Project 1

2024-11-07

Project 1 rubric: Original Question from the CEO

Your CEO has decided that the company needs a full-time data scientist, and possibly a team of them in the future. She thinks she needs someone who can help drive data science within then entire organization and could potentially lead a team in the future. She understands that data scientist salaries vary widely across the world and is unsure what to pay them. To complicate matters, salaries are going up due to the great recession and the market is highly competitive. Your CEO has asked you to prepare an analysis on data science salaries and provide them with a range to be competitive and get top talent. The position can work offshore, but the CEO would like to know what the difference is for a person working in the United States. Your company is currently a small company but is expanding rapidly.

Restated Question From CEO

Your CEO wants you to give them a range of salaries for all full time data science positions for this year, which is almost 2025. Their company is small and they are wanting someone that will grow with their company, eventually becoming a lead. They would prefer to have someone that is located in the US, but they are willing to be flexible and would also like the salary range of someone working outside the US.

- -Since the CEO is wanting someone that will grow with their company, they are asking for the salaries of Entry to Mid Level positions.
- -The CEO isn't looking for Manager, Principal, Director, Lead, or Head positions at the moment, they are looking for someone that can start up with their company and grow into those leadership positions.
- -Since the CEO's company is currently small, they should be looking at salaries of small companies.
- -Need to find the percentage of salary increase over the years to calculate what the current salaries would be for 2025.

My Questions:

- 1). What are the salaries of full time data scientist positions by experience over the years?
- 2). For the estimated 2025 salary percent increase, what are the Median and Interquartile salary ranges of full time data scientists by experience levels?
- 3). For the estimated 2025 salary percent increase, what are the Entry and Mid level salaries of full time data scientists in the US vs not in the US among the different company sizes?
- 4). For the estimated 2025 salary percent increase, what are the Median and Interquartile salary ranges of Entry & Mid level full time data scientists salaries among small companies by location?

Opening file containing salary data:

```
#file.choose()
infile = "/Users/krishabugajski/Desktop/R_Python/Project_1/R_Project_DSE5002/r+project+d
ata.csv"
salaries = read.csv(infile)
head(salaries)
```

```
X work_year experience_level employment_type
##
                                                                        job_title
## 1 0
                                                                   Data Scientist
             2020
                                 ΜI
## 2 1
             2020
                                 SE
                                                  FT Machine Learning Scientist
## 3 2
             2020
                                 SE
                                                  FT
                                                               Big Data Engineer
## 4 3
            2020
                                 ΜI
                                                  FT
                                                            Product Data Analyst
## 5 4
                                 SE
             2020
                                                      Machine Learning Engineer
## 6 5
                                 ΕN
                                                  FT
             2020
                                                                     Data Analyst
##
     salary salary_currency salary_in_usd employee_residence remote_ratio
## 1 70000
                                       79833
                         EUR
                                                              DE
## 2 260000
                         USD
                                     260000
                                                              JΡ
## 3
     85000
                         GBP
                                     109024
                                                              GB
                                                                            50
## 4
      20000
                         USD
                                       20000
                                                              HN
                                                                             0
                         USD
                                                              US
                                                                            50
## 5 150000
                                     150000
## 6
     72000
                         USD
                                      72000
                                                              US
                                                                           100
##
     company_location company_size
## 1
                    DE
## 2
                    JΡ
                                   S
## 3
                    GB
                                   М
                                   S
## 4
                    HN
## 5
                    US
                                   L
## 6
                    US
                                   L
```

Exploratory Data Analysis:

summary(salaries)

```
##
          Χ
                      work_year
                                   experience level
                                                      employment type
                                                      Length:607
##
   Min.
          : 0.0
                    Min.
                          :2020
                                   Length:607
   1st Qu.:151.5
##
                    1st Qu.:2021
                                   Class :character
                                                      Class :character
   Median :303.0
                    Median :2022
                                   Mode :character
                                                      Mode :character
##
##
   Mean
          :303.0
                    Mean
                           :2021
   3rd Ou.:454.5
                    3rd Qu.:2022
##
##
   Max.
           :606.0
                    Max.
                           :2022
##
    job title
                           salary
                                                              salary in usd
                                          salary currency
##
   Length:607
                       Min.
                              :
                                   4000
                                          Length:607
                                                              Min.
                                                                     : 2859
   Class :character
                       1st Ou.:
##
                                  70000
                                          Class :character
                                                              1st Ou.: 62726
   Mode :character
                       Median : 115000
                                          Mode :character
                                                              Median :101570
##
##
                       Mean
                                 324000
                                                              Mean
                                                                     :112298
##
                       3rd Ou.: 165000
                                                              3rd Ou.:150000
##
                       Max.
                              :30400000
                                                              Max.
                                                                     :600000
##
   employee_residence remote_ratio
                                        company_location
                                                            company_size
##
   Length:607
                       Min.
                              : 0.00
                                        Length:607
                                                            Length:607
                       1st Qu.: 50.00
   Class :character
                                        Class :character
                                                            Class :character
##
##
   Mode :character
                       Median :100.00
                                        Mode :character
                                                           Mode :character
##
                       Mean
                              : 70.92
                       3rd Qu.:100.00
##
                              :100.00
##
                       Max.
```

str(salaries)

```
## 'data.frame':
                  607 obs. of 12 variables:
##
  $ X
                      : int 0123456789 ...
## $ work_year
                     ## $ experience_level : chr
                            "MI" "SE" "SE" "MI" ...
                            "FT" "FT" "FT" ...
##
   $ employment_type
                     : chr
                           "Data Scientist" "Machine Learning Scientist" "Big Data E
   $ iob title
##
                      : chr
ngineer" "Product Data Analyst" ...
                     : int 70000 260000 85000 20000 150000 72000 190000 11000000 135
##
   $ salary
000 125000 ...
                           "EUR" "USD" "GBP" "USD" ...
## $ salary currency
                     : chr
## $ salary in usd
                            79833 260000 109024 20000 150000 72000 190000 35735 13500
                     : int
0 125000 ...
                           "DE" "JP" "GB" "HN" ...
##
  $ employee residence: chr
##
  $ remote ratio
                      : int
                            0 0 50 0 50 100 100 50 100 50 ...
  $ company_location : chr
                            "DE" "JP" "GB" "HN" ...
##
                           "L" "S" "M" "S" ...
##
   $ company size
                     : chr
```

Comments on variables

```
work_year <- numeric values, ranges from 2020 to 2022 experience_level <- contains 4 character values employment_type <- contains 4 character values job_title <- Several Job titles as characters salary <- contains numeric salaries in several currencies
```

salary_currency <- character values of currency types

salary_in_usd <- contains numeric salaries in US currency

employee_residence <- character values that states employee location

company_location <- character values that state company location

remote_ratio <- numeric values 1/5/100, representing remote/part remote/not remote

company_size <- contains 3 character values

Changing work_year,experience_level, employment_type, remote_ratio, and company_size to be factors

```
salaries$work_year <- factor(salaries$work_year)
salaries$experience_level <- factor(salaries$experience_level)
salaries$employment_type <- factor(salaries$employment_type)
salaries$remote_ratio <- factor(salaries$remote_ratio)
salaries$company_size <- factor(salaries$company_size)
str(salaries)</pre>
```

```
## 'data.frame':
                   607 obs. of 12 variables:
## $ X
                       : int 0 1 2 3 4 5 6 7 8 9 ...
## $ work year : Factor w/ 3 levels "2020","2021",..: 1 1 1 1 1 1 1 1 1 ...
## $ experience_level : Factor w/ 4 levels "EN", "EX", "MI", ...: 3 4 4 3 4 1 4 3 3 4 ...
## $ employment type : Factor w/ 4 levels "CT", "FL", "FT", ...: 3 3 3 3 3 3 3 3 3 ...
## $ job title
                       : chr "Data Scientist" "Machine Learning Scientist" "Big Data E
ngineer" "Product Data Analyst" ...
                      : int 70000 260000 85000 20000 150000 72000 190000 11000000 135
  $ salary
000 125000 ...
                       : chr "EUR" "USD" "GBP" "USD" ...
## $ salary_currency
## $ salary in usd
                     : int 79833 260000 109024 20000 150000 72000 190000 35735 13500
0 125000 ...
## $ employee_residence: chr "DE" "JP" "GB" "HN" ...
                    : Factor w/ 3 levels "0","50","100": 1 1 2 1 2 3 3 2 3 2 ...
## $ remote ratio
## $ company_location : chr "DE" "JP" "GB" "HN"
                       : Factor w/ 3 levels "L", "M", "S": 1 3 2 3 1 1 3 1 1 3 ...
## $ company size
```

Packages we will be using

```
library(dplyr)
```

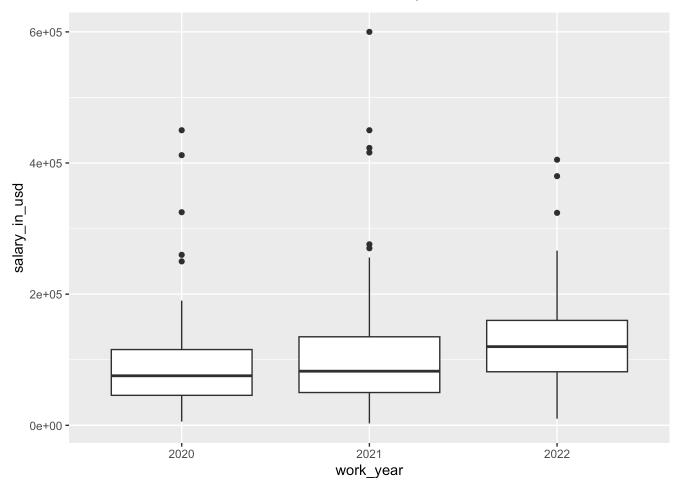
```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##
       filter, lag
## The following objects are masked from 'package:base':
##
##
       intersect, setdiff, setequal, union
library(ggplot2)
library(scales)
library(knitr)
library(kableExtra)
##
## Attaching package: 'kableExtra'
## The following object is masked from 'package:dplyr':
##
##
       group_rows
```

Plots for the Variables:

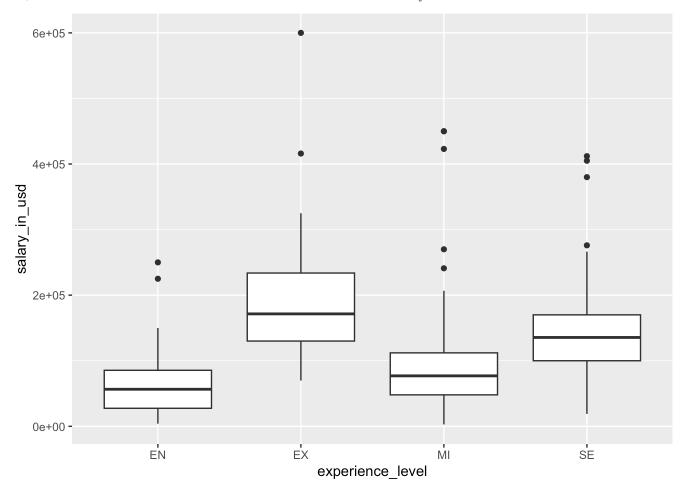
Plot for variable work year

```
require("ggplot2")
ggplot(salaries, aes(x= work_year, y = salary_in_usd))+
  geom_boxplot()
```



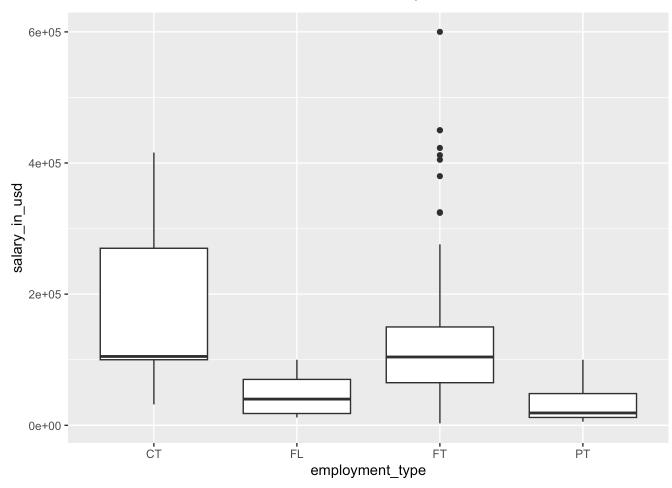
Plot for variable experience_level

```
ggplot(salaries, aes(x= experience_level, y = salary_in_usd))+
  geom_boxplot()
```



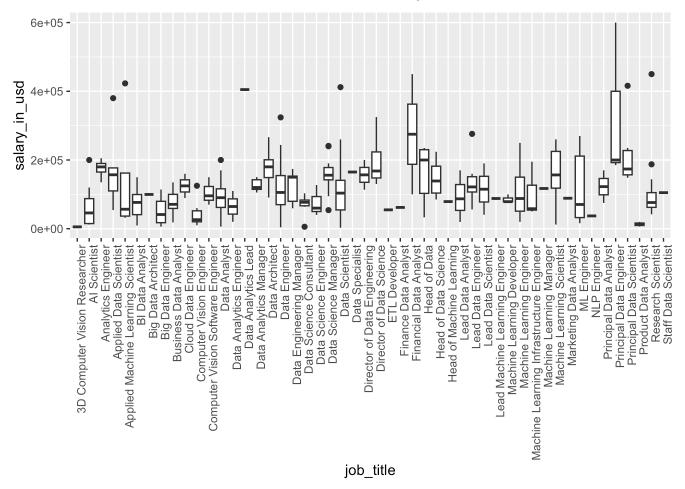
Plot for variable employment_type

```
ggplot(salaries, aes(x= employment_type, y = salary_in_usd))+
  geom_boxplot()
```



Plot for variable job_title

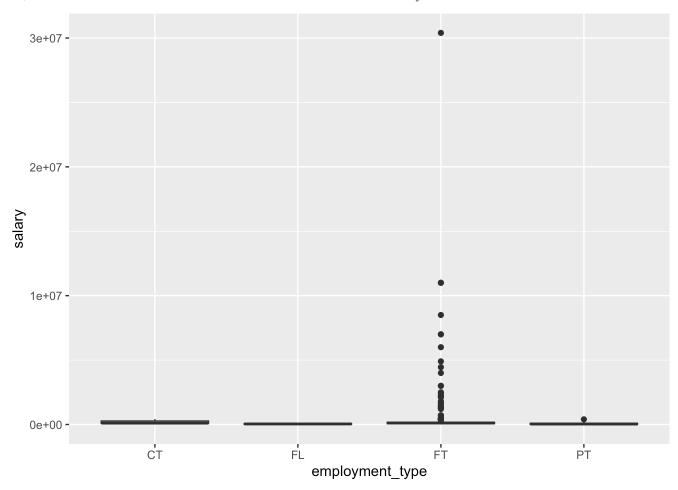
```
ggplot(salaries, aes(x= job_title, y = salary_in_usd))+
  geom_boxplot()+
  theme(axis.text.x = element_text(angle = 90, hjust = 1))
```



#Data Analytics Lead, Data Analytics Manager, Data Engineering Manager, Data Science Manager, Director of Data Engineering, Director of Data Science, Head of Data, Head of Data Science, Head of Machine Learning

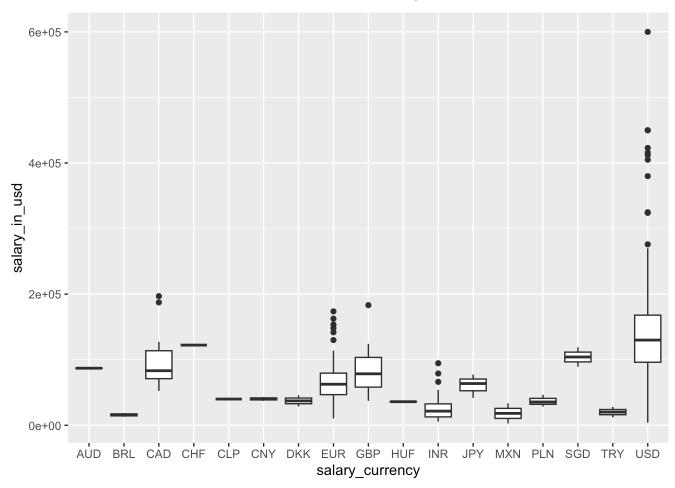
Plot for variable salary

```
ggplot(salaries, aes(x= employment_type, y = salary))+
  geom_boxplot()
```



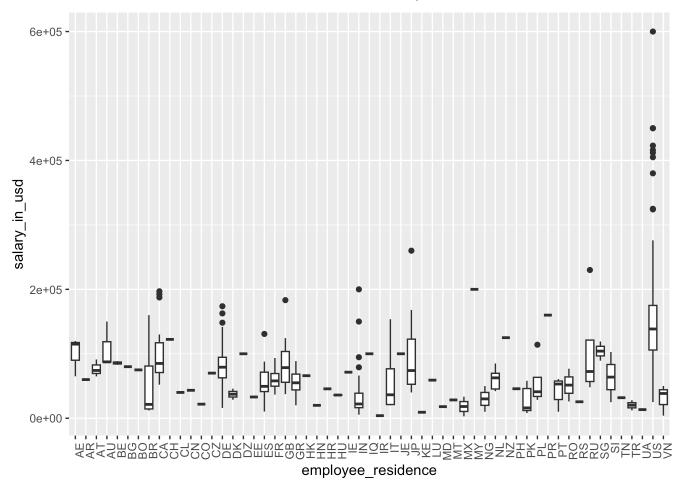
Plot for variable salary_currency

```
ggplot(salaries, aes(x= salary_currency, y = salary_in_usd))+
  geom_boxplot()
```



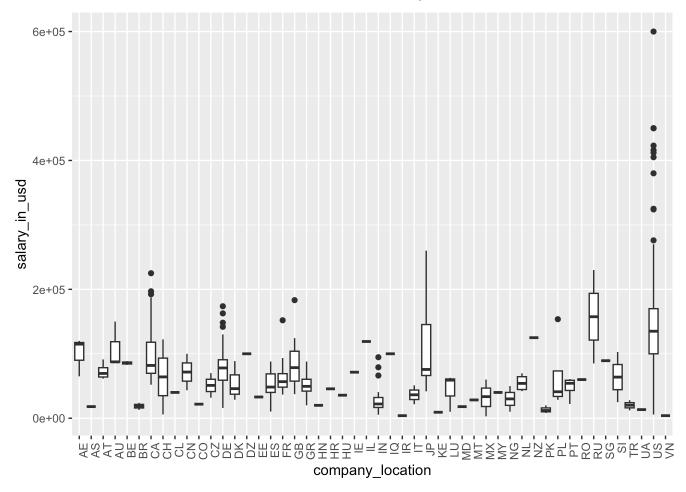
Plot for variable employee_residence

```
ggplot(salaries, aes(x= employee_residence, y = salary_in_usd))+
  geom_boxplot()+
  theme(axis.text.x = element_text(angle = 90, hjust = 1))
```



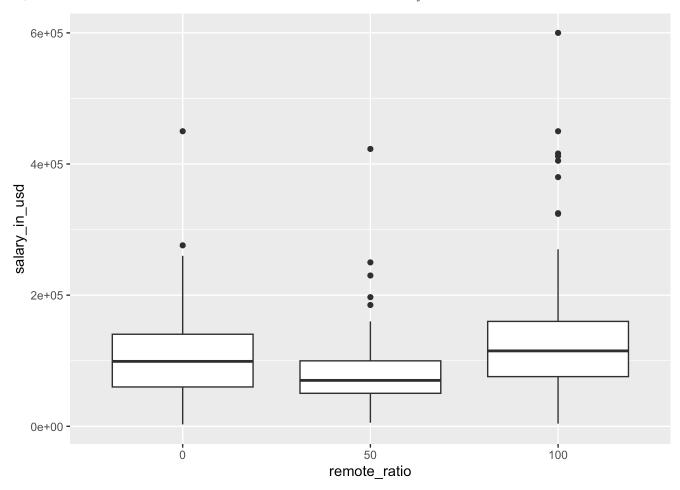
Plot for variable company_location

```
ggplot(salaries, aes(x= company_location, y = salary_in_usd))+
  geom_boxplot()+
  theme(axis.text.x = element_text(angle = 90, hjust = 1))
```



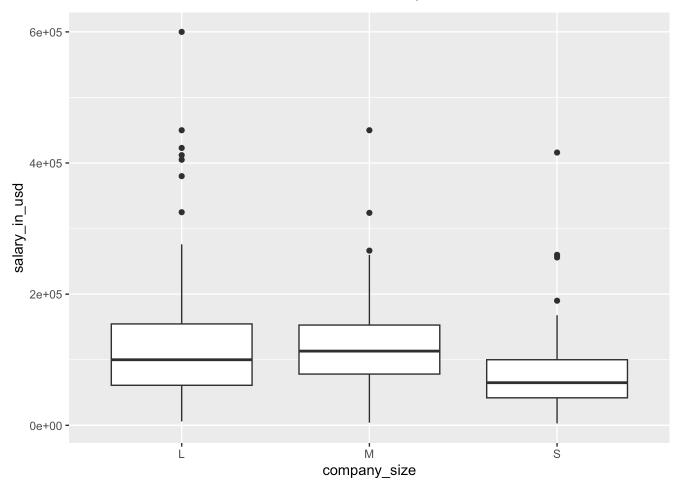
Plot for variable remote_ratio

```
ggplot(salaries, aes(x= remote_ratio, y = salary_in_usd))+
  geom_boxplot()
```



Plot for variable company_size

```
ggplot(salaries, aes(x= company_size , y = salary_in_usd))+
  geom_boxplot()
```



Analyzing Data:

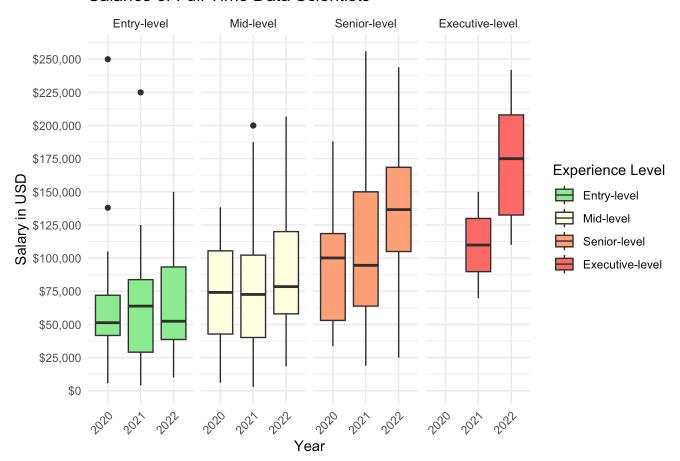
1). What are the salaries of full time data scientist positions by experience over the years?

Filtering the data from Salaries of Full-Time Data Scientists in the US from 2020 to 2022. Taking into account the job titles and eliminating ones that are Manager, Principal, Director, Lead, and Head positions

```
require(dplyr)
  # Find only Full time employees and job titles that don't have leadership positions
filtered salaries<- salaries %>% filter(grepl("FT", employment type))
filtered_Jobs <- filtered_salaries[!grepl("Manager|Principal|Director|Lead|Head", filter</pre>
ed_salaries$job_title), ]
  # Change the order of experience level and rename for nice graph display
filtered_Jobs$experience_level <- factor(filtered_Jobs$experience_level, levels = c("E</pre>
N", "MI", "SE", "EX"))
 new_filtered_salaries<- filtered_Jobs %>%
  mutate(experience_level = recode(experience_level,
                         "EN" = "Entry-level",
                         "MI" = "Mid-level",
                          "SE" = "Senior-level",
                          "EX" = "Executive-level"))
  # Identify and remove outliers for more narrowed down data
outliers <- boxplot.stats(new_filtered_salaries$salary_in_usd)$out
cleaned_salaries <- new_filtered_salaries[!new_filtered_salaries$salary_in_usd %in% outl
iers, ]
head(cleaned salaries)
```

| <pre>## 1 0 2020 Mid-level FT Data Scientist ## 3 2 2020 Senior-level FT Big Data Engineer ## 4 3 2020 Mid-level FT Product Data Analyst ## 5 4 2020 Senior-level FT Machine Learning Engineer ## 6 5 2020 Entry-level FT Data Analyst ## 8 7 2020 Mid-level FT Data Scientist ## salary salary_currency salary_in_usd employee_residence remote_ratio ## 1 70000 EUR 79833 DE 0</pre> | job_title | | ent tyne | vel employmen | experience leve | work vear | Y | | ## |
|--|--------------|---------------|-----------|---------------|------------------|-----------|---|---|----|
| <pre>## 3 2 2020 Senior-level FT Big Data Engineer ## 4 3 2020 Mid-level FT Product Data Analyst ## 5 4 2020 Senior-level FT Machine Learning Engineer ## 6 5 2020 Entry-level FT Data Analyst ## 8 7 2020 Mid-level FT Data Scientist ## salary salary_currency salary_in_usd employee_residence remote_ratio ## 1 70000 EUR 79833 DE 0</pre> | | | | | · — | | | 1 | |
| <pre>## 4 3</pre> | | | | | | | - | | |
| <pre>## 6 5 2020 Entry-level FT</pre> | • | 9 | | | | | | | |
| <pre>## 8 7 2020 Mid-level FT Data Scientist ## salary salary_currency salary_in_usd employee_residence remote_ratio ## 1 70000 EUR 79833 DE 0</pre> | ing Engineer | Machine Lear | FT | /el | Senior-leve | 2020 | 4 | 5 | ## |
| <pre>## salary salary_currency salary_in_usd employee_residence remote_ratio ## 1 70000 EUR 79833 DE 0</pre> | Data Analyst | | FT | /el | Entry-leve | 2020 | 5 | 6 | ## |
| ## 1 70000 EUR 79833 DE 0 | ta Scientist | Da | FT | /el | Mid-leve | 2020 | 7 | 8 | ## |
| | remote_ratio | yee_residence | usd emplo | salary_in_usd | lary_currency sa | salary sa | | | ## |
| ## 2 0E000 CDD 100024 CD E0 | 0 | DE | 333 | 79833 | EUR | 70000 | | 1 | ## |
| | 50 | GB | | 109024 | GBP | 85000 | | | |
| ## 4 20000 USD 20000 HN 0 | 0 | HN | 000 | 20000 | USD | 20000 | | 4 | ## |
| ## 5 150000 USD 150000 US 50 | 50 | | | | | | | | |
| ## 6 72000 USD 72000 US 100 | | | | | | | | 6 | |
| ## 8 11000000 HUF 35735 HU 50 | 50 | HU | 735 | | | | | 8 | |
| ## company_location company_size | | | | | | | | | |
| ## 1 DE L | | | | | | | | | |
| ## 3 GB M | | | | | | | | | |
| ## 4 HN S | | | | S | | | | | |
| ## 5 US L | | | | L | | | | | |
| ## 6 US L | | | | L | | | | | |
| ## 8 HU L | | | | L | HU | | | 8 | ## |

Salaries of Full Time Data Scientists



Analyze Results:

As you many already know, Data Scientist salaries vary wildly around the world and year to year. I'm going to simplify a salary range that will be perfect for paying your new Data Scientist employee. I'll make a note that Before graphing this data, I found job positions that are not in leadership roles, since you are looking for someone to grow with your company, and I also disregarded some big outliers so we can start narrowing down that range.

Let's look at the graph. On the x-axis we have Years from 2020 to 2022, on the y-axis we have Salaries in USD of all full time Data Scientists, and the data is grouped and colored by experience levels, from Entry to Executive level. Sure enough, we can see that as the years increase within each experience level, the majority of the salaries also increase. I did some further research and found that the employment of data scientists is projected to grow 36% from 2021 to 2031 (Rutgers University, 2024). We must take this into account so we can have an accurate range for today's salaries. You can also see that as you move from an Entry-level position to the Executive-level position, the salaries increase.

Ham, C., Hann, R. N., Wang, W., & Yang, J. (2023). Going remote? the role of Labor Market Competition. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4201819 (https://doi.org/10.2139/ssrn.4201819)

2). For the estimated 2025 salary percent increase, what are the Median and Interquartile salary ranges of full time data scientists by experience levels?

```
require("knitr")
require("kableExtra")
  # Function to add a percentage to a number for the projected 36% increase from 2021 to
2031, with 14.4% from 2021 to today 2025
add_percentage <- function(original_number, percentage) {</pre>
  increase <- original number * (percentage / 100)
  new_number <- original_number + increase</pre>
  return(new number)
}
 #Creating a data frame of Median and Interquartile salary ranges
salaries_data <- cleaned_salaries%>%
  group_by(experience_level) %>%
  summarize(
    Median= median(salary_in_usd),
    Q1 = paste(quantile(salary in usd, 0.25)),
    Q3 = paste(quantile(salary_in_usd, 0.75)), .groups ='drop')
#Renaming the columns
colnames(salaries_data) <- c("Experience Level", "Median", "Q1", "Q3")</pre>
#Making the values numeric
salaries_data$Q1 <- as.numeric(salaries_data$Q1)</pre>
salaries_data$Q3<- as.numeric(salaries_data$Q3)</pre>
  #Using function to add a percentage to a number for the projected 36% increase from 20
21 to 2031, with 14.4% from 2021 to today 2025
salaries data$Median <- add percentage(salaries data$Median, 14.4)</pre>
salaries_data$Q1<- add_percentage(salaries_data$Q1, 14.4)</pre>
salaries_data$Q3<- add_percentage(salaries_data$Q3, 14.4)</pre>
 #Adding $ to the values
salaries_data$Median <- dollar(salaries_data$Median)</pre>
salaries data$Q1<- dollar(salaries data$Q1)</pre>
salaries_data$Q3<- dollar(salaries_data$Q3)</pre>
 #Creating a presentable table
kable(salaries_data, caption = "Estimated 2025 Full time Data Scientist Salaries") %>%
  kable_styling("striped", full_width = FALSE, position = "center", font_size = 12)%>%
  row_spec(0, background = "grey84", color = "black", bold = TRUE)%>%
  row_spec(1:1, background = "lightgreen", color = "black")%>%
  row spec(2:2, background = "lightyellow", color = "black")%>%
  row_spec(3:3, background = "lightsalmon", color = "black")%>%
```

row_spec(4:4, background = "indianred1", color = "black")%>%
column_spec(1:4, border_left = TRUE, border_right = TRUE)

Estimated 2025 Full time Data Scientist Salaries

| Experience Level | Median | Q1 | Q3 |
|------------------|-----------|-----------|-----------|
| Entry-level | \$67,613 | \$38,365 | \$98,214 |
| Mid-level | \$88,019 | \$54,707 | \$125,840 |
| Senior-level | \$148,720 | \$110,924 | \$188,760 |
| Executive-level | \$171,600 | \$148,720 | \$228,800 |

Analyze Results:

Let's look more deeply and see what the projected 2025 full time Data Scientist salaries would be by looking at a table. This table shows the estimated 2025 salaries. The table contains the Median and the Interquartile range of the middle 50% of our data. It goes from Q1, the lower part of that range, and Q3, the upper part of that range. This way we can see the majority of our data and narrow down the range even further.

Since you currently have a small company and want your data scientist growing and learning the ways of your company as it continues to expand rapidly, you should look at hiring a data scientist that is at the Entry to Mid Level position. This way they will advance to the Senior or Executive level positions by the time your company becomes large, being able to lead new employees in the future. Also, to be competitive and to get top talent, it is important to look more toward the higher end of the salaries range, looking at the range from the median, up to Q3.

With this in mind and the projected 36% increase from 2021 to 2031, if you were to hire an Entry-level data scientist today, you are looking to pay them anywhere from \$68,000 to \$98,000. If you were to hire a Mid-level data scientist today, you are looking to pay them anywhere from \$88,000 to \$126,000.

Now, these salaries still account for all sized companies and companies not located in the US. So, let's take a closer look and compare the different company sizes and salaries for companies located in and out of the US.

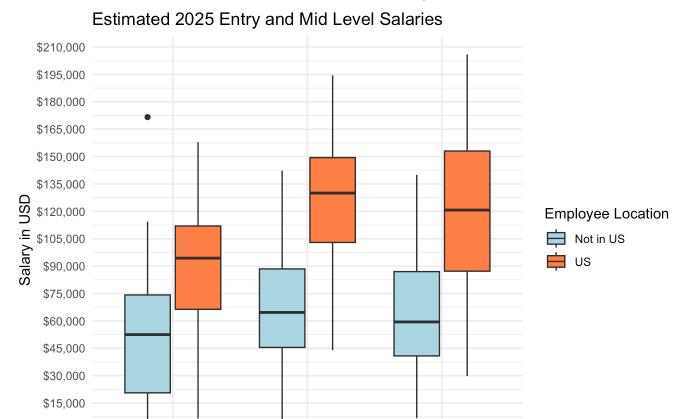
3). For the estimated 2025 salary percent increase, what are the Entry and Mid level salaries of full time data scientists in the US vs not in the US among the different company sizes?

Filtering data so we can compare company location in US vs not in the US.

```
#filtering employee location for in US or Not in US and experience level for Entry and
Mid levels
salaries location <- cleaned salaries %>%
  mutate(employee_residence = ifelse(grepl("US", company_location), company_location, "N
ot in US"))%>%
  filter(experience_level %in% c("Entry-level", "Mid-level" ))
#Reordering and renaming company size from Small to Large for nice graph purposes
salaries location$company size <- factor(salaries location$company size, levels = c("S",
"M", "L"))
new_salaries_location<- salaries_location %>%
  mutate(company_size = recode(company_size,
                         "S" = "Small",
                         "M" = "Medium",
                         "L" = "Large"))
# Using function to add a percentage to a number for the projected 36% increase from 202
1 to 2031, with 14.4% from 2021 to today 2025
new salaries location$salary in usd <- add percentage(new salaries location$salary in us
d, 14.4)
  # Identify and remove outliers for more narrowed down data
outliers <- boxplot.stats(new salaries location$salary in usd)$out
cleaned_locations <- new_salaries_location[!new_salaries_location$salary_in_usd %in% out</pre>
liers, ]
head(cleaned locations)
```

```
job_title
##
      X work_year experience_level employment_type
                                                                               salary
                          Mid-level
                                                             Data Scientist
## 1
             2020
                                                                                 70000
                          Mid-level
## 2
      3
             2020
                                                   FT
                                                       Product Data Analyst
                                                                                20000
## 3
      5
             2020
                        Entry-level
                                                   FT
                                                               Data Analyst
                                                                                 72000
## 4
      7
             2020
                          Mid-level
                                                   FT
                                                             Data Scientist 11000000
                          Mid-level
## 5
     8
             2020
                                                   FT Business Data Analyst
                                                                                135000
## 6 10
             2020
                        Entry-level
                                                   FT
                                                             Data Scientist
                                                                                 45000
##
     salary currency salary in usd employee residence remote ratio
## 1
                  EUR
                           91328.95
                                              Not in US
## 2
                  USD
                           22880.00
                                              Not in US
                                                                     0
## 3
                  USD
                           82368.00
                                                      US
                                                                   100
## 4
                  HUF
                           40880.84
                                              Not in US
                                                                    50
## 5
                  USD
                          154440.00
                                                      US
                                                                   100
                  EUR
## 6
                           58711.22
                                              Not in US
                                                                     0
##
     company_location company_size
## 1
                    DE
                              Large
## 2
                    HN
                              Small
## 3
                    US
                              Large
## 4
                    HU
                              Large
## 5
                    US
                              Large
## 6
                    FR
                              Small
```

Making a graph of the data to compare company location in US vs off shore. Y-axis is salary in USD and x-axis is company size, colored by employee location.



Analyze Results:

Small

\$0

When graphing the Entry and Mid level positions, I also disregarded some big outliers so we can get a narrowed down range. This graph shows the estimated 2025 salaries.

Large

Medium

Company Size

Let's start by looking at this graph. You will notice that I combined the Entry and Mid level positions. On the x-axis, we can see the company size, where Small represents less than 50 employees, Medium represents 50 to 250 employees, and Large represents more than 250 employees. The salaries in USD are on the y-axis and the graph is colored by the location of the employee, either in the US or not.

We can see that employees located in the US pay their Entry to Mid level employees a higher salary than those that are not located in US. We can also see that as the company grows from a small company to a large company, the salaries tend to increase from small to medium, and level out, slightly decreasing from medium to large. That makes sense when we think about it. Small companies aren't making as big as a profit so their employees salaries are lower, where medium sized companies have some more employees but are making a larger profit so they can pay their employees a slightly higher salary, and large companies have so many employees and their profits might not be enough to raise employee salaries, so they are paying their employees about the same or less than the medium sized companies.

Since your company is small at the moment, let's narrow down our range even more by looking closer at table of this data for smaller companies.

4). For the estimated 2025 salary percent increase, what are the Median and Interquartile salary ranges of Entry & Mid level full time data scientists salaries among small companies by location?

```
#Creating a data frame of Median and Interquartile salary ranges while only looking at t
he small companies
small company <- cleaned locations %>%
  filter(company size == "Small")%>%
  group by(employee residence, experience level) %>%
  summarize(
    Median = median(salary in usd),
    Q1 = paste(quantile(salary_in_usd, 0.25)),
    Q3 = paste(quantile(salary in usd, 0.75)), .groups ='drop')
#Renaming the column names
colnames(small_company) <- c("Employee Location", "Experience Level", "Median", "Q1", "Q</pre>
3")
#Making the values numeric
small company$Q1 <- as.numeric(small company$Q1)</pre>
small_company$Q3<- as.numeric(small_company$Q3)</pre>
#Adding $ to the values
small company$Median <- dollar(small company$Median)</pre>
small company$Q1<- dollar(small company$Q1)</pre>
small company$Q3<- dollar(small company$Q3)</pre>
 #Creating a presentable table
kable(small_company , caption = "Estimated 2025 Small Company Data Scientist Salaries")
%>%
  kable_styling("striped", full_width = FALSE, position = "center", font_size = 12) %>%
  row_spec(0, background = "grey84", color = "black", bold = TRUE)%>%
  row_spec(1:2, background = "lightblue", color = "black")%>%
  row_spec(3:4, background = "sienna1", color = "black")%>%
  column spec(1:5, border left = TRUE, border right = TRUE)
```

Estimated 2025 Small Company Data Scientist Salaries

| Employee Location | Experience Level | Median | Q1 | Q3 |
|-------------------|------------------|-----------|-------------|-----------|
| Not in US | Entry-level | \$54,434 | \$21,209.47 | \$83,862 |
| Not in US | Mid-level | \$48,273 | \$20,592.00 | \$72,885 |
| US | Entry-level | \$102,960 | \$83,512.00 | \$117,260 |
| US | Mid-level | \$66,352 | \$54,271.36 | \$98,168 |

Analyze Results:

Now we are looking at estimated salaries for 2025 of Full time Data Scientists that are at Entry to Mid level positions, working at small companies, with the employees located in and out of the US. This table shows the Median and Interquartile range, from Q1 to Q3, similar to the previous table.

Let's look at the higher end of the salaries, from the Median to Q3 again to be competitive and to get top talent.

With the projected 36% increase from 2021 to 2031, if you were to hire a Entry to Mid level employee not located in the US today, you are looking to pay them anywhere from \$48,000 to \$84,000. If you were to hire a Entry to Mid level employee working in the US today, you are looking to pay them anywhere from \$66,000 to \$117,000.

Conclusion:

So, I would recommend paying a data scientist anywhere from \$66,000 to \$117,000. This would get you a full-time data scientist that is at an Entry or Mid level position that can grow with your company and eventually become someone who can drive data science within the entire organization and could potentially lead a team in the future. This salary range is for a data scientist that is used to working for a small company and in the US. If you decide you don't mind your employee working outside of the US, you can pay them anywhere from \$48,000 to \$84,000. All these ranges account for the higher salary ranges due to the market being highly competitive. This higher salary range will also appeal to top talented data scientists.