Data Project Proposal

CUNY MSDA DATA 606

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Data Preparation

```
# Reading our normalized data by employing RMySQL() in R
mydbconnection <- dbConnect(MySQL(),
                  user = myLocalUser,
                  password = myLocalPassword,
                  host = myLocalHost,
                  dbname = myLocalMySQLSchema)

# Check to see if our table exists? and read our dataset.
myLocalTableName <- tolower(myLocalTableName)
if (dbExistsTable(mydbconnection, name = myLocalTableName)  == TRUE){
  my.data <- dbReadTable(mydbconnection, name = myLocalTableName)
} else {
  print("Error, the table does not exist")
}

# Closing connection with local Schema
dbDisconnect(mydbconnection)

#To close all open connections
lapply( dbListConnections( dbDriver( drv = "MySQL")), dbDisconnect)
```

Research question

Are Data Science skills predictive of salary?

Cases

Each case represents a job posting in the united states. There are 390 observations in the given data set.

Data collection

Data is collected by Paysa as part of the Integrated job posting website. Data is submitted by employers daily.

Type of study

This is an observational study.

Data Source

Data is collected by Paysa and is available online here: http://paysa.com For this project, data was extracted by copying and pasting a job search of "Data Science" on March 16, 2017 into a text file uploaded into a table in a remote MySQL server.

Response

The response variable is salary and is numerical.

Explanatory

The explanatory variable is Data Science skills and is categorical.

Relevant summary statistics

Skills	Count	Percentage	Rank
Machine Learning	241	10.87 %	1
Data Science	201	9.07 %	2
Algorithms	169	7.62 %	3
Hadoop	153	6.9 %	4
Big Data	152	6.86 %	5
Python	116	5.23 %	6
Analytics	85	3.83 %	7
Data Mining	77	3.47 %	8
Optimization	74	3.34 %	9
C++	69	3.11 %	10
SQL	56	2.53 %	11
Management	55	2.48 %	12
Statistics	53	2.39 %	13
Data Mining	42	1.89 %	14
Matlab	40	1.8 %	15
Scala	38	1.71 %	16
MapReduce	31	1.4 %	17
Product Management	30	1.35 %	18
Hadoop	29	1.31 %	19
Strategy	25	1.13 %	20
Big Data	25	1.13 %	20
Optimization	23	1.04 %	22
Architectures	20	0.9 %	23
Machine Learning	19	0.86 %	24
Deep Learning	18	0.81 %	26
Distributed Systems	18	0.81 %	26
AWS	17	0.77 %	27
Information Retrieval	16	0.72 %	28
ETL	14	0.63 %	30
User Experience	14	0.63 %	30
Windows	14	0.63 %	30
Algorithms	14	0.63 %	30
Java	13	0.59 %	35
Relational Databases	13	0.59 %	35

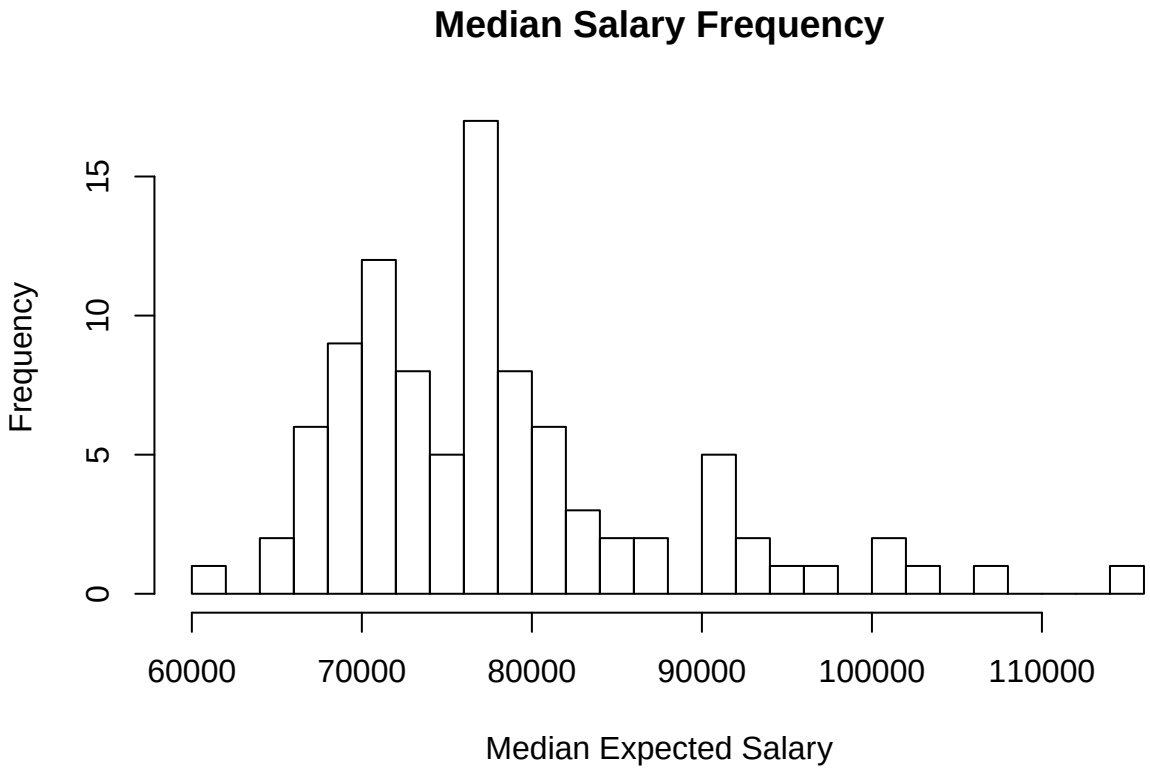
Skills	Count	Percentage	Rank
Ruby	13	0.59 %	35
Technical Leadership	13	0.59 %	35
Scalability	13	0.59 %	35
REST	11	0.5 %	38
Computer Vision	10	0.45 %	40
Leadership	10	0.45 %	40
Apache Spark	8	0.36 %	42
Databases	8	0.36 %	42
Software Design	8	0.36 %	42
C	7	0.32 %	45
Time Series Analysis	7	0.32 %	45
Python	7	0.32 %	45
Architecture	6	0.27 %	50
Natural Language Processing	6	0.27 %	50
Search	6	0.27 %	50
Data Science	6	0.27 %	50
Management	6	0.27 %	50
Technical Leadership	6	0.27 %	50
Automation	5	0.23 %	54
OS X	5	0.23 %	54
Mathematics	4	0.18 %	56
PHP	4	0.18 %	56
Scripting	4	0.18 %	56
Game Development	4	0.18 %	56
Android	3	0.14 %	62
Business Intelligence	3	0.14 %	62
Cassandra	3	0.14 %	62
Functional Programming	3	0.14 %	62
Go	3	0.14 %	62
MySQL	3	0.14 %	62
Product Management	3	0.14 %	62
Enterprise Software	2	0.09 %	73
Image Processing	2	0.09 %	73
LAMP	2	0.09 %	73
Recommender Systems	2	0.09 %	73
Signal Processing	2	0.09 %	73
Tomcat	2	0.09 %	73
Android	2	0.09 %	73
Architectures	2	0.09 %	73
C++	2	0.09 %	73
ETL	2	0.09 %	73
Information Retrieval	2	0.09 %	73
PHP	2	0.09 %	73
Relational Databases	2	0.09 %	73
Software Design	2	0.09 %	73
Strategy	2	0.09 %	73
Algorithm Design	1	0.05 %	88
Engineering Management	1	0.05 %	88
Firewalls	1	0.05 %	88
Game Development	1	0.05 %	88
HTTP	1	0.05 %	88
Mathematical Modeling	1	0.05 %	88

Skills	Count	Percentage	Rank
Network Architecture	1	0.05 %	88
Test Driven Development	1	0.05 %	88
Web Services	1	0.05 %	88
Automation	1	0.05 %	88
Data Science Scripting	1	0.05 %	88
EMPTY	1	0.05 %	88
Optimization Data Science	1	0.05 %	88
Product Design Data Science	1	0.05 %	88
Search	1	0.05 %	88

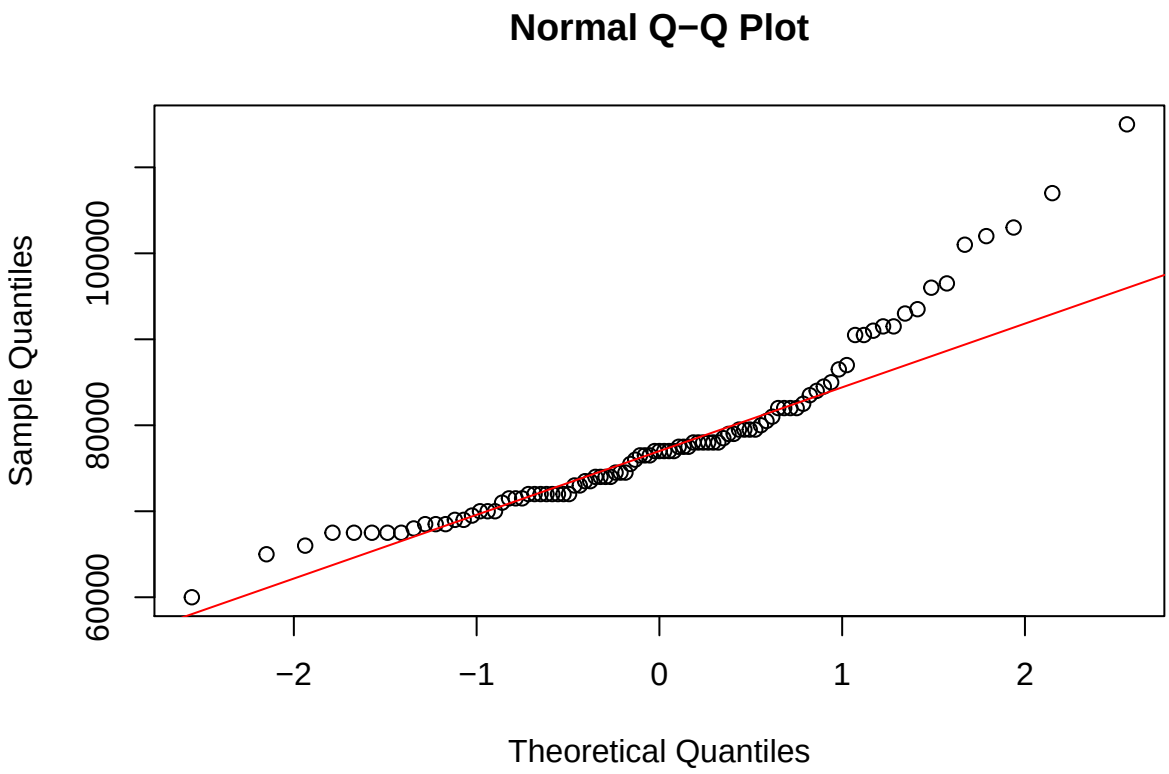
Top 10 paid Skills

Skills	Type	Average	Median	Max	Min
Automation	Expected Salary	305000.0	305000	305000	305000
Go	Expected Salary	277333.3	277000	278000	277000
Firewalls	Expected Salary	255000.0	255000	255000	255000
Technical Leadership	Expected Salary	250666.7	254000	278000	231000
Mathematics	Expected Salary	226750.0	245500	287000	129000
Engineering Management	Expected Salary	231000.0	231000	231000	231000
HTTP	Expected Salary	229000.0	229000	229000	229000
ETL	Expected Salary	226000.0	226000	226000	226000
Optimization Data Science	Expected Salary	226000.0	226000	226000	226000
ETL	Expected Salary	216071.4	225500	255000	151000

Salary Frequency




```
qqnorm(ind_salary_skills$Median)
qqline(ind_salary_skills$Median, col = 2)
```



Salary Type

Type	Average	Median	Max	Min
Expected Salary	176442.04	167000	338000	95000
Base Salary	138188.09	132000	265000	95000
Annual Salary	16169.15	18000	86000	0
Signing Salary	19047.36	17000	43000	0