



R/S

ATTENDANCE FORECAST 2022/23 REGULAR SEASON

by Xiaohui Tan



Agenda



Insights From Datasets



Feature Selection



Model & Results



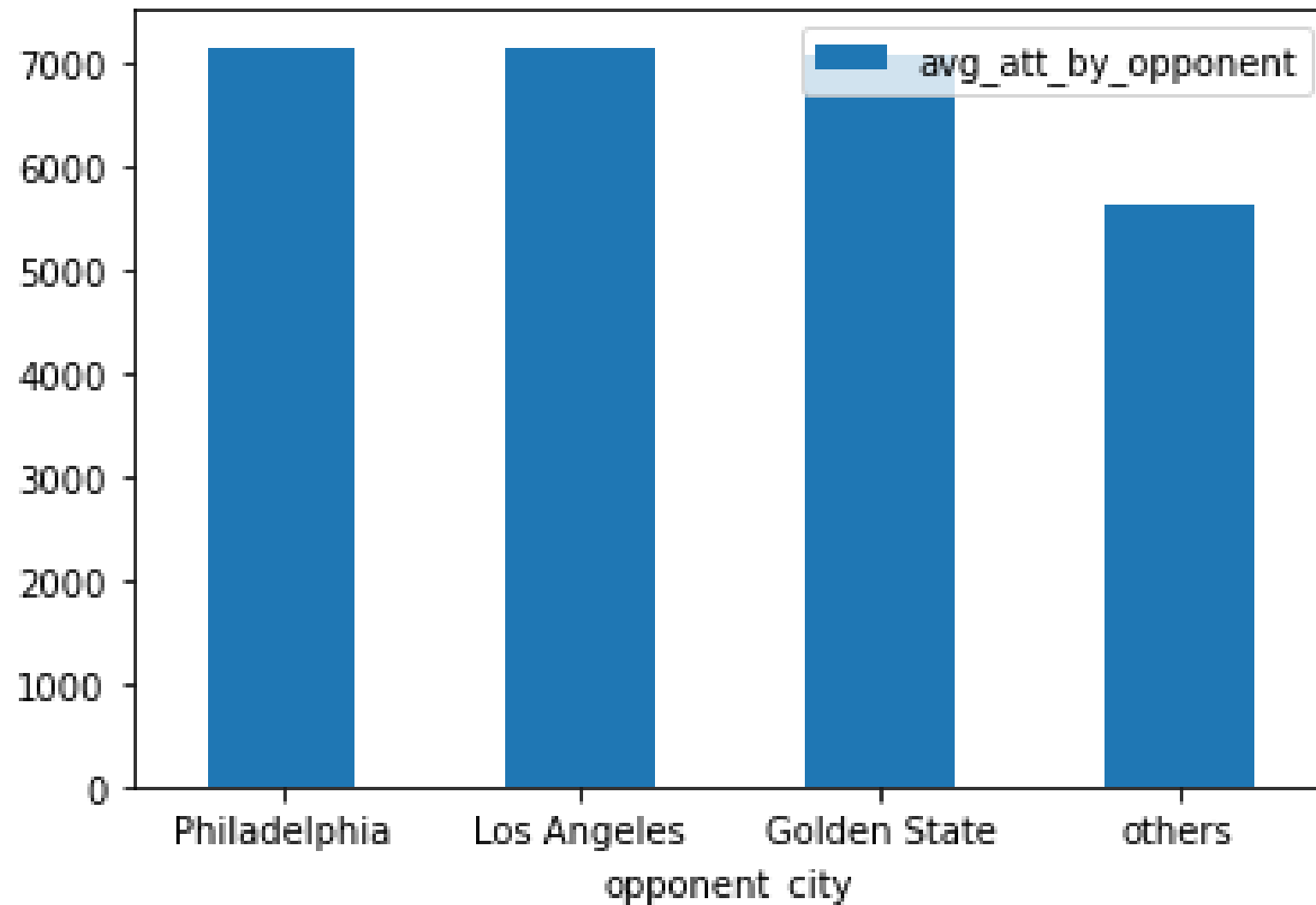
Conclusion



FROM THE DATASETS- 21/22:

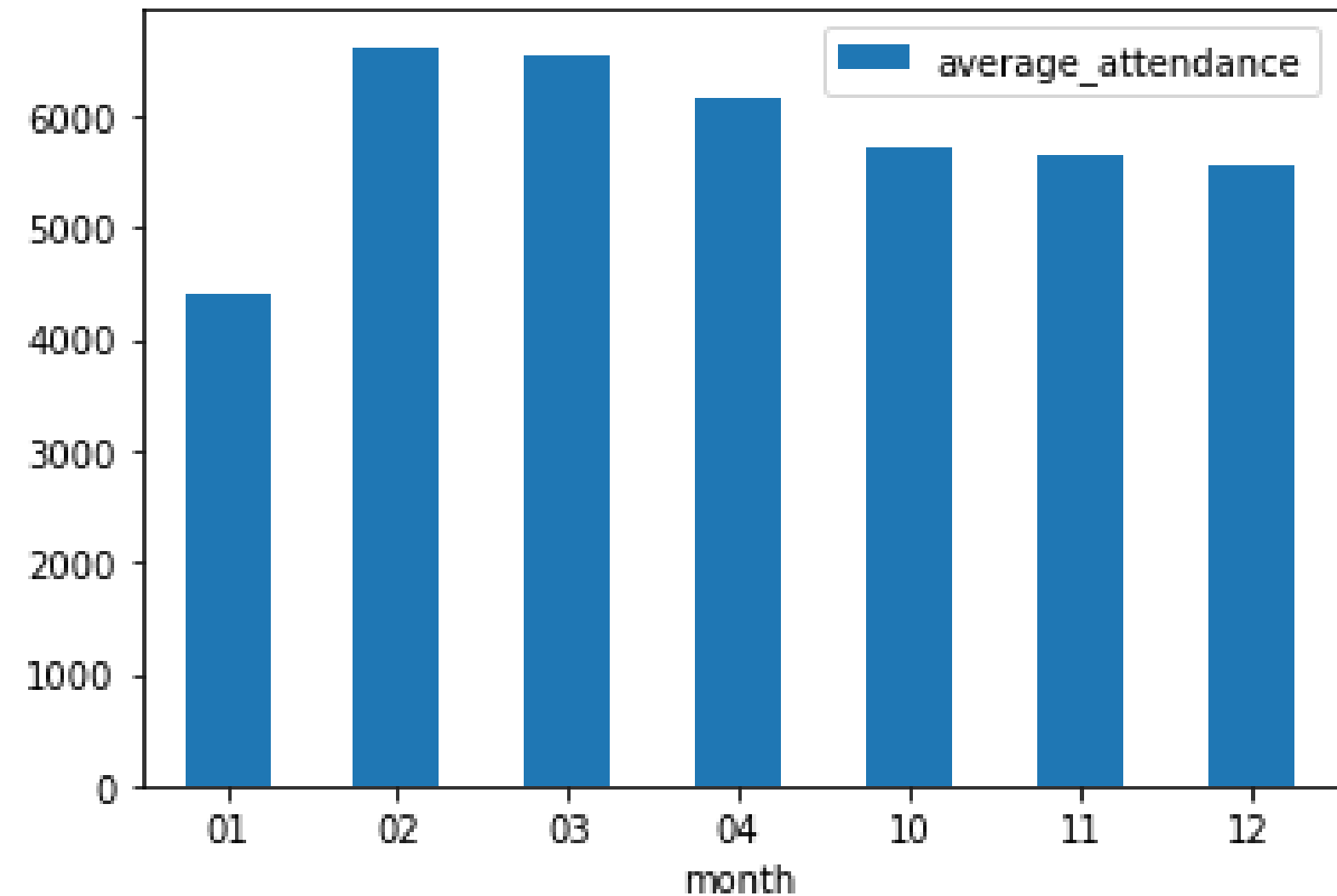


Average attendance by opponent:



- Philadelphia 76ers: 7162
- Los Angeles Lakers: 7144
- Golden State Warriors: 7051
- Others: 5622

Average attendance by month:



- January: 4414
- Feb - Apr: 6450 avg
- Oct - Dec: 5638 avg



Feature Selection



From the datasets:

X variables

- 'Vagas over/under' - 21/22 for training, 22/23 for predicting
- 'Oponent' - top 3 attendance at 21/22(Binary variables):
 - 76ers
 - Warriors
 - Lakers
- 'Conference' - 1: West 0: East
- 'Championship' - The number of championship of a opponent
- 'Playoff' - Whether or not Playoff team in last season
- 'Weekend' - 1: Game on weekend; 0: Game on weekday
- 'Month' - What month the game is on

Y variables

- 'Game_attendance'



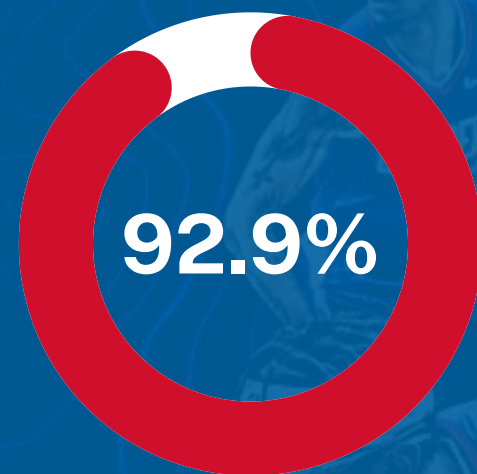
MODELING & RESULTS

R/S

Multiple Linear Regression

- Dependent variable is continuous number
- No need for feature filtering
- Simple and easy to understand interpretation

R² Score

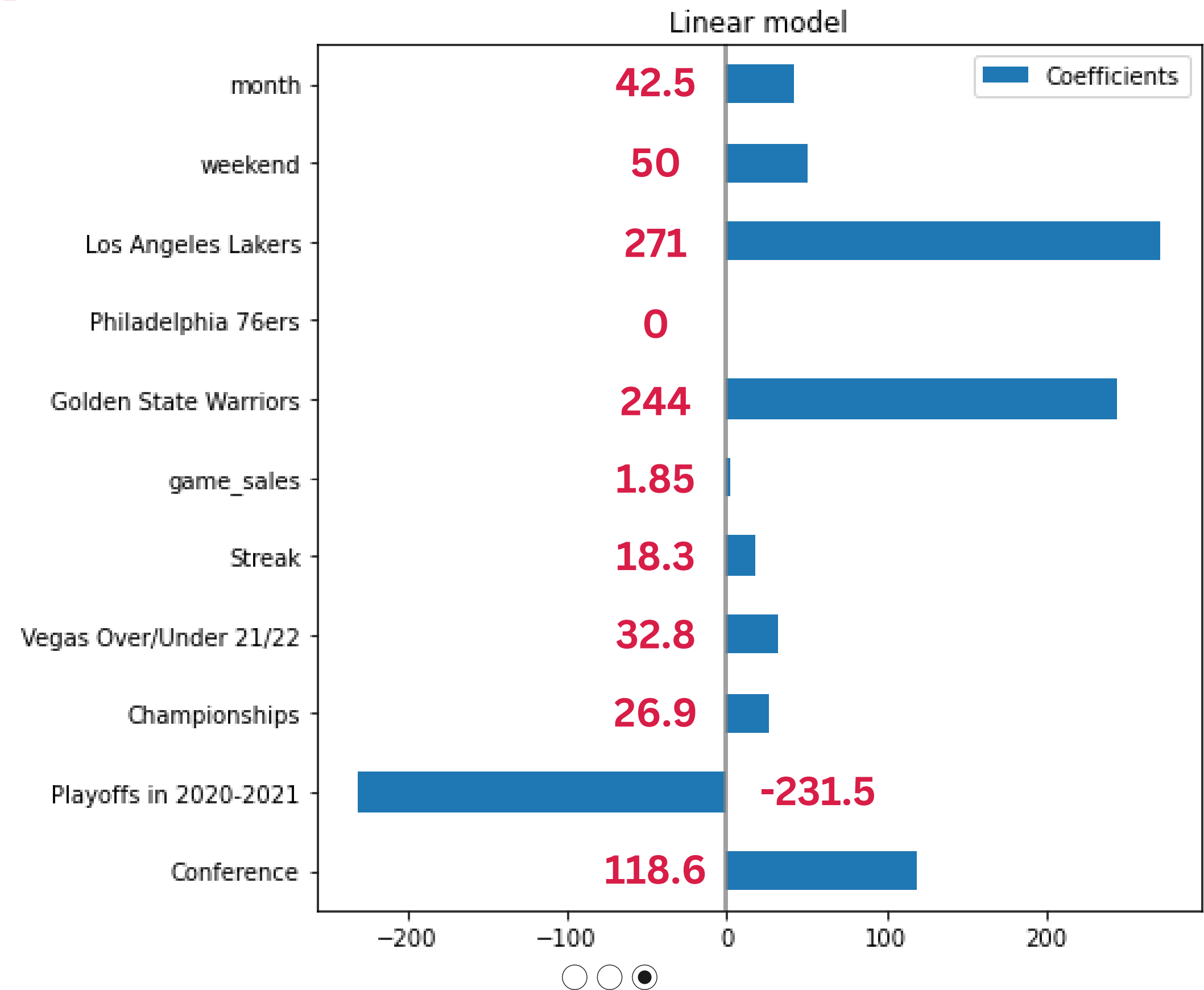


Mean Absolute Error

328.8



Feature Importance



Other Factors Affect Attendance



Superstars Effect

- Kawhi Leonard
- Paul George



DataSource:

- Landofbasketball.com
- Clippers internal player stats

External Factors:

- Work From Home effect

Major event in the city

- Big Concert
- MLB
- NFL
- NHL

Source:

- songkick.com
- Major League Schedule



Future Improvement & Recommendation

R/S

- Larger sample: put in historical data from previous season
- Add as many variables as possible:
 - Average Ticket Prices
 - Fill all opponent(1/0) instead of only top3
 - Evening/afternoon game
- Predict attendance by section
- Consider other models
 - Time series





R/S

THANK YOU

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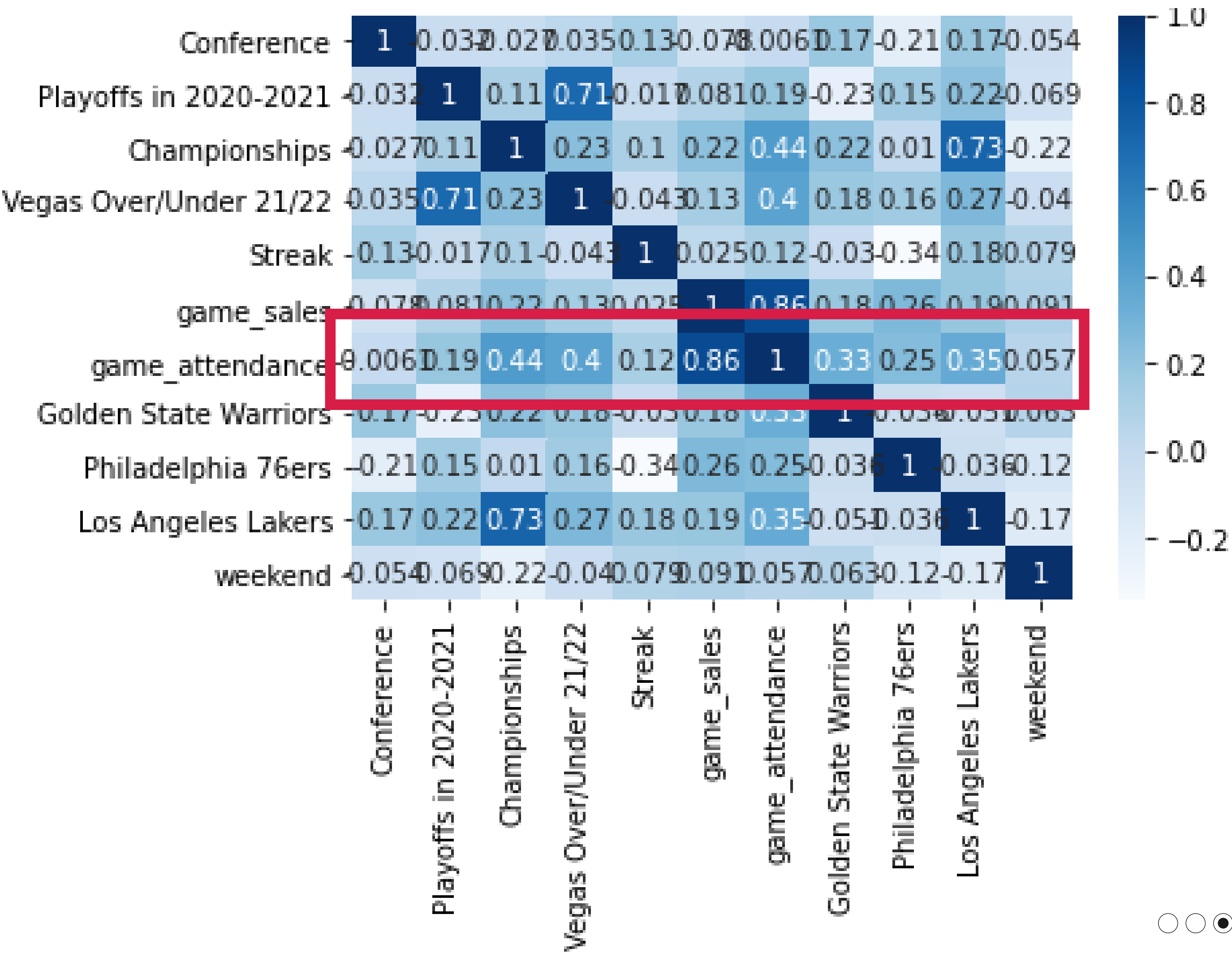
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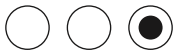
Appendix 1:
Heatmap of
pearson
correlation



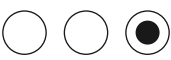
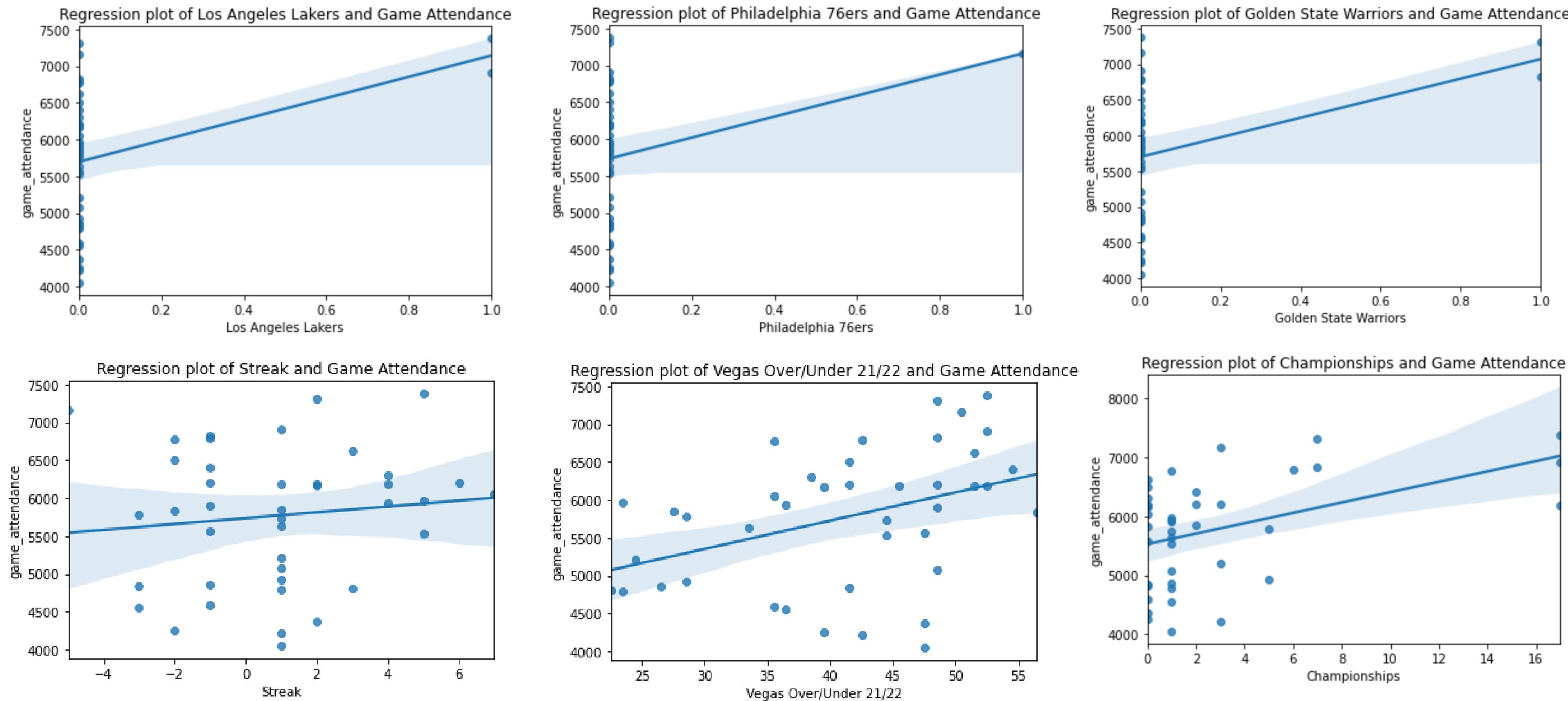
Appendix 2: statistical summary of the model

Dep. Variable:	game_attendance	R-squared:	0.891
Model:	OLS	Adj. R-squared:	0.855
Method:	Least Squares	F-statistic:	24.56
Date:	Sat, 01 Oct 2022	Prob (F-statistic):	9.00e-12
Time:	22:16:03	Log-Likelihood:	-290.98
No. Observations:	41	AIC:	604.0
Df Residuals:	30	BIC:	622.8
Df Model:	10		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	-8084.8171	1172.236	-6.897	0.000	-1.05e+04	-5690.793
Conference	66.4609	124.811	0.532	0.598	-188.437	321.359
Playoffs in 2020-2021	-188.8087	177.977	-1.061	0.297	-552.287	174.670
Championships	41.4839	20.419	2.032	0.051	-0.218	83.185
Vegas Over/Under 21/22	29.1550	9.439	3.089	0.004	9.877	48.433
Streak	35.9768	21.602	1.665	0.106	-8.140	80.093
game_sales	1.6660	0.149	11.196	0.000	1.362	1.970
Golden State Warriors	294.1041	335.546	0.876	0.388	-391.172	979.380
Philadelphia 76ers	394.1528	399.817	0.986	0.332	-422.382	1210.688
Los Angeles Lakers	-56.0966	425.075	-0.132	0.896	-924.216	812.023
weekend	65.4311	118.071	0.554	0.584	-175.703	306.565



Appendix 3: Regression plot by feature



Appendix 4: Prediction Result

- assume the game is in 22/23: 40 home games

	event_name	Predicted
0	LA Clippers 2021-22 Game 1 - Memphis 10/23/21	6732.224728
1	LA Clippers 2021-22 Game 24 - Memphis 1/8/22	5696.043719
2	LA Clippers 2021-22 Game 2 - Portland 10/25/21	5742.035886
3	LA Clippers 2021-22 Game 6 - Portland 11/9/21	5713.276180
4	LA Clippers 2021-22 Game 3 - Cleveland 10/27/21	5158.067896
5	LA Clippers 2021-22 Game 4 - Oklahoma City 11/...	4749.836265
6	LA Clippers 2021-22 Game 41 - Oklahoma City 4/...	5302.542771
7	LA Clippers 2021-22 Game 5 - Charlotte 11/7/21	6425.901165
8	LA Clippers 2021-22 Game 7 - Miami 11/11/21	5732.591025
9	LA Clippers 2021-22 Game 8 - Minnesota 11/13/21	6563.467975
10	LA Clippers 2021-22 Game 23 - Minnesota 1/3/22	4902.297221
11	LA Clippers 2021-22 Game 9 - Chicago 11/14/21	6554.011194
12	LA Clippers 2021-22 Game 10 - San Antonio 11/1...	4795.186785
13	LA Clippers 2021-22 Game 20 - San Antonio 12/2...	6078.233632
14	LA Clippers 2021-22 Game 11 - Dallas 11/21/21	4814.442381
15	LA Clippers 2021-22 Game 12 - Dallas 11/23/21	5667.118970
16	LA Clippers 2021-22 Game 13 - Detroit 11/26/21	5502.850529
17	LA Clippers 2021-22 Game 14 - Golden State 11/...	6746.325806
18	LA Clippers 2021-22 Game 30 - Golden State 2/1...	7130.533751
19	LA Clippers 2021-22 Game 15 - New Orleans11/29/21	4330.488559
20	LA Clippers 2021-22 Game 38 - New Orleans 4/3/22	5774.570236

21	LA Clippers 2021-22 Game 16 - Sacramento 12/1/21	4315.136146
22	LA Clippers 2021-22 Game 40 - Sacramento 4/9/22	5892.195340
23	LA Clippers 2021-22 Game 17 - Boston 12/8/21	6458.142546
24	LA Clippers 2021-22 Game 18 - Orlando 12/11/21	5237.923355
25	LA Clippers 2021-22 Game 19 - Phoenix 12/13/21	6533.768662
26	LA Clippers 2021-22 Game 39 - Phoenix 4/6/22	6494.438805
27	LA Clippers 2021-22 Game 21 - Denver 12/26/21	5876.859902
28	LA Clippers 2021-22 Game 26 - Denver 1/11/22	4528.662632
29	LA Clippers 2021-22 Game 22 - Brooklyn 12/27/21	5904.136391
30	LA Clippers 2021-22 Game 25 - Atlanta 1/9/22	4169.009771
31	LA Clippers 2021-22 Game 27 - Indiana 1/17/22	3813.850224
32	LA Clippers 2021-22 Game 28 - Los Angeles 2/3/22	6659.405911
33	LA Clippers 2021-22 Game 32 - Los Angeles 3/3/22	7633.211625
34	LA Clippers 2021-22 Game 29 - Milwaukee 2/6/22	6002.968785
35	LA Clippers 2021-22 Game 31 - Houston 2/17/22	5995.716468
36	LA Clippers 2021-22 Game 33 - New York 3/6/22	6308.086740
37	LA Clippers 2021-22 Game 34 - Washington 3/9/22	5782.353926
38	LA Clippers 2021-22 Game 35 - Toronto 3/16/22	6667.194393
39	LA Clippers 2021-22 Game 36 - Philadelphia 3/2...	6809.805055
40	LA Clippers 2021-22 Game 37 - Utah 3/29/22	5502.040246

