DS311 Data Explore

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We-R-Finished Project

1. Loading necessary libraries & reading dataset into R

```
## Loading required package: ggplot2

## Warning: package 'ggplot2' was built under R version 4.2.3

## Loading required package: lattice

##
## 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

## Warning: Coercing text to numeric in Y146963 / R146963C25: '45870'

## Warning: Coercing text to numeric in Y164631 / R164631C25: '76700'

## [1] 167278     27
```

2. Renaming columns for sake of ease

```
##  [1] "Case Number"            "Case Status"            "Received Date"
##  [4] "Decision Date"          "Employer Name"          "Submitted Prevail Wage"
##  [7] "SPrW Unit"              "Submitted Paid Wage"    "SPaW Unit"
## [10] "Job Title"              "Work City"              "Required Edu"
## [13] "Required College Major" "Exp Req"                "Exp Req (Months)"
## [16] "Citizenship"            "Prevail Wage SOC Code"  "PWSOC Title"
## [19] "Work State"             "WS Abb"                 "WPostal Code"
## [22] "Full Time"              "Visa Class"             "Prevail Wage/Yr"
## [25] "Paid Wage/Yr"           "Job Title Sub"          "Order"
```

3. What are the job title subcategories & their numbers

```
##   assistant professor              attorney      business analyst
##                 18866                  1488                 27811
##          data analyst        data scientist management consultant
##                  3840                  1227                   770
##     software engineer               teacher
##                 99364                 13912
```

```
##                 Sub_Job Frequency
## 1     Software Engineer     99364
## 2      Business Analyst     27811
## 3        Assistant Prof     18866
## 4               Teacher     13912
## 5        Data Scientist      1227
## 6          Data Analyst      3840
## 7              Attorney      1488
## 8 Management Consultant       770
```

Was expecting higher number of data scientist and analyst Not expecting assistant professor & teacher in top 5

```
##          NEW YORK     MOUNTAIN VIEW     SAN FRANCISCO         SAN DIEGO
##              6714              6712              6458              2983
##          SAN JOSE           HOUSTON       SANTA CLARA           ATLANTA
##              2925              2857              2684              2388
##           CHICAGO            DALLAS         SUNNYVALE         PALO ALTO
##              2351              2277              2198              2145
##            AUSTIN            IRVING            BOSTON       JERSEY CITY
##              1554              1410              1401              1257
##        MENLO PARK           SEATTLE        WASHINGTON        PITTSBURGH
##              1188              1146              1134              1132
##           REDMOND          BELLEVUE      LOS ANGELES NORTH KANSAS CITY
##              1127              1116               986               932
##        PISCATAWAY          COLUMBUS        ALPHARETTA         BALTIMORE
##               919               911               904               879
##             PLANO          San Jose         SAN MATEO           PHOENIX
##               855               829               816               812
##           FREMONT            IRVINE          RICHMOND      REDWOOD CITY
##               800               768               757               755
##         CHARLOTTE       SAN ANTONIO            EDISON     Mountain View
##               749               728               716               697
##      PHILADELPHIA         CAMBRIDGE          BROOKLYN            DURHAM
##               697               692               678               662
##            NEWARK        PRINCETON             TAMPA        RICHARDSON
##               656               631               627               624
##         CUPERTINO      INDIANAPOLIS        WILMINGTON       FOSTER CITY
##               606               599               587               570
##        SCHAUMBURG          HERNDON         HILLSBORO       BLOOMINGTON
##               562               557               557               542
##          MILPITAS           RESTON          COLUMBIA       MINNEAPOLIS
##               538               536               528               527
##           WALTHAM  SOUTH PLAINFIELD           FAIRFAX             MIAMI
```

```
##              510              506              498              472
##           MCLEAN        SAN BRUNO        ST. LOUIS  FARMINGTON HILLS
##              470              461              445              438
##       KANSAS CITY           FRISCO         STERLING      JACKSONVILLE
##              432              431              422              408
##         PORTLAND       PLEASANTON          RALEIGH           DENVER
##              408              383              381              372
##        NASHVILLE         CHANDLER          MADISON             TROY
##              372              370              363              359
##           WARREN       BURLINGTON        San Diego         SOMERSET
##              356              349              348              348
##          DETROIT     GAITHERSBURG       CINCINNATI      Santa Clara
##              340              336              334              329
##     SANTA MONICA            OMAHA           DUBLIN        MILWAUKEE
##              326              324              314              312
##        SAN RAMON         ASHBURN       FORT WORTH        ROCHESTER
##              308              306              306              305
##           ALBANY        GLENDALE        ARLINGTON          (Other)
##              304              299              298            70689
```

```
##            top10 freq
## 1       New York 6714
## 2  Mountain View 6712
## 3  San Francisco 6458
## 4      San Diego 2983
## 5       San Jose 2925
## 6        Houston 2957
## 7    Santa Clara 2684
## 8        Atlanta 2388
## 9        Chicago 2351
## 10        Dallas 2277
```

