Pandas real

July 9, 2024

Understanding Pandas

```
[3]:
     import pandas as pd
     import numpy as np
     data = pd.read_csv('matches - matches.csv')
[9]:
     data
[9]:
           id
               season
                             city
                                          date
                                                                        team1
                        Hyderabad
                                    2017-04-05
                                                         Sunrisers Hyderabad
            1
                  2017
            2
     1
                  2017
                             Pune
                                    2017-04-06
                                                              Mumbai Indians
     2
            3
                  2017
                                    2017-04-07
                           Rajkot
                                                               Gujarat Lions
     3
            4
                  2017
                           Indore
                                    2017-04-08
                                                      Rising Pune Supergiant
     4
            5
                  2017
                        Bangalore
                                    2017-04-08
                                                Royal Challengers Bangalore
     . .
     631
          632
                  2016
                           Raipur
                                    2016-05-22
                                                            Delhi Daredevils
                        Bangalore
     632
          633
                  2016
                                    2016-05-24
                                                               Gujarat Lions
     633
          634
                  2016
                            Delhi
                                    2016-05-25
                                                         Sunrisers Hyderabad
     634
          635
                  2016
                            Delhi
                                    2016-05-27
                                                               Gujarat Lions
          636
     635
                  2016
                        Bangalore
                                    2016-05-29
                                                         Sunrisers Hyderabad
                                  team2
                                                          toss_winner toss_decision
     0
          Royal Challengers Bangalore
                                         Royal Challengers Bangalore
                                                                               field
     1
               Rising Pune Supergiant
                                              Rising Pune Supergiant
                                                                               field
     2
                Kolkata Knight Riders
                                               Kolkata Knight Riders
                                                                               field
     3
                       Kings XI Punjab
                                                      Kings XI Punjab
                                                                               field
     4
                      Delhi Daredevils
                                         Royal Challengers Bangalore
                                                                                 bat
     631
          Royal Challengers Bangalore
                                         Royal Challengers Bangalore
                                                                               field
     632
          Royal Challengers Bangalore
                                         Royal Challengers Bangalore
                                                                               field
     633
                Kolkata Knight Riders
                                               Kolkata Knight Riders
                                                                               field
     634
                  Sunrisers Hyderabad
                                                  Sunrisers Hyderabad
                                                                               field
     635
          Royal Challengers Bangalore
                                                  Sunrisers Hyderabad
                                                                                 bat
          result
                  dl_applied
                                                      winner
                                                              win_by_runs
     0
          normal
                                        Sunrisers Hyderabad
                                                                        35
```

```
1
     normal
                       0
                                Rising Pune Supergiant
                                                                     0
2
                       0
     normal
                                 Kolkata Knight Riders
                                                                     0
3
     normal
                       0
                                       Kings XI Punjab
                                                                     0
4
     normal
                          Royal Challengers Bangalore
                                                                    15
631
    normal
                       0
                          Royal Challengers Bangalore
                                                                    0
632
    normal
                          Royal Challengers Bangalore
                                                                     0
                       0
633
    normal
                       0
                                   Sunrisers Hyderabad
                                                                    22
    normal
                       0
                                   Sunrisers Hyderabad
634
                                                                     0
635
    normal
                       0
                                   Sunrisers Hyderabad
                                                                     8
     win_by_wickets player_of_match
0
                   0
                        Yuvraj Singh
                   7
1
                            SPD Smith
2
                  10
                              CA Lynn
3
                   6
                          GJ Maxwell
4
                   0
                           KM Jadhav
. .
                              V Kohli
631
                   6
632
                   4
                      AB de Villiers
633
                   0
                        MC Henriques
634
                   4
                            DA Warner
635
                   0
                         BCJ Cutting
                                                                    umpire1
                                                   venue
0
            Rajiv Gandhi International Stadium, Uppal
                                                               AY Dandekar
               Maharashtra Cricket Association Stadium
                                                            A Nand Kishore
1
2
                Saurashtra Cricket Association Stadium
                                                               Nitin Menon
3
                                 Holkar Cricket Stadium
                                                              AK Chaudhary
4
                                  M Chinnaswamy Stadium
                                                                        NaN
631
     Shaheed Veer Narayan Singh International Stadium
                                                            A Nand Kishore
632
                                  M Chinnaswamy Stadium
                                                              AK Chaudhary
633
                                        Feroz Shah Kotla
                                                                 M Erasmus
634
                                       Feroz Shah Kotla
                                                                 M Erasmus
635
                                  M Chinnaswamy Stadium
                                                           HDPK Dharmasena
             umpire2
                       umpire3
0
            NJ Llong
                            NaN
1
              S Ravi
                           NaN
2
           CK Nandan
                            NaN
       C Shamshuddin
3
                            NaN
4
                  NaN
                            NaN
631
        BNJ Oxenford
                            NaN
632
     HDPK Dharmasena
                            NaN
       C Shamshuddin
633
                            NaN
```

634	CK Nandan	NaN
635	BNJ Oxenford	NaN

[636 rows x 18 columns]

[10]:	dat	ta.head	1(3)						
[10]:		id se	eason	city	date		team1 '	\	
[10].	0	1		yderabad	2017-04-05	Sunrisers	Hyderabad	`	
	1	2	2017 113	Pune	2017-04-06		oai Indians		
	2	3	2017	Rajkot	2017-04-07		arat Lions		
	_	Ü	2011	najnot	2017 01 07	duj	didu Lions		
				1	team2		toss_winner	toss_deci	sion \
	0	Royal	Challeng	gers Banga	alore Royal	Challenge	ers Bangalore	f	ield
	1	F	Rising Pu	ine Superg	giant	Rising Pur	e Supergiant	f	ield
	2		Kolkata	Knight R	iders	Kolkata K	night Riders	f	ield
	_	result		_	a		win_by_runs	win_by_wi	
	0	normal		0	Sunrisers H	•	35		0
	1	normal			sing Pune Su	_	0		7
	2	normal	-	0 K	olkata Knigh	t Riders	0		10
	1	nlaver	of_match	า			venue	۵	umpire1 \
	0		aj Singl		Gandhi Inter	national S	Stadium, Uppa		andekar
	1		SPD Smith	_			ation Stadium		
	2					MCC MBBCC1	auton buadian	n nama	KIDHOLC
			(;A I.vnr	n Sauu	rashtra Cric	ket Associ	ation Stadium	m Niti	n Menon
	2		CA Lynr	n Saui	rashtra Cric	ket Associ	ation Stadiun	m Niti	n Menon
	2	umpi	•	n Sau	rashtra Cric	ket Associ	ation Stadiun	m Niti	n Menon
	0	umpi NJ Ll	re2 ump		rashtra Cric	ket Associ	ation Stadiur	n Niti	n Menon
		NJ L1	re2 ump	pire3	rashtra Cric	ket Associ	ation Stadiur	n Niti	n Menon
	0	NJ L1	re2 ump ong lavi	pire3 NaN	rashtra Cric	ket Associ	ation Stadiur	n Niti	n Menon
[11]:	0 1 2	NJ L1 S F	re2 ump ong Ravi ndan	pire3 NaN NaN	rashtra Cric	ket Associ	ation Stadiur	n Niti	n Menon
[11]: [11]:	0 1 2	NJ L1 S F CK Nar	re2 ump ong Ravi ndan	pire3 NaN NaN NaN			ation Stadiur		n Menon
	0 1 2	NJ Ll S F CK Nar	re2 ump ong davi dan	pire3 NaN NaN	ty da	te	ation Stadium	team1	
	0 1 2	NJ L1 S F CK Nar ta.tail	re2 ump long lavi ldan L(600)	pire3 NaN NaN NaN	ty da ai 2017-05-	te 01 Royal	Challengers l	team1 Bangalore	
	0 1 2 dat	NJ L1 S F CK Nar ta.tail id 37 38	are2 umplong davi adan (600) season 2017	pire3 NaN NaN NaN cit	ty da ai 2017-05- ne 2017-05-	te 01 Royal 01	Challengers l Guja:	team1 Bangalore rat Lions	
	0 1 2 dat	NJ L1 S F CK Nar ta.tail id 37	are2 ump long lavi ldan L(600) season 2017	pire3 NaN NaN NaN cit Mumba	ty da ai 2017-05- ne 2017-05- ni 2017-05-	te 01 Royal 01	Challengers l Guja: Sunrisers l	team1 Bangalore rat Lions Hyderabad	
	0 1 2 dat 36 37 38	NJ L1 S F CK Nar ta.tail id 37 38 39	ere2 ump long lavi ldan (600) season 2017 2017 2017	pire3 NaN NaN NaN cit Mumba Pur	ty da ai 2017-05- ne 2017-05- ni 2017-05- ta 2017-05-	te 01 Royal 01 02 03	Challengers l Guja: Sunrisers l Kolkata Knigl	team1 Bangalore rat Lions Hyderabad	
	0 1 2 da ⁴ 36 37 38 39	NJ L1 S F CK Nar ta.tail id 37 38 39 40	re2 ump long lavi ldan (600) season 2017 2017 2017 2017	pire3 NaN NaN NaN cit Mumba Pur Dell Kolkat	ty da ai 2017-05- ne 2017-05- ni 2017-05- ta 2017-05-	te 01 Royal 01 02 03	Challengers l Guja: Sunrisers l Kolkata Knigl	team1 Bangalore rat Lions Hyderabad ht Riders	
	0 1 2 36 37 38 39 40	NJ L1 S F CK Nar ta.tail id 37 38 39 40 41	re2 ump long lavi ldan (600) season 2017 2017 2017 2017	pire3 NaN NaN NaN cit Mumba Pur Dell Kolkat	da ai 2017-05- ne 2017-05- ni 2017-05- ta 2017-05- ni 2017-05-	te 01 Royal 01 02 03 04	Challengers l Guja Sunrisers l Kolkata Knigl Guja 	team1 Bangalore rat Lions Hyderabad ht Riders	
	0 1 2 36 37 38 39 40	NJ L1 S F CK Nar ta.tail id 37 38 39 40 41 	re2 umplong Ravi dan (600) season 2017 2017 2017 2017	pire3 NaN NaN NaN cit Mumba Pur Dell Kolkat Dell	ty da ai 2017-05- ne 2017-05- ni 2017-05- ni 2017-05- ni 2016-05-	te 01 Royal 01 02 03 04	Challengers l Guja: Sunrisers l Kolkata Knigl Guja: Delhi Da	team1 Bangalore rat Lions Hyderabad ht Riders rat Lions	
	0 1 2 36 37 38 39 40 	NJ L1 S F CK Nar ta.tail id 37 38 39 40 41 1 632 2 633	re2 umplong lavi dan (600) season 2017 2017 2017 2017 2017 2016	pire3 NaN NaN cit Mumba Pur Dell Kolkat uell Raipu	da ai 2017-05- ne 2017-05- ni 2017-05- ni 2017-05- ni 2016-05- ne 2016-05-	te 01 Royal 01 02 03 04	Challengers l Guja: Sunrisers l Kolkata Knigl Guja: Delhi Da	team1 Bangalore rat Lions Hyderabad ht Riders rat Lions aredevils	
	0 1 2 36 37 38 39 40 633 632	NJ L1 S F CK Nar ta.tail id 37 38 39 40 41 1 632 2 633 3 634	re2 umplong lavi adan (600) season 2017 2017 2017 2017 2017 2016 2016	pire3 NaN NaN NaN Cit Mumba Pur Dell Kolkat Dell Raipu	ty da ai 2017-05- ne 2017-05- ni 2017-05- ni 2017-05- ur 2016-05- ni 2016-05-	te 01 Royal 01 02 03 04 22 24 25	Challengers l Gujar Sunrisers l Kolkata Knigl Gujar Delhi Da Gujar Sunrisers l	team1 Bangalore rat Lions Hyderabad ht Riders rat Lions aredevils	

	team2	toss	_winner toss	_decision	\
36	Mumbai Indians F	Royal Challengers Ba	ngalore	bat	
37	Rising Pune Supergiant	Rising Pune Sup	ergiant	field	
38	Delhi Daredevils	Delhi Dar		field	
39	Rising Pune Supergiant	Rising Pune Sup	~	field	
40	Delhi Daredevils	Delhi Dar	edevils	field	
• •					
631	Royal Challengers Bangalore F		•	field	
632	Royal Challengers Bangalore F	,	•	field	
633	Kolkata Knight Riders	Kolkata Knight		field	
634	Sunrisers Hyderabad	Sunrisers Hy		field	
635	Royal Challengers Bangalore	Sunrisers Hy	derabad	bat	
	result dl_applied	winner	win_by_runs	\	
36	normal 0	Mumbai Indians	0	`	
37		ng Pune Supergiant	0		
38	normal 0	Delhi Daredevils	0		
39		ng Pune Supergiant	0		
40	normal 0	Delhi Daredevils	0		
		•••	•••		
631	normal 0 Royal Chal	llengers Bangalore	0		
632	normal 0 Royal Chal	llengers Bangalore	0		
633	normal 0 Su	ınrisers Hyderabad	22		
634	normal 0 Si	ınrisers Hyderabad	0		
635	normal 0 Si	ınrisers Hyderabad	8		
	win_by_wickets player_of_match				
36	5 RG Sharma				
37	5 BA Stokes				
38	6 Mohammed Shami				
39	4 RA Tripathi				
40	7 RR Pant				
631	 6 V Kohli	i			
632	4 AB de Villiers				
633	0 MC Henriques				
634	4 DA Warner				
635	0 BCJ Cutting				
	2 200 0202				
		venue		umpire1	\
36		Wankhede Stadium	AK	Chaudhary	
37	Maharashtra Cricket A	Association Stadium		M Erasmus	
38		Feroz Shah Kotla		YC Barde	
39		Eden Gardens	KN Ananthapa	admanabhan	
40		Feroz Shah Kotla		M Erasmus	
		•••		•••	
631	Shaheed Veer Narayan Singh Int	ternational Stadium	A Nai	nd Kishore	

```
M Chinnaswamy Stadium AK Chaudhary
633 Feroz Shah Kotla M Erasmus
634 Feroz Shah Kotla M Erasmus
635 M Chinnaswamy Stadium HDPK Dharmasena
umpire2 umpire3
```

```
CB Gaffaney
                           NaN
36
37
       C Shamshuddin
                           NaN
38
         Nitin Menon
                           NaN
39
      A Nand Kishore
                           NaN
         Nitin Menon
40
                           NaN
631
        BNJ Oxenford
                           NaN
632
     HDPK Dharmasena
                           NaN
633
       C Shamshuddin
                           NaN
634
           CK Nandan
                           NaN
635
        BNJ Oxenford
                           NaN
```

[600 rows x 18 columns]

[12]: data.shape

[12]: (636, 18)

[13]: data.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 636 entries, 0 to 635
Data columns (total 18 columns):

#	Column	Non-Null Count	Dtype
0	id	636 non-null	int64
1	season	636 non-null	int64
2	city	629 non-null	object
3	date	636 non-null	object
4	team1	636 non-null	object
5	team2	636 non-null	object
6	toss_winner	636 non-null	object
7	toss_decision	636 non-null	object
8	result	636 non-null	object
9	dl_applied	636 non-null	int64
10	winner	633 non-null	object
11	win_by_runs	636 non-null	int64
12	win_by_wickets	636 non-null	int64
13	player_of_match	633 non-null	object
14	venue	636 non-null	object
15	umpire1	635 non-null	object
16	umpire2	635 non-null	object

25% 2010.000000 0.000000 0.00000 159.750000 0.000000 50% 318.500000 2012.000000 0.000000 0.000000 4.000000 75% 477.250000 2015.000000 0.000000 20.000000 7.000000 2017.000000 636.000000 1.000000 146.000000 10.000000 maxumpire3 0.0 count mean NaN std NaN min NaN 25% NaN 50% NaN 75% NaN NaN max type(data) [15]: [15]: pandas.core.frame.DataFrame [16]: data [16]: id season city date team1 0 1 2017 Hyderabad 2017-04-05 Sunrisers Hyderabad 1 2 2017 Pune 2017-04-06 Mumbai Indians 2 3 2017 Rajkot 2017-04-07 Gujarat Lions 3 4 Indore Rising Pune Supergiant 2017 2017-04-08 4 5 Royal Challengers Bangalore 2017 Bangalore 2017-04-08 . . Delhi Daredevils 631 632 2016 Raipur 2016-05-22

float64

win by runs

636.000000

13.682390

23.908877

0.000000

win by wickets

Gujarat Lions

Gujarat Lions

toss_winner toss_decision \

field

field

Sunrisers Hyderabad

Sunrisers Hyderabad

636.000000

3.372642

3.420338

0.00000

dl applied

636.000000

0.025157

0.156726

0.000000

17 umpire3

[14]: data.describe()

count mean

std

min

632

633

634

635

0

1

633

634

635

636

2016

2016

2016

2016

Bangalore

Bangalore

Royal Challengers Bangalore

Rising Pune Supergiant

Delhi

Delhi

[14]:

memory usage: 89.6+ KB

636.000000

318.500000

183.741666

1.000000

0 non-null

season

636.000000

2.773026

2012.490566

2008.000000

dtypes: float64(1), int64(5), object(12)

id

Royal Challengers Bangalore

Rising Pune Supergiant

2016-05-24

2016-05-25

2016-05-27

2016-05-29

team2

2 3 4	Kolkata Knight Riders Kolkata Knight Riders fiel Kings XI Punjab Kings XI Punjab fiel Delhi Daredevils Royal Challengers Bangalore ba	d
631 632 633 634	Royal Challengers Bangalore Royal Challengers Bangalore fiel Royal Challengers Bangalore Royal Challengers Bangalore fiel Kolkata Knight Riders Kolkata Knight Riders fiel Sunrisers Hyderabad Sunrisers Hyderabad fiel	d d d
635	Royal Challengers Bangalore Sunrisers Hyderabad ba	t
0 1 2 3 4	result dl_applied winner win_by_runs \ normal 0 Sunrisers Hyderabad 35 normal 0 Rising Pune Supergiant 0 normal 0 Kolkata Knight Riders 0 normal 0 Kings XI Punjab 0 normal 0 Royal Challengers Bangalore 15	
631	normal 0 Royal Challengers Bangalore 0	
632 633	normal 0 Royal Challengers Bangalore 0 normal 0 Sunrisers Hyderabad 22	
634	v	
635	normal 0 Sunrisers Hyderabad 8	
_	win_by_wickets player_of_match \	
0	0 Yuvraj Singh	
1	7 SPD Smith	
2	10 CA Lynn	
3 4	6 GJ Maxwell 0 KM Jadhav	
 631	 6 V Kohli	
632	4 AB de Villiers	
633	0 MC Henriques	
634	4 DA Warner	
635	0 BCJ Cutting	
0 1 2 3 4	venue umpire1 \ Rajiv Gandhi International Stadium, Uppal AY Dandekar Maharashtra Cricket Association Stadium A Nand Kishore Saurashtra Cricket Association Stadium Nitin Menon Holkar Cricket Stadium AK Chaudhary M Chinnaswamy Stadium NaN	
631 632 633 634	Shaheed Veer Narayan Singh International Stadium M Chinnaswamy Stadium Feroz Shah Kotla Feroz Shah Kotla M Erasmus M Erasmus	

\

```
635
```

[18]:

4

```
umpire2
                             umpire3
      0
                   NJ Llong
                                  NaN
      1
                     S Ravi
                                  NaN
      2
                  CK Nandan
                                  NaN
             C Shamshuddin
      3
                                  NaN
      4
                        NaN
                                  NaN
      631
              BNJ Oxenford
                                  NaN
           HDPK Dharmasena
      632
                                  NaN
      633
             C Shamshuddin
                                  NaN
      634
                  CK Nandan
                                  NaN
      635
              BNJ Oxenford
                                  NaN
      [636 rows x 18 columns]
[17]: a=(data['winner'])
[18]: 0
                      Sunrisers Hyderabad
                   Rising Pune Supergiant
      1
      2
                    Kolkata Knight Riders
      3
                          Kings XI Punjab
```

631 Royal Challengers Bangalore

632 Royal Challengers Bangalore 633 Sunrisers Hyderabad

634 Sunrisers Hyderabad 635 Sunrisers Hyderabad

Name: winner, Length: 636, dtype: object

Royal Challengers Bangalore

[19]: data[['team1','team2','winner']]

[19]:	team1	team2
0	Sunrisers Hyderabad	Royal Challengers Bangalore
1	Mumbai Indians	Rising Pune Supergiant
2	Gujarat Lions	Kolkata Knight Riders
3	Rising Pune Supergiant	Kings XI Punjab
4	Royal Challengers Bangalore	Delhi Daredevils
		
631	Delhi Daredevils	Royal Challengers Bangalore
632	Gujarat Lions	Royal Challengers Bangalore
633	Sunrisers Hyderabad	Kolkata Knight Riders
634	Gujarat Lions	Sunrisers Hyderabad

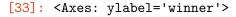
```
winner
                   Sunrisers Hyderabad
      0
      1
                Rising Pune Supergiant
      2
                 Kolkata Knight Riders
      3
                        Kings XI Punjab
      4
           Royal Challengers Bangalore
           Royal Challengers Bangalore
      631
           Royal Challengers Bangalore
      632
      633
                   Sunrisers Hyderabad
      634
                   Sunrisers Hyderabad
      635
                   Sunrisers Hyderabad
      [636 rows x 3 columns]
[20]: data.iloc[[0,10,3]]
[20]:
          id
              season
                                        date
                                                                 team1
                            city
           1
                2017
                      Hyderabad
                                  2017-04-05
                                                  Sunrisers Hyderabad
      10
                                  2017-04-13
                                                      Kings XI Punjab
          11
                2017
                         Kolkata
      3
                2017
                                  2017-04-08 Rising Pune Supergiant
                          Indore
                                                         toss_winner toss_decision \
                                 team2
      0
          Royal Challengers Bangalore
                                       Royal Challengers Bangalore
                                                                              field
      10
                Kolkata Knight Riders
                                               Kolkata Knight Riders
                                                                              field
      3
                       Kings XI Punjab
                                                     Kings XI Punjab
                                                                              field
          result dl_applied
                                               winner
                                                       win_by_runs
                                                                     win_by_wickets
                            0
                                 Sunrisers Hyderabad
                                                                                   0
      0
          normal
                                                                 35
      10
         normal
                            0
                               Kolkata Knight Riders
                                                                  0
                                                                                   8
          normal
                            0
                                                                  0
                                                                                   6
                                     Kings XI Punjab
         player_of_match
                                                                 venue
                                                                             umpire1
      0
            Yuvraj Singh
                           Rajiv Gandhi International Stadium, Uppal
                                                                         AY Dandekar
      10
               SP Narine
                                                         Eden Gardens
                                                                          A Deshmukh
              GJ Maxwell
      3
                                               Holkar Cricket Stadium
                                                                        AK Chaudhary
                umpire2
                          umpire3
      0
               NJ Llong
                              NaN
      10
               NJ Llong
                              NaN
          C Shamshuddin
                              NaN
[21]: data.iloc[:,[4,5,7]]
```

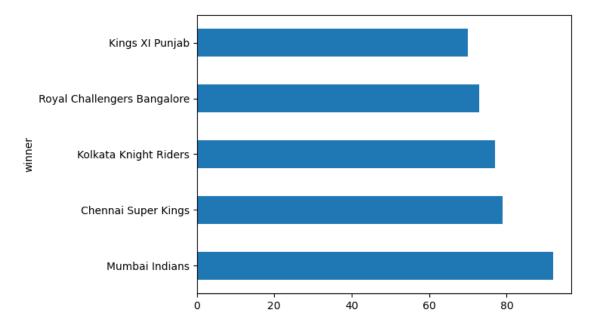
Sunrisers Hyderabad Royal Challengers Bangalore

635

```
[21]:
                                  team1
                                                                team2 toss_decision
                   Sunrisers Hyderabad
                                        Royal Challengers Bangalore
                                                                              field
      0
      1
                        Mumbai Indians
                                              Rising Pune Supergiant
                                                                              field
      2
                         Gujarat Lions
                                               Kolkata Knight Riders
                                                                              field
                                                     Kings XI Punjab
      3
                Rising Pune Supergiant
                                                                              field
      4
           Royal Challengers Bangalore
                                                    Delhi Daredevils
                                                                                bat
                                                                              field
      631
                      Delhi Daredevils
                                         Royal Challengers Bangalore
      632
                         Gujarat Lions
                                         Royal Challengers Bangalore
                                                                              field
      633
                   Sunrisers Hyderabad
                                               Kolkata Knight Riders
                                                                              field
      634
                         Gujarat Lions
                                                 Sunrisers Hyderabad
                                                                              field
      635
                   Sunrisers Hyderabad Royal Challengers Bangalore
                                                                                bat
      [636 rows x 3 columns]
[22]: mask=data['city']=='Hyderabad'
[23]: type(mask)
[23]: pandas.core.series.Series
[24]: data[mask].shape
[24]: (49, 18)
[25]: def get_city_match_count(city):
          mask = data['city'] == city
          return data[mask].shape[0]
     get_city_match_count('Mumbai')
[26]: 85
[27]: mask1 = data['city']>='Ayderabad'
      mask2 = data['date']>'2012-01-01'
[28]: data[mask2].shape
[28]: (388, 18)
[29]: data[mask1].shape
[29]: (610, 18)
[30]: data[mask1&mask2].shape
[30]: (366, 18)
```

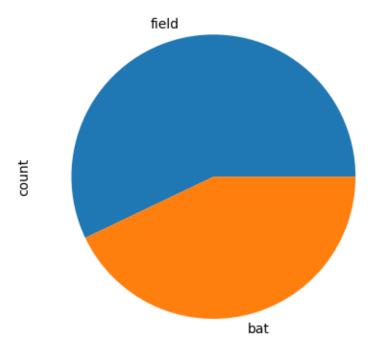
```
[31]: data['winner'].value_counts()
[31]: winner
     Mumbai Indians
                                      92
      Chennai Super Kings
                                      79
      Kolkata Knight Riders
                                      77
      Royal Challengers Bangalore
                                      73
      Kings XI Punjab
                                      70
      Rajasthan Royals
                                      63
      Delhi Daredevils
                                      62
      Sunrisers Hyderabad
                                      42
      Deccan Chargers
                                      29
      Gujarat Lions
                                      13
      Pune Warriors
                                      12
      Rising Pune Supergiant
                                      10
      Kochi Tuskers Kerala
                                       6
      Rising Pune Supergiants
                                       5
      Name: count, dtype: int64
[32]: import matplotlib.pyplot as plt
[33]: data['winner'].value_counts().head().plot(kind='barh')
```





```
[34]: data['toss_decision'].value_counts().plot(kind='pie')
```

[34]: <Axes: ylabel='count'>



[35]: data['win_by_runs'].plot(kind="hist")

[35]: <Axes: ylabel='Frequency'>

```
400 - 300 - 300 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 -
```

```
[36]: myseries=data['winner'].value_counts()
[37]: myseries.index
[37]: Index(['Mumbai Indians', 'Chennai Super Kings', 'Kolkata Knight Riders',
             'Royal Challengers Bangalore', 'Kings XI Punjab', 'Rajasthan Royals',
             'Delhi Daredevils', 'Sunrisers Hyderabad', 'Deccan Chargers',
             'Gujarat Lions', 'Pune Warriors', 'Rising Pune Supergiant',
             'Kochi Tuskers Kerala', 'Rising Pune Supergiants'],
            dtype='object', name='winner')
[38]: myseries.values
[38]: array([92, 79, 77, 73, 70, 63, 62, 42, 29, 13, 12, 10, 6, 5],
            dtype=int64)
[39]:
     myseries.head
[39]: <bound method NDFrame.head of winner
      Mumbai Indians
                                     92
      Chennai Super Kings
                                     79
     Kolkata Knight Riders
                                     77
```

```
70
      Kings XI Punjab
      Rajasthan Royals
                                      63
                                      62
      Delhi Daredevils
      Sunrisers Hyderabad
                                      42
                                      29
      Deccan Chargers
      Gujarat Lions
                                      13
      Pune Warriors
                                      12
      Rising Pune Supergiant
                                      10
      Kochi Tuskers Kerala
                                       6
      Rising Pune Supergiants
                                       5
      Name: count, dtype: int64>
[40]: myseries['Kings XI Punjab']
[40]: 70
[41]: (data['team1'].value_counts()+data['team2'].value_counts()).
       ⇒sort_values(ascending=False)
[41]: Mumbai Indians
                                      157
      Royal Challengers Bangalore
                                      152
      Kings XI Punjab
                                      148
      Kolkata Knight Riders
                                      148
      Delhi Daredevils
                                      147
      Chennai Super Kings
                                      131
      Rajasthan Royals
                                      118
      Sunrisers Hyderabad
                                       76
      Deccan Chargers
                                       75
      Pune Warriors
                                       46
      Gujarat Lions
                                       30
      Rising Pune Supergiant
                                       16
      Kochi Tuskers Kerala
                                       14
      Rising Pune Supergiants
                                       14
      Name: count, dtype: int64
[42]: data
[42]:
            id
                season
                              city
                                          date
                                                                       team1
      0
             1
                  2017
                        Hyderabad
                                    2017-04-05
                                                         Sunrisers Hyderabad
      1
             2
                  2017
                              Pune
                                    2017-04-06
                                                              Mumbai Indians
      2
             3
                  2017
                            Rajkot
                                    2017-04-07
                                                               Gujarat Lions
      3
             4
                  2017
                            Indore
                                    2017-04-08
                                                      Rising Pune Supergiant
      4
             5
                  2017
                        Bangalore
                                    2017-04-08
                                                Royal Challengers Bangalore
                                                            Delhi Daredevils
      631
           632
                  2016
                            Raipur
                                    2016-05-22
      632
           633
                  2016
                        Bangalore
                                    2016-05-24
                                                               Gujarat Lions
```

73

Royal Challengers Bangalore

```
633
     634
            2016
                       Delhi
                              2016-05-25
                                                    Sunrisers Hyderabad
634
     635
            2016
                       Delhi
                              2016-05-27
                                                          Gujarat Lions
635
     636
            2016
                  Bangalore
                              2016-05-29
                                                    Sunrisers Hyderabad
                            team2
                                                     toss_winner toss_decision
                                    Royal Challengers Bangalore
0
     Royal Challengers Bangalore
                                                                          field
1
          Rising Pune Supergiant
                                         Rising Pune Supergiant
                                                                          field
2
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                          field
3
                 Kings XI Punjab
                                                Kings XI Punjab
                                                                          field
4
                 Delhi Daredevils
                                    Royal Challengers Bangalore
                                                                            bat
. .
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                          field
631
632
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                          field
633
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                          field
634
             Sunrisers Hyderabad
                                            Sunrisers Hyderabad
                                                                          field
     Royal Challengers Bangalore
635
                                            Sunrisers Hyderabad
                                                                            bat
     result
             dl_applied
                                                winner
                                                         win_by_runs
0
     normal
                                   Sunrisers Hyderabad
                                                                   35
1
     normal
                       0
                               Rising Pune Supergiant
                                                                    0
2
                       0
     normal
                                Kolkata Knight Riders
                                                                    0
                                       Kings XI Punjab
3
                       0
                                                                    0
     normal
4
                       0
                          Royal Challengers Bangalore
     normal
                                                                   15
. .
631
                          Royal Challengers Bangalore
                                                                    0
    normal
632
    normal
                          Royal Challengers Bangalore
                                                                    0
    normal
633
                       0
                                   Sunrisers Hyderabad
                                                                   22
634
    normal
                       0
                                   Sunrisers Hyderabad
                                                                    0
635
    normal
                       0
                                   Sunrisers Hyderabad
                                                                    8
     win_by_wickets player_of_match
0
                   0
                        Yuvraj Singh
                  7
1
                           SPD Smith
2
                  10
                             CA Lynn
3
                   6
                          GJ Maxwell
4
                   0
                           KM Jadhav
                   6
                             V Kohli
631
632
                   4
                      AB de Villiers
                   0
                        MC Henriques
633
634
                   4
                           DA Warner
635
                   0
                         BCJ Cutting
                                                                   umpire1
                                                   venue
0
            Rajiv Gandhi International Stadium, Uppal
                                                              AY Dandekar
              Maharashtra Cricket Association Stadium
1
                                                           A Nand Kishore
               Saurashtra Cricket Association Stadium
2
                                                              Nitin Menon
```

```
3
                                                             AK Chaudhary
                                Holkar Cricket Stadium
4
                                 M Chinnaswamy Stadium
                                                                       NaN
     Shaheed Veer Narayan Singh International Stadium
631
                                                           A Nand Kishore
632
                                 M Chinnaswamy Stadium
                                                             AK Chaudhary
633
                                       Feroz Shah Kotla
                                                                M Erasmus
634
                                       Feroz Shah Kotla
                                                                M Erasmus
635
                                 M Chinnaswamy Stadium
                                                          HDPK Dharmasena
             umpire2
                       umpire3
0
            NJ Llong
                           NaN
1
              S Ravi
                           NaN
2
           CK Nandan
                           NaN
3
       C Shamshuddin
                           NaN
4
                 NaN
                           NaN
631
        BNJ Oxenford
                           NaN
632
     HDPK Dharmasena
                           NaN
633
       C Shamshuddin
                           NaN
634
           CK Nandan
                           NaN
635
        BNJ Oxenford
                           NaN
[636 rows x 18 columns]
```

[43]: data.sort_values('city')

[43]:		id	season	city	date		t	eam1 \	
	460	461	2014	Abu Dhabi	2014-04-18	Sun	risers Hyder	abad	
	471	472	2014	Abu Dhabi	2014-04-26		Kings XI Pu	njab	
	470	471	2014	Abu Dhabi	2014-04-26	Royal Chall	engers Banga	lore	
	464	465	2014	Abu Dhabi	2014-04-21	Che	nnai Super K	ings	
	459	460	2014	Abu Dhabi	2014-04-18	Che	nnai Super K	ings	
		•••		•••	•••		•••		
	466	467	2014	NaN	2014-04-23	Che	nnai Super K	ings	
	468	469	2014	NaN	2014-04-25	Sun	risers Hyder	abad	
	469	470	2014	NaN	2014-04-25		Mumbai Ind	ians	
	474	475	2014	NaN	2014-04-28	Royal Chall	engers Banga	lore	
	476	477	2014	NaN	2014-04-30	Sun	risers Hyder	abad	
				team2	to	ss_winner to	ss_decision	result	\
	460		Rajasth	an Royals	Rajasth	an Royals	field	normal	
	471	Kolk	ata Knig	ht Riders	Kolkata Knig	ht Riders	field	normal	
	470		Rajasth	an Royals	Rajasth	an Royals	field	normal	
	464		Delhi D	aredevils	Chennai Su	per Kings	bat	normal	
	459		Kings	XI Punjab	Chennai Su	per Kings	bat	normal	
				•••		•••			
	466		Rajasth	an Royals	Rajasth	an Royals	field	normal	

```
468
          Delhi Daredevils
                                Sunrisers Hyderabad
                                                                     normal
                                                                bat
469
                                     Mumbai Indians
       Chennai Super Kings
                                                                bat
                                                                     normal
474
           Kings XI Punjab
                                    Kings XI Punjab
                                                              field
                                                                     normal
476
            Mumbai Indians
                                     Mumbai Indians
                                                              field
                                                                     normal
     dl_applied
                                winner
                                        win_by_runs
                                                      win_by_wickets
                     Rajasthan Royals
460
               0
                                                   0
               0
                                                                    0
471
                      Kings XI Punjab
                                                  23
470
               0
                                                                     6
                     Rajasthan Royals
                                                   0
464
               0
                  Chennai Super Kings
                                                  93
                                                                     0
459
               0
                      Kings XI Punjab
                                                                     6
. .
466
               0
                  Chennai Super Kings
                                                   7
                                                                     0
468
               0
                  Sunrisers Hyderabad
                                                   4
                                                                     0
469
                                                                     7
               0
                  Chennai Super Kings
                                                   0
474
               0
                      Kings XI Punjab
                                                   0
                                                                     5
476
                  Sunrisers Hyderabad
                                                  15
    player_of_match
                                                                       umpire1
                                                      venue
460
          AM Rahane
                                      Sheikh Zayed Stadium
                                                                     BF Bowden
471
     Sandeep Sharma
                                      Sheikh Zayed Stadium
                                                              HDPK Dharmasena
                                                              HDPK Dharmasena
470
           PV Tambe
                                      Sheikh Zayed Stadium
464
           SK Raina
                                      Sheikh Zayed Stadium
                                                               RK Illingworth
459
                                      Sheikh Zayed Stadium
         GJ Maxwell
                                                               RK Illingworth
. .
466
          RA Jadeja
                      Dubai International Cricket Stadium
                                                              HDPK Dharmasena
           AJ Finch
468
                      Dubai International Cricket Stadium
                                                                    M Erasmus
469
          MM Sharma
                      Dubai International Cricket Stadium
                                                                    BF Bowden
474
     Sandeep Sharma
                      Dubai International Cricket Stadium
                                                                     BF Bowden
476
                      Dubai International Cricket Stadium
            B Kumar
                                                              HDPK Dharmasena
            umpire2
                      umpire3
460
     RK Illingworth
                          NaN
471
     RK Illingworth
                          NaN
470
      C Shamshuddin
                          NaN
464
      C Shamshuddin
                          NaN
459
      C Shamshuddin
                          NaN
. .
466
     RK Illingworth
                          NaN
468
             S Ravi
                          NaN
469
          M Erasmus
                          NaN
474
             S Ravi
                          NaN
476
          M Erasmus
                          NaN
```

[636 rows x 18 columns]

```
[44]: data.sort_values('city',ascending=False)
```

```
[44]:
            id
                 season
                                   city
                                                date
                                                                              team1
      312
           313
                   2012
                         Visakhapatnam
                                         2012-04-07
                                                               Chennai Super Kings
                                                                    Mumbai Indians
      622
           623
                         Visakhapatnam
                                         2016-05-15
                   2016
      615
           616
                   2016
                         Visakhapatnam
                                         2016-05-10
                                                               Sunrisers Hyderabad
                                         2016-05-08
                                                               Sunrisers Hyderabad
      612
           613
                   2016
                         Visakhapatnam
      624
           625
                   2016
                         Visakhapatnam
                                                                  Delhi Daredevils
                                         2016-05-17
      . .
                                         2014-04-23
      466
           467
                   2014
                                    NaN
                                                               Chennai Super Kings
      468
           469
                   2014
                                    NaN
                                         2014-04-25
                                                               Sunrisers Hyderabad
      469
           470
                   2014
                                    NaN
                                         2014-04-25
                                                                    Mumbai Indians
           475
      474
                   2014
                                    NaN
                                         2014-04-28
                                                      Royal Challengers Bangalore
      476
           477
                                         2014-04-30
                                                               Sunrisers Hyderabad
                   2014
                                    NaN
                               team2
                                                   toss_winner toss_decision
                                                                                result
      312
                    Deccan Chargers
                                               Deccan Chargers
                                                                         field
                                                                                normal
      622
                   Delhi Daredevils
                                              Delhi Daredevils
                                                                         field
                                                                                normal
      615
           Rising Pune Supergiants
                                           Sunrisers Hyderabad
                                                                           bat
                                                                                normal
      612
                     Mumbai Indians
                                                Mumbai Indians
                                                                         field normal
           Rising Pune Supergiants
                                      Rising Pune Supergiants
                                                                         field
                                                                                normal
      624
                                                                         field
      466
                   Rajasthan Royals
                                              Rajasthan Royals
                                                                                normal
      468
                   Delhi Daredevils
                                          Sunrisers Hyderabad
                                                                           bat
                                                                                normal
      469
                Chennai Super Kings
                                                Mumbai Indians
                                                                           bat
                                                                                normal
      474
                    Kings XI Punjab
                                               Kings XI Punjab
                                                                         field
                                                                                normal
      476
                     Mumbai Indians
                                                Mumbai Indians
                                                                         field normal
            dl_applied
                                                   win_by_runs
                                                                 win_by_wickets
                                           winner
      312
                     0
                             Chennai Super Kings
                                                             74
                                                                               0
      622
                     0
                                  Mumbai Indians
                                                             80
                                                                               0
      615
                     0
                             Sunrisers Hyderabad
                                                              4
                                                                               0
      612
                     0
                             Sunrisers Hyderabad
                                                                               0
                                                             85
      624
                     1
                        Rising Pune Supergiants
                                                                               0
                                                             19
      466
                     0
                             Chennai Super Kings
                                                              7
                                                                               0
                             Sunrisers Hyderabad
                                                                               0
      468
                     0
                                                              4
                                                                               7
      469
                     0
                             Chennai Super Kings
                                                              0
                                 Kings XI Punjab
                                                                               5
      474
                     0
                                                              0
      476
                             Sunrisers Hyderabad
                                                                               0
                                                             15
          player_of_match
                                                                            venue
      312
                             Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket St...
                 RA Jadeja
                             Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket St...
      622
                 KH Pandya
      615
                             Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket St...
                   A Zampa
                             Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket St...
      612
                   A Nehra
                             Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket St...
      624
                  AB Dinda
                                            Dubai International Cricket Stadium
      466
                 RA Jadeja
```

```
469
                 MM Sharma
                                           Dubai International Cricket Stadium
      474
           Sandeep Sharma
                                           Dubai International Cricket Stadium
      476
                   B Kumar
                                           Dubai International Cricket Stadium
                    umpire1
                                      umpire2
                                               umpire3
                             HDPK Dharmasena
                  JD Cloete
      312
                                                    NaN
      622
               Nitin Menon
                                    CK Nandan
                                                    NaN
      615
                                    VK Sharma
               CB Gaffaney
                                                    NaN
      612
                     S Ravi
                                C Shamshuddin
                                                    NaN
      624
                                C Shamshuddin
               Nitin Menon
                                                    NaN
      466
           HDPK Dharmasena
                              RK Illingworth
                                                    NaN
      468
                  M Erasmus
                                       S Ravi
                                                    NaN
      469
                  BF Bowden
                                    M Erasmus
                                                    NaN
      474
                  BF Bowden
                                       S Ravi
                                                    NaN
      476
           HDPK Dharmasena
                                    M Erasmus
                                                    NaN
      [636 rows x 18 columns]
[45]: data = pd.read_csv('matches - matches.csv')
[46]: data.sort_values(['city','date'],ascending=[True,False])
[46]:
                season
                                           date
                                                                         team1
            id
                               city
      475
           476
                   2014
                         Abu Dhabi
                                     2014-04-29
                                                              Rajasthan Royals
      470
           471
                   2014
                         Abu Dhabi
                                                  Royal Challengers Bangalore
                                     2014-04-26
      471
           472
                   2014
                         Abu Dhabi
                                     2014-04-26
                                                               Kings XI Punjab
      464
           465
                   2014
                         Abu Dhabi
                                     2014-04-21
                                                          Chennai Super Kings
                                     2014-04-18
      459
           460
                   2014
                         Abu Dhabi
                                                          Chennai Super Kings
      468
           469
                   2014
                               NaN
                                     2014-04-25
                                                          Sunrisers Hyderabad
      469
           470
                   2014
                                     2014-04-25
                                                                Mumbai Indians
                                NaN
      466
           467
                   2014
                                NaN
                                     2014-04-23
                                                          Chennai Super Kings
      461
           462
                   2014
                                NaN
                                     2014-04-19
                                                                Mumbai Indians
      462
           463
                   2014
                                NaN
                                     2014-04-19
                                                        Kolkata Knight Riders
                                   team2
                                                           toss_winner toss_decision
      475
                  Kolkata Knight Riders
                                                      Rajasthan Royals
                                                                                   bat
      470
                       Rajasthan Royals
                                                      Rajasthan Royals
                                                                                 field
      471
                  Kolkata Knight Riders
                                                 Kolkata Knight Riders
                                                                                 field
      464
                       Delhi Daredevils
                                                   Chennai Super Kings
                                                                                   bat
      459
                        Kings XI Punjab
                                                   Chennai Super Kings
                                                                                   bat
      . .
                       Delhi Daredevils
      468
                                                   Sunrisers Hyderabad
                                                                                   bat
      469
                    Chennai Super Kings
                                                        Mumbai Indians
                                                                                   bat
      466
                       Rajasthan Royals
                                                      Rajasthan Royals
                                                                                 field
```

Dubai International Cricket Stadium

468

AJ Finch

```
461
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                          field
462
                 Delhi Daredevils
                                          Kolkata Knight Riders
                                                                            bat
     result
             dl_applied
                                                 winner
                                                         win_by_runs
475
                                      Rajasthan Royals
        tie
                                                                    0
470
    normal
                       0
                                      Rajasthan Royals
                                                                    0
471
    normal
                       0
                                       Kings XI Punjab
                                                                   23
464
     normal
                       0
                                   Chennai Super Kings
                                                                   93
459
    normal
                       0
                                       Kings XI Punjab
                                                                    0
. .
                                   Sunrisers Hyderabad
468
    normal
                       0
                                                                    4
469
    normal
                       0
                                   Chennai Super Kings
                                                                    0
466
    normal
                       0
                                   Chennai Super Kings
                                                                    7
461
    normal
                       0
                          Royal Challengers Bangalore
                                                                    0
                                      Delhi Daredevils
462
     normal
                                                                    0
     win_by_wickets player_of_match
                                                                       venue
475
                   0
                         JP Faulkner
                                                       Sheikh Zayed Stadium
470
                            PV Tambe
                   6
                                                       Sheikh Zayed Stadium
471
                   0
                      Sandeep Sharma
                                                       Sheikh Zayed Stadium
464
                   0
                            SK Raina
                                                       Sheikh Zayed Stadium
459
                   6
                          GJ Maxwell
                                                       Sheikh Zayed Stadium
468
                   0
                            AJ Finch
                                       Dubai International Cricket Stadium
469
                   7
                           MM Sharma
                                       Dubai International Cricket Stadium
466
                   0
                           RA Jadeja Dubai International Cricket Stadium
                   7
                            PA Patel
461
                                       Dubai International Cricket Stadium
462
                   4
                           JP Duminy
                                       Dubai International Cricket Stadium
                              umpire2
                                        umpire3
             umpire1
475
           Aleem Dar
                         AK Chaudhary
                                            NaN
470
     HDPK Dharmasena
                        C Shamshuddin
                                            NaN
471
     HDPK Dharmasena
                       RK Illingworth
                                            NaN
464
      RK Illingworth
                        C Shamshuddin
                                            NaN
459
                        C Shamshuddin
                                            NaN
      RK Illingworth
. .
           M Erasmus
468
                                S Ravi
                                            NaN
469
           BF Bowden
                            M Erasmus
                                            NaN
466
     HDPK Dharmasena
                       RK Illingworth
                                            NaN
461
           Aleem Dar
                         AK Chaudhary
                                            NaN
462
           Aleem Dar
                          VA Kulkarni
                                            NaN
```

[636 rows x 18 columns]

[47]: data

```
[47]:
            id
                season
                                           date
                                                                          team1
                               city
                                                          Sunrisers Hyderabad
      0
              1
                   2017
                         Hyderabad
                                     2017-04-05
      1
             2
                   2017
                               Pune
                                     2017-04-06
                                                                Mumbai Indians
      2
              3
                   2017
                            Rajkot
                                     2017-04-07
                                                                 Gujarat Lions
      3
                            Indore
                                     2017-04-08
                                                       Rising Pune Supergiant
              4
                   2017
      4
             5
                   2017
                         Bangalore
                                     2017-04-08
                                                  Royal Challengers Bangalore
      . .
      631
           632
                   2016
                            Raipur
                                     2016-05-22
                                                              Delhi Daredevils
      632
           633
                                     2016-05-24
                   2016
                         Bangalore
                                                                 Gujarat Lions
      633
           634
                   2016
                             Delhi
                                     2016-05-25
                                                          Sunrisers Hyderabad
      634
           635
                   2016
                             Delhi
                                     2016-05-27
                                                                 Gujarat Lions
      635
           636
                         Bangalore
                                     2016-05-29
                                                           Sunrisers Hyderabad
                   2016
                                                            toss_winner toss_decision
                                   team2
      0
                                          Royal Challengers Bangalore
           Royal Challengers Bangalore
                                                                                 field
      1
                 Rising Pune Supergiant
                                                Rising Pune Supergiant
                                                                                 field
      2
                  Kolkata Knight Riders
                                                 Kolkata Knight Riders
                                                                                 field
      3
                        Kings XI Punjab
                                                       Kings XI Punjab
                                                                                 field
      4
                       Delhi Daredevils
                                          Royal Challengers Bangalore
                                                                                   bat
      631
           Royal Challengers Bangalore
                                          Royal Challengers Bangalore
                                                                                 field
           Royal Challengers Bangalore
                                          Royal Challengers Bangalore
                                                                                 field
      632
                  Kolkata Knight Riders
      633
                                                 Kolkata Knight Riders
                                                                                 field
      634
                    Sunrisers Hyderabad
                                                   Sunrisers Hyderabad
                                                                                 field
      635
           Royal Challengers Bangalore
                                                   Sunrisers Hyderabad
                                                                                   bat
                    dl_applied
                                                                win_by_runs
           result
                                                       winner
      0
                             0
                                         Sunrisers Hyderabad
                                                                          35
           normal
      1
                             0
           normal
                                      Rising Pune Supergiant
                                                                           0
      2
           normal
                              0
                                       Kolkata Knight Riders
                                                                           0
      3
           normal
                                              Kings XI Punjab
                                                                           0
      4
           normal
                              0
                                 Royal Challengers Bangalore
                                                                          15
      . .
          normal
                                 Royal Challengers Bangalore
                                                                           0
      631
                             0
      632
           normal
                                 Royal Challengers Bangalore
                                                                           0
           normal
                                         Sunrisers Hyderabad
      633
                             0
                                                                          22
      634
           normal
                                         Sunrisers Hyderabad
                                                                           0
      635
           normal
                              0
                                         Sunrisers Hyderabad
                                                                           8
           win_by_wickets player_of_match
      0
                               Yuvraj Singh
                         0
                         7
      1
                                  SPD Smith
      2
                        10
                                    CA Lynn
      3
                         6
                                 GJ Maxwell
                                  KM Jadhav
      4
                         0
      . .
      631
                         6
                                    V Kohli
```

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632
                            AB de Villiers
      633
                         0
                               MC Henriques
      634
                         4
                                  DA Warner
                         0
      635
                                BCJ Cutting
                                                                         umpire1
                                                         venue
      0
                   Rajiv Gandhi International Stadium, Uppal
                                                                     AY Dandekar
      1
                     Maharashtra Cricket Association Stadium
                                                                  A Nand Kishore
      2
                      Saurashtra Cricket Association Stadium
                                                                     Nitin Menon
      3
                                       Holkar Cricket Stadium
                                                                    AK Chaudhary
      4
                                        M Chinnaswamy Stadium
                                                                              NaN
      631
           Shaheed Veer Narayan Singh International Stadium
                                                                  A Nand Kishore
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                                        M Chinnaswamy Stadium
                                                                    AK Chaudhary
      633
                                              Feroz Shah Kotla
                                                                       M Erasmus
      634
                                              Feroz Shah Kotla
                                                                       M Erasmus
      635
                                        M Chinnaswamy Stadium
                                                                 HDPK Dharmasena
                    umpire2
                             umpire3
      0
                   NJ Llong
                                  NaN
                     S Ravi
                                  NaN
      1
      2
                  CK Nandan
                                  NaN
      3
             C Shamshuddin
                                  NaN
      4
                                  NaN
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              BNJ Oxenford
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                                           date
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                   2017
                         Hyderabad
                                     2017-04-05
                                                    Sunrisers Hyderabad
      59
            60
                   2008
                         Bangalore
                                     2008-04-18
                                                  Kolkata Knight Riders
      117
           118
                   2009
                         Cape Town
                                     2009-04-18
                                                         Mumbai Indians
      174
           175
                   2010
                            Mumbai
                                     2010-03-12
                                                  Kolkata Knight Riders
      234
           235
                   2011
                           Chennai
                                     2011-04-08
                                                    Chennai Super Kings
      307
           308
                   2012
                           Chennai
                                     2012-04-04
                                                    Chennai Super Kings
      381
           382
                   2013
                           Kolkata 2013-04-03
                                                       Delhi Daredevils
```

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457
     458
            2014
                   Abu Dhabi
                               2014-04-16
                                           Kolkata Knight Riders
                               2015-04-08
                                                   Mumbai Indians
517
     518
             2015
                     Kolkata
576
     577
             2016
                      Mumbai
                               2016-04-09
                                                   Mumbai Indians
                                                     toss_winner toss_decision
                             team2
0
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                           field
59
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                           field
117
             Chennai Super Kings
                                             Chennai Super Kings
                                                                           field
174
                  Deccan Chargers
                                                 Deccan Chargers
                                                                           field
234
           Kolkata Knight Riders
                                             Chennai Super Kings
                                                                             bat
307
                   Mumbai Indians
                                                  Mumbai Indians
                                                                           field
381
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                           field
457
                   Mumbai Indians
                                          Kolkata Knight Riders
                                                                             bat
517
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                           field
                                                  Mumbai Indians
576
         Rising Pune Supergiants
                                                                             bat
     result
             dl_applied
                                                     win_by_runs
                                                                   win_by_wickets
                                             winner
0
     normal
                               Sunrisers Hyderabad
                                                               35
59
                       0
                                                                                 0
     normal
                            Kolkata Knight Riders
                                                              140
117
     normal
                       0
                                    Mumbai Indians
                                                               19
                                                                                 0
                       0
                                                                                 0
174
     normal
                            Kolkata Knight Riders
                                                               11
234
                       0
                                                                2
                                                                                 0
     normal
                               Chennai Super Kings
307
     normal
                       0
                                    Mumbai Indians
                                                                0
                                                                                 8
     normal
                       0
                            Kolkata Knight Riders
                                                                0
                                                                                 6
381
457
     normal
                       0
                            Kolkata Knight Riders
                                                                                 0
                                                               41
517
     normal
                            Kolkata Knight Riders
                                                                0
                                                                                 7
576
    normal
                          Rising Pune Supergiants
                                                                0
                                                                                 9
    player_of_match
                                                             venue
0
       Yuvraj Singh
                      Rajiv Gandhi International Stadium, Uppal
59
        BB McCullum
                                            M Chinnaswamy Stadium
117
       SR Tendulkar
                                                          Newlands
174
         AD Mathews
                                      Dr DY Patil Sports Academy
234
         S Anirudha
                                 MA Chidambaram Stadium, Chepauk
307
             RE Levi
                                 MA Chidambaram Stadium, Chepauk
381
          SP Narine
                                                     Eden Gardens
          JH Kallis
457
                                            Sheikh Zayed Stadium
517
           M Morkel
                                                     Eden Gardens
576
          AM Rahane
                                                 Wankhede Stadium
             umpire1
                               umpire2
                                        umpire3
0
         AY Dandekar
                              NJ Llong
                                             NaN
59
           Asad Rauf
                          RE Koertzen
                                            NaN
117
         BR Doctrove
                          K Hariharan
                                            NaN
174
         RE Koertzen
                            RB Tiffin
                                            NaN
234
                           PR Reiffel
         BR Doctrove
                                            NaN
307
            JD Cloete
                           SJA Taufel
                                            NaN
```

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381
                     S Ravi
                                  SJA Taufel
                                                   NaN
      457
                  M Erasmus
                             RK Illingworth
                                                   NaN
                     S Ravi
      517
                              C Shamshuddin
                                                   NaN
                                   CK Nandan
      576
           HDPK Dharmasena
                                                   NaN
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[51]: mas[['season', 'winner']].sort_values('season')
[51]:
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           season
                         Rajasthan Royals
      116
              2008
      173
              2009
                          Deccan Chargers
      233
             2010
                      Chennai Super Kings
      306
             2011
                      Chennai Super Kings
      380
             2012
                    Kolkata Knight Riders
      456
             2013
                           Mumbai Indians
      516
             2014
                    Kolkata Knight Riders
      575
              2015
                           Mumbai Indians
      635
              2016
                      Sunrisers Hyderabad
      58
              2017
                           Mumbai Indians
[52]:
     data
[52]:
                season
                                                                         team1
                                                                                 \
            id
                              city
                                           date
      0
              1
                   2017
                         Hyderabad
                                     2017-04-05
                                                          Sunrisers Hyderabad
      1
              2
                   2017
                              Pune
                                     2017-04-06
                                                                Mumbai Indians
      2
              3
                   2017
                            Rajkot
                                     2017-04-07
                                                                 Gujarat Lions
      3
                   2017
                            Indore
                                     2017-04-08
                                                       Rising Pune Supergiant
                   2017
                                                  Royal Challengers Bangalore
      4
             5
                         Bangalore
                                     2017-04-08
                   2016
                                                             Delhi Daredevils
      631
           632
                            Raipur
                                     2016-05-22
      632
           633
                   2016
                         Bangalore
                                     2016-05-24
                                                                 Gujarat Lions
      633
           634
                   2016
                             Delhi
                                                          Sunrisers Hyderabad
                                     2016-05-25
      634
           635
                   2016
                             Delhi
                                     2016-05-27
                                                                 Gujarat Lions
      635
           636
                   2016
                         Bangalore
                                     2016-05-29
                                                          Sunrisers Hyderabad
                                                           toss_winner toss_decision
                                   team2
      0
           Royal Challengers Bangalore
                                          Royal Challengers Bangalore
                                                                                 field
      1
                 Rising Pune Supergiant
                                                Rising Pune Supergiant
                                                                                 field
      2
                  Kolkata Knight Riders
                                                 Kolkata Knight Riders
                                                                                 field
      3
                        Kings XI Punjab
                                                       Kings XI Punjab
                                                                                 field
      4
                       Delhi Daredevils
                                          Royal Challengers Bangalore
                                                                                   bat
           Royal Challengers Bangalore
                                          Royal Challengers Bangalore
                                                                                 field
      631
      632
           Royal Challengers Bangalore
                                          Royal Challengers Bangalore
                                                                                 field
      633
                  Kolkata Knight Riders
                                                 Kolkata Knight Riders
                                                                                 field
                    Sunrisers Hyderabad
                                                   Sunrisers Hyderabad
      634
                                                                                 field
```

635	Royal Challengers E	Sangalore Sunrisers Hy	/derabad	bat
0 1 2 3 4 631 632 633 634	result dl_applied normal 0	winner Sunrisers Hyderabad Rising Pune Supergiant Kolkata Knight Riders Kings XI Punjab Royal Challengers Bangalore Royal Challengers Bangalore Royal Challengers Bangalore Sunrisers Hyderabad Sunrisers Hyderabad	win_by_runs \	
635	normal 0	Sunrisers Hyderabad	8	
0 1 2 3 4 631 632 633 634 635	7 10 6 0 6 4 AB	Ver_of_match \ Vuvraj Singh SPD Smith CA Lynn GJ Maxwell KM Jadhav V Kohli de Villiers IC Henriques DA Warner BCJ Cutting		
0 1 2 3 4 631 632 633 634 635	Maharashtr Saurashtr	venue International Stadium, Uppal Ta Cricket Association Stadium Ta Cricket Association Stadium Holkar Cricket Stadium M Chinnaswamy Stadium In Singh International Stadium M Chinnaswamy Stadium Feroz Shah Kotla Feroz Shah Kotla M Chinnaswamy Stadium	M Erasmus M Erasmus	
0 1 2 3 4	umpire2 un NJ Llong S Ravi CK Nandan C Shamshuddin NaN	npire3 NaN NaN NaN NaN NaN		

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632
          HDPK Dharmasena
                                 NaN
      633
             C Shamshuddin
                                 NaN
      634
                 CK Nandan
                                 NaN
      635
              BNJ Oxenford
                                 NaN
      [636 rows x 18 columns]
[53]: a=data.groupby('venue')
[54]: len(a)
[54]: 35
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[55]: venue
      OUTsurance Oval
                                                                 2
      Buffalo Park
                                                                 3
      De Beers Diamond Oval
                                                                 3
      Vidarbha Cricket Association Stadium, Jamtha
                                                                 3
      Green Park
                                                                 4
      Nehru Stadium
                                                                 5
                                                                 5
      Holkar Cricket Stadium
      Sharjah Cricket Stadium
                                                                 6
      Shaheed Veer Narayan Singh International Stadium
                                                                 6
      St George's Park
                                                                 7
      Sheikh Zayed Stadium
                                                                 7
      Newlands
                                                                 7
      Barabati Stadium
                                                                 7
      Dubai International Cricket Stadium
                                                                 7
                                                                 7
      JSCA International Stadium Complex
      New Wanderers Stadium
                                                                 8
      Himachal Pradesh Cricket Association Stadium
                                                                 9
      Saurashtra Cricket Association Stadium
                                                                10
      Punjab Cricket Association IS Bindra Stadium, Mohali
                                                                11
      Brabourne Stadium
                                                                11
      Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket Stadium
                                                                11
      SuperSport Park
                                                                12
      Sardar Patel Stadium, Motera
                                                                12
      Kingsmead
                                                                15
      Maharashtra Cricket Association Stadium
                                                                15
      Subrata Roy Sahara Stadium
                                                                17
      Dr DY Patil Sports Academy
                                                                17
      Sawai Mansingh Stadium
                                                                33
      Punjab Cricket Association Stadium, Mohali
                                                                35
```

631

BNJ Oxenford

NaN

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MA Chidambaram Stadium, Chepauk
                                                                48
      Rajiv Gandhi International Stadium, Uppal
                                                                49
      Wankhede Stadium
                                                                57
      Feroz Shah Kotla
                                                                60
      Eden Gardens
                                                                61
      M Chinnaswamy Stadium
                                                                66
      dtype: int64
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[57]: data[mask]
[57]:
            id
                season
                          city
                                      date
                                                            team1
                                            Kochi Tuskers Kerala
           237
                  2011
                        Kochi
                                2011-04-09
      236
                                2011-04-18
                                             Chennai Super Kings
      251
           252
                  2011 Kochi
      264
           265
                  2011 Kochi
                                2011-04-27
                                                  Deccan Chargers
      268
           269
                  2011
                                2011-04-30
                                                Delhi Daredevils
                        Kochi
                  2011
                                2011-05-05
      277
           278
                        Kochi
                                            Kochi Tuskers Kerala
                                                    toss_winner toss_decision result
      236
           Royal Challengers Bangalore
                                          Kochi Tuskers Kerala
                                                                           bat
                                                                               normal
      251
                  Kochi Tuskers Kerala
                                          Kochi Tuskers Kerala
                                                                        field normal
      264
                  Kochi Tuskers Kerala
                                          Kochi Tuskers Kerala
                                                                        field
                                                                               normal
      268
                  Kochi Tuskers Kerala
                                              Delhi Daredevils
                                                                           bat normal
                 Kolkata Knight Riders Kolkata Knight Riders
      277
                                                                        field normal
           dl applied
                                             winner win_by_runs
                                                                   win by wickets
      236
                       Royal Challengers Bangalore
                                                                                 6
                                                                                 7
      251
                    1
                               Kochi Tuskers Kerala
                                                                0
                                    Deccan Chargers
      264
                    0
                                                               55
                                                                                 0
      268
                    0
                                   Delhi Daredevils
                                                               38
                                                                                 0
      277
                    0
                               Kochi Tuskers Kerala
                                                               17
                                                                                 0
          player_of_match
                                    venue
                                                   umpire1
                                                                 umpire2
                                                                          umpire3
          AB de Villiers
      236
                            Nehru Stadium
                                           HDPK Dharmasena
                                                             K Hariharan
                                                                               NaN
      251
              BB McCullum
                            Nehru Stadium
                                               K Hariharan
                                                                 AL Hill
                                                                               NaN
                                           HDPK Dharmasena
                                                                 AL Hill
      264
                 I Sharma
                            Nehru Stadium
                                                                               NaN
      268
                 V Sehwag
                           Nehru Stadium
                                          HDPK Dharmasena
                                                                 AL Hill
                                                                               NaN
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                 BJ Hodge
                           Nehru Stadium
                                                     S Ravi
                                                               RJ Tucker
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[59]:	<box< th=""><th></th><th>thod Dat</th><th>aFrame.m</th><th>ean of</th><th>id season</th><th>city</th><th>date</th><th></th></box<>		thod Dat	aFrame.m	ean of	id season	city	date	
	team 6	1 \ 7	2017	Mumbai	2017-04-09	Vollrots	Vnich+	Didora	
	9	10	2017	Mumbai	2017-04-09		a Knight : isers Hyd		
	<i>3</i> 15	16	2017	Mumbai		Suiii	Gujarat		
	23	24	2017	Mumbai	2017-04-10		Mumbai I		
	23 27	28	2017	Mumbai	2017-04-22	Riging I	Pune Supe		
	36	37	2017	Mumbai	2017-05-01	Royal Challer	_	•	
	49	50	2017	Mumbai	2017-05-11	•	Kings XI	~	
	55	56	2017	Mumbai	2017-05-16		oune Supe	•	
	62	63	2008	Mumbai	2008-04-20	itibing i	Mumbai I	•	
	95	96	2008	Mumbai	2008-05-14	Chenr	nambar r nai Super		
	98	99	2008	Mumbai	2008-05-16		a Knight	-	
	105	106	2008	Mumbai	2008-05-21		Kings XI		
	114	115	2008	Mumbai	2008-05-30		ajasthan i	•	
	115	116	2008	Mumbai	2008-05-31		Kings XI	•	
	246	247	2011	Mumbai	2011-04-15	•	Mumbai I	-	
	253	254	2011	Mumbai	2011-04-20		Pune Wa		
	256	257	2011	Mumbai	2011-04-22		Mumbai I		
	272	273	2011	Mumbai	2011-05-02		Mumbai I		
	281	282	2011	Mumbai	2011-05-07		Mumbai I		
	291	292	2011	Mumbai	2011-05-14	Ι	Deccan Ch		
	298	299	2011	Mumbai	2011-05-20	_	Mumbai I	•	
	303	304	2011	Mumbai		Royal Challer			
	304	305	2011	Mumbai	2011-05-25	*	a Knight :	_	
	309	310	2012	Mumbai	2012-04-06		Pune Wa		
	318	319	2012	Mumbai	2012-04-11		Mumbai I	ndians	
	326	327	2012	Mumbai	2012-04-16		Mumbai I	ndians	
	335	336	2012	Mumbai	2012-04-22		Mumbai I	ndians	
	345	346	2012	Mumbai	2012-04-29	Ι	Deccan Ch	argers	
	354	355	2012	Mumbai	2012-05-06	Chenr	nai Super	Kings	
	359	360	2012	Mumbai	2012-05-09		Mumbai I	ndians	
	369	370	2012	Mumbai	2012-05-16	Kolkata	a Knight	Riders	
	389	390	2013	Mumbai	2013-04-09		Mumbai I	ndians	
	394	395	2013	Mumbai	2013-04-13		Mumbai I	ndians	
	416	417	2013	Mumbai	2013-04-27		Mumbai I	ndians	
	420	421	2013	Mumbai	2013-04-29		Mumbai I	ndians	
	429	430	2013	Mumbai	2013-05-05		Mumbai I	ndians	
	433	434	2013	Mumbai	2013-05-07		Mumbai I	ndians	
	443	444	2013	Mumbai	2013-05-13	Sunri	isers Hyd	erabad	
	446	447	2013	Mumbai	2013-05-15		Mumbai I	ndians	
	478	479	2014	Mumbai	2014-05-03	ŀ	Kings XI	Punjab	

483	484 2014	Mumbai	2014-05-06	Mumbai Indi	ans
489	490 2014	Mumbai	2014-05-10	Mumbai Indi	ans
507	508 2014	Mumbai	2014-05-23	Mumbai Indi	ans
512	513 2014	Mumbai	2014-05-25	Rajasthan Roy	rals
515	516 2014	Mumbai	2014-05-30	Kings XI Pur	ıjab
523	524 2015	Mumbai	2015-04-12	Kings XI Pur	ıjab
529	530 2015	Mumbai	2015-04-17	Mumbai Indi	ans
540	541 2015	Mumbai	2015-04-25	Mumbai Indi	ans
548	549 2015	Mumbai	2015-05-01	Mumbai Indi	.ans
555	556 2015	Mumbai	2015-05-05	Delhi Daredev	rils
561	562 2015	Mumbai	2015-05-10	Royal Challengers Bangal	ore
566	567 2015	Mumbai	2015-05-14	Mumbai Indi	ans.
572	573 2015	Mumbai	2015-05-19	Mumbai Indi	ans
576	577 2016	Mumbai	2016-04-09	Mumbai Indi	ans
584	585 2016	Mumbai	2016-04-16	Mumbai Indi	ans
589	590 2016	Mumbai	2016-04-20	Royal Challengers Bangal	ore
599	600 2016	Mumbai	2016-04-28	Kolkata Knight Rid	lers
			team2	-	toss_decision \
6			Indians	Mumbai Indians	field
9			Indians	Mumbai Indians	field
15			Indians	Mumbai Indians	field
23		Delhi Dar		Delhi Daredevils	field
27			Indians	Mumbai Indians	field
36				yal Challengers Bangalore	bat
49			Indians	Mumbai Indians	field
55	וו וא ו		Indians	Mumbai Indians	field
62	Royal Chall	_	-	Mumbai Indians	bat
95			Indians	Mumbai Indians	field
98 105			Indians	Mumbai Indians	field
105			Indians	Mumbai Indians	field
114	Ch.	Delhi Dar		Delhi Daredevils	field
115		ennai Supe ii Tuskers	_	Kings XI Punjab Kochi Tuskers Kerala	bat field
246253	KOCI		Indians	Pune Warriors	bat
256	Cha	numbai nnai Supe			field
272	CHE	miai supe Kings XI	_	Chennai Super Kings Kings XI Punjab	field
281		Delhi Dar	ŭ	Delhi Daredevils	field
291			Indians	Deccan Chargers	bat
298		Rajasthan		Mumbai Indians	bat
303	Che	najastnan ennai Supe	•	Chennai Super Kings	field
303	CITE	_	Indians	Mumbai Indians	field
309			Indians	Mumbai Indians	field
318		Rajasthan		Rajasthan Royals	field
326		Delhi Dar	-	Delhi Daredevils	field
335		Kings XI		Mumbai Indians	bat
345		_	Indians	Mumbai Indians	field
340		riuiiDal	τησταμο	riumbai inulans	iteia

354	Mumbai	Indians		Mumbai	Indians		field
359	Royal Challengers Ba	ngalore	Royal Chall	Lengers B	angalore		field
369	Mumbai	Indians	-	Mumbai	Indians		field
389	Delhi Dar	edevils		Mumbai	Indians		bat
394	Pune W	arriors		Mumbai	Indians		bat
416	Royal Challengers Ba	ngalore		Mumbai	Indians		bat
420	Kings XI	_		Mumbai	Indians		bat
429	Chennai Supe	ū		Mumbai	Indians		bat
433	Kolkata Knight	_		Mumbai	Indians		bat
443	Mumbai	Indians	Sur	nrisers H	yderabad		bat
446	Rajasthan	Royals		Rajastha	n Royals		field
478		Indians		ū	I Punjab		bat
483	Royal Challengers Ba	ngalore	Royal Chall	•	•		field
489	Chennai Supe	_	•	ennai Sup	-		field
507	Delhi Dar	_		Delhi Da:	•		field
512	Mumbai	Indians		Mumbai	Indians		field
515	Chennai Supe	r Kings	Che	ennai Sup	er Kings		field
523	-	Indians		_	Indians		field
529	Chennai Supe	r Kings		Mumbai	Indians		bat
540	Sunrisers Hy	_		Mumbai	Indians		bat
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555		Indians		Delhi Da:	v		bat
561	Mumbai	Indians	Royal Chall	Lengers B	angalore		bat
566	Kolkata Knight	Riders	•	ata Knigh	•		field
572	Chennai Supe			•	Indians		bat
576	Rising Pune Supe	_		Mumbai	Indians		bat
584	-	t Lions		Gujara	at Lions		field
589	Mumbai			•	Indians		field
599	Mumbai	Indians		Mumbai	Indians		field
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246	normal 0		ochi Tuskers	_	0		
253	normal 0		Mumbai	Indians	0		

256	normal	0	Mumbai Indians	8	
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281	normal	0	Mumbai Indians	32	
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304	normal	0	Mumbai Indians	0	
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318	normal	0	Mumbai Indians	27	
326	normal	0	Delhi Daredevils	0	
335	normal	0	Kings XI Punjab	0	
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359	normal	0	Royal Challengers Bangalore	0	
369	normal	0	Kolkata Knight Riders	32	
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489	normal	0	Chennai Super Kings	0	
507	normal	0	Mumbai Indians	15	
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540	normal	0	Mumbai Indians	20	
548	normal	0	Mumbai Indians	8	
555	normal	0	Mumbai Indians	0	
561	normal	0	Royal Challengers Bangalore	39	
566	normal	0	Mumbai Indians	5	
572	normal	0	Mumbai Indians	25	
576	normal	0	Rising Pune Supergiants	0	
584	normal	0	Gujarat Lions	0	
589	normal	0	Mumbai Indians	0	
599	normal	0	Mumbai Indians	0	
	win_by_wickets	р	layer_of_match venue	umpire1	\
6	4		N Rana Wankhede Stadium	Nitin Menon	
9	4		JJ Bumrah Wankhede Stadium	Nitin Menon	
15	6		N Rana Wankhede Stadium	A Nand Kishore	
23	0		MJ McClenaghan Wankhede Stadium	A Nand Kishore	

27	0	RA Stokes	Wankhede Stadium	A Nand Kishore
36	5	RG Sharma		AK Chaudhary
49	0	WP Saha		·
55	0	Washington Sundar		
62	5	ū	Wankhede Stadium	
95	9	•	Wankhede Stadium	
98	8		Wankhede Stadium	
105	0		Wankhede Stadium	BF Bowden
114	0		Wankhede Stadium	BF Bowden
115	9	M Ntini		Asad Rauf
246	8		Wankhede Stadium	
253	7		Wankhede Stadium	Asad Rauf
256	0	•	Wankhede Stadium	Asad Rauf
272	0		Wankhede Stadium	
281	0	AT Rayudu	Wankhede Stadium	
291	0	A Mishra	Wankhede Stadium	S Ravi
298	10	SR Watson	Wankhede Stadium	RE Koertzen
303	6	SK Raina	Wankhede Stadium	Asad Rauf
304	4	MM Patel	Wankhede Stadium	Asad Rauf
309	0	SPD Smith	Wankhede Stadium	AK Chaudhary
318	0	KA Pollard	Wankhede Stadium	Aleem Dar
326	7	S Nadeem	Wankhede Stadium	BF Bowden
335	6	SE Marsh	Wankhede Stadium	S Ravi
345	5	DW Steyn	Wankhede Stadium	AK Chaudhary
354	2	DR Smith	Wankhede Stadium	Asad Rauf
359	9	CH Gayle	Wankhede Stadium	BF Bowden
369	0	SP Narine		S Das
389	0	KD Karthik	Wankhede Stadium	M Erasmus
394	0	RG Sharma	Wankhede Stadium	S Ravi
416	0	DR Smith	Wankhede Stadium	Asad Rauf
420	0		Wankhede Stadium	Asad Rauf
429	0		Wankhede Stadium	
433	0	SR Tendulkar	Wankhede Stadium	HDPK Dharmasena
443	7	KA Pollard	Wankhede Stadium	AK Chaudhary
446	0	AP Tare	Wankhede Stadium	Asad Rauf
478	5	CJ Anderson	Wankhede Stadium	BNJ Oxenford
483	0	RG Sharma	Wankhede Stadium	S Ravi
489	4	DR Smith	Wankhede Stadium	HDPK Dharmasena
507	0	MEK Hussey	Wankhede Stadium	S Ravi
512	5	CJ Anderson	Wankhede Stadium	K Srinath
515	0	V Sehwag	Wankhede Stadium	HDPK Dharmasena
523	0	GJ Bailey		AK Chaudhary
529	6	A Nehra	Wankhede Stadium	•
540	0			AK Chaudhary
		SL Malinga		HDPK Dharmasena
548	0	AT Rayudu		HDPK Dharmasena
555 561	5	Harbhajan Singh	Wankhede Stadium	HDPK Dharmasena
561	0	AB de Villiers	Wankhede Stadium	JD Cloete

566 572 576 584 589 599	0 0 9 3 6 6	HH Pandy KA Pollar AM Rahan AJ Find RG Sharm RG Sharm	rd Wankhede Stadium ne Wankhede Stadium ch Wankhede Stadium na Wankhede Stadium	HDPK Dharmasena HDPK Dharmasena HDPK Dharmasena AK Chaudhary
	umpire2	umpire3		
6	CK Nandan	NaN		
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15	S Ravi	NaN		
23	S Ravi	NaN		
27	S Ravi	NaN		
36	CB Gaffaney	NaN		
49	A Nand Kishore	NaN		
55	C Shamshuddin	NaN		
62	DJ Harper	NaN		
95	AM Saheba	NaN		
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105	GA Pratapkumar	NaN		
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326	SK Tarapore	NaN		
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446	S Asnani	NaN		

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523	K Srinivasan	NaN
529	M Erasmus	NaN
540	CB Gaffaney	NaN
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561	C Shamshuddin	NaN
566	VA Kulkarni	NaN
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584	VK Sharma	NaN
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599	RJ Tucker	NaN >
data		

[60]: data

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	1	2	2017	Pune	2017-0	4-06		Mumbai 1	Indians		
	2	3	2017	Rajkot	2017-0	4-07		Gujarat	Lions		
	3	4	2017	Indore	2017-0	4-08	Rising	g Pune Supe	ergiant		
	4	5	2017	Bangalore	2017-0	4-08	Royal Chall	lengers Bar	ngalore		
		•••			•••			•••			
	631	632	2016	Raipur	2016-0	5-22		Delhi Dare	edevils		
	632	633	2016	Bangalore	2016-0	5-24		Gujarat	t Lions		
	633	634	2016	Delhi	2016-05-25		Sur	ınrisers Hyderabad			
	634	635	2016	Delhi	2016-0	5-27		Gujarat	t Lions		
	635	636	2016	Bangalore	2016-05-29		Sunrisers Hyderabad				
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				_	eam2	_		oss_winner	toss_de		\
	0	Roya	oyal Challengers Bangalore Rising Pune Supergiant			•	Challengers	•		field	
	1				iant				field		
	2		Kolkata Knight Riders Kings XI Punjab			g .			field		
	3									field	
	4		Delhi Daredevils		vils R	oyal	Challengers	${\tt Bangalore}$		bat	
					•••			•••			
	631	Roya	l Challe	ngers Banga	lore R	oyal	Challengers	Bangalore		field	
	632	Roya	l Challe	ngers Banga	lore R	oyal	Challengers	Bangalore		field	
	633	-	Kolkata Knight Riders			•	Kolkata Knig	ght Riders		field	
	634		Sunrisers Hyderabad				Sunrisers	Hyderabad		field	
	635	Roya		ngers Banga				Hyderabad		bat	
		-		-				-			

```
result
             dl_applied
                                                          win_by_runs
                                                 winner
0
                                   Sunrisers Hyderabad
                                                                    35
     normal
                       0
1
     normal
                                Rising Pune Supergiant
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2
     normal
                       0
                                 Kolkata Knight Riders
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3
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     normal
                                       Kings XI Punjab
                                                                    15
4
                       0
                          Royal Challengers Bangalore
     normal
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631
    normal
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                          Royal Challengers Bangalore
                          Royal Challengers Bangalore
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632
    normal
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633
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                                   Sunrisers Hyderabad
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     normal
                                   Sunrisers Hyderabad
634
                       0
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635
    normal
                                   Sunrisers Hyderabad
                                                                     8
     win_by_wickets player_of_match
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                   0
                        Yuvraj Singh
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1
                           SPD Smith
2
                  10
                              CA Lynn
3
                   6
                          GJ Maxwell
4
                   0
                           KM Jadhav
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                   6
                              V Kohli
631
                      AB de Villiers
632
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633
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                        MC Henriques
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634
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635
                   0
                         BCJ Cutting
                                                                    umpire1
                                                   venue
0
            Rajiv Gandhi International Stadium, Uppal
                                                               AY Dandekar
1
              Maharashtra Cricket Association Stadium
                                                            A Nand Kishore
2
                Saurashtra Cricket Association Stadium
                                                               Nitin Menon
3
                                 Holkar Cricket Stadium
                                                              AK Chaudhary
4
                                  M Chinnaswamy Stadium
                                                                        NaN
631
     Shaheed Veer Narayan Singh International Stadium
                                                            A Nand Kishore
632
                                  M Chinnaswamy Stadium
                                                              AK Chaudhary
633
                                       Feroz Shah Kotla
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                                       Feroz Shah Kotla
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635
                                  M Chinnaswamy Stadium
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             umpire2
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            NJ Llong
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               S Ravi
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3
       C Shamshuddin
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631
        BNJ Oxenford
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632 HDPK Dharmasena NaN
633 C Shamshuddin NaN
634 CK Nandan NaN
635 BNJ Oxenford NaN
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                                                                      bowling team
                                                                                     over
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                                                     Royal Challengers Bangalore
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                                                     Royal Challengers Bangalore
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       19
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                               Sunrisers Hyderabad
                                                     Royal Challengers Bangalore
           ball
                       batsman
                                  non_striker
                                                      bowler
                                                              is_super_over
       0
                     DA Warner
                                     S Dhawan
                                                   TS Mills
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               2
                     DA Warner
                                     S Dhawan
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                     DA Warner
                                     S Dhawan
                                                   TS Mills
                                                                           0
       3
               4
                     DA Warner
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                                                                           0
       4
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                     DA Warner
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       5
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                                                   TS Mills
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                                    DA Warner
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       6
               7
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       7
               1
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                                    DA Warner
                                                A Choudhary
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                     DA Warner
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               5
                     DA Warner
                                     S Dhawan
                                                A Choudhary
                                                                           0
       12
                  MC Henriques
                                     S Dhawan
                                                A Choudhary
                                                                           0
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13	7 M	C Henriques		S Dhawan	A Chou	dhary		0	
14	1	S Dhawan	MC	Henriques	TS 1	Mills		0	
15	2 M	C Henriques		S Dhawan	TS 1	Mills		0	
16		C Henriques		S Dhawan		Mills		0	
17		C Henriques		S Dhawan		Mills		0	
18	5			Henriques		Mills		0	
19	6 M	C Henriques		S Dhawan	TS 1	Mills		0	
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2		0	0		0	0		4	
3		0	0		0	0		0	
4		0	0		0	0		0	
5		0	0		0	0		0	
6		0	1		0	0		0	
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12		0	0		0	0		0	
13		0	0		0	0		4	
14		0	0		0	0		1	
15		0	0		0	0		0	
16 17		0	0		0	0		0 3	
18		0 0	0		0	0		3 1	
19		0	0		0	0		1	
13		O	O		O	O		1	
	extra_r	uns total_	runs	player_di	smissed	dismissa	l_kind	f	ielder
0		0	0		NaN		NaN		NaN
1		0	0		NaN		NaN		NaN
2		0	4		NaN		NaN		NaN
3		0	0		NaN		NaN		NaN
4		2	2		NaN		NaN		NaN
5		0	0		NaN		NaN		NaN
6		1	1		NaN		NaN		NaN
7		0	1		NaN NaN		NaN NaN		NaN
8 9		0 1	4 1		NaN NaN		NaN NaN		NaN NaN
9 10		0	6		nan NaN		NaN NaN		NaN
11		0	0	DΝ	Nan Warner		caught	Mandeep	
12		0	0	DE	warner NaN		NaN	nanasep	NaN
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14		0	1		NaN		NaN		NaN
15		0	0		NaN		NaN		NaN

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	0	DA Warne	r	0										
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	150456	Iqbal Abdull	•	4										
	100403	iquai Abduii	u.											
	[150460	rows x 2 col	umns]											
[172]:	mask=a['batsman']=='	DA Wa	rner'										
[176]:	deli[ma	sk]												
[476]				1			1	14						
[176]:	0	match_id in	ning 1		tting_team Hyderabad	Rosso 7	Challengers	ling_team	\					
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	150283	636	1	Sunrisers	 Hyderabad	Royal	Challengers	Bangalore						
	150284	636	1		Hyderabad	•	Challengers	-						
	150288	636	1		Hyderabad	•	Challengers	-						
	150291	636	1		Hyderabad	•	Challengers	_						
	150292	636	1		Hyderabad	•	Challengers	-						
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                             DA Warner
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                                                  DA Warner
                                                                      caught
                                                                              Iqbal Abdulla
       [2902 rows x 21 columns]
[178]: a = deli.groupby('batsman')
[190]: a.size()
[190]: batsman
       A Ashish Reddy
                            196
```

A Chandila

```
A Chopra
                          75
      A Choudhary
                          20
      A Flintoff
                          57
      YV Takawale
                         183
      Yashpal Singh
                          67
      Younis Khan
                           7
      Yuvraj Singh
                        2050
      Z Khan
                         141
      Length: 461, dtype: int64
[192]: a
a.get_group('V Kohli')
[198]:
              match_id
                        inning
                                              batting_team
                                                                   bowling_team \
      2590
                    12
                               Royal Challengers Bangalore
                                                                 Mumbai Indians
      2591
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                                Royal Challengers Bangalore
                                                                 Mumbai Indians
                                Royal Challengers Bangalore
      2594
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      2597
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                                                                 Mumbai Indians
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                                                            Sunrisers Hyderabad
                                Royal Challengers Bangalore
      150413
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                                Royal Challengers Bangalore
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      150414
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      150415
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      150416
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                                Royal Challengers Bangalore
                                                            Sunrisers Hyderabad
              over
                    ball
                          batsman
                                      non_striker
                                                           bowler
                                                                   is_super_over
      2590
                          V Kohli
                                         CH Gayle
                                                       TG Southee
      2591
                          V Kohli
                                         CH Gayle
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                 1
                          V Kohli
                                         CH Gayle
                                                       TG Southee
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      2594
                          V Kohli
                                         CH Gayle
                                                       TG Southee
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                          V Kohli
                                         CH Gayle
                                                  Harbhajan Singh
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                          V Kohli
                                   AB de Villiers
                                                     Bipul Sharma
                                                                               0
```

150416	13 5		V Kohli AB o	le Villiers	BB Sran	0	
		bye_runs	legbye_runs	noball_runs	penalty_runs	batsman_runs \	
2590		0	0	0	0	0	
2591		0	0	0	0	1	
2593	•••	0	0	0	0	0	

AB de Villiers

AB de Villiers

AB de Villiers

BB Sran

BB Sran

BB Sran

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150415

2 V Kohli

3 V Kohli

4 V Kohli

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2597	•••	0	0	0	0	()
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15041	.0	0	0	0	0	1	<u>[</u>
15041		0	0	0	0	6	
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15041		0	0	0	0	(
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2590		1	1	NaN	- NaN	NaN	
2591		0	1	NaN	NaN	NaN	
2593		0	0	NaN	NaN	NaN	
2594		0	1	NaN	NaN	NaN	
2597		0	0	NaN	NaN	NaN	
				•••			
15041	0	0	1	NaN	NaN	NaN	
15041		0	6	NaN	NaN	NaN	
15041		0	2	NaN	NaN	NaN	
15041		0	2	NaN	NaN	NaN	
15041		0	0	V Kohli	bowled	NaN	
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[3494	rows x	21 column	ıs]				
: type	(a)						
: panda	s.core.g	groupby.ge	eneric.DataFr	ameGroupBy			
: a['ba	ntsman_ru	ıns'].sum(().sort_value	s(ascending=Fal	lse).head()		
: batsm	non.						
SK Ra		4548					
V Koh		4423					
RG Sh		4207					
G Gam		4132					
DA Wa		4014					
			ype: int64				
: deli							
:	match	n_id inni	.ng	batting_	team \		
0		1	1	Sunrisers Hyder	rabad		
1		1	1	Sunrisers Hyder	abad		
2		1	1	Sunrisers Hyder	abad		
3		1	1	Sunrisers Hyder	abad		
4		1	1	Sunrisers Hyder	abad		

[200]

[200]

[210]

[210]

[212]

[212]

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                 Sunrisers Hyderabad
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       [150460 rows x 21 columns]
      a=deli.groupby('batsman')
[222]: a
       <pandas.core.groupby.generic.DataFrameGroupBy object at 0x0000002488504E390>
       mask=deli['batsman_runs']==2
[289]:
[291]:
      a=deli[mask]
[293]: a
[293]:
               match_id
                          inning
                                                   batting_team
       29
                       1
                                           Sunrisers Hyderabad
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                               bowling_team
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                                                           Yuvraj Singh
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                                                        Sachin Baby
                                                                             CJ Jordan
                              is_super_over
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                     bowler
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[9705 rows x 21 columns]
```

[295]: fours=a.groupby('batsman')['batsman_runs'].count()

[297]: batsman MS Dhoni 251 G Gambhir 245 SK Raina 242 V Kohli 242 DA Warner 207 Name: batsman_runs, dtype: int64 [299]: deli [299]: $match_id$ batting_team inning 0 Sunrisers Hyderabad 1 1 1 1 Sunrisers Hyderabad 1 2 Sunrisers Hyderabad 3 1 1 Sunrisers Hyderabad 4 1 1 Sunrisers Hyderabad 150455 636 Royal Challengers Bangalore Royal Challengers Bangalore 150456 636 Royal Challengers Bangalore 150457 636 150458 636 Royal Challengers Bangalore Royal Challengers Bangalore 150459 636 non_striker bowling_team over ball batsman Royal Challengers Bangalore 0 1 1 DA Warner S Dhawan 1 Royal Challengers Bangalore 1 2 S Dhawan DA Warner 2 Royal Challengers Bangalore 1 3 DA Warner S Dhawan 3 Royal Challengers Bangalore 1 S Dhawan 4 DA Warner Royal Challengers Bangalore 4 1 DA Warner S Dhawan 150455 Sunrisers Hyderabad 20 2 Sachin Baby CJ Jordan 150456 Sunrisers Hyderabad 20 3 Sachin Baby CJ Jordan 150457 Sunrisers Hyderabad 20 4 Iqbal Abdulla Sachin Baby 150458 Sunrisers Hyderabad 20 5 Sachin Baby Iqbal Abdulla 150459 Sunrisers Hyderabad 20 Iqbal Abdulla Sachin Baby bowler is_super_over bye_runs legbye_runs noball runs 0 TS Mills 0 0 1 TS Mills 0 0 0 0 2 TS Mills 0 0 0 0 3 TS Mills 0 0 0 0 4 TS Mills 0 0 0 0 150455 B Kumar 0 0 0 0 150456 B Kumar 0 0 0 0

[297]: fours.sort_values(ascending=False).head()

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150457
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                 B Kumar
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                 B Kumar
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       150459
                 B Kumar
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                                                      0
                penalty_runs
                               batsman_runs
                                              extra_runs
                                                           total_runs
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                                NV Ojha
       150457
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       150458
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                                    NaN
       150459
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                                    NaN
       [150460 rows x 21 columns]
[323]: mask =
[327]:
      vir = deli[deli['batsman'] == 'V Kohli']
[341]: a=vir.groupby('bowling_team')['batsman_runs'].sum()
[347]: a.sort_values(ascending=False).head(3)
[347]: bowling_team
       Chennai Super Kings
                                706
       Delhi Daredevils
                                661
       Kings XI Punjab
                                483
       Name: batsman_runs, dtype: int64
```

```
[355]: def run_scored(batsman_name):
           vir = deli[deli['batsman'] == batsman_name]
           a=vir.groupby('bowling_team')['batsman_runs'].sum()
           return a.sort_values(ascending=False).head(3)
[365]: run scored('MS Dhoni')
[365]: bowling_team
       Royal Challengers Bangalore
                                        608
       Mumbai Indians
                                        581
       Kings XI Punjab
                                        453
       Name: batsman_runs, dtype: int64
[367]: deli
[367]:
                {\tt match\_id}
                          inning
                                                   batting_team
                                           Sunrisers Hyderabad
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                                   Royal Challengers Bangalore
       150459
                     636
                                bowling_team
                                                     ball
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                                               over
                                                                  batsman
       0
                Royal Challengers Bangalore
                                                                DA Warner
                                                                                 S Dhawan
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                Royal Challengers Bangalore
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                        Sunrisers Hyderabad
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                                                              Sachin Baby
                                                                            Iqbal Abdulla
       150458
                        Sunrisers Hyderabad
                                                            Iqbal Abdulla
                                                                              Sachin Baby
       150459
                                                 20
                  bowler
                          is_super_over
                                                        legbye_runs
                                                                      noball_runs
                                              bye_runs
       0
                TS Mills
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                TS Mills
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                TS Mills
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               TS Mills
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                TS Mills
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                 B Kumar
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       150459
                 B Kumar
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                                                             total_runs
                                                                           player_dismissed \
                penalty_runs
                                batsman_runs
                                                extra_runs
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                       run out
                                 NV Ojha
       150457
                           NaN
                                      NaN
                                      {\tt NaN}
       150458
                           NaN
       150459
                           NaN
                                      NaN
       [150460 rows x 21 columns]
[369]: death=deli['over']>=16
      death=deli[death]
[375]:
       death
[375]:
                match_id
                           inning
                                                     batting_team \
       93
                        1
                                 1
                                              Sunrisers Hyderabad
                        1
                                              Sunrisers Hyderabad
       94
                                 1
       95
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                                              Sunrisers Hyderabad
       96
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                                              Sunrisers Hyderabad
```

97	1	1		Su	nrisers	Hyde	erabad		
•••	•••	•••							
150455	636	2	Royal C	Chal	lengers	Bang	galore		
150456	636	2	Royal (Chal	lengers	Bang	galore		
150457	636	2	Royal (Chal	lengers	Bang	galore		
150458	636	2	Royal (Chal	lengers	Bang	galore		
150459	636	2	Royal C	Chal	lengers	Bang	galore		
		bor	wling_te	eam	over	ball	batsma	n non_striker	\
93	Royal Cha	llengers	Bangalo	ore	16	1	MC Henrique	s Yuvraj Singh	
94	Royal Cha	llengers	Bangalo	ore	16	2	MC Henrique	s Yuvraj Singh	
95	Royal Cha	llengers	Bangalo	ore	16	3	Yuvraj Sing	h DJ Hooda	
96	Royal Cha	llengers	Bangalo	ore	16	4	DJ Hood	la Yuvraj Singh	
97	Royal Cha	llengers	Bangalo	ore	16	5	Yuvraj Sing	h DJ Hooda	
					•••		•••	•••	
150455	S	unrisers	Hyderab	oad	20	2	Sachin Bab	y CJ Jordan	
150456	S	unrisers	Hyderab	oad	20	3	Sachin Bab	y CJ Jordan	
150457	S	unrisers	Hyderab	oad	20	4	Iqbal Abdull	a Sachin Baby	
150458	S	unrisers	Hyderab	oad	20	5	Sachin Bab	y Iqbal Abdulla	
150459	S	unrisers	Hyderab	oad	20	6	Iqbal Abdull	a Sachin Baby	
	bowler	is_sup	er_over		bye_ru	ns 1	egbye_runs n	oball_runs \	
93	YS Chahal		0			0	0	0	
94	YS Chahal		0	•••		0	0	0	
95	YS Chahal		0	•••		0	0	0	
96	YS Chahal		0	•••		0	0	0	
97	YS Chahal		0	•••		0	0	0	
	•••				•••				
150455	B Kumar		0			0	0	0	
150456	B Kumar		0	•••		0	0	0	
150457	B Kumar		0	•••		0	1	0	
150458	B Kumar		0			0	0	0	
150459	B Kumar		0			0	0	0	
	penalty_r	uns bat	sman_rur		extra_r		_	layer_dismissed	\
93		0		0		0	0	NaN	
94		0		0		0	0	MC Henriques	
95		0		1		0	1	NaN	
96		0		1		0	1	NaN	
97		0		1		0	1	NaN	
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150455		0		2		0	2	NaN	
150456		0		0		0	0	CJ Jordan	
150457		0		0		1	1	NaN	
150458		0		1		0	1	NaN	
150459		0		4		0	4	NaN	

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93
                          NaN
                                        NaN
       94
                       caught
                               Sachin Baby
       95
                          NaN
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                                        NaN
       150455
                          NaN
       150456
                      run out
                                   NV Ojha
       150457
                          NaN
                                        NaN
       150458
                          NaN
                                        NaN
       150459
                          NaN
                                        NaN
       [33737 rows x 21 columns]
[425]: run = death.groupby('batsman')['batsman_runs'].sum()
[427]: balls = death.groupby('batsman')['ball'].count()
[429]: run
[429]: batsman
       A Ashish Reddy
                          214
       A Chandila
                            4
       A Chopra
                            1
       A Choudhary
                           25
       A Flintoff
                           25
       YS Chahal
                           15
       YV Takawale
                           29
       Yashpal Singh
                           17
       Yuvraj Singh
                          883
       Z Khan
                          108
       Name: batsman_runs, Length: 416, dtype: int64
[439]: balls
[439]: batsman
       A Ashish Reddy
                          148
       A Chandila
                            7
                            2
       A Chopra
       A Choudhary
                           20
       A Flintoff
                           18
       YS Chahal
                           27
       YV Takawale
                           13
       Yashpal Singh
                           13
```

dismissal_kind

fielder

Yuvraj Singh 516 Z Khan 109

Name: ball, Length: 416, dtype: int64

```
[441]: strike=run/balls
```

[443]: strike

[443]: batsman

A Ashish Reddy 1.445946 A Chandila 0.571429 A Chopra 0.500000 A Choudhary 1.250000 A Flintoff 1.388889 YS Chahal 0.555556

YS Chahal 0.555556

YV Takawale 2.230769

Yashpal Singh 1.307692

Yuvraj Singh 1.711240

Z Khan 0.990826

Length: 416, dtype: float64

[459]: strike[balls>=200].sort_values(ascending=False)*100

[459]: batsman

AB de Villiers 211.052632 DA Warner 189.473684 DA Miller 186.666667 V Kohli 181.868132 RG Sharma 175.668449 DJ Hussey 175.213675 RV Uthappa 173.454545 Yuvraj Singh 171.124031 JH Kallis 170.562771 MS Dhoni 169.607843 SPD Smith 169.303797 JP Duminy 167.760618 DJ Bravo 167.726161 SK Raina 167.467249 AT Rayudu 165.411765 WP Saha 163.389831 KA Pollard 161.336516 YK Pathan 159.246575 S Dhawan 158.847737 BJ Hodge 157.402597 AM Nayar 155.000000 AM Rahane 152.985075

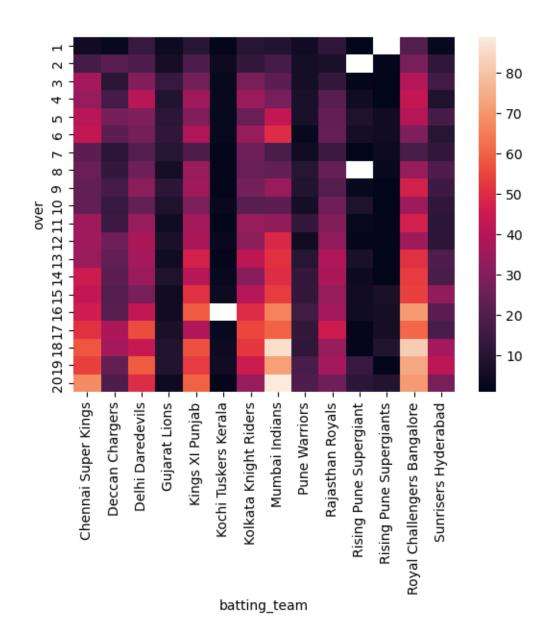
LRPL Taylor	152.941176
KD Karthik	152.051836
DPMD Jayawardene	152.032520
MK Pandey	151.785714
JA Morkel	149.882353
JP Faulkner	149.319728
S Badrinath	149.116608
Y Venugopal Rao	148.846154
Harbhajan Singh	147.607656
AD Mathews	147.058824
KM Jadhav	144.378698
STR Binny	144.036697
AR Patel	142.794760
IK Pathan	142.580645
MK Tiwary	140.189125
SS Tiwary	136.666667
NV Ojha	134.868421
RA Jadeja	130.729167
PP Chawla	120.257235
P Kumar	109.701493
R Vinay Kumar	108.936170
A Mishra	100.888889
dtype: float64	

[471]: run[balls>=200]

[471]: batsman

A Mishra	227
AB de Villiers	1203
AD Mathews	425
AM Nayar	310
AM Rahane	410
AR Patel	327
AT Rayudu	703
BJ Hodge	606
DA Miller	672
DA Warner	432
DJ Bravo	686
DJ Hussey	410
DPMD Jayawardene	374
Harbhajan Singh	617
IK Pathan	663
JA Morkel	637
JH Kallis	394
JP Duminy	869
JP Faulkner	439
KA Pollard	1352

```
704
       KD Karthik
       KM Jadhav
                            488
       LRPL Taylor
                            312
       MK Pandey
                            340
       MK Tiwary
                            593
       MS Dhoni
                           2076
       NV Ojha
                            410
       P Kumar
                            294
       PP Chawla
                            374
       R Vinay Kumar
                            256
       RA Jadeja
                            753
       RG Sharma
                           1314
       RV Uthappa
                            477
       S Badrinath
                            422
       S Dhawan
                            386
       SK Raina
                            767
       SPD Smith
                            535
       SS Tiwary
                            410
       STR Binny
                            314
       V Kohli
                            993
       WP Saha
                            482
       Y Venugopal Rao
                            387
       YK Pathan
                            930
                            883
       Yuvraj Singh
       Name: batsman_runs, dtype: int64
[473]: new = deli.merge(data,left_on='match_id',right_on='id')
[481]: new.groupby('season')
[481]: <pandas.core.groupby.generic.DataFrameGroupBy object at 0x00000248826181A0>
[487]: mask=deli['batsman_runs']==6
[491]: a=deli[mask]
[507]: at=a.
        apivot_table(index='over',columns='batting_team',values='batsman_runs',aggfunc=|count')
[509]: import seaborn as sns
[511]: sns.heatmap(at)
[511]: <Axes: xlabel='batting_team', ylabel='over'>
```



[513]: data [513]: season city date team1 id Hyderabad 2017-04-05 Sunrisers Hyderabad 0 1 2017 1 2 Pune 2017-04-06 Mumbai Indians 2017 2 3 2017 Rajkot 2017-04-07 Gujarat Lions 3 4 2017 Indore 2017-04-08 Rising Pune Supergiant 4 5 2017 Bangalore 2017-04-08 Royal Challengers Bangalore 2016-05-22 631 632 2016 Raipur Delhi Daredevils 632 633 2016 Bangalore 2016-05-24 Gujarat Lions

```
633
     634
            2016
                       Delhi
                              2016-05-25
                                                    Sunrisers Hyderabad
634
     635
            2016
                       Delhi
                              2016-05-27
                                                          Gujarat Lions
635
     636
            2016
                  Bangalore
                              2016-05-29
                                                    Sunrisers Hyderabad
                            team2
                                                     toss_winner toss_decision
                                    Royal Challengers Bangalore
0
     Royal Challengers Bangalore
                                                                          field
1
          Rising Pune Supergiant
                                         Rising Pune Supergiant
                                                                          field
2
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                          field
3
                 Kings XI Punjab
                                                Kings XI Punjab
                                                                          field
                 Delhi Daredevils
                                    Royal Challengers Bangalore
4
                                                                            bat
. .
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                          field
631
632
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                          field
633
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                          field
634
             Sunrisers Hyderabad
                                            Sunrisers Hyderabad
                                                                          field
     Royal Challengers Bangalore
635
                                            Sunrisers Hyderabad
                                                                            bat
     result
             dl_applied
                                                winner
                                                         win_by_runs
0
     normal
                                   Sunrisers Hyderabad
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     normal
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                               Rising Pune Supergiant
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2
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     normal
                                Kolkata Knight Riders
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                                       Kings XI Punjab
3
                       0
                                                                    0
     normal
4
                       0
                          Royal Challengers Bangalore
     normal
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631
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    normal
632
    normal
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633
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634
    normal
                       0
                                   Sunrisers Hyderabad
                                                                    0
635
    normal
                       0
                                   Sunrisers Hyderabad
                                                                    8
     win_by_wickets player_of_match
0
                   0
                        Yuvraj Singh
                  7
1
                           SPD Smith
2
                  10
                             CA Lynn
3
                   6
                          GJ Maxwell
4
                   0
                           KM Jadhav
                   6
                             V Kohli
631
632
                   4
                      AB de Villiers
                   0
                        MC Henriques
633
634
                   4
                           DA Warner
635
                   0
                         BCJ Cutting
                                                                   umpire1
                                                   venue
0
            Rajiv Gandhi International Stadium, Uppal
                                                              AY Dandekar
              Maharashtra Cricket Association Stadium
1
                                                           A Nand Kishore
               Saurashtra Cricket Association Stadium
2
                                                              Nitin Menon
```

```
3
                                Holkar Cricket Stadium
                                                             AK Chaudhary
4
                                                                       NaN
                                 M Chinnaswamy Stadium
. .
631
     Shaheed Veer Narayan Singh International Stadium
                                                           A Nand Kishore
632
                                 M Chinnaswamy Stadium
                                                             AK Chaudhary
633
                                       Feroz Shah Kotla
                                                                M Erasmus
634
                                       Feroz Shah Kotla
                                                                M Erasmus
635
                                 M Chinnaswamy Stadium
                                                         HDPK Dharmasena
             umpire2
                       umpire3
0
            NJ Llong
                           NaN
1
              S Ravi
                           NaN
2
           CK Nandan
                           NaN
3
       C Shamshuddin
                           NaN
4
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                           NaN
631
        BNJ Oxenford
                           NaN
632
     HDPK Dharmasena
                           NaN
633
       C Shamshuddin
                           NaN
634
           CK Nandan
                           NaN
635
        BNJ Oxenford
                           NaN
```

[636 rows x 18 columns]

[516]: deli

[310].	dell								
[516]:		match_id	inning		b	atting_t	eam \		
	0	1	1		Sunriser	s Hydera	bad		
	1	1	1		Sunriser	s Hydera	bad		
	2	1	1		Sunriser	s Hydera	bad		
	3	1	1		Sunriser	s Hydera	bad		
	4	1	1		Sunriser	s Hydera	bad		
		•••	•••						
	150455	636	2	Royal	Challenger	s Bangal	ore		
	150456	636	2	•	Challenger	•			
	150457	636	2	-	Challenger	_			
	150458	636	2	•	Challenger	•			
	150459	636	2	Royal	Challenger	s Bangal	ore		
			_				_		
				wling_t		ball	batsman	non_striker	\
	0	Royal Cha	llengers	Bangal	ore 1	1	DA Warner	S Dhawan	
	1	Royal Cha	llengers	Bangal	ore 1	2	DA Warner	S Dhawan	
	2	Royal Cha	llengers	Bangal	ore 1	3	DA Warner	S Dhawan	
	3	Royal Cha	llengers	Bangal	ore 1	4	DA Warner	S Dhawan	
	4	Royal Cha	llengers	Bangal	ore 1	5	DA Warner	S Dhawan	
				•••			•••	•••	
	150455	S	unrisers	Hydera	bad 20	2	Sachin Baby	CJ Jordan	

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150456
                  Sunrisers Hyderabad
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                                                         Sachin Baby
                                                                             CJ Jordan
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150457
                  Sunrisers Hyderabad
                                                       Iqbal Abdulla
                                                                          Sachin Baby
150458
                  Sunrisers Hyderabad
                                            20
                                                         Sachin Baby
                                                                        Iqbal Abdulla
                                            20
150459
                  Sunrisers Hyderabad
                                                       Iqbal Abdulla
                                                                          Sachin Baby
           bowler
                    is_super_over
                                        bye_runs
                                                    legbye_runs
                                                                  noball_runs
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150459
          B Kumar
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                                                                   player_dismissed
        penalty_runs
                        batsman_runs
                                        extra_runs
                                                      total_runs
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       dismissal_kind
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[150460 rows x 21 columns]
```

[520]: deli.corr()

```
ValueError
                                          Traceback (most recent call last)
Cell In[520], line 1
----> 1 deli.corr()
File ~\anaconda3\Lib\site-packages\pandas\core\frame.py:11049, in DataFrame.
 Gorr(self, method, min_periods, numeric_only)
  11047 cols = data.columns
  11048 idx = cols.copv()
> 11049 mat = data.to_numpy(dtype=float, na_value=np.nan, copy=False)
  11051 if method == "pearson":
  11052
            correl = libalgos.nancorr(mat, minp=min_periods)
File ~\anaconda3\Lib\site-packages\pandas\core\frame.py:1993, in DataFrame.
 →to numpy(self, dtype, copy, na value)
   1991 if dtype is not None:
            dtype = np.dtype(dtype)
-> 1993 result = self._mgr.as_array(dtype=dtype, copy=copy, na_value=na_value)
   1994 if result.dtype is not dtype:
   1995
            result = np.asarray(result, dtype=dtype)
File ~\anaconda3\Lib\site-packages\pandas\core\internals\managers.py:1694, in_
 →BlockManager.as_array(self, dtype, copy, na_value)
                arr.flags.writeable = False
   1692
   1693 else:
           arr = self._interleave(dtype=dtype, na_value=na_value)
   1695
            # The underlying data was copied within _interleave, so no need
            # to further copy if copy=True or setting na_value
   1696
   1698 if na_value is lib.no_default:
File ~\anaconda3\Lib\site-packages\pandas\core\internals\managers.py:1753, in_
 →BlockManager._interleave(self, dtype, na_value)
   1751
            else:
   1752
                arr = blk.get_values(dtype)
           result[rl.indexer] = arr
-> 1753
   1754
            itemmask[rl.indexer] = 1
   1756 if not itemmask.all():
ValueError: could not convert string to float: 'Sunrisers Hyderabad'
```

[522]: data [522]: id season city team1 \ 1 2017 Hyderabad 2017-04-05 Sunrisers Hyderabad 2017 Pune 2017-04-06 Mumbai Indians 1 2 Gujarat Lions 2 3 2017 Rajkot 2017-04-07

```
3
       4
            2017
                      Indore
                              2017-04-08
                                                 Rising Pune Supergiant
4
       5
            2017
                   Bangalore
                               2017-04-08
                                           Royal Challengers Bangalore
. .
631
     632
            2016
                      Raipur
                               2016-05-22
                                                       Delhi Daredevils
632
     633
            2016
                   Bangalore
                               2016-05-24
                                                          Gujarat Lions
633
     634
            2016
                       Delhi
                               2016-05-25
                                                    Sunrisers Hyderabad
     635
            2016
                       Delhi
634
                               2016-05-27
                                                          Gujarat Lions
635
     636
            2016
                   Bangalore
                               2016-05-29
                                                    Sunrisers Hyderabad
                            team2
                                                     toss_winner toss_decision
0
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                           field
1
          Rising Pune Supergiant
                                         Rising Pune Supergiant
                                                                           field
2
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                           field
3
                  Kings XI Punjab
                                                 Kings XI Punjab
                                                                           field
4
                 Delhi Daredevils
                                    Royal Challengers Bangalore
                                                                             bat
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631
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
                                                                           field
     Royal Challengers Bangalore
                                    Royal Challengers Bangalore
632
                                                                           field
633
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                           field
634
             Sunrisers Hyderabad
                                             Sunrisers Hyderabad
                                                                           field
635
     Royal Challengers Bangalore
                                             Sunrisers Hyderabad
                                                                             bat
             dl_applied
     result
                                                 winner
                                                         win_by_runs
0
     normal
                                   Sunrisers Hyderabad
                                                                   35
1
     normal
                       0
                                Rising Pune Supergiant
                                                                    0
2
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                                 Kolkata Knight Riders
                                                                    0
     normal
3
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                                       Kings XI Punjab
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4
     normal
                          Royal Challengers Bangalore
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                          Royal Challengers Bangalore
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631
    normal
                       0
    normal
                          Royal Challengers Bangalore
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    normal
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                       0
                                   Sunrisers Hyderabad
                                                                   22
634
     normal
                                   Sunrisers Hyderabad
                                                                    0
635
    normal
                                   Sunrisers Hyderabad
                                                                    8
     win_by_wickets player_of_match
0
                   0
                        Yuvraj Singh
1
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                           SPD Smith
2
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                              CA Lynn
3
                   6
                          GJ Maxwell
                   0
                           KM Jadhav
4
. .
                             V Kohli
631
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                   4
                      AB de Villiers
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                        MC Henriques
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635
                         BCJ Cutting
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```
Rajiv Gandhi International Stadium, Uppal
       0
                                                                      AY Dandekar
       1
                      Maharashtra Cricket Association Stadium
                                                                   A Nand Kishore
       2
                       Saurashtra Cricket Association Stadium
                                                                      Nitin Menon
       3
                                        Holkar Cricket Stadium
                                                                     AK Chaudhary
       4
                                         M Chinnaswamy Stadium
                                                                               NaN
       631
            Shaheed Veer Narayan Singh International Stadium
                                                                   A Nand Kishore
       632
                                         M Chinnaswamy Stadium
                                                                     AK Chaudhary
       633
                                               Feroz Shah Kotla
                                                                         M Erasmus
       634
                                               Feroz Shah Kotla
                                                                        M Erasmus
       635
                                         M Chinnaswamy Stadium
                                                                 HDPK Dharmasena
                     umpire2
                               umpire3
       0
                    NJ Llong
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       1
                      S Ravi
                                   NaN
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                   CK Nandan
                                   NaN
       3
              C Shamshuddin
                                   NaN
       4
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       631
               BNJ Oxenford
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            HDPK Dharmasena
                                   NaN
              C Shamshuddin
       633
                                   NaN
                   CK Nandan
       634
                                   NaN
       635
               BNJ Oxenford
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                  season
                              place
                                            date
                                                                           team1
                    2017
                          Hyderabad
                                      2017-04-05
                                                            Sunrisers Hyderabad
               1
                                                                 Mumbai Indians
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               2
                    2017
                                Pune
                                      2017-04-06
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                    2017
                             Rajkot
                                      2017-04-07
                                                                  Gujarat Lions
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                    2017
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                                                        Rising Pune Supergiant
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                    2017
                          Bangalore
                                      2017-04-08
                                                   Royal Challengers Bangalore
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                                                               Delhi Daredevils
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            633
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                                                                  Gujarat Lions
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            634
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                              Delhi
                                      2016-05-25
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       634
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                    2016
                              Delhi
                                      2016-05-27
                                                                  Gujarat Lions
                          Bangalore
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                    2016
                                      2016-05-29
                                    team2
                                                             toss_winner toss_decision \
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umpire1

venue

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0
     Royal Challengers Bangalore
                                   Royal Challengers Bangalore
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1
          Rising Pune Supergiant
                                         Rising Pune Supergiant
                                                                          field
2
           Kolkata Knight Riders
                                          Kolkata Knight Riders
                                                                          field
3
                 Kings XI Punjab
                                                Kings XI Punjab
                                                                          field
4
                Delhi Daredevils
                                   Royal Challengers Bangalore
                                                                            bat
                                   Royal Challengers Bangalore
631
     Royal Challengers Bangalore
                                                                          field
                                    Royal Challengers Bangalore
632
     Royal Challengers Bangalore
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           Kolkata Knight Riders
                                          Kolkata Knight Riders
633
                                                                          field
634
             Sunrisers Hyderabad
                                            Sunrisers Hyderabad
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     Royal Challengers Bangalore
                                            Sunrisers Hyderabad
635
                                                                            bat
     result
             dl_applied
                                                winner
                                                         win_by_runs
0
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                       0
                                   Sunrisers Hyderabad
                                                                   35
                       0
1
     normal
                               Rising Pune Supergiant
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     normal
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                                Kolkata Knight Riders
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                                       Kings XI Punjab
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4
                          Royal Challengers Bangalore
     normal
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631
                          Royal Challengers Bangalore
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632
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                          Royal Challengers Bangalore
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                                   Sunrisers Hyderabad
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634
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635
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     win_by_wickets player_of_match
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                        Yuvraj Singh
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                           SPD Smith
2
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                             CA Lynn
3
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4
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633
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0
            Rajiv Gandhi International Stadium, Uppal
                                                              AY Dandekar
              Maharashtra Cricket Association Stadium
1
                                                           A Nand Kishore
2
                Saurashtra Cricket Association Stadium
                                                              Nitin Menon
3
                                Holkar Cricket Stadium
                                                             AK Chaudhary
4
                                 M Chinnaswamy Stadium
                                                                       NaN
631
     Shaheed Veer Narayan Singh International Stadium
                                                           A Nand Kishore
632
                                 M Chinnaswamy Stadium
                                                             AK Chaudhary
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	633				Fe	roz Shah Kotla	M Erasm	us	
	634					roz Shah Kotla	M Erasm		
	635				M Chinn	aswamy Stadium	HDPK Dharmase	na	
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			umpi	re2 umpire	:3				
	0		NJ Ll	ong Na	.N				
	1		S R	avi Na	.N				
	2		CK Nan	ldan Na	.N				
	3	C SI	hamshud	ldin Na	ıN				
	4			NaN Na	ıN				
	631	BN.	J Oxenf	ord Na	lN				
	632	HDPK 1	Dharmas	ena Na	lN				
	633	C S	hamshud	ldin Na	ıN				
	634		CK Nan		lN				
	635	BN.	J Oxenf	ord Na	.N				
	_			_					
	[636	rows	х 18 со	lumns]					
[532]:	data								
[002].	aava	-							
[532]:		id	season	place	date		team1	\	
	0	1	2017	Hyderabad	2017-04-05	Sunri	sers Hyderabad		
	1	2	2017	Pune	2017-04-06		Mumbai Indians		
	2	3	2017	Rajkot	2017-04-07		Gujarat Lions		
	3	4	2017	Indore	2017-04-08	Rising P	une Supergiant		
	4	5	2017	Bangalore	2017-04-08	Royal Challen	gers Bangalore		
		•••	•••	•••	•••		•••		
	631	632	2016	Raipur	2016-05-22	De	lhi Daredevils		
	632	633	2016	Bangalore	2016-05-24		Gujarat Lions		
	633	634	2016	Delhi	2016-05-25	Sunri	sers Hyderabad		
	634	635	2016	Delhi	2016-05-27		Gujarat Lions		
	635	636	2016	Bangalore	2016-05-29	Sunri	sers Hyderabad		
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	•		a		eam2		_winner toss_d		\
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	1]	_	Pune Superg		Rising Pune Sup	~	field	
	2			a Knight Ri		Kolkata Knight		field	
	3			Kings XI Pu	•	Kings XI	•	field	
	4		D	elhi Darede	vils Royal	Challengers Ba	ngalore	bat	
	 621	Dovol	Chall-	ngong Don		Challer mana Da	m .	 f; ^7 ~	
	631	-		ngers Banga	-	Challengers Ba	•	field	
	632 633	noyal		ngers Banga	•	Challengers Ba	•	field	
				a Knight Ri		Kolkata Knight		field	
	634	D 7	Sunr	isers Hyder	apad	Sunrisers Hy	uerapad	field	

Sunrisers Hyderabad

bat

635 Royal Challengers Bangalore

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result
             dl_applied
                                                          win_by_runs
                                                 winner
0
                                   Sunrisers Hyderabad
                                                                   35
     normal
                       0
1
     normal
                                Rising Pune Supergiant
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2
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     normal
                                 Kolkata Knight Riders
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     normal
                                       Kings XI Punjab
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4
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                          Royal Challengers Bangalore
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631
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                          Royal Challengers Bangalore
                          Royal Challengers Bangalore
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632
    normal
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633
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                                   Sunrisers Hyderabad
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634
     normal
                                   Sunrisers Hyderabad
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635
    normal
                                   Sunrisers Hyderabad
                                                                    8
     win_by_wickets player_of_match
0
                   0
                        Yuvraj Singh
                   7
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                           SPD Smith
2
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                              CA Lynn
3
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                          GJ Maxwell
4
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                           KM Jadhav
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                              V Kohli
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                      AB de Villiers
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                   0
                        MC Henriques
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635
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                         BCJ Cutting
                                                   venue
                                                                   umpire1
0
            Rajiv Gandhi International Stadium, Uppal
                                                               AY Dandekar
1
              Maharashtra Cricket Association Stadium
                                                            A Nand Kishore
2
                Saurashtra Cricket Association Stadium
                                                               Nitin Menon
3
                                 Holkar Cricket Stadium
                                                              AK Chaudhary
4
                                  M Chinnaswamy Stadium
                                                                        NaN
631
     Shaheed Veer Narayan Singh International Stadium
                                                            A Nand Kishore
632
                                  M Chinnaswamy Stadium
                                                              AK Chaudhary
633
                                       Feroz Shah Kotla
                                                                 M Erasmus
634
                                       Feroz Shah Kotla
                                                                 M Erasmus
635
                                  M Chinnaswamy Stadium
                                                          HDPK Dharmasena
             umpire2
                       umpire3
0
            NJ Llong
                           NaN
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               S Ravi
                           NaN
2
           CK Nandan
                           NaN
3
       C Shamshuddin
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                  NaN
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631
        BNJ Oxenford
                           NaN
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632	HDPK Dharmasena	NaN
633	C Shamshuddin	NaN
634	CK Nandan	NaN
635	BNJ Oxenford	NaN

[636 rows x 18 columns]

	[000	10110 11	10 COLUMNIS,					
[536]:	data	.set_ind	lex('id',inp	lace=True)				
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[538]:		season	place	date		team1	\	
	id							
	1	2017	Hyderabad	2017-04-05	Sunrisers H	Hyderabad		
	2	2017	Pune	2017-04-06	Mumbai	Indians		
	3	2017	Rajkot	2017-04-07	Gujar	at Lions		
	4	2017	Indore	2017-04-08	Rising Pune Su	pergiant		
	5	2017	Bangalore	2017-04-08	Royal Challengers E	Bangalore		
			•••	•••	••			
	632	2016	Raipur	2016-05-22		aredevils		
	633	2016	•	2016-05-24		rat Lions		
	634	2016	Delhi	2016-05-25	Sunrisers H	•		
	635	2016		2016-05-27	•	rat Lions		
	636	2016	Bangalore	2016-05-29	Sunrisers H	Hyderabad		
				team2	toss_	_winner tos	s_decision	\
	id	D 10		.		-	6. 7.1	
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	2		sing Pune S		Rising Pune Supe	_	field	
	3	K	olkata Knig		Kolkata Knight		field	
	4		_	XI Punjab	Kings XI	Ū	field	
	5		Delui D	aredevils F	Royal Challengers Bar	igalore	bat	
	632	Povol C	hallangara	 Dangalana E	Royal Challengers Ban	 	 field	
	633	•	hallengers hallengers	-	Royal Challengers Bar Royal Challengers Bar	•	field	
	634	•	olkata Knig	-	Kolkata Knight	-	field	
	635	IX	Sunrisers		Sunrisers Hyd		field	
	636	Royal C	hallengers	•	Sunrisers Hyd		bat	
	000	noyar o	narrongorb	Dangaroro	built 15015 Try 0	ioi abaa	540	
		result	dl_applied		winner w	in_by_runs		
	id					· ·- J	•	
	1	normal	0	Su	nrisers Hyderabad	35	•	
	2	normal	0		ng Pune Supergiant	0		
	3	normal	0		kata Knight Riders	0		
	4	normal	0		Kings XI Punjab	0		
	5	normal	0	Royal Chal	llengers Bangalore	15		
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632
    normal
                          Royal Challengers Bangalore
                                                                    0
633
    normal
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                          Royal Challengers Bangalore
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634
    normal
                                   Sunrisers Hyderabad
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635
    normal
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                                   Sunrisers Hyderabad
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636
    normal
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                                   Sunrisers Hyderabad
                                                                    8
     win_by_wickets player_of_match \
id
1
                   0
                        Yuvraj Singh
2
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                           SPD Smith
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                             CA Lynn
4
                   6
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                           KM Jadhav
                             V Kohli
632
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633
                   4
                      AB de Villiers
                   0
634
                        MC Henriques
635
                           DA Warner
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636
                         BCJ Cutting
                                                                   umpire1 \
                                                   venue
id
1
            Rajiv Gandhi International Stadium, Uppal
                                                               AY Dandekar
2
              Maharashtra Cricket Association Stadium
                                                            A Nand Kishore
                Saurashtra Cricket Association Stadium
3
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4
                                 Holkar Cricket Stadium
                                                              AK Chaudhary
5
                                  M Chinnaswamy Stadium
                                                                       NaN
632
     Shaheed Veer Narayan Singh International Stadium
                                                            A Nand Kishore
633
                                  M Chinnaswamy Stadium
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634
                                       Feroz Shah Kotla
                                                                 M Erasmus
635
                                       Feroz Shah Kotla
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636
                                  M Chinnaswamy Stadium
                                                          HDPK Dharmasena
             umpire2 umpire3
id
1
                           NaN
            NJ Llong
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              S Ravi
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4
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632
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     HDPK Dharmasena
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634
       C Shamshuddin
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635
           CK Nandan
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        BNJ Oxenford
636
                           NaN
```

[636 rows x 17 columns]

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	1	2	2017	P	une	2017-04-06		Mumbai Indians			
	2	3	2017	Raj]	kot	2017-04-07		Gujarat Lions			
	3	4	2017	Ind	ore	2017-04-08	Rising	Pune Supergiant			
	4	5	2017	Bangal	ore	2017-04-08	Royal Challe	ngers Bangalore			
	631	632	2016	 Raij	nur	2016-05-22	D	elhi Daredevils			
	632	633	2016	Bangal	_	2016-05-24	_	Gujarat Lions			
	633	634	2016	_	lhi	2016-05-25	Sunr	isers Hyderabad			
	634	635	2016		lhi	2016-05-27	2 4111	Gujarat Lions			
	635	636	2016	Bangal		2016-05-29	Sunr	isers Hyderabad			
	team2 toss_winner toss_deci										
	1	3	Rising	pergiant	field						
	2		_	a Knigh	_		Kolkata Knigh		field		
	3			Kings X			•	I Punjab	field		
	4			elhi Da:		·	Challengers B	· ·	bat		
							G		•		
	631	Royal	L Challe	ngers B	anga]	Lore Royal	Challengers B	field			
	632	Royal	L Challe	ngers B	anga]	Lore Royal	Challengers B	field			
	633		Kolkat	a Knigh	t Ric	lers	Kolkata Knight Riders				
	634		Sunr	isers H	ydera	abad	Sunrisers H	yderabad	field		
	635	Royal	L Challe	ngers B	anga]	Lore	Sunrisers H	yderabad	bat		
		resul	lt dl a	pplied			winner	win_by_runs \			
	0	norma		0		Sunrise	ers Hyderabad	35			
	1	norma	al	0			ne Supergiant	0			
	2	norma	al	0		•	Knight Riders	0			
	3	norma	al	0			ngs XI Punjab	0			
	4	norma	al	0	Roya		ers Bangalore	15			
				•••			•••	•••			
	631	norma	al	0	Roya	al Challenge	ers Bangalore	0			
	632	norma	al	0	Roya	al Challenge	ers Bangalore	0			
	633	norma	al	0		Sunrise	ers Hyderabad	22			
	634	norma	al	0		Sunrise	ers Hyderabad	0			
	635	norma	al	0		Sunrise	ers Hyderabad	8			

 ${\tt win_by_wickets\ player_of_match} \quad \backslash$

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0
                          0
                               Yuvraj Singh
                          7
                                   SPD Smith
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                                     CA Lynn
       3
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                                  GJ Maxwell
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                                   KM Jadhav
                          6
                                     V Kohli
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       632
                          4
                             AB de Villiers
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                               MC Henriques
       634
                          4
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                                BCJ Cutting
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                                                          venue
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       0
                    Rajiv Gandhi International Stadium, Uppal
                                                                      AY Dandekar
                      Maharashtra Cricket Association Stadium
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                       Saurashtra Cricket Association Stadium
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       3
                                        Holkar Cricket Stadium
                                                                     AK Chaudhary
       4
                                         M Chinnaswamy Stadium
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       631
            Shaheed Veer Narayan Singh International Stadium
                                                                   A Nand Kishore
       632
                                         M Chinnaswamy Stadium
                                                                     AK Chaudhary
       633
                                              Feroz Shah Kotla
                                                                        M Erasmus
       634
                                              Feroz Shah Kotla
                                                                        M Erasmus
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                                         M Chinnaswamy Stadium HDPK Dharmasena
                     umpire2
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                   CK Nandan
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              C Shamshuddin
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               BNJ Oxenford
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            HDPK Dharmasena
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       633
              C Shamshuddin
                                   NaN
       634
                   CK Nandan
                                   NaN
       635
               BNJ Oxenford
                                   NaN
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                                        92
       Chennai Super Kings
                                        79
       Kolkata Knight Riders
                                        77
       Royal Challengers Bangalore
                                        73
```

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Sunrisers Hyderabad
                                        42
                                        29
       Deccan Chargers
       Gujarat Lions
                                        13
       Pune Warriors
                                        12
       Rising Pune Supergiant
                                        10
       Kochi Tuskers Kerala
                                         6
       Rising Pune Supergiants
                                         5
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[592]:
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                              place
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                          Hyderabad
                                                           Sunrisers Hyderabad
       0
              1
                    2017
              2
       1
                    2017
                               Pune
                                      2017-04-06
                                                                Mumbai Indians
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              3
                    2017
                             Rajkot
                                      2017-04-07
                                                                 Gujarat Lions
       3
              4
                    2017
                             Indore
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                                                        Rising Pune Supergiant
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                    2017
                                                  Royal Challengers Bangalore
                          Bangalore
                                      2017-04-08
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                    2016
                             Raipur
                                      2016-05-22
                                                              Delhi Daredevils
       632
                          Bangalore
            633
                    2016
                                      2016-05-24
                                                                 Gujarat Lions
       633
            634
                    2016
                              Delhi
                                      2016-05-25
                                                           Sunrisers Hyderabad
       634
            635
                              Delhi
                                                                 Gujarat Lions
                    2016
                                      2016-05-27
       635
            636
                    2016
                          Bangalore
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                                                           Sunrisers Hyderabad
                                    team2
                                                            toss_winner toss_decision
       0
            Royal Challengers Bangalore
                                           Royal Challengers Bangalore
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                  Kolkata Knight Riders
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                                                                                 field
       4
                        Delhi Daredevils
                                           Royal Challengers Bangalore
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       631
            Royal Challengers Bangalore
                                           Royal Challengers Bangalore
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       632
            Royal Challengers Bangalore
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       633
                  Kolkata Knight Riders
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                     Sunrisers Hyderabad
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            Royal Challengers Bangalore
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                                                                                   bat
            result dl_applied
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            normal
                                       Rising Pune Supergiant
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            normal
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                                        Kolkata Knight Riders
                                                                           0
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            normal
                              0
                                              Kings XI Punjab
                                                                           0
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63

62

Kings XI Punjab

Rajasthan Royals

Delhi Daredevils

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4
     normal
                          Royal Challengers Bangalore
                                                                   15
631
     normal
                          Royal Challengers Bangalore
                                                                    0
                          Royal Challengers Bangalore
632
     normal
                       0
                                                                    0
633
    normal
                       0
                                   Sunrisers Hyderabad
                                                                   22
                                   Sunrisers Hyderabad
634
    normal
                       0
                                                                    0
635
                       0
                                   Sunrisers Hyderabad
                                                                    8
    normal
     win_by_wickets player_of_match
0
                   0
                        Yuvraj Singh
                   7
1
                           SPD Smith
2
                  10
                             CA Lynn
3
                   6
                          GJ Maxwell
                           KM Jadhav
4
                   0
                   6
631
                             V Kohli
                   4
632
                      AB de Villiers
633
                   0
                        MC Henriques
634
                   4
                           DA Warner
635
                   0
                         BCJ Cutting
                                                                   umpire1
                                                   venue
0
            Rajiv Gandhi International Stadium, Uppal
                                                               AY Dandekar
1
              Maharashtra Cricket Association Stadium
                                                            A Nand Kishore
2
                Saurashtra Cricket Association Stadium
                                                               Nitin Menon
3
                                Holkar Cricket Stadium
                                                              AK Chaudhary
4
                                  M Chinnaswamy Stadium
                                                                       NaN
631
     Shaheed Veer Narayan Singh International Stadium
                                                           A Nand Kishore
632
                                  M Chinnaswamy Stadium
                                                              AK Chaudhary
633
                                       Feroz Shah Kotla
                                                                 M Erasmus
634
                                       Feroz Shah Kotla
                                                                 M Erasmus
635
                                  M Chinnaswamy Stadium
                                                          HDPK Dharmasena
             umpire2
0
            NJ Llong
1
              S Ravi
2
           CK Nandan
       C Shamshuddin
3
4
                 NaN
631
        BNJ Oxenford
632
     HDPK Dharmasena
633
       C Shamshuddin
634
           CK Nandan
        BNJ Oxenford
635
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[636 rows x 17 columns]

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                              place
                                            date
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       0
              1
                    2017
                          Hyderabad
                                      2017-04-05
                                                           Sunrisers Hyderabad
       1
              2
                    2017
                               Pune
                                      2017-04-06
                                                                Mumbai Indians
       2
              3
                    2017
                             Rajkot
                                      2017-04-07
                                                                 Gujarat Lions
       3
              4
                    2017
                             Indore
                                      2017-04-08
                                                        Rising Pune Supergiant
       4
              5
                                                  Royal Challengers Bangalore
                    2017
                          Bangalore
                                      2017-04-08
       631
            632
                    2016
                                      2016-05-22
                                                              Delhi Daredevils
                             Raipur
       632
            633
                    2016
                          Bangalore
                                      2016-05-24
                                                                 Gujarat Lions
       633
            634
                    2016
                              Delhi
                                      2016-05-25
                                                           Sunrisers Hyderabad
       634
            635
                    2016
                              Delhi
                                      2016-05-27
                                                                 Gujarat Lions
       635
            636
                    2016
                          Bangalore
                                      2016-05-29
                                                           Sunrisers Hyderabad
                                    team2
                                                            toss_winner toss_decision
       0
            Royal Challengers Bangalore
                                           Royal Challengers Bangalore
                                                                                 field
       1
                  Rising Pune Supergiant
                                                Rising Pune Supergiant
                                                                                 field
       2
                  Kolkata Knight Riders
                                                 Kolkata Knight Riders
                                                                                 field
       3
                         Kings XI Punjab
                                                        Kings XI Punjab
                                                                                 field
       4
                        Delhi Daredevils
                                           Royal Challengers Bangalore
                                                                                   bat
       . .
                                           Royal Challengers Bangalore
            Royal Challengers Bangalore
                                                                                 field
       632
            Royal Challengers Bangalore
                                           Royal Challengers Bangalore
                                                                                 field
       633
                  Kolkata Knight Riders
                                                 Kolkata Knight Riders
                                                                                 field
       634
                     Sunrisers Hyderabad
                                                    Sunrisers Hyderabad
                                                                                 field
       635
            Royal Challengers Bangalore
                                                   Sunrisers Hyderabad
                                                                                   bat
                     dl_applied
            result
                                                        winner
                                                                win_by_runs
       0
            normal
                              0
                                          Sunrisers Hyderabad
                                                                          35
       1
                              0
            normal
                                       Rising Pune Supergiant
                                                                           0
       2
            normal
                              0
                                        Kolkata Knight Riders
                                                                           0
       3
            normal
                                              Kings XI Punjab
                                                                           0
            normal
                                 Royal Challengers Bangalore
                                                                          15
                                                                           0
       631
           normal
                              0
                                 Royal Challengers Bangalore
                                 Royal Challengers Bangalore
       632
            normal
                              0
                                                                           0
       633
            normal
                              0
                                          Sunrisers Hyderabad
                                                                          22
                                          Sunrisers Hyderabad
       634
            normal
                                                                           0
       635
            normal
                                          Sunrisers Hyderabad
                                                                           8
            win_by_wickets player_of_match
       0
                          0
                               Yuvraj Singh
```

```
1
                          7
                                   SPD Smith
       2
                         10
                                     CA Lynn
       3
                          6
                                  GJ Maxwell
                          0
       4
                                   KM Jadhav
                          6
                                     V Kohli
       631
       632
                          4
                             AB de Villiers
                          0
       633
                               MC Henriques
       634
                          4
                                   DA Warner
       635
                          0
                                 BCJ Cutting
                                                                           umpire1
                                                          venue
       0
                    Rajiv Gandhi International Stadium, Uppal
                                                                      AY Dandekar
       1
                      Maharashtra Cricket Association Stadium
                                                                   A Nand Kishore
       2
                       Saurashtra Cricket Association Stadium
                                                                      Nitin Menon
       3
                                        Holkar Cricket Stadium
                                                                     AK Chaudhary
       4
                                         M Chinnaswamy Stadium
                                                                               NaN
       . .
       631
            Shaheed Veer Narayan Singh International Stadium
                                                                   A Nand Kishore
       632
                                         M Chinnaswamy Stadium
                                                                     AK Chaudhary
       633
                                               Feroz Shah Kotla
                                                                        M Erasmus
       634
                                              Feroz Shah Kotla
                                                                        M Erasmus
       635
                                         M Chinnaswamy Stadium
                                                                  HDPK Dharmasena
                     umpire2
       0
                    NJ Llong
       1
                      S Ravi
       2
                   CK Nandan
       3
              C Shamshuddin
       4
                         NaN
       . .
       631
               BNJ Oxenford
       632
            HDPK Dharmasena
       633
              C Shamshuddin
       634
                   CK Nandan
       635
               BNJ Oxenford
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                                                                           team1
             id
                              place
                                            date
                                                               Delhi Daredevils
       300
            301
                    2011
                              Delhi
                                      2011-05-21
       545
            546
                    2015
                          Bangalore
                                      2015-04-29
                                                   Royal Challengers Bangalore
       570
            571
                    2015
                          Bangalore
                                      2015-05-17
                                                               Delhi Daredevils
```

team2

toss_winner toss_decision \

[622]:

```
300
                           Pune Warriors
                                                      Delhi Daredevils
                                                                                  bat
       545
                       Rajasthan Royals
                                                      Rajasthan Royals
                                                                                field
       570 Royal Challengers Bangalore Royal Challengers Bangalore
                                                                                field
               result
                       dl_applied
                                       winner
                                              win_by_runs
                                                             win_by_wickets
                                    Nahi Pata
       300
            no result
                                                          0
                                                                           0
                                                                           0
       545
           no result
                                 0
                                    Nahi Pata
                                                          0
       570 no result
                                    Nahi Pata
                                                                           0
                                                          0
           player_of_match
                                                             umpire1
                                                                            umpire2
                                              venue
                                                           SS Hazare
                                                                          RJ Tucker
       300
                        NaN
                                  Feroz Shah Kotla
       545
                        NaN
                            M Chinnaswamy Stadium
                                                           JD Cloete
                                                                          PG Pathak
       570
                       {\tt NaN}
                             M Chinnaswamy Stadium HDPK Dharmasena K Srinivasan
[644]: data
[648]: data[data['winner']=="Nahi Pata"]
[648]:
             id
                 season
                              place
                                           date
                                                                         team1
                                                                                \
       300
                   2011
                              Delhi
                                     2011-05-21
            301
                                                             Delhi Daredevils
       545
            546
                   2015
                         Bangalore
                                     2015-04-29
                                                 Royal Challengers Bangalore
       570
            571
                   2015
                         Bangalore
                                     2015-05-17
                                                             Delhi Daredevils
                                   team2
                                                           toss_winner toss_decision \
       300
                           Pune Warriors
                                                      Delhi Daredevils
                                                                                  bat
       545
                        Rajasthan Royals
                                                      Rajasthan Royals
                                                                                field
       570 Royal Challengers Bangalore Royal Challengers Bangalore
                                                                                field
               result
                      dl applied
                                       winner win_by_runs
                                                             win by wickets
       300
            no result
                                    Nahi Pata
                                 0
                                                          0
                                                                           0
       545
           no result
                                 0
                                    Nahi Pata
                                                          0
                                                                           0
           no result
                                    Nahi Pata
                                                                           0
       570
                                                          0
           player_of_match
                                                             umpire1
                                                                            umpire2
                                              venue
       300
                                  Feroz Shah Kotla
                                                           SS Hazare
                                                                          RJ Tucker
                        NaN
                                                                          PG Pathak
       545
                        NaN
                             M Chinnaswamy Stadium
                                                           JD Cloete
       570
                        NaN
                             M Chinnaswamy Stadium
                                                     HDPK Dharmasena K Srinivasan
  []:
```