INTRODUCTION TO DATA MANAGEMENT

PROJECT REPORT

(Project Semester August-December 2021)

FIFA FOOTBALL WORLDCUP(1930-2014)
DATA ANALYSIS
IN EXCEL

Submitted by

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Registration No:11902929

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Course Code INT217

Under the Guidance of

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Discipline of CSE/IT

Lovely School of Computer Science and Engineering

Lovely Professional University, Phagwara

CERTIFICATE

This is to certify that **Rajeev Ranjan Pan** bearing Registration no.**11902929** has completed **INT217** project titled, **"FIFA Football Data Analysis in Excel(1930-2014)"** under my guidance and supervision. To the best of my knowledge, the present work is the result of his/her original development, effort and study.

Signature and Name of the Supervisor
Designation of the Supervisor
School of Computer Science
Lovely Professional University
Phagwara, Punjab.

Date: 08/12/2021

DECLARATION

I, **Rajeev Ranjan Pan**, student of **Data Science** under CSE/IT Discipline at, Lovely Professional University, Punjab, hereby declare that all the information furnished in this project report is based on my own intensive work and is genuine.

Name of the student: Rajeev Ranjan Pan

Date:08/12/2021

Signature: Rajeev

Registration No.11902929

ACKNOWLEDGEMENT

A project work is a combination of views, ideas, suggestions and contribution of many people. Thus, one of the pleasant parts of writing the report is to thank those who have contributed towards its fulfilment.

I consider it as great privilege to have esteemed Lecturer **Ms. Sandeep Kaur** as my project guide. I take this opportunity to express my sincere gratitude to her through constant advice and constructive criticism nourished my interest in the subject and provided a free and pleasant atmosphere to work against all odd situations. I avail this opportunity to extend my heart full thanks and deep respect to faculty member for their able guidance during this project.

My gratitude to all those, who responded to my questionnaire in a well-defined manner and helped me acquiring knowledge.

I would like to communicate a deep sense of gratitude to all these people without whom my project would not have been such a great learning experience.

Rajeev Ranjan Pan

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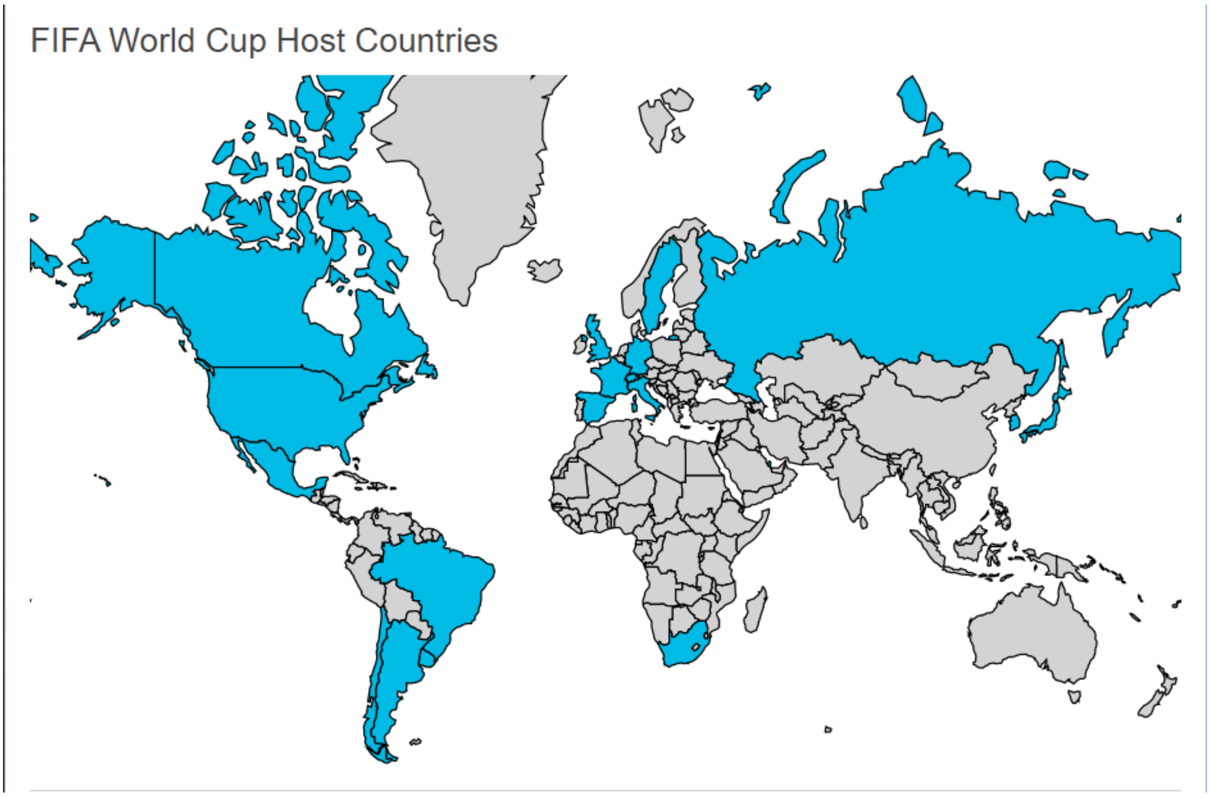
Introduction

The FIFA World Cup, often simply called the World Cup, is an international association football competition contested by the senior men's national teams that belong to the Fédération Internationale de Football Association (FIFA), the sport's global governing body. The championship has been awarded every four years since the inaugural tournament in 1930, except in 1942 and 1946 when it was not held because of the Second World War. The current champion is France, which won its second title at the 2018 tournament in Russia and the next world cup will happen in 2022 in Qatar. As of 2019, there are 211 teams eligible to qualify for the championship. Only 32 teams make it to the finals to determine one winner. IFA's Council chooses the host countries. A balloting system is used to determine which bidding nations will become the host country. This system was put into place to avoid boycotts and controversies – problems that had plagued the tournament in its early years.

The first host country in 1930 was Uruguay. In 1934, Italy was the host country. The next host country selected was France. All host countries of the FIFA World Cup are as follows:

- Canada, United States, and Mexico: 2026
- Qatar: 2022
- Russia: 2018
- Brazil: 2014
- South Africa: 2010
- Germany: 2006
- Japan/South Korea: 2002
- United States: 1994
- Mexico: 1986
- Spain: 1982
- Argentina: 1978
- West Germany: 1974
- Mexico: 1970
- England: 1966
- Chile: 1962
- Sweden: 1958
- Switzerland: 1954
- Brazil: 1950, 2014
- France: 1938, 1998
- Italy: 1934, 1990
- Uruguay: 1930

These datasets includes the data about FIFA worldcup teams, venues, winner, attendance and matches for worldcup years between 1930 to 2014(20 years).



FIFA World Cup Host Countries

These datasets includes the worldcup results and team information for 20 years in which worldcup was held between 1930 to 2014. The First Dataset(Winning Title Dataset) contain year in which worldcup is played, hosting countries, Winner, Runner-Up,Third,Fourth,Goals Scored,Qualified Teams,Matches played,Attendence of the audience.The second Dataset(Matches Dataset) contains Year,Datetime,Stage,stadium,city,home team and away team name,Home team and away team goal,Referee name.

- ## Datasets

The World Cups dataset show all information about all the World Cups in the history, while the World Cup Matches dataset shows all the results from the matches contested as part of the cups.

S.no	**Dataset Name**	**Definition**
1.	**Winning Titles**	**Contains data of teams according to titles won per year.**

2.	**Matches**	**Contains data according to goals and home/away team name.**

1.Winning Titles dataset

S.No	**Column name**	**Definition**
1.	**Year**	Year of the worldcup
2.	**Country**	Hosting country of the worldcup of the particular year
3.	**Winner**	Team who won the worldcup
4.	**Runner-Up**	Team who was the second place
5.	**Third**	Team who was the third place
6.	**Fourth**	Team who was the fourth place
7.	**GoalsScored**	Total goals scored in the worldcup
8.	**QualifiedTeams**	Total participating teams
9.	**MatchesPlayed**	Total matches played in the cup
10.	**Attendance**	Total attendance of the audience in the worldcup

2.Matches dataset

S.No	Column name	Definition
1.	**Year**	The year in which the match was played
2.	**Datetime**	The Date on which the match was played along with a 24 hour format time
3.	**Stage**	The stage at which the match was played
4.	**Stadium**	Stadium name where the match was held
5.	**City**	The city name, where the match was played
6.	**Home Team Name**	Home team country name
7.	**Home Team Goals**	Total goals scored by the home team by the end of the match
8.	**Away Team Goals**	Total goals scored by the away team by the end of the match
9.	**Away Team Name**	Away team country name

Scope of The Analysis

To analyze a data set related to FIFA World Cup using a suitable method. In this study we have taken up the data sets of the FIFA World Cup(1930-2014) and analyzed them using Excel.

The analysis focused on:

a) which team got the titles of winner,runner-up,third for a desired year

b) Which team won the most titles of winner,runner-up and third

c) country hitting most number of goals per country and number of goals per country.

d) Per Year:

- Attendance of audience
- No.of qualified teams
- Goals scored
- Matches played

e) According to attendance:

- Matches with highest of attendance
- Stadium with highest average attendance

f) Matches outcome according to home and away team

.

Source of The Dataset

- The datasets are taken from the Kaggle with the name ‘FIFA World Cup’.

  https://www.kaggle.com/abecklas/fifa-world-cup

- Author of the Datasets

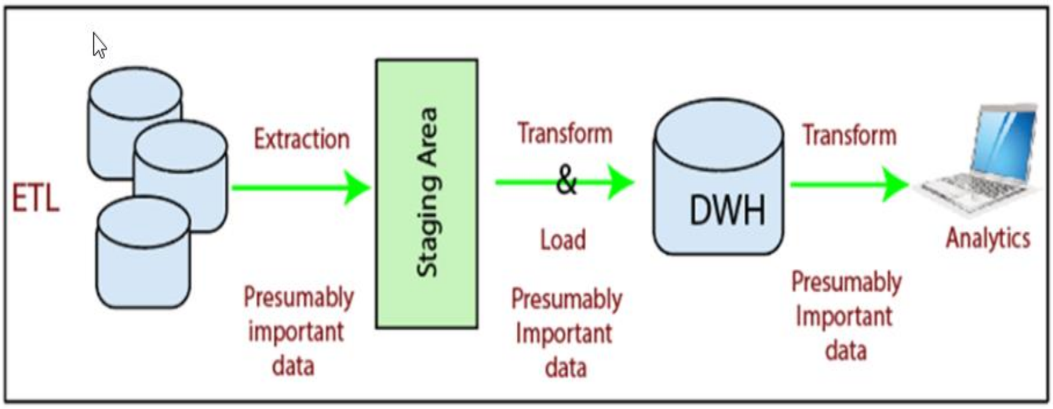
  Andre Becklas

- Data last updated

  2017

ETL Process

ETL, which stands for Extraction, Transformation and Loading, is a data integration process that combines data from multiple data sources into a single, consistent data store that is loaded into a data warehouse or other target system. It is the foundation of data analytics and a process for integrating and loading data for computation and analysis, eventually becoming the primary method to process data for data warehousing projects.


ETL
Extraction
Presumably important data
Staging Area
Transform & Load
Presumably Important data
DWH
Transform
Presumably Important data
Analytics

- **Extraction**: Extraction is the operation of extracting information from a source system for further use in a data warehouse environment. This is the first stage of the ETL process. It is often one of the most time-consuming tasks in the ETL. The source systems might be complicated and poorly documented, and thus determining which data needs to be extracted can be difficult. The data has to be extracted several times in a periodic manner to supply all changed data to the warehouse and keep it up to date.

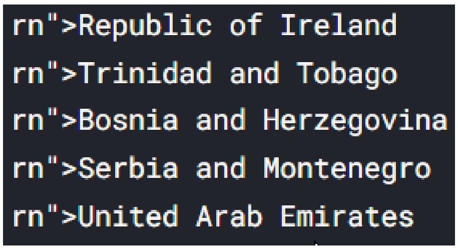
- **Cleansing:** The cleansing stage is crucial in a data warehouse technique because it is supposed to improve data quality. The primary data cleansing features found in ETL tools are rectification and homogenization. They use specific dictionaries to rectify typing mistakes and to recognize synonyms, as well as rule-based cleansing to enforce domain-specific rules and defines appropriate associations between values.
- **Transformation**: Transformation is the core of the reconciliation phase. It converts records from its operational source format into a particular data warehouse format. If we implement a three-layer architecture, this phase outputs our reconciled data layer.
- **Load:** The **Load** is the process of writing the data into the target database. During the load step, it is necessary to ensure that the load is performed correctly and with as little resources as possible. Loading can be carried in two ways:
    - **Refresh:** Data Warehouse data is completely rewritten. This means that older file is replaced. Refresh is usually used in combination with static extraction to populate a data warehouse initially.
    - **Update:** Only those changes applied to source information are added to the Data Warehouse. An update is typically carried out without deleting or modifying pre-existing data. This method is used in combination with incremental extraction to update data warehouses regularly.

The whole ETL process for this project is done in Microsoft Excel.

Cleaning in this project:

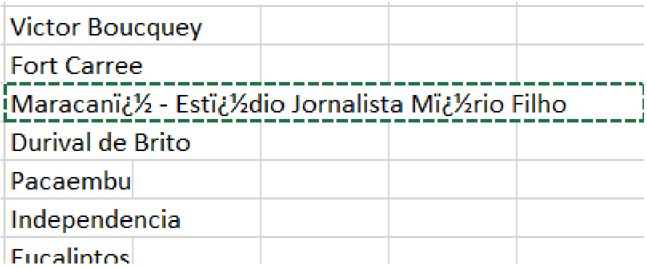
In this project Cleaning is an important part of the analysis as some of the initial data is been cleaned to get desired data to perform the analysis.

1)Cleaning 1:Some of the Home Team Name in Matches Data set are having “rn”>” in their name.So we need to remove this by replacing them.



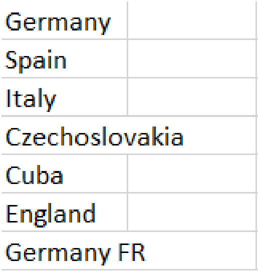
```
rn">Republic of Ireland
rn">Trinidad and Tobago
rn">Bosnia and Herzegovina
rn">Serbia and Montenegro
rn">United Arab Emirates
```

2)Cleaning 2:The Stadium Maracana was written as “Maracanï¿½ - Estï¿½dio Jornalista Mï¿½rio Filho”.So we replaced it with Maracana



Victor Boucquey
Fort Carree
Maracanï¿½ - Estï¿½dio Jornalista Mï¿½rio Filho
Durival de Brito
Pacaembu
Independencia
Eucaliptos

3)Cleaning 3: The Home team Name and Away team name have Germany’s other mistaken name as Germany FR.So we should replace Germany FR to Germany.



Germany
Spain
Italy
Czechoslovakia
Cuba
England
Germany FR

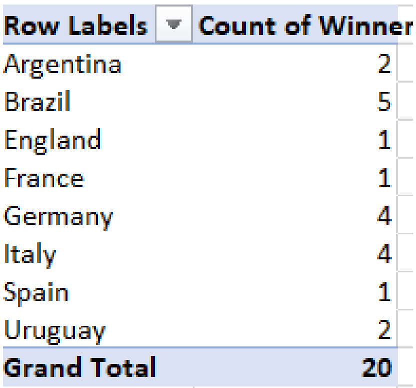
Analysis of Dataset

1.Objective 1:Most Number of Winning Titles(Winner,Runner-up,Third)

a) Introduction: The analysis shows the countries having winners, runner-ups, third titles in the FIFA football worldcup.For this analysis we used **Winning Title Datasheet**.

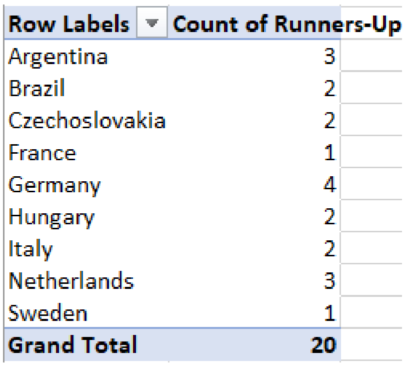
b) Specific Requirements/Functions and Formulas:

1) Pivot table of Winning Title Data containing country name and count of winner titles per country



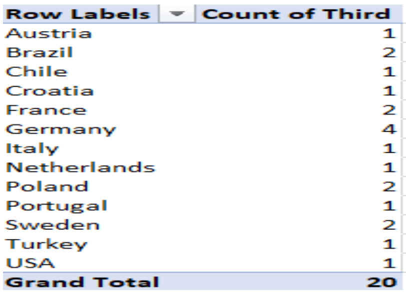
Row Labels	Count of Winner
Argentina	2
Brazil	5
England	1
France	1
Germany	4
Italy	4
Spain	1
Uruguay	2
Grand Total	**20**

2) Pivot table of Winning Title Data containing country name and count of Runner-Up titles per country



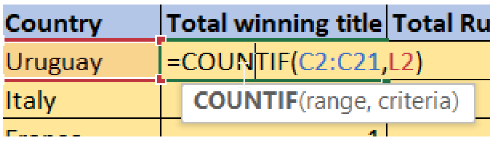
Row Labels	Count of Runners-Up
Argentina	3
Brazil	2
Czechoslovakia	2
France	1
Germany	4
Hungary	2
Italy	2
Netherlands	3
Sweden	1
Grand Total	**20**

3) Pivot table of Winning Title Data containing country name and count of Runner-Up titles per country



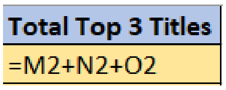
Row Labels	Count of Third
Austria	1
Brazil	2
Chile	1
Croatia	1
France	2
Germany	4
Italy	1
Netherlands	1
Poland	2
Portugal	1
Sweden	2
Turkey	1
USA	1
Grand Total	20

4) COUNTIF Function



Country	Total winning title	Total Ru
Uruguay	=COUNTIF(C2:C21,L2)	
Italy	COUNTIF(range, criteria)	

5) Addition formula



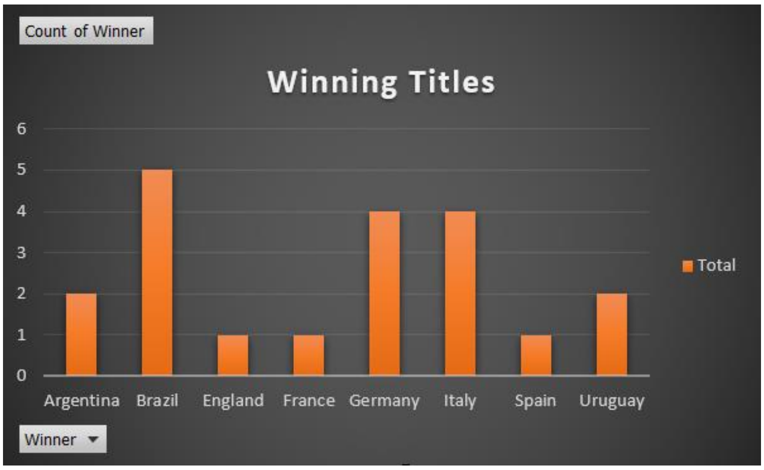
Total Top 3 Titles
=M2+N2+O2

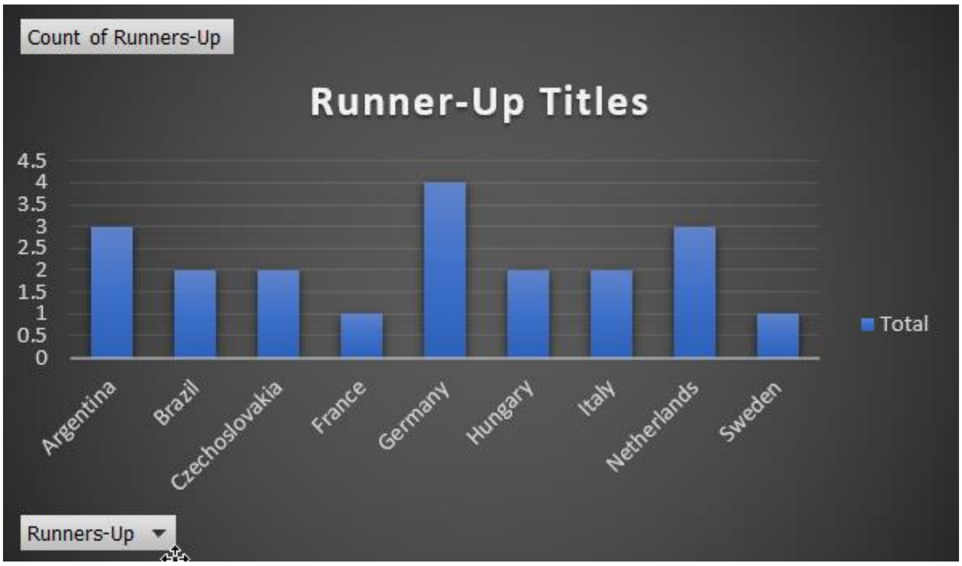
6) Slicer for year, country column
7) Clustered Column chart for winners, Runner-up and Third
8) Hyperlink

c) Analysis Results:

