In [1]:

```
# This R environment comes with many helpful analytics packages installed
# It is defined by the kaggle/rstats Docker image: https://github.com/kaggle/docker-rstat
s
# For example, here's a helpful package to load

library(tidyverse) # metapackage of all tidyverse packages

# Input data files are available in the read-only "../input/" directory
# For example, running this (by clicking run or pressing Shift+Enter) will list all files
under the input directory

list.files(path = "../input")

# You can write up to 20GB to the current directory (/kaggle/working/) that gets preserve
d as output when you create a version using "Save & Run All"
# You can also write temporary files to /kaggle/temp/, but they won't be saved outside of
the current session
```

```
── Attaching packages ─────────────────────────────── tidyverse 1.3.1 ──

✔ ggplot2 3.3.4     ✔ purrr   0.3.4
✔ tibble  3.1.2     ✔ dplyr   1.0.7
✔ tidyr   1.1.3     ✔ stringr 1.4.0
✔ readr   1.4.0     ✔ forcats 0.5.1
── Conflicts ──────────────────────────────── tidyverse_conflicts() ──
✖ dplyr::filter() masks stats::filter()
✖ dplyr::lag()    masks stats::lag()
```

'crypto-coin-infos'

In [3]:

```
library(readxl)
```

In [4]:

```
cmd <- read_excel("../input/crypto-coin-infos/cmd_final.xlsx")
pod <- read_excel("../input/crypto-coin-infos/pod_final.xlsx")
```

In [5]:

```
str(cmd)
```

```
tibble [7,459 × 59] (S3: tbl_df/tbl/data.frame)
 $ id                                : chr [1:7459] "bitcoin" "01coin" "0-5
x-long-algorand-token" "0-5x-long-altcoin-index-token" ...
 $ symbol                            : chr [1:7459] "btc" "zoc" "algohalf"
"althalf" ...
 $ name                              : chr [1:7459] "Bitcoin" "01coin" "0.5
X Long Algorand Token" "0.5X Long Altcoin Index Token" ...
 $ asset_platform_id                 : chr [1:7459] NA NA "ethereum" "ether
eum" ...
 $ block_time_in_minutes             : num [1:7459] 10 0 0 0 0 0 0 0 0 0 ..
.
 $ hashing_algorithm                 : chr [1:7459] "SHA-256" "NeoScrypt" N
A NA ...
 $ categories                        : chr [1:7459] "['Cryptocurrency']" "[
'Masternodes']" "[]" "[]" ...
 $ country_origin                    : chr [1:7459] NA NA NA NA ...
 $ genesis_date                      : chr [1:7459] "2009-01-03" NA NA NA .
..
 $ sentiment_votes_up_percentage     : num [1:7459] 55.4 NA NA NA NA NA NA N
A NA NA ...
 $ sentiment_votes_down_percentage   : num [1:7459] 44.6 NA NA NA NA NA NA N
A NA NA ...
```

```
 $ market_cap_rank                           : num [1:7459] 1 2588 NA NA NA ...
 $ coingecko_rank                            : num [1:7459] 2 990 6752 7230 6838 ..
.
 $ coingecko_score                           : num [1:7459] 80.479 21.938 0.2 0.062
0.2 ...
 $ liquidity_score                           : num [1:7459] 100.39 1 1 0.31 1 ...
 $ ico_data                                  : chr [1:7459] NA NA NA NA ...
 $ md_current_price                          : chr [1:7459] "38362" "0.00267148" "1
4844.59" "18454.75" ...
 $ md_total_value_locked                     : num [1:7459] NA NA NA NA NA NA NA NA
NA NA ...
 $ md_mcap_to_tvl_ratio                      : num [1:7459] NA NA NA NA NA NA NA NA
NA NA ...
 $ md_fdv_to_tvl_ratio                       : chr [1:7459] NA NA NA NA ...
 $ md_roi                                    : chr [1:7459] NA NA NA NA ...
 $ md_ath                                    : chr [1:7459] "64805" "0.03418169" "2
0123" "24262" ...
 $ md_ath_change_percentage                  : num [1:7459] -40.8 -92.2 -26.2 -23.9
-29.6 ...
 $ md_ath_date                               : chr [1:7459] "2021-04-14T11:54:46.76
3Z" "2018-10-10T17:27:38.034Z" "2021-02-13T05:56:26.817Z" "2021-05-15T00:11:58.556Z" ...
 $ md_atl                                    : chr [1:7459] "67.81" "0.00070641" "7
222.78" "7519.66" ...
 $ md_atl_change_percentage                  : num [1:7459] 56474 278 106 145 104 ..
.
 $ md_atl_date                               : chr [1:7459] "2013-07-06T00:00:00.00
0Z" "2020-03-16T10:22:30.944Z" "2020-11-04T21:58:23.744Z" "2020-11-04T21:58:06.513Z" ...
 $ md_market_cap                             : chr [1:7459] "718732681723" "28442"
"0" "0" ...
 $ md_market_cap_rank                        : num [1:7459] 1 2588 NA NA NA ...
 $ md_fully_diluted_valuation                : chr [1:7459] "806542068976" "{}" "{}
" "{}" ...
 $ md_total_volume                           : chr [1:7459] "80381645199" "12269.7"
"99995" "35136" ...
 $ md_high_24h                               : chr [1:7459] "39071" "0.00280229" "1
5369.99" "18897.43" ...
 $ md_low_24h                                : chr [1:7459] "34387" "0.00163751" "1
4898.51" "18454.75" ...
 $ md_price_change_24h                       : num [1:7459] 8.33e+02 8.11e-04 -4.22
e+02 -3.58e+02 -3.72e+02 ...
 $ md_price_change_percentage_24h            : num [1:7459] 2.22 43.62 -2.76 -1.9 -
2.88 ...
 $ md_price_change_percentage_7d             : num [1:7459] -23.1 21.5 -17.9 -23.8
-27.2 ...
 $ md_price_change_percentage_14d            : num [1:7459] -33.1 -13.6 -21.5 -22.6
0 ...
 $ md_price_change_percentage_30d            : num [1:7459] -29.2 -18.8 -12.7 -11.3
0 ...
 $ md_price_change_percentage_60d            : num [1:7459] -29.44 -36.39 0 8.88 0
...
 $ md_price_change_percentage_200d           : num [1:7459] 182.9 -55.6 0 0 0 ...
 $ md_price_change_percentage_1y             : num [1:7459] 323 121 0 0 0 ...
 $ md_market_cap_change_24h                  : num [1:7459] 1.19e+10 8.20e+03 0.00
0.00 0.00 ...
 $ md_market_cap_change_percentage_24h       : num [1:7459] 1.68 40.51 0 0 0 ...
 $ md_price_change_24h_in_currency           : chr [1:7459] "833.22" "0.00081142" "-
421.61329671" "-357.94558902" ...
 $ md_price_change_percentage_1h_in_currency : chr [1:7459] "1.76034" "5.60859" "{}"
"{}" ...
 $ md_price_change_percentage_24h_in_currency: chr [1:7459] "2.2202" "43.62294" "-2.
76174" "-1.90268" ...
 $ md_price_change_percentage_7d_in_currency : chr [1:7459] "-23.14226" "21.51652" "
-17.85343" "-23.83771" ...
 $ md_price_change_percentage_14d_in_currency: chr [1:7459] "-33.12212" "-13.60597"
"-21.51847" "-22.63836" ...
 $ md_price_change_percentage_30d_in_currency: chr [1:7459] "-29.20806" "-18.79421"
"-12.72064" "-11.32032" ...
 $ md_price_change_percentage_60d_in_currency: chr [1:7459] "-29.44251" "-36.3899" "
{}" "8.87758" ...
 $ md_price_change_percentage_200d_in_currency: chr [1:7459] "182.94129" "-55.61437"
"{}" "{}" ...
 $ md_price_change_percentage_1y_in_currency : chr [1:7459] "323.42564" "120.63372"
```

```
"{}" "{}" ...
 $ md_market_cap_change_24h_in_currency          : chr [1:7459] "11889582775" "8199.6200
00000001" "0" "0" ...
 $ md_market_cap_change_percentage_24h_in_currency: chr [1:7459] "1.68207" "40.50804" "0"
"0" ...
 $ md_total_supply                              : num [1:7459] 21000000 65658824 NA NA
NA ...
 $ md_max_supply                                : num [1:7459] 2.1e+07 NA NA NA NA NA
NA NA NA NA ...
 $ md_circulating_supply                        : num [1:7459] 18713700 10646361 0 0 0
...
 $ md_sparkline_7d                              : chr [1:7459] "{'price': [48868.60305
863678, 49379.76315234058, 49052.68444471721, 49675.90532371078, 49053.167386888, 47917.9
"| __truncated__ "{'price': [0.0021475681770300142, 0.0022167032925730704, 0.002263168198
9402023, 0.0021746056988295823, 0.002145"| __truncated__ "{'price': [18641.185692094314,
18593.31088060331, 18566.090421298537, 18594.561731250385, 18248.214018945913, 1"| __trun
cated__ "{'price': [23960.15859130861, 23925.783506376752, 23501.362488607054, 22248.9525
77643446, 21925.9349749464, 201"| __truncated__ ...
 $ md_last_updated                              : chr [1:7459] "2021-05-22T16:40:21.32
1Z" "2021-05-22T16:34:16.193Z" "2021-05-22T16:18:29.824Z" "2021-05-21T19:32:35.706Z" ...
```

In [6]:

```r
cmd[cmd == "{}"] <- NA
chr_cols <- c('md_current_price', 'md_fdv_to_tvl_ratio', 'md_roi', 'md_ath', 'md_atl', 'm
d_market_cap',
        'md_fully_diluted_valuation', 'md_total_volume', 'md_total_volume', 'md_high_2
4h', 'md_low_24h',
        'md_price_change_24h_in_currency', 'md_price_change_percentage_1h_in_currency',
        'md_price_change_percentage_24h_in_currency', 'md_price_change_percentage_7d_in
_currency',
        'md_price_change_percentage_14d_in_currency', 'md_price_change_percentage_30d_i
n_currency',
        'md_price_change_percentage_60d_in_currency', 'md_price_change_percentage_200d_
in_currency',
        'md_price_change_percentage_1y_in_currency', 'md_market_cap_change_24h_in_curre
ncy',
        'md_market_cap_change_percentage_24h_in_currency')
for(i in chr_cols){
  cmd[i] <- as.numeric(cmd[[i]])
}
```

```
Warning message in eval(expr, envir, enclos):
"NAs introduced by coercion"
Warning message in eval(expr, envir, enclos):
"NAs introduced by coercion"
Warning message in eval(expr, envir, enclos):
"NAs introduced by coercion"
Warning message in eval(expr, envir, enclos):
"NAs introduced by coercion"
```

In [7]:

```r
str(cmd)
```

```
tibble [7,459 × 59] (S3: tbl_df/tbl/data.frame)
 $ id                                : chr [1:7459] "bitcoin" "01coin" "0-5
x-long-algorand-token" "0-5x-long-altcoin-index-token" ...
 $ symbol                            : chr [1:7459] "btc" "zoc" "algohalf"
"althalf" ...
 $ name                              : chr [1:7459] "Bitcoin" "01coin" "0.5
X Long Algorand Token" "0.5X Long Altcoin Index Token" ...
 $ asset_platform_id                 : chr [1:7459] NA NA "ethereum" "ether
eum" ...
 $ block_time_in_minutes             : num [1:7459] 10 0 0 0 0 0 0 0 0 0 ..
.
 $ hashing_algorithm                 : chr [1:7459] "SHA-256" "NeoScrypt" N
A NA ...
 $ categories                        : chr [1:7459] "['Cryptocurrency']" "[
'Masternodes']" "[]" "[]" ...
 $ country_origin                    : chr [1:7459] NA NA NA NA ...
 $ genesis_date                      : chr [1:7459] "2009-01-03" NA NA NA .
```

```
 ..
 $ sentiment_votes_up_percentage                  : num [1:7459] 55.4 NA NA NA NA NA NA N
A NA NA ...
 $ sentiment_votes_down_percentage                : num [1:7459] 44.6 NA NA NA NA NA NA N
A NA NA ...
 $ market_cap_rank                                : num [1:7459] 1 2588 NA NA NA ...
 $ coingecko_rank                                 : num [1:7459] 2 990 6752 7230 6838 ..
.
 $ coingecko_score                                : num [1:7459] 80.479 21.938 0.2 0.062
0.2 ...
 $ liquidity_score                                : num [1:7459] 100.39 1 1 0.31 1 ...
 $ ico_data                                       : chr [1:7459] NA NA NA NA ...
 $ md_current_price                               : num [1:7459] 3.84e+04 2.67e-03 1.48e
+04 1.85e+04 1.25e+04 ...
 $ md_total_value_locked                          : num [1:7459] NA NA NA NA NA NA NA NA
NA NA ...
 $ md_mcap_to_tvl_ratio                           : num [1:7459] NA NA NA NA NA NA NA NA
NA NA ...
 $ md_fdv_to_tvl_ratio                            : num [1:7459] NA NA NA NA NA NA NA NA
NA NA ...
 $ md_roi                                         : num [1:7459] NA NA NA NA NA NA NA NA
NA NA ...
 $ md_ath                                         : num [1:7459] 6.48e+04 3.42e-02 2.01e
+04 2.43e+04 1.78e+04 ...
 $ md_ath_change_percentage                       : num [1:7459] -40.8 -92.2 -26.2 -23.9
-29.6 ...
 $ md_ath_date                                    : chr [1:7459] "2021-04-14T11:54:46.76
3Z" "2018-10-10T17:27:38.034Z" "2021-02-13T05:56:26.817Z" "2021-05-15T00:11:58.556Z" ...
 $ md_atl                                         : num [1:7459] 6.78e+01 7.06e-04 7.22e
+03 7.52e+03 6.13e+03 ...
 $ md_atl_change_percentage                       : num [1:7459] 56474 278 106 145 104 ..
.
 $ md_atl_date                                    : chr [1:7459] "2013-07-06T00:00:00.00
0Z" "2020-03-16T10:22:30.944Z" "2020-11-04T21:58:23.744Z" "2020-11-04T21:58:06.513Z" ...
 $ md_market_cap                                  : num [1:7459] 7.19e+11 2.84e+04 0.00
0.00 0.00 ...
 $ md_market_cap_rank                             : num [1:7459] 1 2588 NA NA NA ...
 $ md_fully_diluted_valuation                     : num [1:7459] 8.07e+11 NA NA NA NA ...
 $ md_total_volume                                : num [1:7459] 8.04e+10 1.23e+04 1.00e
+05 3.51e+04 8.74e+03 ...
 $ md_high_24h                                    : num [1:7459] 3.91e+04 2.80e-03 1.54e
+04 1.89e+04 1.29e+04 ...
 $ md_low_24h                                     : num [1:7459] 3.44e+04 1.64e-03 1.49e
+04 1.85e+04 1.29e+04 ...
 $ md_price_change_24h                            : num [1:7459] 8.33e+02 8.11e-04 -4.22
e+02 -3.58e+02 -3.72e+02 ...
 $ md_price_change_percentage_24h                 : num [1:7459] 2.22 43.62 -2.76 -1.9 -
2.88 ...
 $ md_price_change_percentage_7d                  : num [1:7459] -23.1 21.5 -17.9 -23.8
-27.2 ...
 $ md_price_change_percentage_14d                 : num [1:7459] -33.1 -13.6 -21.5 -22.6
0 ...
 $ md_price_change_percentage_30d                 : num [1:7459] -29.2 -18.8 -12.7 -11.3
0 ...
 $ md_price_change_percentage_60d                 : num [1:7459] -29.44 -36.39 0 8.88 0
...
 $ md_price_change_percentage_200d                : num [1:7459] 182.9 -55.6 0 0 0 ...
 $ md_price_change_percentage_1y                  : num [1:7459] 323 121 0 0 0 ...
 $ md_market_cap_change_24h                       : num [1:7459] 1.19e+10 8.20e+03 0.00
0.00 0.00 ...
 $ md_market_cap_change_percentage_24h            : num [1:7459] 1.68 40.51 0 0 0 ...
 $ md_price_change_24h_in_currency                : num [1:7459] 8.33e+02 8.11e-04 -4.22
e+02 -3.58e+02 -3.72e+02 ...
 $ md_price_change_percentage_1h_in_currency      : num [1:7459] 1.76 5.61 NA NA -2.88 ..
.
 $ md_price_change_percentage_24h_in_currency     : num [1:7459] 2.22 43.62 -2.76 -1.9 -2
.88 ...
 $ md_price_change_percentage_7d_in_currency      : num [1:7459] -23.1 21.5 -17.9 -23.8 -
27.2 ...
 $ md_price_change_percentage_14d_in_currency     : num [1:7459] -33.1 -13.6 -21.5 -22.6
NA ...
 $ md_price_change_percentage_30d_in_currency     : num [1:7459] -29.2 -18.8 -12.7 -11.3
```

