

# COLLEGE OF COMPUTING AND INFORMATION SCIENCES SCHOOL OF COMPUTING AND INFORMATICS TECHNOLOGY

# UACE Results (2011-2015) REPORT DOCUMENT

# **Recess Year 2 GROUP B1**

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INTRODUCTION ABOUT THE DATASET:

Group: Group B1 Evening

Dataset: "Uace results 2011-2015.CSV"

We were given a task to analyze the above-mentioned dataset to come up with

meaningful deductions.

The "Uace results 2011-2015.CSV" is a record of the results of schools in the

respective districts of Uganda.

In this dataset, details for each school were recorded that included:

District name, the school, gender, years plus the years (2011-015) and their respective

performance according to points in ranges ("%0-5 Points', "%6-10 Points', "%11-15

Points', '%16-20 Points', '%21-25 Points')

Although this dataset is columnated, we realized that these schools have got a lot of

differences in data having null values and consequently their data needed to be

grouped and analyzed in order to extract meaningful information for informed

decision-making and strategic planning.

The dataset initially had **null value** columns, we had to drop them.

We tried our level best to bring out the quantitative aspect to enable visualizations of

plots and graphs.

THE KEY OBJECTIVES OF ANALYZING THE DATA:

The objectives of our analysis are as follows:

**GENDER PERFORMANCE:** 

• We want to determine the number of Females who sat for UACE to help us in

estimating the rates of girl child education. Whether females are actively

having education in Uganda.

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- We want to compare the performance of girls and boys over years.
- We want to compare the percentage of males and females who sat for UACE.

#### **DISTRICT PERFORMANCE:**

• We want to determine the best and worst performing districts across the country so as to help the ministry of education and sports in resource allocation.

#### **SCHOOLS PERFORMANCE:**

- We want to determine the best and worst performing schools over the years in the whole country.
- We want to know the performance of single sex schools and mixed sex schools all over the country.
- We want to determine the overall performance of all schools for five years ie; from 2011-2015.
- We want to compare the performance of schools while maximum points were 25 and when they changed the grading to 20.

#### THE FEATURES ANALYZED:

The features analyzed were selected based on the underlying objectives of our analysis.

These included: School performance, District performance, Change of grading system and Gender performance.

#### THE TECHNIQUES:

The approach we took for analyzing data was both *qualitative*(descriptive) and **quantitative**.

Qualitative: through extraction of organized tables using the *to\_markdown()* method and drawing conclusions based on that information.

Quantitative: through use of plots and graphs that base on numeric data.

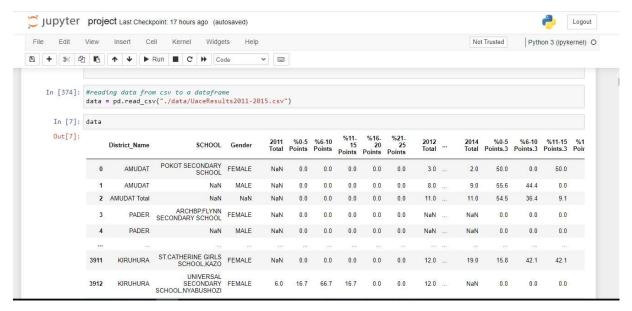
The quantitative approach was achieved through use of *grouping* and *methods of aggregation* performed on the data. The application of our very own user-defined functions also aided the quantification of the data at hand.

#### THE PROCESS:

#### Reading the Dataset into the dataframe:

Here we used the read method to read the data set. "data = pd.read\_csv("./data/UaceResults2011-2015.csv")".

After reading the data we found out that we had to clean because it was dirty.

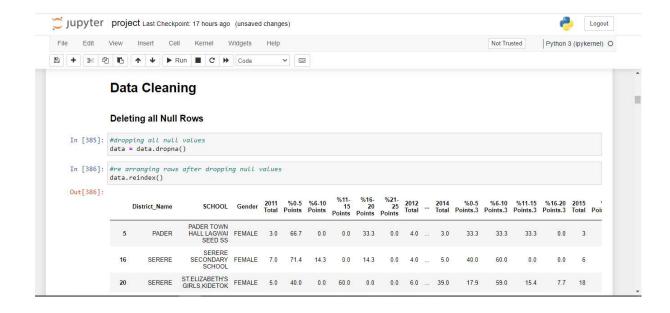


#### **Data cleaning:**

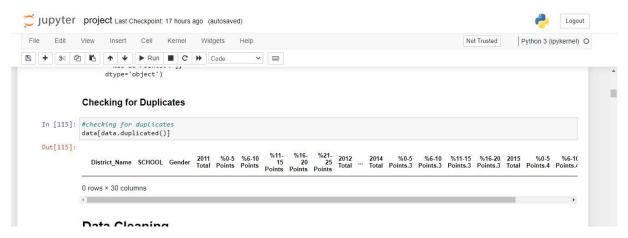
The first thing was to drop columns which were unnamed since it was affecting our analysis.

Using the drop method. "data = data.dropna()"

After we used the drop method, we used the reindex method "data.reindex()" to rearrange the columns..



We went on to check if our data was duplicated using the *data[data.duplicated()]* method and we found out that none of the rows was duplicated.



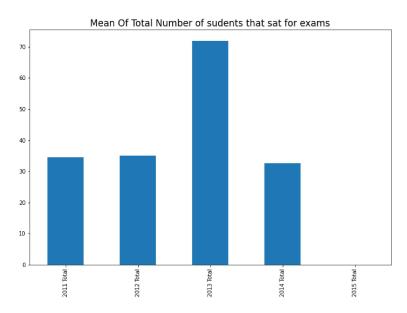
#### The Analysis:

#### **Determining the Modal and Mean Scores:**

We used the **methods of aggregation**(mean() and mode()) to perform some analysis on the **total** number of students that sat in each year(total 20...) feature.

The initial analysis was on the mean of total year as shown below using the method .mean()

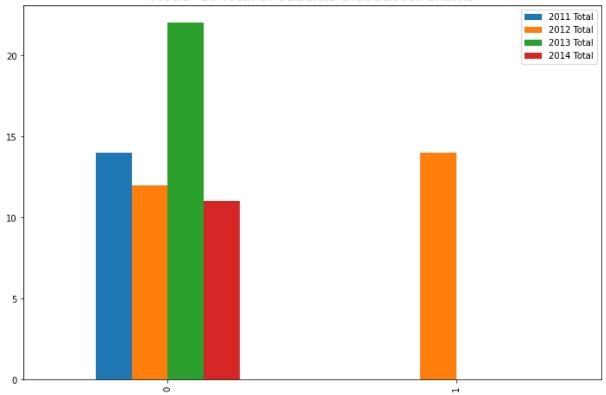
```
In [407]: data[["2011 Total","2012 Total","2013 Total","2014 Total","2015 Total"]].mean().plot(kind="bar",figsize=[12,8])
plt.title("Mean Of Total Number of sudents that sat for exams",size=17)
print()
```



We found out that the year with the biggest number of students was 2013 using the mode() aggregation method and our user-defined function modal\_age()

```
In [408]: data[["2011 Total","2012 Total","2013 Total","2014 Total","2015 Total"]].mode().plot(kind="bar",figsize=[12,8])
plt.title("Mode Of Total of sudents that sat for exams",size=17)
print()
```

Mode Of Total of sudents that sat for exams



Part of the Analysis tools of visualization that we used are tables ,pie charts,bar graphs that we extracted from the dataset using different methods. These tables are more categorical and specialized to specific features of the dataset and they provide a basis for action and making strategic decisions.

#### **GENDER PERFORMANCE**

Table showing female students in all years.

District_Name	SCHOOL	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total
PADER	PADER TOWN HALL LAGWAI SEED SS	3.0	4.0	10.0	3.0	3
SERERE	SERERE SECONDARY SCHOOL	7.0	4.0	18.0	5.0	6
SERERE	ST.ELIZABETH'S GIRLS,KIDETOK	5.0	6.0	64.0	39.0	18
RUBIRIZI	NDEKYE SECONDARY SCHOOL	2.0	10.0	28.0	12.0	6
RUBIRIZI	RYERU SCHOOL	41.0	34.0	68.0	8.0	21
***		5144	52.5	88.5	122	22.5
KIRUHURA	KAZO SECONDARY SCHOOL	26.0	28.0	72.0	47.0	29
KIRUHURA	LAKE MBURO SECONDARY SCHOOL	10.0	12.0	14.0	6.0	6
KIRUHURA	NAZARETH HIGH SCHOOL	4.0	3.0	8.0	12.0	4
KIRUHURA	PREMIER HIGH SCHOOL, KANONI	17.0	18.0	36.0	26.0	9
KIRUHURA	RWANYANGWE HIGH SCHOOL	13.0	12.0	22.0	9.0	12
	PADER SERERE SERERE RUBIRIZI RUBIRIZI KIRUHURA KIRUHURA KIRUHURA KIRUHURA	PADER PADER TOWN HALL LAGWAI SEED SS SERERE SERERE SECONDARY SCHOOL SERERE ST.ELIZABETH'S GIRLS,KIDETOK RUBIRIZI NDEKYE SECONDARY SCHOOL RUBIRIZI RYERU SCHOOL KIRUHURA KAZO SECONDARY SCHOOL KIRUHURA LAKE MBURO SECONDARY SCHOOL KIRUHURA NAZARETH HIGH SCHOOL KIRUHURA PREMIER HIGH SCHOOL,KANONI	PADER PADER TOWN HALL LAGWAI SEED SS 3.0  SERERE SERERE SECONDARY SCHOOL 7.0  SERERE ST.ELIZABETH'S GIRLS,KIDETOK 5.0  RUBIRIZI NDEKYE SECONDARY SCHOOL 2.0  RUBIRIZI RYERU SCHOOL 41.0  KIRUHURA KAZO SECONDARY SCHOOL 26.0  KIRUHURA LAKE MBURO SECONDARY SCHOOL 10.0  KIRUHURA NAZARETH HIGH SCHOOL 4.0  KIRUHURA PREMIER HIGH SCHOOL,KANONI 17.0	PADER PADER TOWN HALL LAGWAI SEED SS 3.0 4.0  SERERE SERERE SECONDARY SCHOOL 7.0 4.0  SERERE ST.ELIZABETH'S GIRLS, KIDETOK 5.0 6.0  RUBIRIZI NDEKYE SECONDARY SCHOOL 2.0 10.0  RUBIRIZI RYERU SCHOOL 41.0 34.0  KIRUHURA KAZO SECONDARY SCHOOL 26.0 28.0  KIRUHURA LAKE MBURO SECONDARY SCHOOL 10.0 12.0  KIRUHURA NAZARETH HIGH SCHOOL 4.0 3.0  KIRUHURA PREMIER HIGH SCHOOL, KANONI 17.0 18.0	PADER PADER TOWN HALL LAGWAI SEED SS 3.0 4.0 10.0  SERERE SERERE SECONDARY SCHOOL 7.0 4.0 18.0  SERERE ST.ELIZABETH'S GIRLS,KIDETOK 5.0 6.0 64.0  RUBIRIZI NDEKYE SECONDARY SCHOOL 2.0 10.0 28.0  RUBIRIZI RYERU SCHOOL 41.0 34.0 68.0  KIRUHURA KAZO SECONDARY SCHOOL 26.0 28.0 72.0  KIRUHURA LAKE MBURO SECONDARY SCHOOL 10.0 12.0 14.0  KIRUHURA NAZARETH HIGH SCHOOL 4.0 3.0 8.0  KIRUHURA PREMIER HIGH SCHOOL,KANONI 17.0 18.0 36.0	PADER PADER TOWN HALL LAGWAI SEED SS 3.0 4.0 10.0 3.0  SERERE SERERE SECONDARY SCHOOL 7.0 4.0 18.0 5.0  SERERE ST.ELIZABETH'S GIRLS,KIDETOK 5.0 6.0 64.0 39.0  RUBIRIZI NDEKYE SECONDARY SCHOOL 2.0 10.0 28.0 12.0  RUBIRIZI RYERU SCHOOL 41.0 34.0 68.0 8.0  KIRUHURA KAZO SECONDARY SCHOOL 26.0 28.0 72.0 47.0  KIRUHURA LAKE MBURO SECONDARY SCHOOL 10.0 12.0 14.0 6.0  KIRUHURA NAZARETH HIGH SCHOOL 4.0 3.0 8.0 12.0  KIRUHURA PREMIER HIGH SCHOOL,KANONI 17.0 18.0 36.0 26.0

The table showing the list of male students that sat for UACE in Uganda.

	SCHOOL	Gender	District_Name	2015 Total	%0-5 Points.4	%6-10 Points.4	%11-15 Points.4	%16-20 Points.4
5	PADER TOWN HALL LAGWAI SEED SS	FEMALE	PADER	3	66.7	33.3	0.0	0.0
16	SERERE SECONDARY SCHOOL	FEMALE	SERERE	6	52.5	16.7	16.7	0.0
20	ST.ELIZABETH'S GIRLS,KIDETOK	FEMALE	SERERE	18	38.9	61.1	0.0	0.0
33	NDEKYE SECONDARY SCHOOL	FEMALE	RUBIRIZI	6	85.1	0.0	0.0	0.0
35	RYERU SCHOOL	FEMALE	RUBIRIZI	21	67.8	23.8	0.0	0.0
	350	577	333	(000	.555	700	075	3555
3895	KAZO SECONDARY SCHOOL	FEMALE	KIRUHURA	29	69.0	20.7	10.3	0.0
3899	LAKE MBURO SECONDARY SCHOOL	FEMALE	KIRUHURA	6	68.8	16.7	0.0	0.0
3901	NAZARETH HIGH SCHOOL	FEMALE	KIRUHURA	4	0.0	50.0	50.0	0.0
3903	PREMIER HIGH SCHOOL,KANONI	FEMALE	KIRUHURA	9	57.4	11.1	11.1	0.0
3905	RWANYANGWE HIGH SCHOOL	FEMALE	KIRUHURA	12	66.7	16.7	16.7	0.0

1197 rows × 8 columns

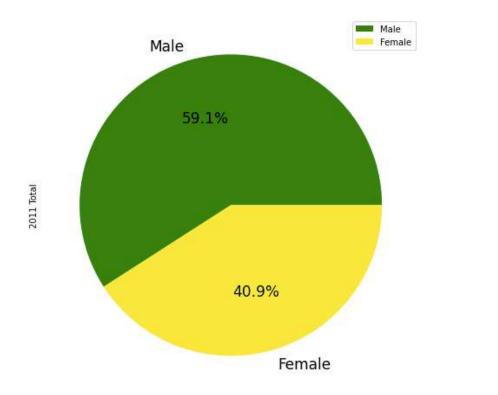
#### Mean Number of total number of Female that sat each each year

We used the method .MEAN() to find the mean number of female students that sat for UACE in each year.

#### Mode of female students that sat each year in a district

We used the method .Mode() to find the mode number of female students that sat for UACE in each year in a district.hence we found out that ZOMBO district had the modal number in 2015 total.

We also used the analysis visualization tool called the pie chart to compare the number of female and male students that sat for uace in certain years and we found out that there were more males than in the year 2011 and 2014 as we sampled a few and based our analysis.



#### **SCHOOLS PERFORMANCE**

We used the method .Max() to find the best school that sat for UACE in each year 2011,2012 ,2013,2014,2015 in the country as per the provided dataset.

#### Selecting best school each year

```
In [450]: ##2011
         ## Selecting schools and points
         schools = data_2011[["SCHOOL",
'%21-25 Points']]
         schools.max()
Out[450]: SCHOOL
                        ZANA MIXED SECONDARY SCHOOL
         %21-25 Points
                                            56.7
         dtype: object
           2012
 In [451]: #2012
          print(schools.max())
           -----Best School------SCHOOL ZANA MIXED SECONDARY SCHOOL
           %21-25 Points.1
           dtype: object
           2015
 In [454]: ## Selecting schools and points
          schools = data_2015[["SCHOOL",
    '%16-20 Points.4']]
           print("-----")
           print(schools.max())
           -----Best School-----
                          ZANA MIXED SECONDARY SCHOOL
           %16-20 Points.4
           dtype: object
          2014
 In [453]: ## Selecting schools and points
         schools = data_2014[["SCHOOL",
           '%0-5 Points.3']]
          print("---Worst School----")
          print(schools.max())
          SCHOOL ZANA MIXED SECONDARY SCHOOL %16-20 Points.3
          dtype: object
          SCHOOL ZANA MIXED SECONDARY SCHOOL %0-5 Points.3
```

#### **Districts performance:**

We selected and managed to view the district's performance data and we managed to rank the best district according to the provided dataset.

#### **Ditricts data**

```
In [455]: #selecting data for districts for each year

district_data_2011 = data_2011[list(data_2011.columns)[1:]]

district_data_2012 = data_2012[list(data_2012.columns)[1:]]

district_data_2013 = data_2013[list(data_2013.columns)[1:]]

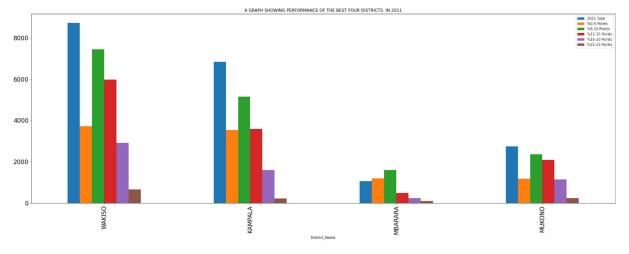
district_data_2014 = data_2014[list(data_2014.columns)[1:]]

district_data_2015 = data_2015[list(data_2015.columns)[1:]]
```

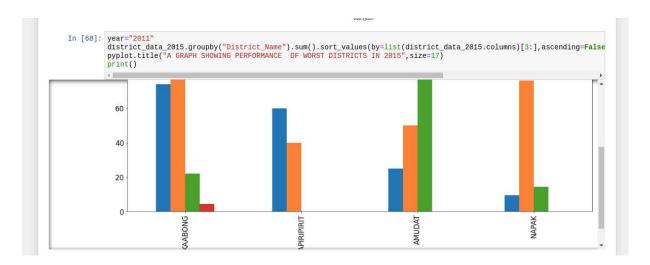
We selected and used the **Group-by** method to view the districts performance data and we managed to rank the best district according to the provided dataset. We also used the head(4) to view the best districts for different years and we found that the best performers were wakiso district.

```
In [456]: year="2011"

# Selecting data and grouping by district
district_data_2011.groupby("District_Name").sum().sort_values(by=list(district_data_2011.columns)[3:],ascending=False).head(4).p.
plt.title("A GRAPH SHOWING PERFORMANCE OF THE BEST FOUR DISTRICTS IN 2011")
print()
```



We also used the method .tail(4) to view the worst districts for different years. And we found out that the worst performers were Nakapiripirit district as shown on the graph.



**CONCLUSIONS Drawn on the UACE Results (2011-2015) Dataset:** 

#### **DISTRICT PERFORMANCE:**

We found out that schools in the developed regions of Kampala, Wakiso, Mukono,

Mbarara performed better than the deep schools of the other parts of Uganda having Zana

mixed secondary school of Wakiso as the best school in all years.

#### Recommendation

Therefore, the Government needs to increase budget allocation to schools in the rural areas of the country in order to put them on the standard of other schools to boost competition among schools and this will improve performance in rural areas.

#### **GENDER PERFORMANCE:**

Male attendance is higher compared to females in all years, which means girls have not been fully participating in education.

#### Recommendation

The government of Uganda should encourage girl child education through bursaries to female students so that girls fully participate in education and also carry out cross-region teaching to girls showing the goods of education. This helps to know how far the government has gone on promotion of gender equality.

#### **STUDENTS:**

We found out that the number of students sitting for the exams in Uganda is fluctuating between years with the number rising till 2013 and reduced in the years that came afterwards hence a reduction from the change of curriculum. This analysis helps to know the rate of ongoing school students within the country and find ways to increase the number to full participation in education.

#### **SCHOOL PERFORMANCE:**

• Schools in the central perform better than other schools in further regions