Not surprised NY and CA areas are in top 5 cities Expected LA to be in top Wait i didn't expect to see my city, but it sure is a lot of CA areas

4. Who are the top 10 employers

```
##                                  GOOGLE INC.
##                                         6213
##                       FUJITSU AMERICA, INC.
##                                         1814
##                          INTEL CORPORATION
##                                         1781
##                       MICROSOFT CORPORATION
##                                         1364
##                 QUALCOMM TECHNOLOGIES, INC.
##                                         1277
##                             FACEBOOK, INC.
##                                         1210
##                           CERNER CORPORATION
##                                         1038
##                           CISCO SYSTEMS, INC.
##                                         1011
```

```
##                 HITACHI CONSULTING CORPORATION
##                                            812
##             DALLAS INDEPENDENT SCHOOL DISTRICT
##                                            808
##                               EMC CORPORATION
##                                            789
##                               IBM CORPORATION
##                                            762
##                                  VMWARE, INC.
##                                            701
##                       IBM INDIA PRIVATE LIMITED
##                                            694
##               LARSEN & TOUBRO INFOTECH LIMITED
##                                            679
##                      WAL-MART ASSOCIATES, INC.
##                                            674
##                           LINKEDIN CORPORATION
##                                            637
##                                TWITTER, INC.
##                                            632
##                  YASH & LUJAN CONSULTING, INC.
##                                            629
##                      CAPITAL ONE SERVICES, LLC
##                                            526
##                           SYMANTEC CORPORATION
##                                            520
##                                    APPLE INC.
##                                            482
##                                 ACCENTURE LLP
##                                            472
##                       LOGISTIC SOLUTIONS, INC.
##                                            453
##                           ORACLE AMERICA, INC.
##                                            448
##                        DELOITTE CONSULTING LLP
##                                            436
##                                ITECH US, INC.
##                                            417
##                  BALTIMORE CITY PUBLIC SCHOOLS
##                                            411
##                            MOTOROLA MOBILITY LLC
##                                            408
##                QUALCOMM INNOVATION CENTER INC.
##                                            372
##           CAPGEMINI FINANCIAL SERVICES USA INC
##                                            350
##                                     AKVARR INC
##                                            336
##                          IGATE TECHNOLOGIES INC.
##                                            335
##     SOFTWARE PARADIGMS INTERNATIONAL GROUP, LLC
##                                            334
##                                   INTUIT INC.
##                                            333
```

```
##                                INTRAEDGE, INC.
##                                           331
##                           QUALCOMM ATHEROS, INC.
##                                           328
##            NEW YORK CITY DEPARTMENT OF EDUCATION
##                                           311
##                            QUALCOMM INCORPORATED
##                                           302
##                                  ALINDUS, INC.
##                                           295
##           MCKINSEY & COMPANY, INC. UNITED STATES
##                                           294
##                            KPIT INFOSYSTEMS INC.
##                                           286
##                                  SCM DATA, INC
##                                           284
##                               MINDTREE LIMITED
##                                           282
##                            OPENLOGIX CORPORATION
##                                           274
##                       QUALCOMM TECHNOLOGIES INC.
##                                           267
##                               THE MATHWORKS, INC.
##                                           267
##                               ARGHA SERVICES, INC
##                                           260
##         GLOBAL TEACHERS RESEARCH & RESOURCES, INC
##                                           250
##                                SYNECHRON, INC.
##                                           250
##                               CYMA SYSTEMS INC
##                                           248
##                             SALESFORCE.COM, INC.
##                                           247
##                       VISION IT SERVICES USA INC
##                                           243
##                            PHOTON INFOTECH, INC.