NA ...
 $ md_price_change_percentage_60d_in_currency   : num [1:7459] -29.44 -36.39 NA 8.88 NA
...
 $ md_price_change_percentage_200d_in_currency   : num [1:7459] 182.9 -55.6 NA NA NA ...
 $ md_price_change_percentage_1y_in_currency   : num [1:7459] 323 121 NA NA NA ...
 $ md_market_cap_change_24h_in_currency   : num [1:7459] 1.19e+10 8.20e+03 0.00 0
.00 0.00 ...
 $ md_market_cap_change_percentage_24h_in_currency: num [1:7459] 1.68 40.51 0 0 0 ...
 $ md_total_supply   : num [1:7459] 21000000 65658824 NA NA
NA ...
 $ md_max_supply   : num [1:7459] 2.1e+07 NA NA NA NA NA
NA NA NA NA ...
 $ md_circulating_supply   : num [1:7459] 18713700 10646361 0 0 0
...
 $ md_sparkline_7d   : chr [1:7459] "{'price': [48868.60305
863678, 49379.76315234058, 49052.68444471721, 49675.90532371078, 49053.167386888, 47917.9
"| __truncated__ "{'price': [0.0021475681770300142, 0.0022167032925730704, 0.002263168198
9402023, 0.0021746056988295823, 0.002145"| __truncated__ "{'price': [18641.185692094314,
18593.31088060331, 18566.090421298537, 18594.561731250385, 18248.214018945913, 1"| __trun
cated__ "{'price': [23960.15859130861, 23925.783506376752, 23501.362488607054, 22248.9525
77643446, 21925.9349749464, 201"| __truncated__ ...
 $ md_last_updated   : chr [1:7459] "2021-05-22T16:40:21.32
1Z" "2021-05-22T16:34:16.193Z" "2021-05-22T16:18:29.824Z" "2021-05-21T19:32:35.706Z" ...

In [8]:

```r
for(i in 1:dim(cmd)[2]){
  if(sum(is.na(cmd[i])) == dim(cmd)[1]){
    print(colnames(cmd)[i])
  }
}
```

[1] "md_roi"

In [9]:

```r
drop <- c("md_roi")
cmd <- cmd[, !(names(cmd) %in% drop)]
```
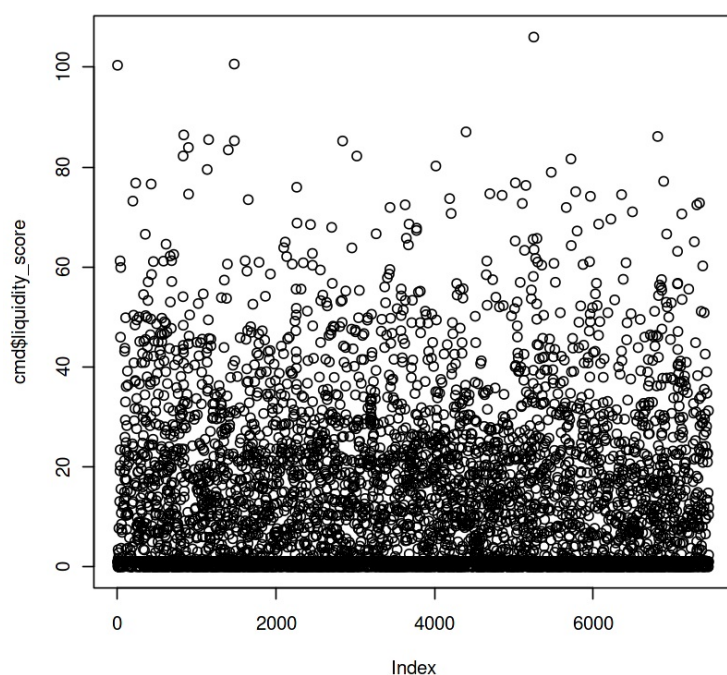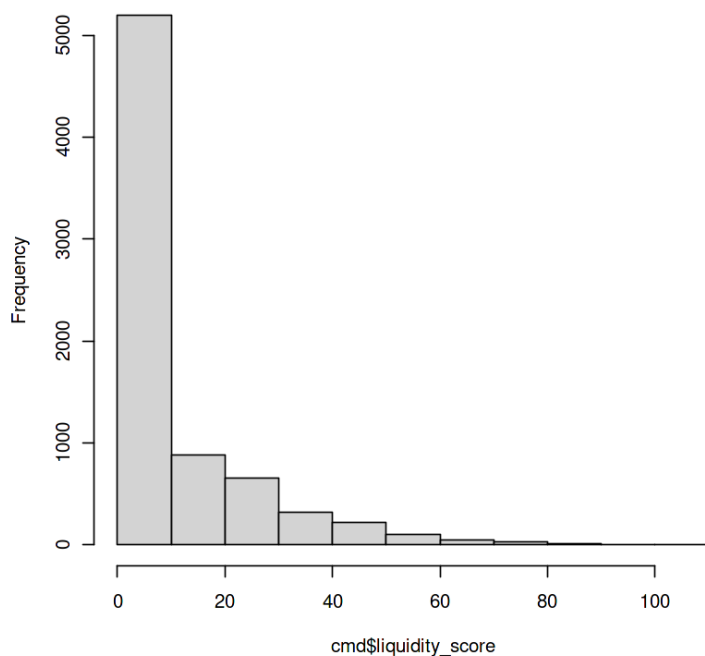
In [10]:

```r
plot(cmd$liquidity_score)
hist(cmd$liquidity_score)
```
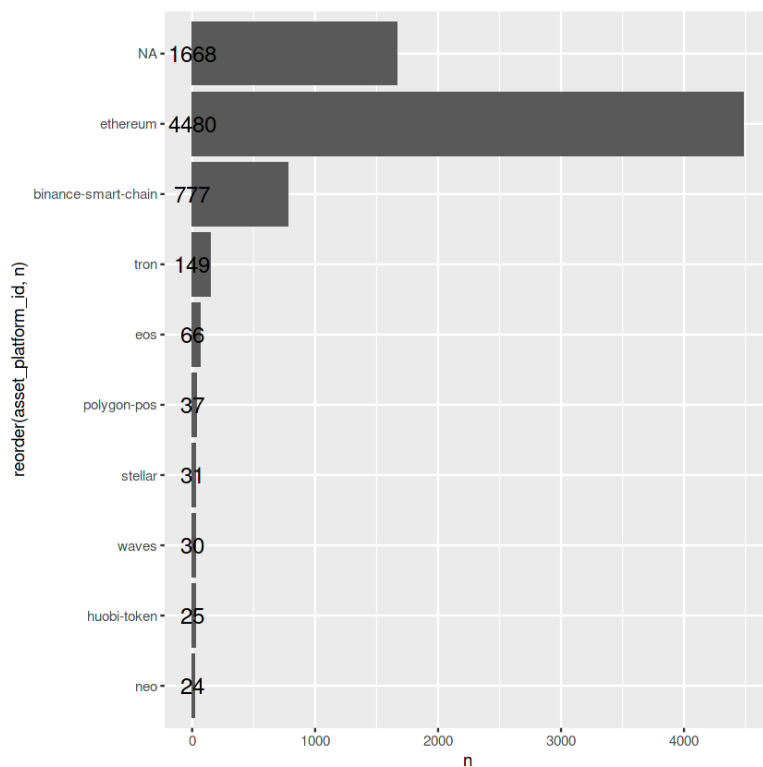

Histogram of cmd$liquidity_score

```
cmd %>% group_by(asset_platform_id) %>%
    summarise(n=n()) %>% arrange(desc(n)) %>% head(10) %>%
    ggplot(aes(x = reorder(asset_platform_id,n), y = n)) +
    geom_col() +
    geom_text(aes(label = paste(n)), y = 1, size = 5) +
    coord_flip()
```

```
cmd %>%
  select(id,hashing_algorithm) %>%
  na.omit() %>%
  group_by(hashing_algorithm) %>%
  summarise(n=n()) %>% arrange(desc(n)) %>% head(20) %>%
  ggplot(aes(x = reorder(hashing_algorithm,n), y = n))+
  geom_col()+
  geom_text(aes(label = paste(n)), y = 1, size = 5) +
  coord_flip()
```
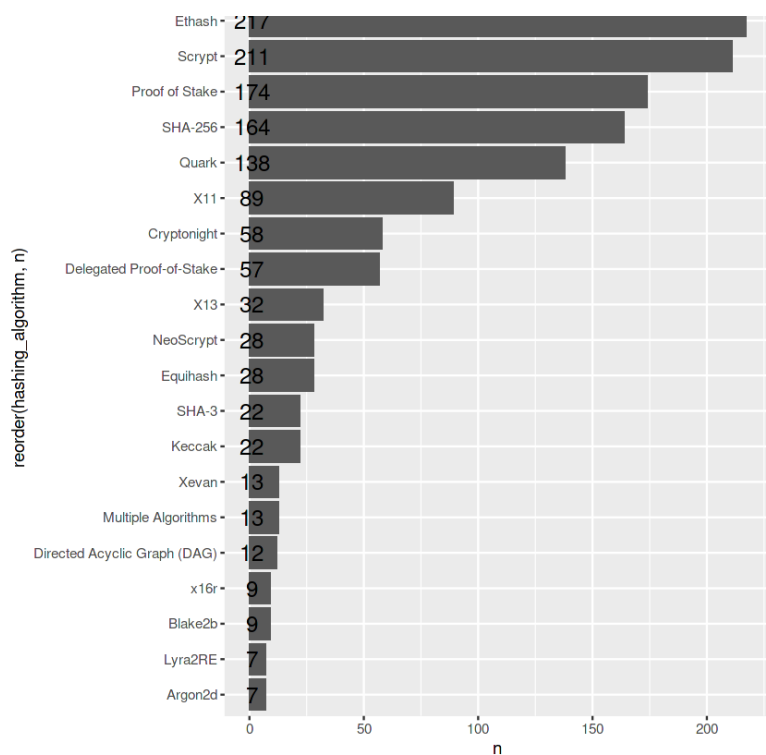
In [13]:

```
cmd %>% filter(is.na(asset_platform_id)) %>%
  arrange(desc(liquidity_score)) %>%
  select(id,liquidity_score, symbol, name, md_current_price, coingecko_rank) %>% head(20
)
```

A tibble: 20 × 6

id	liquidity_score	symbol	name	md_current_price	coingecko_rank
<chr>	<dbl>	<chr>	<chr>	<dbl>	<dbl>
ethereum	100.635	eth	Ethereum	2.36604e+03	3
bitcoin	100.391	btc	Bitcoin	3.83620e+04	2
ripple	87.055	xrp	XRP	9.01118e-01	9
cardano	86.139	ada	Cardano	1.14000e+00	7
dogecoin	85.507	doge	Dogecoin	3.42034e-01	4
ethereum-classic	85.282	etc	Ethereum Classic	5.94600e+01	119
litecoin	85.238	ltc	Litecoin	1.77540e+02	13
bitcoin-cash	83.931	bch	Bitcoin Cash	6.60760e+02	121
polkadot	80.225	dot	Polkadot	2.27200e+01	135
dkk-token	79.522	dkkt	DKK Token	1.53614e-01	1877
tron	78.968	trx	TRON	7.62610e-02	10
stellar	76.846	xlm	Stellar	4.01923e-01	8
abc-chain	76.808	abc	ABC Chain	4.63508e-03	1975
bitcoin-cash-sv	74.596	bsv	Bitcoin SV	1.68510e+02	197
zcash	74.493	zec	Zcash	1.47250e+02	26
solana	74.359	sol	Solana	3.31600e+01	14
filecoin	73.484	fil	Filecoin	7.23000e+01	304
dash	72.819	dash	Dash	1.38130e+02	20
neo	71.926	neo	NEO	5.35800e+01	16
qtum	70.719	qtum	Qtum	9.96000e+00	24

In [14]:

```
cmd %>%
  arrange(coingecko_rank) %>%
  select(id,liquidity_score, symbol, name, md_current_price, coingecko_rank) %>% head(20
)
```

A tibble: 20 × 6

| id	liquidity_score	symbol	name	md_current_price	coingecko_rank
<chr>	<dbl>	<chr>	<chr>	<dbl>	<dbl>
silver-gateway	9.751	svs	Silver Gateway	5.11428e-01	1
bitcoin	100.391	btc	Bitcoin	3.83620e+04	2
ethereum	100.635	eth	Ethereum	2.36604e+03	3
dogecoin	85.507	doge	Dogecoin	3.42034e-01	4
eos	83.446	eos	EOS	5.28000e+00	5
binancecoin	82.233	bnb	Binance Coin	3.14600e+02	6
cardano	86.139	ada	Cardano	1.14000e+00	7
stellar	76.846	xlm	Stellar	4.01923e-01	8
ripple	87.055	xrp	XRP	9.01118e-01	9
tron	78.968	trx	TRON	7.62610e-02	10
chainlink	77.156	link	Chainlink	1.67200e+01	11
monero	66.653	xmr	Monero	2.43630e+02	12
litecoin	85.238	ltc	Litecoin	1.77540e+02	13
solana	74.359	sol	Solana	3.31600e+01	14
vechain	75.082	vet	VeChain	1.04254e-01	15
neo	71.926	neo	NEO	5.35800e+01	16
algorand	66.563	algo	Algorand	1.00000e+00	17
matic-network	82.219	matic	Polygon	1.33000e+00	18
nano	57.841	nano	Nano	6.84000e+00	19
dash	72.819	dash	Dash	1.38130e+02	20

In [15]:

```
market_cap <- cmd %>%
    select(id, md_market_cap) %>%
    na.omit() %>%
    arrange(desc(md_market_cap))
df1 <- market_cap %>%
    head(10) %>%
    rbind(data.frame(md_market_cap=sum(market_cap[! market_cap$md_market_cap %in% head(ma
rket_cap$md_market_cap,10),"md_market_cap"]),id="others"))
df1
pie(df1$md_market_cap,df1$id)
```
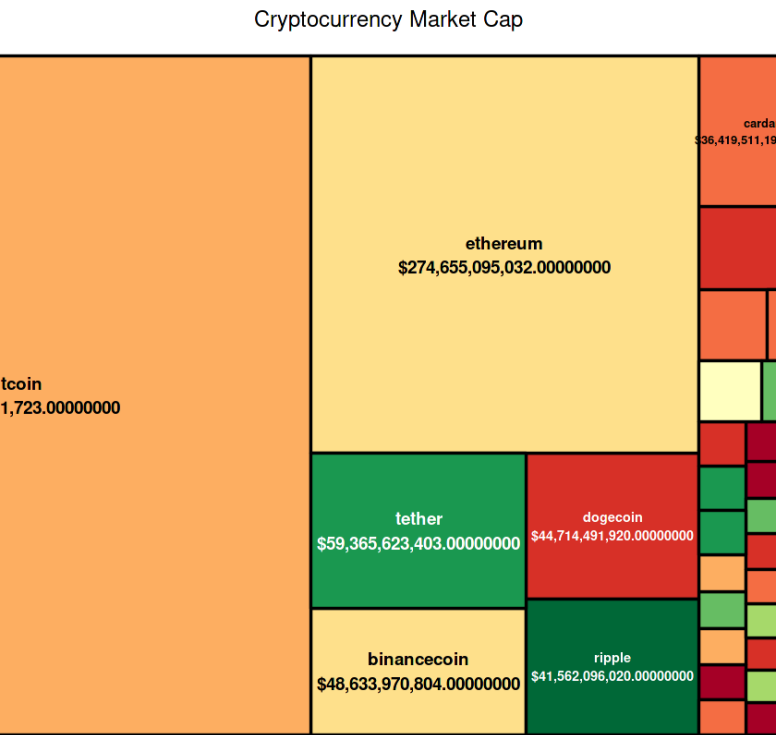
A tibble: 11 × 2

id	md_market_cap
<chr>	<dbl>
bitcoin	718732681723
ethereum	274655095032
tether	59365623403
binancecoin	48633970804
dogecoin	44714491920
ripple	41562096020

id	md_market_cap
cardano	36419511193
polkadot	22855709568
usd-coin	19707542193
internet-computer	17437393024
others	339713634264
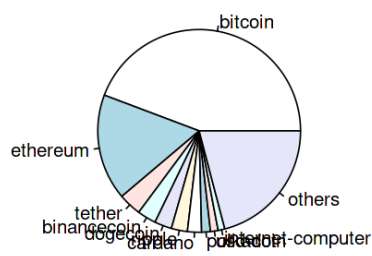
```
library(treemap)
df1 <- na.omit(cmd[,c('id','md_market_cap')])
df1$formatted_market_cap <-  paste0(df1$id,'\n','$',format(df1$md_market_cap,big.mark = '
,',scientific = F, trim = T))
treemap(df1, index = 'formatted_market_cap', vSize = 'md_market_cap', title = 'Cryptocur
rency Market Cap', palette='RdYlGn')
```

Cryptocurrency Market Cap

In [17]:

```
cmd %>% filter(is.na(asset_platform_id)) %>%
    select(id,md_current_price, md_circulating_supply) %>%
    na.omit() %>%
    arrange(desc(md_current_price))
```

A tibble: 1659 × 3

id	md_current_price	md_circulating_supply
<chr>	<dbl>	<dbl>
blipcoin	435231.00	0.000000e+00
42-coin	75910.00	4.199995e+01
mirrored-bitcoin	38507.00	2.802831e+02
bitcoin	38362.00	1.871370e+07
rootstock	37813.00	0.000000e+00
project-x	30341.00	0.000000e+00
bankcoin-reserve	11195.42	0.000000e+00
elons	5192.60	0.000000e+00
usgold	2464.93	0.000000e+00
mirrored-ether	2377.50	4.583276e+03
ethereum	2366.04	1.159805e+08
eth2-staking-by-poolx	2201.49	0.000000e+00
binance-eth	2128.00	0.000000e+00
grace-period-token	1408.73	0.000000e+00
gold-bcr	1063.30	1.842681e+02
chia	683.49	6.492728e+05
bitcoin-cash	660.76	1.874349e+07
king-money	463.60	0.000000e+00
mixin	457.50	0.000000e+00
capital-x-cell	437.46	0.000000e+00
vectorium	379.71	0.000000e+00
mirrored-goldman-sachs	365.53	1.270464e+04
zilswap	314.53	0.000000e+00
kusama	314.19	8.980098e+06
monero	243.63	1.791519e+07
coinbase-stock	218.88	0.000000e+00
coinbase-stock-bittrex	195.78	0.000000e+00
litecoin	177.54	6.675241e+07
mirrored-gamestop	175.21	1.731167e+04
bitcoin-cash-sv	168.51	1.873966e+07
⋮	⋮	⋮
wechain-coin	1.84e-06	0.000000e+00
peepcoin	1.82e-06	1.834683e+03
bitcoinx-2	1.78e-06	0.000000e+00
vestxcoin	1.74e-06	0.000000e+00
experiencecoin	1.51e-06	1.928543e+10
xrphd	1.46e-06	0.000000e+00
condensate	1.44e-06	0.000000e+00
valorbit	1.33e-06	0.000000e+00

id	md_current_price	md_circulating_supply
	<chr>	<dbl>	<dbl>
simplicity-coin	1.22e-06	0.000000e+00
spartancoin	7.80e-07	0.000000e+00
sandego	7.70e-07	0.000000e+00
gcn-coin	6.90e-07	1.493812e+11
junsonmingchancoin	6.90e-07	3.207213e+10
compound-coin	5.60e-07	9.223321e+10
dyngecoin	5.50e-07	0.000000e+00
seed2need	4.90e-07	0.000000e+00
cirquity	4.00e-07	0.000000e+00
mousecoin	3.80e-07	0.000000e+00
slothcoin	3.70e-07	0.000000e+00
willowcoin	1.90e-07	2.810010e+09
swaptoken	1.30e-07	0.000000e+00
bitcoinmono	1.00e-07	0.000000e+00
rock-n-rain-coin	5.00e-08	0.000000e+00
safegalaxy	3.00e-08	0.000000e+00
argentum	2.00e-08	1.491010e+07
pos-coin	2.00e-08	0.000000e+00
thebigcoin	2.00e-08	0.000000e+00
sprouts	1.00e-08	0.000000e+00
derogold	0.00e+00	0.000000e+00
smartcoin	0.00e+00	2.909130e+07

In [18]:

```
#md_circulating_supply, md_current_price, liquidity_score
#forks, stars, subscribers, reddit_subscribers, reddit_average_posts_48h, reddit_average_
comments_48h, twitter_followers
```

In [19]:

```
colnames(cmd)
```

'id' · 'symbol' · 'name' · 'asset_platform_id' · 'block_time_in_minutes' · 'hashing_algorithm' ·
'categories' · 'country_origin' · 'genesis_date' · 'sentiment_votes_up_percentage' ·
'sentiment_votes_down_percentage' · 'market_cap_rank' · 'coingecko_rank' · 'coingecko_score' ·
'liquidity_score' · 'ico_data' · 'md_current_price' · 'md_total_value_locked' · 'md_mcap_to_tvl_ratio' ·
'md_fdv_to_tvl_ratio' · 'md_ath' · 'md_ath_change_percentage' · 'md_ath_date' · 'md_atl' ·
'md_atl_change_percentage' · 'md_atl_date' · 'md_market_cap' · 'md_market_cap_rank' ·
'md_fully_diluted_valuation' · 'md_total_volume' · 'md_high_24h' · 'md_low_24h' · 'md_price_change_24h' ·
'md_price_change_percentage_24h' · 'md_price_change_percentage_7d' ·
'md_price_change_percentage_14d' · 'md_price_change_percentage_30d' ·
'md_price_change_percentage_60d' · 'md_price_change_percentage_200d' ·
'md_price_change_percentage_1y' · 'md_market_cap_change_24h' ·
'md_market_cap_change_percentage_24h' · 'md_price_change_24h_in_currency' ·
'md_price_change_percentage_1h_in_currency' · 'md_price_change_percentage_24h_in_currency' ·
'md_price_change_percentage_7d_in_currency' · 'md_price_change_percentage_14d_in_currency' ·
'md_price_change_percentage_30d_in_currency' · 'md_price_change_percentage_60d_in_currency' ·
'md_price_change_percentage_200d_in_currency' · 'md_price_change_percentage_1y_in_currency' ·
'md_market_cap_change_24h_in_currency' · 'md_market_cap_change_percentage_24h_in_currency' ·
'md_total_supply' · 'md_max_supply' · 'md_circulating_supply' · 'md_sparkline_7d' · 'md_last_updated'

In [20]:

```
col <- c('md_price_change_24h_in_currency', 'md_price_change_percentage_1h_in_currency',
'md_price_change_percentage_24h_in_currency',
         'md_price_change_percentage_7d_in_currency', 'md_price_change_percentage_14d_in_
currency', 'md_price_change_percentage_30d_in_currency',
         'md_price_change_percentage_60d_in_currency', 'md_price_change_percentage_200d_i
n_currency', 'md_price_change_percentage_1y_in_currency',
         'md_market_cap_change_24h_in_currency', 'md_market_cap_change_percentage_24h_in_
currency')
cmd <- cmd[, !(names(cmd) %in% col)]
```

In [21]:

```
colnames(cmd)
```

'id' · 'symbol' · 'name' · 'asset_platform_id' · 'block_time_in_minutes' · 'hashing_algorithm' ·
'categories' · 'country_origin' · 'genesis_date' · 'sentiment_votes_up_percentage' ·
'sentiment_votes_down_percentage' · 'market_cap_rank' · 'coingecko_rank' · 'coingecko_score' ·
'liquidity_score' · 'ico_data' · 'md_current_price' · 'md_total_value_locked' · 'md_mcap_to_tvl_ratio' ·
'md_fdv_to_tvl_ratio' · 'md_ath' · 'md_ath_change_percentage' · 'md_ath_date' · 'md_atl' ·
'md_atl_change_percentage' · 'md_atl_date' · 'md_market_cap' · 'md_market_cap_rank' ·
'md_fully_diluted_valuation' · 'md_total_volume' · 'md_high_24h' · 'md_low_24h' · 'md_price_change_24h' ·
'md_price_change_percentage_24h' · 'md_price_change_percentage_7d' ·
'md_price_change_percentage_14d' · 'md_price_change_percentage_30d' ·
'md_price_change_percentage_60d' · 'md_price_change_percentage_200d' ·
'md_price_change_percentage_1y' · 'md_market_cap_change_24h' ·
'md_market_cap_change_percentage_24h' · 'md_total_supply' · 'md_max_supply' · 'md_circulating_supply' ·
'md_sparkline_7d' · 'md_last_updated'

In [22]:

```
boxplot(cmd$md_current_price)
```
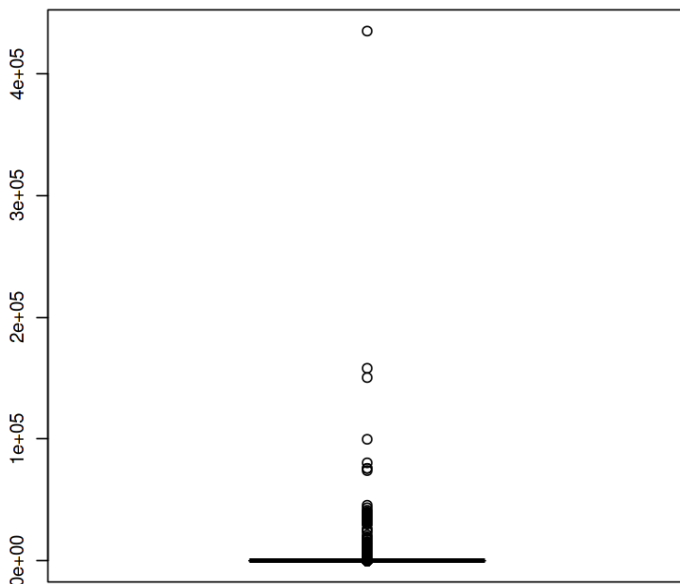