- Brazil has most number of winner title of 5 worldcups.
- Germany has most number of runner-up titles of 4 worldcups
- Germany also have most number of third(second runner-up) titles of 4 worldcups
- Germany and Brazil are most consistent teams with total sum of all top 3 titles of 8 each.

d)Visualization:





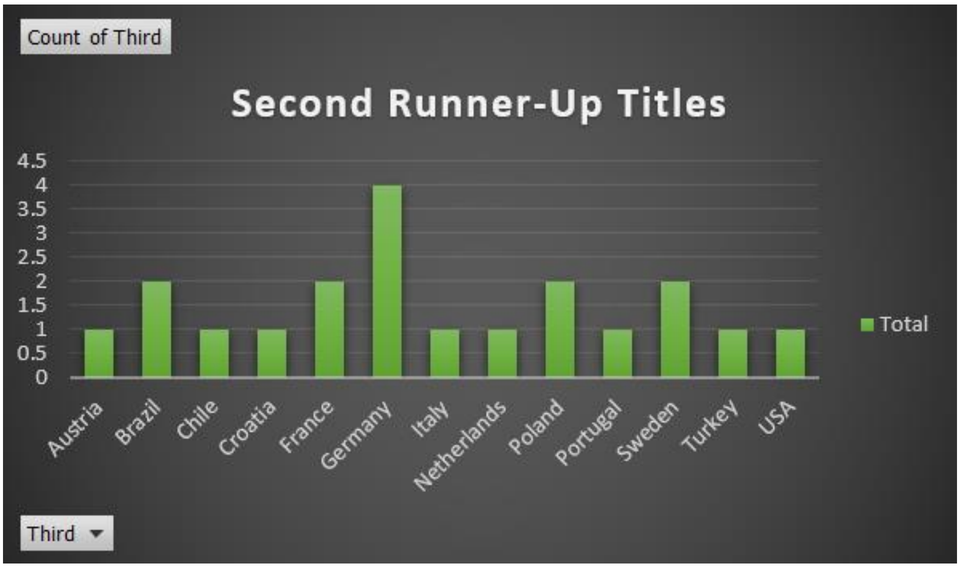
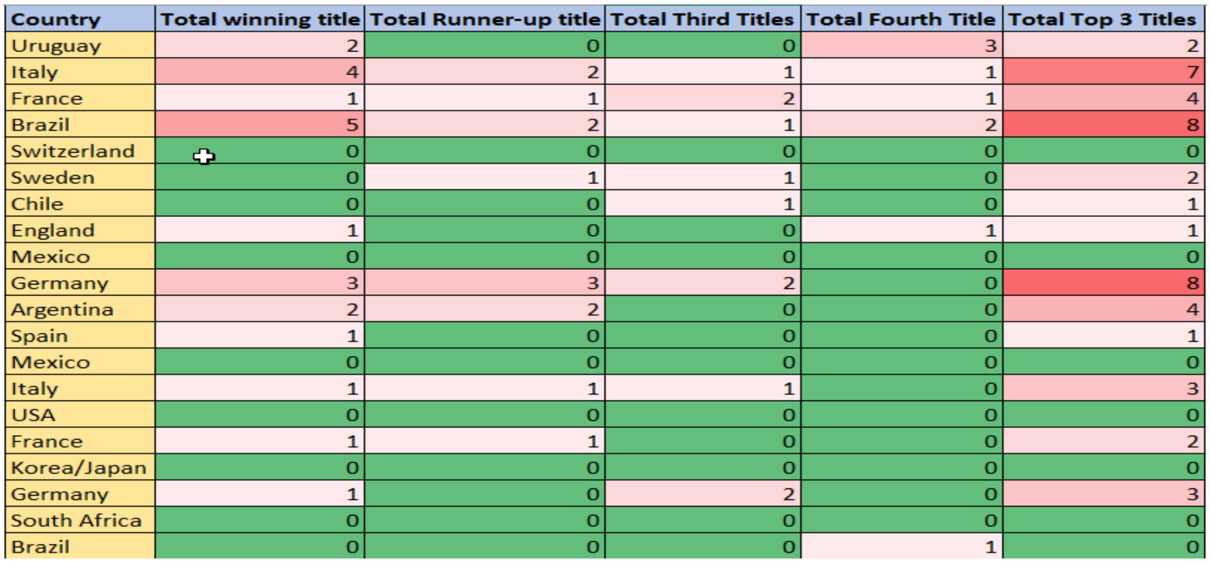
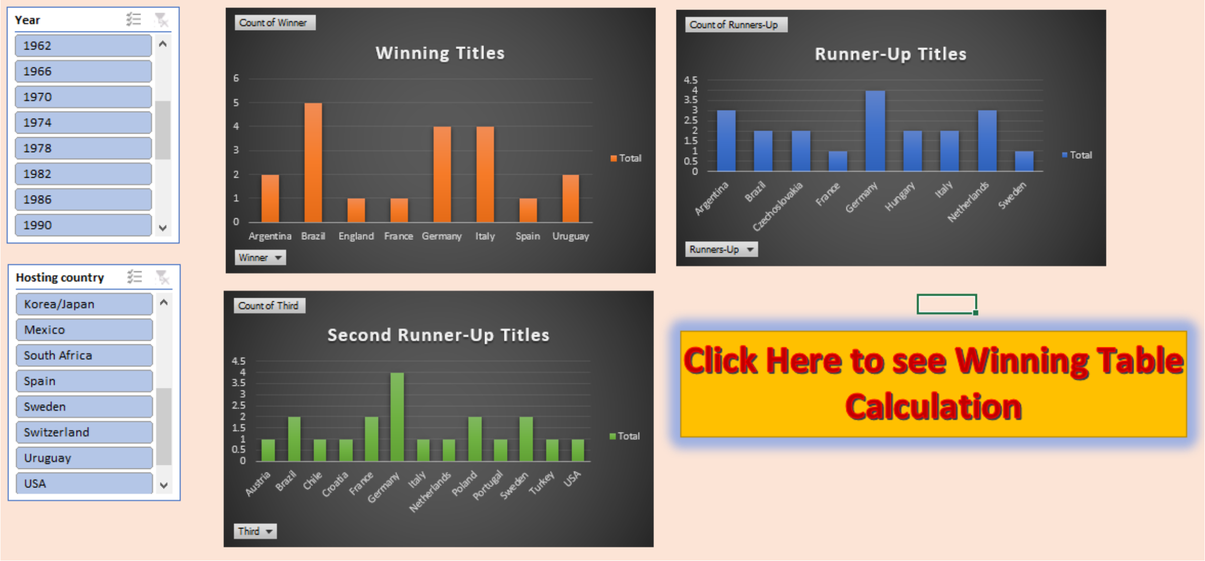


Table for sum of top 3 titles of every country:



Country	Total winning title	Total Runner-up title	Total Third Titles	Total Fourth Title	Total Top 3 Titles
Uruguay	2	0	0	3	2
Italy	4	2	1	1	7
France	1	1	2	1	4
Brazil	5	2	1	2	8
Switzerland	0	0	0	0	0
Sweden	0	1	1	0	2
Chile	0	0	1	0	1
England	1	0	0	1	1
Mexico	0	0	0	0	0
Germany	3	3	2	0	8
Argentina	2	2	0	0	4
Spain	1	0	0	0	1
Mexico	0	0	0	0	0
Italy	1	1	1	0	3
USA	0	0	0	0	0
France	1	1	0	0	2
Korea/Japan	0	0	0	0	0
Germany	1	0	2	0	3
South Africa	0	0	0	0	0
Brazil	0	0	0	1	0

Dashboard of Objective 1:

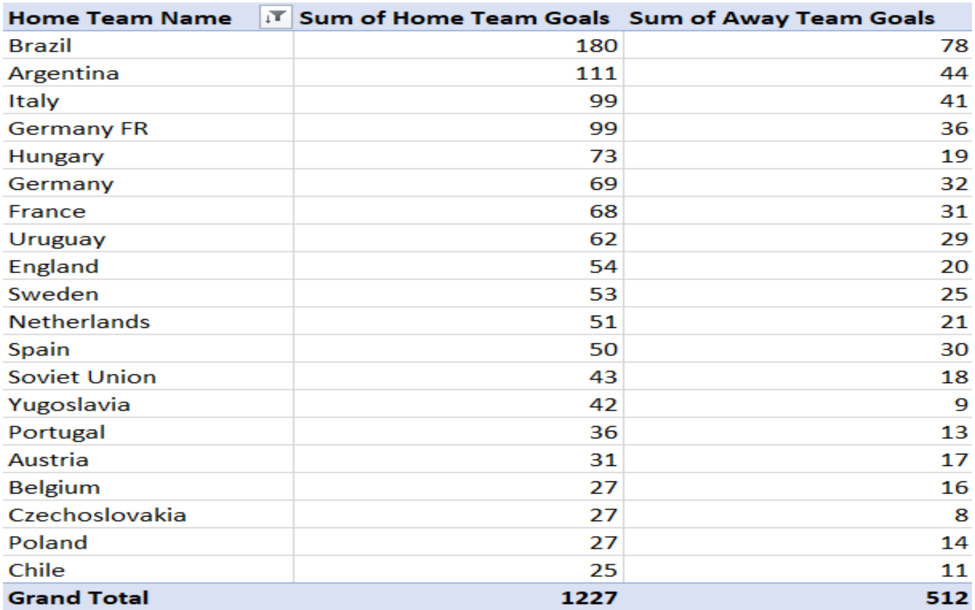


2.Objective 2: Number of goals per country and country scoring most number of goals

a) Introduction: The analysis shows the countries having total goals in the FIFA football worldcup and the country scoring most number of goals.For this analysis we used **Matches Dataset.**

b) Specific Requirements/Functions and Formulas:

1) Pivot table of Matches Dataset containing sum of Home Team Goals and Sum of Away Team Goals



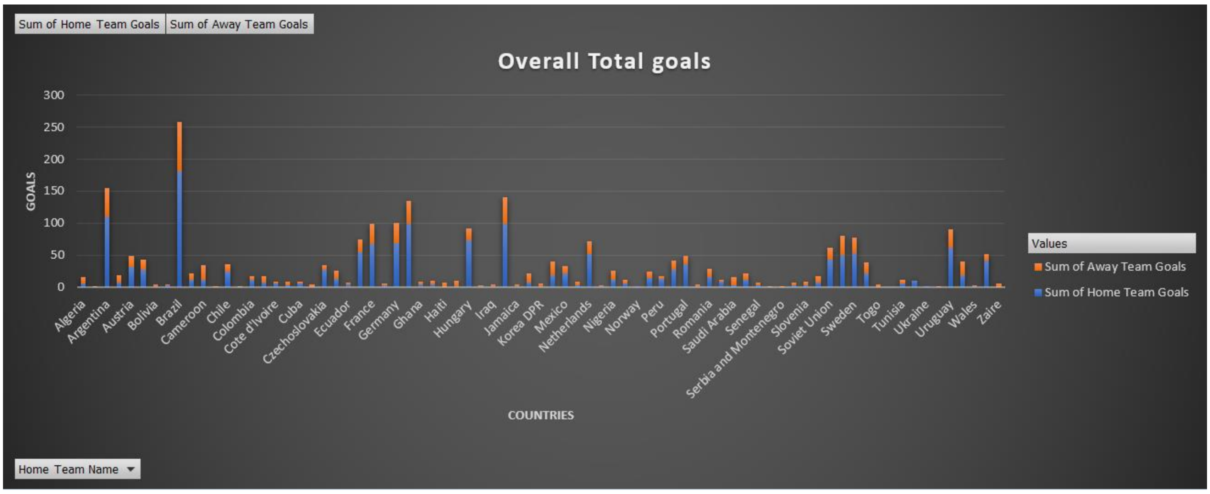
Home Team Name	Sum of Home Team Goals	Sum of Away Team Goals
Brazil	180	78
Argentina	111	44
Italy	99	41
Germany FR	99	36
Hungary	73	19
Germany	69	32
France	68	31
Uruguay	62	29
England	54	20
Sweden	53	25
Netherlands	51	21
Spain	50	30
Soviet Union	43	18
Yugoslavia	42	9
Portugal	36	13
Austria	31	17
Belgium	27	16
Czechoslovakia	27	8
Poland	27	14
Chile	25	11
Grand Total	**1227**	**512**

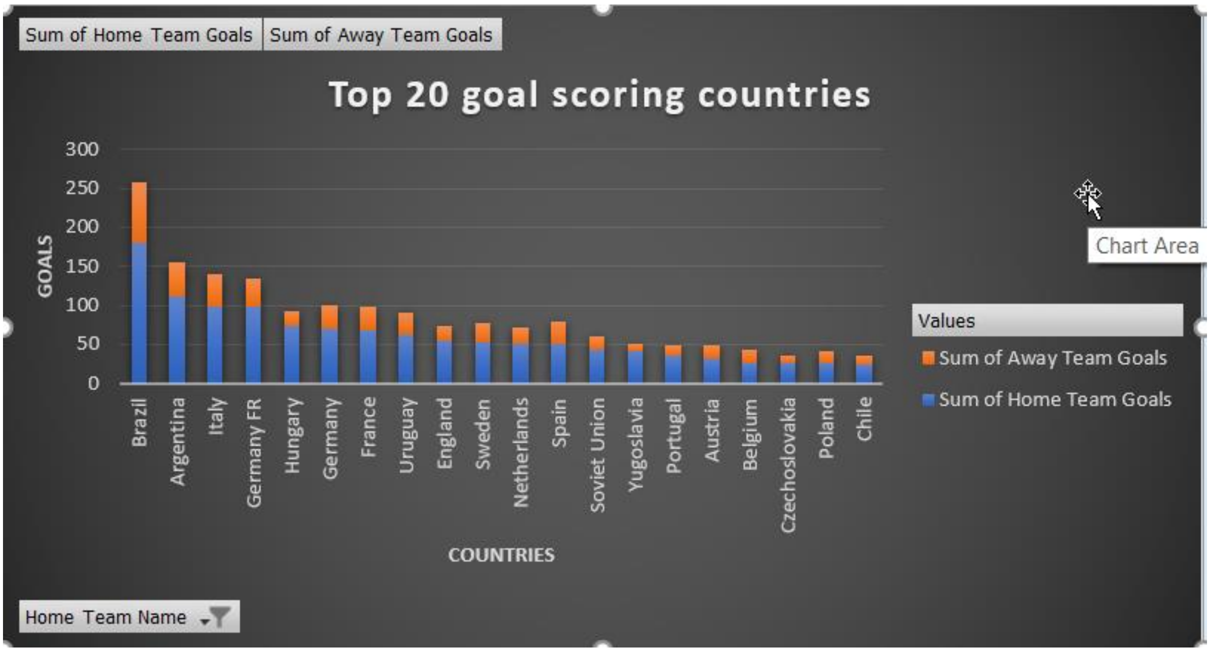
2) Applying custom filter in the pivot to get below 20 and top 20 total goals scoring countries
3) Stacked Column Chart for Overall Total goals for every country, below 20 countries with lowest total goals and top 20 countries with highest total goals
4) Hyperlink
5) Slicer of Home and Away team name

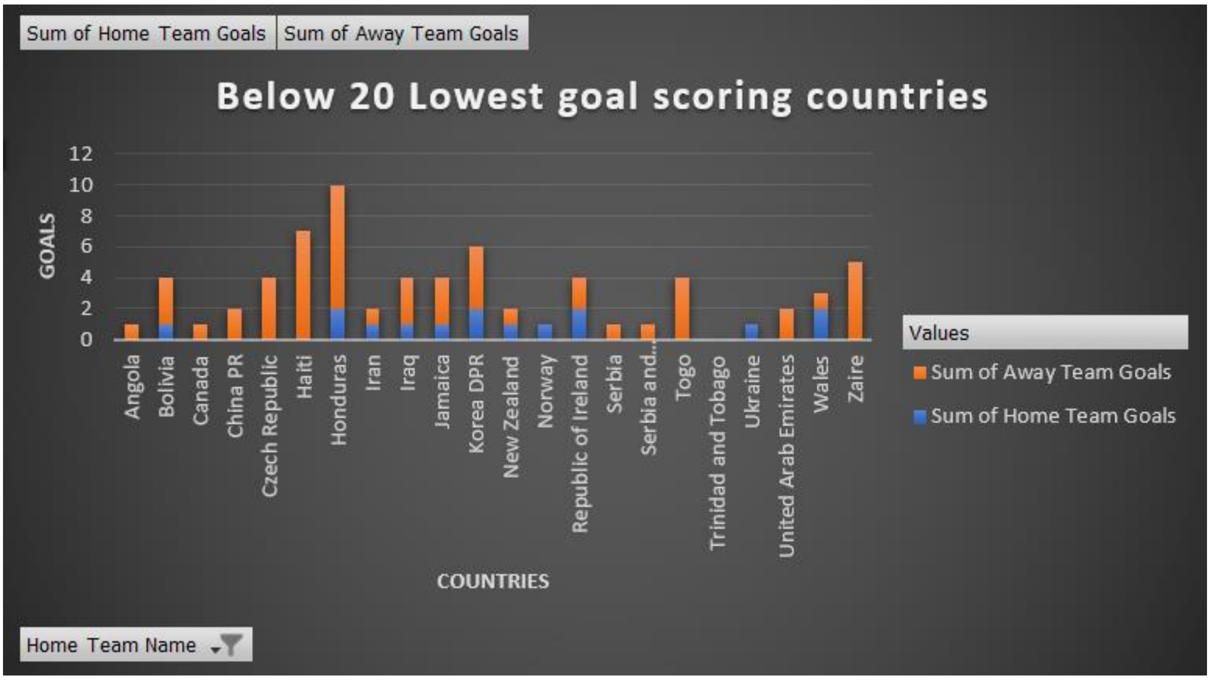
c) Analysis Results:

- Brazil has most number of overall goals with 258 goals(180 home goals and 78 away goals)
- Brazil, Argentina and Italy are the top 3 countries with most overall goals 258,155,140 goals respectively.
- Trinidad and Tobago have lowest overall goals with 0 goals

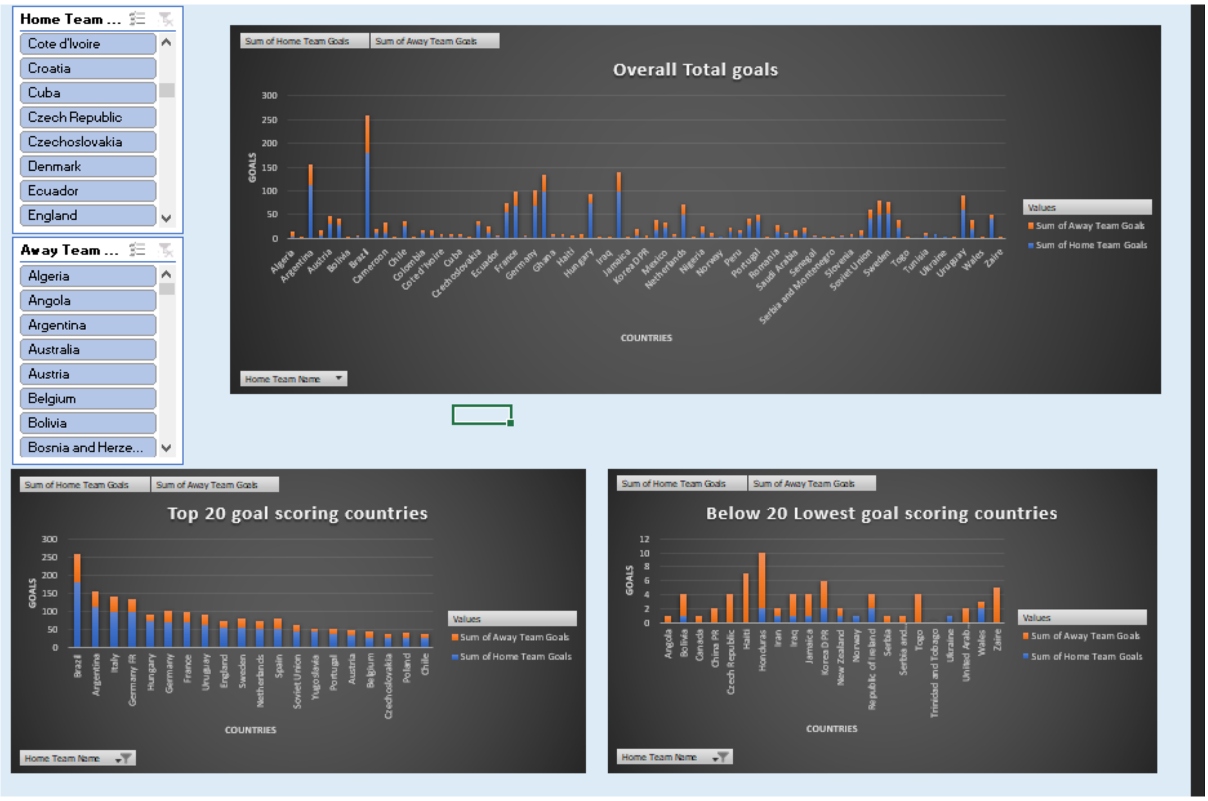
d)Visualization:







Dashboard of Objective 2:

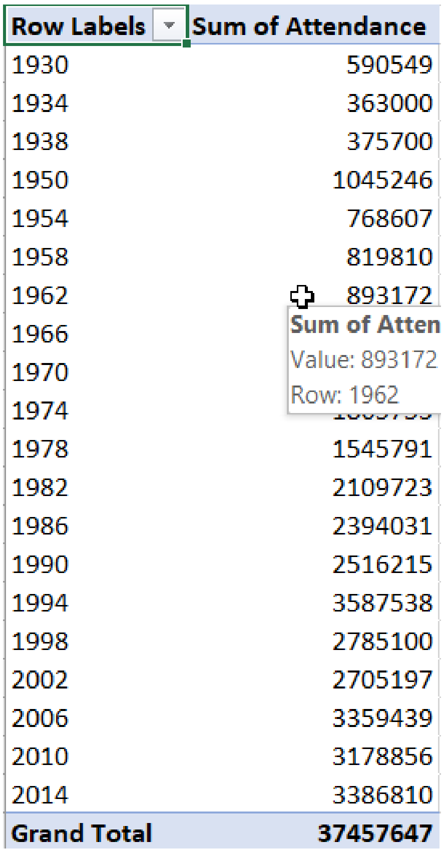


<u>3.Objective 3: Per Year:i)Attendance of audience ii)No.of Qualified Teams iv)Goals scored v)Matches Played</u>

a) Introduction: The analysis shows the Year highest attendance of audience,No.of team qualified teams, total goals scored and matches played per year comparison in the FIFA.For this analysis we used **Winning Title Dataset.**

b) Specific Requirements/Functions and Formulas:

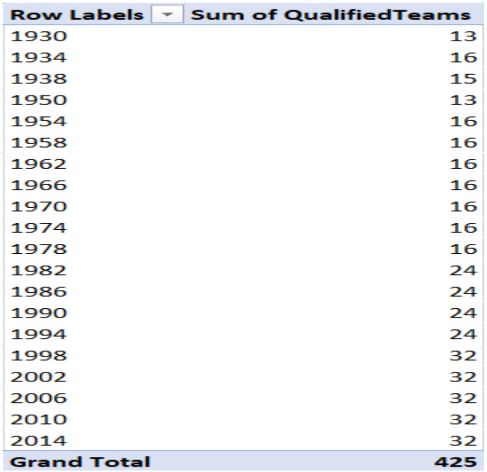
1) Pivot table of Winning Title Dataset containing Year of world cup and Sum of Attendance.



Row Labels	Sum of Attendance
1930	590549
1934	363000
1938	375700
1950	1045246
1954	768607
1958	819810
1962	893172
1966	[illegible]
1970	[illegible]
1974	[illegible]
1978	1545791
1982	2109723
1986	2394031
1990	2516215
1994	3587538
1998	2785100
2002	2705197
2006	3359439
2010	3178856
2014	3386810
Grand Total	**37457647**

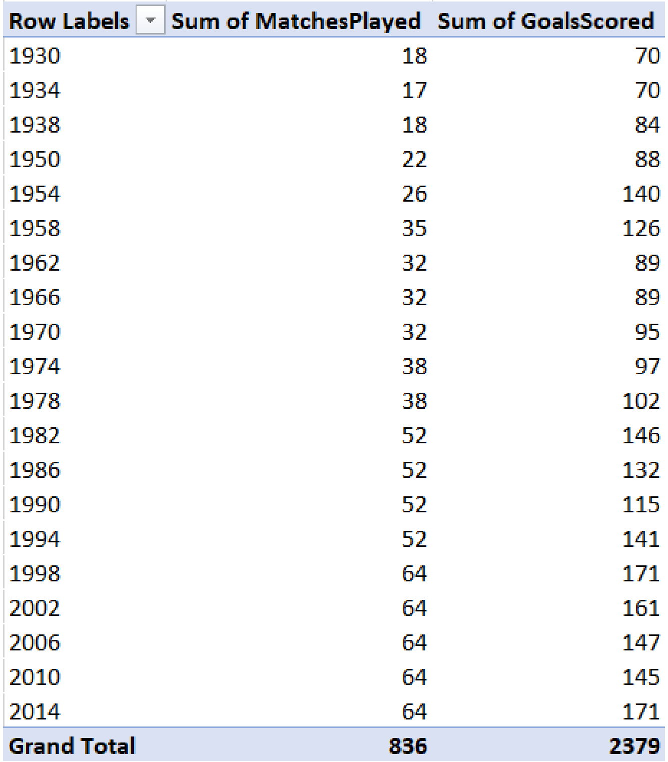
Sum of Atten
Value: 893172
Row: 1962

2) Pivot table of Winning Title Dataset containing Year of world cup and Sum of QualifiedTeams



Row Labels	Sum of QualifiedTeams
1930	13
1934	16
1938	15
1950	13
1954	16
1958	16
1962	16
1966	16
1970	16
1974	16
1978	16
1982	24
1986	24
1990	24
1994	24
1998	32
2002	32
2006	32
2010	32
2014	32
Grand Total	**425**

3) Pivot table of Winning Title Dataset containing Year of world cup and Sum of MatchesPlayed and sum of GoalsScored.



Row Labels	Sum of MatchesPlayed	Sum of GoalsScored
1930	18	70
1934	17	70
1938	18	84
1950	22	88
1954	26	140
1958	35	126
1962	32	89
1966	32	89
1970	32	95
1974	38	97
1978	38	102
1982	52	146
1986	52	132
1990	52	115
1994	52	141
1998	64	171
2002	64	161
2006	64	147
2010	64	145
2014	64	171
Grand Total	**836**	**2379**

4)Slicer for year

5)Line graph with trendline

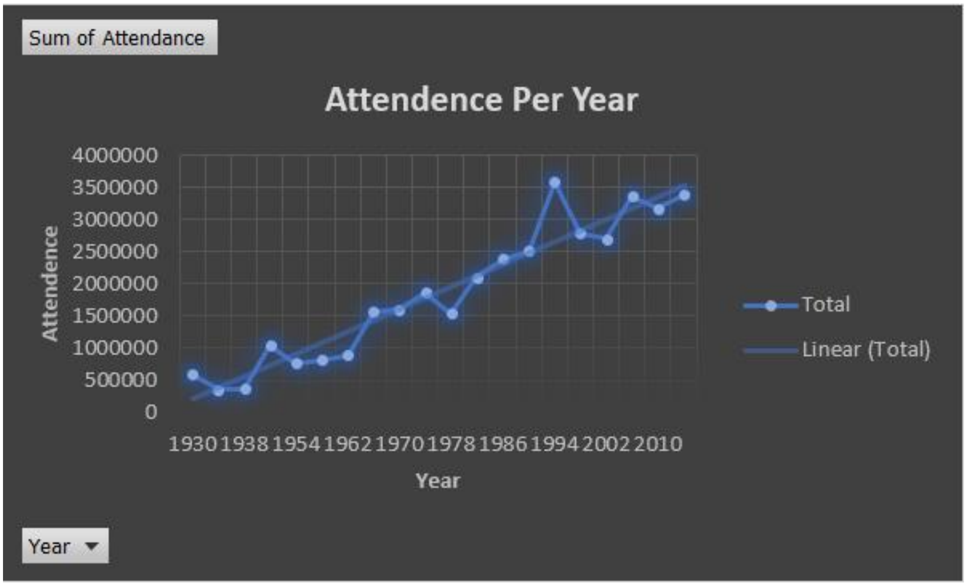
6)Area graph

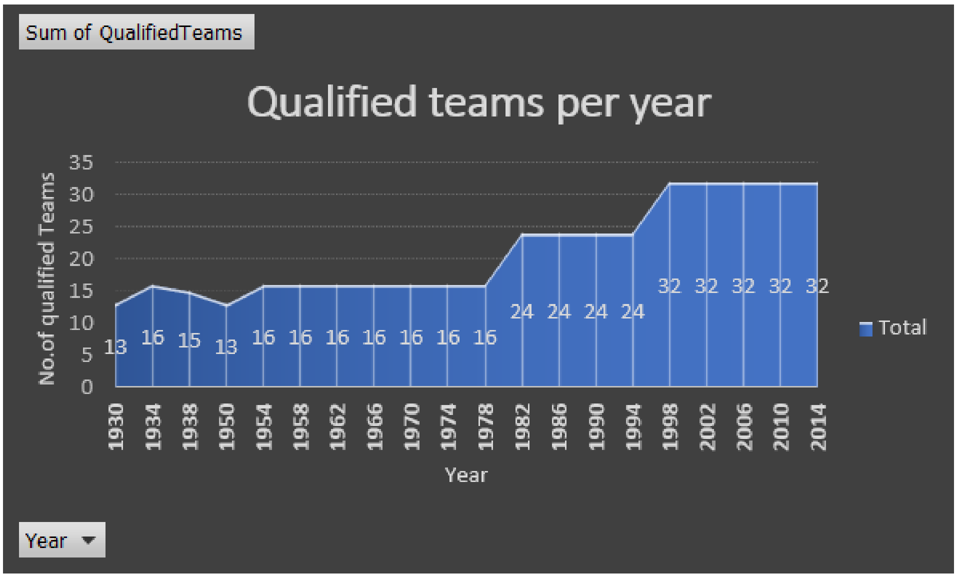
7)Clustered -Line Combo Chart

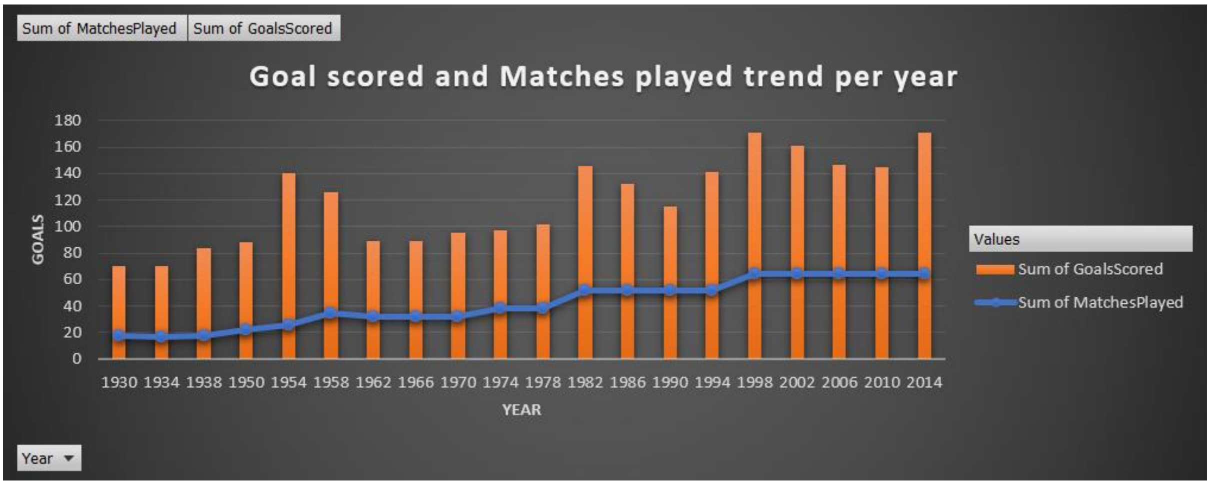
c) Analysis Results:

- There is a rapid increase of the attendance in year 1994 of 3587538 people.
- There is an increase of popularity trend of football worldcup among the people within the years.
- In 1930 and 1950 lowest number of teams have qualified with 13 teams each.
- In 1998 the trend of highest number of teams qualification increase to 32 teams.
- At an average of every 5 year there is an increase of qualified teams.
- In 1998 and 2014 there were most number of goals scored 171 goals and number of matches played is same with 64 matches which are record breaking years.
- With increase in number of matches there is uneven increase in goals per year.

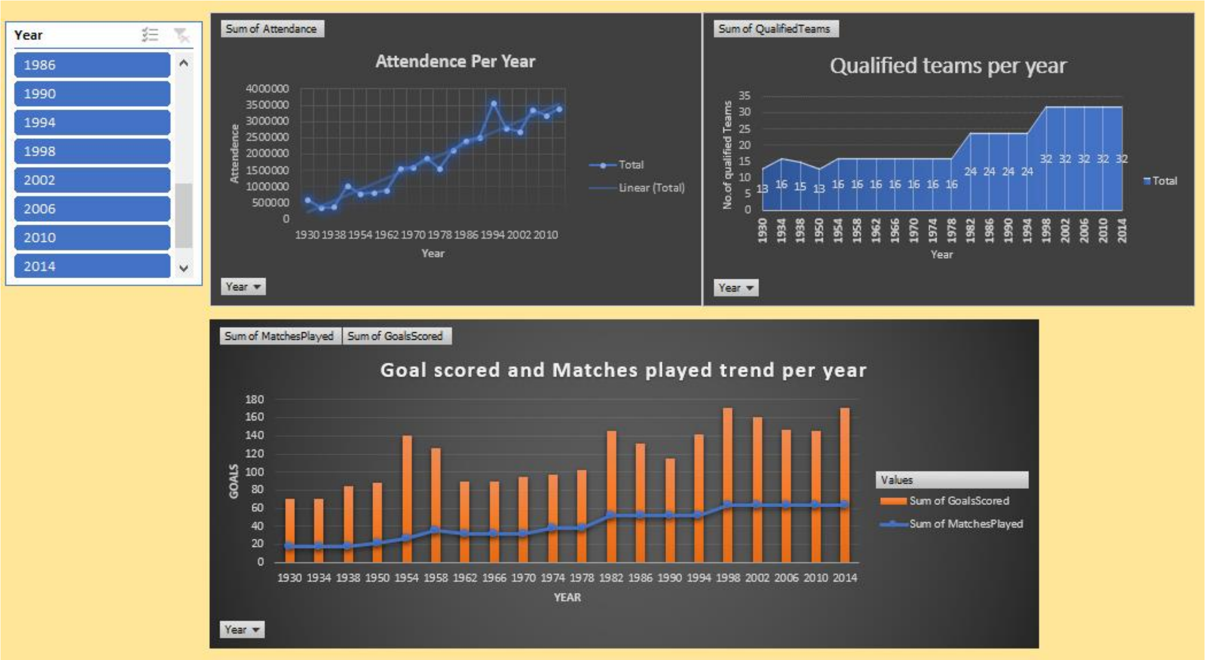
d)Visualization:







Dashboard for Objective 3:

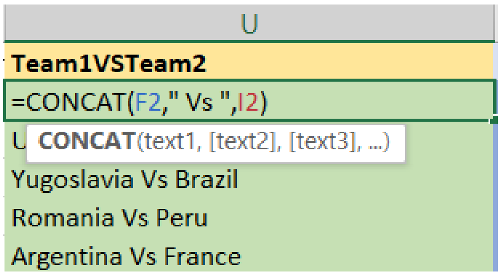


4.Objective 4:According to attendance: i)Matches with highest number of attendance ii)Stadium with highest average attendence

a) Introduction: The analysis shows the match between two different countries having highest number of audience attendance and Stadium in which average attendance of audience in the FIFA football worldcup.For this analysis we used **Matches Datasheet**.

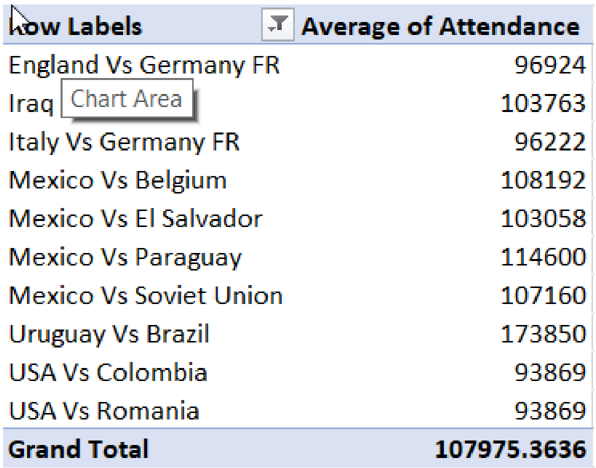
b) Specific Requirements/Functions and Formulas:

1) **CONCAT** Function for joining two teams(Home and away) name to create new column Team1vsTeam2.



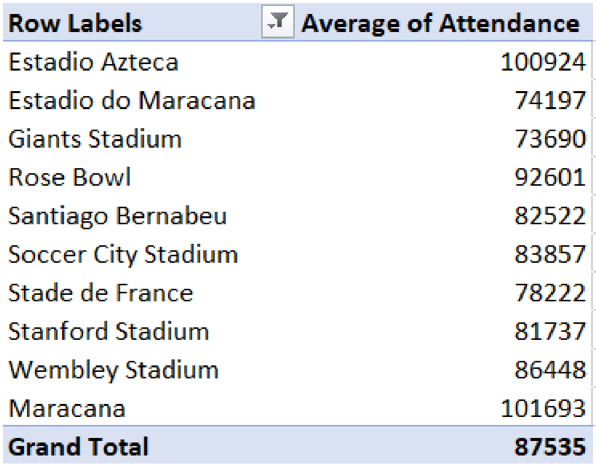
U
Team1VSTeam2
=CONCAT(F2," Vs ",I2)
U CONCAT(text1, [text2], [text3], ...)
Yugoslavia Vs Brazil
Romania Vs Peru
Argentina Vs France

2) Pivot table for Top 10 Match names and average of attendance



Row Labels	Average of Attendance
England Vs Germany FR	96924
Iraq	103763
Italy Vs Germany FR	96222
Mexico Vs Belgium	108192
Mexico Vs El Salvador	103058
Mexico Vs Paraguay	114600
Mexico Vs Soviet Union	107160
Uruguay Vs Brazil	173850
USA Vs Colombia	93869
USA Vs Romania	93869
Grand Total	**107975.3636**

3) Pivot Table for top 10 Stadium with their average attendance



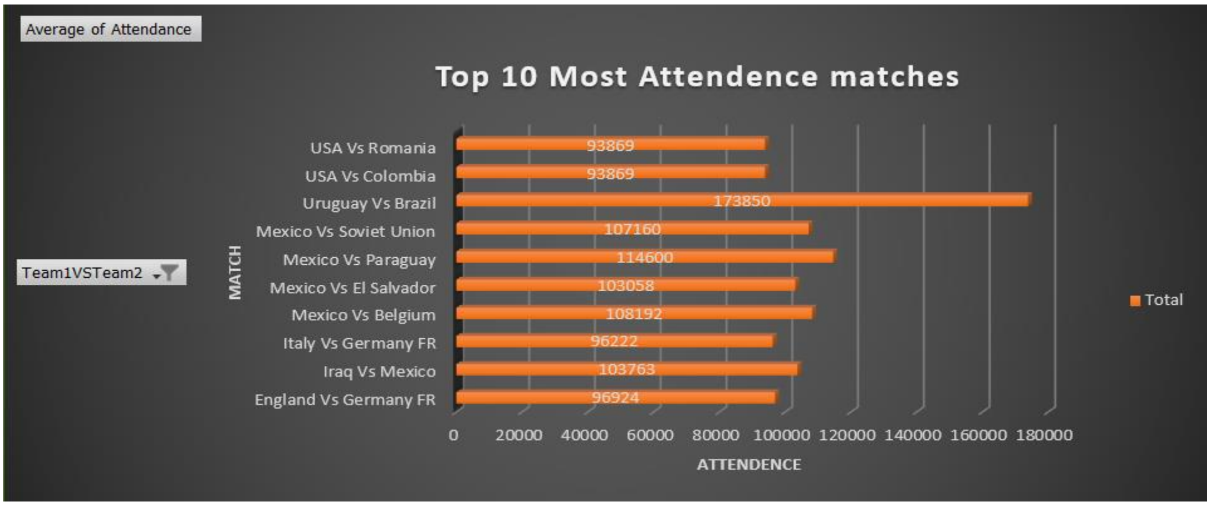
Row Labels	Average of Attendance
Estadio Azteca	100924
Estadio do Maracana	74197
Giants Stadium	73690
Rose Bowl	92601
Santiago Bernabeu	82522
Soccer City Stadium	83857
Stade de France	78222
Stanford Stadium	81737
Wembley Stadium	86448
Maracana	101693
Grand Total	**87535**

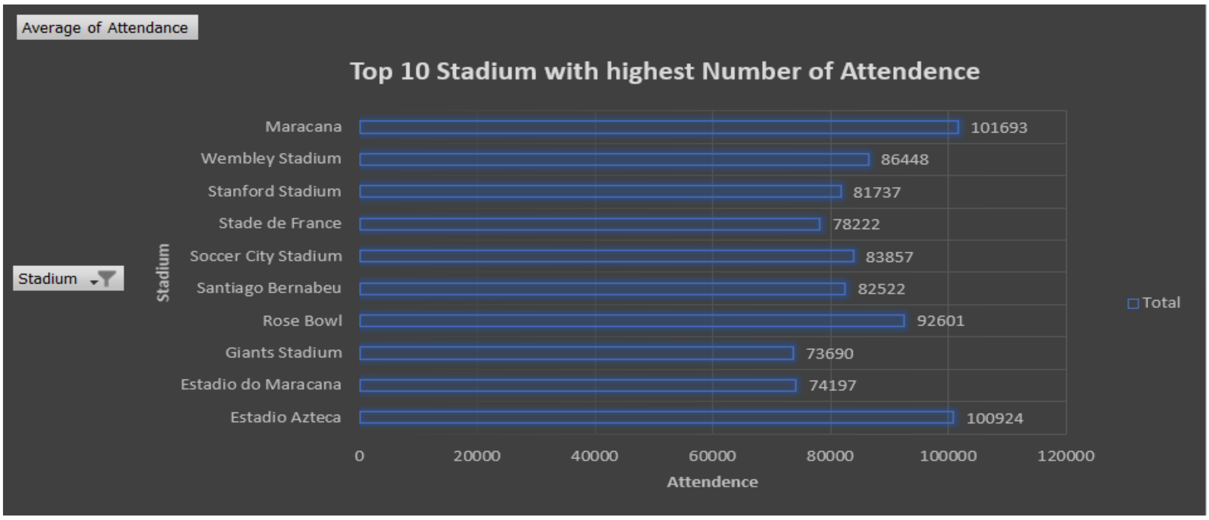
4) Slicer for Year,Stadium,Home team name and Away team name
5) Clustered Bar Chart
6) Hyperlink
7) Filter

c) Analysis Results:

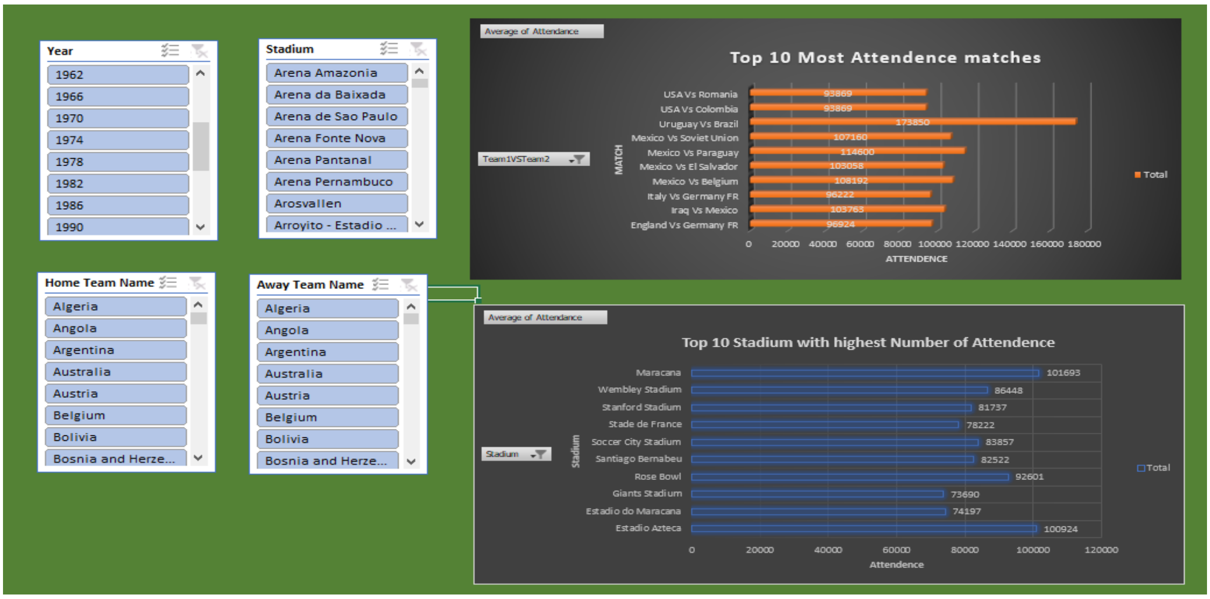
- The match between **Uruguay** and **Brazil** has highest average attendance of audience of **173850** people. It is the most popular match, which means that Uruguay and Brazil are most popular teams in FIFA worldcup.
- **Maracana** and **Estadio Azteca stadium** has the highest number of average attendance of audience of **101696** and **100924**. Which means that they must have high audience capacity in the stadium. I did research and found that **Estadio Azteca stadium** is the **4th** largest stadium in the world with a capacity of **81044**.
- As **Estadio Azteca stadium** is in **Spain** and **Uruguay** is a **Spanish** count ry so that's conclude that the reason behind **Uruguay and Brazil match** to be most popular match.

d)Visualization:





Dashboard for Objective 4:

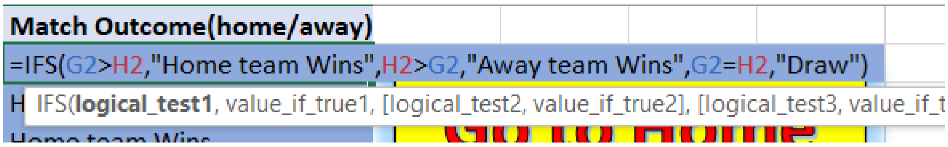


5.Objective 5:Matches outcome with Home and Away team

a) Introduction: The analysis shows the matches outcome of the matches according to home and away team and can be used to analyse about individual team winning percentage playing as Home team and Playing as Away team in the FIFA football worldcup.For this analysis we used **Matches Datasheet**.

b) Specific Requirements/Functions and Formulas:

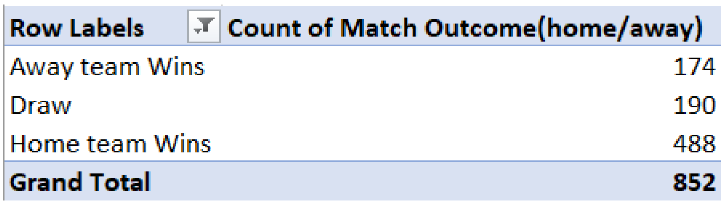
1) IFS Function to find whether Home teams wins or Away team wins.



Match Outcome(home/away)

```
=IFS(G2>H2,"Home team Wins",H2>G2,"Away team Wins",G2=H2,"Draw")
H  IFS(logical_test1, value_if_true1, [logical_test2, value_if_true2], [logical_test3, value_if_t
Home team Wins
```

2) Pivot table of Match outcome and Count of Match Outcome(Home/Away)



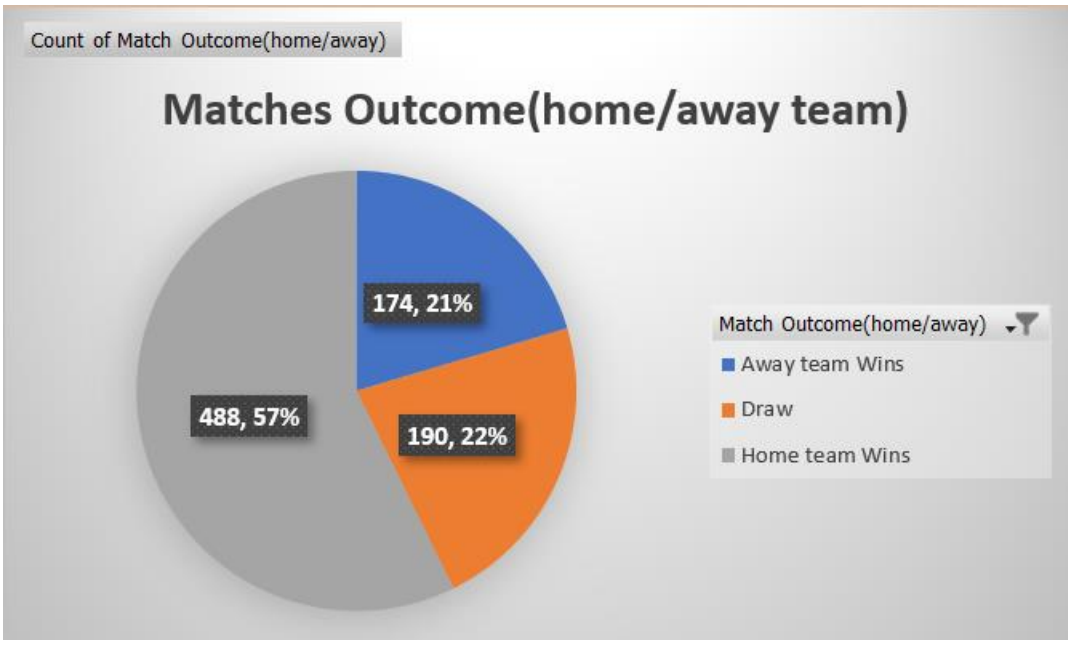
Row Labels	Count of Match Outcome(home/away)
Away team Wins	174
Draw	190
Home team Wins	488
Grand Total	**852**

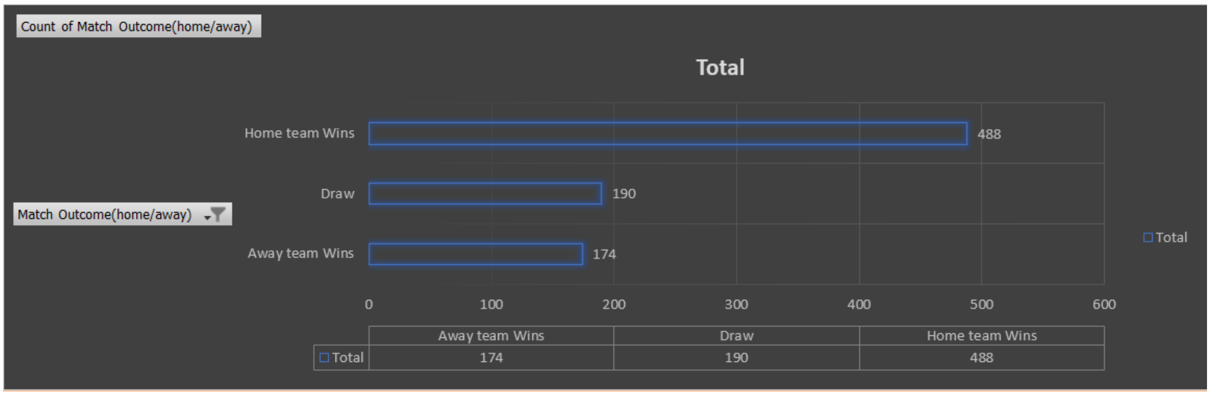
3) Pie chart
4) Clustered Bar Chart
5) Slicer of Year and Home Team Name

c) Analysis Results:

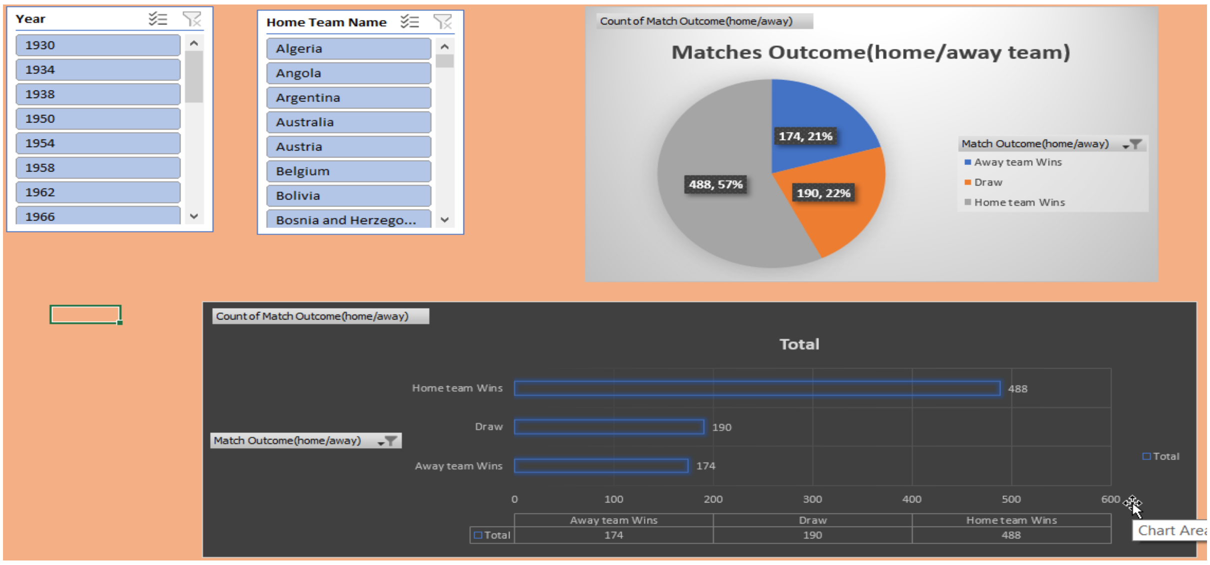
- Teams playing at their home country have the highest chances to win the worldcup as the Home Team has highest percentage of winning percentage of 57% and away team winning percentage is 21%.
- The draw percentage which is 22% is greater than away team wins percentage which is 21%,which means that teams playing in away country have very less chances to win.

d)Visualization:





Dashboard for Objective 5:

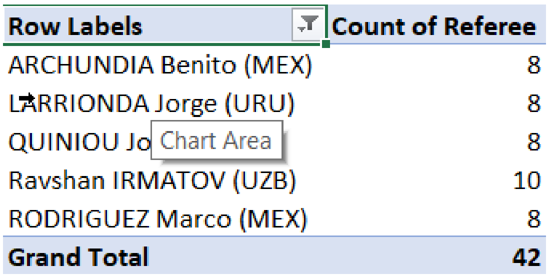


5.Objective 5:Top 5 referees with most number of matches

a) Introduction: The analysis shows Top 5 referees with most number of matches in the FIFA football worldcup. For this analysis we used **Matches Datasheet**.

b) Specific Requirements/Functions and Formulas:

1) pivot of Referee Name and count of Referee Name



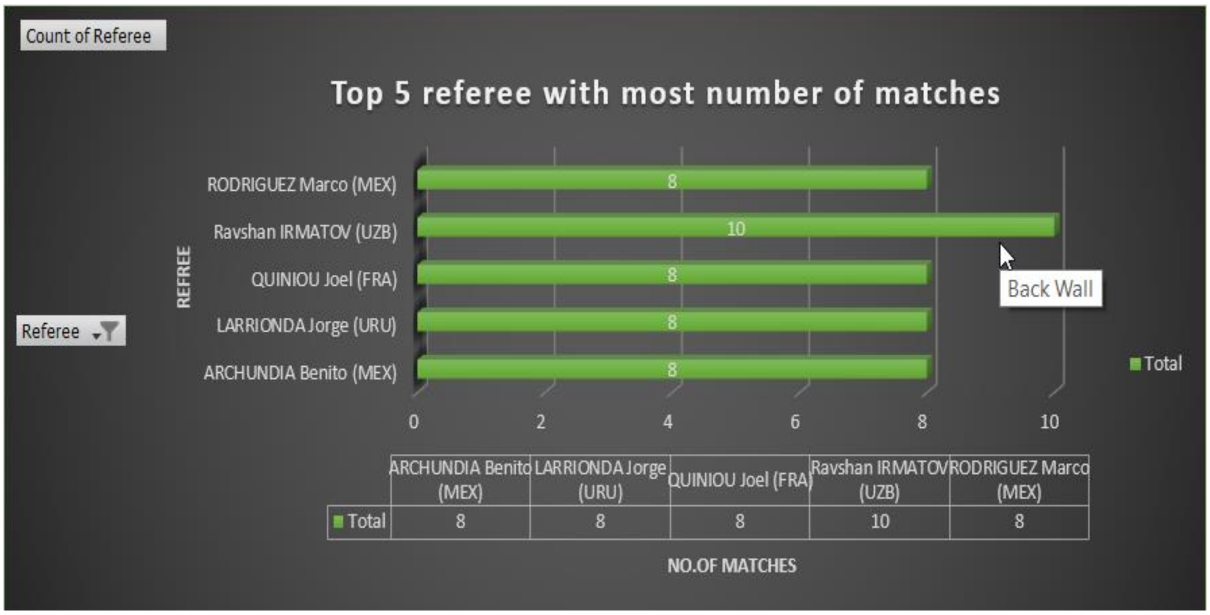
Row Labels	Count of Referee
ARCHUNDIA Benito (MEX)	8
LARRIONDA Jorge (URU)	8
QUINIOU Jo	8
Ravshan IRMATOV (UZB)	10
RODRIGUEZ Marco (MEX)	8
Grand Total	**42**

2) Filter for top 5
3) Clustered Bar Chart

c) Analysis Results:

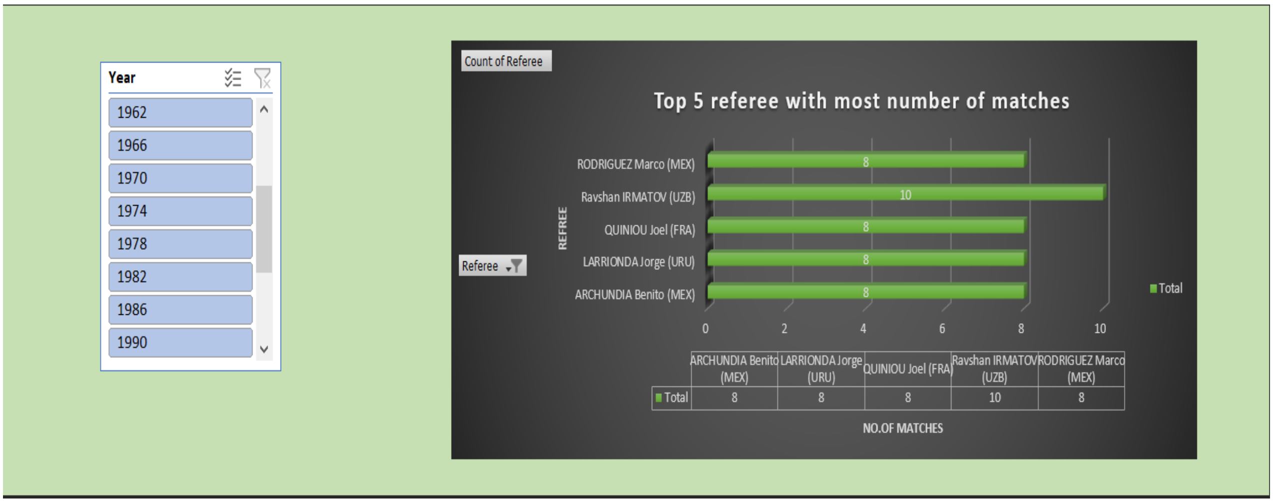
- **Ravshan Irmatov** was the referee of most number of matches of 10

d)Visualization:



	ARCHUNDIA Benito (MEX)	LARRIONDA Jorge (URU)	QUINIOU Joel (FRA)	Ravshan IRMATOV (UZB)	RODRIGUEZ Marco (MEX)
🟩 Total	8	8	8	10	8

Dashboard for Objective 6:



	ARCHUNDIA Benito (MEX)	LARRIONDA Jorge (URU)	QUINIOU Joel (FRA)	Ravshan IRMATOV (UZB)	RODRIGUEZ Marco (MEX)
🟩 Total	8	8	8	10	8

<u>In this Project</u>

- Formulas used:7
- Hyperlink used:32
- Pivot used:14
- Slicers used:12
- Graphs:14
- Icon:15
- Shapes:32
- Excel sheets:13
- Data Sets:2
- Dataset 1(winning title):10 Columns,21 Rows
- Dataset 2(Matches):22 Columns,853 Rows

List of Analysis with Results

- Brazil has most number of overall goals with 258 goals(180 home goals and 78 away goals)
- Brazil, Argentina and Italy are the top 3 countries with most overall goals 258,155,140 goals respectively.
- Trinidad and Tobago have lowest overall goals with 0 goals

- Brazil has most number of overall goals with 258 goals(180 home goals and 78 away goals)
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- Trinidad and Tobago have lowest overall goals with 0 goals

- There is a rapid increase of the attendance in year 1994 of 3587538 people.
- There is an increase of popularity trend of football worldcup among the people within the years.
- In 1930 and 1950 lowest number of teams have qualified with 13 teams each.
- In 1998 the trend of highest number of teams qualification increase to 32 teams.
- At an average of every 5 year there is an increase of qualified teams.
- In 1998 and 2014 there were most number of goals scored 171 goals and number of matches played is same with 64 matches which are record breaking years.
- With increase in number of matches there is uneven increase in goals per year.
- The match between **Uruguay** and **Brazil** has highest average attendance of audience of **173850** people. It is the most popular match, which means that Uruguay and Brazil are most popular teams in FIFA worldcup.
- **Maracana** and **Estadio Azteca stadium** has the highest number of average attendance of audience of **101696** and **100924**. Which means that they must have high audience capacity in the stadium. I did research and found that **Estadio Azteca stadium** is the **4th** largest stadium in the world with a capacity of **81044**.
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References

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