

As a part of player performance Analysis, An Indian Ex-Captain and current player Virat Kohli Data as taken for Analysis

Virat Kohli is a professional cricketer from India who is widely regarded as one of the best batsmen of his generation. He has played in all three formats of the game - Test, One Day International (ODI), and Twenty20 International (T20I) - and has achieved remarkable success in each of them.

In Test cricket, Kohli has scored 8,416 runs in 108 matches at an average of 48.9. He has scored 28 centuries and 28 half-centuries in this format, with a highest score of 254*. Kohli has been particularly impressive in overseas conditions, where he has scored 3,467 runs at an average of 54.17.

In ODIs, Kohli has scored 12,813 runs in 272 matches at an average of 57.50. He has scored 43 100's & 63 half-centuries in this format, with a highest score of 183. Kohli holds the record for the fastest player to reach 10,000 runs in ODI cricket, achieving the feat in just 205 innings.

In T20Is, Kohli has scored 4,008 runs in 90 matches at an avg of 52.7, He has scored 1 century and 37 half centuries in this format, with a highest score of 122*.

In T20s, Kohli has scored 6,624 runs in 223 matches at an average of 36.2. He has scored 5 centuries and 44 half-centuries in this format, with a highest score of 113.

```
In [135]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

```
In [136]: import io
%cd "C:\Users\gouth\Downloads"
```

C:\Users\gouth\Downloads

```
In [137]: viratkohli_df=pd.read_csv("Virat Kohli Centuries.csv")
```

```
In [138]: viratkohli_df.shape
```

```
Out[138]: (80, 18)
```

```
In [139]: viratkohli_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 80 entries, 0 to 79
Data columns (total 18 columns):
#   Column          Non-Null Count  Dtype
---  -
0   Number          80 non-null    int64
1   Format          80 non-null    object
2   Inning          80 non-null    int64
3   Position        80 non-null    object
4   Score           80 non-null    int64
5   Balls           80 non-null    int64
6   Strike Rate     80 non-null    float64
7   Against         80 non-null    object
8   Venue           80 non-null    object
9   Host Nation     80 non-null    object
10  Series          80 non-null    object
11  Year            80 non-null    int64
12  Team Total      80 non-null    int64
13  Wickets lost    80 non-null    int64
14  Not Out         80 non-null    object
15  MOTM            80 non-null    object
16  Win             80 non-null    object
17  Captain         80 non-null    object
dtypes: float64(1), int64(7), object(10)
memory usage: 11.4+ KB
```

```
In [140]: viratkohli_df.head()
```

Out[140]:

	Number	Format	Inning	Position	Score	Balls	Strike Rate	Against	Venue	Host Nation	Series	Year	Team Total	Wickets lost	Not Out	MOTM
0	1	ODI	2	4	107	114	93.859649	Sri Lanka	Kolkata	India	Bilateral	2009	316	3	No	
1	2	ODI	2	3	102	95	107.368421	Bangladesh	Mirpur	Bangladesh	Tri-Series	2010	249	4	Yes	
2	3	ODI	2	3	118	121	97.520661	Australia	Vizag	India	Bilateral	2010	292	5	No	
3	4	ODI	1	3	105	104	100.961539	New Zealand	Guwahati	India	Bilateral	2010	276	10	No	
4	5	ODI	1	4	100	83	120.481928	Bangladesh	Mirpur	Bangladesh	World Cup	2011	370	4	Yes	

```
In [141]: viratkohli_df.tail()
```

Out[141]:

	Number	Format	Inning	Position	Score	Balls	Strike Rate	Against	Venue	Host Nation	Series	Year	Team Total	Wickets lost	Not Out	MOTM
75	76	Test	1	4	121	206	58.737864	West Indies	Port Of Spain	West Indies	Bilateral	2023	438	10	No	
76	77	ODI	1	3	122	94	129.787234	Pakistan	Colombo	Sri Lanka	Asia Cup	2023	356	2	Yes	Yes
77	78	ODI	2	3	103	97	106.185567	Bangladesh	Pune	India	World Cup	2023	261	3	Yes	Yes
78	79	ODI	1	3	101	121	83.471074	South Africa	Kolkata	India	World Cup	2023	326	5	Yes	Yes
79	80	ODI	1	3	117	113	103.539823	New Zealand	Mumbai	India	World Cup	2023	397	4	No	