##                                           239
##                       FRONTIER TECHNOLOGIES, LLC
##                                           232
##          SAMSUNG TELECOMMUNICATIONS AMERICA, LLC
##                                           229
##                    FIDELITY TECHNOLOGY GROUP LLC
##                                           227
##                           VISIONET SYSTEMS, INC.
##                                           227
##                            BAHA INDUSTRIES CORP.
##                                           225
##                      CAPITAL ONE SERVICES II LLC
##                                           224
##                              SUDHI INFOMATICS INC
##                                           219
##                    CLIENT NETWORK SERVICES, INC.
##                                           217
```

```
##                            NORTHSTAR GROUP INC
##                                            214
##                  FACTSET RESEARCH SYSTEMS, INC.
##                                            213
##                       RANDSTAD TECHNOLOGIES, LP
##                                            212
##                           CITRIX SYSTEMS, INC.
##                                            210
##                                  GOOGLE, INC.
##                                            210
##                         HEWLETT-PACKARD COMPANY
##                                            209
##                                   YAHOO! INC.
##                                            208
##                                 COOLSOFT, LLC
##                                            207
##                                 ICONSOFT INC.
##                                            207
##                                CONSULTADD INC
##                                            206
##                       AKAMAI TECHNOLOGIES, INC.
##                                            202
##                    APEX TECHNOLOGY SYSTEMS, INC
##                                            201
##             BROCADE COMMUNICATIONS SYSTEMS, INC.
##                                            200
##                        MOTOROLA SOLUTIONS, INC.
##                                            198
##                               EPAM SYSTEMS, INC
##                                            194
##                UNIVERSITY OF ILLINOIS AT CHICAGO
##                                            193
##                                  STAPLES, INC.
##                                            189
##                                  AIM BIG, INC.
##                                            188
##              CGI TECHNOLOGIES AND SOLUTIONS INC.
##                                            187
## MASTECH, INC., A MASTECH HOLDINGS, INC. COMPANY
##                                            186
##                                   TABNER, INC.
##                                            185
##                         CSC COVANSYS CORPORATION
##                                            183
##                             JPMORGAN CHASE & CO.
##                                            183
##          SASKEN COMMUNICATION TECHNOLOGIES, LTD.
##                                            182
##                                  GROUPON, INC.
##                                            181
##                        RIVERBED TECHNOLOGY, INC.
##                                            180
##                           UNIVERSITY OF MICHIGAN
##                                            179
```

```
##                       THE OHIO STATE UNIVERSITY
##                                             177
##                                MMC SYSTEMS INC.
##                                             176
##                               PURDUE UNIVERSITY
##                                             176
##                          THE UNIVERSITY OF ARIZONA
##                                             175
##                     TECH MAHINDRA (AMERICAS),INC.
##                                             174
##                             UNIVERSITY OF FLORIDA
##                                             173
##                              RJT COMPUQUEST, INC.
##                                             171
##                                   ASTA CRS, INC.
##                                             168
##               LOS ANGELES UNIFIED SCHOOL DISTRICT
##                                             167
##                     MIRACLE SOFTWARE SYSYTEMS INC
##                                             164
##                                          (Other)
##                                           123034
```

```
##                                  top10 freq
## 1                          Google Inc. 6213
## 2                Fujitsu America, Inc. 1814
## 3                    Intel Corporation 1781
## 4                Microsoft Corporation 1364
## 5          Qualcomm Technologies, Inc. 1277
## 6                       Facebook, Inc. 1210
## 7                   Cerner Corporation 1038
## 8                  Cisco Systems, Inc. 1011
## 9       Hitachi Consulting Corporation  812
## 10 Dallas Independent School District 2277
```

We know Google, Intel, Microsoft, Facebook, Cisco. The others I don't recognize. Also Dallas Independent School District is one of the top 10 employers?

5. Top 10 states to work in

```
##                  Alabama                   Alaska                  Arizona
##                      559                       66                     2570
##                 Arkansas               California                 Colorado
##                      558                    46782                     1614
##              Connecticut                 Delaware     District of Columbia
##                     2023                      874                     1370
##                  Florida                  Georgia                     Guam
##                     4064                     5615                       61
##                   Guamam                   Hawaii                    Idaho
##                        1                      170                      186
##                 Illinois                 Indiana                     Iowa
##                     7411                     1617                     1012
##                   Kansas                 Kentucky                Louisiana
```

```
##                   746                   641                   883
##                 Maine                 Maryland         Massachusetts
##                   216                  3275                  6848
##              Michigan              Minnesota           Mississippi
##                  3844                  2116                   343
##              Missouri               Montana              Nebraska
##                  2773                    63                   598
##                Nevada         New Hampshire            New Jersey
##                   427                   427                 10198
##            New Mexico              New York        North Carolina
##                   575                 11373                  3578
##          North Dakota Northern Mariana Islands                  Ohio
##                   138                    58                  3192
##              Oklahoma                Oregon                 Palau
##                   551                  1535                     1
##          Pennsylvania           Puerto Rico          Rhode Island
##                  4725                   109                   528
##        South Carolina          South Dakota             Tennessee
##                   851                   105                  1087
##                 Texas                  Utah               Vermont
##                 15498                   757                   131
##        Virgin Islands              Virginia            Washington
##                   109                  6031                  4610
##         West Virginia             Wisconsin               Wyoming
##                   307                  1433                    45
```

```
##           top10  freq
## 1    California 46782
## 2         Texas 15498
## 3      New York 11373
## 4    New Jersey 10198
## 5      Illinois  7411
## 6  Massachussets  6848
## 7       Virgina  6031
## 8  Pennsylvania  4725
## 9    Washington  4610
## 10     Michigan  3844
```

as expected CA is the largest, but WOW did the numbers really vary after. I was expecting TX and NY, but def not NJ.

6. Top 10 Jobs

```
##                               SOFTWARE ENGINEER
##                                           54478
##                              BUSINESS ANALYST
##                                           19516
##                         SENIOR SOFTWARE ENGINEER
##                                           11714
##                             ASSISTANT PROFESSOR
##                                           10134
##                               Software Engineer
##                                            3743
```

```
##                           SR. SOFTWARE ENGINEER
##                                            2133
##         COMPUTER SOFTWARE ENGINEER, APPLICATIONS
##                                            1808
##                                         TEACHER
##                                            1566
##                                    DATA ANALYST
##                                            1524
##                          SENIOR BUSINESS ANALYST
##                                            1437
##                          STAFF SOFTWARE ENGINEER
##                                            1335
##                       ELEMENTARY BILINGUAL TEACHER
##                                            1020
##                        COMPUTER SOFTWARE ENGINEER
##                                             982
##                       PRINCIPAL SOFTWARE ENGINEER
##                                             962
##                          Senior Software Engineer
##                                             862
##                     RESEARCH ASSISTANT PROFESSOR
##                                             809
##                              SOFTWARE ENGINEER II
##                                             800
##                                  DATA SCIENTIST
##                                             762
##                               Assistant Professor
##                                             678
##                             LEAD SOFTWARE ENGINEER
##                                             658
##                                ASSOCIATE ATTORNEY
##                                             650
##                         SPECIAL EDUCATION TEACHER
##                                             625
##                       ASSOCIATE SOFTWARE ENGINEER
##                                             591
##                             SOFTWARE ENGINEER III
##                                             579
##                        SOFTWARE ENGINEER & TESTER
##                                             529
##                         SOFTWARE ENGINEER IN TEST
##                                             496
##                     VISITING ASSISTANT PROFESSOR
##                                             495
##                     CLINICAL ASSISTANT PROFESSOR
##                                             485
##                                 SCIENCE TEACHER
##                                             481
##                         ELEMENTARY SCHOOL TEACHER
##                                             463
##                                       ATTORNEY
##                                             436
##                              SR. BUSINESS ANALYST
##                                             385
```

```
##                              MATHEMATICS TEACHER
##                                              375
## MEMBER OF TECHNICAL STAFF - SOFTWARE ENGINEERING
##                                              369
##                                SENIOR DATA ANALYST
##                                              368
##                             PUBLIC SCHOOL TEACHER
##                                              361
##                               SOFTWARE ENGINEER I
##                                              327
##                                      MATH TEACHER
##                                              290
##                                  software engineer
##                                              285
##                                   Business Analyst
##                                              278
##                               IT BUSINESS ANALYST
##                                              275
##                          EMBEDDED SOFTWARE ENGINEER
##                                              266
##                               KINDERGARTEN TEACHER
##                                              237
##                               SR SOFTWARE ENGINEER
##                                              231
##                             Sr. Software Engineer
##                                              231
##                            FOREIGN LANGUAGE TEACHER
##                                              230
##                       SOFTWARE ENGINEER AND TESTER
##                                              225
##                                ELEMENTARY TEACHER
##                                              222
##                                     LEAD TEACHER
##                                              213
##                 SENIOR CONSULTANT/BUSINESS ANALYST
##                                              202
##                               BUSINESS DATA ANALYST
##                                              192
##                         GRAPHICS SOFTWARE ENGINEER
##                                              190
##                       BILINGUAL ELEMENTARY TEACHER
##                                              189
##                            SECONDARY SCHOOL TEACHER
##                                              186
##                               CLINICAL DATA ANALYST
##                                              183
##                                  SPANISH TEACHER
##                                              177
##                                BILINGUAL TEACHER
##                                              172
##                               BUSINESS ANALYST II
##                                              159
##        COMPUTER SOFTWARE ENGINEER - APPLICATIONS
##                                              157
```

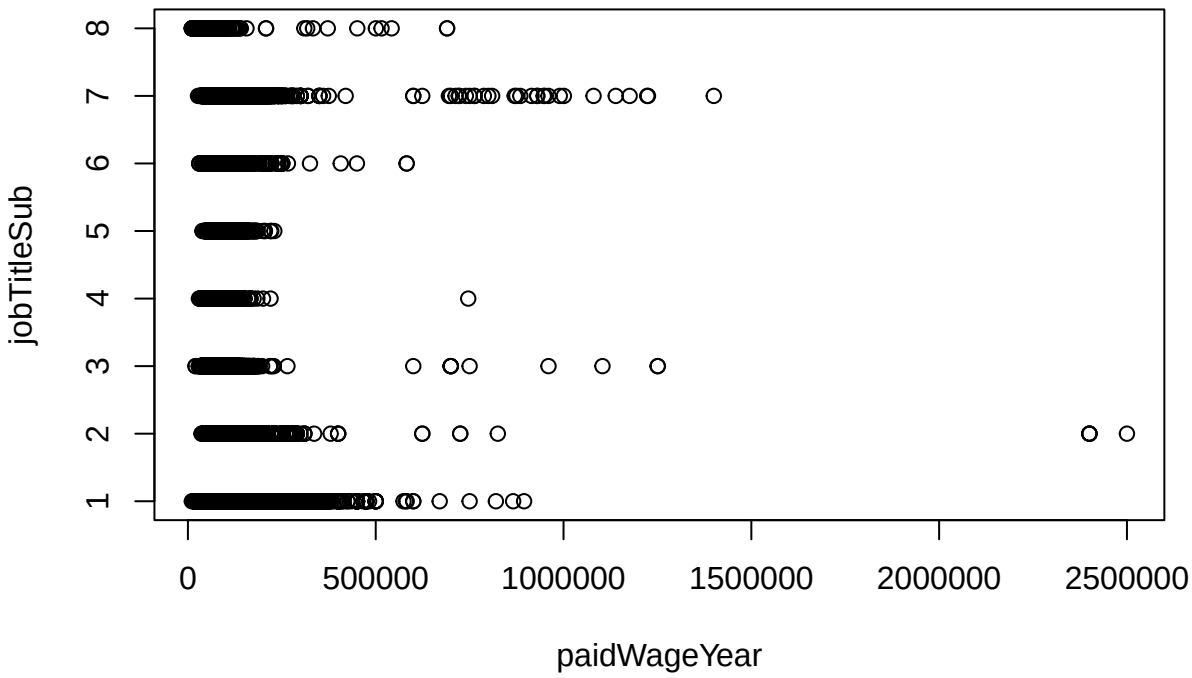
```
##                           MANAGEMENT CONSULTANT
##                                             152
##                           MIDDLE SCHOOL TEACHER
##                                             149
##                                PRESCHOOL TEACHER
##                                             149
##                 ASSOCIATE (MANAGEMENT CONSULTANT)
##                                             145
##                        ADVISORY SOFTWARE ENGINEER
##                                             144
##                           SENIOR DATA SCIENTIST
##                                             142
##                  ASSISTANT PROFESSOR OF ECONOMICS
##                                             141
##                           LEAD BUSINESS ANALYST
##                                             141
##                        SYSTEMS/SOFTWARE ENGINEER
##                                             141
##                             SAP BUSINESS ANALYST
##                                             134
##                                COMPUTER TEACHER
##                                             132
##                       SOFTWARE ENGINEER/DEVELOPER
##                                             132
##                     SENIOR JAVA SOFTWARE ENGINEER
##                                             131
##                            JAVA SOFTWARE ENGINEER
##                                             130
##    MEMBER OF TECHNICAL STAFF - SOFTWARE ENGINEER
##                                             129
##                                   MUSIC TEACHER
##                                             128
##                   SOFTWARE ENGINEER APPLICATIONS
##                                             128
##                ASSISTANT PROFESSOR OF MATHEMATICS
##                                             126
##                       ASSOCIATE BUSINESS ANALYST
##                                             122
##                    MANAGER, SOFTWARE ENGINEERING
##                                             122
##         ASSISTANT PROFESSOR OF CLINICAL MEDICINE
##                                             121
##                          HIGH SCHOOL MATH TEACHER
##                                             119
##                          SYSTEM SOFTWARE ENGINEER
##                                             115
##                       HIGH SCHOOL SCIENCE TEACHER
##                                             112
##                   ASSISTANT PROFESSOR OF MEDICINE
##                                             111
##                     Elementary Bilingual Teacher
##                                             111
##                                BUSINESS ANALYSTS
##                                             110
```

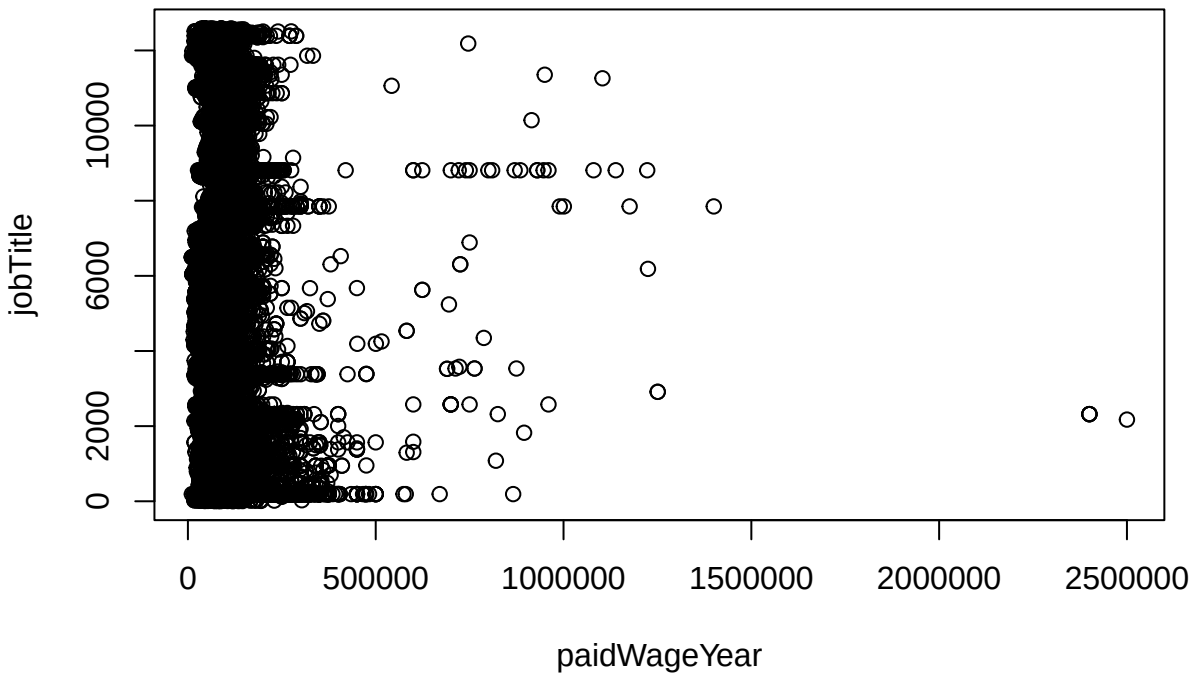
```
##                                     ESL TEACHER
##                                             108
##                   SENIOR STAFF SOFTWARE ENGINEER
##                                             104
##                              SOFTWARE ENGINEER IV
##                                             103
##                         TECHNICAL BUSINESS ANALYST
##                                             103
##                            SOFTWARE ENGINEER APPS
##                                             102
##                  SOFTWARE ENGINEER, APPLICATIONS
##                                             101
##             ASSOCIATE SOFTWARE ENGINEER DEVELOPER
##                                             100
##                    ASSISTANT PROFESSOR OF FINANCE
##                                              96
##                         CLINICAL BUSINESS ANALYST
##                                              96
##                    INTERNATIONAL BUSINESS ANALYST
##                                              95
##                     SENIOR .NET SOFTWARE ENGINEER
##                                              95
##                SENIOR SOFTWARE ENGINEER DEVELOPER
##                                              95
##           ASSISTANT PROFESSOR OF COMPUTER SCIENCE
##                                              92
##                                         (Other)
##                                           32745
```

```
##                               top10  freq
## 1                  Software Engineer 58221
## 2                   Business Analyst 19516
## 3               Sr Software Engineer 13847
## 4                Assistant Professor 10134
## 5  Computer Software Engineer, Apps  1808
## 6                            Teacher  1566
## 7                       Data Analyst  1524
## 8                Sr Business Analyst  1437
## 9            Staff Software Engineer  1335
## 10     Elementary Bilungual Teacher  1020
```

Dataset separated the ones with different cases, had to add up a few. Wasn't expecting teachers, esp the last one. engineer and analyst are popular jobs it seems

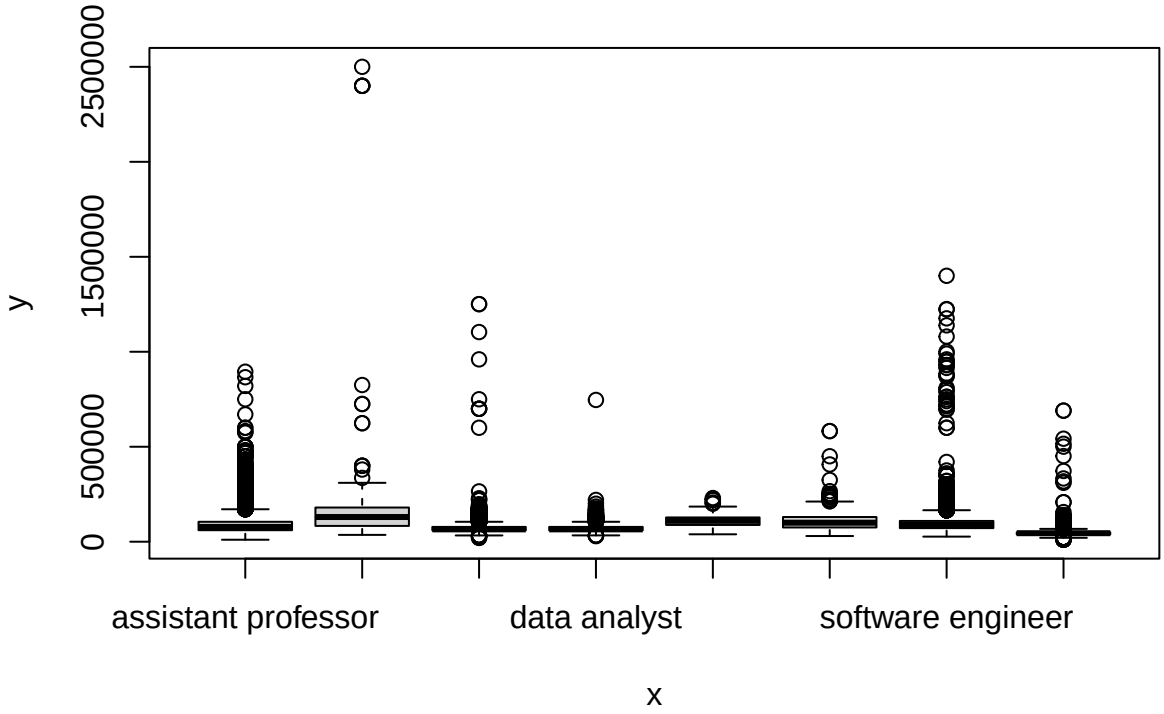
```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   10500   63000   78600   85533  100006 2500000
```


jobTitleSub
1
2
3
4
5
6
7
8
0
500000
1000000
1500000
2000000
2500000
paidWageYear



Norm seems to be under $500,000 wage/year. If only the table can tell me which sub jobs they were... I will need to revisit the jobTitle one, but the norm still holds.

7. Trying the plots again



Hard to read

```
knitr::opts_chunk$set(echo = FALSE)
# loading libraries
library(readxl)
library(caret)
library(ggplot2)
library(dplyr)

# dataset overview
salary <- read_excel("C:/Users/knigh/OneDrive/Desktop/Github/We-R-Finished/salary/salary_data_states.xls
dim(salary)
# renaming
colnames(salary)[1] = "Case Number"
colnames(salary)[2] = "Case Status"
colnames(salary)[3] = "Received Date"
colnames(salary)[4] = "Decision Date"
colnames(salary)[5] = "Employer Name"
colnames(salary)[6] = "Submitted Prevail Wage"
colnames(salary)[7] = "SPrW Unit"
colnames(salary)[8] = "Submitted Paid Wage"
colnames(salary)[9] = "SPaW Unit"
colnames(salary)[10] = "Job Title"
colnames(salary)[11] = "Work City"
```

```r
colnames(salary)[12] = "Required Edu"
colnames(salary)[13] = "Required College Major"
colnames(salary)[14] = "Exp Req"
colnames(salary)[15] = "Exp Req (Months)"
colnames(salary)[16] = "Citizenship"
colnames(salary)[17] = "Prevail Wage SOC Code"
colnames(salary)[18] = "PWSOC Title"
colnames(salary)[19] = "Work State"
colnames(salary)[20] = "WS Abb"
colnames(salary)[21] = "WPostal Code"
colnames(salary)[22] = "Full Time"
colnames(salary)[23] = "Visa Class"
colnames(salary)[24] = "Prevail Wage/Yr"
colnames(salary)[25] = "Paid Wage/Yr"
colnames(salary)[26] = "Job Title Sub"
colnames(salary)[27] = "Order"
names(salary)
jobTitleSub <- as.factor(salary$`Job Title Sub`)
summary(jobTitleSub)
# dataframe
Sub_Job <- c("Software Engineer", "Business Analyst", "Assistant Prof", "Teacher",
             "Data Scientist", "Data Analyst", "Attorney", "Management Consultant")
Frequency <- c(99364, 27811, 18866, 13912, 1227, 3840, 1488, 770)
job2 <- data.frame(Sub_Job, Frequency)
print(job2)
city <- as.factor(salary$`Work City`)
summary(city)
top10 <- c("New York", "Mountain View", "San Francisco", "San Diego", "San Jose", "Houston", "Santa Cla
freq <- c(6714, 6712, 6458, 2983, 2925, 2957, 2684, 2388, 2351, 2277)
topCity <- data.frame(top10, freq)
print(topCity)
employName <- as.factor(salary$`Employer Name`)
summary(employName)
top10 <- c("Google Inc.", "Fujitsu America, Inc.", "Intel Corporation",
           "Microsoft Corporation", "Qualcomm Technologies, Inc.", "Facebook, Inc.",
           "Cerner Corporation", "Cisco Systems, Inc.", "Hitachi Consulting Corporation", "Dallas Indep
freq <- c(6213, 1814, 1781, 1364, 1277, 1210, 1038, 1011, 812, 2277)
topEmploy <- data.frame(top10, freq)
print(topEmploy)
state <- as.factor(salary$`Work State`)
summary(state)
top10 <- c("California", "Texas", "New York", "New Jersey", "Illinois",
           "Massachussets", "Virgina", "Pennsylvania", "Washington", "Michigan")
freq <- c(46782, 15498, 11373, 10198, 7411, 6848, 6031, 4725, 4610, 3844)
topState <- data.frame(top10, freq)
print(topState)
jobTitle <- as.factor(salary$`Job Title`)
summary(jobTitle)
top10 <- c("Software Engineer", "Business Analyst", "Sr Software Engineer", "Assistant Professor", "Comp
           "Teacher", "Data Analyst", "Sr Business Analyst", "Staff Software Engineer", "Elementary Bilu
freq <- c(58221, 19516, 13847, 10134, 1808, 1566, 1524, 1437, 1335, 1020)
topJob <- data.frame(top10, freq)
print(topJob)
```

```r
paidWageYear <- salary$`Paid Wage/Yr`
summary(paidWageYear)
# plots
plot(paidWageYear, jobTitleSub)
plot(paidWageYear, jobTitle)
plot(jobTitleSub, paidWageYear)
```