

ls— title: “gl05\_hoermann” author: “Paul Hörmann” date: “11/25/2019” output: pdf\_document — #  
Aufgabe 1: Forbes 2000

Setup Environment

```
library(data.table)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:data.table':
##
##   between, first, last

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
str(dtforbes)
```

```
## Classes 'data.table' and 'data.frame':  2000 obs. of  9 variables:
## $ V1      : int  1 2 3 4 5 6 7 8 9 10 ...
## $ rank     : int  1 2 3 4 5 6 7 8 9 10 ...
## $ name     : chr  "Citigroup" "General Electric" "American Intl Group" "ExxonMobil" ...
## $ country  : chr  "United States" "United States" "United States" "United States" ...
## $ category : chr  "Banking" "Conglomerates" "Insurance" "Oil & gas operations" ...
## $ sales    : num  94.7 134.2 76.7 222.9 232.6 ...
## $ profits  : num  17.85 15.59 6.46 20.96 10.27 ...
## $ assets   : num  1264 627 648 167 178 ...
## $ marketvalue: num  255 329 195 277 174 ...
## - attr(*, ".internal.selfref")=<externalptr>
```

```
ndtforbes = nrow(dtforbes)
```

Erste & Letzte 5:

```
slice(dtforbes, c(1:5, (n() - 5):n()))
```

```
##      V1 rank      name      country
## 1     1     1      Citigroup United States
## 2     2     2  General Electric United States
## 3     3     3 American Intl Group United States
## 4     4     4    ExxonMobil United States
## 5     5     5         BP United Kingdom
## 6 1995 1995         AMEC United Kingdom
## 7 1996 1996    Siam City Bank    Thailand
## 8 1997 1997  Yokogawa Electric    Japan
## 9 1998 1998  Hindalco Industries    India
## 10 1999 1999      Nexans    France
## 11 2000 2000 Oriental Bank of Commerce    India
##      category sales profits assets marketvalue
## 1      Banking  94.71   17.85 1264.03    255.30
## 2 Conglomerates 134.19   15.59  626.93    328.54
## 3      Insurance  76.66    6.46  647.66    194.87
```

```
## 4      Oil & gas operations 222.88  20.96 166.99  277.02
## 5      Oil & gas operations 232.57  10.27 177.57  173.54
## 6      Construction      5.17    0.02  2.62    1.53
## 7      Banking            0.48    0.02 11.27    1.47
## 8 Business services & supplies 2.78 -0.22  2.96    3.29
## 9      Materials          1.35    0.14  2.47    2.76
## 10     Capital goods      5.09    0.00  2.71    0.88
## 11     Banking            0.81    0.10  7.16    1.17
```

## Sales

```
dtforbes[,list(
  Min = min(sales),
  Median = median(sales),
  Max = max(sales),
  SD = sd(sales)
)]
```

```
##      Min Median      Max      SD
## 1: 0.01  4.365 256.33 18.00259
```

## Profits

```
dtforbes[,list(
  Min = min(profits),
  Median = median(profits),
  Max = max(profits),
  SD = sd(profits)
)]
```

```
##      Min Median Max SD
## 1: NA      NA NA NA
```

## Assets

```
dtforbes[,list(
  Min = min(assets),
  Median = median(assets),
  Max = max(assets),
  SD = sd(assets)
)]
```

```
##      Min Median      Max      SD
## 1: 0.27  9.345 1264.03 99.67879
```

## Marketvalue

```
dtforbes[,list(
  Min = min(marketvalue),
  Median = median(marketvalue),
  Max = max(marketvalue),
  SD = sd(marketvalue)
)]
```

```
##      Min Median      Max      SD
## 1: 0.02   5.15 328.54 24.4602
```

## Keys

```
setkey(dtforbes, country, assets, category, profits)
```

- österreichische Finanzinstitute:

```
dtforbes[("Austria")]
```

```
##      V1 rank      name country      category
## 1: 1567 1567      voestalpine Austria      Materials
## 2:  720  720      OMV Group Austria      Oil & gas operations
## 3: 1184 1184 Verbund-Austrian Electric Austria      Utilities
## 4: 1105 1105      Telekom Austria Austria      Telecommunications services
## 5: 1408 1408      Wiener Stadtische Austria      Insurance
## 6: 1499 1499      Uniqa Austria      Insurance
## 7: 1912 1912      Investkredit Bank Austria      Banking
## 8:  363  363      Erste Bank Austria      Banking
##      sales profits assets marketvalue
## 1:  4.78   0.08   4.84       1.90
## 2:  7.44   0.33   6.30       4.45
## 3:  2.18   0.16   7.27       4.28
## 4:  3.28   0.01   8.76       7.58
## 5:  3.58  -0.02  11.71       2.39
## 6:  3.16   0.00  13.67       1.34
## 7:  1.22   0.03  14.16       0.57
## 8:  7.50   0.27 126.93       8.12
```

Mittelwert pro Land:

```
dtforbes[,.(Mittel_Land = mean(assets)), by = country]
```

```
##      country Mittel_Land
## 1:      Africa 11.220000
## 2:    Australia 28.827297
## 3: Australia/ United Kingdom 17.370000
## 4:      Austria 24.205000
## 5:     Bahamas  3.620000
## 6:     Belgium 79.911111
## 7:     Bermuda 13.845500
## 8:     Brazil 18.376667
## 9:     Canada 32.971786
## 10:  Cayman Islands  4.658000
## 11:      Chile  6.820000
## 12:      China 16.482400
## 13:  Czech Republic  6.445000
## 14:     Denmark 39.065000
## 15:     Finland 14.315455
## 16:     France 62.345238
## 17: France/ United Kingdom 14.880000
## 18:     Germany 81.388615
## 19:     Greece 19.153333
## 20: Hong Kong/China 14.943000
## 21:     Hungary 10.390000
```

```
## 22:          India 11.906296
## 23:      Indonesia 9.312857
## 24:      Ireland 52.710000
## 25:      Islands 4.040000
## 26:      Israel 22.895000
## 27:      Italy 54.887805
## 28:      Japan 31.864304
## 29:      Jordan 22.780000
## 30:      Kong/China 16.775000
## 31:      Korea 4.837500
## 32:      Liberia 11.320000
## 33:      Luxembourg 36.715000
## 34:      Malaysia 11.509375
## 35:      Mexico 7.080000
## 36:      Netherlands 89.156786
## 37: Netherlands/ United Kingdom 73.105000
## 38:      New Zealand 4.550000
## 39:      Norway 20.880000
## 40:      Pakistan 2.350000
## 41:      Panama/ United Kingdom 23.400000
## 42:      Peru 0.620000
## 43:      Philippines 5.365000
## 44:      Poland 3.990000
## 45:      Portugal 19.842857
## 46:      Russia 19.197500
## 47:      Singapore 18.664375
## 48:      South Africa 11.906000
## 49:      South Korea 21.796222
## 50:      Spain 40.188621
## 51:      Sweden 34.454615
## 52:      Switzerland 73.046765
## 53:      Taiwan 13.773714
## 54:      Thailand 13.014444
## 55:      Turkey 10.556667
## 56:      United Kingdom 45.495693
## 57:      United Kingdom/ Australia 24.080000
## 58:      United Kingdom/ Netherlands 2.510000
## 59:      United Kingdom/ South Africa 23.460000
## 60:      United States 30.335406
## 61:      Venezuela 6.690000
##          country Mittel_Land
```

Mittel pro Land und Kategorie

```
dtforbes[,.(Mittel_Land_Kategorie = mean(assets)), by = list(country, category)]
```

```
##          country          category Mittel_Land_Kategorie
## 1:      Africa      Food markets          1.27000
## 2:      Africa      Insurance          21.17000
## 3:    Australia      Materials          3.49250
## 4:    Australia      Construction          2.66000
## 5:    Australia Hotels restaurants & leisure          1.57000
## ---
## 459: United States      Capital goods          11.30300
## 460: United States      Conglomerates          67.39182
```

```
## 461: United States          Utilities          17.14870
## 462: United States          Banking           80.00205
## 463:      Venezuela      Diversified financials    6.69000
```

Mittel Marktwert und Verkaufserlös

```
dtforbes[,list(Mittel_assets = mean(assets),Mittel_profit = mean(sales))]
```

```
##      Mittel_assets Mittel_profit
## 1:      34.04185      9.69701
```

Anzahl US Unternehmen und mittlerer Marktwert und Erlös pro Kategorie

```
dtforbes[("United States"),
  list(Anzahl = length(name),Mittel_assets = mean(assets),Mittel_profit = mean(sales)),
  by = category]
```

```
##              category Anzahl Mittel_assets Mittel_profit
## 1:      Diversified financials      60      79.245000      5.564000
## 2:      Business services & supplies      31       5.856774      3.872903
## 3:      Household & personal products      20       7.837500      8.141000
## 4:      Transportation      17      16.314706      10.531765
## 5:      Semiconductors      16       7.057500      4.089375
## 6:      Oil & gas operations      32      19.616250      20.488125
## 7:      Retailing      53       9.165849      17.291132
## 8:      Media      28      22.768929      7.417857
## 9: Health care equipment & services      53       7.806792      10.042642
## 10: Technology hardware & equipment      33      12.593030      12.490909
## 11:      Drugs & biotechnology      21      18.258095      10.046190
## 12:      Food markets      9       8.098889      22.585556
## 13:      Construction      18       4.955556      5.557778
## 14:      Hotels restaurants & leisure      17       8.827647      5.598824
## 15:      Telecommunications services      16      35.566875      16.026875
## 16:      Chemicals      13      11.410000      8.525385
## 17:      Software & services      21      10.573810      5.974762
## 18:      Food drink & tobacco      28      12.844643      12.042143
## 19:      Insurance      46      63.307174      9.793043
## 20:      Materials      26      10.189615      7.121538
## 21:      Consumer durables      25      37.132400      22.486000
## 22:      Aerospace & defense      10      19.765000      17.737000
## 23:      Capital goods      10      11.303000      9.032000
## 24:      Conglomerates      11      67.391818      21.170000
## 25:      Utilities      54      17.148704      6.918704
## 26:      Banking      83      80.002048      5.506265
##              category Anzahl Mittel_assets Mittel_profit
```