
## Very Satisfied	0.6860866	1.570055	
##	training_instructor_led	Instructor Led	
## Satisfied		1.335387	
## Slightly Unsatisfied		2.092650	
## Very Satisfied		1.943026	
##	training_web_based	Web/Computer Based	

## Satisfied	1.0870230	
## Slightly Unsatisfied	1.4434240	
## Very Satisfied	0.9228891	
##	training_readRead & Understood of Procedural Document	
(s)		
## Satisfied		1.822
080		
## Slightly Unsatisfied		2.196
325		
## Very Satisfied		3.649
455		
##	no_trainingI did not take training	
## Satisfied	3.697612e+05	
## Slightly Unsatisfied	6.124279e+05	
## Very Satisfied	5.762262e-06	
##	training_effectivenessI did not take training	
## Satisfied	3.213576e-07	
## Slightly Unsatisfied	2.750284e-07	
## Very Satisfied	4.263146e+04	
##	training_effectivenessNot effective enough	
## Satisfied	0.3900675	
## Slightly Unsatisfied	0.9820114	
## Very Satisfied	0.6788077	
##	training_effectivenessVery effective support_GnetGNet	
## Satisfied	0.2292600	2.056138
## Slightly Unsatisfied	0.2049145	1.258983
## Very Satisfied	1.1561334	2.532090
##	support_inapplicationIn-Application (GVault)	
## Satisfied	0.5107783	
## Slightly Unsatisfied	0.6391882	
## Very Satisfied	1.1990605	
##	support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc)	
## Satisfied		
1.1254630		
## Slightly Unsatisfied		
0.9263018		
## Very Satisfied		
2.6138428		
##	support_SOPSOPs and Work Instructions	
## Satisfied	0.6191839	
## Slightly Unsatisfied	0.6755588	
## Very Satisfied	0.7170990	
##	support_contactedContacted my Document Control or Training Group	
## Satisfied		
6.516624		
## Slightly Unsatisfied		
4.315527		
## Very Satisfied		

```

5.437626
## support_ITIT Support / SPARC
## Satisfied 0.7790589
## Slightly Unsatisfied 0.3710331
## Very Satisfied 0.5408285
## complete_without_helpMost of the time
## Satisfied 3.4132279
## Slightly Unsatisfied 2.8567506
## Very Satisfied 0.8702847
## complete_without_helpNever
## Satisfied 4.889533e-02
## Slightly Unsatisfied 2.229774e-01
## Very Satisfied 8.144701e-15
## complete_without_helpSome of the time
## Satisfied 0.30364700
## Slightly Unsatisfied 0.78003653
## Very Satisfied 0.03309714
## easy_access_documentsYes Gvault_efficiencyDecreased
## Satisfied 7.629050 2.928740375
## Slightly Unsatisfied 1.026245 19.128910192
## Very Satisfied 39.114817 0.001056387
## Gvault_efficiencyIncreased
## Satisfied 3.135891e+01
## Slightly Unsatisfied 4.740185e+01
## Very Satisfied 5.984891e+11
## Gvault_efficiencyNo noticeable difference
## Satisfied 3.258845e+01
## Slightly Unsatisfied 6.371783e+01
## Very Satisfied 2.419109e+11
## Gvault_improvedNo Gvault_improvedYes
## Satisfied 1.873708e-14 2.572514e-13
## Slightly Unsatisfied 4.921121e-14 8.239173e-14
## Very Satisfied 2.100194e-14 4.707385e-13

```

Interpretation of the odds ratios

For instance the ease of access to documents increased the odds of satisfaction by 39.11 times.

