playoff_viz

March 25, 2018

In [1]:
```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt
import seaborn as sns
import time
plt.style.use('ggplot')
%matplotlib inline
```

In [2]:
```
from nba_py.team import TeamYearOverYearSplits, TeamList
team_list = TeamList().info().head(30)
```

In [3]:
```
regular_stats = pd.read_csv('all_team_playoffs.csv')
advs_stats = pd.read_csv('all_team_playoffs_adv.csv')
```

In [4]:
```
regular_features = regular_stats[['GROUP_VALUE','FGM', 'FGA', 'FG_PCT', 'FG3M', 'FG3A'
       'FT_PCT', 'OREB', 'DREB', 'REB', 'AST', 'TOV', 'STL', 'BLK', 'BLKA',
       'PF', 'PFD', 'PTS', 'PLUS_MINUS','PLAYOFFS']]
```

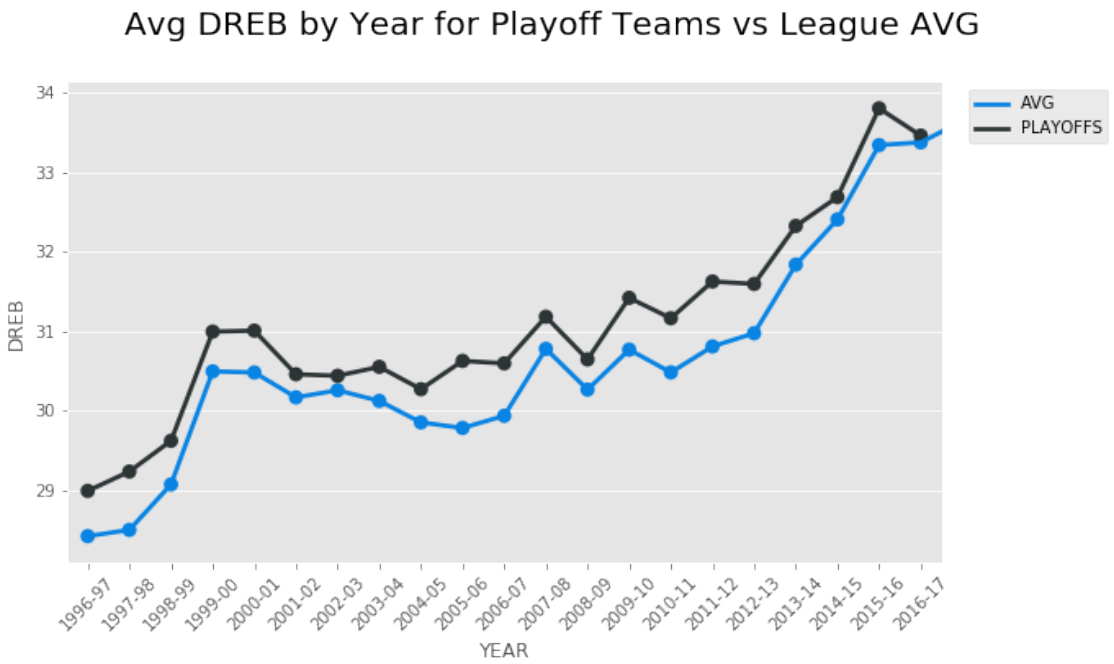
In [5]:
```
playoff_reg = regular_features[regular_features['PLAYOFFS'] == 1].groupby(['GROUP_VALU
playoff_reg['YEAR'] = playoff_reg.index
```

In [6]:
```
reg_means = regular_features.groupby(['GROUP_VALUE']).mean()
reg_means['YEAR'] = reg_means.index
```

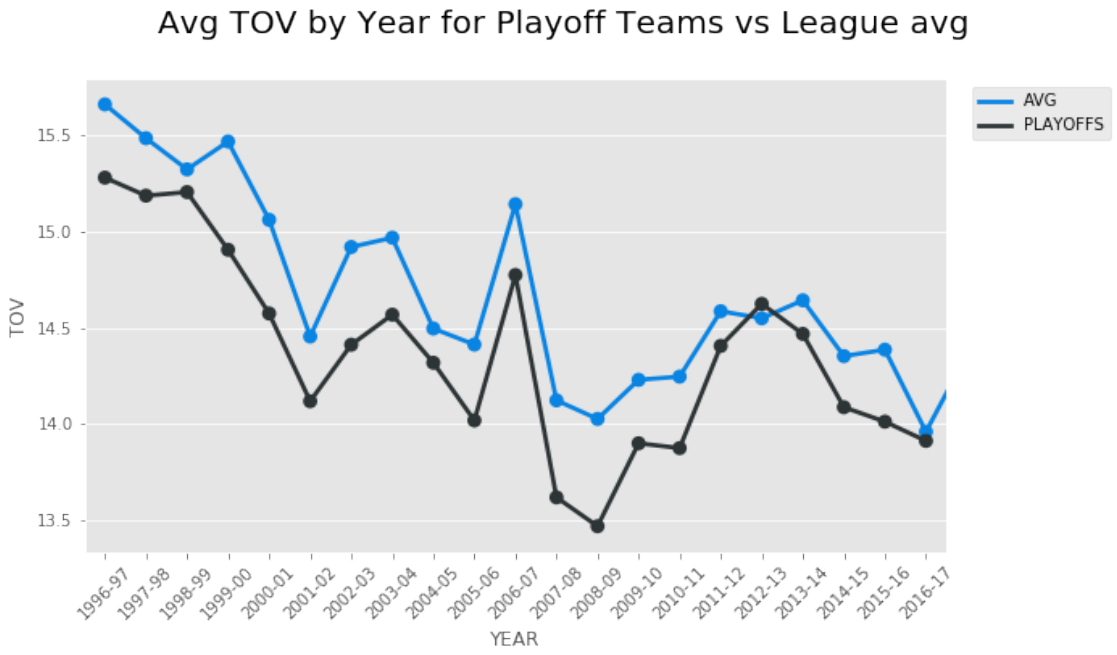
In [7]:
```
advs_features = advs_stats[['GROUP_VALUE','NET_RATING', 'AST_PCT', 'AST_TO',
       'AST_RATIO', 'OREB_PCT', 'DREB_PCT', 'REB_PCT', 'TM_TOV_PCT', 'EFG_PCT',
       'TS_PCT', 'PACE', 'PIE','PLAYOFFS']]
adv_means = advs_features.groupby(['GROUP_VALUE']).mean()
adv_means['YEAR'] = adv_means.index
playoff_adv = advs_features[advs_features['PLAYOFFS'] == 1].groupby(['GROUP_VALUE']).me
playoff_adv['YEAR'] = playoff_adv.index
```

In [33]:
```
fig, ax = plt.subplots(figsize=(11,6))
sns.pointplot(x='YEAR',y='DREB', data=reg_means,color='#0984e3')
sns.pointplot(x='YEAR',y='DREB', data=playoff_reg, color='#2d3436')
leg = plt.legend(labels=['AVG','PLAYOFFS'], bbox_to_anchor=[1.2,1.0])
leg.legendHandles[0].set_color('#0984e3')
leg.legendHandles[1].set_color('#2d3436')
```

```
fig.suptitle('Avg DREB by Year for Playoff Teams vs League AVG', fontsize=20)
ticks = plt.xticks(rotation=45)
plt.subplots_adjust(bottom=0.2,right=0.8)
fig.savefig('dreb_by_year')
```

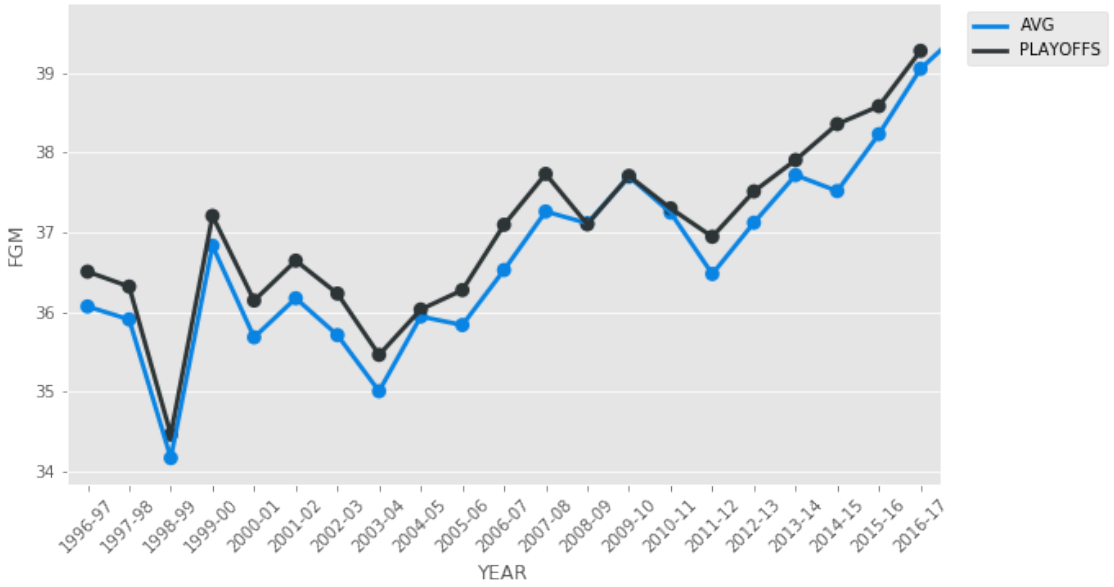


In [34]:
```
stat_to_analyze = 'TOV'
fig, ax = plt.subplots(figsize=(11,6))
sns.pointplot(x='YEAR',y=stat_to_analyze, data=reg_means,color='#0984e3')
sns.pointplot(x='YEAR',y=stat_to_analyze, data=playoff_reg, color='#2d3436')
leg = plt.legend(labels=['AVG','PLAYOFFS'], bbox_to_anchor=[1.2,1.0])
leg.legendHandles[0].set_color('#0984e3')
leg.legendHandles[1].set_color('#2d3436')
fig.suptitle('Avg %s by Year for Playoff Teams vs League avg' % (stat_to_analyze), fo
ticks = plt.xticks(rotation=45)
plt.subplots_adjust(bottom=0.2,right=0.8)
fig.savefig('%s_by_year' % stat_to_analyze)
```

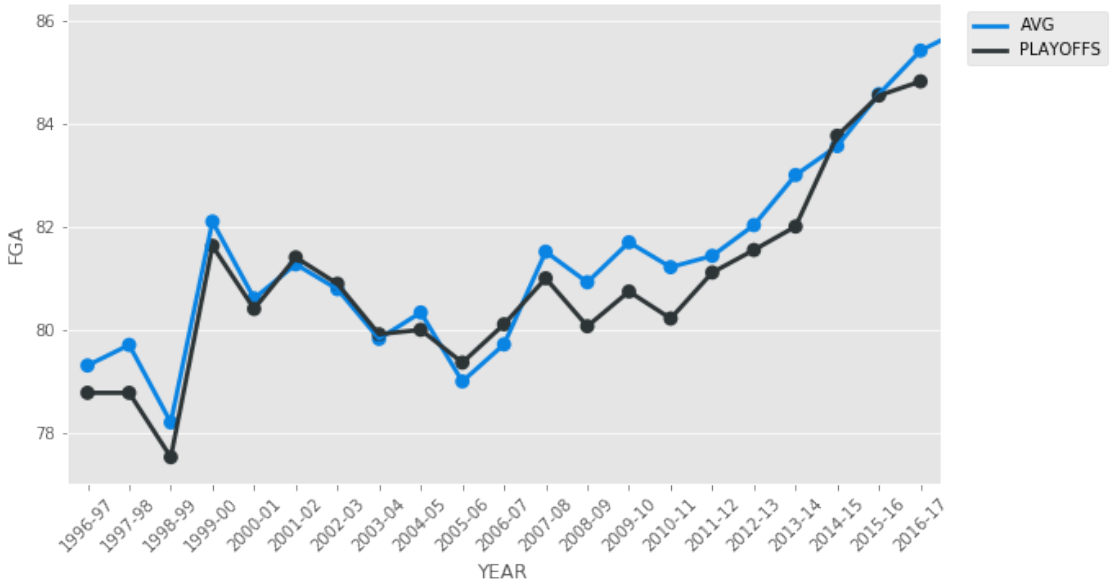


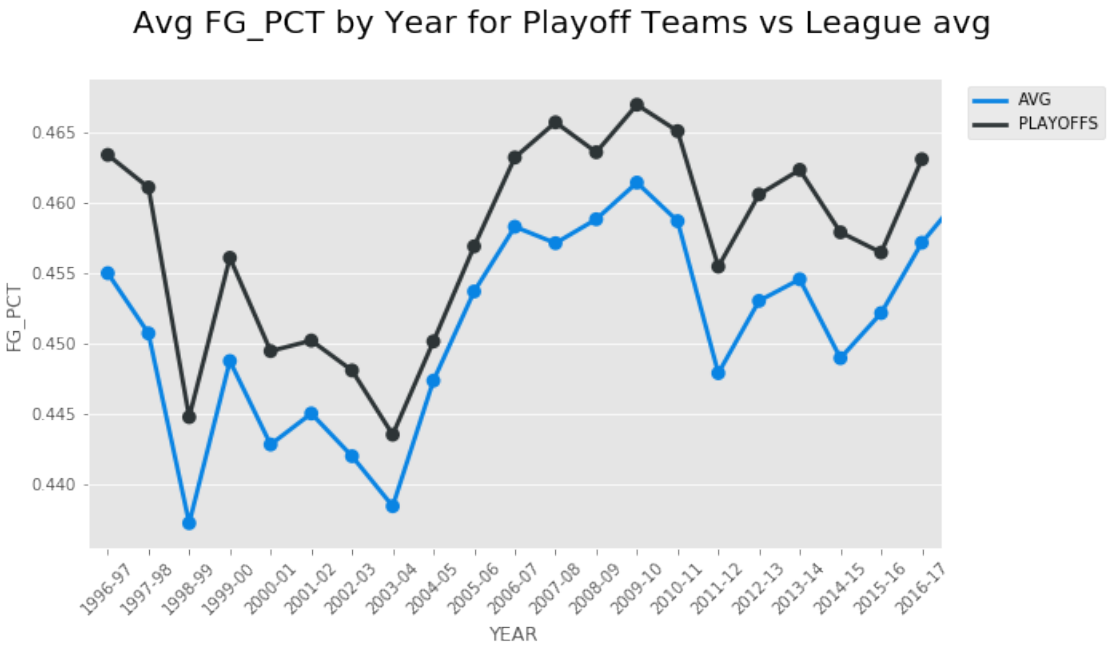

```
In [36]: features_analyze = ['FGM', 'FGA', 'FG_PCT', 'FG3M', 'FG3A', 'FG3_PCT', 'FTM', 'FTA',
                'FT_PCT', 'OREB', 'DREB', 'REB', 'AST', 'TOV', 'STL', 'BLK', 'BLKA',
                'PF', 'PFD', 'PTS']
         for feature in features_analyze:
             fig, ax = plt.subplots(figsize=(11,6))
             sns.pointplot(x='YEAR',y=feature, data=reg_means,color='#0984e3')
             sns.pointplot(x='YEAR',y=feature, data=playoff_reg, color='#2d3436')
             leg = plt.legend(labels=['AVG','PLAYOFFS'], bbox_to_anchor=[1.2,1.0])
             leg.legendHandles[0].set_color('#0984e3')
             leg.legendHandles[1].set_color('#2d3436')
             fig.suptitle('Avg %s by Year for Playoff Teams vs League avg' % (feature), fontsi
             ticks = plt.xticks(rotation=45)
             plt.subplots_adjust(bottom=0.2,right=0.8)
             fig.savefig('%s_by_year' % feature)
```

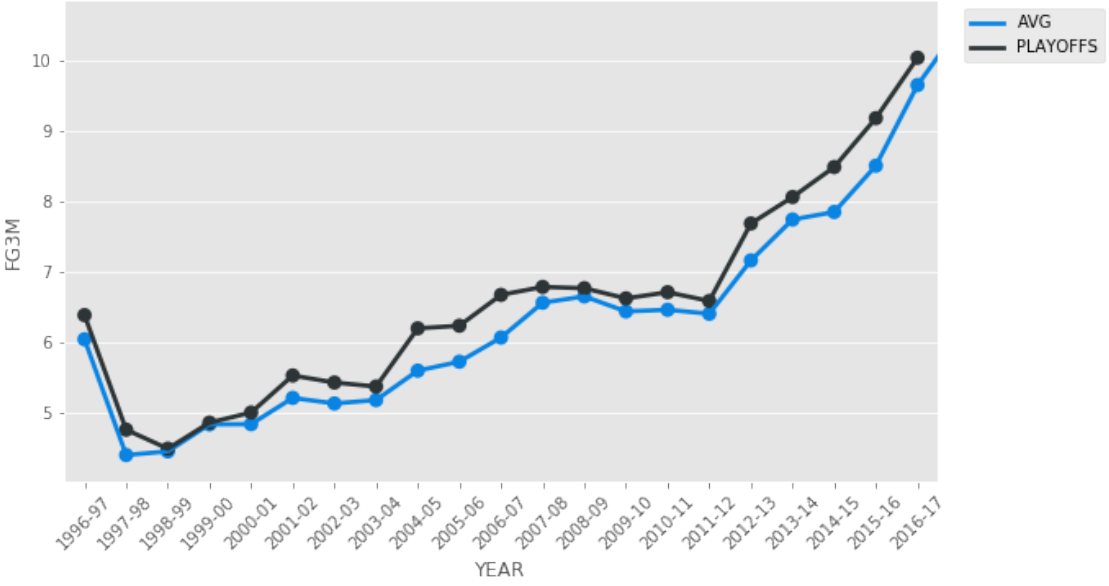
Avg FGM by Year for Playoff Teams vs League avg

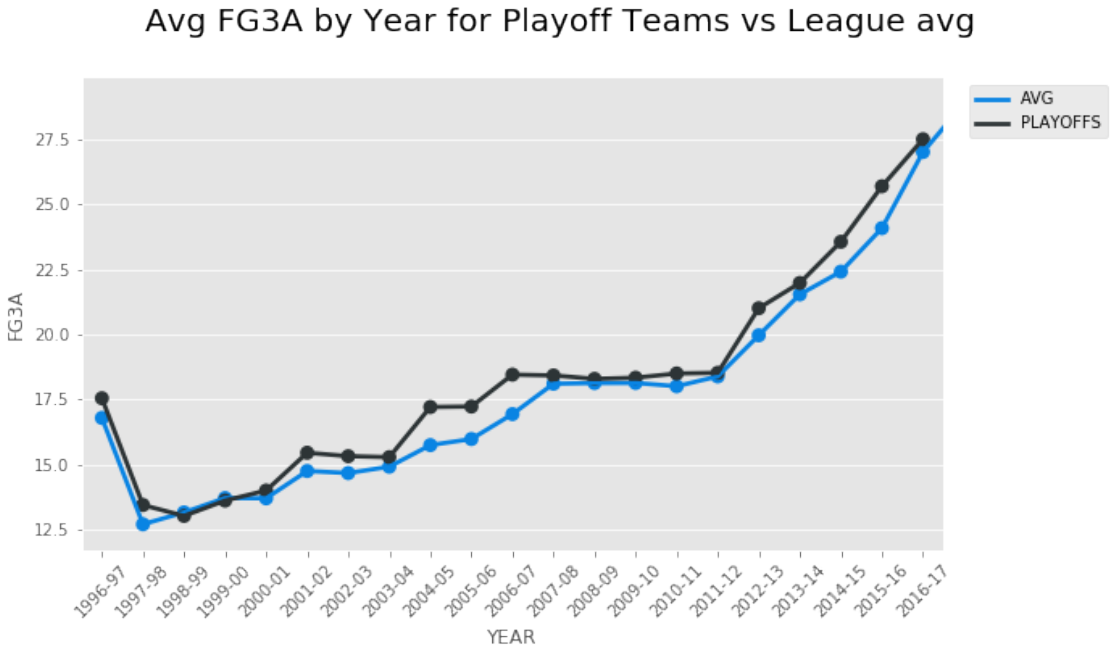


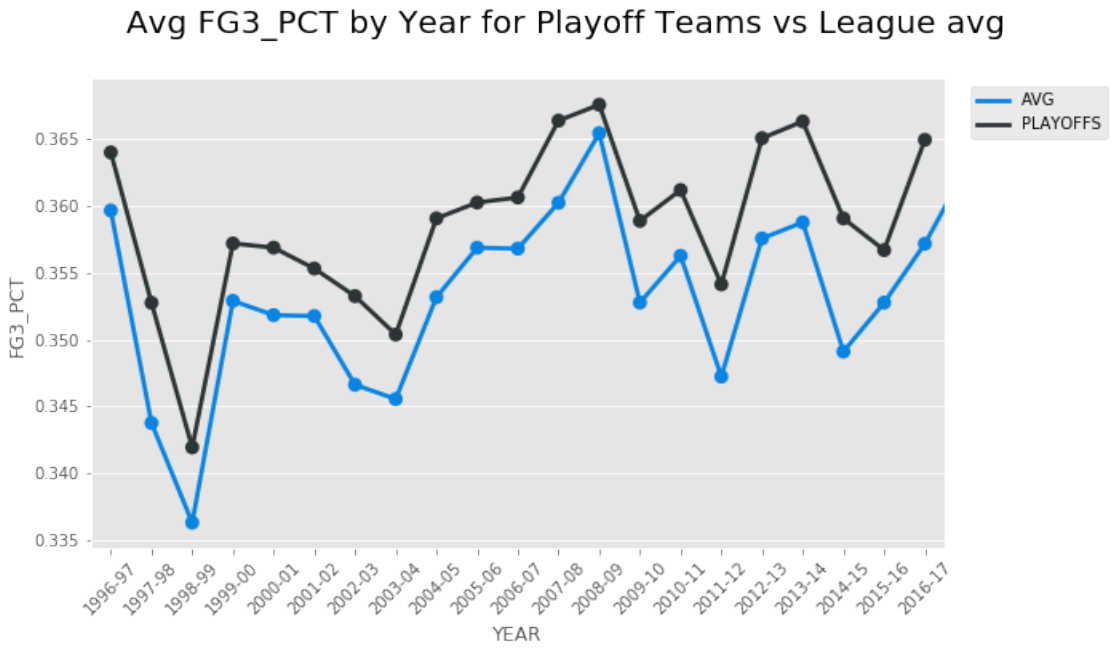
Avg FGA by Year for Playoff Teams vs League avg

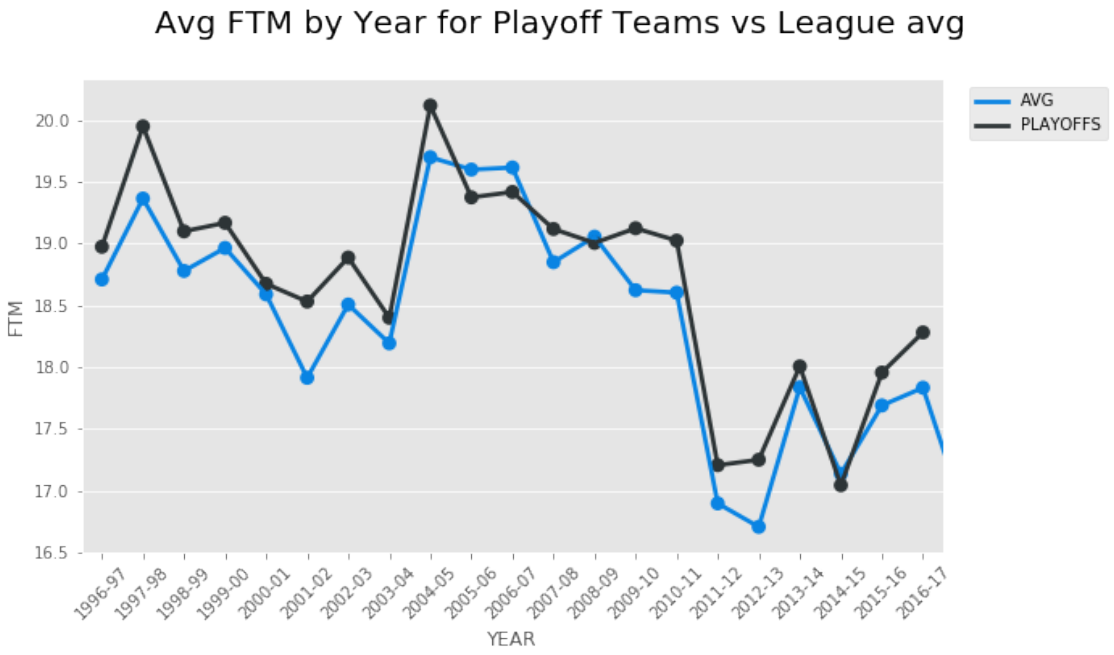


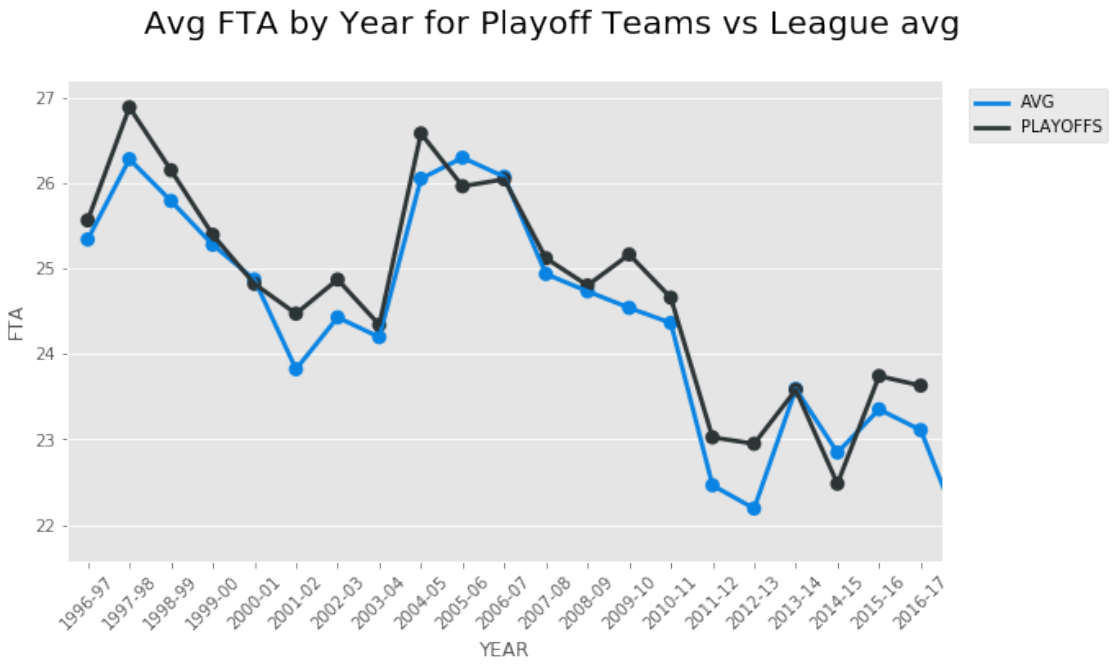

Avg FG_PCT by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
FG_PCT
0.465
0.460
0.455
0.450
0.445
0.440
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR


Avg FG3M by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
FG3M
10
9
8
7
6
5
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR

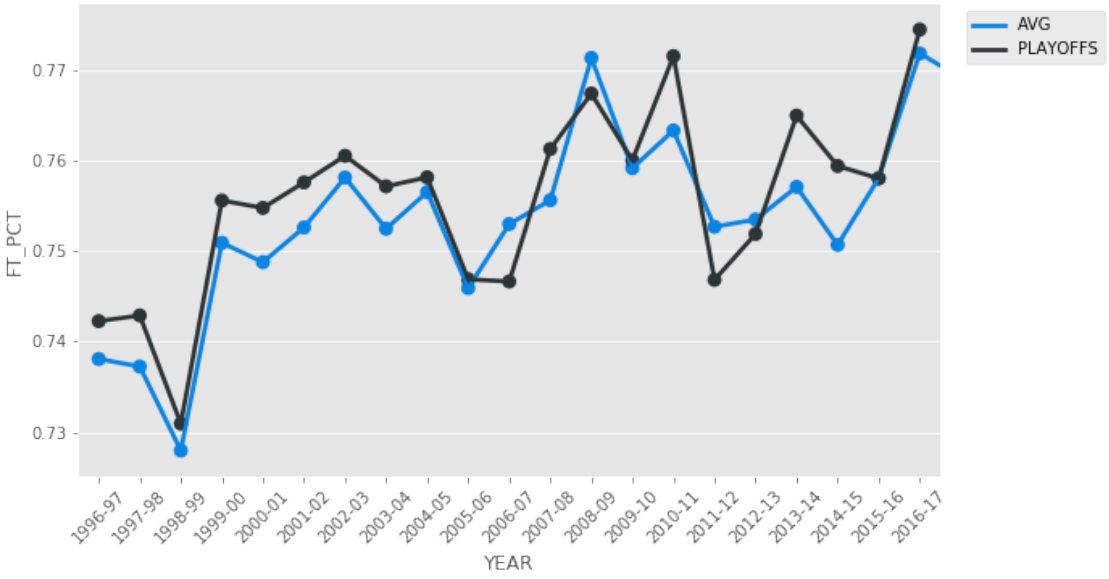

Avg FG3A by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
FG3A
27.5
25.0
22.5
20.0
17.5
15.0
12.5
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR


Avg FG3_PCT by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
FG3_PCT
0.365
0.360
0.355
0.350
0.345
0.340
0.335
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR

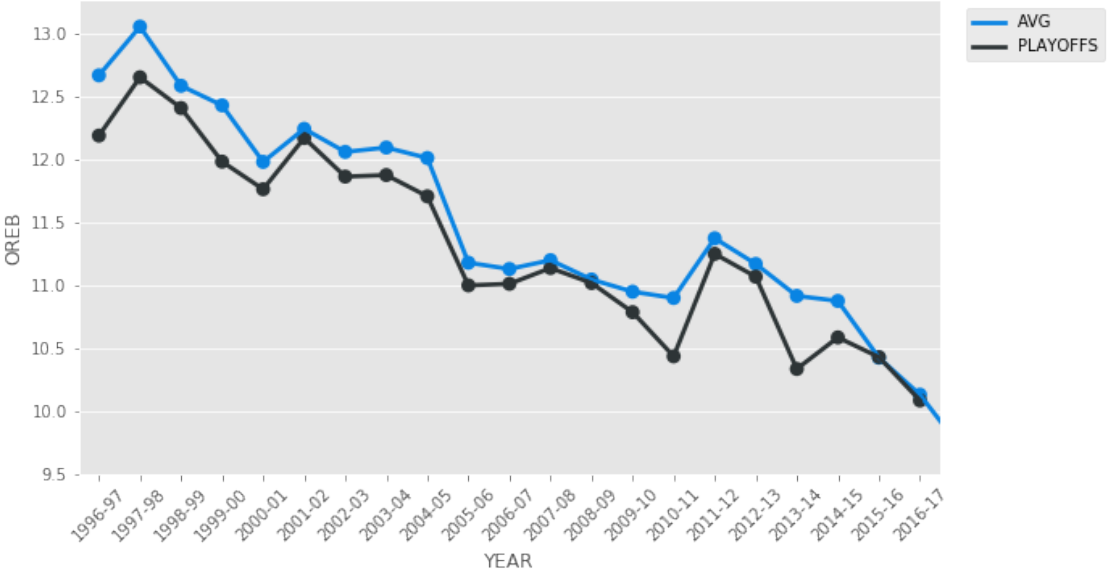

Avg FTM by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
FTM
YEAR
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17

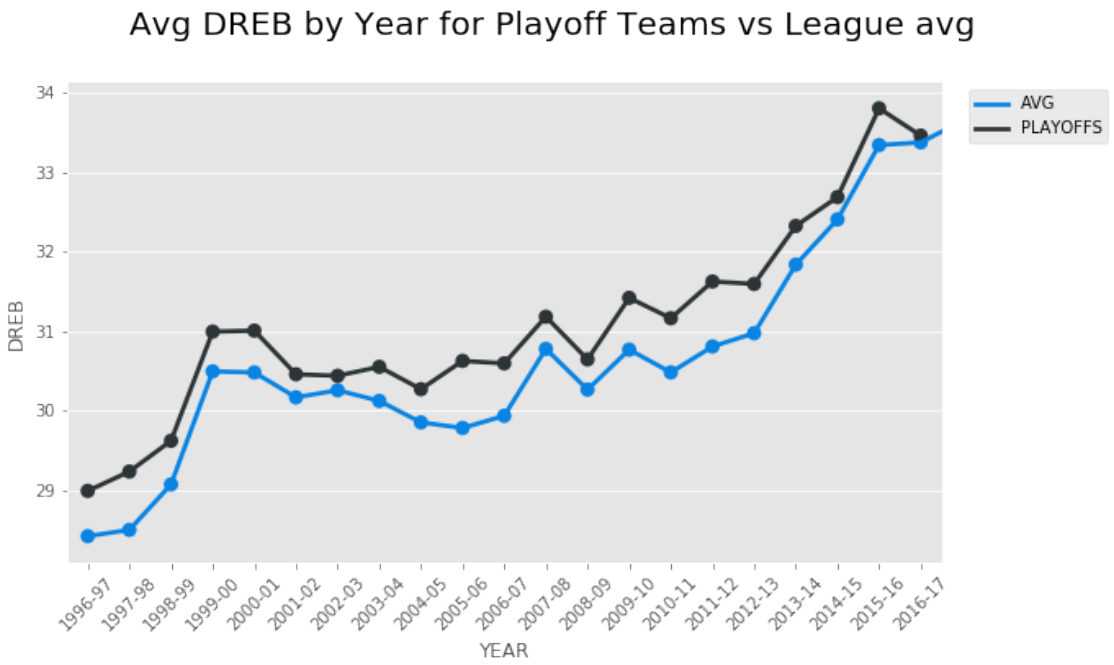

Avg FTA by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
FTA
YEAR
27
26
25
24
23
22
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17

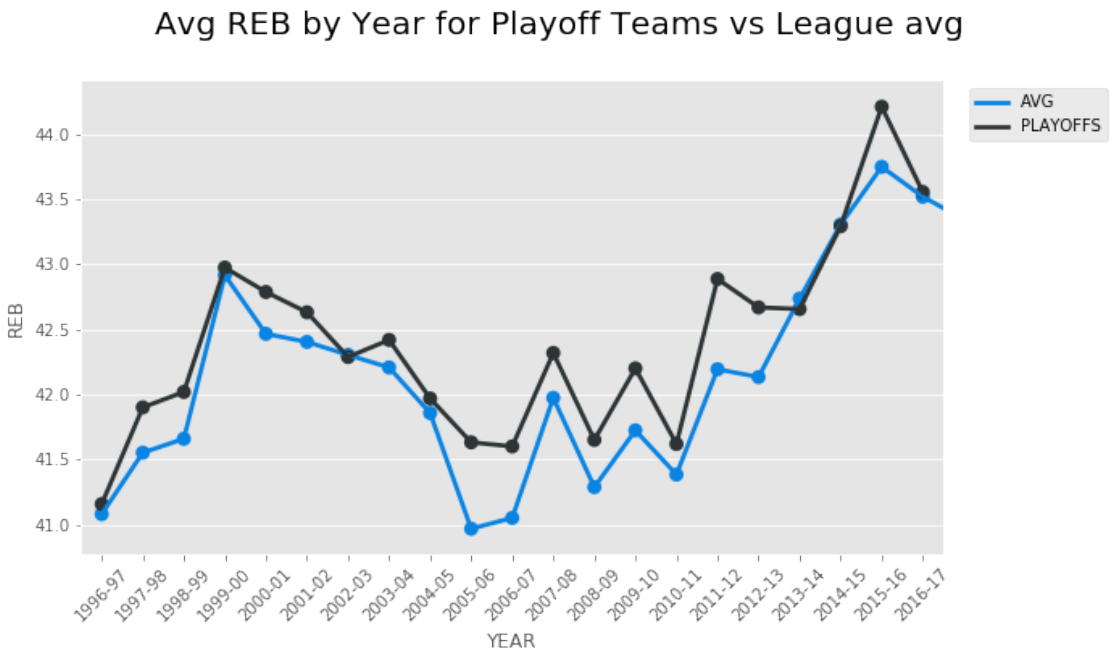
Avg FT_PCT by Year for Playoff Teams vs League avg

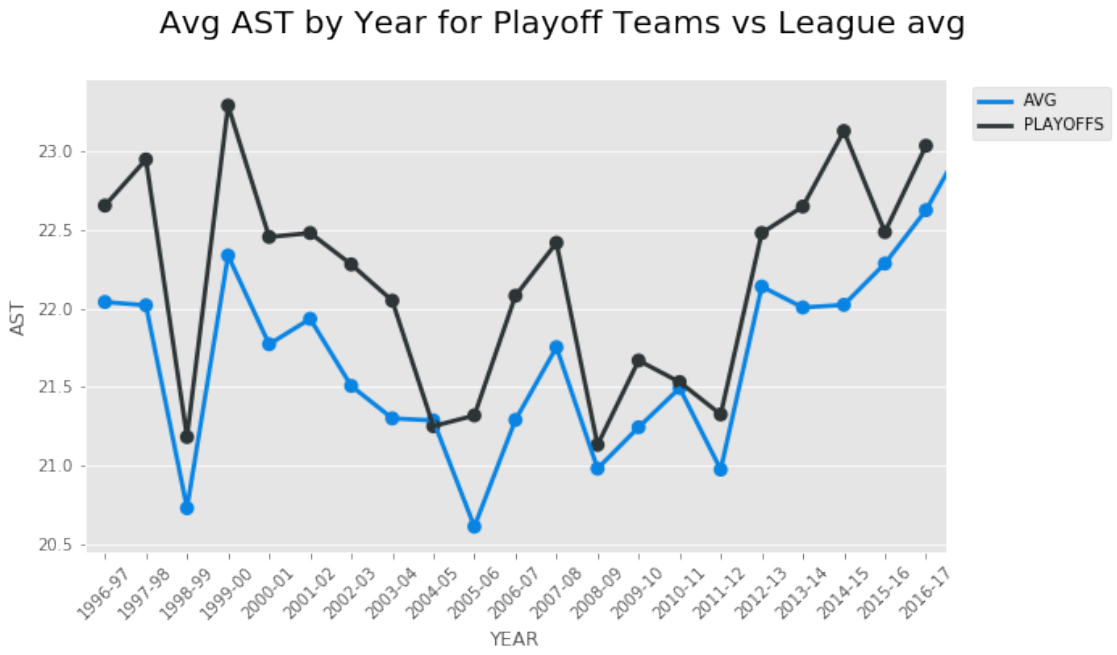


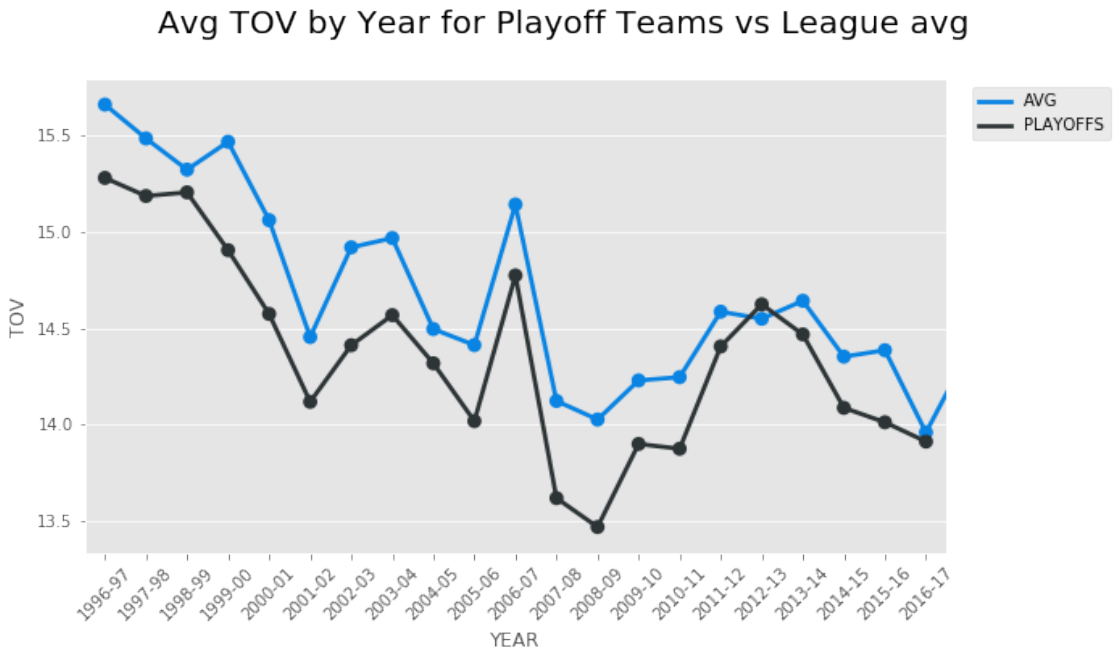
Avg OREB by Year for Playoff Teams vs League avg



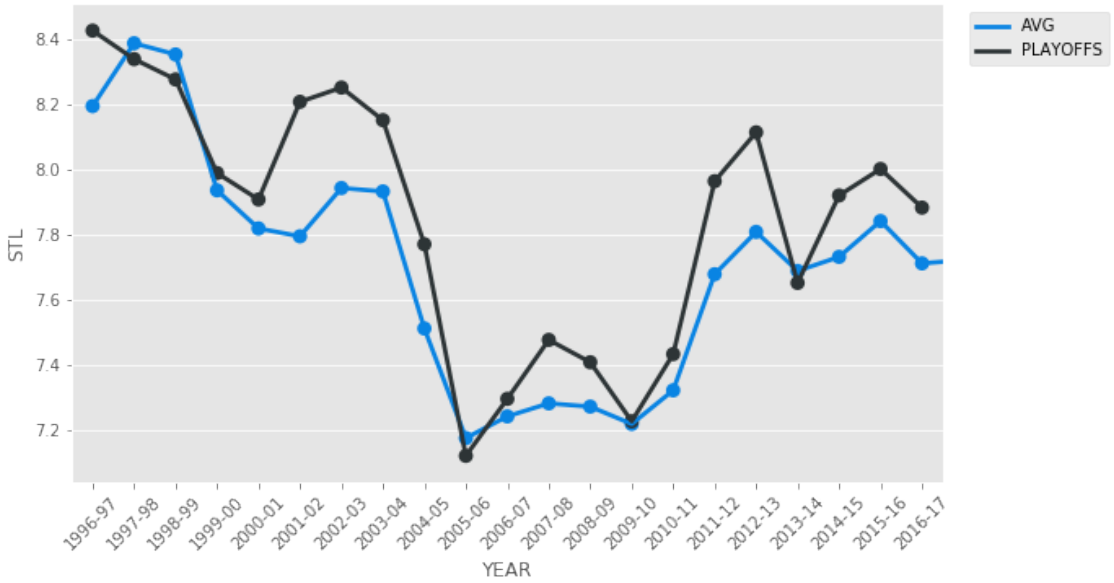

Avg DREB by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
DREB
YEAR
34
33
32
31
30
29
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17


Avg REB by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
REB
YEAR
44.0
43.5
43.0
42.5
42.0
41.5
41.0
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17

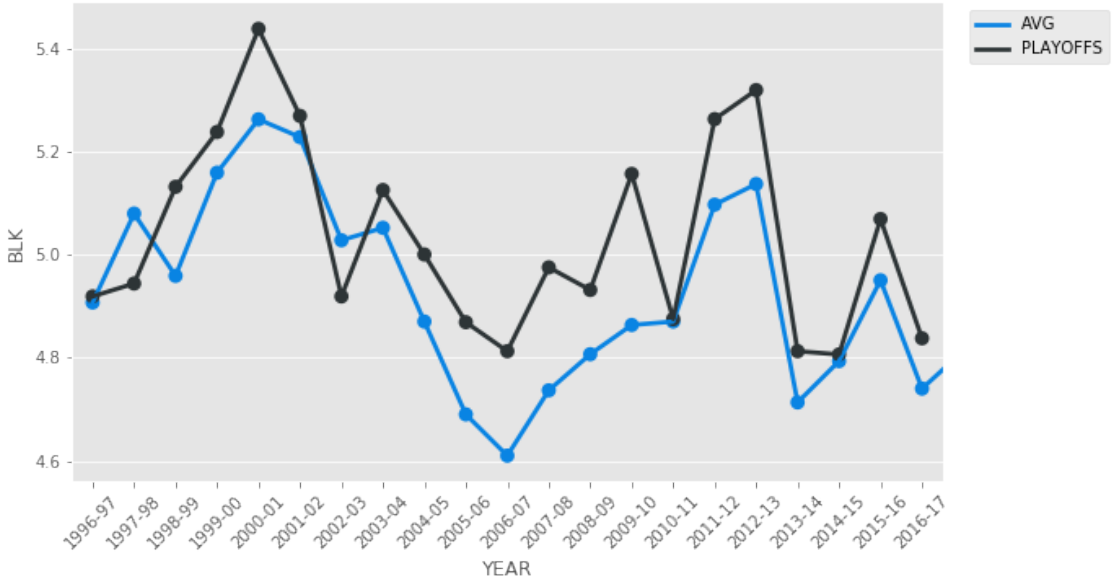

Avg AST by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
AST
YEAR
23.0
22.5
22.0
21.5
21.0
20.5
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17

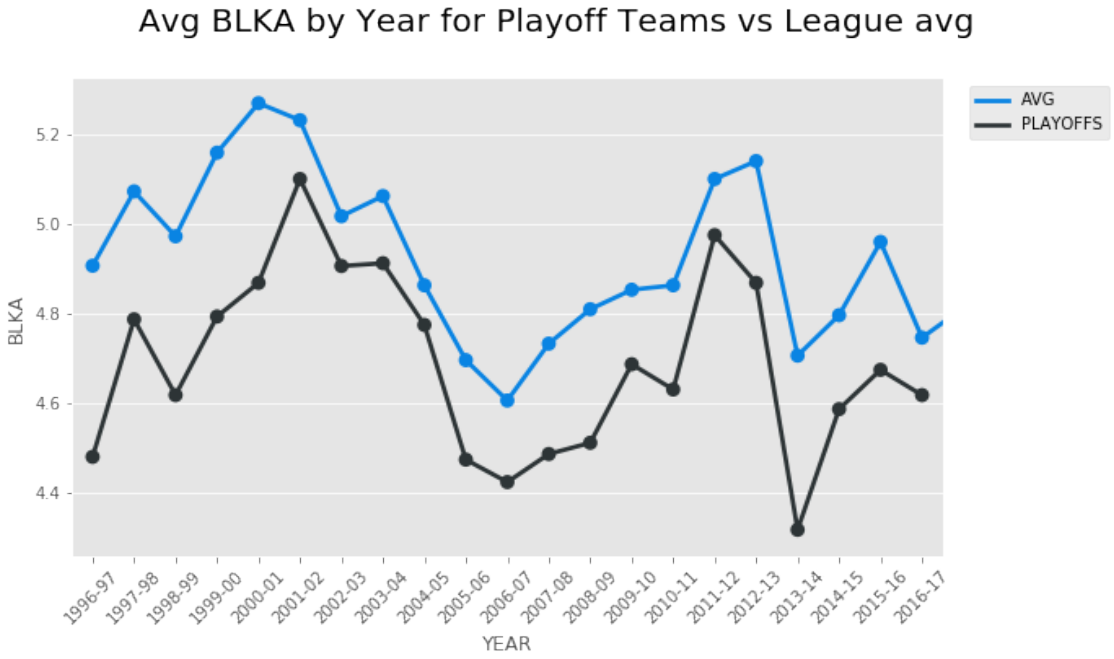

Avg TOV by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
TOV
YEAR
15.5
15.0
14.5
14.0
13.5
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17

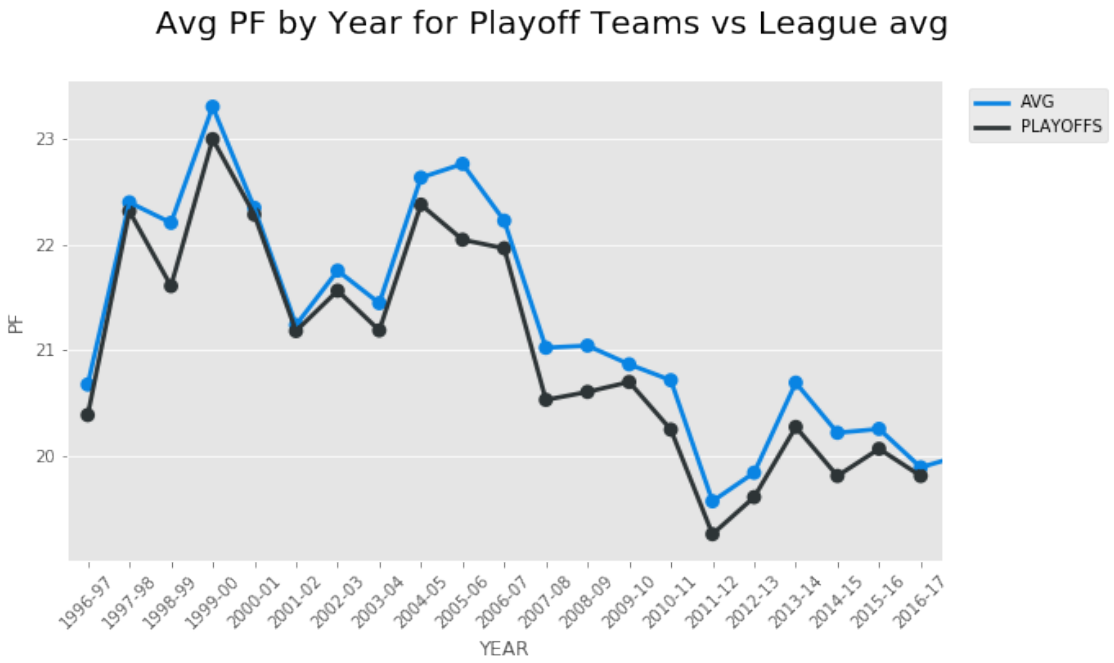
Avg STL by Year for Playoff Teams vs League avg

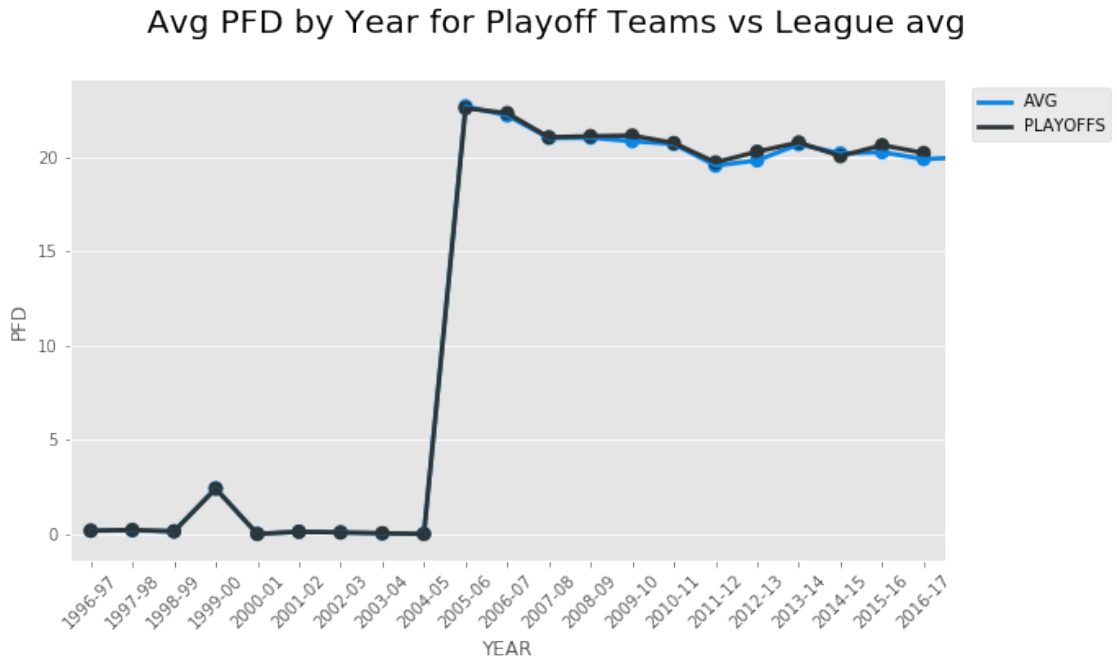


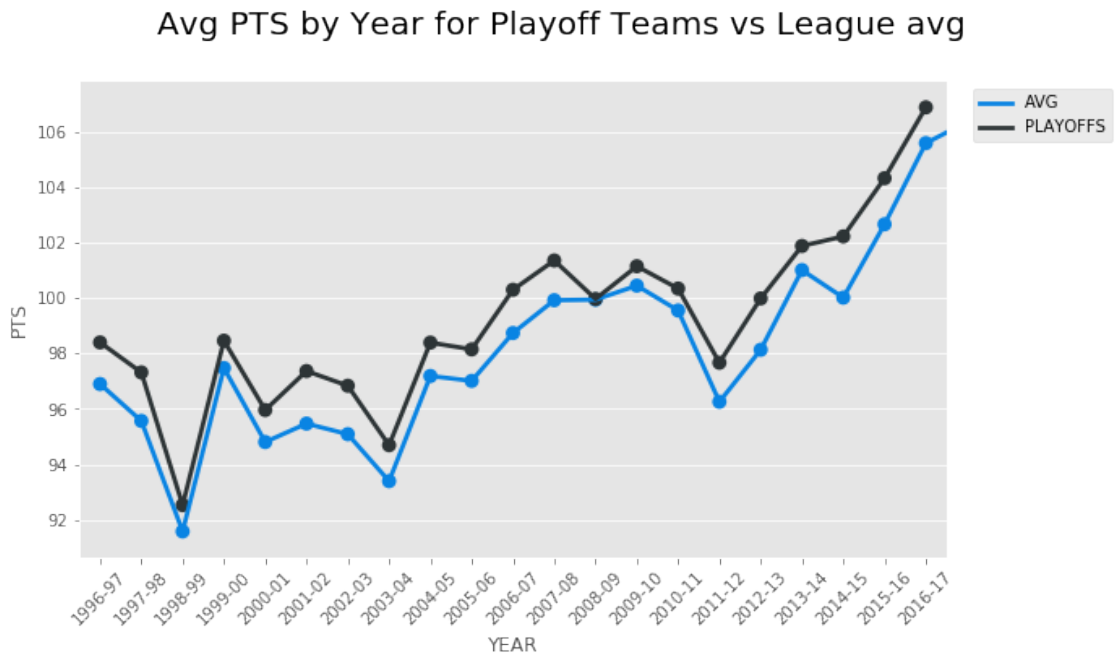
Avg BLK by Year for Playoff Teams vs League avg




Avg BLKA by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
BLKA
5.2
5.0
4.8
4.6
4.4
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR

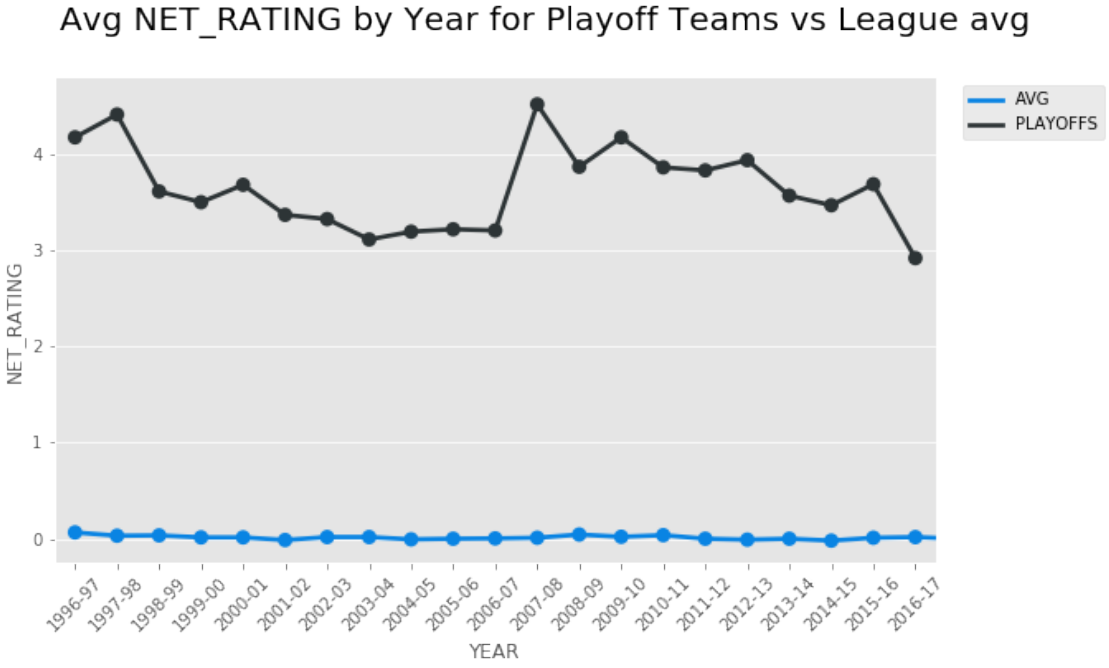

Avg PF by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
PF
23
22
21
20
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR



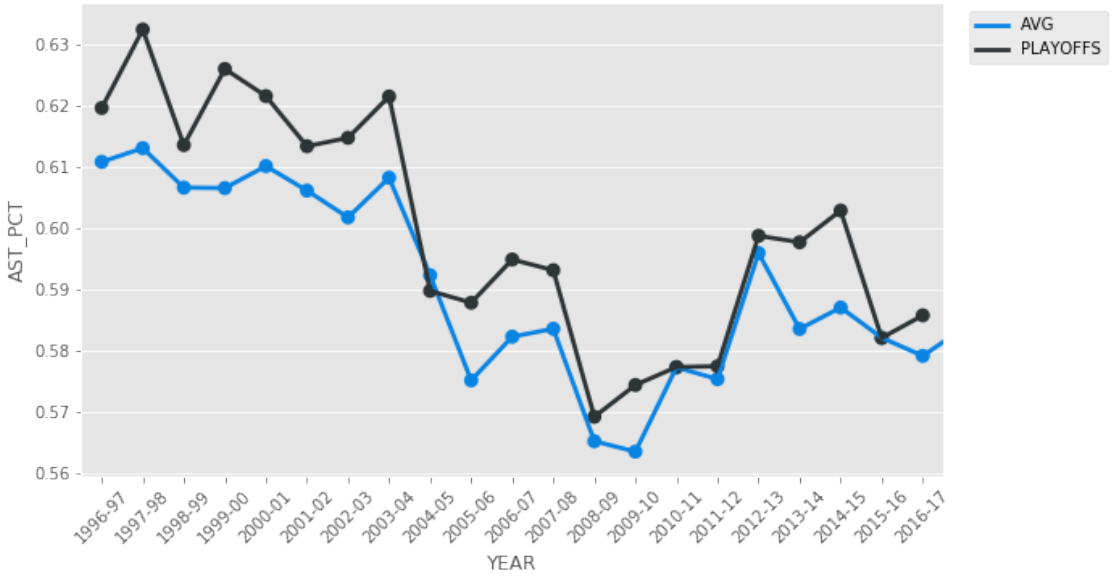



```
In [37]: features_analyze = ['NET_RATING', 'AST_PCT', 'AST_TO',
                 'AST_RATIO', 'OREB_PCT', 'DREB_PCT', 'REB_PCT', 'TM_TOV_PCT', 'EFG_PCT',
                 'TS_PCT', 'PACE', 'PIE']
```

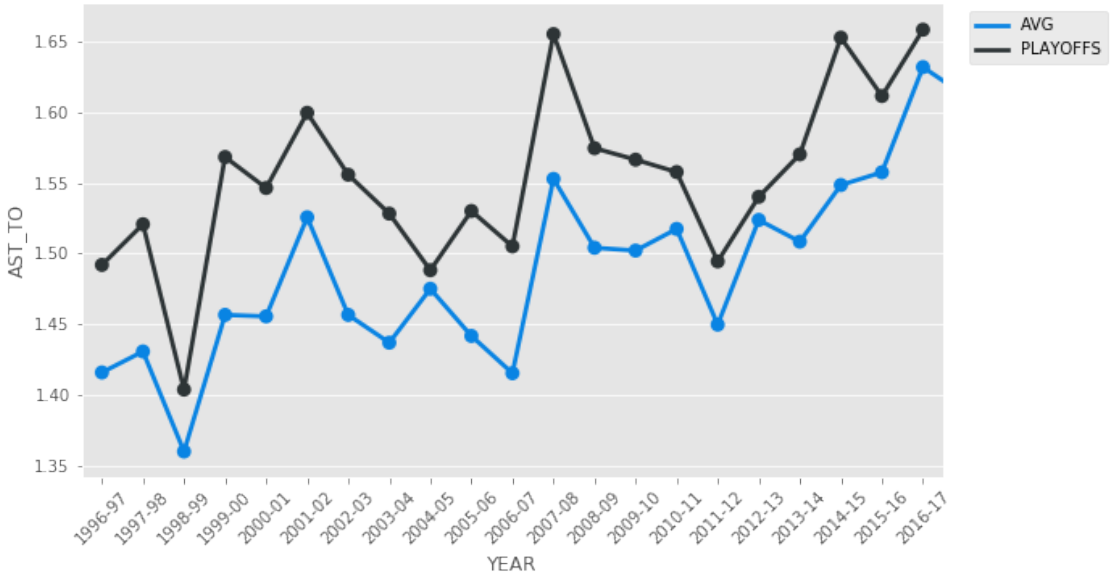
```
for feature in features_analyze:
    fig, ax = plt.subplots(figsize=(11,6))
    sns.pointplot(x='YEAR',y=feature, data=adv_means,color='#0984e3')
    sns.pointplot(x='YEAR',y=feature, data=playoff_adv, color='#2d3436')
    leg = plt.legend(labels=['AVG','PLAYOFFS'], bbox_to_anchor=[1.2,1.0])
    leg.legendHandles[0].set_color('#0984e3')
    leg.legendHandles[1].set_color('#2d3436')
    fig.suptitle('Avg %s by Year for Playoff Teams vs League avg' % (feature), fontsi
    ticks = plt.xticks(rotation=45)
    plt.subplots_adjust(bottom=0.2,right=0.8)
    fig.savefig('%s_by_year' % feature)
```



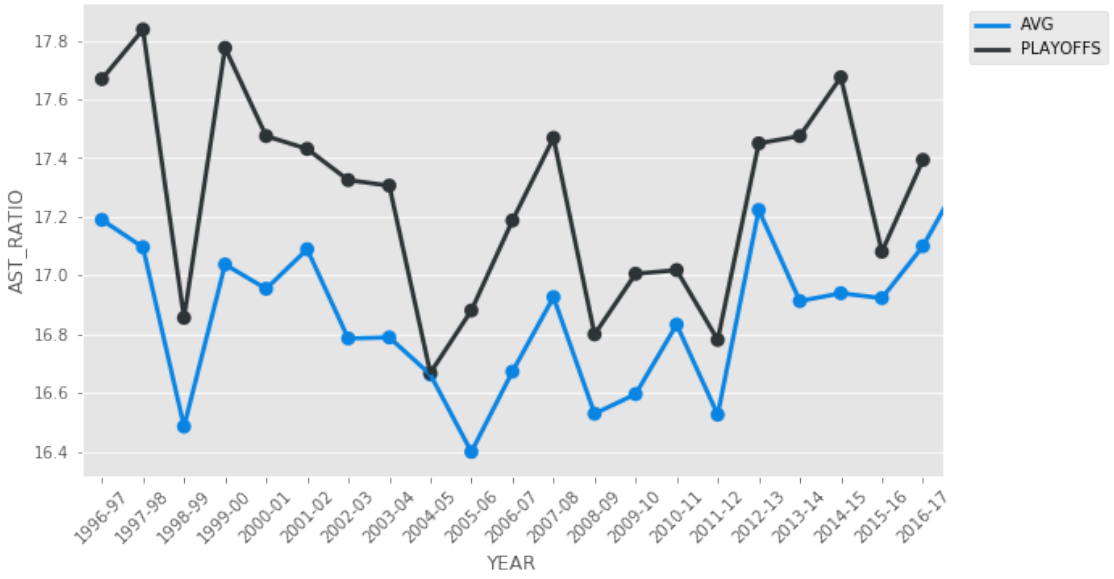
Avg AST_PCT by Year for Playoff Teams vs League avg



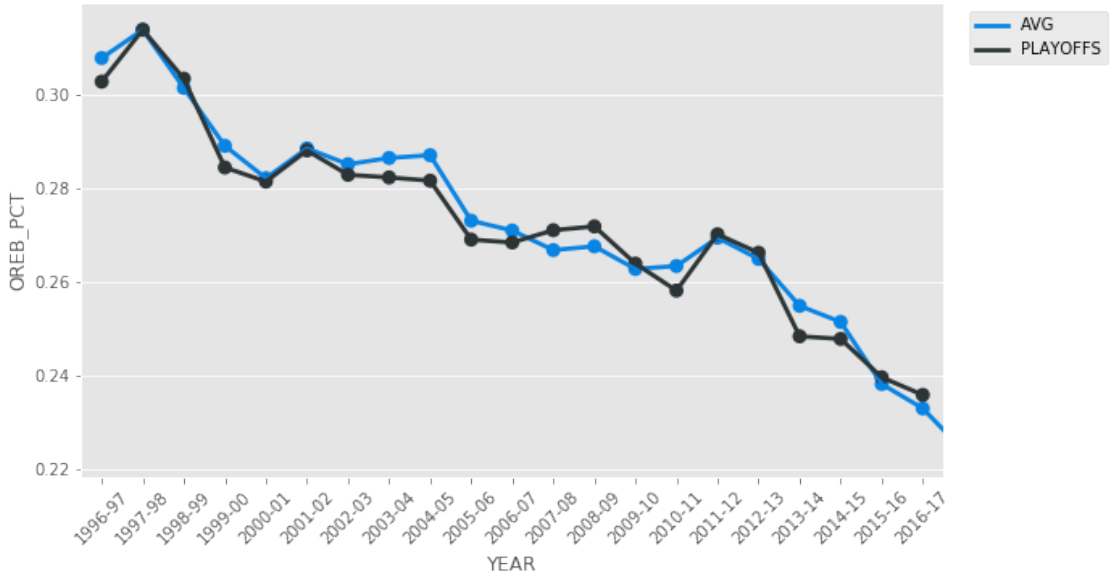
Avg AST_TO by Year for Playoff Teams vs League avg

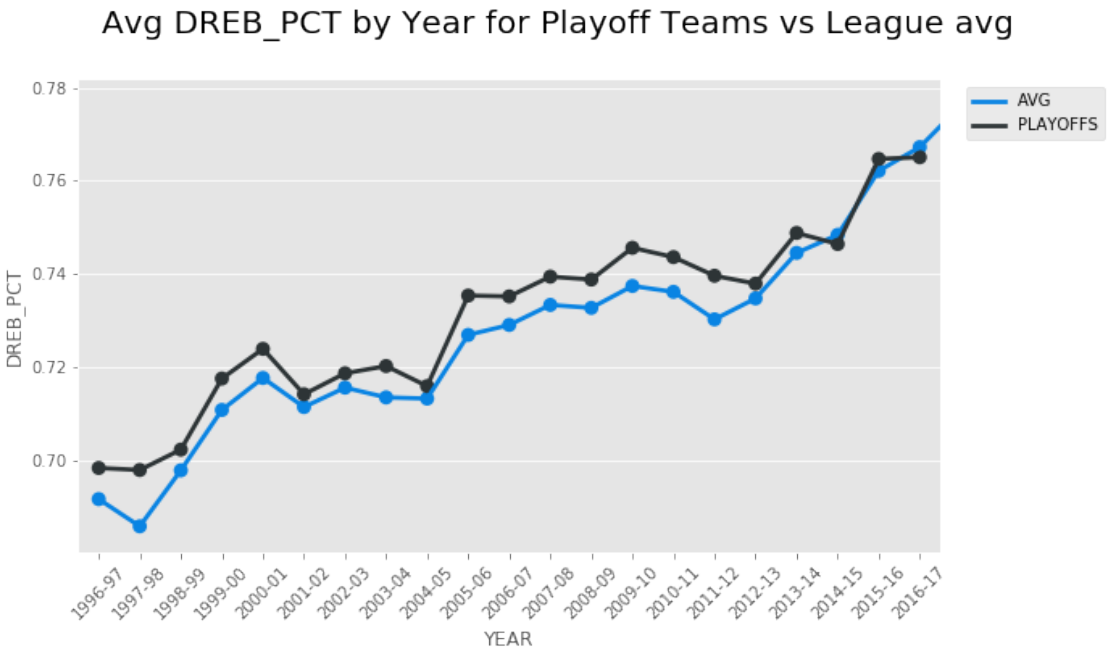


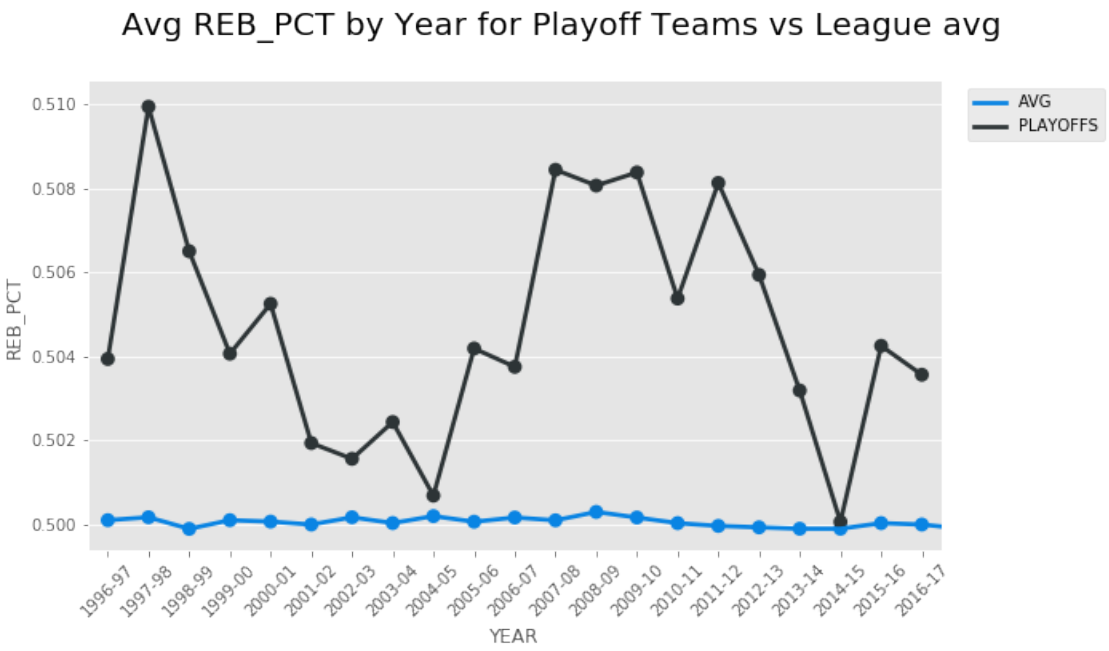
Avg AST_RATIO by Year for Playoff Teams vs League avg

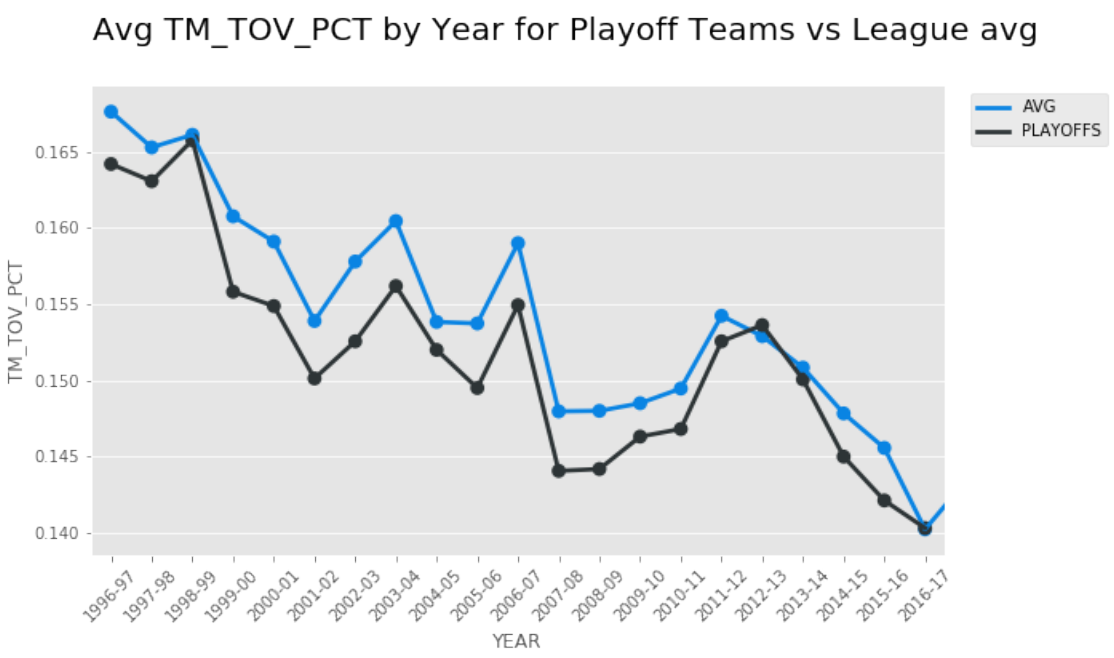


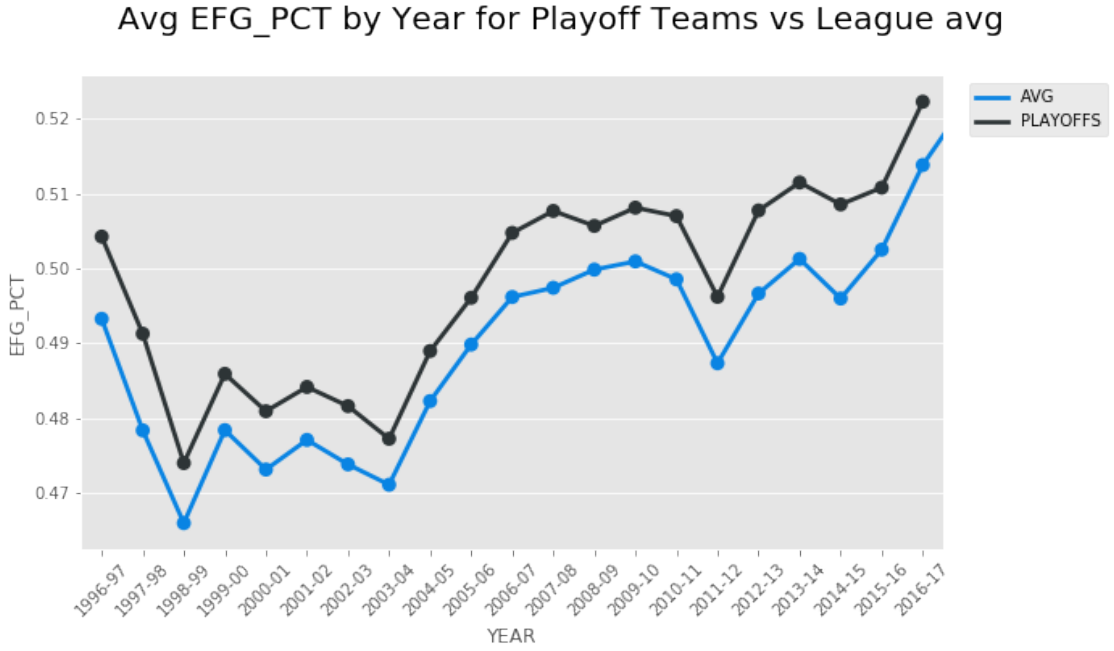
Avg OREB_PCT by Year for Playoff Teams vs League avg

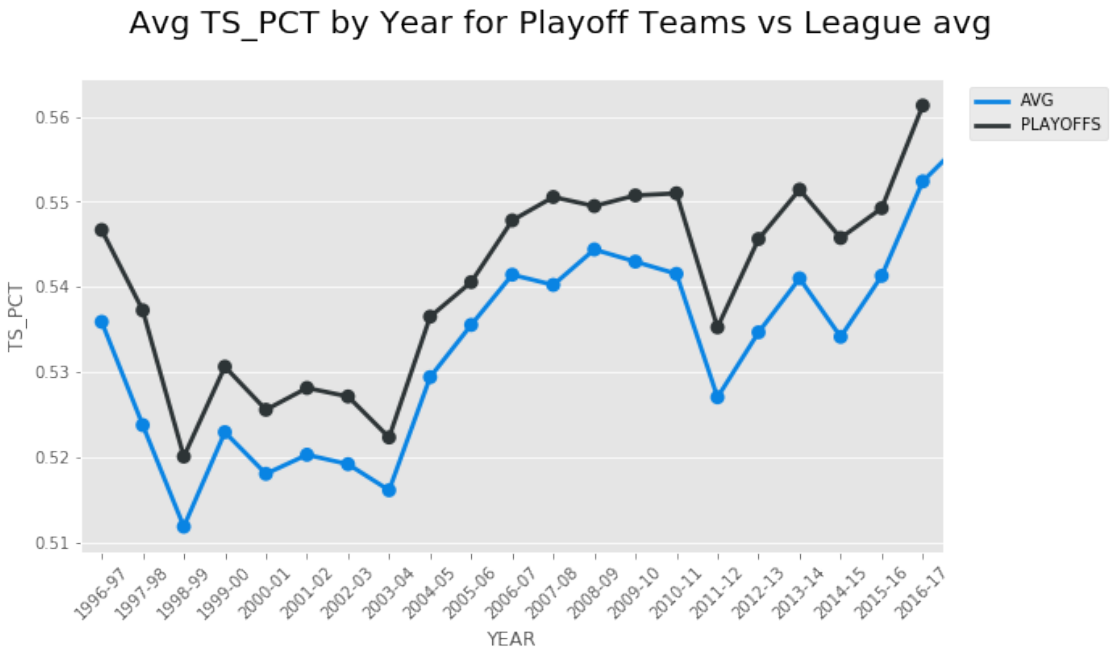


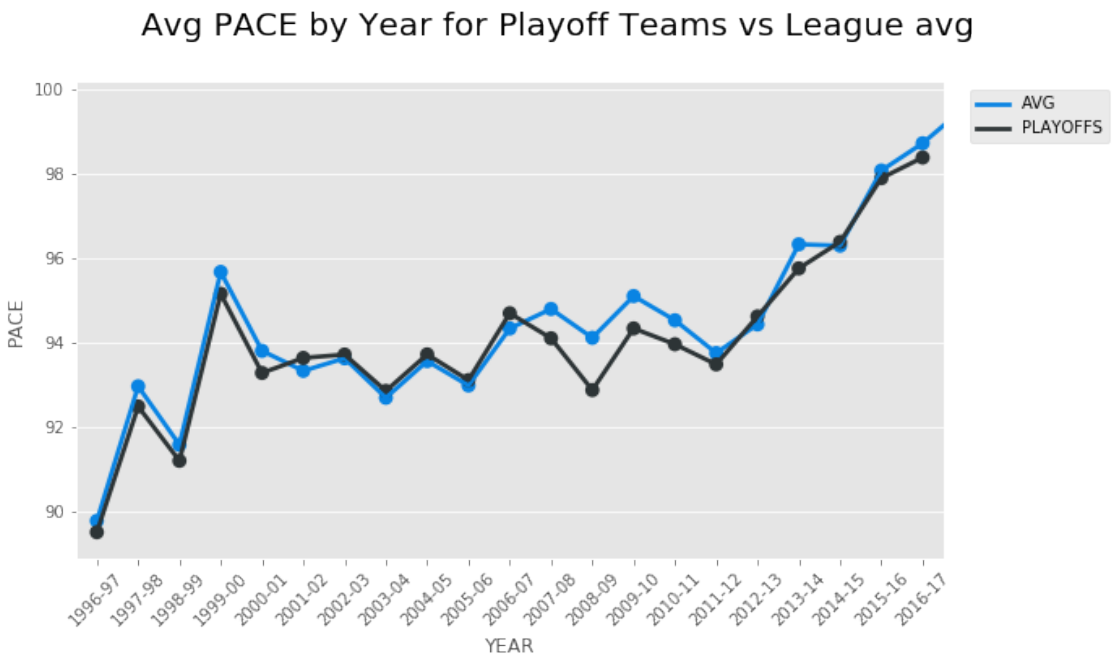

Avg DREB_PCT by Year for Playoff Teams vs League avg
DREB_PCT
0.78
0.76
0.74
0.72
0.70
AVG
PLAYOFFS
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR

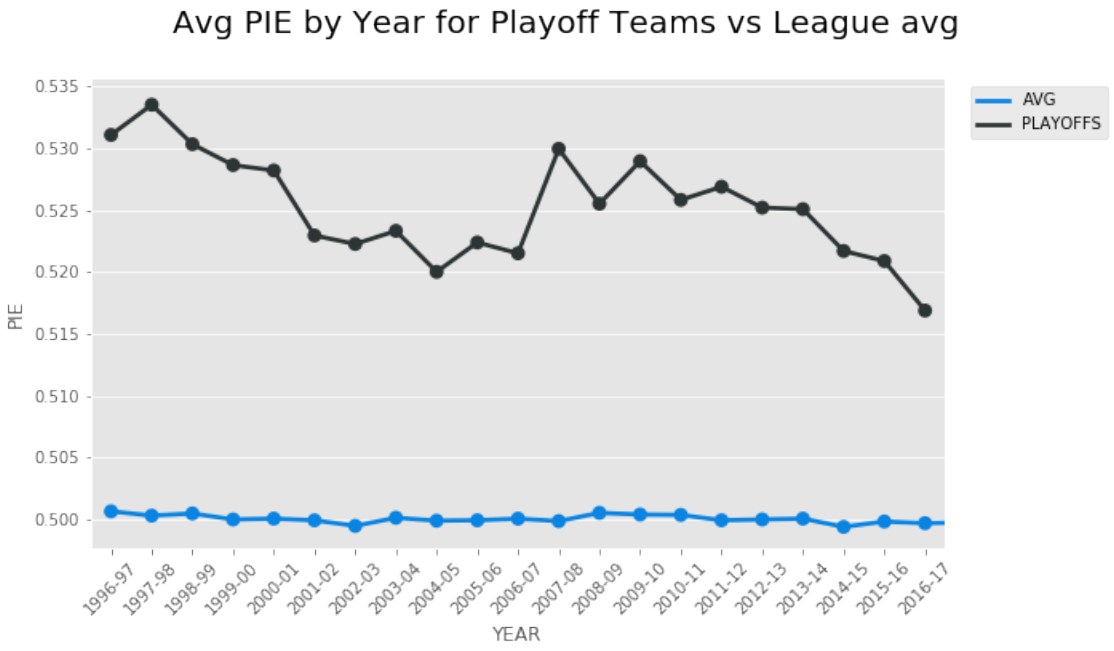

Avg REB_PCT by Year for Playoff Teams vs League avg
REB_PCT
0.510
0.508
0.506
0.504
0.502
0.500
AVG
PLAYOFFS
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR


Avg TM_TOV_PCT by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
TM_TOV_PCT
0.165
0.160
0.155
0.150
0.145
0.140
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR


Avg EFG_PCT by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
EFG_PCT
0.52
0.51
0.50
0.49
0.48
0.47
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR


Avg TS_PCT by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
TS_PCT
0.56
0.55
0.54
0.53
0.52
0.51
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR


Avg PACE by Year for Playoff Teams vs League avg
AVG
PLAYOFFS
PACE
100
98
96
94
92
90
1996-97
1997-98
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
YEAR




```
In [31]: all_stats = pd.concat([reg_means,adv_means], axis=1)
         playoff_all_stats = pd.concat([playoff_reg,playoff_adv], axis=1)

In [70]: sns.lmplot(x='TOV',y='AST_TO', data=all_stats)
         plt.xticks(rotation=45)

Out[70]: (array([ 13.75,  14.  ,  14.25,  14.5 ,  14.75,  15.  ,  15.25,  15.5 ,
                  15.75,  16.  ]), <a list of 10 Text xticklabel objects>)
```


AST_TO
1.60
1.55
1.50
1.45
1.40
1.35
14.00
14.25
14.50
14.75
15.00
15.25
15.50
15.75
TOV

In [ ]: