Homework 3,.1

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Exercise 4.4 (a) Categorical variables: sex, future plans, citizenship Numerical variables: age at graduation, time to complete degree, class rank, grade point average Nominal: Sex, citizenship Ordinal: future plans Discrete: Class rank Cointinuous: Age at graduation, grade point average

Exercise 4.4 (b) Ratio scale: age at graduation, time to complete degree Interval scale: class rank, grade point average

Exercise 4.7 (a)

```
.146*6276+.087*5212+.386*6928+6127*.494+.465*4094+.581*6397+.346*2417
```

```
## [1] 13527.33
```

```
library(qcc)
```

```
## Warning: package 'qcc' was built under R version 4.3.3
```

```
## Package 'qcc' version 2.7
```

```
## Type 'citation("qcc")' for citing this R package in publications.
```
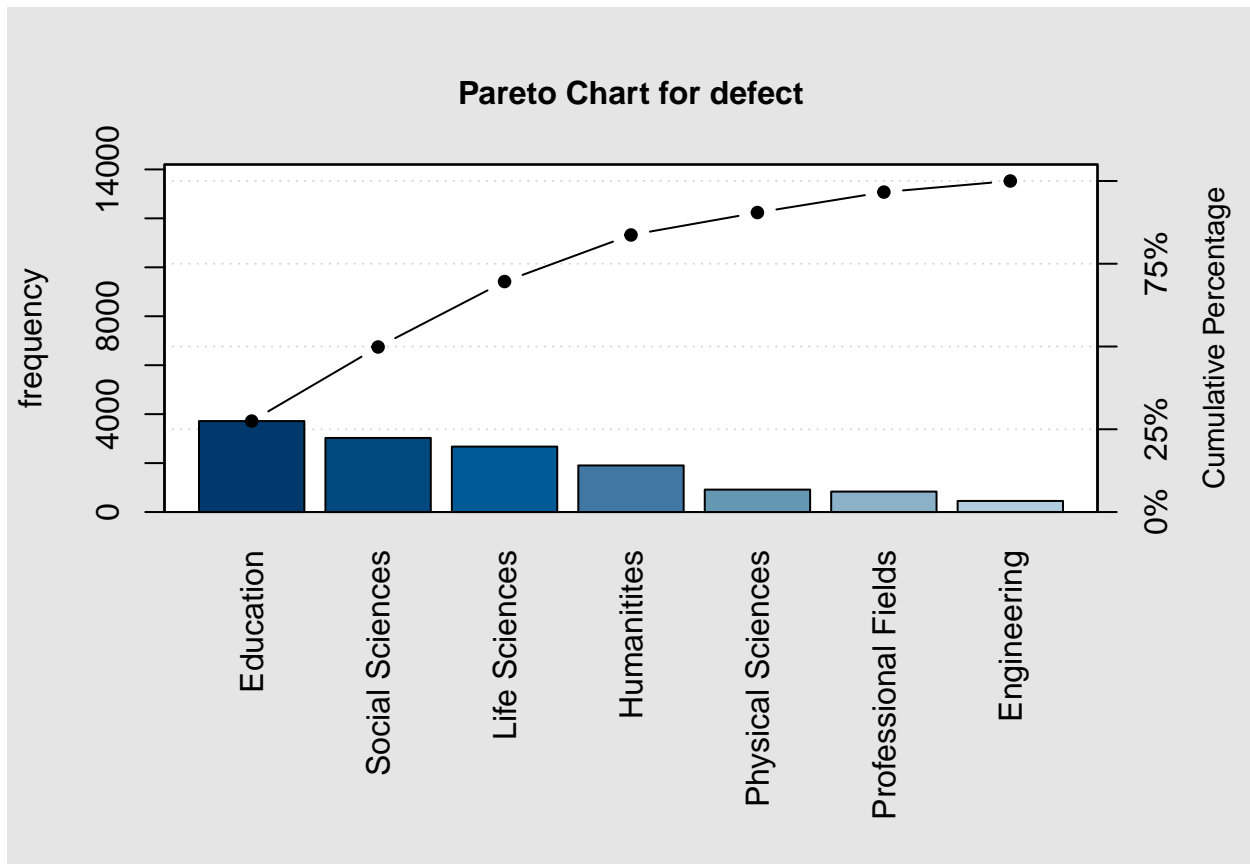
```
defect <- c(.146*6276,.087*5212,.386*6928,6127*.494,.465*4094,.581*6397,.346*2417)
names(defect) <- c("Physical Sciences","Engineering","Life Sciences","Social Sciences","Humanitites","Ec
pareto.chart(defect,xab="Categories",ylab="frequency")
```

```
## Warning in plot.window(xlim, ylim, log = log, ...): "xab" is not a graphical
## parameter
```

```
## Warning in axis(if (horiz) 2 else 1, at = at.l, labels = names.arg, lty =
## axis.lty, : "xab" is not a graphical parameter
```

```
## Warning in title(main = main, sub = sub, xlab = xlab, ylab = ylab, ...): "xab"
## is not a graphical parameter
```

```
## Warning in axis(if (horiz) 1 else 2, cex.axis = cex.axis, ...): "xab" is not a
## graphical parameter
```

Pareto Chart for defect


```
## 
## Pareto chart analysis for defect
##                      Frequency    Cum.Freq.    Percentage Cum.Percent.
##   Education        3716.657000  3716.657000     27.475160    27.475160
##   Social Sciences  3026.738000  6743.395000     22.374976    49.850137
##   Life Sciences    2674.208000  9417.603000     19.768920    69.619057
##   Humanitites      1903.710000 11321.313000     14.073060    83.692117
##   Physical Sciences 916.296000 12237.609000      6.773662    90.465779
##   Professional Fields 836.282000 13073.891000    6.182164    96.647943
##   Engineering       453.444000 13527.335000      3.352057   100.000000
```

Exercise 4.7 (b) Most degrees are awarded in education with very few in engineering.