```
In [142]: viratkohli_df.columns
```

Out[142]: Index(['Number', 'Format', 'Inning', 'Position', 'Score', 'Balls', 'Strike Rate', 'Against', 'Venue', 'Host Nation', 'Series', 'Year', 'Team Total', 'Wickets lost', 'Not Out', 'MOTM', 'Win', 'Captain'], dtype='object')

Exploratory Data Analysis

```
In [143]: viratkohli=viratkohli_df.groupby('Year')
```

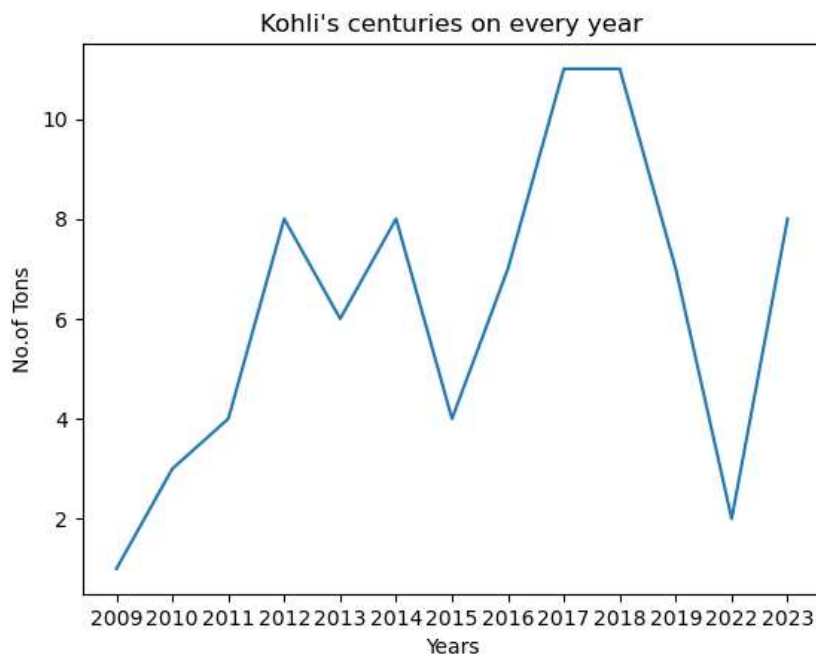
```
In [144]: print(viratkohli.count()['Number'])

Year
2009    1
2010    3
2011    4
2012    8
2013    6
2014    8
2015    4
2016    7
2017   11
2018   11
2019    7
2022    2
2023    8
Name: Number, dtype: int64
```

```
In [145]: year_centuriess=np.array(viratkohli.count()['Number'])
```

```
In [146]: year=np.array(['2009','2010','2011','2012','2013','2014','2015','2016','2017','2018','2019','2022','2023'])
```

```
In [147]: plt.plot(year,year_centuriess)
plt.xlabel('Years')
plt.ylabel('No.of Tons')
plt.title("Kohli's centuries on every year")
plt.show()
```



```
In [148]: import plotly.express as px
```

Virat Kohli Centuries in Each Venue

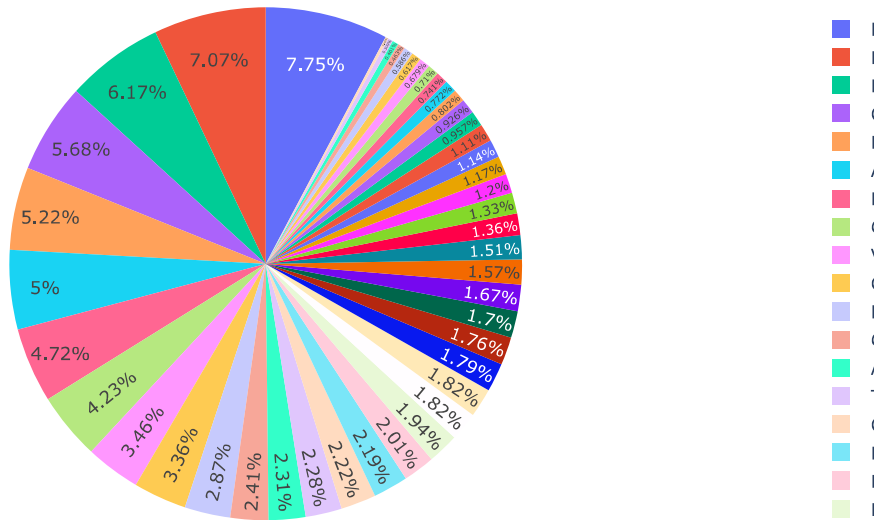
```
In [149]: viratkohli_venue=viratkohli_df.groupby('Venue')
```

