# Foundations of Data Science (UCS548)

# **Dashboard Submission**

#### CAMPUS PLACEMENT ANALYSIS



## **Submitted By:**

Jigisha Chopra 102003650 3COE26

## **Submitted To:**

Dr. Sharad Saxena

**July 2022 – December 2022** 

#### About the dataset

The dataset consists of 215 rows representing students that completed an MBA course at an Indian University. In this report we analyse what factors influence the chances of finding good jobs after graduating from an MBA at an Indian university. The columns are:

SerialNumber: An increasing number which represents the row id.

Gender: The gender of the student (M / F).

LowerSecondarySchollGrade%: The average of grades in middle school (in %).

LowerSecondarySchollBoard: Schools in India are separated in "Boards",

depending on their region (Central / Others).

HigherSecondarySchollGrade%: The average of grades in high school (in %).

HigherSecondarySchollBoard: Same as middle school board, but for high school (Central / Others).

HigherSecondarySchollSpecialization: The area of specialization during high school (Commerce / Science / Arts).

DegreeGrade%: The average of grades in college (in %).

DegreeSpecialization: The area of specialization in college (Sci&Tech / Comm&Mgmt / Others).

WorkExperience: Whether the student had previous work experience (Yes / No).

EmployabilityTestGrade%: A test that was made by the university to see if a student will find a job or not.

MBASpecialization: The area of specialization in the MBA (Mkt&HR / Mkt&Fin).

MBAGrade%: The average of grades in the MBA (in %).

PlacementStatus: Whether the student finds a job or not after completing the MBA (Placed / Not Placed).

Salary: The student salary after getting a job (only available if PlacementStatus == "Placed". NaN otherwise).

This dataset is divided into 2 tables:

Table 1:

| 1  | Α     | В      | С     | D       | Е     | F       | G        | Н        | 1         | J   |
|----|-------|--------|-------|---------|-------|---------|----------|----------|-----------|-----|
| 1  | sl_no | gender | ssc_p | ssc_b   | hsc_p | hsc_b   | hsc_s    | degree_p | degree_t  |     |
| 2  | 1     | M      | 67    | Others  | 91    | Others  | Commerce | 58       | Sci&Tech  |     |
| 3  | 2     | M      | 79.33 | Central | 78.33 | Others  | Science  | 77.48    | Sci&Tech  |     |
| 4  | 3     | M      | 65    | Central |       | Central | Arts     |          | Comm&M    | gmt |
| 5  | 4     | M      | 56    | Central | 52    | Central | Science  | 52       | Sci&Tech  |     |
| 6  | 5     | M      |       | Central | 73.6  | Central | Commerce | 73.3     | Comm&Mgmt |     |
| 7  | 6     | M      | 55    | Others  | 49.8  | Others  | Science  | 67.25    | Sci&Tech  |     |
| 8  | 7     | F      | 46    | Others  | 49.2  | Others  | Commerce | 79       | Comm&M    | gmt |
| 9  | 8     | M      | 82    | Central |       | Central | Science  | 66       | Sci&Tech  |     |
| 10 | 9     | M      | 73    | Central | 79    | Central | Commerce | 72       | Comm&M    | gmt |
| 11 | 10    | M      | 58    | Central | 70    | Central | Commerce | 61       | Comm&M    | gmt |
| 12 | 11    | M      | 58    | Central | 61    | Central | Commerce | 60       | Comm&M    | gmt |
| 13 | 12    | M      | 69.6  | Central | 68.4  | Central | Commerce | 78.3     | Comm&M    | gmt |
| 14 | 13    | F      | 47    | Central | 55    | Others  | Science  | 65       | Comm&M    | gmt |
| 15 | 14    | F      | 77    | Central | 87    | Central | Commerce | 59       | Comm&Mgmt |     |
| 16 | 15    | M      | 62    | Central | 47    | Central | Commerce | 50       | Comm&Mgmt |     |
| 17 | 16    | F      | 65    | Central | 75    | Central | Commerce | ,        | Comm&M    | gmt |
| 18 | 17    | M      | 63    | Central |       | Central | Commerce | 65.6     | Comm&M    | gmt |
| 19 | 18    | F      | 55    | Central | 67    | Central | Commerce | 64       | Comm&M    | gmt |
| 20 | 19    | F      | 63    | Central | 66    | Central | Commerce | 64       | Comm&M    | gmt |
| 21 | 20    | M      | 60    | Others  | 67    | Others  | Arts     | 70       | Comm&M    | gmt |
| 22 | 21    | M      | 62    | Others  |       | Others  | Commerce | 66       | Comm&M    | gmt |
| 23 | 22    | F      | 79    | Others  | 76    | Others  | Commerce | 85       | Comm&M    | gmt |
| 24 | 23    | F      | 69.8  | Others  | 60.8  | Others  | Science  | 72.23    | Sci&Tech  |     |
| 25 | 24    | F      |       | Others  | 60    | Others  | Science  | 64.74    | Sci&Tech  |     |
| 26 | 25    | M      | 76.5  | Others  | 97.7  | Others  | Science  | 78.86    | Sci&Tech  |     |
| 27 | 26    | F      | 52.58 | Others  | 54.6  | Central | Commerce | 50.2     | Comm&M    | gmt |

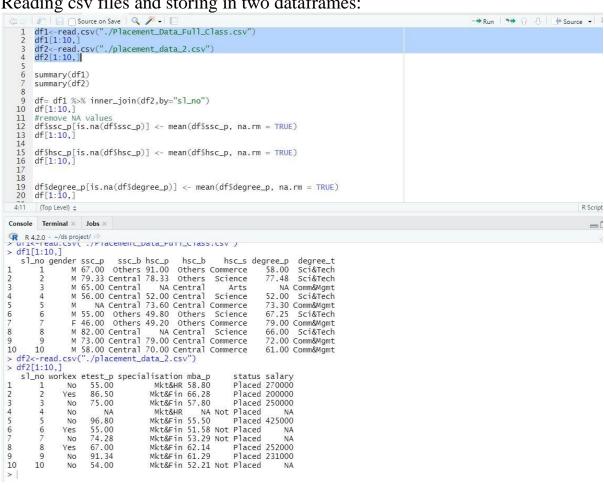
Table 2:

| 4  | Α     | В      | С       | D           | Е     | F          | G      |  |
|----|-------|--------|---------|-------------|-------|------------|--------|--|
| 1  | sl_no | workex | etest_p | specialisat | mba_p | status     | salary |  |
| 2  | 1     | No     | 55      | Mkt&HR      | 58.8  | Placed     | 270000 |  |
| 3  | 2     | Yes    | 86.5    | Mkt&Fin     | 66.28 | Placed     | 200000 |  |
| 4  | 3     | No     | 75      | Mkt&Fin     | 57.8  | Placed     | 250000 |  |
| 5  | 4     | No     |         | Mkt&HR      |       | Not Placed | ł      |  |
| 6  | 5     | No     | 96.8    | Mkt&Fin     | 55.5  | Placed     | 425000 |  |
| 7  | 6     | Yes    | 55      | Mkt&Fin     | 51.58 | Not Placed | ł      |  |
| 8  | 7     | No     | 74.28   | Mkt&Fin     | 53.29 | Not Placed | ł      |  |
| 9  | 8     | Yes    | 67      | Mkt&Fin     | 62.14 | Placed     | 252000 |  |
| 0  | 9     | No     | 91.34   | Mkt&Fin     | 61.29 | Placed     | 231000 |  |
| 1  | 10    | No     | 54      | Mkt&Fin     | 52.21 | Not Placed | ł      |  |
| 2  | 11    | Yes    | 62      | Mkt&HR      | 60.85 | Placed     | 260000 |  |
| 3  | 12    | Yes    | 60      | Mkt&Fin     | 63.7  | Placed     | 250000 |  |
| 4  | 13    | No     | 62      | Mkt&HR      | 65.04 | Not Placed | ł      |  |
| 5  | 14    | No     | 68      | Mkt&Fin     | 68.63 | Placed     | 218000 |  |
| 6  | 15    | No     | 76      | Mkt&HR      | 54.96 | Not Placed | ł      |  |
| 7  | 16    | Yes    | 72      | Mkt&Fin     | 64.66 | Placed     | 200000 |  |
| 8  | 17    | Yes    | 60      | Mkt&Fin     | 62.54 | Placed     | 300000 |  |
| 9  | 18    | No     | 60      | Mkt&Fin     | 67.28 | Not Placed | ł      |  |
| 20 | 19    | No     | 68      | Mkt&HR      | 64.08 | Not Placed | ł      |  |
| !1 | 20    | Yes    | 50.48   | Mkt&Fin     | 77.89 | Placed     | 236000 |  |
| 22 | 21    | No     | 50      | Mkt&HR      | 56.7  | Placed     | 265000 |  |
| !3 | 22    | No     | 95      | Mkt&Fin     | 69.06 | Placed     | 393000 |  |
| 4  | 23    | No     | 55.53   | Mkt&HR      | 68.81 | Placed     | 360000 |  |
| 25 | 24    | Yes    | 92      | Mkt&Fin     | 63.62 | Placed     | 300000 |  |
| 16 | 25    | No     | 97.4    | Mkt&Fin     | 74.01 | Placed     | 360000 |  |
| 27 | 26    | Yes    | 76      | Mkt&Fin     | 65.33 | Not Placed | ł      |  |

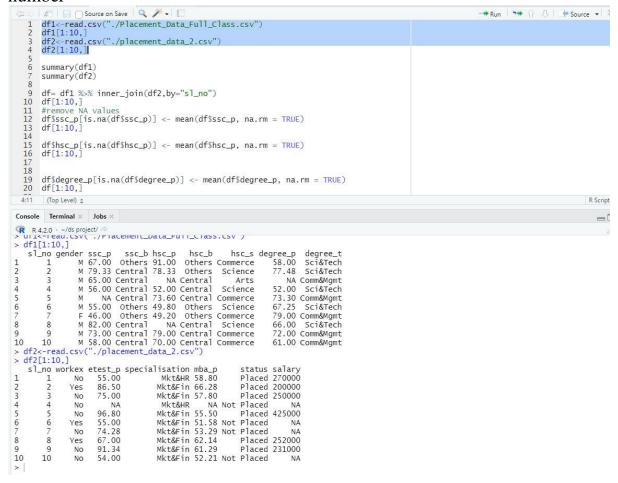
Now, running queries in R to merge these tables into a single dataset.

#### **Queries for merging dataset:**

Reading csv files and storing in two dataframes:



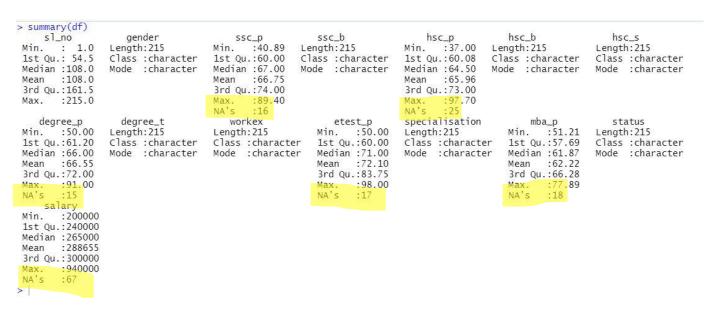
Merging all dataset into a single dataset by using inner join function by serial number

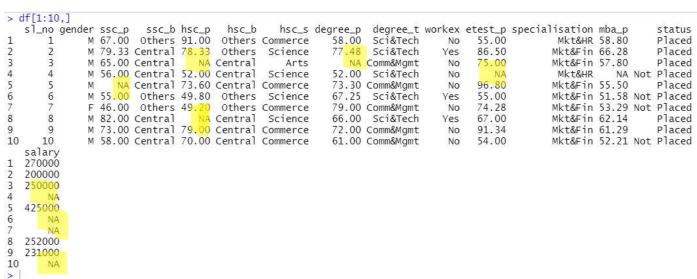


After merging the data into a single dataset, next step is to clean the dataset by analysing the dataset.

## **Data Cleaning**

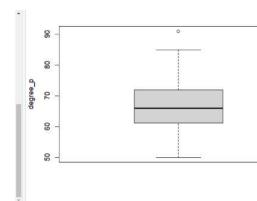
#### Checking missing and NA Values





Removing NA values and replacing them with mean as its numerical data and there and doesn't have outliers.

```
> df\hsc_p[is.na(df\hsc_p)] <- mean(df\hsc_p, na.rm = TRUE) 
> df[1:10,]
                                                                               degree_t workex etest_p specialisation mba_p
Sci&Tech No 55.00 Mkt&HR 58.80
                                                            hsc_s degree_p
    sl_no gender
                  ssc_p
67.0000
                                         hsc_p
                              ssc b
                                                  hsc h
                                                                                                                                         status
                                                                       58.00
                                                                                                    55.00
                                                                                                                                         Placed
                            Others 91.00000
                                                                                                                     Mkt&HR 58.80
                                                Others Commerce
                                                                                                                                         Placed
2
                  79.3300 Central
                                     78.33000
                                                                                                     86.50
                                                Others
                                                         Science
                                                                       77.48
                                                                               Sci&Tech
                                                                                              Yes
                                                                                                                    Mkt&Fin 66.28
                                                                                                                                         Placed
3
                M 65.0000 Central 65.95795 Central
                                                                          NA Comm&Mgmt
                                                                                                    75.00
                                                                                                                    Mkt&Fin 57.80
                                                              Arts
                                                                                              No
4
        4
                M 56.0000 Central 52.00000 Central
                                                           Science
                                                                        52.00
                                                                               Sci&Tech
                                                                                               No
                                                                                                        NA
                                                                                                                     Mkt&HR
                                                                                                                                NA Not Placed
                                                                       73.30 Comm&Mgmt
67.25 Sci&Tech
                                                                                                    96.80
                                                                                                                   Mkt&Fin 55.50
                                                                                                                                         Placed
5
        5
                M 66.7491 Central 73.60000 Central Commerce
                                                                                              No
67
                M 55.0000 Others 49.80000 Others
                                                                                                                   Mkt&Fin 51.58 Not Placed
                                                                                                    55.00
74.28
        6
                                                         Science
                                                                                              Yes
                F 46.0000 Others 49.20000 Others
M 82.0000 Central 65.95795 Central
                                                Others Commerce
                                                                        79.00 Comm&Mgmt
                                                                                              No
                                                                                                                    Mkt&Fin 53.29 Not Placed
8
                                                                       66.00
                                                                              Sci&Tech
                                                                                                     67.00
                                                                                                                    Mkt&Fin 62.14
                                                                                                                                         Placed
                                                         Science
                                                                                              Yes
                M 73.0000 Central 79.00000 Central Commerce
M 58.0000 Central 70.00000 Central Commerce
9
        9
                                                                        72.00 Comm&Mgmt
                                                                                              No
                                                                                                    91.34
                                                                                                                    Mkt&Fin 61.29
                                                                                                                                         Placed
10
       10
                                                                       61.00 Comm&Mgmt
                                                                                              No
                                                                                                    54.00
                                                                                                                   Mkt&Fin 52.21 Not Placed
    salary
1
   270000
2
    200000
3
    250000
4
        NA
5
   425000
67
        NA
        NA
8
   252000
9
   231000
10
        NA
```



```
)
dfSetest_p[is.na(dfSetest_p)] <- mean(dfSetest_p, na.rm = TRUE)
df[1:10,]
                                         er 55C_D 55C_b hsc_D hsc_D M 67.0000 Others 91.00000 Others 91.00000 Others M 79.3300 Central 78.33000 Others M 65.0000 Central 65.95795 Central M 56.0000 Central 52.00000 Central M 56.0000 Others 49.80000 Others 49.80000 Others M 62.0000 Others 49.80000 Others M 82.0000 Central 65.95795 Central M 73.0000 Central 70.00000 Central M 58.0000 Central 70.00000 Central M 58.0000 Central 70.00000 Central
                                                                                                                                                                                                                                       rkex etest_p specialisation mba_p
No 55.00000 Mkt&AFR $8.80
Yes 86.50000 Mkt&Fin 66.28
No 75.00000 Mkt&Fin 57.80
No 72.09758 Mkt&AFR NA Not
No 96.80000 Mkt&Fin 55.50
Ves 55.00000 Mkt&Fin 55.50
No 74.28000 Mkt&Fin 52.29
No 91.34000 Mkt&Fin 52.29 Not
No 91.34000 Mkt&Fin 62.14
No 91.34000 Mkt&Fin 62.14
                                                                                                                                                hsc_s degree_p
Commerce 58.00000
Science 77.48000
Arts 66.55055
Science 52.00000
Commerce 73.30000
Science 67.25000
Commerce 79.00000
Science 66.00000
                                                                                                                                                                                                     degree_t
Sci&Tech
Sci&Tech
                                                                                                                                                                                                                                                                                                                                                     status
Placed
Placed
                                                                                                                                                                                                                                                                                                                                                                                                              90
                                                                                                                                                                                                                                                                                                                                                     Placed
Placed
Placed
Placed
Placed
                                                                                                                                                                                                                                                                                                                                                                                                              80
                                                                                                                                                                                                                                                                                                                                                                                                  etest p
                                                                                                                                                                                                     Sci&Tech
                                                                                                                                                  Science
                                                                                                                                                                                                     Sci&Tech
                                                                                                                                                                                                                                                                                                                                                                                                              20
          9
10
salary
270000
200000
250000
                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                              00
         NA
NA
252000
231000
 8
9
10
         \label{eq:dfsmba} $$ df$mba_p[is.na(df$mba_p)] <- mean(df$mba_p, na.rm = TRUE) $$ df[1:10,] $$
                                                                                                                                                                                                                                                                                                                                                                                                                 15
                                                                                                                                                                                                                                          degree_p
58.00000
77.48000
66.55055
                                                                                                                                                                                                       degree_t
Sci&Tech
Sci&Tech
                                                                                                                                                                                                                                                                                                                                                                                                                 2
                                                                                                                                                                                                       Sci&Tect
                                                                                                                                                                                 .30000 Cor
.25000 Cor
.00000 Cor
.00000 Cor
                                                                                                                                                                                                       omm&Mgmt
Sci&Tech
                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                 55
                       Placed 252000
Placed 231000
```

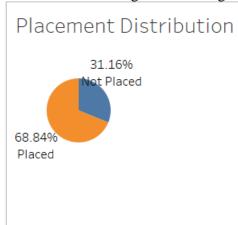
For salary we have replaced the NA values with 0 as salary was given as NA for all those who weren't placed

```
> df$salary[is.na(df$salary)] <- 0
> df[1:10,]
   sl_no gender
                             ssc_b
                                       hsc_p
                                               hsc_b
                                                          hsc_s
                                                                degree_p
                                                                           degree_t workex
                                                                                              etest_p specialisation
                    ssc_p
                            Others
               M 67.0000
                                   91.00000
                                               Others
                                                      Commerce
                                                                58.00000
                                                                           Sci&Tech
                                                                                          No 55.00000
                                                                                                                Mkt&HR 58.80000
2
               M
                 79.3300 Central
                                   78.33000
                                              Others
                                                       Science
                                                                   48000
                                                                           Sci&Tech
                                                                                         Yes 86.50000
No 75.00000
                                                                                                               Mkt&Fin 66.28000
Mkt&Fin 57.80000
               M 65.0000
                                   65.95795
                                             Central
                                                           Arts 66.55055
                                                                          Comm&Mamt
                          Central
                 56.0000 Central
                                   52.00000
                                                                52.00000
                                                                           Sci&Tech
                                                                                          No 72.09758
                                                                                                                Mkt&HR 62.22294
                                             Central
                                                        Science
               M 66.7491
                          Central
                                   73.60000 Central
                                                                   30000
                                                                          Comm&Mgmt
                                                                                          No 96.80000
                                                                                                               Mkt&Fin 55.50000
                                                      Commerce
                                                                                                               Mkt&Fin 51.58000
6
        6
               M 55.0000
                           Others 49.80000
                                              Others
                                                       Science 67.25000
                                                                           Sci&Tech
                                                                                         Yes 55,00000
                 46.0000
                           Others 49.20000
                                                                79.00000 Comm&Mamt
                                                                                          No 74.28000
                                                                                                               Mkt&Fin 53.29000
                                              Others
                                                      Commerce
                 82.0000 Central 65.95795
73.0000 Central 79.00000
8
                                                                                         Yes 67.00000
                                                                                                               Mkt&Fin 62.14000
                                             Central
                                                       Science 66.00000
                                                                           Sci&Tech
9
                                                                72.00000
                                                                          Comm&Mgmt
                                                                                          No 91.34000
                                                                                                               Mkt&Fin 61.29000
                                             Central
                                                      Commerce
10
       10
               M 58.0000 Central 70.00000 Central Commerce 61.00000 Comm&Mgmt
                                                                                          No 54.00000
                                                                                                               Mkt&Fin 52.21000
       status salary
Placed 270000
        Placed
2
        Placed 200000
3
        Placed 250000
4
   Not Placed
                     0
        Placed
               425000
6
        Placed
       Placed
                     0
   Not
8
        Placed
               252000
        Placed
               231000
10 Not Placed
```

To finally use and analyze the data in tableau we have saved the data in RData format named as place.RData.

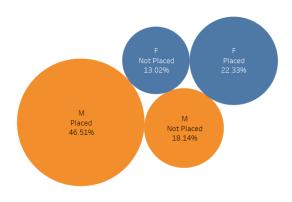
## **Tableau Queries**

Shows more students find a job after completing MBA as compared to those who don't. Can be inferred that doing an MBA degree adds value to them

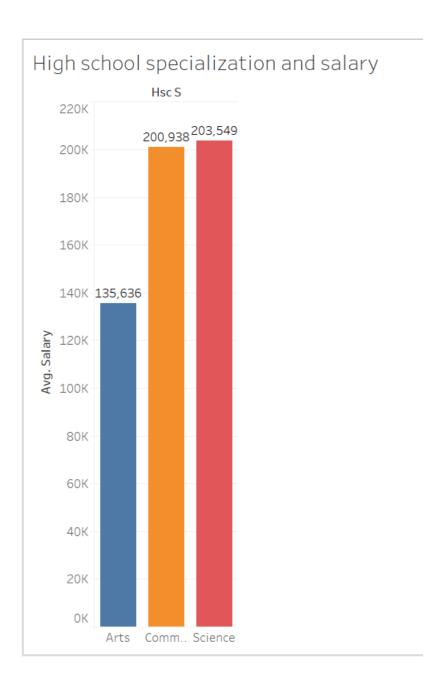


The number of male students placed are more than female students.

Gender Distribution

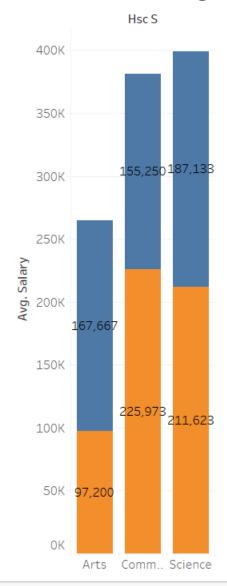


| The specialization the person chose during High school plays a role. Science and Commerce again show a salary boost when compared to Arts as their salaries are higher. |
|---|
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |
|   |

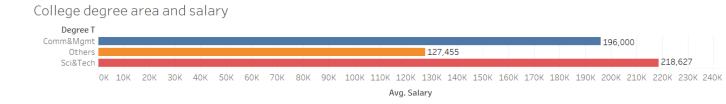


Analyzing the effects of gender on placement and salary, the conclusion was that women that came Science and Commerce tend to receive lower salaries and when they had a background different from these women receive higher salaries in this scenario.

# Relation between high school specialization and salary

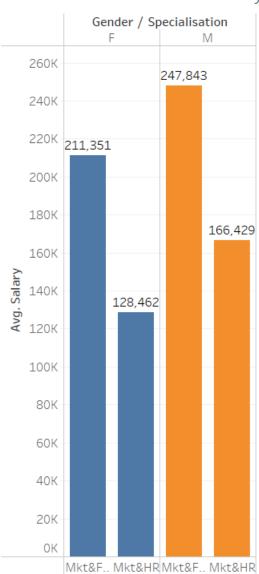


The person who chose science and tech as their college degree type had highest average salaries.

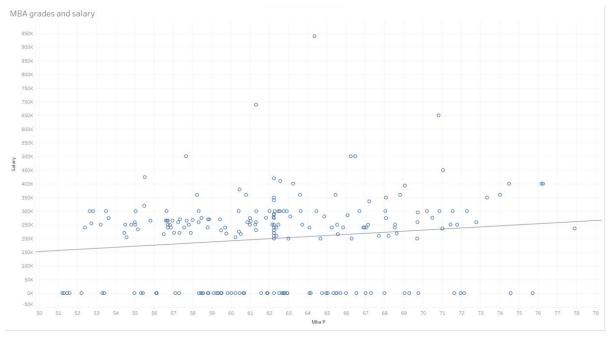


In both the MBA field choices the average salaries of men are more than female students.

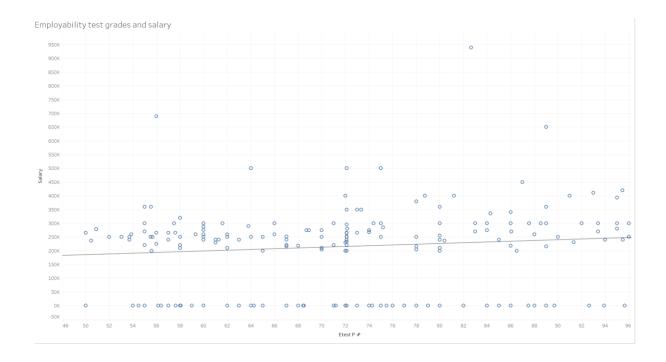
#### MBA field choice and salary



The data suggests that having good grades in MBA impacts positively on the salary a person will receive when employed.

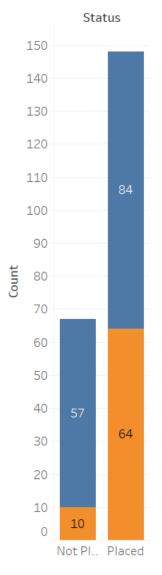


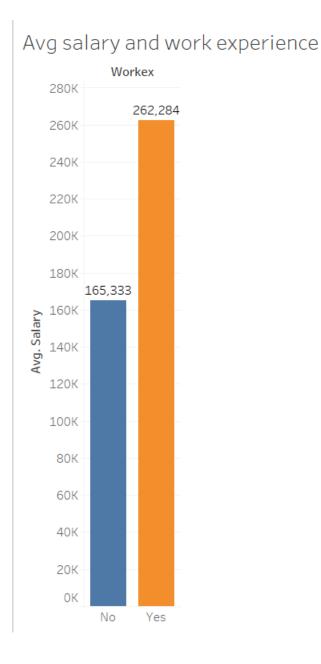
There is a positive relation between salaries and the employability test. Image shows an increase in salary for students that scored higher on the test.



This is another factor that greatly affects the salary and chance to find a job. Having worked before led to almost 10% higher salary on average. It also results in almost 50% better chances to be employed.

# Work experience and employability





**Final Dashboard** 

#### CAMPUS RECRUITMENT ANALYSIS

