Data discription and transformation

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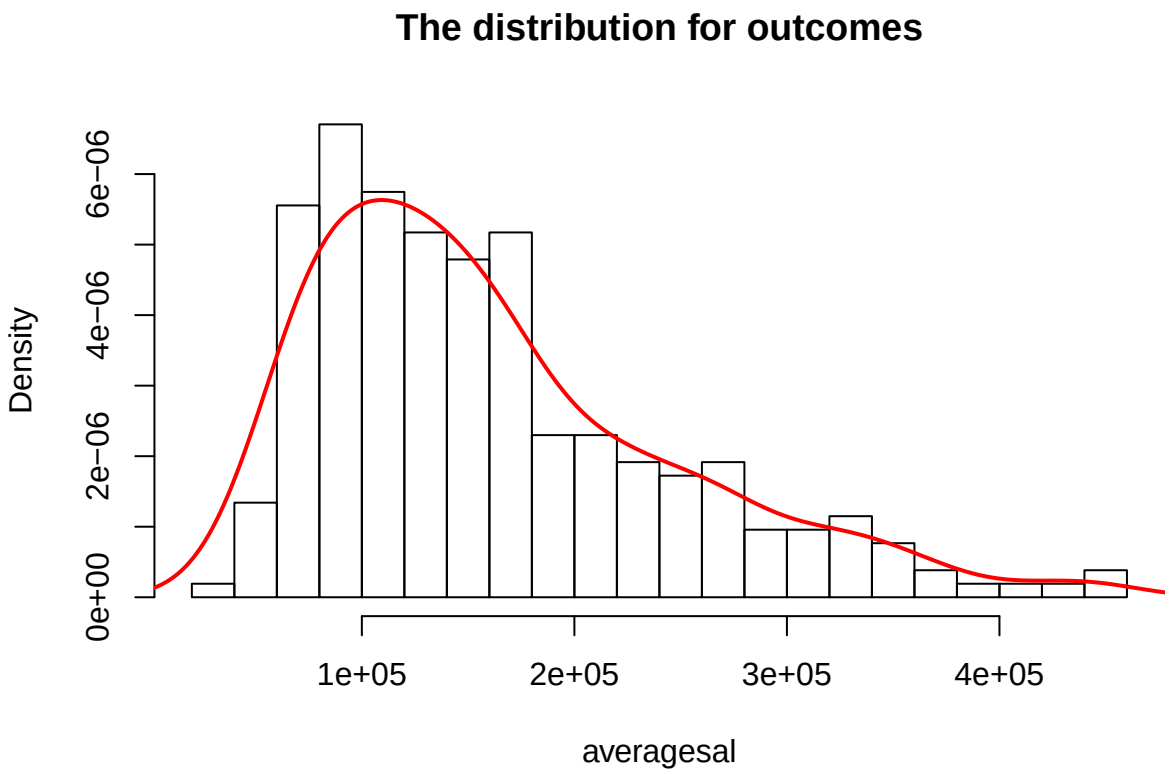
```
lawsuit =
  read_csv("./Lawsuit.csv") %>%
  janitor::clean_names()

my_labels <- list(dept = "Department,n(%)", gender = "Gender,n(%)", clin =
                  "Clin,n(%)",cert = "Cert,n(%)", rank = "Rank,n(%)")

# Clean the output
my_controls <- tableby.control(
               total = T,
               test = T,  # No test p-values yet
               numeric.stats = c("meansd", "medianq1q3"),
               cat.stats = c("countpct"),
               digits = 2,
               stats.labels = list(
               meansd = "Mean (SD)",
               medianq1q3 = "Median (Q1, Q3)",
               countpct = "N (%)"))

# Make some factors to show N (%)
pb_1a <- lawsuit %>%
          mutate(dept = factor(dept, labels = c("Biochemistry/Molecular Biology", "Physiology","Genetics
          mutate(gender = factor(gender, labels = c("Female","Male"))) %>%
          mutate(clin = factor(clin, labels = c("Primarily research emphasis", "Primarily clinical empha
          mutate(cert = factor(cert, labels = c("Nor certified", "Board certified"))) %>%
          mutate(rank = factor(rank, labels = c("Assistant", "Associate", "Full professor")))

tab1 = tableby(gender ~ dept + clin + cert + prate + exper + rank + sal94 + sal95, data = pb_1a, control
tab1 %>%
summary(title = "EDA", labelTranslations = my_labels, text = T) %>%
  knitr::kable()
```

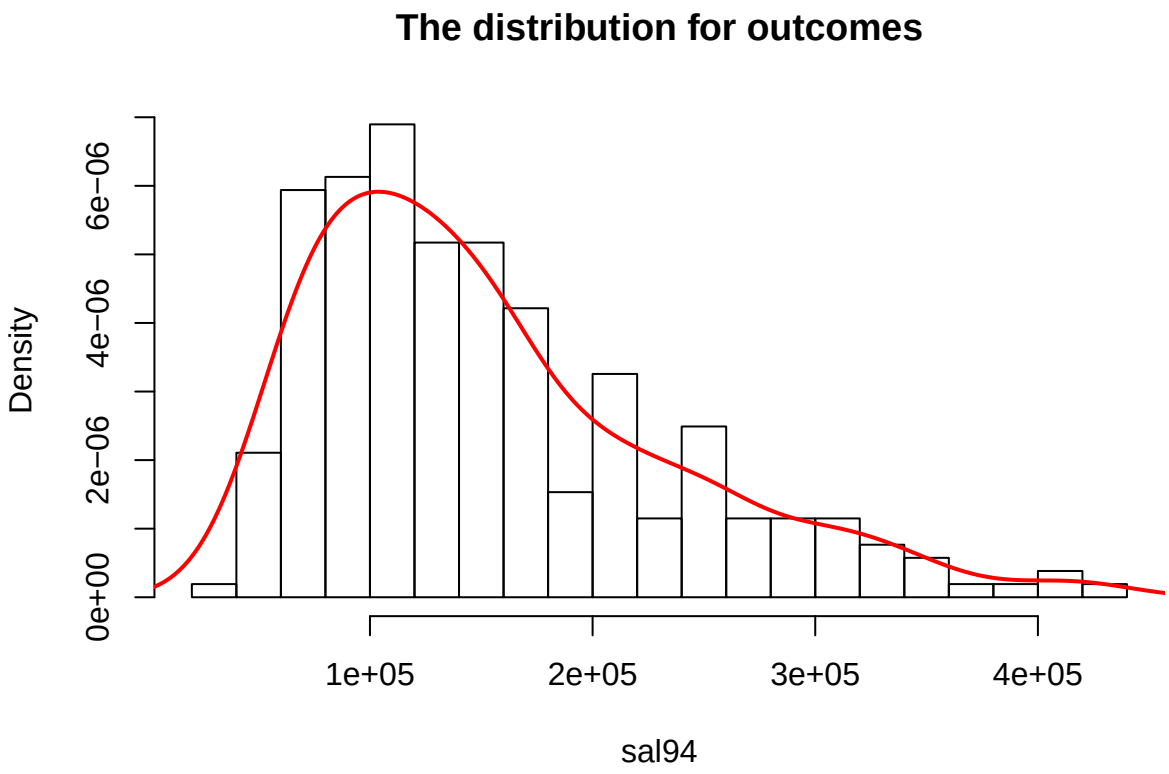
	Female (N=106)	Male (N=155)	Total (N=261)
Department,n(%)			
- Biochemistry/Molecular Biology	20 (18.9%)	30 (19.4%)	50 (19.2%)
- Physiology	20 (18.9%)	20 (12.9%)	40 (15.3%)
- Genetics	11 (10.4%)	10 (6.5%)	21 (8.0%)
- Pediatrics	20 (18.9%)	10 (6.5%)	30 (11.5%)
- Medicine	30 (28.3%)	50 (32.3%)	80 (30.7%)
- Surgery	5 (4.7%)	35 (22.6%)	40 (15.3%)
Clin,n(%)			
- Primarily research emphasis	46 (43.4%)	55 (35.5%)	101 (38.7%)
- Primarily clinical emphasis	60 (56.6%)	100 (64.5%)	160 (61.3%)
Cert,n(%)			
- Nor certified	36 (34.0%)	37 (23.9%)	73 (28.0%)
- Board certified	70 (66.0%)	118 (76.1%)	188 (72.0%)

	Female (N=106)	Male (N=155)	Total (N=261)
prate			
- Mean (SD)	5.35 (1.89)	4.65 (1.94)	4.93 (1.94)
- Median (Q1, Q3)	5.25 (3.73, 7.27)	4.00 (3.10, 6.70)	4.40 (3.20, 6.90)
exper			
- Mean (SD)	7.49 (4.17)	12.10 (6.70)	10.23 (6.23)
- Median (Q1, Q3)	7.00 (5.00, 10.00)	10.00 (7.00, 15.00)	9.00 (6.00, 14.00
Rank,n(%)			
- Assistant	69 (65.1%)	43 (27.7%)	112 (42.9%)
- Associate	21 (19.8%)	43 (27.7%)	64 (24.5%)
- Full professor	16 (15.1%)	69 (44.5%)	85 (32.6%)
sal94			
- Mean (SD)	118871.27 (56168.01)	177338.76 (85930.54)	153593.34 (8046
- Median (Q1, Q3)	108457.00 (75774.50, 143096.00)	155006.00 (109687.00, 231501.50)	133284.00 (9077
sal95			
- Mean (SD)	130876.92 (62034.51)	194914.09 (94902.73)	168906.66 (8877
- Median (Q1, Q3)	119135.00 (82345.25, 154170.50)	170967.00 (119952.50, 257163.00)	148117.00 (9997

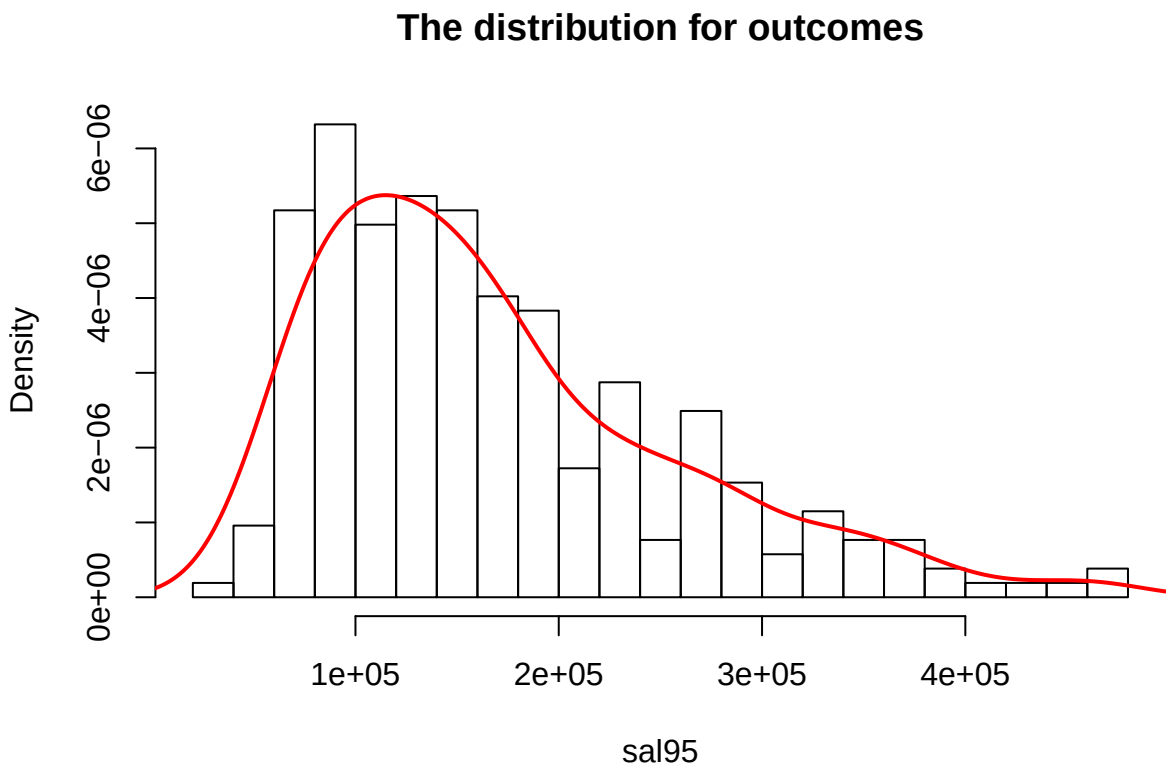
```
lawsuit =
  lawsuit %>%
  mutate(
    aveg_sal = (sal94 + sal95)/2
    )

hist(lawsuit$aveg_sal,breaks = 20,xlab = "averagesal", freq=F, main="The distribution for outcomes")
lines(density(lawsuit$aveg_sal,na.rm=T),col="red",lwd=2)
```



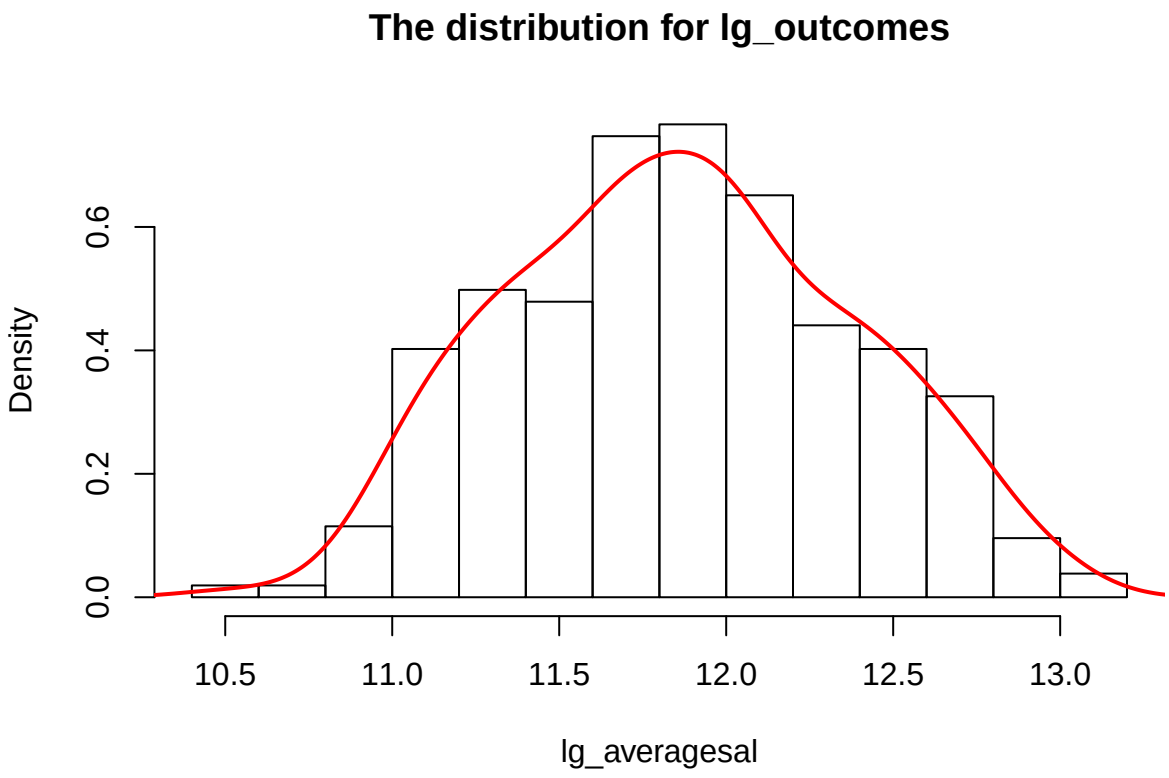

```
hist(lawsuit$sal94,breaks = 20,xlab = "sal94", freq=F, main="The distribution for outcomes")
lines(density(lawsuit$sal94,na.rm=T),col="red",lwd=2)
```



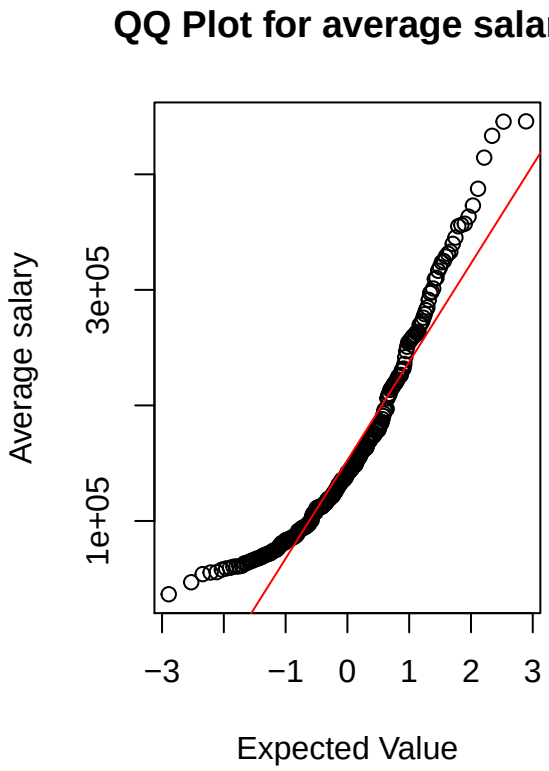

```
hist(lawsuit$sal95,breaks = 20,xlab = "sal95", freq=F, main="The distribution for outcomes")
lines(density(lawsuit$sal95,na.rm=T),col="red",lwd=2)
```

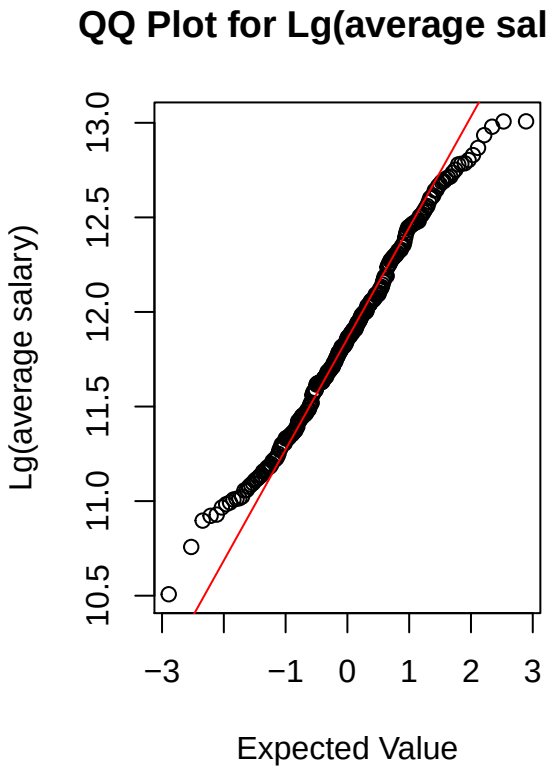



```
lawsuit =
  lawsuit %>%
  mutate(
    lg_aveg_sal = log(aveg_sal)
    )

hist(lawsuit$lg_aveg_sal,breaks = 15,xlab = "lg_averagesal", freq=F, main="The distribution for lg_outc
lines(density(lawsuit$lg_aveg_sal,na.rm=T),col="red",lwd=2)
```




```
par(mfrow = c(1, 2))
qqnorm(lawsuit$aveg_sal, xlab = "Expected Value", ylab = "Average salary", main = "")
qqline(lawsuit$aveg_sal, col = 2)
title("QQ Plot for average salary")

qqnorm(lawsuit$lg_aveg_sal, xlab = "Expected Value", ylab = "Lg(average salary)", main = "")
qqline(lawsuit$lg_aveg_sal, col = 2)
title("QQ Plot for Lg(average salary)")
```


QQ Plot for average salary
Average salary
1e+05
3e+05
−3
−1
0
1
2
3
Expected Value


QQ Plot for Lg(average salary)
Lg(average salary)
10.5
11.0
11.5
12.0
12.5
13.0
−3
−1
0
1
2
3
Expected Value