```
In [150]: print(viratkohli_venue.count()['Number'].head())
```

```
Venue
Adelaide      5
Ahmedabad     1
Bengaluru     1
Birmingham   1
Canberra      1
Name: Number, dtype: int64
```

```
In [151]: fig=px.pie(viratkohli_df,values='Number',names='Venue',hover_data=['Venue'],title="Virat Kohli centuries in ea
fig.update_traces(textposition='inside')
fig.show()
```

Virat Kohli centuries in each venue



Virat Kohli Centuries across Formats

Formats - Test, ODI and T20I

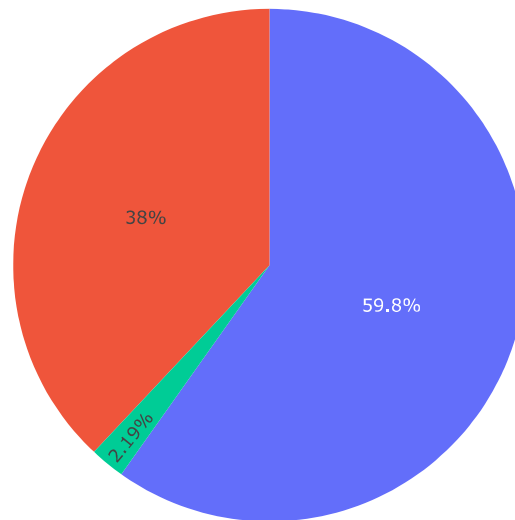
```
In [152]: viratkohli_format=viratkohli_df.groupby('Format')
```

```
In [153]: print(viratkohli_format.count()['Number'])
```

```
Format
ODI      50
T20i      1
Test     29
Name: Number, dtype: int64
```

```
In [154]: fig=px.pie(viratkohli_df,values='Number',names='Format',hover_data=['Format'],title="Virat Kohli centuries across format")
fig.show()
```

Virat Kohli centuries across format



```
In [155]: viratkohli_opponent=viratkohli_df.groupby('Against')
```

```
In [156]: viratkohli_opp=viratkohli_opponent.count()['Number']
```

```
In [157]: viratkohli=pd.DataFrame(viratkohli_opp)
```

```
In [158]: viratkohli
```

Out[158]:

	Number
Against	
Afghanistan	1
Australia	16
Bangladesh	7
England	8
New Zealand	9
Pakistan	3
South Africa	8
Sri Lanka	15
West Indies	12
Zimbabwe	1

Virat Kohli centuries against an opposition in Test Format

```
In [159]: viratkohli_df[(viratkohli_df.Format=='Test')].groupby('Against').count()['Number'].sort_values(ascending=False)
```

Out[159]:

Against	
Australia	8
England	5
Sri Lanka	5
New Zealand	3
South Africa	3
West Indies	3
Bangladesh	2

Name: Number, dtype: int64

Virat Kohli centuries against an opposition in ODI Format

```
In [160]: viratkohli_df[(viratkohli_df.Format=='ODI')].groupby('Against').count()['Number'].sort_values(ascending=False)
```

```
Out[160]: Against
Sri Lanka      10
West Indies     9
Australia       8
New Zealand     6
Bangladesh      5
South Africa    5
England         3
Pakistan        3
Zimbabwe        1
Name: Number, dtype: int64
```

Virat Kohli centuries against an opposition in T20I Format

```
In [161]: viratkohli_df[(viratkohli_df.Format=='T20i')].groupby('Against').count()['Number'].sort_values(ascending=False)
```

```
Out[161]: Against
Afghanistan     1
Name: Number, dtype: int64
```

No. of Centuries as Captain and as Player

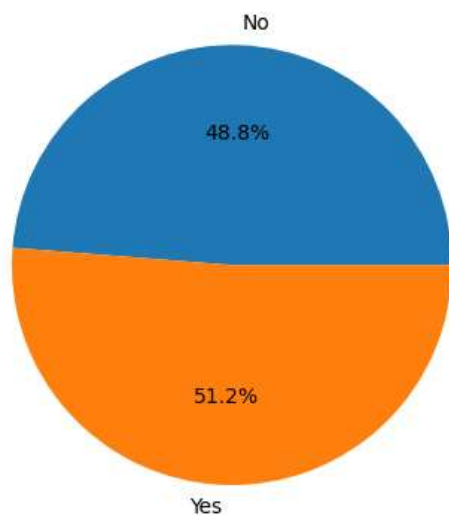
```
In [162]: viratkohli_captain=viratkohli_df.groupby('Captain')
```

```
In [163]: captain=viratkohli_captain.count()['Number']
```

```
In [164]: print(captain)
```

```
Captain
No      39
Yes     41
Name: Number, dtype: int64
```

```
In [165]: plt.pie(captain,labels=['No','Yes'],autopct='%1.1f%%')
plt.show()
```



Virat Kohli scored 41 Centuries as Captain across formats and 39 Centuries as player

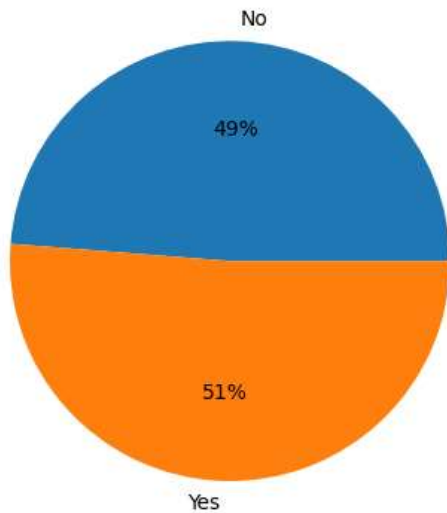
Instance of winning Man of the match after scoring a Century

```
In [166]: viratkohli_motm=viratkohli_df.groupby('MOTM').count()['Number']
```

```
In [167]: print(viratkohli_motm)
```

```
MOTM
No    34
Yes   46
Name: Number, dtype: int64
```

```
In [168]: plt.pie(captain,labels=['No','Yes'],autopct='%0.0f%%')
plt.show()
```



Virat Kohli won 46 Man of the match across formats when scored a Century

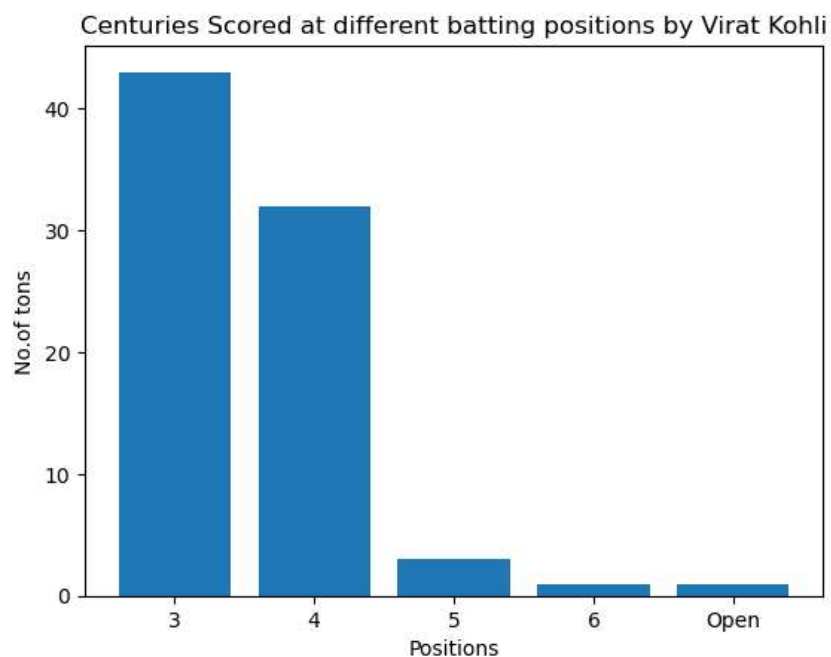
Centuries Scored at different batting positions by Virat Kohli

```
In [169]: viratkohli_pos=viratkohli_df.groupby('Position')
```

```
In [170]: pos=viratkohli_pos.count()
print(pos['Number'])
```

```
Position
3      43
4      32
5       3
6       1
Open    1
Name: Number, dtype: int64
```

```
In [171]: plt.bar(['3','4','5','6','Open'],height=pos['Number'])
plt.xlabel('Positions')
plt.ylabel('No.of tons')
plt.title('Centuries Scored at different batting positions by Virat Kohli')
plt.show()
```



Virat Kohli has scored 75 Centuries across formats in 3rd and 4th batting position

No. of Centuries by Virat Kohli in Different Innings of an ODI

```
In [172]: odi_first=viratkohli_df[(viratkohli_df.Format=='ODI')&(viratkohli_df.Inning==1)].count()['Number']
odi_second=viratkohli_df[(viratkohli_df.Format=='ODI')&(viratkohli_df.Inning==2)].count()['Number']
```

```
In [173]: kohli_ODIinnings=pd.DataFrame({'Innings':['First Innings','Second Innings'],'Tons':[odi_first,odi_second]},index=[1,2])
```

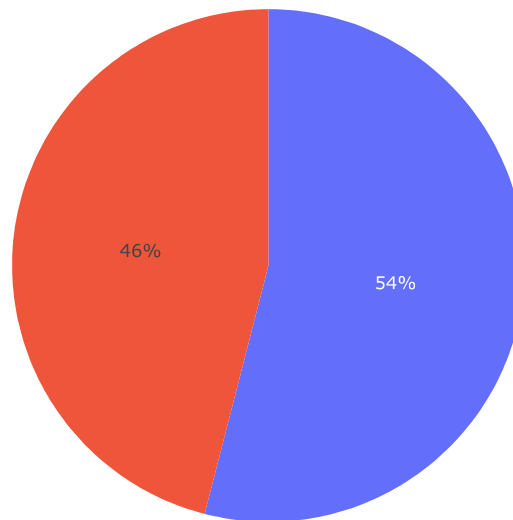
```
In [174]: kohli_ODIinnings
```

Out[174]:

	Innings	Tons
1	First Innings	23
2	Second Innings	27


```
In [175]: fig=px.pie(kohli_ODIinnings,values='Tons',names='Innings',
                  title="No. of Centuries by Virat Kohli in Different Innings of an ODI")
fig.show()
```

No. of Centuries by Virat Kohli in Different Innings of an ODI



Virat Kohli has 23 Centuries in First innings and 27 Centuries in Second innings of an One Day International Match

No wonder why he is called as CHASE MASTER

No. of Centuries by Virat Kohli in Different Innings of a Test match

```
In [176]: test_first=viratkohli_df[(viratkohli_df.Format=='Test')&(viratkohli_df.Inning==1)].count()['Number']
test_second=viratkohli_df[(viratkohli_df.Format=='Test')&(viratkohli_df.Inning==2)].count()['Number']
test_third=viratkohli_df[(viratkohli_df.Format=='Test')&(viratkohli_df.Inning==3)].count()['Number']
test_fourth=viratkohli_df[(viratkohli_df.Format=='Test')&(viratkohli_df.Inning==4)].count()['Number']
```

```
In [177]: kohli_TESTinnings=pd.DataFrame({'Innings':['First Innings','Second Innings','Third Innings','Fourth Innings'],
                                          'Tons':[test_first,test_second,test_third,test_fourth]},index=(1,2,3,4))
```

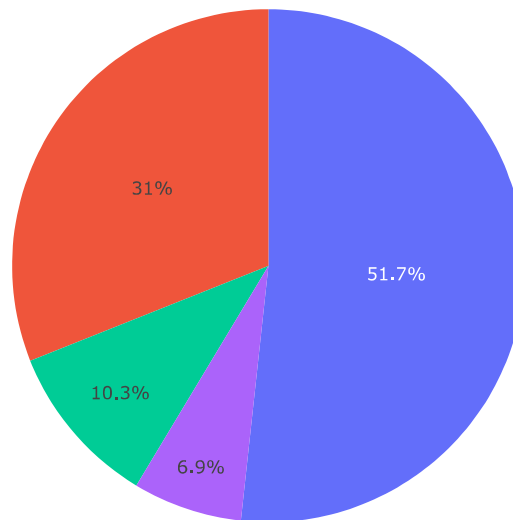
```
In [178]: kohli_TESTinnings
```

Out[178]:

	Innings	Tons
1	First Innings	9
2	Second Innings	15
3	Third Innings	3
4	Fourth Innings	2

```
In [179]: fig=px.pie(kohli_TESTinnings,values='Tons',names='Innings',
                  title="No. of Centuries by Virat Kohli in Different Innings of a Test match")
fig.show()
```

No. of Centuries by Virat Kohli in Different Innings of a Test match



No. of Centuries by Virat Kohli in Different Innings of a T20i

```
In [180]: T20i_first=viratkohli_df[(viratkohli_df.Format=='T20i')&(viratkohli_df.Inning==1)].count()['Number']
T20i_second=viratkohli_df[(viratkohli_df.Format=='T20i')&(viratkohli_df.Inning==2)].count()['Number']
```

```
In [181]: kohli_T20iinnings=pd.DataFrame({'Innings':['First Innings','Second Innings'],'Tons':[T20i_first,T20i_second]},
```

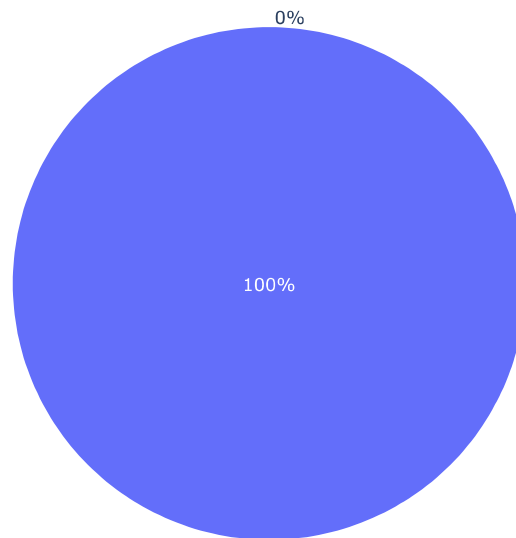
```
In [182]: kohli_T20iinnings
```

Out[182]:

	Innings	Tons
1	First Innings	1
2	Second Innings	0

```
In [183]: fig=px.pie(kohli_T20innings,values='Tons',names='Innings',
                  title="No. of Centuries by Virat Kohli in Different Innings of a T20i")
fig.show()
```

No. of Centuries by Virat Kohli in Different Innings of a T20i



No. of Centuries in Different Host Nations

```
In [184]: viratkohli_nation=pd.DataFrame(viratkohli_df.groupby('Host Nation').count()['Number'])
```

```
In [185]: viratkohli_nation
```

Out[185]:

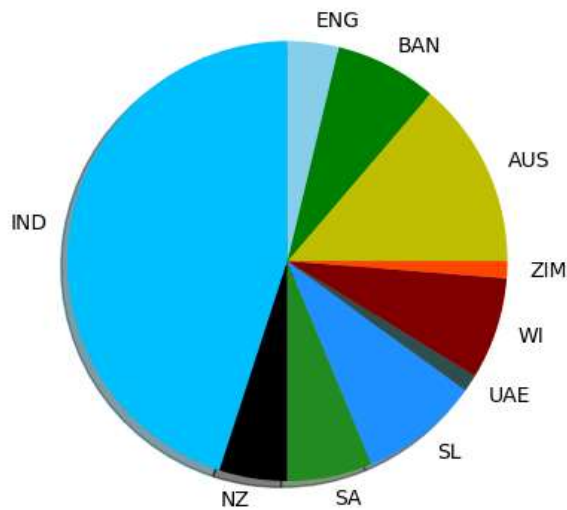
	Number
Host Nation	
Australia	11
Bangladesh	6
England	3
India	36
New Zealand	4
South Africa	5
Sri Lanka	7
UAE	1
West Indies	6
Zimbabwe	1

VK has scored 11 Centuries in Australia, His best among host nations other than Home Country (India)

```
In [186]: host_nations=['AUS','BAN','ENG','IND','NZ','SA','SL','UAE','WI','ZIM']
```

```
In [187]: colors=['y','g','skyblue','deepskyblue','k','forestgreen','dodgerblue','darkslategray','maroon','orangered']
```

```
In [188]: plt.pie(viratkohli_nation['Number'],
                 labels=host_nations,colors=colors,shadow=True)
plt.show()
```



Centuries in Different Series

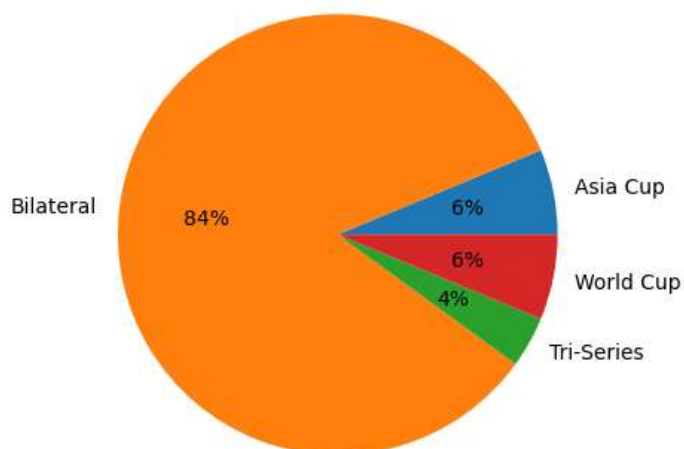
```
In [189]: viratkohli_series=viratkohli_df.groupby('Series').count()['Number']
```

```
In [190]: viratkohli_series
```

```
Out[190]: Series
Asia Cup      5
Bilateral    67
Tri-Series    3
World Cup     5
Name: Number, dtype: int64
```

Virat Kohli is also a Big match player. He has scored 5 Centuries in Asia cup and 5 in ICC cricket world Cup

```
In [191]: plt.pie(viratkohli_series,labels=viratkohli_series.index,autopct='%0.0f%%')
plt.show()
```



VK's Contribution for Team total at each Instance

```
In [192]: kohli_contribution=pd.DataFrame(viratkohli_df['Score']/viratkohli_df['Team Total']*100)
```

```
In [193]: kohli_contribution.columns=['Percentage']
```

```
In [194]: print(kohli_contribution)
print('Average Percentage')
np.mean(kohli_contribution)
```

```
Percentage
0      33.860759
1      40.963855
2      40.410959
3      38.043478
4      27.027027
..      ...
75     27.625571
76     34.269663
77     39.463602
78     30.981595
79     29.471033
```

```
[80 rows x 1 columns]
Average Percentage
```

C:\Users\gouth\anaconda3\lib\site-packages\numpy\core\fromnumeric.py:3502: FutureWarning:

In a future version, DataFrame.mean(axis=None) will return a scalar mean over the entire DataFrame. To retain the old behavior, use 'frame.mean(axis=0)' or just 'frame.mean()'

```
Out[194]: Percentage      39.458922
dtype: float64
```

Sorting the values according to the percentage

```
In [195]: kohli_percentage=kohli_contribution.sort_values(by='Percentage',ascending=False)
kohli_percentage
```

```
Out[195]:
```

```
Percentage
23      63.253012
55      62.621359
70      57.547170
11      55.454545
56      54.379562
...      ...
32      27.466667
4       27.027027
27      25.900901
58      21.417565
16      18.706294
```

```
80 rows x 1 columns
```

```
In [196]: virat_contribution=kohli_contribution[(kohli_contribution.Percentage>=50)].count()
```

```
In [197]: print('No.of Times when kohli scored a ton which contributed the majority of runs to the team total,',
virat_contribution)
```

```
No.of Times when kohli scored a ton which contributed the majority of runs to the team total, Percentage      1
0
dtype: int64
```

Overall, Kohli's performance in international cricket has been nothing short of outstanding. He is a technically sound batsman with a wide range of strokes and excellent temperament. Kohli is also an excellent captain, having led India to numerous

Virat Kohli's performance in cricket can be described as exceptional, both in terms of his individual statistics and his contribution to the success of the Indian cricket team.

Kohli is widely regarded as one of the best batsmen of his generation and his record in all three formats of the game speaks for itself. He has scored a remarkable number of runs, with an average that is consistently above 50 in all formats of the game. His ability to score runs under pressure and in tough conditions is particularly impressive, and he has produced some memorable innings in important matches.

Apart from his batting, Kohli is also an excellent fielder and a tactically astute captain. He is known for his aggressive and proactive approach to captaincy, and has led India to numerous victories in all three formats of the game.

Overall, Kohli's performance in cricket has been outstanding, and he has established himself as one of the greatest cricketers of all time. His talent, hard work, and dedication have earned him a place among the cricketing elite, and he is widely respected both within India and around the world.

In []: