part1_markdown

This pdf contains more in detail information about the data found on in the book and the verizon data set. please scroll through it and read the comments for better understanding

```
options( warn = -1 )
library(verisr)
library(ggplot2)
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
```

```
jsondir <- '~/Desktop/ch07/data/vcdb/'

vcdb_orginal <- json2veris(jsondir)
```

```
## [1] "veris dimensions"
## [1] 1643 1890
##       discovery_method.Ext - unrelated party
##                                         1838
##      discovery_method.Int - reported by user
##                                         1839
##           action.misuse.variety.Embezzlement
##                                         1840
##              discovery_method.Int - IT audit
##                                         1841
```

```
## attribute.integrity.variety.Misappropriation
##                                         1842
##     action.physical.vector.Bypassed controls
##                                         1843
##     action.physical.vector.Disabled controls
##                                         1844
## named integer(0)
```

```
summary(vcdb_orginal)
```

```
## 1643 incidents in this object.

##       actor      action           asset               attribute
##  External:955   3   :398   Kiosk/Term: 17   Availability   : 614
##  Internal:535   4   :216   Media     :520   Confidentiality:1604
##  Partner :100   5   :508   Network   :  8   Integrity      : 165
##  Unknown : 85   6   : 31   Person    : 33
##                 7   :416   Server    :639
##                 8   : 42   Unknown   : 80
##                            User Dev  :407
##
```

```
newjsondir <- '~/Desktop/VCDB-master/data/json/'

vcdb_verizon <- json2veris(newjsondir)
```

```
## [1] "veris dimensions"
## [1] 5711 1879
## named integer(0)
## named integer(0)
```

```
summary(vcdb_verizon)
```

```
## 5711 incidents in this object.

##       actor               action           asset
```

```
##  External:2902   Environmental:   7   Kiosk/Term: 144
##  Internal:2490   Error        :1674   Media     :1662
##  Partner : 234   Hacking      :1614   Network   : 135
##  Unknown : 183   Malware      : 428   Person    : 377
##                  Misuse       :1022   Server    :2490
##                  Physical     :1104   Unknown   : 524
##                  Social       : 348   User Dev  :1197
##                  Unknown      : 203
##
##            attribute
##  Availability   :1894
##  Confidentiality:5230
##  Integrity      :1231
##
##
##
##
##
##
```

```
actors <- getenum(vcdb_orginal, "actor")

print(actors)
```

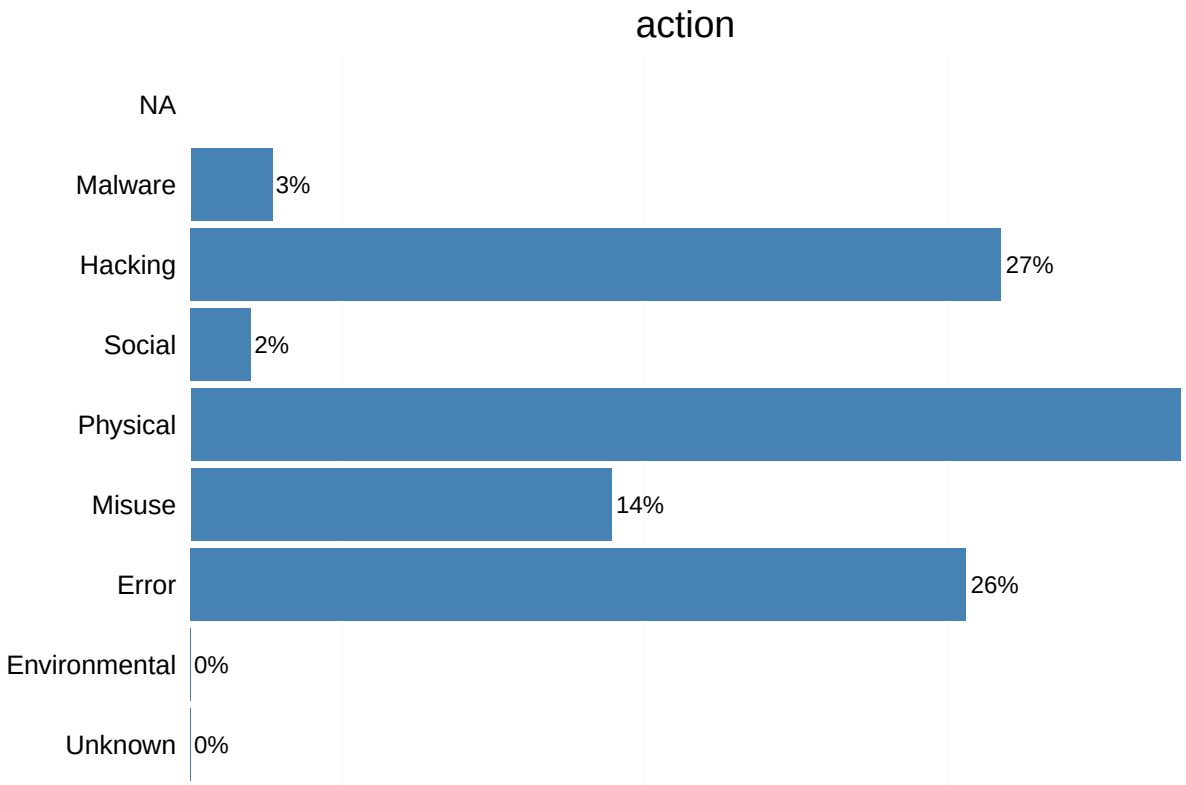
```
##        enum   x    n       freq
## 1: External 955 1640 0.58231707
## 2: Internal 535 1640 0.32621951
## 3:  Partner 100 1640 0.06097561
## 4:  Unknown  85 1640 0.05182927
```

```
actors2 <- getenum(vcdb_verizon, "actor")

print(actors2)
```

```
##        enum    x    n       freq
## 1: External 2902 5711 0.50814218
## 2: Internal 2490 5711 0.43600070
## 3:  Partner  234 5711 0.04097356
```

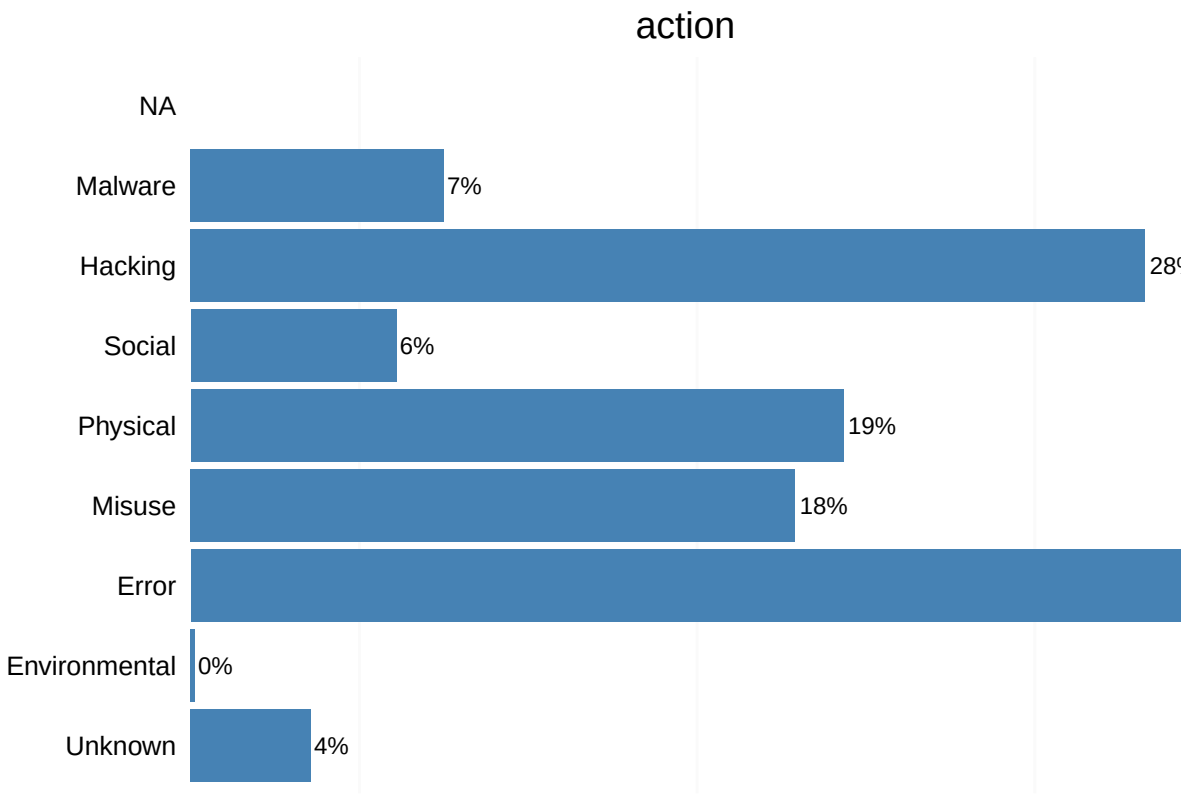
```
## 4:  Unknown  183 5711 0.03204342
```

```
verisplot <- function(vcdb_orginal, field) {
  localdf <- getenum(vcdb_orginal, field, add.freq=T)
  localdf <- localdf[c(1:15), ]
  localdf$lab <- paste(round(localdf$freq*100, 0), "%", sep="")
  gg <- ggplot(localdf, aes(x=enum, y=freq, label=lab))
  gg <- gg + geom_bar(stat="identity", fill="steelblue")
  gg <- gg + geom_text(hjust=-0.1, size=3)
  gg <- gg + coord_flip() + ggtitle(field)
  gg <- gg + xlab("") + ylab("") + theme_bw()
  gg <- gg + scale_y_continuous(expand=c(0,0),
                                limits=c(0, max(localdf$freq)*1.1))
  gg <- gg + theme(panel.grid.major = element_blank(),
                   panel.border = element_blank(),
                   axis.text.x = element_blank(),
                   axis.ticks = element_blank())
}

print (verisplot(vcdb_orginal, "action"))
```

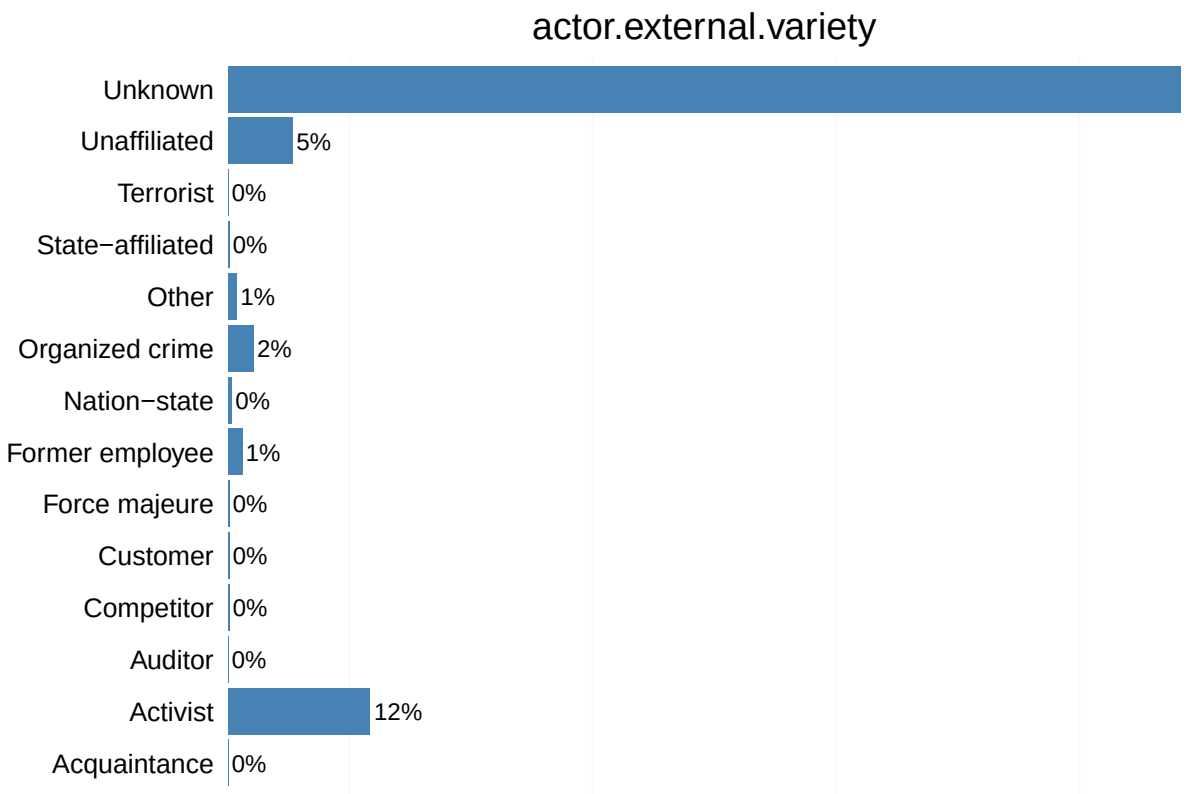



```
verisplot2 <- function(vcdb_verizon, field) {
  localdf2 <- getenum(vcdb_verizon, field, add.freq=T)
  localdf2 <- localdf2[c(1:15), ]
  localdf2$lab <- paste(round(localdf2$freq*100, 0), "%", sep="")
  gg2 <- ggplot(localdf2, aes(x=enum, y=freq, label=lab))
  gg2 <- gg2 + geom_bar(stat="identity", fill="steelblue")
  gg2 <- gg2 + geom_text(hjust=-0.1, size=3)
  gg2 <- gg2 + coord_flip() + ggtitle(field)
  gg2 <- gg2 + xlab("") + ylab("") + theme_bw()
  gg2 <- gg2 + scale_y_continuous(expand=c(0,0),
                                  limits=c(0, max(localdf2$freq)*1.1))
  gg2 <- gg2 + theme(panel.grid.major = element_blank(),
                     panel.border = element_blank(),
```

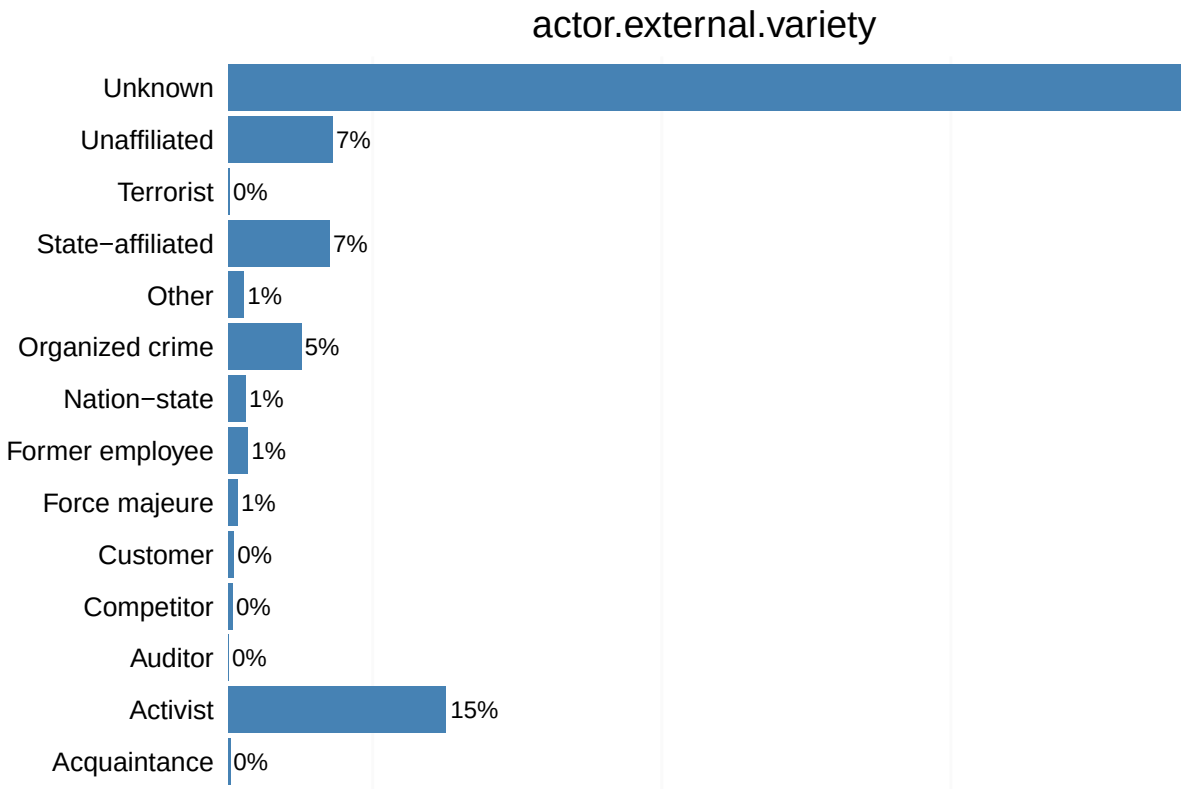
```
                    axis.text.x = element_blank(),
                    axis.ticks = element_blank())
}
print (verisplot2(vcdb_verizon, "action"))
```



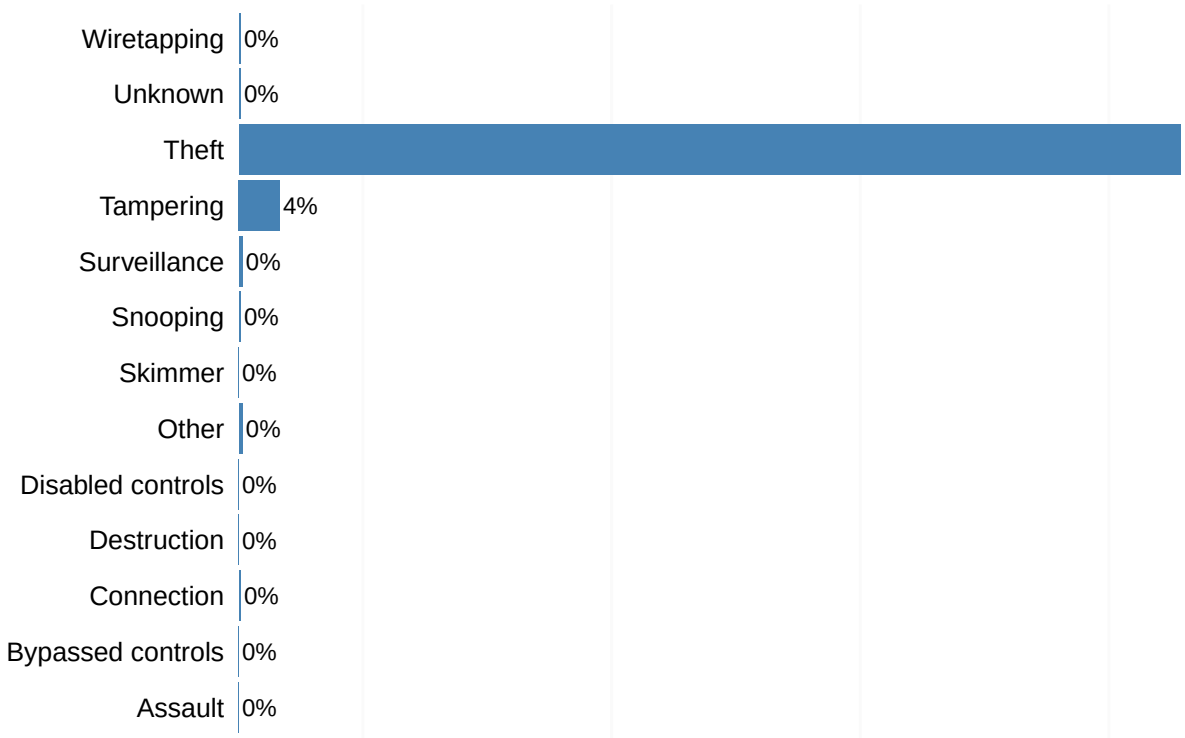

```
#interesting findings:
#we can see that the number of malware and hacking has increased what the book has provides and what verizon
#provides us. But why is this? I personally think that the technology has created a bigger infrastructure which has
#now created another source for income for criminal; regadless there is still a huge number of physical theft and
#that will slowly change to more hacking and malware issues since we can now steal information and sell without
#risking to show our own identity.

print(verisplot(vcdb_orginal, "actor.external.variety"))
```



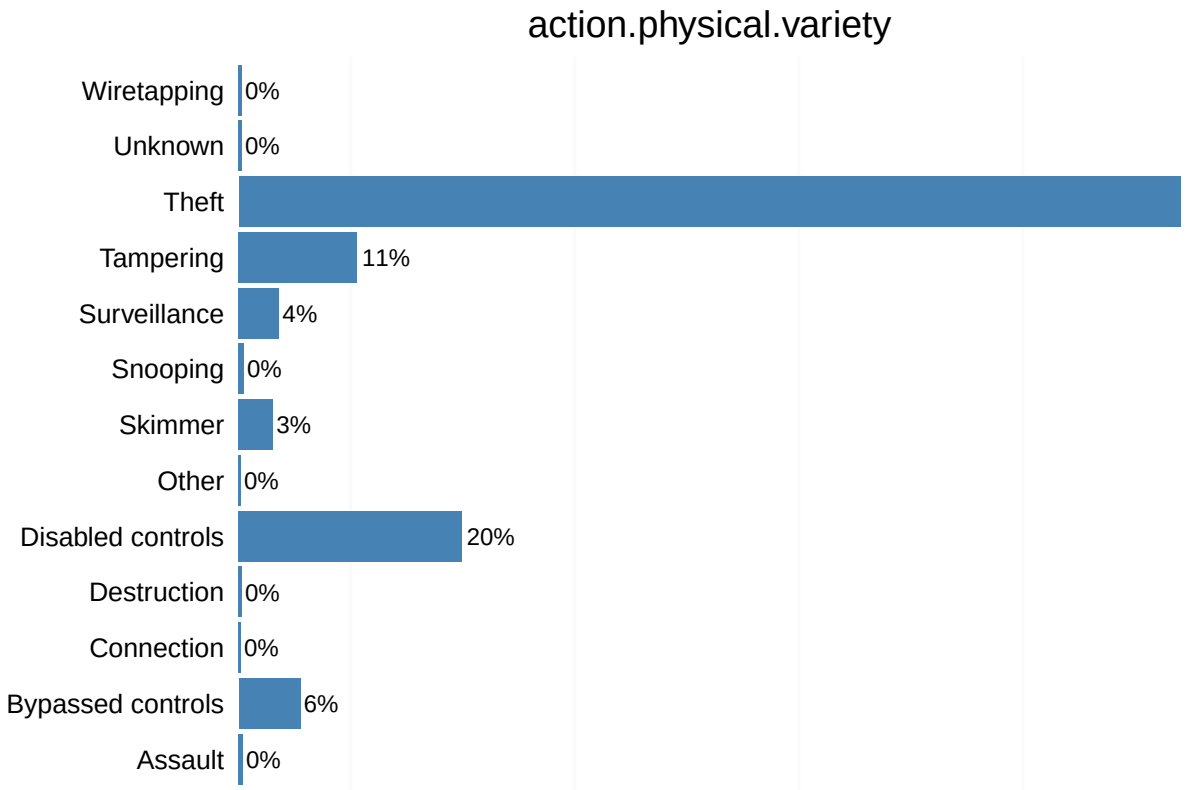

```
print(verisplot2(vcdb_verizon, "actor.external.variety"))
```



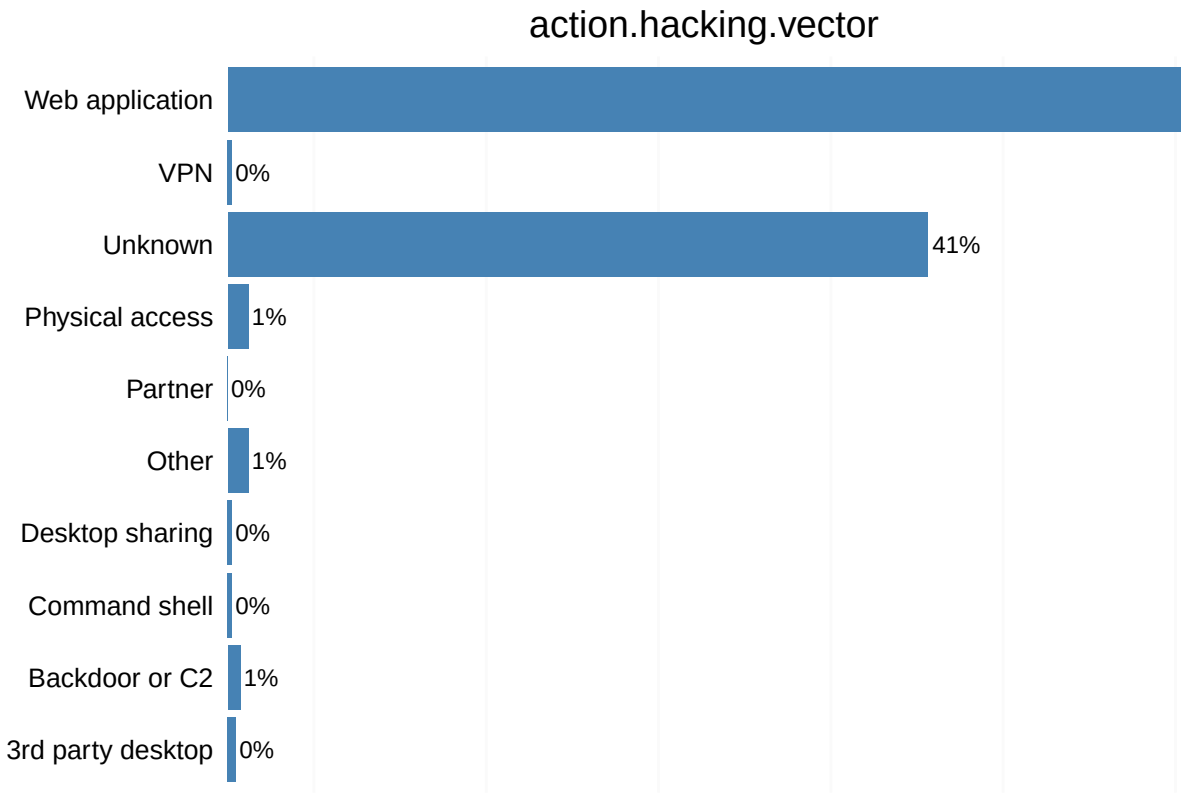

```
#interesting findings on external variety
#It is not so long ago that we had attacks on our countries these came in physcial form but we see slowly change in
#this also. We see that groups such as 'Unaffiliated, Terrorist, Organized crime, Nation???state, Former employee,
#Force majeure' increased in external attacks and while these were at 0% during the older data set!

print(verisplot(vcdb_orginal, "action.physical.variety"))
```



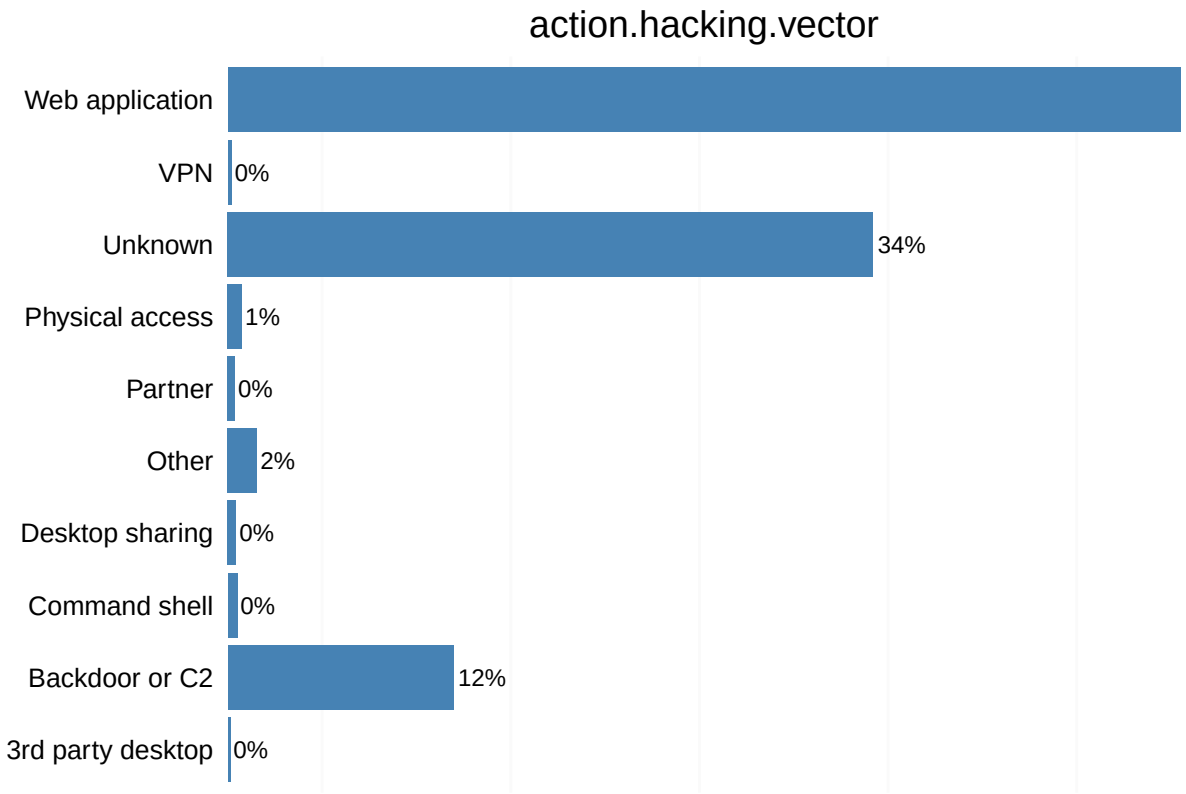

```
print(verisplot2(vcdb_verizon, "action.physical.variety"))
```



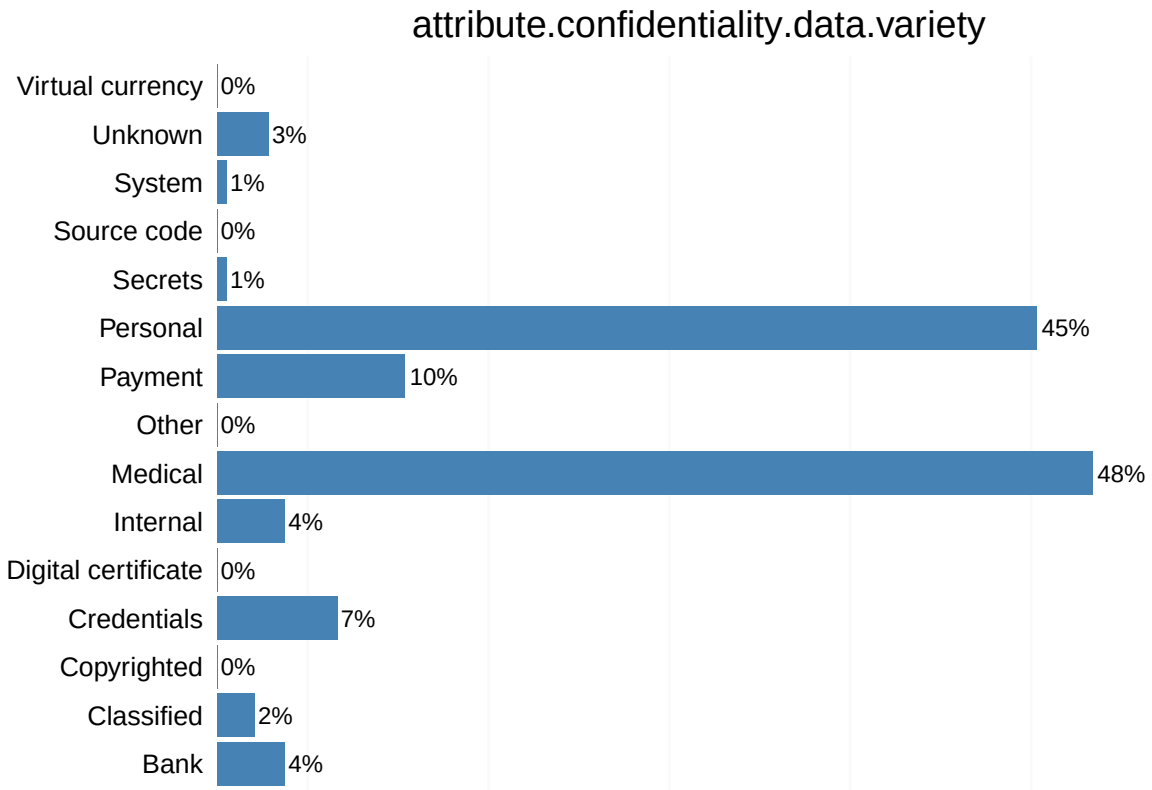

```
#interesting findings on physical variety
#Theft is still number one but the following methods have increased from 0%: 'Tampering, Surveillance, Skimmer,
#Disabled controls, Bypassed controls, Assault' why tho? is the Internet of Thing creating a bigger problom that we
#can handle? I believe that the information that is provided by Verizon to us is showing prove that the Internet of
#Thing is increasing our risk to attacks while it was only physical we can see many other forms growing.

print(verisplot(vcdb_orginal, "action.hacking.vector"))
```



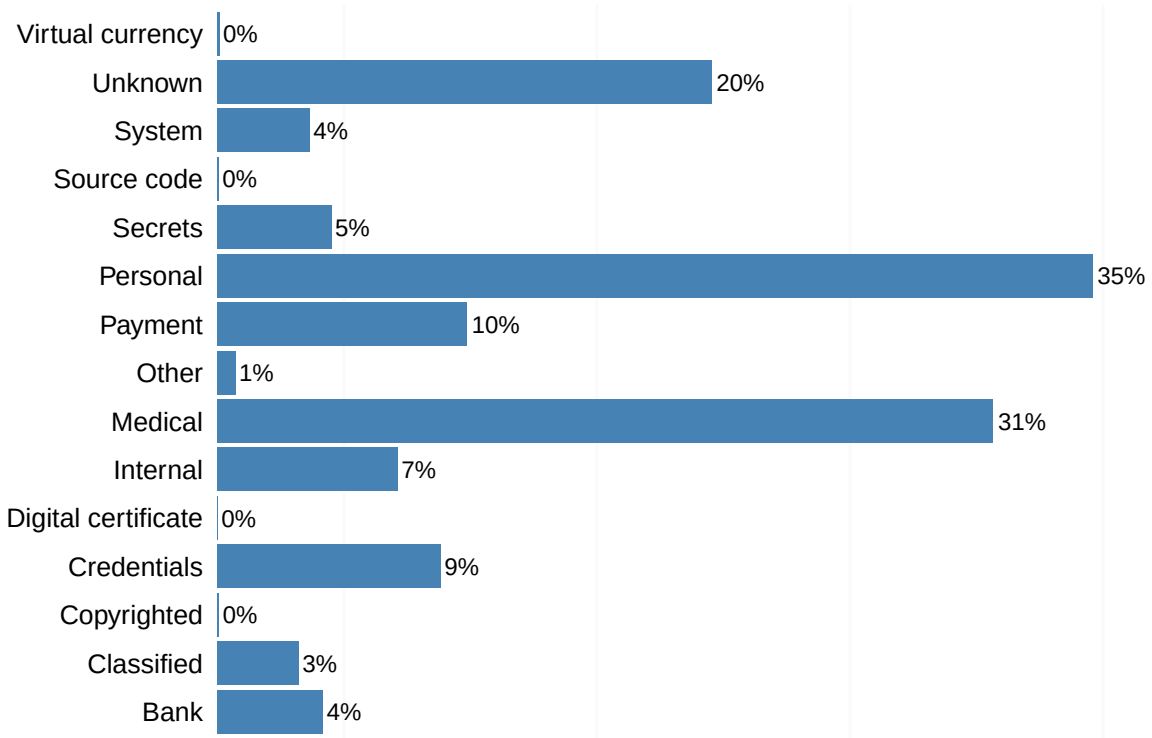

```
print(verisplot2(vcdb_verizon, "action.hacking.vector"))
```



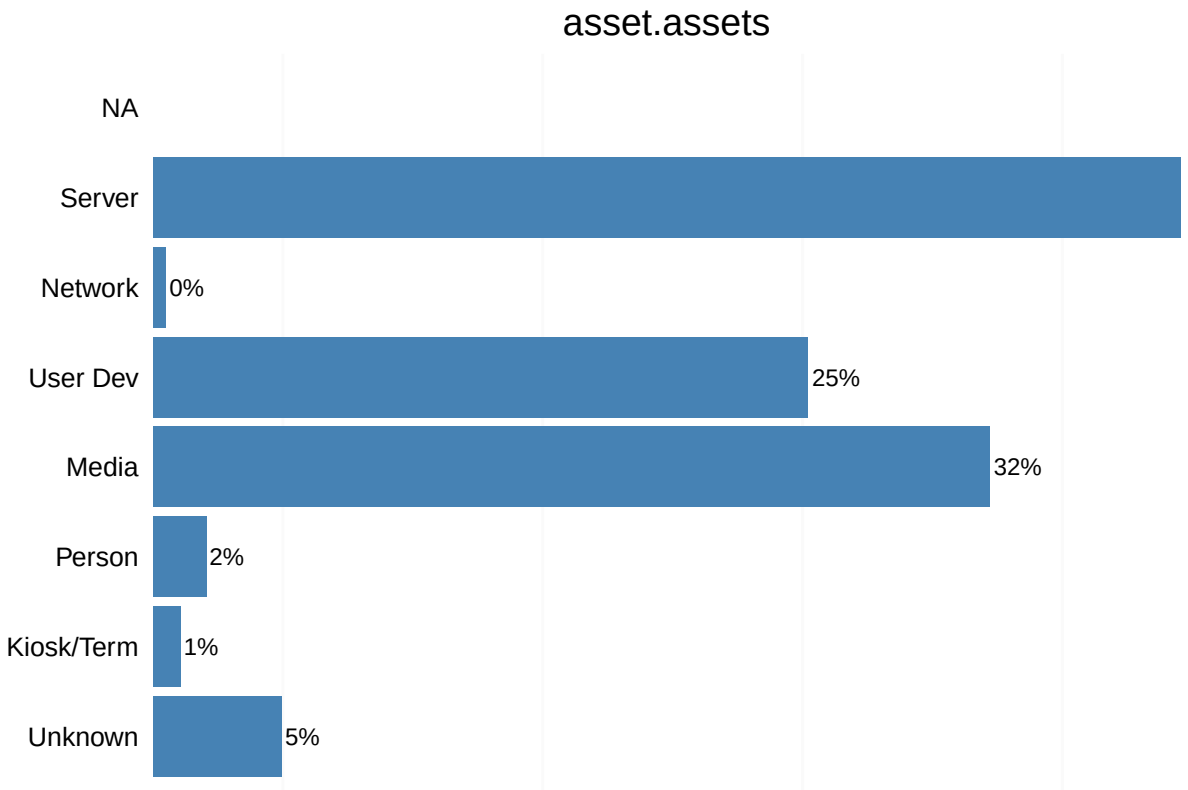

```
#interesting findings on physical
#I dont think that anything has changed in the hacking society it is still an elite group which has his own way of #surviving.

print(verisplot(vcdb_orginal, "attribute.confidentiality.data.variety"))
```



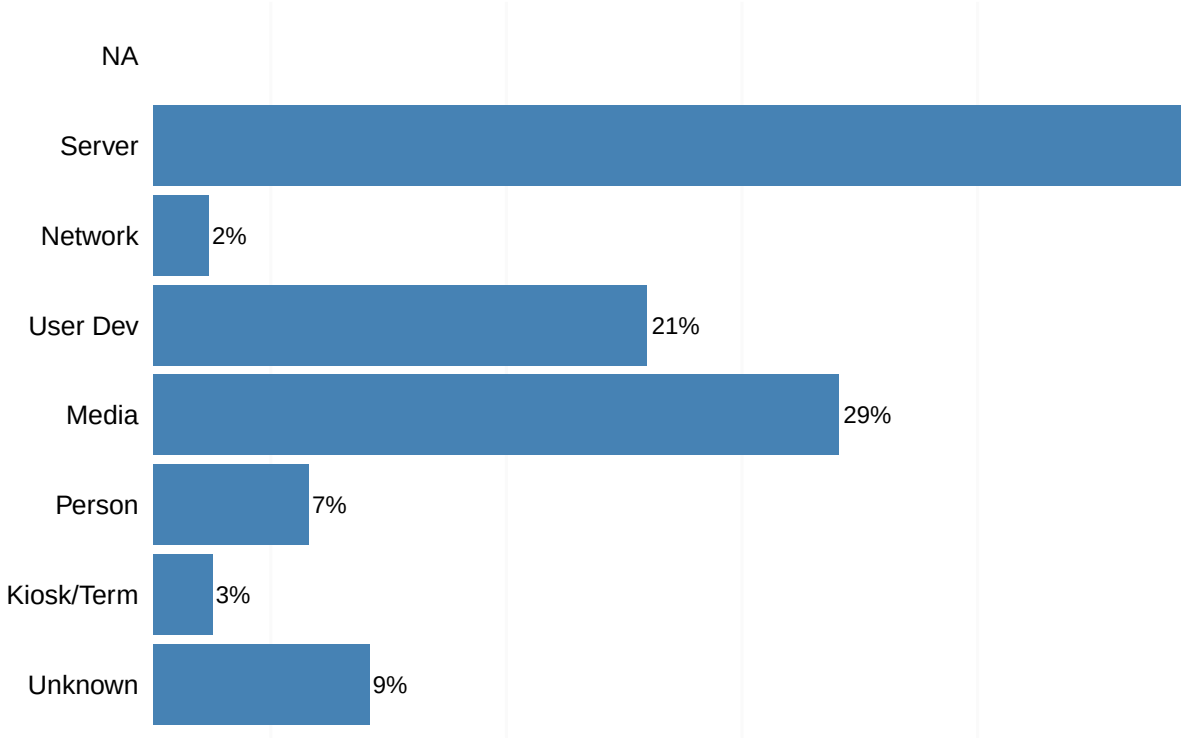

```
print(verisplot2(vcdb_verizon, "attribute.confidentiality.data.variety"))
```




```
#interesting findings on data variety
#More data means? More risk of loss the lesser we have out there the better we can see that their is a huge portion
#unknown 20%. The rest is almost identical thus I can conclude that the data has not much changed but we got bigger
#and new application might have created different kind of data which is not logged yet such as Tor

print(verisplot(vcdb_orginal, "asset.assets"))
```




```
print(verisplot2(vcdb_verizon, "asset.assets"))
```



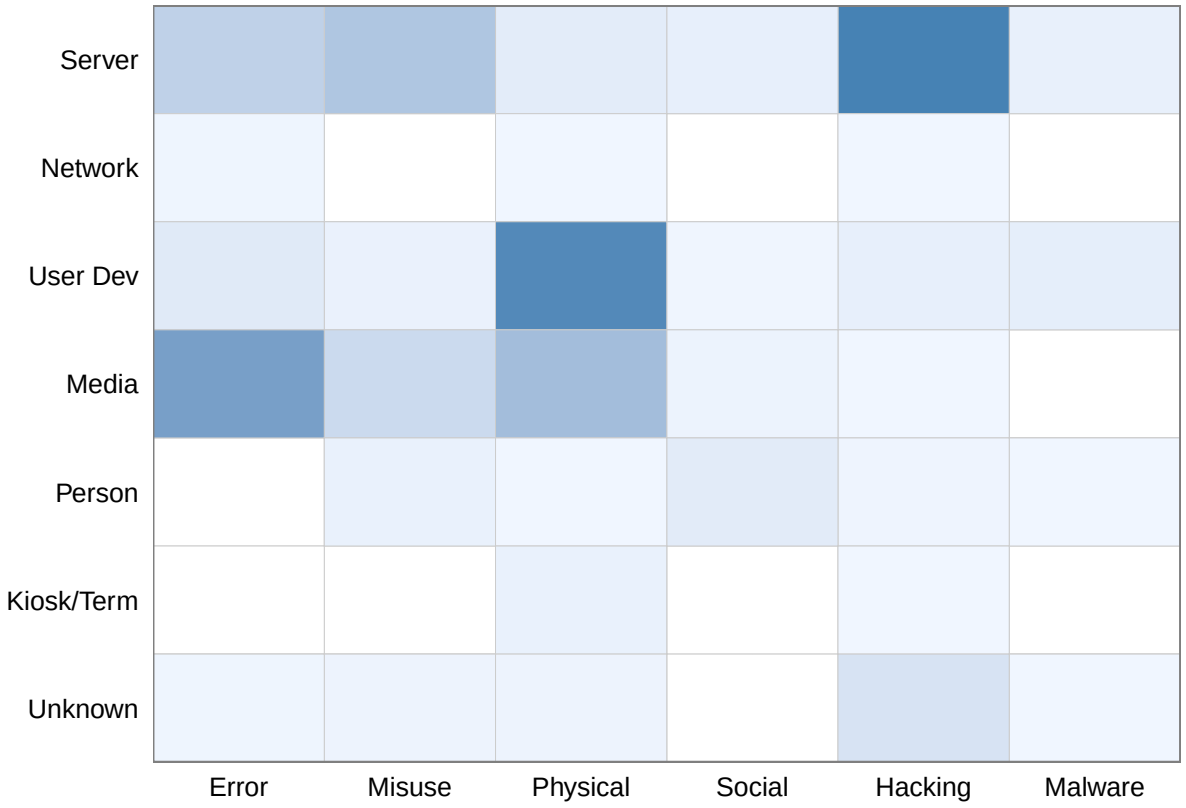

```
a2 <- getenum(vcdb_orginal, enum="action", primary="asset.assets", add.freq=T)
a2
```

```
##              enum      enum1   x    n         freq
##  1:       Malware     Server  18 1630 0.0110429448
##  2:       Hacking     Server 339 1630 0.2079754601
##  3:        Social     Server  20 1630 0.0122699387
##  4:      Physical     Server  29 1630 0.0177914110
##  5:        Misuse     Server 137 1630 0.0840490798
##  6:         Error     Server 104 1630 0.0638036810
##  7: Environmental     Server   0 1630 0.0000000000
##  8:       Unknown     Server   0 1630 0.0000000000
##  9:       Malware    Network   0 1630 0.0000000000
```

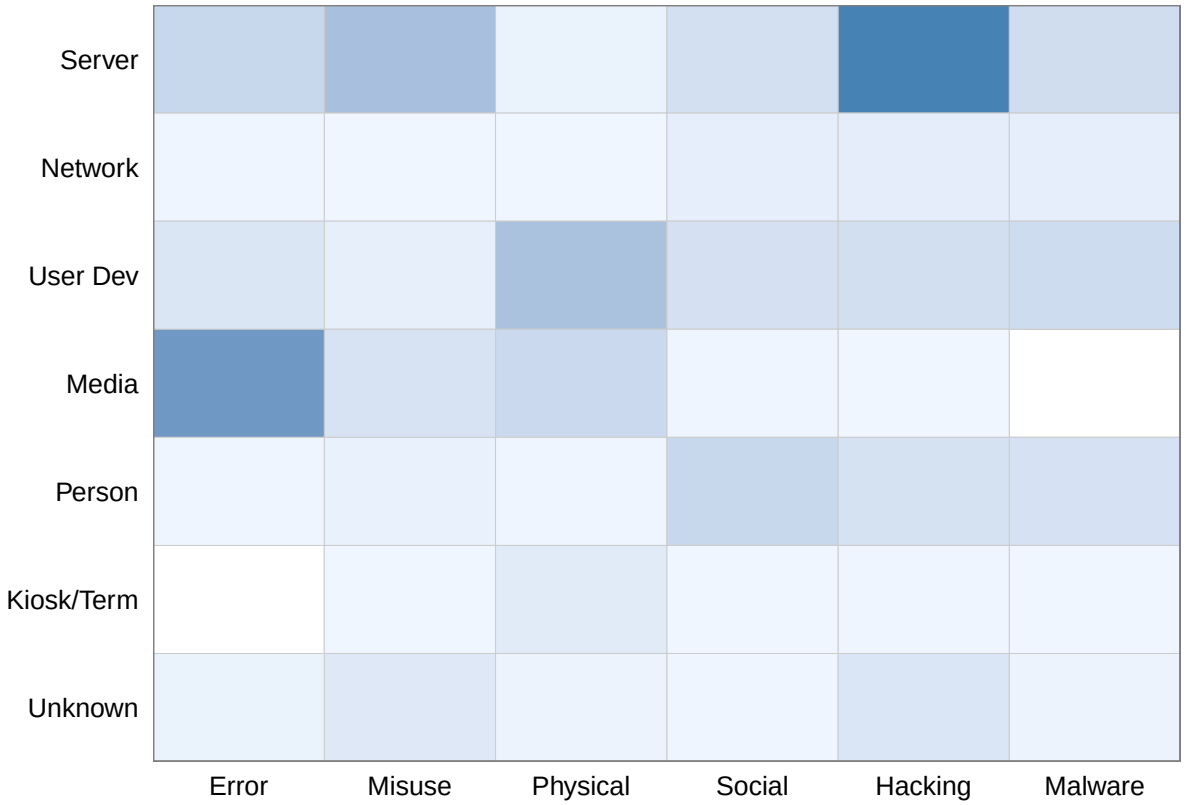
```
## 10:       Hacking    Network   2 1630 0.0012269939
## 11:        Social    Network   0 1630 0.0000000000
## 12:      Physical    Network   1 1630 0.0006134969
## 13:        Misuse    Network   0 1630 0.0000000000
## 14:         Error    Network   5 1630 0.0030674847
## 15: Environmental    Network   0 1630 0.0000000000
## 16:       Unknown    Network   0 1630 0.0000000000
## 17:       Malware   User Dev  23 1630 0.0141104294
## 18:       Hacking   User Dev  20 1630 0.0122699387
## 19:        Social   User Dev   4 1630 0.0024539877
## 20:      Physical   User Dev 317 1630 0.1944785276
## 21:        Misuse   User Dev  14 1630 0.0085889571
## 22:         Error   User Dev  35 1630 0.0214723926
## 23: Environmental   User Dev   0 1630 0.0000000000
## 24:       Unknown   User Dev   0 1630 0.0000000000
## 25:       Malware      Media   0 1630 0.0000000000
## 26:       Hacking      Media   2 1630 0.0012269939
## 27:        Social      Media  10 1630 0.0061349693
## 28:      Physical      Media 163 1630 0.1000000000
## 29:        Misuse      Media  78 1630 0.0478527607
## 30:         Error      Media 250 1630 0.1533742331
## 31: Environmental      Media   0 1630 0.0000000000
## 32:       Unknown      Media   0 1630 0.0000000000
## 33:       Malware     Person   1 1630 0.0006134969
## 34:       Hacking     Person   6 1630 0.0036809816
## 35:        Social     Person  31 1630 0.0190184049
## 36:      Physical     Person   2 1630 0.0012269939
## 37:        Misuse     Person  15 1630 0.0092024540
## 38:         Error     Person   0 1630 0.0000000000
## 39: Environmental     Person   0 1630 0.0000000000
## 40:       Unknown     Person   0 1630 0.0000000000
## 41:       Malware Kiosk/Term   0 1630 0.0000000000
## 42:       Hacking Kiosk/Term   1 1630 0.0006134969
## 43:        Social Kiosk/Term   0 1630 0.0000000000
## 44:      Physical Kiosk/Term  16 1630 0.0098159509
## 45:        Misuse Kiosk/Term   0 1630 0.0000000000
## 46:         Error Kiosk/Term   0 1630 0.0000000000
## 47: Environmental Kiosk/Term   0 1630 0.0000000000
## 48:       Unknown Kiosk/Term   0 1630 0.0000000000
```

```
## 49:       Malware    Unknown   1 1630 0.0006134969
## 50:       Hacking    Unknown  53 1630 0.0325153374
## 51:        Social    Unknown   0 1630 0.0000000000
## 52:      Physical    Unknown   8 1630 0.0049079755
## 53:        Misuse    Unknown   8 1630 0.0049079755
## 54:         Error    Unknown   5 1630 0.0030674847
## 55: Environmental    Unknown   0 1630 0.0000000000
## 56:       Unknown    Unknown   0 1630 0.0000000000
##              enum      enum1   x    n         freq
```

```
a2 <- a2[which(a2$enum!="Environmental" & a2$enum!="Unknown"), ]
slim.a2 <- a2[which(a2$x!=0), ]
gg <- ggplot(a2, aes(x=enum, y=enum1, fill=freq))
gg <- gg + geom_tile(fill="white", color="gray80")
gg <- gg + geom_tile(data=slim.a2, color="gray80")
gg <- gg + scale_fill_gradient(low = "#F0F6FF",
                               high = "#4682B4", guide=F)
gg <- gg + xlab("") + ylab("") + theme_bw()
gg <- gg + scale_x_discrete(expand=c(0,0))
gg <- gg + scale_y_discrete(expand=c(0,0))
gg <- gg + theme(axis.ticks = element_blank())
print(gg)
```




```
a22 <- getenum(vcdb_verizon, enum="action", primary="asset.assets", add.freq=T)
a22 <- a22[which(a22$enum!="Environmental" & a22$enum!="Unknown"), ]
slim.a22 <- a22[which(a22$x!=0), ]
gg <- ggplot(a22, aes(x=enum, y=enum1, fill=freq))
gg <- gg + geom_tile(fill="white", color="gray80")
gg <- gg + geom_tile(data=slim.a22, color="gray80")
gg <- gg + scale_fill_gradient(low = "#F0F6FF",
                               high = "#4682B4", guide=F)
gg <- gg + xlab("") + ylab("") + theme_bw()
gg <- gg + scale_x_discrete(expand=c(0,0))
gg <- gg + scale_y_discrete(expand=c(0,0))
gg <- gg + theme(axis.ticks = element_blank())
print(gg)
```


Server
Network
User Dev
Media
Person
Kiosk/Term
Unknown
Error
Misuse
Physical
Social
Hacking
Malware