Probabilities of satisfaction

You can also use predicted probabilities to help you understand the model. You can calculate predicted probabilities for each of our outcome levels using the fitted function. We can start by generating the predicted probabilities for the observations in our dataset and viewing the first few rows

```

head(pp <- fitted(test))
## Very Unsatisfied Satisfied Slightly Unsatisfied Very Satisfied
## 1 3.941143e-04 0.7344955 0.014087374 0.25102297
## 2 1.910445e-03 0.7233229 0.033338361 0.24142829

```

## 3	1.036560e-03	0.5164083	0.017960261	0.46459488
## 4	6.272947e-04	0.8829404	0.010387354	0.10604498
## 5	2.394410e-15	0.8125645	0.105980105	0.08145536
## 6	8.415195e-05	0.6809652	0.008372793	0.31057785

Interpretation at a glance

Summary

Ordinal Logistic Regression (OLR)

This model was selected also because the response variable can be measure on an ordinal scale. We begin by Loading the packages.

```
require(foreign)
require(ggplot2)
require(MASS)

## Loading required package: MASS

require(Hmisc)

## Loading required package: Hmisc
## Loading required package: lattice
## Loading required package: survival
## Loading required package: Formula

##
## Attaching package: 'Hmisc'

## The following object is masked from 'package:pspearman':
##
##      spearman.test

## The following objects are masked from 'package:base':
##
##      format.pval, units

require(reshape2)
```

For building this model, we will be using the polr command to estimate an ordered logistic regression. Then, we'll specify Hess=TRUE to let the model output show the observed information matrix from optimization which is used to get standard errors.

Fit the Ordinal logistic regression model

```
m<-polr(df1$satisfaction ~ df1$freq_use + df1$role
        +df1$training_instructor_led + df1$training_web_based
        + df1$training_read+ df1$no_training+df1$training_effectiveness
        + df1$support_Gnet + df1$support_inapplication
        +df1$support_ref_doc + df1$support_SOP + df1$support_contacted
```

```

+df1$support_IT + df1$complete_without_help
+df1$easy_access_documents + df1$Gvault_efficiency
+df1$Gvault_improved,data=df1,Hess=TRUE)
summary(m)

## Call:
## polr(formula = df1$satisfaction ~ df1$freq_use + df1$role + df1$training_instructor_led +
##      df1$training_web_based + df1$training_read + df1$no_training +
##      df1$training_effectiveness + df1$support_Gnet + df1$support_inapplicat
ion +
##      df1$support_ref_doc + df1$support_SOP + df1$support_contacted +
##      df1$support_IT + df1$complete_without_help + df1$easy_access_documents
+
##      df1$Gvault_efficiency + df1$Gvault_improved, data = df1,
##      Hess = TRUE)
##
## Coefficients:
##
Value
## df1$freq_useAt least once a week
-0.061256
## df1$freq_useDaily
-0.225149
## df1$freq_useLess than once a month
-0.298138
## df1$roleDocument Control Group Member
-0.035346
## df1$roleDocument Steward for a functional area
0.839250
## df1$roleNot Sure
-0.710795
## df1$roleOwner / Author
0.232541
## df1$roleReviewer / Approver
0.149034
## df1$training_instructor_ledInstructor Led
-0.014088
## df1$training_web_basedWeb/Computer Based
-0.201767
## df1$training_readRead & Understood of Procedural Document(s)
0.233305
## df1$no_trainingI did not take training
-2.164934
## df1$training_effectivenessI did not take training
2.662338
## df1$training_effectivenessNot effective enough
0.418935
## df1$training_effectivenessVery effective
1.469944

```

```
## df1$support_GnetGNet
0.007038
## df1$support_inapplicationIn-Application (GVault)
0.672101
## df1$support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc) 0.349751
## df1$support_SOPSOPs and Work Instructions
0.112311
## df1$support_contactedContacted my Document Control or Training Group
-0.224774
## df1$support_ITIT Support / SPARC
0.062084
## df1$complete_without_helpMost of the time
-0.900815
## df1$complete_without_helpNever
0.499156
## df1$complete_without_helpSome of the time
-0.261270
## df1$easy_access_documentsYes
-0.162641
## df1$Gvault_efficiencyDecreased
0.925684
## df1$Gvault_efficiencyIncreased
0.813776
## df1$Gvault_efficiencyNo noticeable difference
0.107436
## df1$Gvault_improvedNo
1.889843
## df1$Gvault_improvedYes
0.539834
##
Std. Error
## df1$freq_useAt least once a week
0.3640
## df1$freq_useDaily
0.3642
## df1$freq_useLess than once a month
0.5118
## df1$roleDocument Control Group Member
0.5846
## df1$roleDocument Steward for a functional area
0.5561
## df1$roleNot Sure
0.6216
## df1$roleOwner / Author
0.2884
## df1$roleReviewer / Approver
0.2782
## df1$training_instructor_ledInstructor Led
0.2450
```

```

## df1$training_web_basedWeb/Computer Based
0.2269
## df1$training_readRead & Understood of Procedural Document(s)
0.2339
## df1$no_trainingI did not take training
1.3209
## df1$training_effectivenessI did not take training
1.3396
## df1$training_effectivenessNot effective enough
0.2972
## df1$training_effectivenessVery effective
0.2688
## df1$support_GnetGNet
0.2210
## df1$support_inapplicationIn-Application (GVault)
0.2336
## df1$support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc)
0.2145
## df1$support_SOPSOPs and Work Instructions
0.2152
## df1$support_contactedContacted my Document Control or Training Group
0.2209
## df1$support_ITIT Support / SPARC
0.3173
## df1$complete_without_helpMost of the time
0.2542
## df1$complete_without_helpNever
0.6184
## df1$complete_without_helpSome of the time
0.3708
## df1$easy_access_documentsYes
0.2574
## df1$Gvault_efficiencyDecreased
0.8537
## df1$Gvault_efficiencyIncreased
0.8234
## df1$Gvault_efficiencyNo noticeable difference
0.8297
## df1$Gvault_improvedNo
0.6701
## df1$Gvault_improvedYes
0.6258
##
t value
## df1$freq_useAt least once a week
-0.16828
## df1$freq_useDaily
-0.61814
## df1$freq_useLess than once a month
-0.58252

```

```
## df1$roleDocument Control Group Member
-0.06046
## df1$roleDocument Steward for a functional area
1.50921
## df1$roleNot Sure
-1.14345
## df1$roleOwner / Author
0.80632
## df1$roleReviewer / Approver
0.53578
## df1$training_instructor_ledInstructor Led
-0.05751
## df1$training_web_basedWeb/Computer Based
-0.88939
## df1$training_readRead & Understood of Procedural Document(s)
0.99730
## df1$no_trainingI did not take training
-1.63898
## df1$training_effectivenessI did not take training
1.98735
## df1$training_effectivenessNot effective enough
1.40961
## df1$training_effectivenessVery effective
5.46838
## df1$support_GnetGNet
0.03184
## df1$support_inapplicationIn-Application (GVault)
2.87713
## df1$support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc)
1.63043
## df1$support_SOPSOPs and Work Instructions
0.52185
## df1$support_contactedContacted my Document Control or Training Group
-1.01772
## df1$support_ITIT Support / SPARC
0.19564
## df1$complete_without_helpMost of the time
-3.54343
## df1$complete_without_helpNever
0.80717
## df1$complete_without_helpSome of the time
-0.70457
## df1$easy_access_documentsYes
-0.63187
## df1$Gvault_efficiencyDecreased
1.08428
## df1$Gvault_efficiencyIncreased
0.98825
## df1$Gvault_efficiencyNo noticeable difference
0.12949
```



```
## df1$Gvault_improvedNo
2.82023
## df1$Gvault_improvedYes
0.86269
##
## Intercepts:
##
## Value Std. Error t value
## Satisfied|Slightly Unsatisfied 1.6519 0.7826 2.1109
## Slightly Unsatisfied|Very Satisfied 2.4814 0.7885 3.1472
## Very Satisfied|Very Unsatisfied 4.7798 0.8193 5.8342
##
## Residual Deviance: 914.5326
## AIC: 980.5326
```

We see the usual regression output coefficient table including the value of each coefficient, standard errors, t values, estimates for the two intercepts, residual deviance and AIC. AIC is the information criteria. Lesser the better.

Model parameters

Now we'll calculate some essential metrics such as p-Value, CI, Odds ratio. The output displayed next are values: log odds(coefficients of estimation), t values are the t-distribution test statistic values, and finally the p-values are the probability of error.

```
ctable <- coef(summary(m))
p <- pnorm(abs(ctable[, "t value"]), lower.tail = FALSE) * 2
ctable <- cbind(ctable, "p value" = p)
ctable

##
Value
## df1$freq_useAt least once a week
-0.061255520
## df1$freq_useDaily
-0.225148789
## df1$freq_useLess than once a month
-0.298137738
## df1$roleDocument Control Group Member
-0.035346366
## df1$roleDocument Steward for a functional area
0.839250212
## df1$roleNot Sure
-0.710794769
## df1$roleOwner / Author
0.232540770
## df1$roleReviewer / Approver
0.149033738
## df1$training_instructor_ledInstructor Led
-0.014088132
## df1$training_web_basedWeb/Computer Based
```

```

-0.201766655
## df1$training_readRead & Understood of Procedural Document(s)
0.233305064
## df1$no_trainingI did not take training
-2.164933941
## df1$training_effectivenessI did not take training
2.662337561
## df1$training_effectivenessNot effective enough
0.418934925
## df1$training_effectivenessVery effective
1.469944319
## df1$support_GnetGNet
0.007037608
## df1$support_inapplicationIn-Application (GVault)
0.672101137
## df1$support_ref_docReference Document (User Manual, Reference Guide, Train
ing Material, etc) 0.349751351
## df1$support_SOPSOPs and Work Instructions
0.112310847
## df1$support_contactedContacted my Document Control or Training Group
-0.224773958
## df1$support_ITIT Support / SPARC
0.062083893
## df1$complete_without_helpMost of the time
-0.900814906
## df1$complete_without_helpNever
0.499156305
## df1$complete_without_helpSome of the time
-0.261270473
## df1$easy_access_documentsYes
-0.162640886
## df1$Gvault_efficiencyDecreased
0.925683533
## df1$Gvault_efficiencyIncreased
0.813775704
## df1$Gvault_efficiencyNo noticeable difference
0.107435707
## df1$Gvault_improvedNo
1.889843138
## df1$Gvault_improvedYes
0.539833742
## Satisfied|Slightly Unsatisfied
1.651903387
## Slightly Unsatisfied|Very Satisfied
2.481428832
## Very Satisfied|Very Unsatisfied
4.779807594
##
Std. Error
## df1$freq_useAt least once a week

```

0.3640076
df1\$freq_useDaily
0.3642379
df1\$freq_useLess than once a month
0.5118063
df1\$roleDocument Control Group Member
0.5846309
df1\$roleDocument Steward for a functional area
0.5560856
df1\$roleNot Sure
0.6216254
df1\$roleOwner / Author
0.2883987
df1\$roleReviewer / Approver
0.2781638
df1\$training_instructor_ledInstructor Led
0.2449576
df1\$training_web_basedWeb/Computer Based
0.2268604
df1\$training_readRead & Understood of Procedural Document(s)
0.2339372
df1\$no_trainingI did not take training
1.3209057
df1\$training_effectivenessI did not take training
1.3396388
df1\$training_effectivenessNot effective enough
0.2971996
df1\$training_effectivenessVery effective
0.2688082
df1\$support_GnetGNet
0.2210034
df1\$support_inapplicationIn-Application (GVault)
0.2336016
df1\$support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc) 0.2145142
df1\$support_SOPSOPs and Work Instructions
0.2152168
df1\$support_contactedContacted my Document Control or Training Group
0.2208596
df1\$support_ITIT Support / SPARC
0.3173358
df1\$complete_without_helpMost of the time
0.2542211
df1\$complete_without_helpNever
0.6184067
df1\$complete_without_helpSome of the time
0.3708206
df1\$easy_access_documentsYes
0.2573965
df1\$Gvault_efficiencyDecreased

```
0.8537290
## df1$Gvault_efficiencyIncreased
0.8234482
## df1$Gvault_efficiencyNo noticeable difference
0.8296784
## df1$Gvault_improvedNo
0.6701029
## df1$Gvault_improvedYes
0.6257589
## Satisfied|Slightly Unsatisfied
0.7825531
## Slightly Unsatisfied|Very Satisfied
0.7884581
## Very Satisfied|Very Unsatisfied
0.8192696
##
t value
## df1$freq_useAt least once a week
-0.16828087
## df1$freq_useDaily
-0.61813665
## df1$freq_useLess than once a month
-0.58252067
## df1$roleDocument Control Group Member
-0.06045929
## df1$roleDocument Steward for a functional area
1.50921053
## df1$roleNot Sure
-1.14344556
## df1$roleOwner / Author
0.80631711
## df1$roleReviewer / Approver
0.53577681
## df1$training_instructor_ledInstructor Led
-0.05751253
## df1$training_web_basedWeb/Computer Based
-0.88938675
## df1$training_readRead & Understood of Procedural Document(s)
0.99729791
## df1$no_trainingI did not take training
-1.63897685
## df1$training_effectivenessI did not take training
1.98735477
## df1$training_effectivenessNot effective enough
1.40960810
## df1$training_effectivenessVery effective
5.46837694
## df1$support_GnetGNet
0.03184388
## df1$support_inapplicationIn-Application (GVault)
```

```

2.87712521
## df1$support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc) 1.63043451
## df1$support_SOPSOPs and Work Instructions
0.52184971
## df1$support_contactedContacted my Document Control or Training Group
-1.01772325
## df1$support_ITIT Support / SPARC
0.19564098
## df1$complete_without_helpMost of the time
-3.54343092
## df1$complete_without_helpNever
0.80716509
## df1$complete_without_helpSome of the time
-0.70457384
## df1$easy_access_documentsYes
-0.63186911
## df1$Gvault_efficiencyDecreased
1.08428267
## df1$Gvault_efficiencyIncreased
0.98825372
## df1$Gvault_efficiencyNo noticeable difference
0.12949078
## df1$Gvault_improvedNo
2.82022827
## df1$Gvault_improvedYes
0.86268647
## Satisfied|Slightly Unsatisfied
2.11091543
## Slightly Unsatisfied|Very Satisfied
3.14719184
## Very Satisfied|Very Unsatisfied
5.83423013
##
p value
## df1$freq_useAt least once a week
8.663623e-01
## df1$freq_useDaily
5.364853e-01
## df1$freq_useLess than once a month
5.602160e-01
## df1$roleDocument Control Group Member
9.517898e-01
## df1$roleDocument Steward for a functional area
1.312450e-01
## df1$roleNot Sure
2.528536e-01
## df1$roleOwner / Author
4.200600e-01
## df1$roleReviewer / Approver

```

```

5.921128e-01
## df1$training_instructor_ledInstructor Led
9.541369e-01
## df1$training_web_basedWeb/Computer Based
3.737953e-01
## df1$training_readRead & Understood of Procedural Document(s)
3.186199e-01
## df1$no_trainingI did not take training
1.012181e-01
## df1$training_effectivenessI did not take training
4.688310e-02
## df1$training_effectivenessNot effective enough
1.586554e-01
## df1$training_effectivenessVery effective
4.541752e-08
## df1$support_GnetGNet
9.745965e-01
## df1$support_inapplicationIn-Application (GVault)
4.013163e-03
## df1$support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc) 1.030097e-01
## df1$support_SOPSOPs and Work Instructions
6.017750e-01
## df1$support_contactedContacted my Document Control or Training Group
3.088095e-01
## df1$support_ITIT Support / SPARC
8.448912e-01
## df1$complete_without_helpMost of the time
3.949568e-04
## df1$complete_without_helpNever
4.195714e-01
## df1$complete_without_helpSome of the time
4.810755e-01
## df1$easy_access_documentsYes
5.274724e-01
## df1$Gvault_efficiencyDecreased
2.782395e-01
## df1$Gvault_efficiencyIncreased
3.230284e-01
## df1$Gvault_efficiencyNo noticeable difference
8.969693e-01
## df1$Gvault_improvedNo
4.798950e-03
## df1$Gvault_improvedYes
3.883099e-01
## Satisfied|Slightly Unsatisfied
3.477958e-02
## Slightly Unsatisfied|Very Satisfied
1.648468e-03

```

```
## Very Satisfied|Very Unsatisfied  
5.403950e-09
```

Odds Ratios and their Confidence Intervals

```
ci <- confint(m)  
  
## Waiting for profiling to be done...  
  
exp(cbind(OR = coef(m), ci))  
  
##  
OR  
## df1$freq_useAt least once a week  
0.9405829  
## df1$freq_useDaily  
0.7983974  
## df1$freq_useLess than once a month  
0.7421991  
## df1$roleDocument Control Group Member  
0.9652710  
## df1$roleDocument Steward for a functional area  
2.3146308  
## df1$roleNot Sure  
0.4912536  
## df1$roleOwner / Author  
1.2618019  
## df1$roleReviewer / Approver  
1.1607121  
## df1$training_instructor_ledInstructor Led  
0.9860106  
## df1$training_web_basedWeb/Computer Based  
0.8172856  
## df1$training_readRead & Understood of Procedural Document(s)  
1.2627666  
## df1$no_trainingI did not take training  
0.1147575  
## df1$training_effectivenessI did not take training  
14.3297466  
## df1$training_effectivenessNot effective enough  
1.5203414  
## df1$training_effectivenessVery effective  
4.3489930  
## df1$support_GnetGNet  
1.0070624  
## df1$support_inapplicationIn-Application (GVault)  
1.9583478  
## df1$support_ref_docReference Document (User Manual, Reference Guide, Train  
ing Material, etc) 1.4187147  
## df1$support_SOPSOPs and Work Instructions  
1.1188606  
## df1$support_contactedContacted my Document Control or Training Group
```

```
0.7986967
## df1$support_ITIT Support / SPARC
1.0640516
## df1$complete_without_helpMost of the time
0.4062385
## df1$complete_without_helpNever
1.6473308
## df1$complete_without_helpSome of the time
0.7700726
## df1$easy_access_documentsYes
0.8498963
## df1$Gvault_efficiencyDecreased
2.5235926
## df1$Gvault_efficiencyIncreased
2.2564115
## df1$Gvault_efficiencyNo noticeable difference
1.1134193
## df1$Gvault_improvedNo
6.6183304
## df1$Gvault_improvedYes
1.7157216
##
2.5 %
## df1$freq_useAt least once a week
0.463984624
## df1$freq_useDaily
0.393674401
## df1$freq_useLess than once a month
0.266853560
## df1$roleDocument Control Group Member
0.298130157
## df1$roleDocument Steward for a functional area
0.756901241
## df1$roleNot Sure
0.131970798
## df1$roleOwner / Author
0.717716313
## df1$roleReviewer / Approver
0.673176065
## df1$training_instructor_ledInstructor Led
0.610563800
## df1$training_web_basedWeb/Computer Based
0.524022291
## df1$training_readRead & Understood of Procedural Document(s)
0.800739629
## df1$no_trainingI did not take training
0.004596766
## df1$training_effectivenessI did not take training
1.250406179
## df1$training_effectivenessNot effective enough
```


0.843980236
df1\$training_effectivenessVery effective
2.572731017
df1\$support_GnetGNet
0.650983679
df1\$support_inapplicationIn-Application (GVault)
1.238240827
df1\$support_ref_docReference Document (User Manual, Reference Guide, Training Material, etc) 0.932364218
df1\$support_SOPSOPs and Work Instructions
0.733004716
df1\$support_contactedContacted my Document Control or Training Group
0.517337265
df1\$support_ITIT Support / SPARC
0.564939050
df1\$complete_without_helpMost of the time
0.246551259
df1\$complete_without_helpNever
0.473766898
df1\$complete_without_helpSome of the time
0.370922492
df1\$easy_access_documentsYes
0.513532685
df1\$Gvault_efficiencyDecreased
0.479579095
df1\$Gvault_efficiencyIncreased
0.456763606
df1\$Gvault_efficiencyNo noticeable difference
0.221095979
df1\$Gvault_improvedNo
1.896190043
df1\$Gvault_improvedYes
0.537459748

97.5 %
df1\$freq_useAt least once a week
1.9416099
df1\$freq_useDaily
1.6491686
df1\$freq_useLess than once a month
2.0030414
df1\$roleDocument Control Group Member
2.9884884
df1\$roleDocument Steward for a functional area
6.8122375
df1\$roleNot Sure
1.5668129
df1\$roleOwner / Author
2.2266164
df1\$roleReviewer / Approver

```

2.0062932
## df1$training_instructor_ledInstructor Led
1.5969506
## df1$training_web_basedWeb/Computer Based
1.2766539
## df1$training_readRead & Understood of Procedural Document(s)
2.0058319
## df1$no_trainingI did not take training
1.2460146
## df1$training_effectivenessI did not take training
363.9223923
## df1$training_effectivenessNot effective enough
2.7125669
## df1$training_effectivenessVery effective
7.3915420
## df1$support_GnetGNet
1.5498643
## df1$support_inapplicationIn-Application (GVault)
3.0976786
## df1$support_ref_docReference Document (User Manual, Reference Guide, Train
ing Material, etc) 2.1638272
## df1$support_SOPSOPs and Work Instructions
1.7057883
## df1$support_contactedContacted my Document Control or Training Group
1.2308936
## df1$support_ITIT Support / SPARC
1.9673261
## df1$complete_without_helpMost of the time
0.6688372
## df1$complete_without_helpNever
5.4780282
## df1$complete_without_helpSome of the time
1.5909998
## df1$easy_access_documentsYes
1.4113909
## df1$Gvault_efficiencyDecreased
14.4853373
## df1$Gvault_efficiencyIncreased
12.3340562
## df1$Gvault_efficiencyNo noticeable difference
6.1067697
## df1$Gvault_improvedNo
27.2439790
## df1$Gvault_improvedYes
6.5299143

```

Interpretation at a glance: The effect of one predictor on the odds/likelihood of satisfaction

When Gvault is used atleast once a week versus atleast once a month, the odds of satisfaction being very satisfied are 0.9 greater than the odds of either “satisfied” , “slightly

unsatisfied” or “very unsatisfied” combined. NOTE: The reference level selected was “atleast once a month”

When the training is very effective versus effective training, the odds of a user being very satisfied are 4.38 greater than the odds of being either “satisfied” , “slightly unsatisfied” or “very unsatisfied” combined. NOTE: The reference level selected was “effective”

Summary

Most of the predictor variables were not statistically significant in predicting the level of satisfaction with the overall experience of GVault QDMS. Training effectiveness (p-value=0.04688), Support for In application(p-value=0.00401), complete work without(p-value=0.000395) help,and whether Gvault improved features(p-value=0.000479) were the variables that significantly affected satisfaction of a user.