In [23]:

```
library(psych)
describe(cmd)
```

Attaching package: 'psych'

The following objects are masked from 'package:ggplot2':

    %+%, alpha

A psych: 47 × 13

	vars	n	mean	sd	median	trimmed	mad
	<int>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
id*	1	7459	3.730000e+03	2.153372e+03	3.730000e+03	3.730000e+03	2.765049e+03
symbol*	2	7458	3.246540e+03	1.892309e+03	3.252500e+03	3.240209e+03	2.441101e+03
name*	3	7459	3.730000e+03	2.153372e+03	3.730000e+03	3.730000e+03	2.765049e+03
asset_platform_id*	4	5791	1.421084e+01	7.706776e+00	1.400000e+01	1.344938e+01	0.000000e+00
block_time_in_minutes	5	7459	1.988007e+03	1.242472e+05	0.000000e+00	1.390518e-02	0.000000e+00
hashing_algorithm*	6	1371	2.863384e+01	1.207604e+01	3.200000e+01	2.884777e+01	1.037820e+01
categories*	7	7459	4.480940e+02	1.812953e+02	5.750000e+02	4.785946e+02	0.000000e+00
country_origin*	8	3357	7.057432e+01	3.931656e+01	6.500000e+01	7.119017e+01	5.782140e+01
genesis_date*	9	926	3.343790e+02	1.682260e+02	3.520000e+02	3.381523e+02	1.808772e+02
sentiment_votes_up_percentage	10	3798	6.982434e+01	3.194462e+01	7.647000e+01	7.476738e+01	3.488558e+01
sentiment_votes_down_percentage	11	3798	3.017567e+01	3.194462e+01	2.353000e+01	2.523263e+01	3.488558e+01
market_cap_rank	12	2766	1.383641e+03	7.988502e+02	1.383500e+03	1.383658e+03	1.024477e+03
coingecko_rank	13	7451	3.725670e+03	2.150670e+03	3.726000e+03	3.725888e+03	2.762084e+03
coingecko_score	14	7459	1.029740e+01	1.086945e+01	6.430000e+00	8.543092e+00	7.807372e+00
liquidity_score	15	7459	9.308542e+00	1.441905e+01	1.000000e+00	6.108326e+00	1.482600e+00
ico_data*	16	965	4.830000e+02	2.787158e+02	4.830000e+02	4.830000e+02	3.573066e+02
md_current_price	17	7392	4.728221e+02	6.714226e+03	3.853833e-02	7.488595e-01	5.712447e-02
md_total_value_locked	18	171	6.294763e+08	1.696571e+09	6.102321e+07	1.739638e+08	8.627794e+07
md_mcap_to_tvl_ratio	19	168	1.437625e+01	1.226071e+02	4.650000e-01	1.119338e+00	6.449310e-01
md_fdv_to_tvl_ratio	20	125	4.117712e+01	3.369956e+02	1.670000e+00	4.390693e+00	1.957032e+00
md_ath	21	7392	7.801413e+04	3.978454e+06	7.385705e-01	1.014604e+01	1.092639e+00
md_ath_change_percentage	22	7459	-7.941723e+01	2.497075e+01	-8.938354e+01	-8.434264e+01	1.483023e+01
md_ath_date*	23	7392	3.294691e+03	2.106729e+03	3.277500e+03	3.277500e+03	2.739845e+03
md_atl	24	7392	1.427421e+02	1.800040e+03	3.253180e-03	1.944452e-01	4.823150e-03
md_atl_change_percentage	25	7459	2.615939e+41	2.259269e+43	4.352196e+02	1.823148e+03	6.346500e+02
md_atl_date*	26	7392	3.467353e+03	2.113570e+03	3.454500e+03	3.454500e+03	2.739845e+03
md_market_cap	27	7392	2.196696e+08	9.049240e+09	0.000000e+00	9.791538e+05	0.000000e+00
md_market_cap_rank	28	2766	1.383641e+03	7.988502e+02	1.383500e+03	1.383658e+03	1.024477e+03
md_fully_diluted_valuation	29	878	3.649316e+09	5.966921e+10	2.380776e+07	1.032170e+08	3.501052e+07
md_total_volume	30	7408	7.349535e+07	2.733270e+09	8.292795e+03	1.664653e+05	1.229490e+04
md_high_24h	31	6122	5.224067e+02	8.006449e+03	5.450700e-02	9.160927e-01	8.080063e-02
md_low_24h	32	6122	4.534231e+02	7.122084e+03	4.187671e-02	7.255975e-01	6.208052e-02
		6122		7.031088e-02	-2.249300e-	-2.833894e-	0.000151

	vars	n	mean	sd	median	trimmed	mad
md_price_change_24h	33	6122	1.811738e+01	7.321202e+02	...04	...02	3.960151e-03
	<int>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
md_price_change_percentage_24h	34	6122	-1.389696e+00	6.792436e+01	4.188960e+00	5.097955e+00	9.898164e+00
md_price_change_percentage_7d	35	7459	-1.029045e+01	5.620028e+02	-2.910886e+01	-2.653455e+01	3.599990e+01
md_price_change_percentage_14d	36	7459	2.290472e+07	1.978177e+09	-3.121857e+01	-2.739223e+01	4.070690e+01
md_price_change_percentage_30d	37	7459	4.914687e+03	3.407884e+05	-2.175484e+01	-2.349443e+01	3.225373e+01
md_price_change_percentage_60d	38	7459	5.329205e+15	4.602594e+17	0.000000e+00	-1.328573e+01	4.243772e+01
md_price_change_percentage_200d	39	7459	4.804918e+03	2.620314e+05	0.000000e+00	5.610365e+01	3.321383e+01
md_price_change_percentage_1y	40	7459	5.697896e+09	4.920380e+11	0.000000e+00	4.118958e+01	0.000000e+00
md_market_cap_change_24h	41	6208	-8.622653e+06	3.029149e+08	0.000000e+00	-6.796571e+04	0.000000e+00
md_market_cap_change_percentage_24h	42	6208	-1.301579e+00	4.464876e+01	0.000000e+00	-1.507751e+00	0.000000e+00
md_total_supply	43	6729	1.061826e+18	8.703581e+19	1.053543e+08	1.472584e+09	1.561687e+08
md_max_supply	44	884	2.843558e+14	4.931465e+15	4.779826e+07	2.177229e+08	7.085289e+07
md_circulating_supply	45	7392	1.249366e+13	7.109012e+14	0.000000e+00	1.503804e+07	0.000000e+00
md_sparkline_7d*	46	7459	3.119449e+03	2.110675e+03	3.092000e+03	3.092096e+03	2.765049e+03
md_last_updated*	47	7408	3.703623e+03	2.137845e+03	3.703500e+03	3.703654e+03	2.744293e+03

In [24]:

```
describe(pod)
```

A psych: 20 × 13

	vars	n	mean	sd	median	trimmed	mad	mi
	<int>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl
forks	1	7457	1.473340e+01	3.726661e+02	0.000	2.545668e-01	0.000000e+00	
stars	2	7457	3.775070e+01	7.685227e+02	0.000	3.591419e-01	0.000000e+00	
subscribers	3	7457	4.820974e+00	5.717826e+01	0.000	3.056812e-01	0.000000e+00	
total_issues	4	7457	1.661325e+01	1.879830e+02	0.000	2.362996e-02	0.000000e+00	
closed_issues	5	7457	1.406008e+01	1.660098e+02	0.000	8.379420e-04	0.000000e+00	
pull_requests_merged	6	7457	2.886737e+01	2.776798e+02	0.000	3.720463e-02	0.000000e+00	
pull_request_contributors	7	7457	1.437173e+00	1.315016e+01	0.000	2.865762e-02	0.000000e+00	
code_additions_deletions_4_weeks*	8	7457	2.334565e+02	1.169882e+02	295.000	2.547955e+02	0.000000e+00	
commit_count_4_weeks	9	7457	1.692101e+00	1.864748e+01	0.000	0.000000e+00	0.000000e+00	
last_4_weeks_commit_activity_series*	10	7457	6.324527e+00	2.871528e+01	1.000	1.157366e+00	0.000000e+00	
developer_score	11	7459	8.178051e+00	1.727893e+01	0.000	3.509087e+00	0.000000e+00	
alexa_rank	12	4968	1.877779e+06	2.671637e+06	581286.000	1.293440e+06	8.618146e+05	
twitter_followers	13	7447	2.151358e+04	1.946319e+05	2186.000	5.317259e+03	3.240964e+03	
reddit_average_posts_48h	14	7459	7.099611e-02	5.525225e-01	0.000	0.000000e+00	0.000000e+00	
reddit_average_comments_48h	15	7459	4.641961e+00	1.871918e+02	0.000	0.000000e+00	0.000000e+00	
reddit_subscribers	16	7459	2.704932e+03	5.809277e+04	0.000	3.728698e+01	0.000000e+00	
reddit_accounts_active_48h	17	7459	1.965746e+01	4.405582e+02	0.000	6.565589e-01	0.000000e+00	

	vars	n	mean	sd	median	trimmed	mad	mi
telegram_channel_user_count	18	5642	6.476295e+03	1.338939e+04	2129.500	3.584081e+03	2.756895e+03	mi
id*	`<int>` 19	`<dbl>` 7459	`<dbl>` 3.730000e+03	`<dbl>` 2.153372e+03	`<dbl>` 3730.000	`<dbl>` 3.730000e+03	`<dbl>` 2.765049e+03	`<dbl`
community_score	20	7459	1.076133e+01	1.063399e+01	7.705	9.024142e+00	4.422596e+00	

◀ ▏ ▶

In [25]:

```r
summary(pod)
```

```
     forks              stars           subscribers        total_issues
 Min.   :    0.00   Min.   :    0.00   Min.   :   0.000   Min.   :    0.00
 1st Qu.:    0.00   1st Qu.:    0.00   1st Qu.:   0.000   1st Qu.:    0.00
 Median :    0.00   Median :    0.00   Median :   0.000   Median :    0.00
 Mean   :   14.73   Mean   :   37.75   Mean   :   4.821   Mean   :   16.61
 3rd Qu.:    0.00   3rd Qu.:    0.00   3rd Qu.:   0.000   3rd Qu.:    0.00
 Max.   :29231.00   Max.   :53934.00   Max.   :3811.000   Max.   :6229.00
 NA's   :2          NA's   :2          NA's   :2          NA's   :2
 closed_issues     pull_requests_merged pull_request_contributors
 Min.   :   0.00   Min.   :    0.00     Min.   :  0.000
 1st Qu.:   0.00   1st Qu.:    0.00     1st Qu.:  0.000
 Median :   0.00   Median :    0.00     Median :  0.000
 Mean   :  14.06   Mean   :   28.87     Mean   :  1.437
 3rd Qu.:   0.00   3rd Qu.:    0.00     3rd Qu.:  0.000
 Max.   :5760.00   Max.   :12639.00     Max.   :728.000
 NA's   :2         NA's   :2            NA's   :2
 code_additions_deletions_4_weeks commit_count_4_weeks
 Length:7459                       Min.   :  0.000
 Class :character                  1st Qu.:  0.000
 Mode  :character                  Median :  0.000
                                   Mean   :  1.692
                                   3rd Qu.:  0.000
                                   Max.   :642.000
                                   NA's   :2
 last_4_weeks_commit_activity_series developer_score   alexa_rank
 Length:7459                         Min.   : 0.000   Min.   :       0
 Class :character                    1st Qu.: 0.000   1st Qu.:       0
 Mode  :character                    Median : 0.000   Median :  581286
                                     Mean   : 8.178   Mean   : 1877779
                                     3rd Qu.:12.000   3rd Qu.: 2678638
                                     Max.   :98.879   Max.   :17290931
                                                      NA's   :2491
 twitter_followers reddit_average_posts_48h reddit_average_comments_48h
 Min.   :      0   Min.   : 0.000           Min.   :    0.000
 1st Qu.:     96   1st Qu.: 0.000           1st Qu.:    0.000
 Median :   2186   Median : 0.000           Median :    0.000
 Mean   :  21514   Mean   : 0.071           Mean   :    4.642
 3rd Qu.:   9962   3rd Qu.: 0.000           3rd Qu.:    0.000
 Max.   :9998924   Max.   :13.000           Max.   :15222.273
 NA's   :12
 reddit_subscribers reddit_accounts_active_48h telegram_channel_user_count
 Min.   :      0    Min.   :    0.00           Min.   :     2.0
 1st Qu.:      0    1st Qu.:    0.00           1st Qu.:   652.2
 Median :      0    Median :    0.00           Median :  2129.5
 Mean   :   2705    Mean   :   19.66           Mean   :  6476.3
 3rd Qu.:      0    3rd Qu.:    0.00           3rd Qu.:  6405.5
 Max.   :2945960    Max.   :30675.00           Max.   :188388.0
                                               NA's   :1817
      id             community_score
 Length:7459        Min.   : 0.000
 Class :character   1st Qu.: 4.870
 Mode  :character   Median : 7.705
                    Mean   :10.761
                    3rd Qu.:10.878
                    Max.   :79.379
```

In [26]:

```r
# Top 20 popular coins
library(reshape2)
```

```
top_coins <- pod %>%
    select(id, forks, stars, subscribers, commit_count_4_weeks, twitter_followers,
           reddit_average_posts_48h, reddit_average_comments_48h, reddit_subscribers, red
dit_accounts_active_48h) %>%
    mutate(sum = reddit_average_posts_48h + reddit_average_comments_48h + reddit_accounts
_active_48h) %>%
    top_n(20, wt=sum)

pod %>%
    select(id, reddit_average_posts_48h, reddit_average_comments_48h, reddit_accounts_act
ive_48h) %>%
    na.omit() %>%
    filter(id %in% top_coins$id) %>%
    melt(id="id") %>%
    ggplot(aes(x = reorder(id, value), y = value, fill = variable))+
    geom_col() +
    labs(x = 'Coins', y = 'Total Score') +
    coord_flip()

# Top 20 coins that are being actively developed(based on github data)
top_coins1 <- pod %>%
    select(id, forks, stars, subscribers, commit_count_4_weeks, twitter_followers,
           reddit_average_posts_48h, reddit_average_comments_48h, reddit_subscribers, red
dit_accounts_active_48h) %>%
    mutate(sum = forks + stars + subscribers + commit_count_4_weeks) %>%
    top_n(20, wt=sum)

pod %>%
    select(id, forks, stars, subscribers, commit_count_4_weeks) %>%
    na.omit() %>%
    filter(id %in% top_coins1$id) %>%
    melt(id="id") %>%
    ggplot(aes(x = reorder(id, value), y = value, fill = variable))+
    geom_col() +
    labs(x = 'Coins', y = 'Total Score') +
    coord_flip()

pod %>%
    select(id, commit_count_4_weeks) %>%
    na.omit() %>%
    top_n(20, wt = commit_count_4_weeks) %>%
    ggplot(aes(x = reorder(id,commit_count_4_weeks), y = commit_count_4_weeks)) +
    geom_col() +
    coord_flip()
```

Attaching package: 'reshape2'

The following object is masked from 'package:tidyr':

    smiths
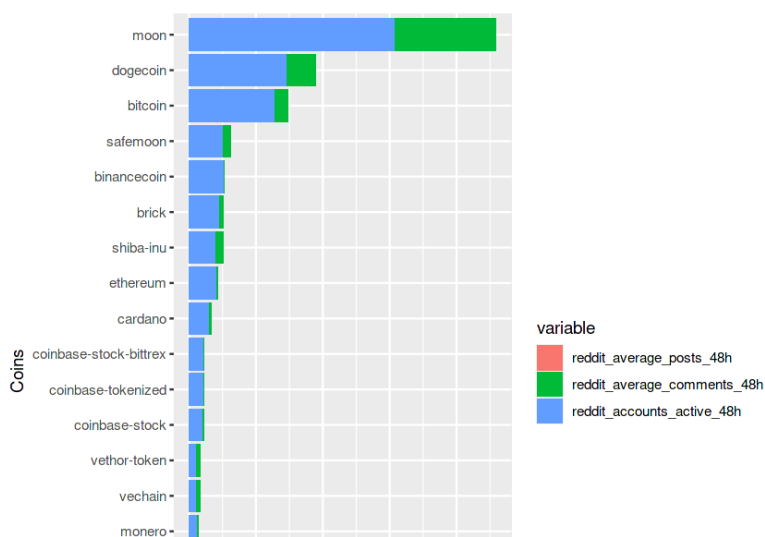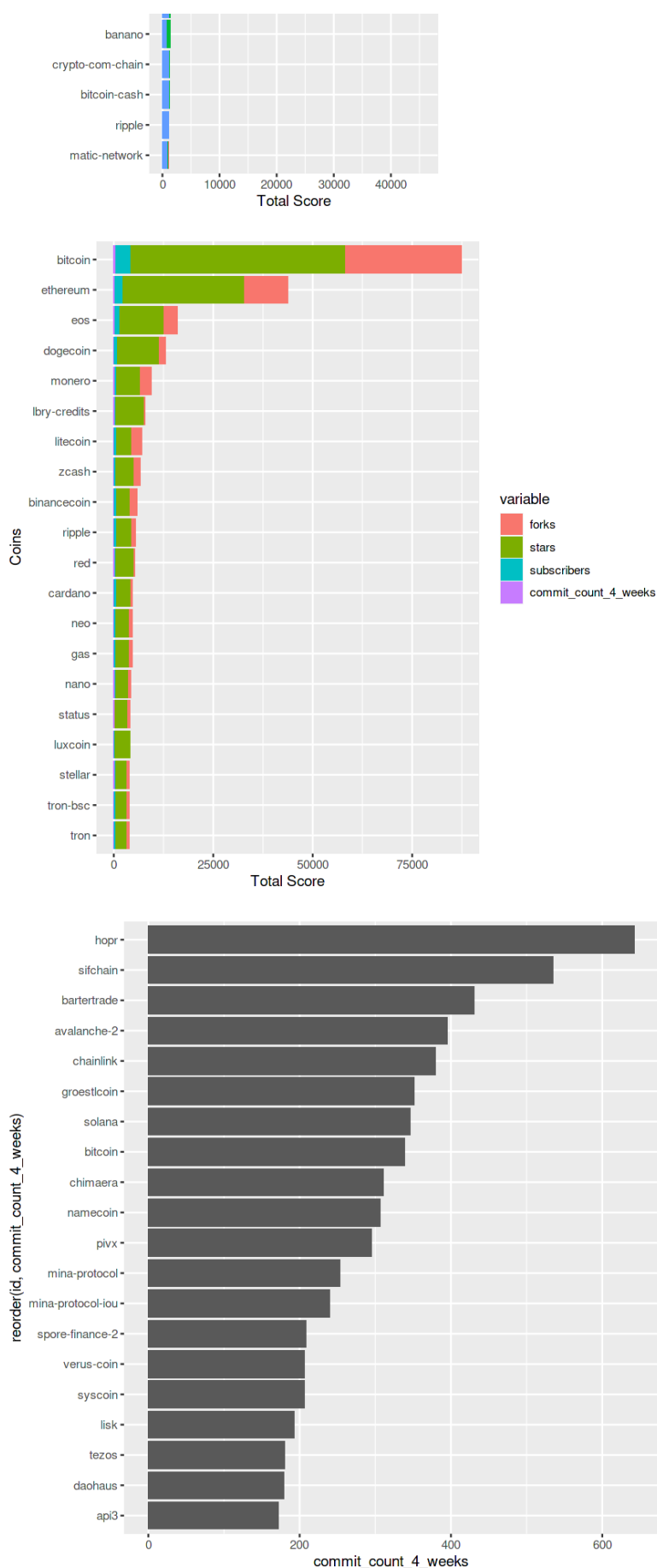
In [27]:

```
library(GGally)
lowerFn <- function(data, mapping, method = "lm") {
  ggplot(data = data, mapping = mapping) +
    geom_point(colour = "slategray4", size = 2, shape = 18) +
    geom_smooth(method = method, color = "coral3") +
    theme_minimal() +
    theme(axis.text.x = element_text(size = 8, angle = 45))
}
cmd %>%
```

```
  select(md_circulating_supply, md_current_price, md_ath_change_percentage, md_price_chan
ge_percentage_1y) %>%
  na.omit() %>%
  ggpairs(lower = list(continuous = wrap(lowerFn, method = "lm")),
    diag = list(continuous = wrap("barDiag", fill = 'skyblue1', colour = "skyblue4")),
    upper = list(continuous = wrap("cor", size = 5)),
    progress = FALSE)
```

Registered S3 method overwritten by 'GGally':
  method from
  +.gg   ggplot2

`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

`geom_smooth()` using formula 'y ~ x'

`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

`geom_smooth()` using formula 'y ~ x'

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`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

In [28]:

```
cmd %>%
  select(md_price_change_percentage_24h, md_price_change_percentage_7d, md_price_change_p
ercentage_14d,
        md_price_change_percentage_30d, md_price_change_percentage_60d, md_price_change
_percentage_200d,
        md_price_change_percentage_1y) %>%
  na.omit() %>%
  ggpairs(lower = list(continuous = wrap(lowerFn, method = "lm")),
    diag = list(continuous = wrap("barDiag", fill = 'skyblue1', colour = "skyblue4")),
    upper = list(continuous = wrap("cor", size = 5)),
    progress = FALSE)
```

```
`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

`geom_smooth()` using formula 'y ~ x'

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`geom_smooth()` using formula 'y ~ x'

`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

`geom_smooth()` using formula 'y ~ x'

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`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`geom_smooth()` using formula 'y ~ x'

`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```
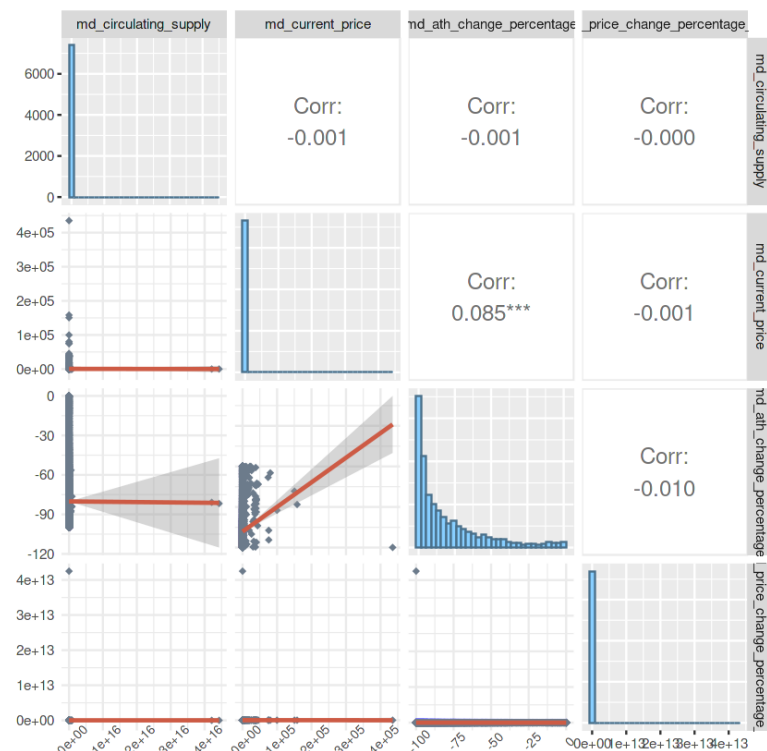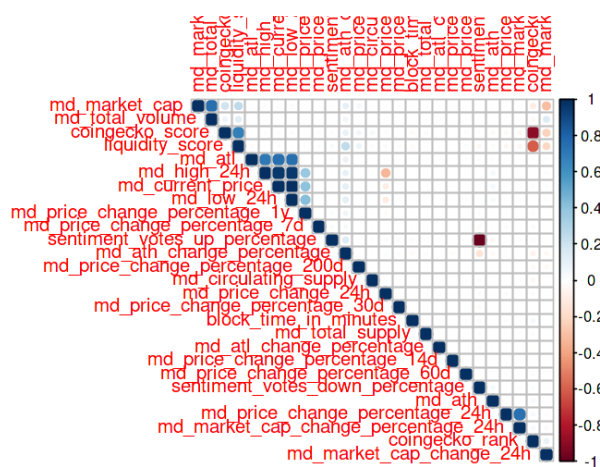
In [29]:

```r
library(corrplot)
```

corrplot 0.88 loaded

In [ ]:

```r
corr <- cor(cmd[, unlist(lapply(cmd, is.numeric))])
corr
# corrplot(corr, type = "upper", order = "hclust",)
```

In [ ]:

```r
ncol(cmd)
```

In [30]:

```r
cols <- c()
for(i in colnames(cmd)){
    if(sum(!is.na(cmd[i])) >= 3798){
        cols <- c(cols, i)
    }
}
print(cols)
cmd1 <- cmd[, (colnames(cmd) %in% cols)]
cmd1 <- na.omit(cmd1)
corr <- cor(cmd1[, unlist(lapply(cmd1, is.numeric))])
# corr
corrplot(corr, type = "upper", order = "hclust")
```

```
 [1] "id"                             "symbol"
 [3] "name"                           "asset_platform_id"
 [5] "block_time_in_minutes"          "categories"
 [7] "sentiment_votes_up_percentage"  "sentiment_votes_down_percentage"
 [9] "coingecko_rank"                 "coingecko_score"
[11] "liquidity_score"                "md_current_price"
[13] "md_ath"                         "md_ath_change_percentage"
[15] "md_ath_date"                    "md_atl"
[17] "md_atl_change_percentage"       "md_atl_date"
[19] "md_market_cap"                  "md_total_volume"
[21] "md_high_24h"                    "md_low_24h"
[23] "md_price_change_24h"            "md_price_change_percentage_24h"
[25] "md_price_change_percentage_7d"  "md_price_change_percentage_14d"
[27] "md_price_change_percentage_30d" "md_price_change_percentage_60d"
[29] "md_price_change_percentage_200d" "md_price_change_percentage_1y"
[31] "md_market_cap_change_24h"       "md_market_cap_change_percentage_24h"
[33] "md_total_supply"                "md_circulating_supply"
[35] "md_sparkline_7d"                "md_last_updated"
```

HYPOTHISIS TESTING

In [31]:

```
mod1<- md_price_change_percentage_24h~md_price_change_percentage_7d+md_price_change_perce
ntage_14d
fit1<-lm(mod1, data = cmd)
summary(fit1)
```

```
Call:
lm(formula = mod1, data = cmd)

Residuals:
   Min     1Q Median     3Q    Max
 -98.6  -10.7   -2.8    2.8 3217.4

Coefficients:
                                   Estimate Std. Error t value Pr(>|t|)
(Intercept)                      -1.363e+00  8.684e-01  -1.570    0.116
md_price_change_percentage_7d     2.027e-03  1.406e-03   1.441    0.150
md_price_change_percentage_14d   -3.244e-11  3.976e-10  -0.082    0.935

Residual standard error: 67.92 on 6119 degrees of freedom
  (1337 observations deleted due to missingness)
Multiple R-squared:  0.0003405, Adjusted R-squared:  1.379e-05
F-statistic: 1.042 on 2 and 6119 DF,  p-value: 0.3527
```

In [32]:

```
t.test(cmd$md_price_change_percentage_7d, cmd$md_price_change_percentage_14d)
```

```
 Welch Two Sample t-test

data:  cmd$md_price_change_percentage_7d and cmd$md_price_change_percentage_14d
t = -1, df = 7458, p-value = 0.3173
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -67804428  21994975
sample estimates:
    mean of x     mean of y
-1.029045e+01  2.290472e+07
```

In [33]:

```
anova1 <- aov(mod1, data = cmd)
summary(anova1)
```

```
                                 Df    Sum Sq  Mean Sq F value Pr(>F)
md_price_change_percentage_7d     1      9586     9586   2.078  0.150
md_price_change_percentage_14d    1        31       31   0.007  0.935
Residuals                      6119  28230954     4614
1337 observations deleted due to missingness
```
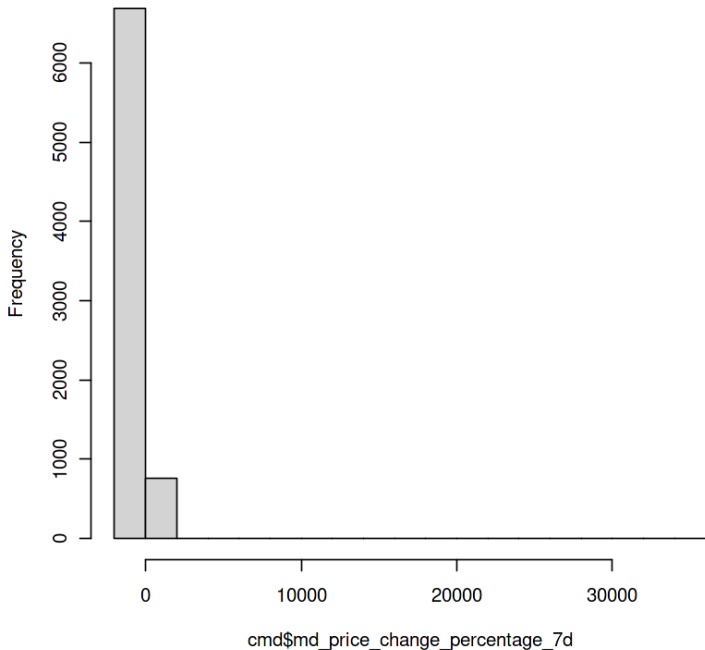
In [34]:

```
hist(cmd$md_price_change_percentage_24h)
hist(cmd$md_price_change_percentage_7d)
hist(cmd$md_price_change_percentage_14d)
```
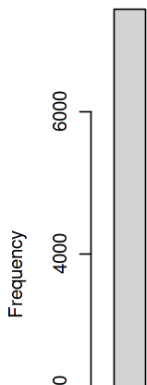
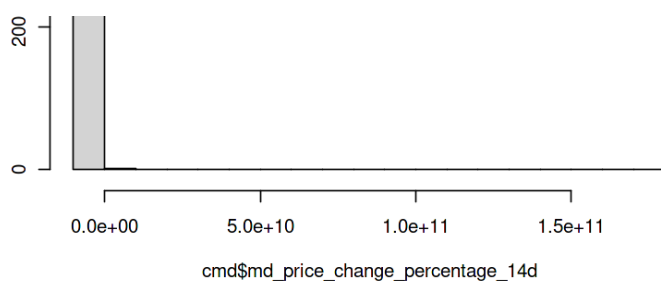**Histogram of cmd$md_price_change_percentage_24h**
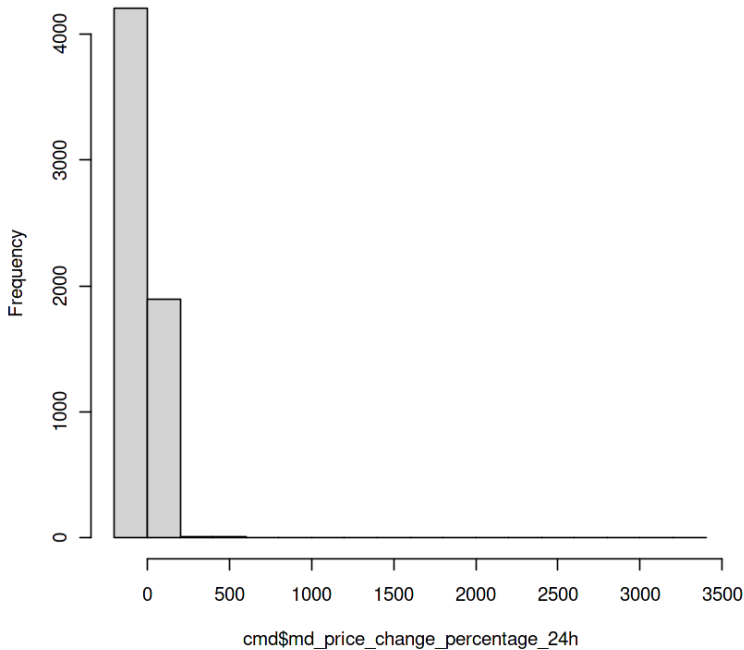
Histogram of cmd$md_price_change_percentage_7d

Histogram of cmd$md_price_change_percentage_14d

cmd$md_price_change_percentage_14d

CLUSTERING

In [35]:

```
library(clustertend)
library(cluster)
library(factoextra)
```

Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa

In [36]:

```
c_df1 <- cmd %>%
    select(id, md_circulating_supply, md_current_price, liquidity_score) %>%
    na.omit()
print(dim(c_df1))
# hopkins(c_df1[,2:4], n=nrow(c_df1)-1)
```

[1] 7391   4

In [37]:

```
c_df1 <- cmd %>%
    select(id, md_circulating_supply, md_current_price, md_ath_change_percentage, md_tot
al_volume, coingecko_score, liquidity_score) %>%
    na.omit()
print(dim(c_df1))
```

[1] 7391   7

In [38]:

```
c_df2 <- scale(c_df1[,2:6])
head(c_df2)
```

A matrix: 6 × 5 of type dbl

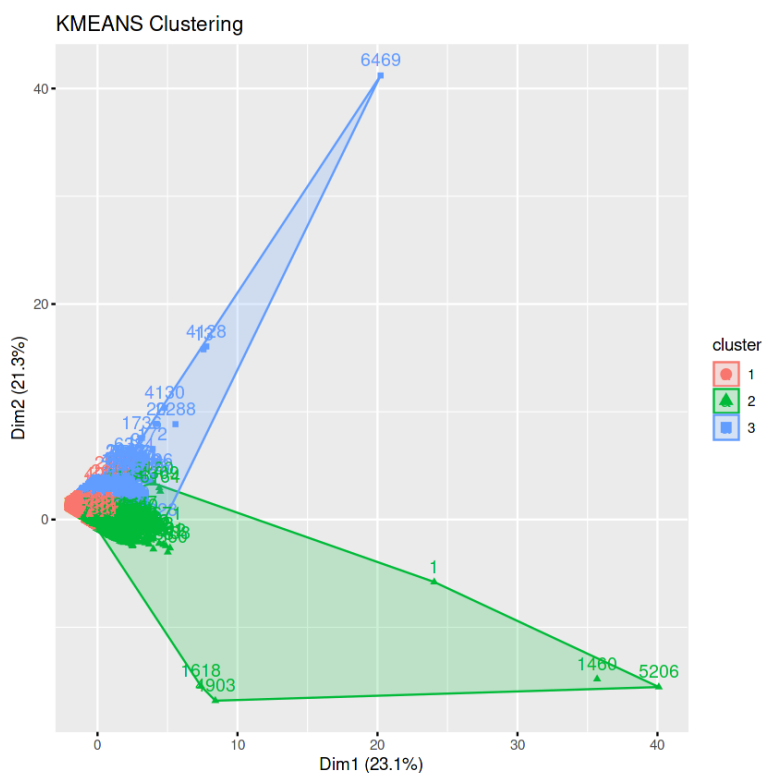| md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score
-0.01757555	5.64273005	1.6469403	29.34793463	6.4399859
-0.01757557	-0.07042533	-0.5038442	-0.02691558	1.0634154
-0.01757558	2.14034157	2.2569243	-0.02688352	-0.9330639
-0.01757558	2.67799358	2.3530290	-0.02690723	-0.9457382
-0.01757558	1.79417306	2.1174197	-0.02691687	-0.9330639
-0.01757558	2.20245028	3.0801292	-0.02691863	-0.9514324

In [39]:

```
fviz_nbclust(c_df2, kmeans, method = "silhouette") + theme_classic()
```


Optimal number of clusters
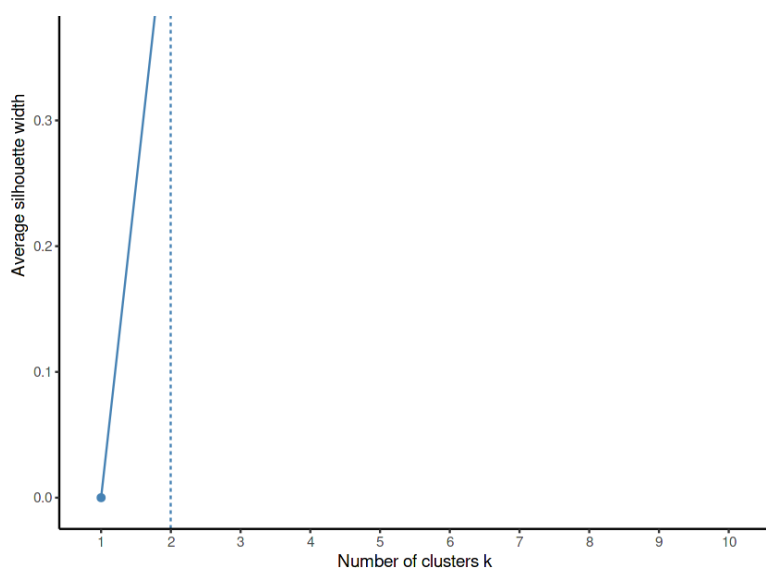
In [40]:

```
res.km <-eclust(c_df2, "kmeans", hc_metric="euclidean",k=3)
```


In [41]:

```
res.km
```

K-means clustering with 3 clusters of sizes 4492, 1752, 1147

Cluster means:
```
  md_circulating_supply md_current_price md_ath_change_percentage
1           -0.01724655      -0.06184674              -0.45053117
2            0.05572452      -0.04737055              -0.09031705
3           -0.01757442       0.31456736               1.90237270
  md_total_volume coingecko_score
1     -0.02656424      -0.4641020
2      0.08142433       1.4207148
3     -0.02033901      -0.3525248
```

Clustering vector:
```
  [1] 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 1 2 2 2 2 3 1 1
 [38] 1 1 3 2 3 1 1 2 1 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 3
 [75] 3 1 1 3 1 1 1 2 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1
[112] 1 3 1 1 1 1 1 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1
[149] 1 1 1 1 1 1 3 1 1 1 1 1 3 3 1 1 1 1 1 1 1 1 1 3 3 1 1 2 1 1 1 1 1 1 1 1 3 1
[186] 1 1 2 1 1 1 3 1 2 3 3 3 3 3 3 1 1 3 2 3 2 3 2 3 2 3 2 1 1 3 2 3 2 3 3 3 3 2
```

```
[223] 3 1 3 3 3 2 1 1 1 1 2 3 2 1 1 1 1 1 1 2 2 3 1 1 3 1 2 1 2 1 1 1 1 2 2 2 1
[260] 1 2 1 1 2 2 2 1 3 1 1 1 2 3 3 2 1 2 2 1 1 2 1 1 1 1 1 1 1 1 1 1 3 2 2 1 2
[297] 1 2 1 2 1 1 1 1 1 2 1 1 2 1 2 1 1 3 3 2 1 2 1 1 2 1 1 3 3 2 1 1 3 1 2 1
[334] 1 1 1 3 1 1 2 3 3 2 3 1 2 2 3 1 1 2 3 1 2 2 3 1 1 1 1 2 1 1 1 1 1 1 3 1
[371] 1 2 3 3 1 2 2 3 1 1 1 1 2 1 1 2 1 2 1 2 1 2 1 1 1 2 3 1 2 1 1 1 3 1 1 1 1
[408] 1 1 2 1 2 2 2 1 2 1 1 3 1 2 1 1 2 1 1 1 2 2 3 2 2 3 1 1 3 1 1 1 1 1 2 3 1
[445] 2 1 2 1 1 1 3 3 3 2 3 1 1 1 2 1 1 1 2 2 2 2 2 1 2 1 1 3 1 1 3 1 3 2 2 2 3
[482] 1 1 1 2 1 2 1 1 1 1 1 1 1 1 2 1 1 3 1 2 1 1 1 2 1 2 1 3 1 1 1 2 2 1 1 2 2
[519] 3 2 1 2 3 1 1 1 2 2 1 1 1 1 1 1 1 1 1 1 2 1 3 2 2 1 1 1 1 1 1 2 1 3 2 1 3
[556] 1 1 1 1 1 1 1 1 2 1 1 1 1 1 2 1 3 1 1 1 3 1 2 1 1 1 1 2 2 1 2 2 2 1 1 1 2 1
[593] 2 2 2 1 1 2 1 3 1 1 1 2 2 1 2 2 2 1 2 1 2 1 1 2 3 1 1 1 2 1 2 2 2 3 1 3 3 1 1
[630] 1 3 1 1 2 1 1 3 1 1 2 2 1 3 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 1 2 3 1 1 1 1
[667] 1 2 1 1 1 3 1 1 2 1 2 1 2 1 2 1 3 1 2 1 1 1 1 3 3 2 1 1 1 1 2 3 3 2 1 2 1 1 2
[704] 1 1 2 1 1 1 1 1 1 1 1 1 1 2 2 1 1 2 3 1 1 3 2 1 1 2 1 1 2 2 1 1 1 1 1 2 1 1
[741] 2 1 1 1 1 2 1 1 1 3 1 1 1 1 1 1 2 1 2 1 1 2 1 1 1 1 3 2 2 1 1 1 1 1 3 2 1
[778] 1 2 1 1 1 1 1 1 1 1 1 2 1 2 1 3 2 2 3 1 2 2 1 1 2 3 1 3 1 2 1 1 1 1 1 3 1
[815] 1 1 1 1 3 2 3 3 3 3 3 3 3 3 3 1 1 3 1 1 1 1 1 3 1 1 3 1 2 2 1 2 1 1 2 1 3
[852] 1 1 1 1 2 3 2 1 1 1 1 1 2 3 1 3 2 2 1 2 2 1 1 2 1 1 1 1 1 3 1 3 1 2 2 2 3
[889] 1 1 1 1 2 1 1 1 1 1 1 1 1 1 2 1 1 2 1 1 2 1 1 1 1 1 2 1 2 1 2 2 1 1 1 2 1 2
[926] 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 2 3 1 1 3 1 2 1 2 3 3 1 1 1
[963] 1 1 1 1 1 1 2 1 1 3 1 1 1 3 1 2 1 1 3 1 1 2 3 1 1 1 3 2 1 1 1 1 1 1 2 1 1
[1000] 2 1 1 1 1 2 2 2 2 1 2 3 1 1 1 2 1 2 1 1 1 3 1 2 3 1 2 3 2 2 2 2 1 1 2 1 2
[1037] 1 1 2 1 3 1 3 1 1 2 2 1 1 1 1 3 1 1 2 3 2 1 2 1 1 1 1 1 1 1 2 1 3 1 2 1 1 1
[1074] 1 1 1 1 1 3 2 2 1 1 1 1 1 1 2 2 1 2 1 1 2 3 2 2 1 2 3 1 1 1 3 1 1 1 1 1 3
[1111] 1 2 1 1 1 2 1 1 1 2 1 2 2 1 1 2 2 1 2 3 1 2 1 2 1 1 2 2 1 1 1 2 1 1 1 1 1
[1148] 3 1 1 1 3 1 3 1 1 1 2 1 1 1 1 1 1 2 1 2 2 1 3 2 1 1 1 1 1 1 2 1 3 1 3 1 1
[1185] 3 1 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 3 2 1 3 2 1 1 1 2 3 1 1 3 2 1 1 3 3
[1222] 2 1 1 1 1 1 1 1 1 1 1 3 1 3 1 1 1 2 1 1 1 1 3 3 1 1 1 1 1 2 1 1 1 1 1 2 1
[1259] 1 1 3 1 1 1 1 1 2 1 1 2 3 1 1 1 1 2 2 2 3 2 2 1 1 1 2 1 2 1 1 3 1 2 1 2
[1296] 1 1 1 2 1 1 3 2 2 1 2 2 3 1 1 2 3 2 1 2 1 2 1 1 1 1 3 1 3 2 1 3 1 3 2 2 2
[1333] 1 1 2 2 1 1 1 2 2 2 1 2 2 2 1 1 1 1 1 1 2 3 1 1 2 3 1 1 1 1 1 1 2 1 2 1 1 1 1
[1370] 2 1 1 2 2 1 2 1 1 1 1 1 1 2 1 1 2 2 1 1 2 1 1 2 1 2 1 3 1 1 1 1 1 2 3 1 1 1 3 1 3
[1407] 1 2 1 2 1 1 2 1 1 1 1 3 1 1 1 1 2 2 1 3 1 2 1 2 1 2 1 1 1 3 3 3 3 3 3 3
[1444] 2 3 2 1 2 3 1 3 3 3 3 3 1 2 2 1 1 2 1 2 1 2 1 1 1 1 3 3 1 1 2 1 3 3 3 1 1 1 2 2
[1481] 1 1 2 1 2 1 1 1 2 3 2 1 3 3 3 3 3 1 2 2 2 1 3 3 3 3 3 3 1 1 1 3 3 1 1 2 2
[1518] 1 1 1 1 1 1 3 3 1 1 3 2 1 2 2 2 2 2 1 1 1 1 2 1 3 1 3 1 1 1 1 1 3 2 1 2 2
[1555] 1 3 3 1 3 1 1 1 2 2 2 1 2 3 1 2 1 3 1 1 1 3 1 1 3 2 1 2 2 1 1 1 1 1 1 1 1
[1592] 1 1 1 1 2 1 2 1 1 1 1 1 1 3 1 2 1 3 2 2 1 1 2 1 2 2 3 1 1 1 3 2 2 1 2
[1629] 1 1 1 1 1 2 2 2 1 1 1 1 3 1 1 1 1 3 1 1 2 1 3 1 2 2 1 2 2 1 1 3 2 1 1
[1666] 1 1 3 1 3 1 3 1 3 1 1 1 1 1 1 1 1 1 3 3 2 1 2 2 2 3 1 1 2 1 3 2 1 1 2 1 1
[1703] 1 1 3 2 1 3 3 1 2 3 3 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 3 1 1 1
[1740] 1 3 2 1 1 1 2 1 1 1 2 2 1 3 3 1 1 1 1 1 2 1 1 1 1 1 2 1 2 2 2 1 1 2 1 3 1 1
[1777] 3 1 1 2 1 1 2 1 1 1 1 1 1 1 1 2 1 1 1 1 1 2 2 1 1 1 1 1 1 1 1 3 2 2 2 1 3 1
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Within cluster sum of squares by cluster:
[1]   1763.363 17120.865 8185.313
 (between_SS / total_SS = 26.7 %)

Available components:

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[11] "silinfo"   "nbclust"   "data"

In [42]:

```
fviz_cluster(res.km, geom = "point", ellipse.type = "norm", ggtheme = theme_minimal())
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Cluster plot

40 -
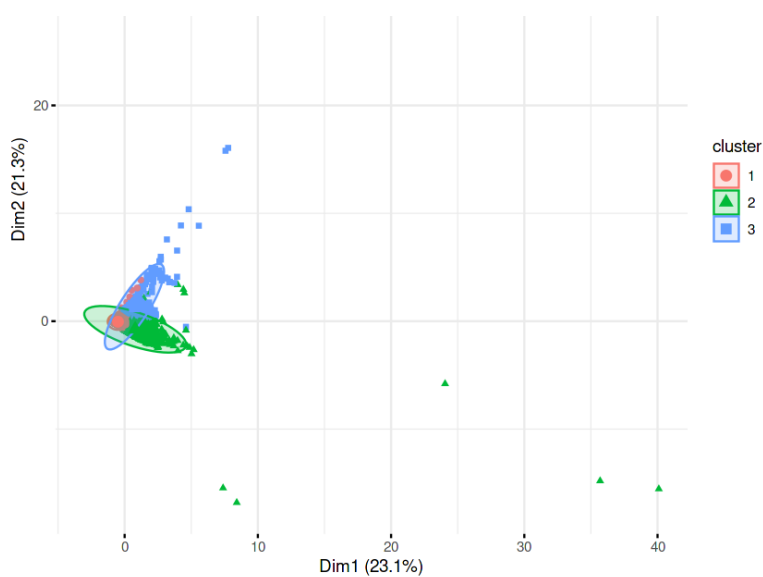
```
df2 <- select(cmd, id, asset_platform_id)
c_df1 <- left_join(c_df1, df2, by = "id")
head(c_df1)
```

A tibble: 6 × 8

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity_s
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<
bitcoin	18713700	3.836200e+04	-40.80338	8.038165e+10	80.479	100
01coin	10646361	2.671480e-03	-92.18446	1.226970e+04	21.938	
0-5x-long-algorand-token	0	1.484459e+04	-26.23119	9.999500e+04	0.200	
0-5x-long-altcoin-index-token	0	1.845475e+04	-23.93530	3.513600e+04	0.062	
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0-5x-long-bitcoin-cash-token	0	1.526163e+04	-6.56527	3.932310e+03	0.000	

In [44]:

```
c_df1$cluster <- res.km$cluster
c_df1 %>%
    group_by(cluster) %>%
    slice_max(order_by = coingecko_score,n = 7)

c_df1 %>%
    filter(id == "chainlink")
```

A grouped_df: 21 × 9

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
lightpaycoin	0.000000e+00	2.170915e-02	-99.91057	2.171000e+01	16.761	

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity
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cappasity	0.000000e+00	3.092680e-03	-99.35413	4.827300e+04	16.644	
hilux	1.043483e+07	8.292100e-04	-98.61603	1.680000e+00	16.626	
lition	8.783512e+07	6.620860e-03	-98.21895	1.608196e+04	16.605	
liquidity-network	5.221878e+07	9.215160e-03	-99.42599	6.786500e+04	16.587	
gentarium	5.381715e+06	1.612052e-02	-99.48856	1.640000e+01	16.566	
bitcoin	1.871370e+07	3.836200e+04	-40.80338	8.038165e+10	80.479	
ethereum	1.159805e+08	2.366040e+03	-45.64788	1.413929e+11	77.576	
dogecoin	1.297079e+11	3.420340e-01	-53.03660	6.910886e+09	72.131	
eos	9.576606e+08	5.280000e+00	-76.74584	4.683260e+09	67.251	
binancecoin	1.545337e+08	3.146000e+02	-54.18894	4.659247e+09	66.874	
cardano	3.206639e+10	1.140000e+00	-53.07300	6.196208e+09	66.017	
stellar	2.310744e+10	4.019230e-01	-53.61976	1.733884e+09	65.245	
binance-usd	8.608934e+09	1.000000e+00	-13.21252	9.314613e+09	36.080	
musd	3.247126e+07	1.000000e+00	-16.74699	5.861900e+04	33.328	
compound-usdt	3.166555e+10	2.118068e-02	-9.68700	6.166010e+05	31.336	
husd	1.007187e+09	1.010000e+00	-20.57916	3.676914e+08	30.699	
interest-bearing-bitcoin	5.249890e+02	3.956300e+04	-23.78174	3.680445e+06	30.371	
wrapped-bitcoin	1.816634e+05	3.825000e+04	-40.75814	8.553752e+08	30.320	
liquity-usd	6.336208e+08	9.964900e-01	-13.78112	3.086008e+07	30.105	

A tibble: 1 × 9

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity_sc
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<d
chainlink	428009554	16.72	-67.51993	2000646684	64.118	77

In [47]:

```
# Using Partitioning Around Medoids
fviz_nbclust(c_df2,pam, method = "silhouette") + theme_classic()
```

In [50]:

```
pam.res <- eclust(c_df2, "pam", k = 3, hc_metric="euclidean")
```

PAM Clustering
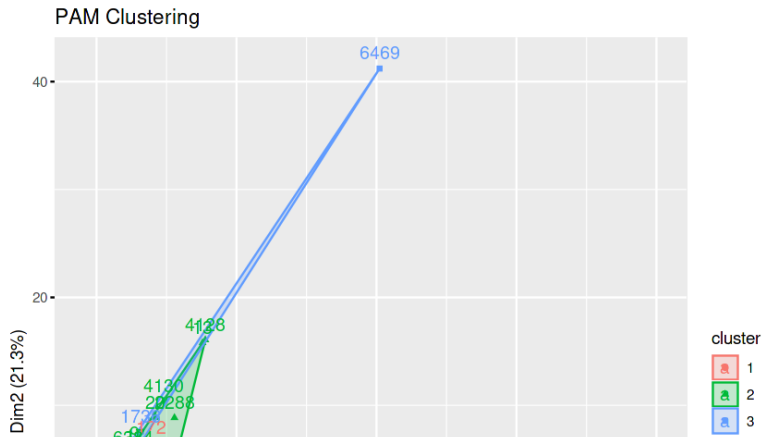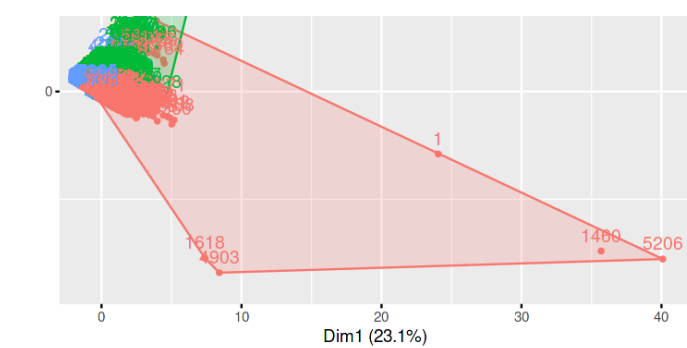
```
fviz_cluster(pam.res, geom = "point", ellipse.type = "norm", ggtheme = theme_minimal())
```
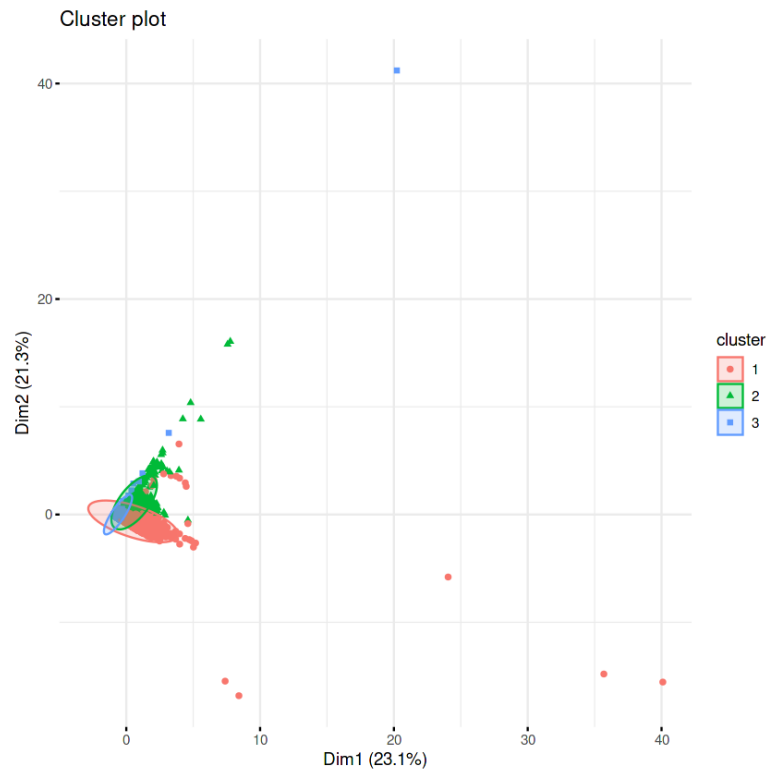

In [52]:

```
pam.res$clusinfo
```

A matrix: 3 × 5 of type dbl

size	max_diss	av_diss	diameter	separation
2538	62.30673	0.9948755	87.53293	0.007520285
1423	23.55546	1.1426882	24.03467	0.012946979
3430	64.81840	0.4188246	64.83250	0.007520285

In [53]:

```
c_df1$pcluster <- pam.res$clustering
# head(c_df1)
c_df1 %>%
    group_by(pcluster) %>%
    slice_max(order_by = coingecko_score,n = 7)
```

A grouped_df: 21 × 10

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
bitcoin	18713700	3.836200e+04	-40.80338	8.038165e+10	80.479	
ethereum	115980456	2.366040e+03	-45.64788	1.413929e+11	77.576	

dogecoid	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity
<chr>	95766...	5.280000e...	-76.74...	4.683260e...	67....	
binancecoin	154533652	3.146000e+02	-54.18894	4.659247e+09	66.874	
cardano	32066390668	1.140000e+00	-53.07300	6.196208e+09	66.017	
stellar	23107442288	4.019230e-01	-53.61976	1.733884e+09	65.245	
dai	4064376026	9.902140e-01	-18.76367	1.125371e+09	40.359	
paxos-standard	1419829455	9.992850e-01	-11.21073	1.099693e+08	40.300	
binance-usd	8608933842	1.000000e+00	-13.21252	9.314613e+09	36.080	
celsius-degree-token	383306566	5.920000e+00	-24.62409	3.685521e+07	35.489	
usdp	117057384	1.010000e+00	-28.31659	1.888397e+07	34.836	
unit-protocol-duck	211357079	4.755070e-01	-26.50658	2.248108e+06	34.228	
quant-network	12873332	4.149000e+01	-33.74473	8.272062e+06	33.622	
secure-cash	106931	7.501000e-02	-99.94411	8.180000e+00	11.396	
sucrecoin	10170765	1.245560e-03	-99.62235	3.323000e+01	11.385	
nyxcoin	8965008	3.042344e-02	-99.79206	2.329600e+05	11.349	
paypex	94048768	4.772000e-05	-99.99944	5.553000e+01	11.347	
emergency-coin	8788203	1.421780e-03	-98.39714	1.418940e-03	11.346	
lux	565400550	9.162700e-04	-99.94490	8.766000e+01	11.307	
zeusshield	1960019216	2.820100e-04	-99.68156	1.974070e+03	11.296	

In [54]:

```
p_df1 <- pod %>%
    select(id, community_score, stars, reddit_accounts_active_48h, reddit_average_commen
ts_48h,
         developer_score, commit_count_4_weeks) %>%
    na.omit()
print(dim(p_df1))
```

```
[1] 7457    7
```

In [55]:

```
p_df2 <- scale(p_df1[,2:7])
head(p_df2)
```

A matrix: 6 × 6 of type dbl

community_score	stars	reddit_accounts_active_48h	reddit_average_comments_48h	developer_score	commit_count_4_w
5.690806	70.12967668	28.68326425	11.24894366	5.2485493	18.088
0.394753	-0.03090436	-0.03327772	-0.02480121	2.0968303	-0.090
-1.012249	-0.04912113	-0.04462544	-0.02480121	-0.4733738	-0.090
-1.012249	-0.04912113	-0.04462544	-0.02480121	-0.4733738	-0.090
-1.012249	-0.04912113	-0.04462544	-0.02480121	-0.4733738	-0.090
-1.012249	-0.04912113	-0.04462544	-0.02480121	-0.4733738	-0.090

```
fviz_nbclust(p_df2, kmeans, method = "silhouette") + theme_classic()
```

Optimal number of clusters
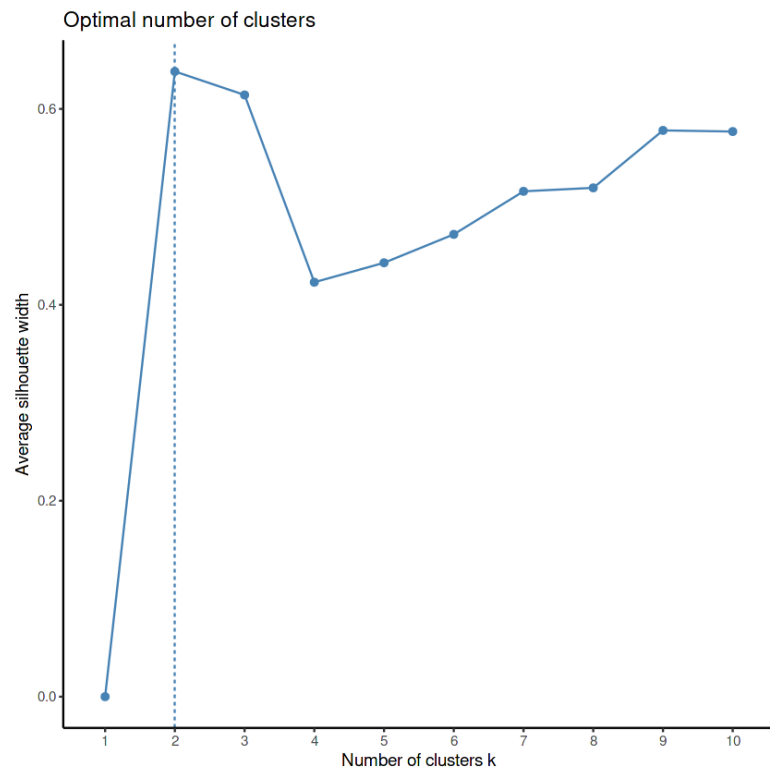
```
res.km1 <-eclust(p_df2, "kmeans", hc_metric="euclidean",k=3)
```
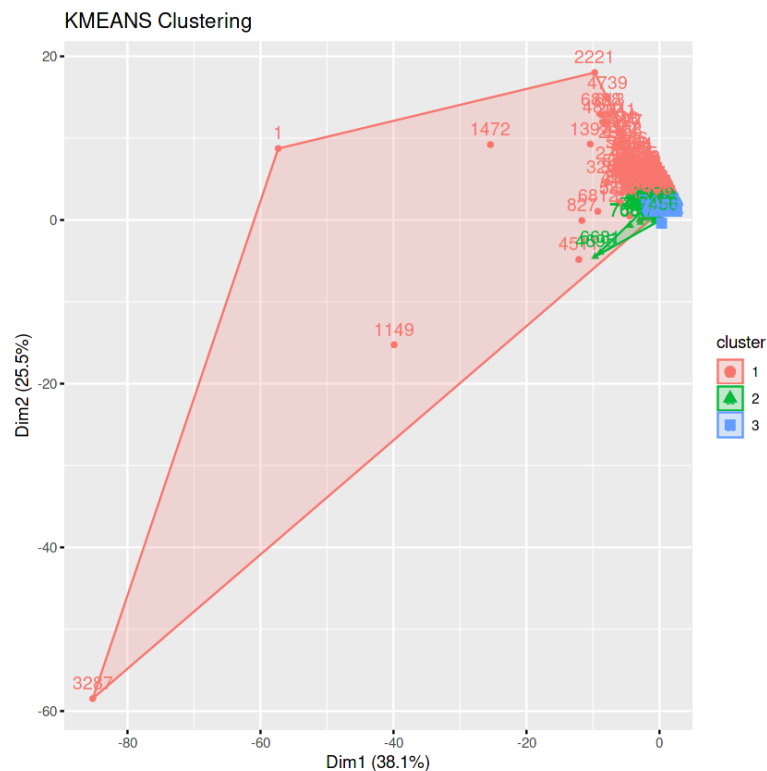
KMEANS Clustering

```
res.km1
```

```
K-means clustering with 3 clusters of sizes 726, 1131, 5600

Cluster means:
  community_score       stars reddit_accounts_active_48h
1       1.2184279  0.44095546                  0.28327054
2       1.5669983 -0.04577552                  0.03786476
3      -0.4744382 -0.04792170                 -0.04437133
  reddit_average_comments_48h developer_score commit_count_4_weeks
```

1	0.184312484	2.6487252	0.80547163
2	0.004469878	-0.1575461	-0.08486206
3	-0.024797553	-0.3115696	-0.08728454

Clustering vector:
```
   [1] 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 1 1 1 3 3 3
  [38] 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
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Within cluster sum of squares by cluster:
[1] 30301.038  1175.210  1701.912
 (between_SS / total_SS =  25.8 %)

Available components:

 [1] "cluster"       "centers"       "totss"         "withinss"      "tot.withinss"
 [6] "betweenss"     "size"          "iter"          "ifault"        "clust plot"
```

In [59]:

```
df2 <- select(cmd, id, asset_platform_id)
p_df1 <- left_join(p_df1, df2, by = "id")
head(p_df1)
```

A tibble: 6 × 8

id	community_score	stars	reddit_accounts_active_48h	reddit_average_comments_48h	developer_score	commit_cou
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
bitcoin	71.280	53934	12658	2110.636	98.879	
01coin	14.962	14	5	0.000	44.415	
0-5x-long-algorand-token	0.000	0	0	0.000	0.000	
0-5x-long-altcoin-index-token	0.000	0	0	0.000	0.000	
0-5x-long-balancer-token	0.000	0	0	0.000	0.000	
0-5x-long-bitcoin-cash-token	0.000	0	0	0.000	0.000	

In [60]:

```
p_df1$pod_cluster <- res.km1$cluster
p_df1 %>%
    group_by(pod_cluster) %>%
    slice_max(order_by = developer_score,n = 7)

p_df1 %>%
    filter(id == "chainlink")
```

A grouped_df: 21 × 9

id	community_score	stars	reddit_accounts_active_48h	reddit_average_comments_48h	developer_score	commit_cc
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
bitcoin	71.280	53934	12658	2110.636	98.879	
ethereum	62.899	30455	3961	278.167	97.173	
eos	48.324	11188	391	31.636	94.125	
status	37.677	3127	47	0.750	89.147	
lisk	43.460	2741	80	2.250	88.940	
monero	55.134	5855	1120	222.167	88.847	
stellar	50.643	2715	649	52.333	87.629	
nucleus-vision	43.643	0	68	0.000	36.042	
cortex	39.537	10	12	0.250	34.532	
blockv	29.645	6	20	0.000	33.618	
digitalnote	33.505	0	72	0.917	33.600	

id	community_score	stars	reddit_accounts_active_48h	reddit_average_comments_48h	developer_score	commit_co...
hshare	25.xxx					
quantstamp	37.xxx	9	2	0.000	33.xxx	
thunder-token	30.033	35	4	0.000	33.026	
chronologic	0.000	39	0	0.000	45.077	
bitcoen	0.000	5	0	0.000	44.573	
narrative	0.000	14	0	0.000	44.237	
iftoken	5.122	5	0	0.000	40.544	
proxynode	4.139	11	0	0.000	40.043	
lunarium	4.879	4	0	0.000	39.812	
lightbit	6.222	3	0	0.000	39.639	

A tibble: 1 × 9

id	community_score	stars	reddit_accounts_active_48h	reddit_average_comments_48h	developer_score	commit_count
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
chainlink	48.091	1945	466	12.667	84.784	

In [61]:

```
df3 <- select(p_df1, id, pod_cluster, developer_score, community_score)
value_coins <- left_join(c_df1, df3, by = "id")
head(value_coins)
```

A tibble: 6 × 13

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity_s...
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<
bitcoin	18713700	3.836200e+04	-40.80338	8.038165e+10	80.479	100
01coin	10646361	2.671480e-03	-92.18446	1.226970e+04	21.938	
0-5x-long-algorand-token	0	1.484459e+04	-26.23119	9.999500e+04	0.200	
0-5x-long-altcoin-index-token	0	1.845475e+04	-23.93530	3.513600e+04	0.062	
0-5x-long-balancer-token	0	1.252018e+04	-29.56388	8.744970e+03	0.200	
0-5x-long-bitcoin-cash-token	0	1.526163e+04	-6.56527	3.932310e+03	0.000	

In [62]:

```
value_coins <- value_coins %>%
    filter(cluster == 2 & pcluster == 1 & pod_cluster == 1) %>%
    arrange(desc(coingecko_score))
print(dim(value_coins))
head(value_coins)
```

```
[1] 605  13
```

A tibble: 6 × 13

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
bitcoin	18713700	3.83620e+04	-40.80338	80381645199	80.479	
ethereum	115980456	2.36604e+03	-45.64788	141392923000	77.576	
dogecoin	129707901212	3.42034e-01	-53.03660	6910885512	72.131	
eos	957660558	5.28000e+00	-76.74584	4683260015	67.251	
binancecoin	154533652	3.14600e+02	-54.18894	4659247041	66.874	
cardano	32066390668	1.14000e+00	-53.07300	6196208407	66.017	

In [63]:

```
value_coins %>%
    filter(id %in% top_coins$id)
```

A tibble: 13 × 13

id	md_circulating_supply	md_current_price	md_ath_change_percentage	md_total_volume	coingecko_score	liquidity
<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
bitcoin	1.871370e+07	3.836200e+04	-40.80338	80381645199	80.479	
ethereum	1.159805e+08	2.366040e+03	-45.64788	141392923000	77.576	
dogecoin	1.297079e+11	3.420340e-01	-53.03660	6910885512	72.131	
binancecoin	1.545337e+08	3.146000e+02	-54.18894	4659247041	66.874	
cardano	3.206639e+10	1.140000e+00	-53.07300	6196208407	66.017	
ripple	4.613537e+10	9.011180e-01	-73.49166	9566094773	64.922	
monero	1.791519e+07	2.436300e+02	-55.07632	671078996	63.943	
vechain	6.524175e+10	1.042540e-01	-62.64408	1896226504	63.058	
matic-network	6.155590e+09	1.330000e+00	-49.22384	3994657609	59.958	
vethor-token	3.569292e+10	9.752670e-03	-78.94933	73678442	56.276	
safemoon	5.836952e+14	4.740000e-06	-56.37564	38231343	44.822	
banano	1.244918e+09	2.631352e-02	-51.39859	676190	39.781	
moon	0.000000e+00	7.291100e-02	-84.24242	22774	17.663	

In [65]:

```
value_coins$coingecko_rank <- cmd$coingecko_rank[match(value_coins$id,cmd$id)]
```

In [71]:

```
dim(value_coins)
```

605 · 14

In [94]:

```
m <- c(100, 200, 300, 400, 500, 600)
for (i in m){
    rank <- value_coins %>%
    arrange(coingecko_rank) %>%
```

```
    head(i) %>%
    tail(1) %>%
    select(coingecko_rank)
    print(paste0("Top ",i," coins - ",(i/rank$coingecko_rank)*100,"%"))
}
```

```
[1] "Top 100 coins - 99.0099009900099%"
[1] "Top 200 coins - 89.2857142857143%"
[1] "Top 300 coins - 78.9473684210526%"
[1] "Top 400 coins - 67.0016750418761%"
[1] "Top 500 coins - 54.585152838428%"
[1] "Top 600 coins - 35.3565114908662%"
```