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SLOT: MORNING SLOT

CAMPUS: VIT AP

REGISTRATION NO.: 21BCE9043

ASSIGNMENT NO.: 2

"Assignment 8 th september,

"1.Take car crashes dataset from seaborn library",

"2.load the dataset ",

"3.data visualiation ",

"4.Inference is must for each and every graph",

"5.Submit it by wednesday in html format",

In [39]:
```
import seaborn as sns
import matplotlib.pyplot as plt
```

In [40]:
```
# Load the car_crashes dataset
car_crashes = sns.load_dataset("car_crashes")
car_crashes
```

Out[40]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_lo
0	18.8	7.332	5.640	18.048	15.040	784.55	14
1	18.1	7.421	4.525	16.290	17.014	1053.48	13
2	18.6	6.510	5.208	15.624	17.856	899.47	11
3	22.4	4.032	5.824	21.056	21.280	827.34	14
4	12.0	4.200	3.360	10.920	10.680	878.41	16
5	13.6	5.032	3.808	10.744	12.920	835.50	13
6	10.8	4.968	3.888	9.396	8.856	1068.73	16
7	16.2	6.156	4.860	14.094	16.038	1137.87	15
8	5.9	2.006	1.593	5.900	5.900	1273.89	13
9	17.9	3.759	5.191	16.468	16.826	1160.13	14
10	15.6	2.964	3.900	14.820	14.508	913.15	14
11	17.5	9.450	7.175	14.350	15.225	861.18	12
12	15.3	5.508	4.437	13.005	14.994	641.96	8
13	12.8	4.608	4.352	12.032	12.288	803.11	13
14	14.5	3.625	4.205	13.775	13.775	710.46	10
15	15.7	2.669	3.925	15.229	13.659	649.06	11
16	17.8	4.806	4.272	13.706	15.130	780.45	13
17	21.4	4.066	4.922	16.692	16.264	872.51	13
18	20.5	7.175	6.765	14.965	20.090	1281.55	19
19	15.1	5.738	4.530	13.137	12.684	661.88	9
20	12.5	4.250	4.000	8.875	12.375	1048.78	19
21	8.2	1.886	2.870	7.134	6.560	1011.14	13
22	14.1	3.384	3.948	13.395	10.857	1110.61	15
23	9.6	2.208	2.784	8.448	8.448	777.18	13
24	17.6	2.640	5.456	1.760	17.600	896.07	15
25	16.1	6.923	5.474	14.812	13.524	790.32	14
26	21.4	8.346	9.416	17.976	18.190	816.21	8
27	14.9	1.937	5.215	13.857	13.410	732.28	11
28	14.7	5.439	4.704	13.965	14.553	1029.87	13
29	11.6	4.060	3.480	10.092	9.628	746.54	12
30	11.2	1.792	3.136	9.632	8.736	1301.52	15
31	18.4	3.496	4.968	12.328	18.032	869.85	12
32	12.3	3.936	3.567	10.824	9.840	1234.31	15

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_lo
33	16.8	6.552	5.208	15.792	13.608	708.24	12
34	23.9	5.497	10.038	23.661	20.554	688.75	10
35	14.1	3.948	4.794	13.959	11.562	697.73	13
36	19.9	6.368	5.771	18.308	18.706	881.51	17
37	12.8	4.224	3.328	8.576	11.520	804.71	10
38	18.2	9.100	5.642	17.472	16.016	905.99	15
39	11.1	3.774	4.218	10.212	8.769	1148.99	14
40	23.9	9.082	9.799	22.944	19.359	858.97	11
41	19.4	6.014	6.402	19.012	16.684	669.31	9
42	19.5	4.095	5.655	15.990	15.795	767.91	15
43	19.4	7.760	7.372	17.654	16.878	1004.75	15
44	11.3	4.859	1.808	9.944	10.848	809.38	10
45	13.6	4.080	4.080	13.056	12.920	716.20	10
46	12.7	2.413	3.429	11.049	11.176	768.95	15
47	10.6	4.452	3.498	8.692	9.116	890.03	11
48	23.8	8.092	6.664	23.086	20.706	992.61	15
49	13.8	4.968	4.554	5.382	11.592	670.31	10
50	17.4	7.308	5.568	14.094	15.660	791.14	12

In [41]:
```
car_crashes.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51 entries, 0 to 50
Data columns (total 8 columns):
 #   Column          Non-Null Count  Dtype  
---  ------          --------------  -----  
 0   total           51 non-null     float64
 1   speeding        51 non-null     float64
 2   alcohol         51 non-null     float64
 3   not_distracted  51 non-null     float64
 4   no_previous     51 non-null     float64
 5   ins_premium     51 non-null     float64
 6   ins_losses      51 non-null     float64
 7   abbrev          51 non-null     object 
dtypes: float64(7), object(1)
memory usage: 3.3+ KB
```

