

Virat vs Bumrah

By: Jaikrishna Sharma

Data : <https://cricsheet.org/> (<https://cricsheet.org/>)

In [1]:

```
import pandas as pd
import numpy as np
pd.set_option('display.max_rows', None)
pd.set_option('display.max_columns', None)
pd.set_option('display.expand_frame_repr', False)
pd.set_option('max_colwidth', -1)
```

C:\Users\Jaikrishna\anaconda3\lib\site-packages\ipykernel_launcher.py:6: FutureWarning: Passing a negative integer is deprecated in version 1.0 and will not be supported in future version. Instead, use None to not limit the column width.

Read CSV

Download latest csv from <https://cricsheet.org/> (<https://cricsheet.org/>) to get updated stats

In [2]:

```
data=pd.read_csv('all_matches.csv')
```

C:\Users\Jaikrishna\anaconda3\lib\site-packages\IPython\core\interactiveshell.py:3063: DtypeWarning: Columns (1) have mixed types.Specify dtype option on import or set low_memory=False.
interactivity=interactivity, compiler=compiler, result=result)

In [3]:

```
data.head(2)
```

Out[3]:

	match_id	season	start_date	venue	innings	ball	batting_team	bowling_team	
0	335982	2007/08	2008-04-18	M Chinnaswamy Stadium	1	0.1	Kolkata Knight Riders	Royal Challengers Bangalore	
1	335982	2007/08	2008-04-18	M Chinnaswamy Stadium	1	0.2	Kolkata Knight Riders	Royal Challengers Bangalore	M

Compare Virat vs Bumrah

Data where the Batsman is Virat and Bowler is Bumrah

In [4]:

```
kohli_bumrah=data[(data['striker']=='V Kohli')&(data['bowler']=='JJ Bumrah')]
```

In [5]:

```
kohli_bumrah.head(2)
```

Out[5]:

	match_id	season	start_date	venue	innings	ball	batting_team	bowling_team
76637	597999	2013	2013-04-04	M Chinnaswamy Stadium	1	4.1	Royal Challengers Bangalore	Mumbai Indians
76638	597999	2013	2013-04-04	M Chinnaswamy Stadium	1	4.2	Royal Challengers Bangalore	Mumbai Indians

To check how many times Bumrah dismissed Virat

Note: wicket type should not be run out Because it does not go into the account of the bowler

In [6]:

```
kohli_bumrah[(kohli_bumrah['wicket_type']!='run out')&(kohli_bumrah['player_dismissed']=='V Kohli')].head(2)
```

Out[6]:

	match_id	season	start_date	venue	innings	ball	batting_team	bowling_team
76641	597999	2013	2013-04-04	M Chinnaswamy Stadium	1	4.5	Royal Challengers Bangalore	Mumbai Indians
152118	1175362	2019	2019-03-28	M.Chinnaswamy Stadium	2	13.4	Royal Challengers Bangalore	Mumbai Indians

Score card Virat vs Bumrah

Step1: Total No. of Runs Scored

Step2: Balls Played

Step3: Strike Rate

Step4: Narine dismissed Rohit

Step5: No. of sixes

Step6: No. of Fours

In [7]:

```
kohlivs_bum_sc=pd.DataFrame(kohli_bumrah.groupby('striker')['runs_off_bat'].sum()).reset_index()
```

In [8]:

```
kohlivs_bum_sc
```

Out[8]:

	striker	runs_off_bat
0	V Kohli	120

In [9]:

```
kohlivs_bum_sc['balls']=kohli_bumrah[(kohli_bumrah['wides'].isnull()==True)]['ball'].count()
```

In [10]:

```
kohlivs_bum_sc
```

Out[10]:

	striker	runs_off_bat	balls
0	V Kohli	120	82

In [11]:

```
kohlivs_bum_sc['SR']=100*kohlivs_bum_sc['runs_off_bat']/kohlivs_bum_sc['balls']
```

In [12]:

```
kohlivs_bum_sc
```

Out[12]:

	striker	runs_off_bat	balls	SR
0	V Kohli	120	82	146.341463

In [13]:

```
kohlivs_bum_sc['Out']=kohli_bumrah[(kohli_bumrah['wicket_type']!='run out')&(kohli_bumrah['player_dismissed']=='V Kohli')]['ball'].count()
```

In [14]:

```
kohlivs_bum_sc['Six']=kohli_bumrah[(kohli_bumrah['runs_off_bat']==6)]['ball'].count()
```

In [15]:

```
kohlivs_bum_sc['Four']=kohli_bumrah[(kohli_bumrah['runs_off_bat']==4)]['ball'].count()
```

In [16]:

```
kohlivs_bum_sc['bowler']='JJ Bumrah'
```

In [17]:

```
kohlivs_bum_sc['Bowling SR']=kohlivs_bum_sc['balls']/kohlivs_bum_sc['Out']
```

In [18]:

```
kohlivs_bum_sc['Eco']=6*kohlivs_bum_sc['runs_off_bat']/kohlivs_bum_sc['balls']
```

In [19]:

```
kohlivs_bum_sc.T
```

Out[19]:

	0
striker	V Kohli
runs_off_bat	120
balls	82
SR	146.341
Out	4
Six	4
Four	14
bowler	JJ Bumrah
Bowling SR	20.5
Eco	8.78049

Virat Kohli against the bowlers

In [20]:

```
kohli_bowlers=data[(data['striker']=='V Kohli')]
```

In [21]:

```
kohli_bowlers.head(2)
```

Out[21]:

	match_id	season	start_date	venue	innings	ball	batting_team	bowling_team
132	335982	2007/08	2008-04-18	M Chinnaswamy Stadium	2	1.2	Royal Challengers Bangalore	Kolkata Knight Riders
133	335982	2007/08	2008-04-18	M Chinnaswamy Stadium	2	1.3	Royal Challengers Bangalore	Kolkata Knight Riders

Total Runs scored by Virat against every bowler in IPL

In [22]:

```
kohli_bowlers_sc=pd.DataFrame(kohli_bowlers.groupby(['bowler','bowling_team'])['runs_off_fat'].sum()).reset_index()
```

In [23]:

```
kohli_bowlers_sc=kohli_bowlers_sc.sort_values('runs_off_fat',ascending=False)
```

In [24]:

```
kohli_bowlers_sc.head(5)
```

Out[24]:

	bowler	bowling_team	runs_off_fat
142	JJ Bumrah	Mumbai Indians	120
242	R Ashwin	Chennai Super Kings	115
331	UT Yadav	Delhi Daredevils	105
308	SP Narine	Kolkata Knight Riders	99
79	DJ Bravo	Chennai Super Kings	87

Total No. of balls played against every bowler

Do not count wides, but you can count noballs

In [25]:

```
kohli_balls_played=pd.DataFrame(kohli_bowlers[(kohli_bowlers['wides']==True)].groupby(['bowler','bowling_team'])['ball'].count()).reset_index()
```

In [26]:

```
kohli_balls_played.head(5)
```

Out[26]:

	bowler	bowling_team	ball
0	A Ashish Reddy	Deccan Chargers	15
1	A Ashish Reddy	Sunrisers Hyderabad	11
2	A Chandila	Rajasthan Royals	15
3	A Flintoff	Chennai Super Kings	4
4	A Mishra	Deccan Chargers	31

In [27]:

```
kohli_bowlers_sc=kohli_bowlers_sc.merge(kohli_balls_played,how='left',on=['bowler','bowling_team'])
```

In [28]:

```
kohli_bowlers_sc.head(5)
```

Out[28]:

	bowler	bowling_team	runs_off_bat	ball
0	JJ Bumrah	Mumbai Indians	120	82
1	R Ashwin	Chennai Super Kings	115	83
2	UT Yadav	Delhi Daredevils	105	53
3	SP Narine	Kolkata Knight Riders	99	94
4	DJ Bravo	Chennai Super Kings	87	62

Calculating Strike Rate

In [29]:

```
kohli_bowlers_sc['SR']=100*kohli_bowlers_sc['runs_off_bat']/kohli_bowlers_sc['ball']
```

In [30]:

```
kohli_bowlers_sc.head(5)
```

Out[30]:

	bowler	bowling_team	runs_off_bat	ball	SR
0	JJ Bumrah	Mumbai Indians	120	82	146.341463
1	R Ashwin	Chennai Super Kings	115	83	138.554217
2	UT Yadav	Delhi Daredevils	105	53	198.113208
3	SP Narine	Kolkata Knight Riders	99	94	105.319149
4	DJ Bravo	Chennai Super Kings	87	62	140.322581

In [31]:

```
kohl1i_6=pd.DataFrame(kohli_bowlers[(kohli_bowlers['runs_off_bat']==6)].groupby(['bowler', 'bowling_team'])['ball'].count()).reset_index()
```

In [32]:

```
kohl1i_6.head(5)
```

Out[32]:

	bowler	bowling_team	ball
0	A Ashish Reddy	Deccan Chargers	1
1	A Mishra	Deccan Chargers	4
2	A Mishra	Delhi Daredevils	2
3	A Mishra	Sunrisers Hyderabad	2
4	A Nehra	Chennai Super Kings	2

In [33]:

```
kohli_bowlers_sc=kohli_bowlers_sc.merge(kohl1i_6,how='left',on=['bowler','bowling_team'])
```

In [34]:

```
kohli_bowlers_sc.rename(columns={'ball_x':'balls','ball_y':'Sixes'},inplace=True)
```

In [35]:

```
kohli_bowlers_sc.head(5)
```

Out[35]:

	bowler	bowling_team	runs_off_bat	balls	SR	Sixes
0	JJ Bumrah	Mumbai Indians	120	82	146.341463	4.0
1	R Ashwin	Chennai Super Kings	115	83	138.554217	6.0
2	UT Yadav	Delhi Daredevils	105	53	198.113208	6.0
3	SP Narine	Kolkata Knight Riders	99	94	105.319149	1.0
4	DJ Bravo	Chennai Super Kings	87	62	140.322581	2.0

In [36]:

```
kohlli_4=pd.DataFrame(kohli_bowlers[(kohli_bowlers['runs_off_bat']==4)].groupby(['bowler', 'bowling_team'])['ball'].count()).reset_index()
```

In [37]:

```
kohlli_4.rename(columns={'ball': 'Fours'}, inplace=True)
```

In [38]:

```
kohlli_4.head(5)
```

Out[38]:

	bowler	bowling_team	Fours
0	A Ashish Reddy	Deccan Chargers	2
1	A Ashish Reddy	Sunrisers Hyderabad	2
2	A Chandila	Rajasthan Royals	1
3	A Mishra	Deccan Chargers	2
4	A Mishra	Delhi Daredevils	8

In [39]:

```
kohli_bowlers_sc=kohli_bowlers_sc.merge(kohlli_4, how='left', on=['bowler', 'bowling_team'])
```

In [40]:

```
kohlli_wkts=pd.DataFrame(kohli_bowlers[(kohli_bowlers['wicket_type']!='run out')&(kohli_bowlers['player_dismissed']=='V Kohli')].groupby(['bowler', 'bowling_team'])['ball'].count()).reset_index()
```

In [41]:

```
kohlili_wkts.head(5)
```

Out[41]:

	bowler	bowling_team	ball
0	A Ashish Reddy	Deccan Chargers	1
1	A Ashish Reddy	Sunrisers Hyderabad	1
2	A Mishra	Deccan Chargers	1
3	A Mishra	Delhi Daredevils	1
4	A Nehra	Chennai Super Kings	3

In [42]:

```
kohlili_wkts.rename(columns={'ball':'Out'},inplace=True)
```

In [43]:

```
kohli_bowlers_sc=kohli_bowlers_sc.merge(kohlili_wkts,how='left',on=['bowler','bowling_team'])
```

In [44]:

```
kohli_bowlers_sc.fillna(0,inplace=True)
```

Scorecard of Virat Kohli against Bolwers

In [45]:

```
kohli_bowlers_sc=kohli_bowlers_sc[(kohli_bowlers_sc['runs_off_bat']>30)]
```

In [46]:

```
kohli_bowlers_sc.head(5)
```

Out[46]:

	bowler	bowling_team	runs_off_bat	balls	SR	Sixes	Fours	Out
0	JJ Bumrah	Mumbai Indians	120	82	146.341463	4.0	14.0	4.0
1	R Ashwin	Chennai Super Kings	115	83	138.554217	6.0	9.0	0.0
2	UT Yadav	Delhi Daredevils	105	53	198.113208	6.0	10.0	1.0
3	SP Narine	Kolkata Knight Riders	99	94	105.319149	1.0	9.0	2.0
4	DJ Bravo	Chennai Super Kings	87	62	140.322581	2.0	9.0	0.0

Bumrah vs Batsman

In [47]:

```
bumrah_df=data[(data['bowler']=='JJ Bumrah')]
```

In [48]:

```
bumrah_df.head(2)
```

Out[48]:

	match_id	season	start_date	venue	innings	ball	batting_team	bowling_team
76637	597999	2013	2013-04-04	M Chinnaswamy Stadium	1	4.1	Royal Challengers Bangalore	Mumba Indians
76638	597999	2013	2013-04-04	M Chinnaswamy Stadium	1	4.2	Royal Challengers Bangalore	Mumba Indians

How many times Bumrah dismissed a batsman?

Note:run out is not considered as bowler's wicket

In [49]:

```
bumrah_sc = pd.DataFrame(bumrah_df[(bumrah_df['wicket_type']!='run out')&(bumrah_df['wicket_type'].isnull()==False)].groupby('striker')['ball'].count()).reset_index()
```

In [50]:

```
bumrah_sc=bumrah_sc.sort_values('ball',ascending=False)
```

In [51]:

```
bumrah_sc=bumrah_sc.rename(columns={'ball':'Out'})
```

In [52]:

```
bumrah_sc.head(5)
```

Out[52]:

	striker	Out
52	RR Pant	6
72	V Kohli	4
16	DJ Bravo	4
24	GJ Maxwell	4
42	MS Dhoni	3

In [53]:

```
bumrah_runs= pd.DataFrame(bumrah_df.groupby('striker')['runs_off_bat'].sum()).reset_index()
```

In [54]:

```
bumrah_runs.head(5)
```

Out[54]:

	striker	runs_off_bat
0	A Mishra	1
1	AB de Villiers	120
2	AD Nath	4
3	AD Russell	51
4	AJ Finch	25

In [55]:

```
bumrah_sc=bumrah_sc.merge(bumrah_runs,how='left',on='striker')
```

In [56]:

```
bumrah_sc.head(5)
```

Out[56]:

	striker	Out	runs_off_bat
0	RR Pant	6	36
1	V Kohli	4	120
2	DJ Bravo	4	34
3	GJ Maxwell	4	39
4	MS Dhoni	3	56

In [57]:

```
bumrah_df.columns
```

Out[57]:

```
Index(['match_id', 'season', 'start_date', 'venue', 'innings', 'ball',
      'batting_team', 'bowling_team', 'striker', 'non_striker', 'bowler',
      'runs_off_bat', 'extras', 'wides', 'noballs', 'byes', 'legbyes',
      'penalty', 'wicket_type', 'player_dismissed', 'other_wicket_type',
      'other_player_dismissed'],
      dtype='object')
```

In [58]:

```
bumrah_balls= pd.DataFrame(bumrah_df[(bumrah_df['wides'].isnull()==True)&(bumrah_df['no
balls'].isnull()==True)].groupby('striker')['ball'].count()).reset_index()
```

In [59]:

```
bumrah_balls.head(2)
```

Out[59]:

	striker	ball
0	A Mishra	5
1	AB de Villiers	82

In [60]:

```
bumrah_sc=bumrah_sc.merge(bumrah_balls,how='left',on='striker')
```

In [61]:

```
bumrah_sc.head(2)
```

Out[61]:

	striker	Out	runs_off_bat	ball
0	RR Pant	6	36	36
1	V Kohli	4	120	82

In [62]:

```
bumrah_sc['Bowling SR']=bumrah_sc['ball']/bumrah_sc['Out']
```

In [63]:

```
bumrah_sc.head(5)
```

Out[63]:

	striker	Out	runs_off_bat	ball	Bowling SR
0	RR Pant	6	36	36	6.000000
1	V Kohli	4	120	82	20.500000
2	DJ Bravo	4	34	22	5.500000
3	GJ Maxwell	4	39	32	8.000000
4	MS Dhoni	3	56	55	18.333333

In [64]:

```
bumrah_sc['Eco']=6*bumrah_sc['runs_off_bat']/bumrah_sc['ball']
```

In [65]:

```
bumrah_sc.head(5)
```

Out[65]:

	striker	Out	runs_off_bat	ball	Bowling SR	Eco
0	RR Pant	6	36	36	6.000000	6.000000
1	V Kohli	4	120	82	20.500000	8.780488
2	DJ Bravo	4	34	22	5.500000	9.272727
3	GJ Maxwell	4	39	32	8.000000	7.312500
4	MS Dhoni	3	56	55	18.333333	6.109091

In [66]:

```
bumrah_6s = pd.DataFrame(bumrah_df[(bumrah_df['runs_off_bat']==6)].groupby('striker')['ball'].count()).reset_index()
```

In [67]:

```
bumrah_6s.rename(columns={'ball':'Sixes'},inplace=True)
```

In [68]:

```
bumrah_sc=bumrah_sc.merge(bumrah_6s,how='left',on='striker')
```

In [69]:

```
bumrah_sc.fillna(0,inplace=True)
```

In [70]:

```
bumrah_extra=pd.DataFrame(bumrah_df[(bumrah_df['wides'].isnull()==False)|(bumrah_df['no balls'].isnull()==False)].groupby('striker')['ball'].count()).reset_index()
```

In [71]:

```
bumrah_extra=bumrah_extra.rename(columns={'ball':'extra_runs'})
```

In [72]:

```
bumrah_sc=bumrah_sc.merge(bumrah_extra,how='left',on='striker')
```

In [73]:

```
bumrah_sc['Total_Runs']=bumrah_sc['runs_off_bat']+bumrah_sc['extra_runs']
```

Bumrah against every Batsman

In [74]:

```
bumrah_sc['Eco']=6*bumrah_sc['Total_Runs']/bumrah_sc['ball']
```

In [75]:

```
bumrah_sc.head(5)
```

Out[75]:

	striker	Out	runs_off_bat	ball	Bowling SR	Eco	Sixes	extra_runs	Total_Runs
0	RR Pant	6	36	36	6.000000	6.166667	2.0	1.0	37.0
1	V Kohli	4	120	82	20.500000	8.853659	4.0	1.0	121.0
2	DJ Bravo	4	34	22	5.500000	9.545455	4.0	1.0	35.0
3	GJ Maxwell	4	39	32	8.000000	7.687500	0.0	2.0	41.0
4	MS Dhoni	3	56	55	18.333333	6.436364	2.0	3.0	59.0

Visualization

In [76]:

```
import plotly.graph_objects as go
import plotly.express as px
import matplotlib.pyplot as plt
import seaborn as sns
```

In [83]:

```
plt.figure(figsize = (16, 8))
fig = go.Figure(data=px.scatter(bumrah_sc,bumrah_sc['Bowling SR'],bumrah_sc.Eco,
                                size='Out',text="striker",hover_data=['striker','Out'],
                                labels={
                                    "Total_Runs": "Runs scored by the striker",
                                    "Bowling SR": "Bowling Strike Rate"
                                },
                                title='Bowling Strike Rate and Economy by Bumrah in IP
L'))
fig.update_traces(textposition='top left')
fig.add_vline(x=20, line_width=3, line_dash="dash", line_color="green")
fig.add_hline(y=8)
fig.show()
```

<Figure size 1152x576 with 0 Axes>

In [85]:

```
plt.figure(figsize = (16, 8))
fig = go.Figure(data=px.scatter(bumrah_sc,bumrah_sc['Bowling SR'],bumrah_sc.Total_Runs,
                               size='Out',text="striker",hover_data=['striker','Out'],
                               labels={
                                   "Total_Runs": "Runs scored by the striker",
                                   "Bowling SR": "Bowling Strike Rate"
                               },
                               title='Bowling Strike Rate and Runs given by Bumrah in
IPL'))
fig.update_traces(textposition='top left')
fig.add_vline(x=20, line_width=3, line_dash="dash", line_color="green")
fig.add_hline(y=80)
fig.show()
fig.write_html("Bowling Strike Rate and Runs given by Bumrah in IPL.html")
```

<Figure size 1152x576 with 0 Axes>

In [84]:

```
plt.figure(figsize = (16, 8))
fig = go.Figure(data=px.scatter(kohli_bowlers_sc,kohli_bowlers_sc['SR'],kohli_bowlers_sc['runs_off_bat'],
                                size='Out',text="bowler",hover_data=['bowler','SR'],color='bowling_team',
                                labels={
                                    "runs_off_bat": "Runs scored",
                                    "SR": "Strike Rate"
                                },
                                title='Runs scored and Strike Rate by Virat Kohli in IPL'))
fig.update_traces(textposition='top left')
fig.add_vline(x=150, line_width=3, line_dash="dash", line_color="green")
fig.add_hline(y=80)
fig.show()
fig.write_html("Runs scored and Strike Rate by Virat Kohli in IPL.html")
```

<Figure size 1152x576 with 0 Axes>

In [79]:

```
plt.figure(figsize = (16, 8))
fig = go.Figure(data=px.scatter(kohli_bowlers_sc,kohli_bowlers_sc['SR'],kohli_bowlers_s
c['Sixes'],
                                size='Out',text="bowler",hover_data=['bowler','SR'],
                                labels={
                                    "runs_off_bat": "Runs scored",
                                    "SR": "Strike Rate"
                                },
                                title='Sixes and Strike Rate by Virat Kohli in IPL'))
fig.update_traces(textposition='top left')
fig.add_vline(x=150, line_width=3, line_dash="dash", line_color="green")
fig.add_hline(y=5)
fig.show()
# fig.write_html("Batsman with Healthy Strike Rate and Runs in Death Overs (2016 to May
-2021).html")
```

<Figure size 1152x576 with 0 Axes>