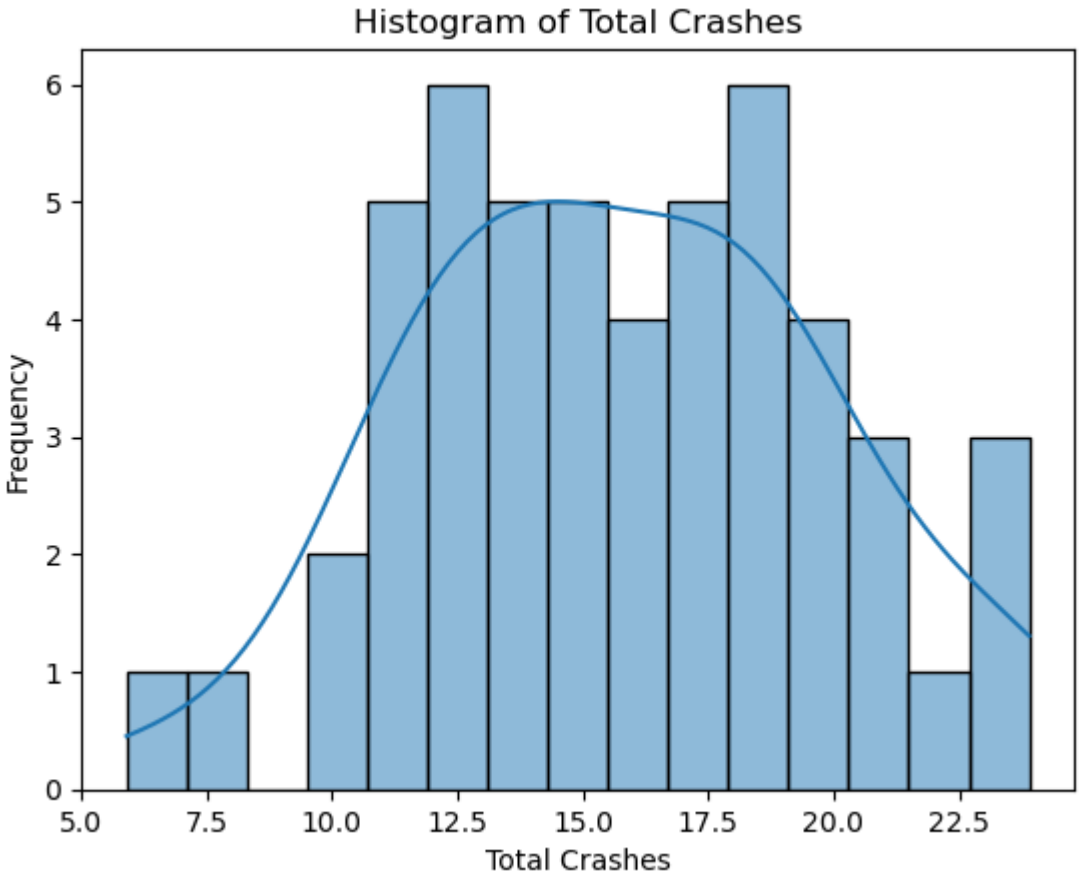
In [42]:
```
car_crashes.head()
```

Out[42]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_los
0	18.8	7.332	5.640	18.048	15.040	784.55	145
1	18.1	7.421	4.525	16.290	17.014	1053.48	133
2	18.6	6.510	5.208	15.624	17.856	899.47	110
3	22.4	4.032	5.824	21.056	21.280	827.34	142
4	12.0	4.200	3.360	10.920	10.680	878.41	165

In [43]:

```
# Histogram of the total crashes
sns.histplot(car_crashes["total"], bins=15, kde=True)
plt.xlabel("Total Crashes")
plt.ylabel("Frequency")
plt.title("Histogram of Total Crashes")
plt.show()
```

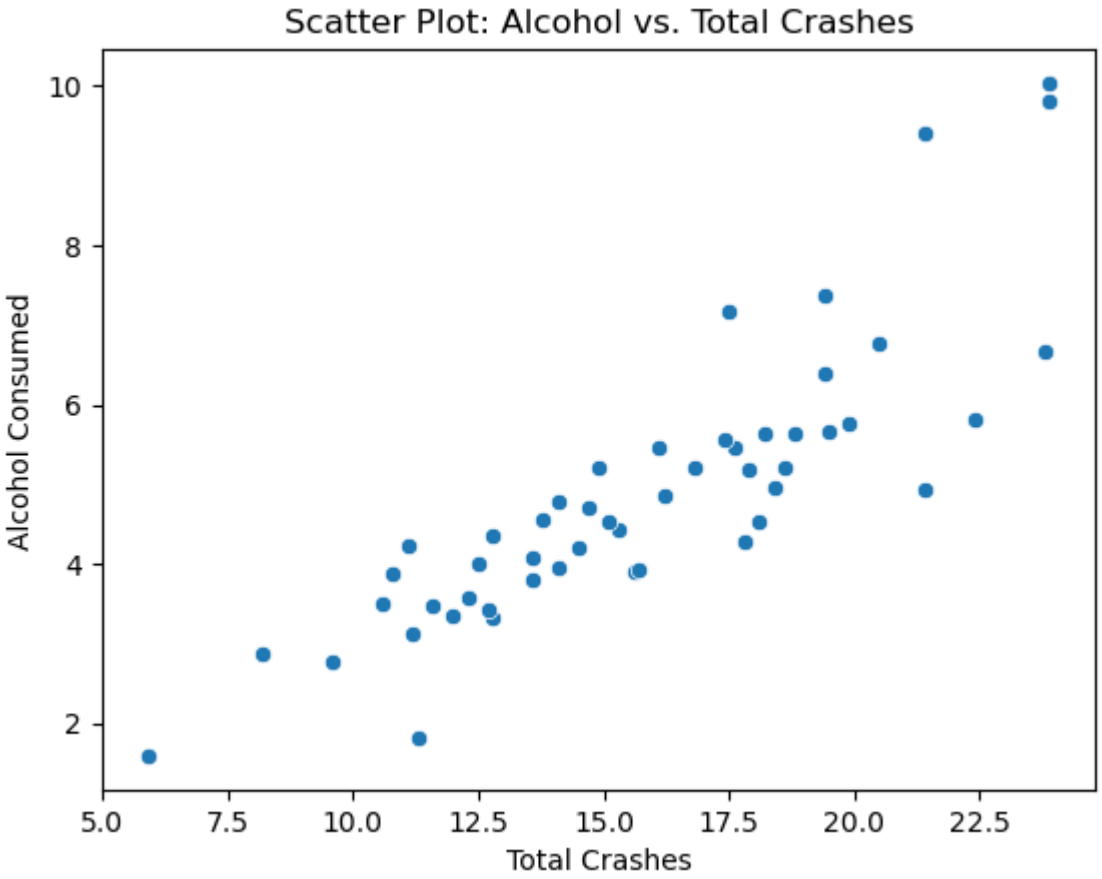


histogram of the number of total crashes in the car_crashes DataFrame, with 15 bins. It also

plots a smoothed version of the histogram, which can be used to better visualize the

distribution of the data.

In [44]:
```
# Scatter plot of alcohol versus total crashes
sns.scatterplot(x="total", y="alcohol", data=car_crashes)
plt.xlabel("Total Crashes")
plt.ylabel("Alcohol Consumed")
plt.title("Scatter Plot: Alcohol vs. Total Crashes")
plt.show()
```

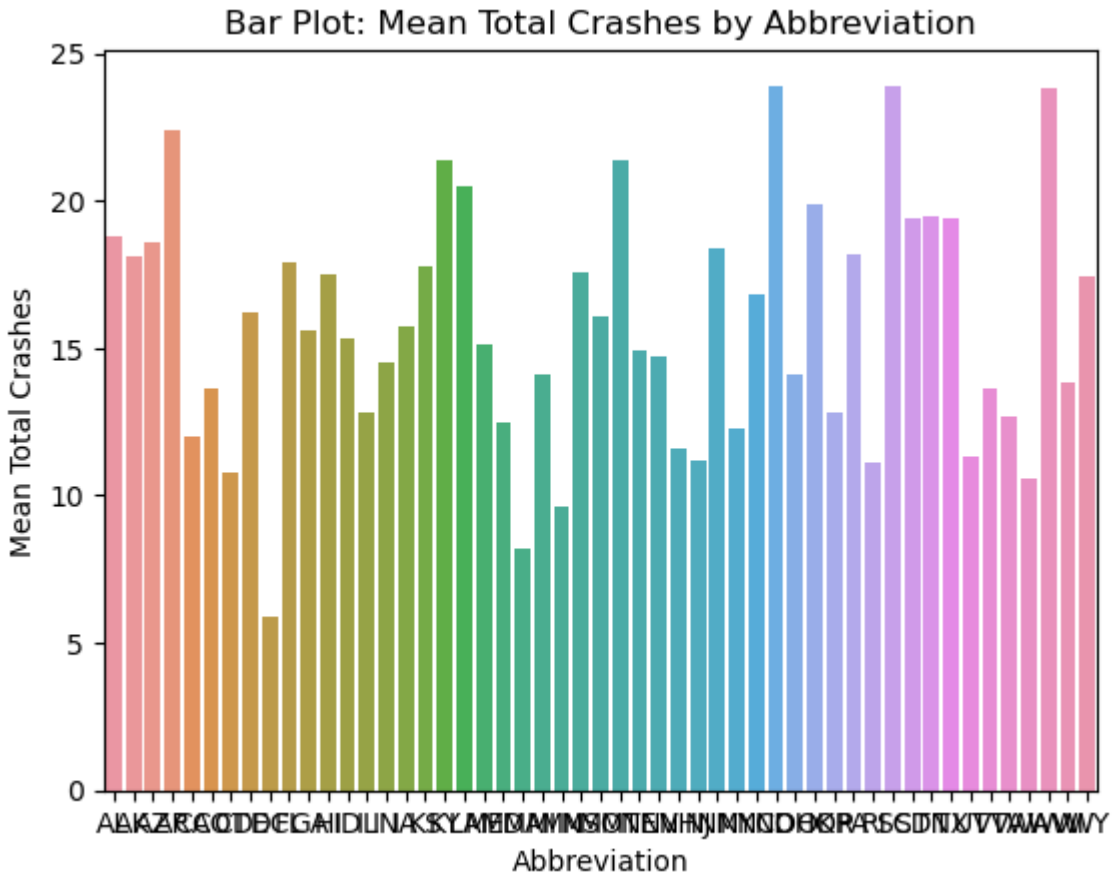


scatter plot of the total number of crashes versus the amount of alcohol consumed by drivers

in the car_crashes DataFrame. The plot can be used to visualize the relationship between

alcohol consumption and the risk of car crashes..#

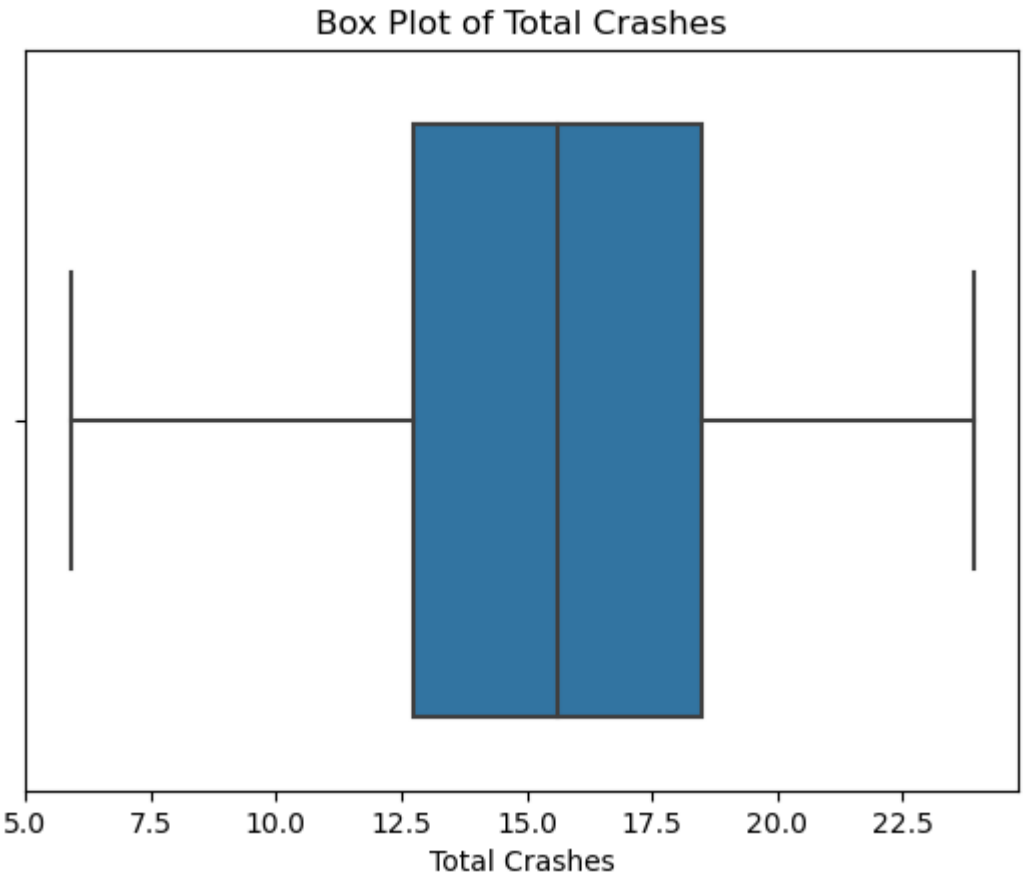
In [45]:
```
sns.barplot(x="abbrev", y="total", data=car_crashes)
plt.xlabel("Abbreviation")
plt.ylabel("Mean Total Crashes")
plt.title("Bar Plot: Mean Total Crashes by Abbreviation")
plt.show()
```



bar plot of the mean total crashes for each abbreviation in the car_crashes DataFrame. The

plt.show() function displays the plot.

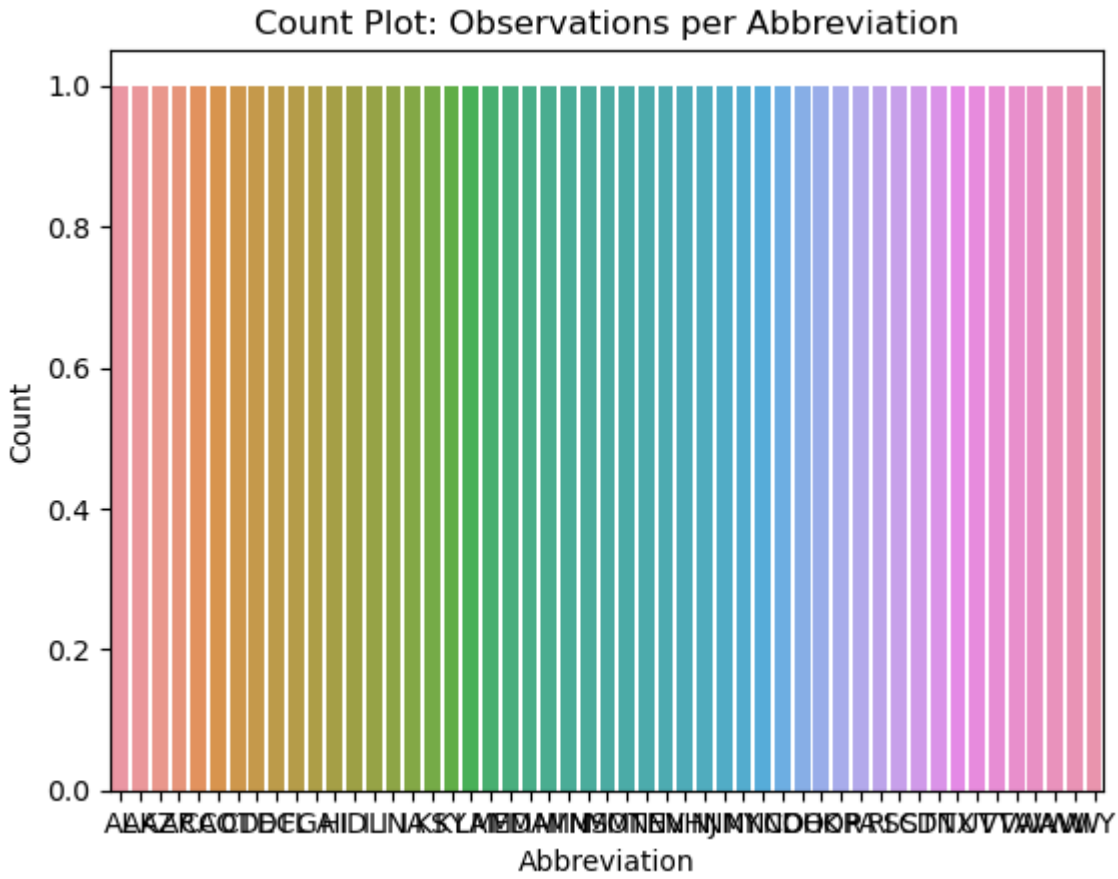
In [46]:
```
sns.boxplot(x="total", data=car_crashes)
plt.xlabel("Total Crashes")
plt.title("Box Plot of Total Crashes")
plt.show()
```



box plot of the total number of crashes in the car_crashes DataFrame. The plot can be used to

visualize the distribution of the data and identify outliers.

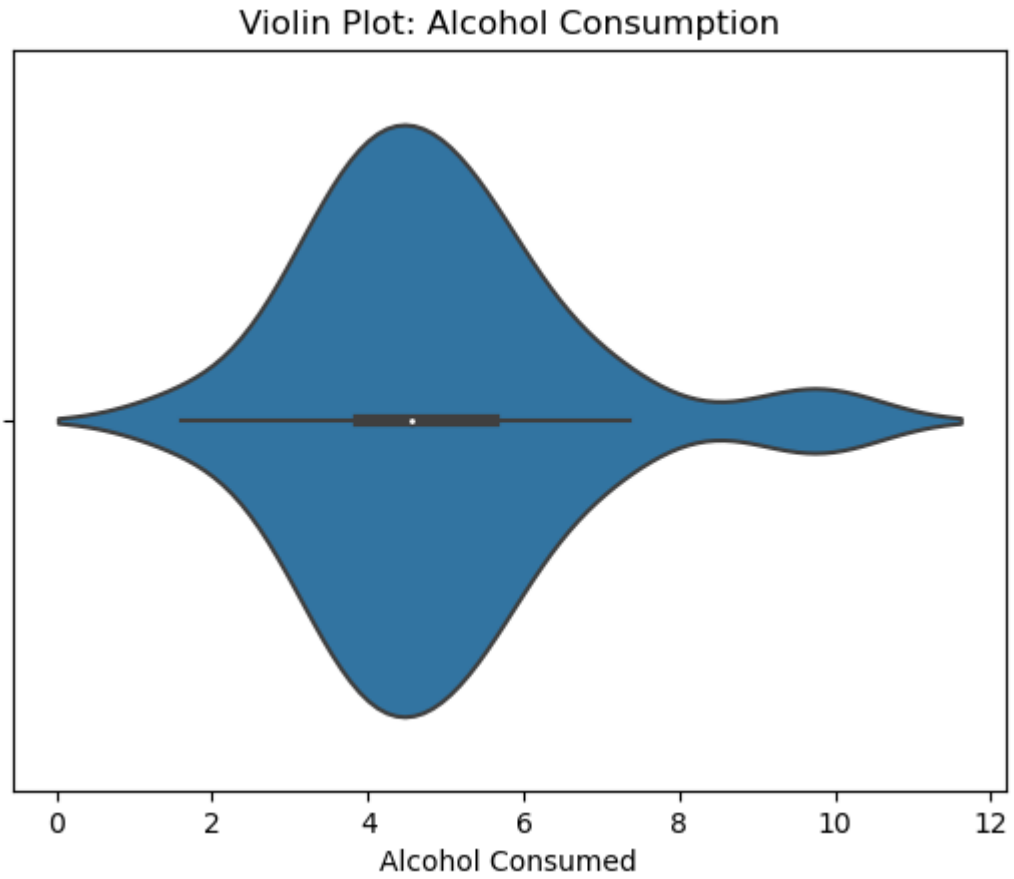
In [47]:
```
sns.countplot(x="abbrev", data=car_crashes)
plt.xlabel("Abbreviation")
plt.ylabel("Count")
plt.title("Count Plot: Observations per Abbreviation")
plt.show()
```



count plot of the number of observations for each abbreviation in the car_crashes DataFrame.

The plot can be used to identify the states or regions with the most and least car crashes.

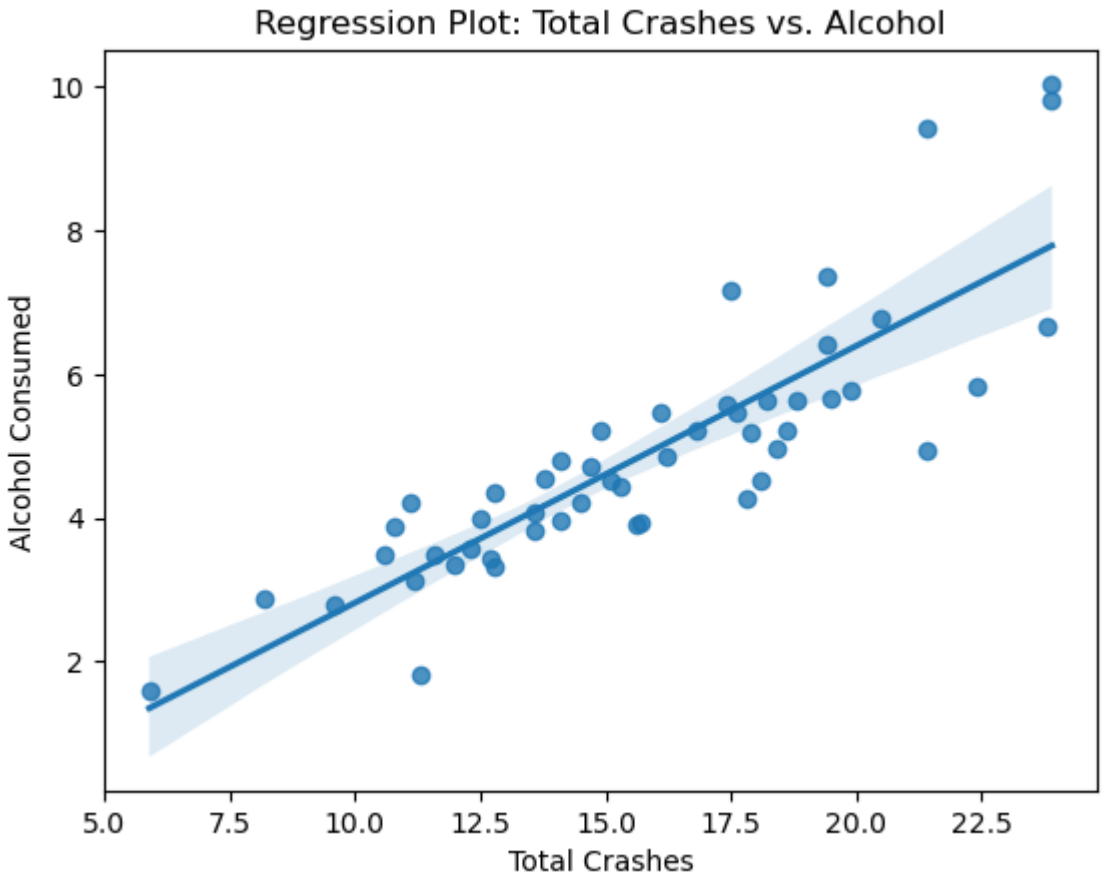
In [48]:
```
sns.violinplot(x="alcohol", data=car_crashes)
plt.xlabel("Alcohol Consumed")
plt.title("Violin Plot: Alcohol Consumption")
plt.show()
```



violin plot of the alcohol consumption for each driver in the car_crashes DataFrame. The plot

can be used to visualize the distribution of alcohol consumption and identify outliers.

In [49]:
```
sns.regplot(x="total", y="alcohol", data=car_crashes)
plt.xlabel("Total Crashes")
plt.ylabel("Alcohol Consumed")
plt.title("Regression Plot: Total Crashes vs. Alcohol")
plt.show()
```



regression plot of the total number of crashes versus the amount of alcohol consumed by

drivers in the car_crashes DataFrame. The plot can be used to visualize the relationship

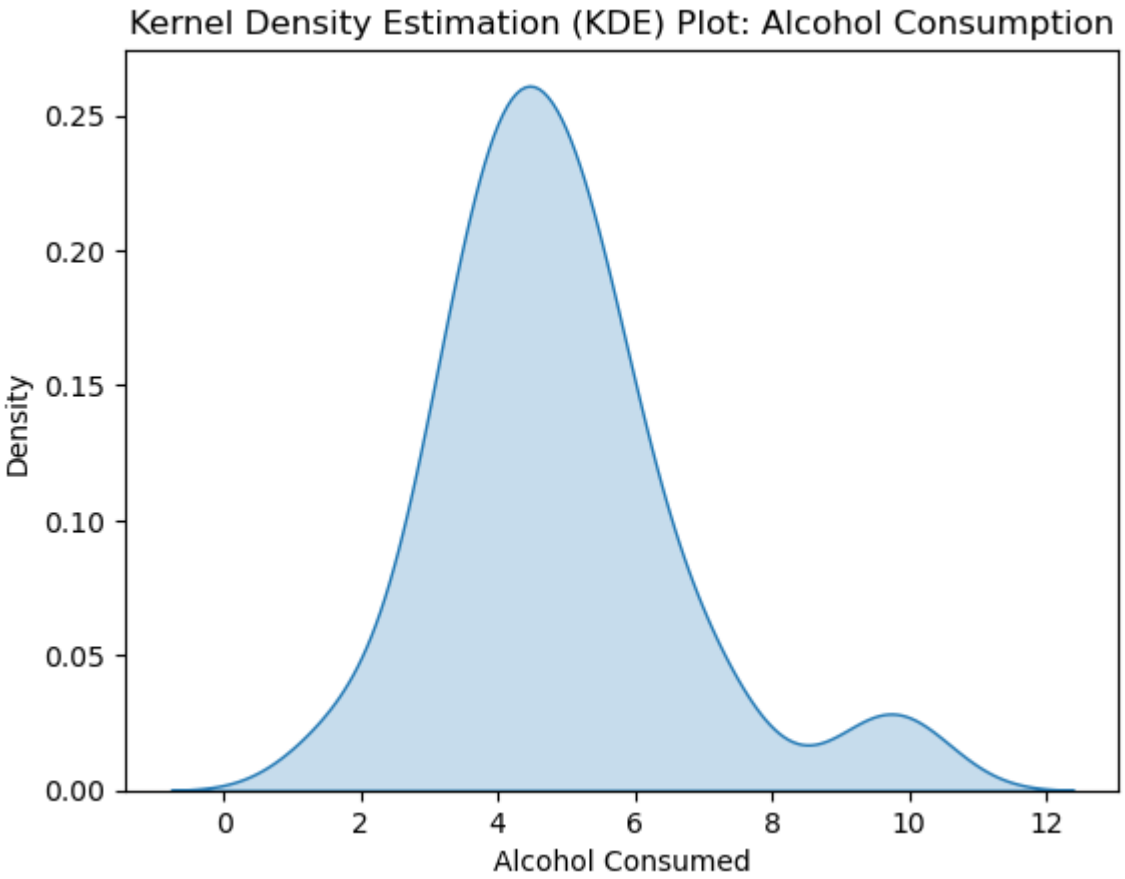
between alcohol consumption and the risk of car crashes.

In [50]:
```
sns.kdeplot(car_crashes["alcohol"], shade=True)
plt.xlabel("Alcohol Consumed")
plt.title("Kernel Density Estimation (KDE) Plot: Alcohol Consumption")
plt.show()
```

```
C:\Users\NAGA BHAVANI\AppData\Local\Temp\ipykernel_6932\1084857995.py:1: Fut
ureWarning:

`shade` is now deprecated in favor of `fill`; setting `fill=True`.
This will become an error in seaborn v0.14.0; please update your code.

  sns.kdeplot(car_crashes["alcohol"], shade=True)
```

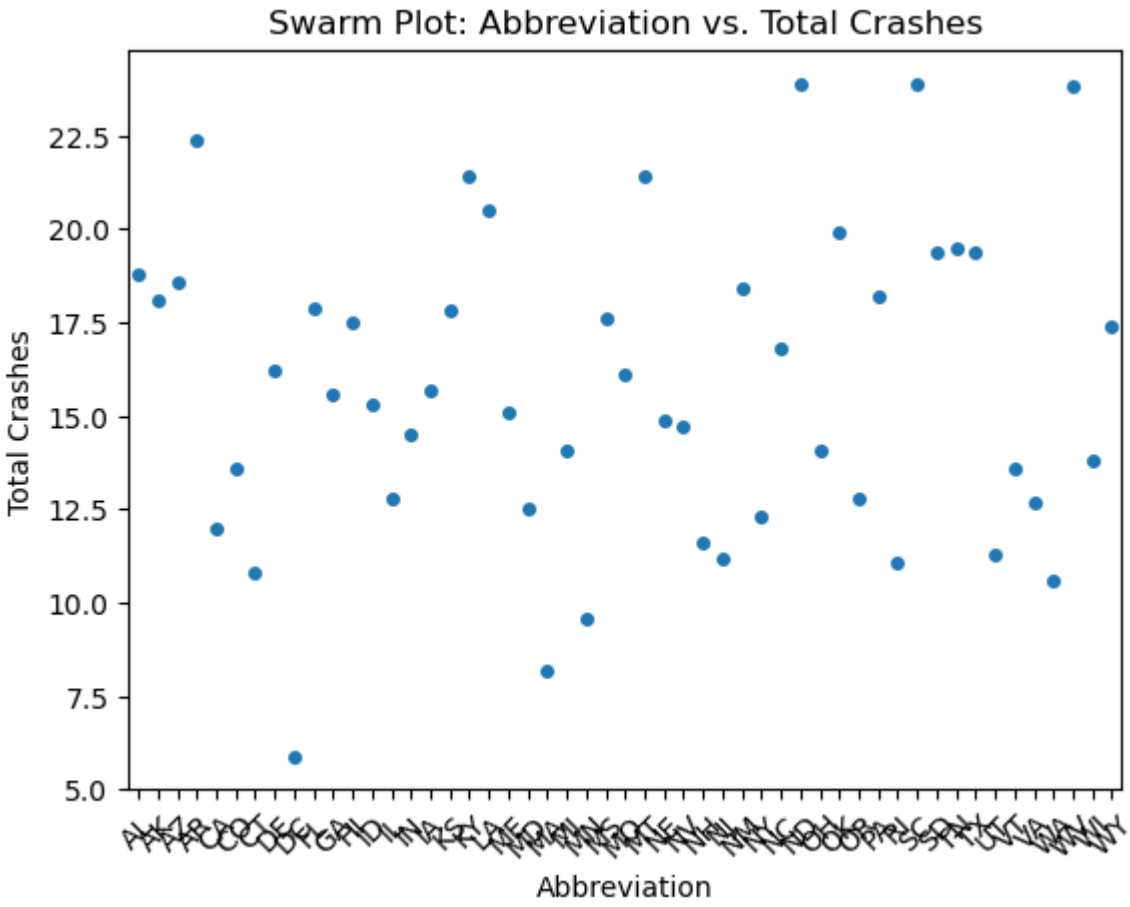


kernel density estimation (KDE) plot of the alcohol consumption for each driver in the

car_crashes DataFrame. The plot can be used to visualize the distribution of alcohol

consumption and identify outliers.

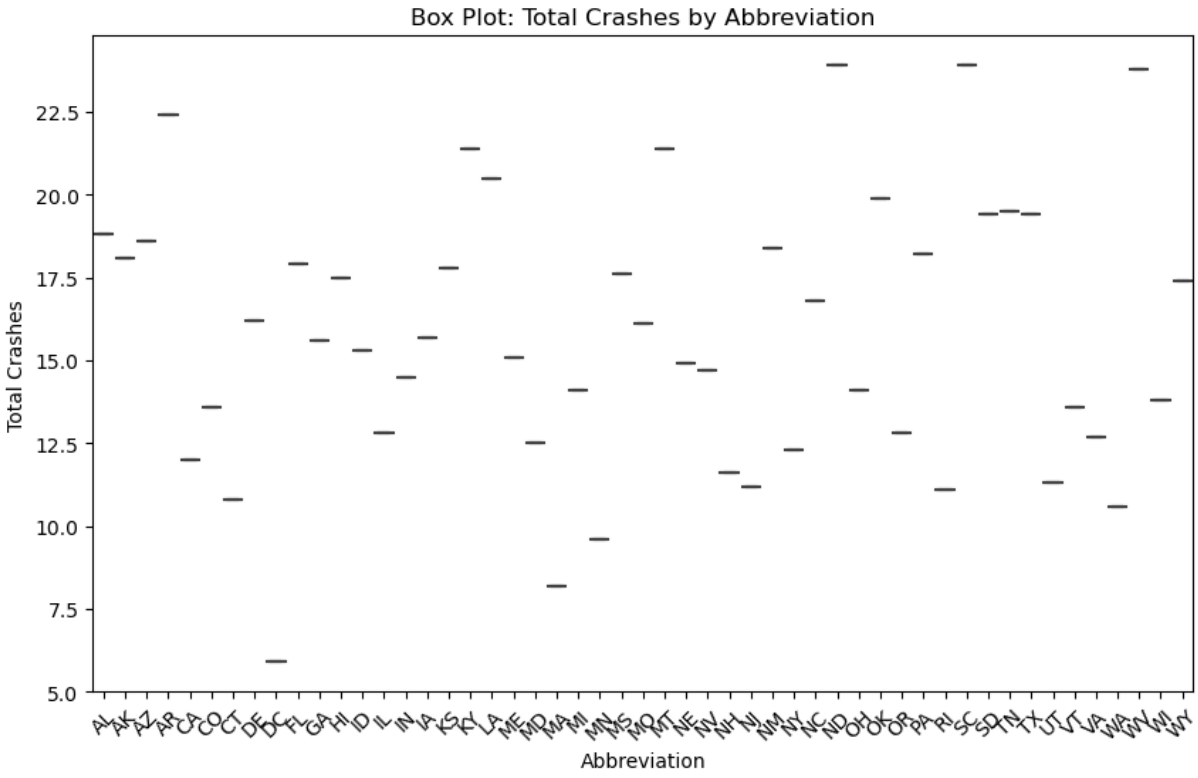
In [51]:
```
sns.swarmplot(x="abbrev", y="total", data=car_crashes)
plt.xlabel("Abbreviation")
plt.ylabel("Total Crashes")
plt.title("Swarm Plot: Abbreviation vs. Total Crashes")
plt.xticks(rotation=45)
plt.show()
```



swarm plot of the total number of crashes for each abbreviation in the car_crashes

DataFrame. The plot can be used to visualize the distribution of the data and identify outliers.

In [52]:
```
plt.figure(figsize=(10, 6))
sns.boxplot(x="abbrev", y="total", data=car_crashes)
plt.xlabel("Abbreviation")
plt.ylabel("Total Crashes")
plt.title("Box Plot: Total Crashes by Abbreviation")
plt.xticks(rotation=45)
plt.show()
```



box plot of the total number of crashes for each abbreviation in the car_crashes DataFrame.

The plot can be used to visualize the distribution of the data and identify outliers.

CORRELATION HEAT MAP

In [53]:
```
corr= car_crashes.corr()
corr
```

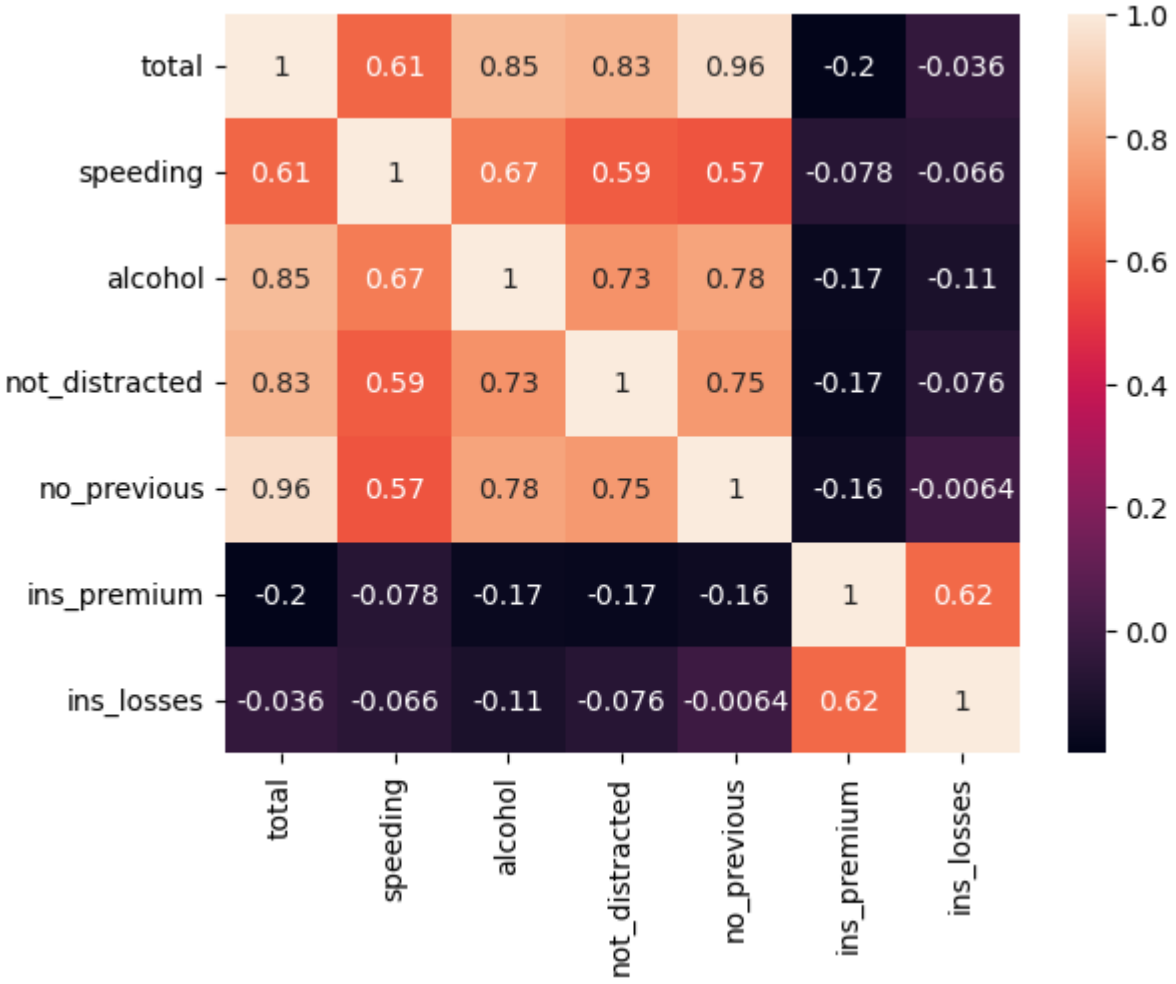
```
C:\Users\NAGA BHAVANI\AppData\Local\Temp\ipykernel_6932\1013747950.py:1: Fut
ureWarning: The default value of numeric_only in DataFrame.corr is deprecate
d. In a future version, it will default to False. Select only valid columns
or specify the value of numeric_only to silence this warning.
  corr= car_crashes.corr()
```

Out[53]:

	total	speeding	alcohol	not_distracted	no_previous	in
total	1.000000	0.611548	0.852613	0.827560	0.956179	
speeding	0.611548	1.000000	0.669719	0.588010	0.571976	
alcohol	0.852613	0.669719	1.000000	0.732816	0.783520	
not_distracted	0.827560	0.588010	0.732816	1.000000	0.747307	
no_previous	0.956179	0.571976	0.783520	0.747307	1.000000	
ins_premium	-0.199702	-0.077675	-0.170612	-0.174856	-0.156895	
ins_losses	-0.036011	-0.065928	-0.112547	-0.075970	-0.006359	

In [54]:
```
sns.heatmap(corr,annot=True)
```

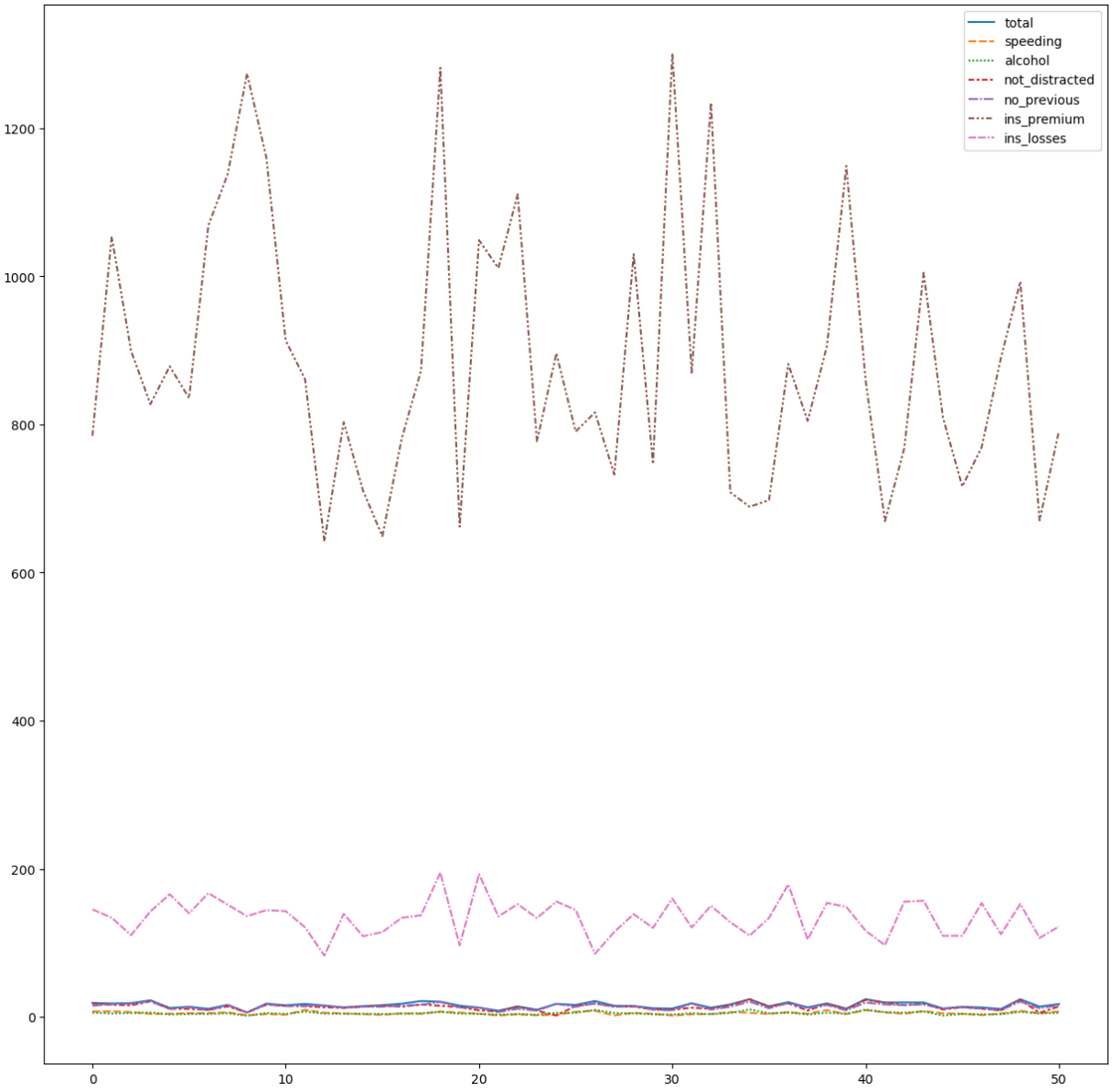
Out[54]: <Axes: >



LinePlot

In [55]:
```
plt.subplots(figsize=(15,15))
sns.lineplot(data=car_crashes)
```

Out[55]: <Axes: >

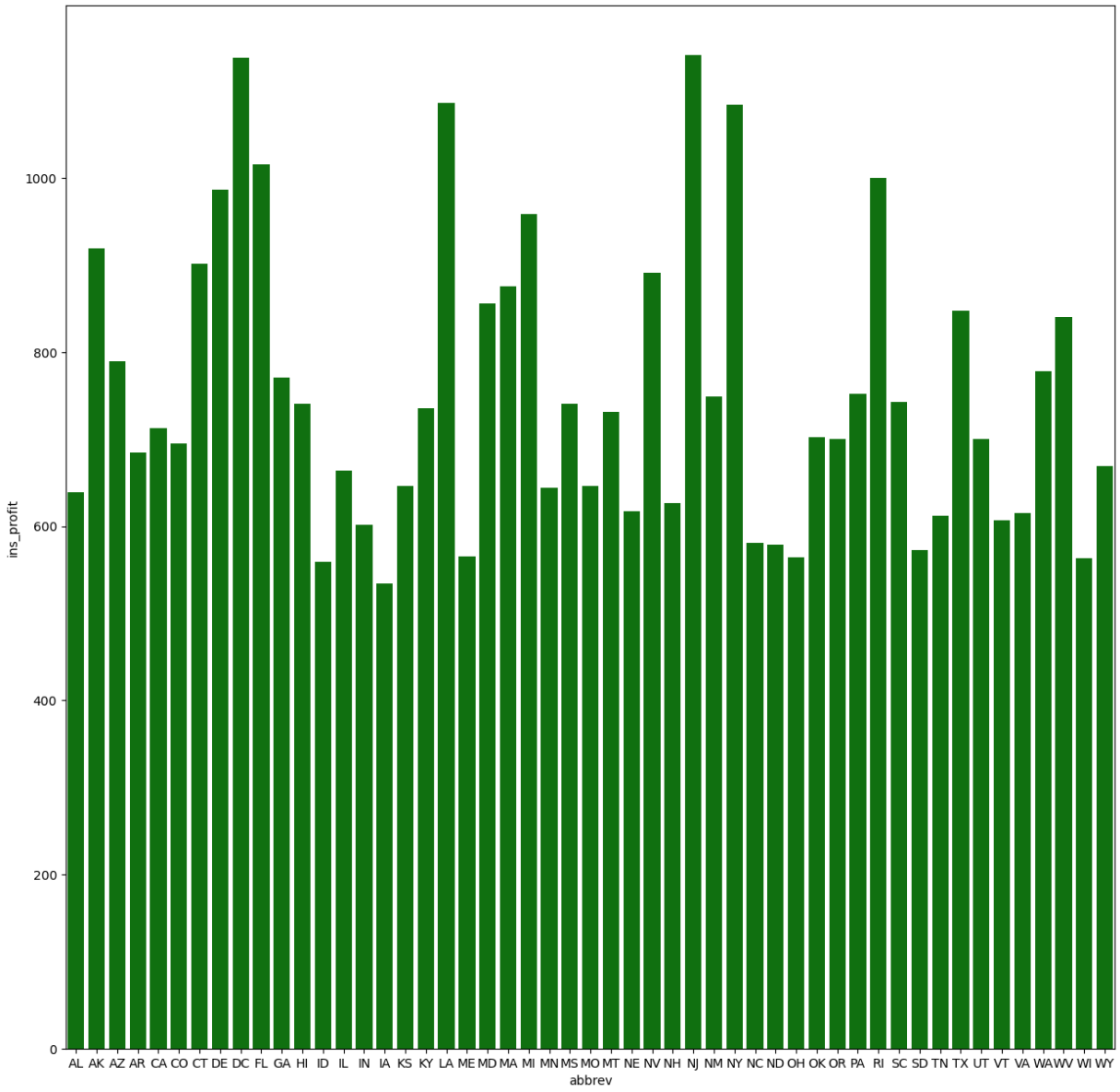


Profit Earned by Insurances in every state

Insurance Profit = Insurance Premium - Insurance Loss

In [56]:
```
car_crashes["ins_profit"]=car_crashes["ins_premium"]-car_crashes["ins_losses
plt.subplots(figsize=(15,15))
sns.barplot(x='abbrev', y='ins_profit', data=car_crashes, color='green', lab
```

Out[56]:
```
<Axes: xlabel='abbrev', ylabel='ins_profit'>
```



In [ ]: