```
ASSIGNTMENT-2
1.Take car crashes dataset from seaborn library
2.load the dataset
3.Perfrom Data Visualization
```

```python
#IMPORTING SEABORN
import seaborn as sns
```

```python
#printing all the inbuilt datasets
print(sns.get_dataset_names())
```

```
['anagrams', 'anscombe', 'attention', 'brain_networks', 'car_crashes', 'diamonds', 'dots', 'dowjones', 'exercise', 'flights', 'fmri', 'geyser', 'glue', 'healthexp', 'iris', 'mpg', 'penguins', 'planets', 'seaice', 'taxis', 'tips', 'titanic']
```

Step 1 and 2

```python
#taking car crashes dataset from seaborn library and loading it
df=sns.load_dataset('car_crashes')
```

```python
df
```

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
0	18.8	7.332	5.640	18.048	15.040	784.55	145.08	AL
1	18.1	7.421	4.525	16.290	17.014	1053.48	133.93	AK
2	18.6	6.510	5.208	15.624	17.856	899.47	110.35	AZ
3	22.4	4.032	5.824	21.056	21.280	827.34	142.39	AR
4	12.0	4.200	3.360	10.920	10.680	878.41	165.63	CA
5	13.6	5.032	3.808	10.744	12.920	835.50	139.91	CO
6	10.8	4.968	3.888	9.396	8.856	1068.73	167.02	CT
7	16.2	6.156	4.860	14.094	16.038	1137.87	151.48	DE
8	5.9	2.006	1.593	5.900	5.900	1273.89	136.05	DC
9	17.9	3.759	5.191	16.468	16.826	1160.13	144.18	FL
10	15.6	2.964	3.900	14.820	14.508	913.15	142.80	GA
11	17.5	9.450	7.175	14.350	15.225	861.18	120.92	HI
12	15.3	5.508	4.437	13.005	14.994	641.96	82.75	ID
13	12.8	4.608	4.352	12.032	12.288	803.11	139.15	IL
14	14.5	3.625	4.205	13.775	13.775	710.46	108.92	IN
15	15.7	2.669	3.925	15.229	13.659	649.06	114.47	IA
16	17.8	4.806	4.272	13.706	15.130	780.45	133.80	KS
17	21.4	4.066	4.922	16.692	16.264	872.51	137.13	KY
18	20.5	7.175	6.765	14.965	20.090	1281.55	194.78	LA
19	15.1	5.738	4.530	13.137	12.684	661.88	96.57	ME
20	12.5	4.250	4.000	8.875	12.375	1048.78	192.70	MD
21	8.2	1.886	2.870	7.134	6.560	1011.14	135.63	MA
22	14.1	3.384	3.948	13.395	10.857	1110.61	152.26	MI
23	9.6	2.208	2.784	8.448	8.448	777.18	133.35	MN
24	17.6	2.640	5.456	1.760	17.600	896.07	155.77	MS
25	16.1	6.923	5.474	14.812	13.524	790.32	144.45	MO
26	21.4	8.346	9.416	17.976	18.190	816.21	85.15	MT
27	14.9	1.937	5.215	13.857	13.410	732.28	114.82	NE
28	14.7	5.439	4.704	13.965	14.553	1029.87	138.71	NV
29	11.6	4.060	3.480	10.092	9.628	746.54	120.21	NH
30	11.2	1.792	3.136	9.632	8.736	1301.52	159.85	NJ
31	18.4	3.496	4.968	12.328	18.032	869.85	120.75	NM
32	12.3	3.936	3.567	10.824	9.840	1234.31	150.01	NY
33	16.8	6.552	5.208	15.792	13.608	708.24	127.82	NC
34	23.9	5.497	10.038	23.661	20.554	688.75	109.72	ND
35	14.1	3.948	4.794	13.959	11.562	697.73	133.52	OH
36	19.9	6.368	5.771	18.308	18.706	881.51	178.86	OK
37	12.8	4.224	3.328	8.576	11.520	804.71	104.61	OR
38	18.2	9.100	5.642	17.472	16.016	905.99	153.86	PA
39	11.1	3.774	4.218	10.212	8.769	1148.99	148.58	RI
40	23.9	9.082	9.799	22.944	19.359	858.97	116.29	SC
41	19.4	6.014	6.402	19.012	16.684	669.31	96.87	SD
42	19.5	4.095	5.655	15.990	15.795	767.91	155.57	TN
43	19.4	7.760	7.372	17.654	16.878	1004.75	156.83	TX
44	11.3	4.859	1.808	9.944	10.848	809.38	109.48	UT
45	13.6	4.080	4.080	13.056	12.920	716.20	109.61	VT
46	12.7	2.413	3.429	11.049	11.176	768.95	153.72	VA
47	10.6	4.452	3.498	8.692	9.116	890.03	111.62	WA
48	23.8	8.092	6.664	23.086	20.706	992.61	152.56	WV
49	13.8	4.968	4.554	5.382	11.592	670.31	106.62	WI
50	17.4	7.308	5.568	14.094	15.660	791.14	122.04	WY

```python
df.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
```

```python
df.head()
```

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
0	18.8	7.332	5.640	18.048	15.040	784.55	145.08	AL
1	18.1	7.421	4.525	16.290	17.014	1053.48	133.93	AK
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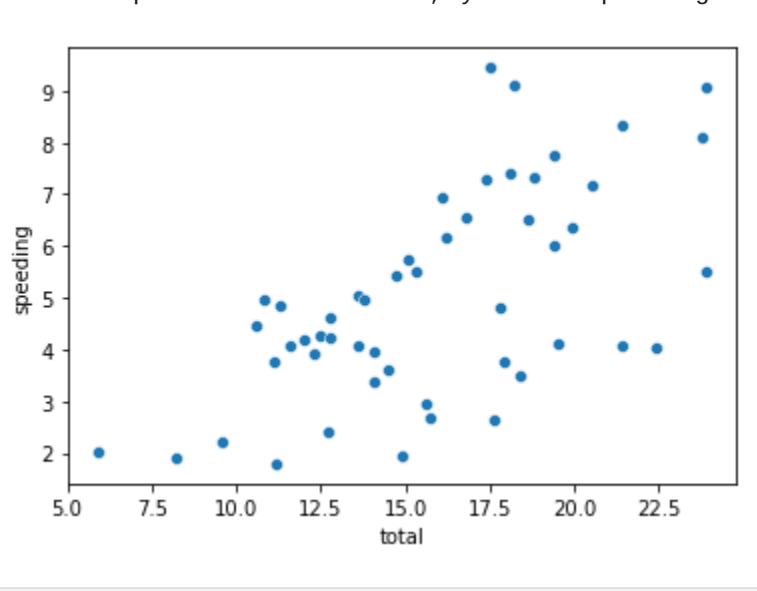
3	22.4	4.032	5.824	21.056	21.280	827.34	142.39	AR
4	12.0	4.200	3.360	10.920	10.680	878.41	165.63	CA

SCATTERPLOT

```python
sns.scatterplot(x="total",y="speeding",data=df)
```

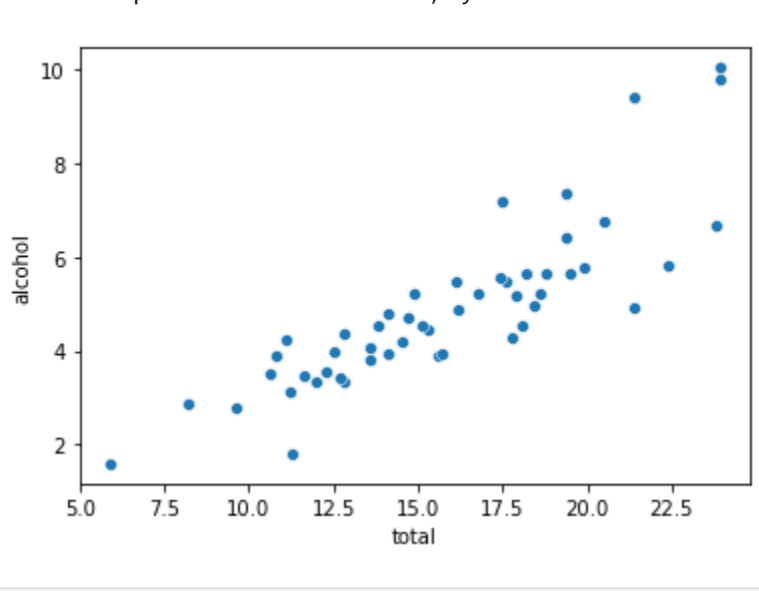
```
<AxesSubplot:xlabel='total', ylabel='speeding'>
```




```
Inference: From the plot we can say that as the speed increases the number of drivers involved in collisions are also increasing
```

```python
sns.scatterplot(x="total",y="alcohol",data=df)
```

```
<AxesSubplot:xlabel='total', ylabel='alcohol'>
```

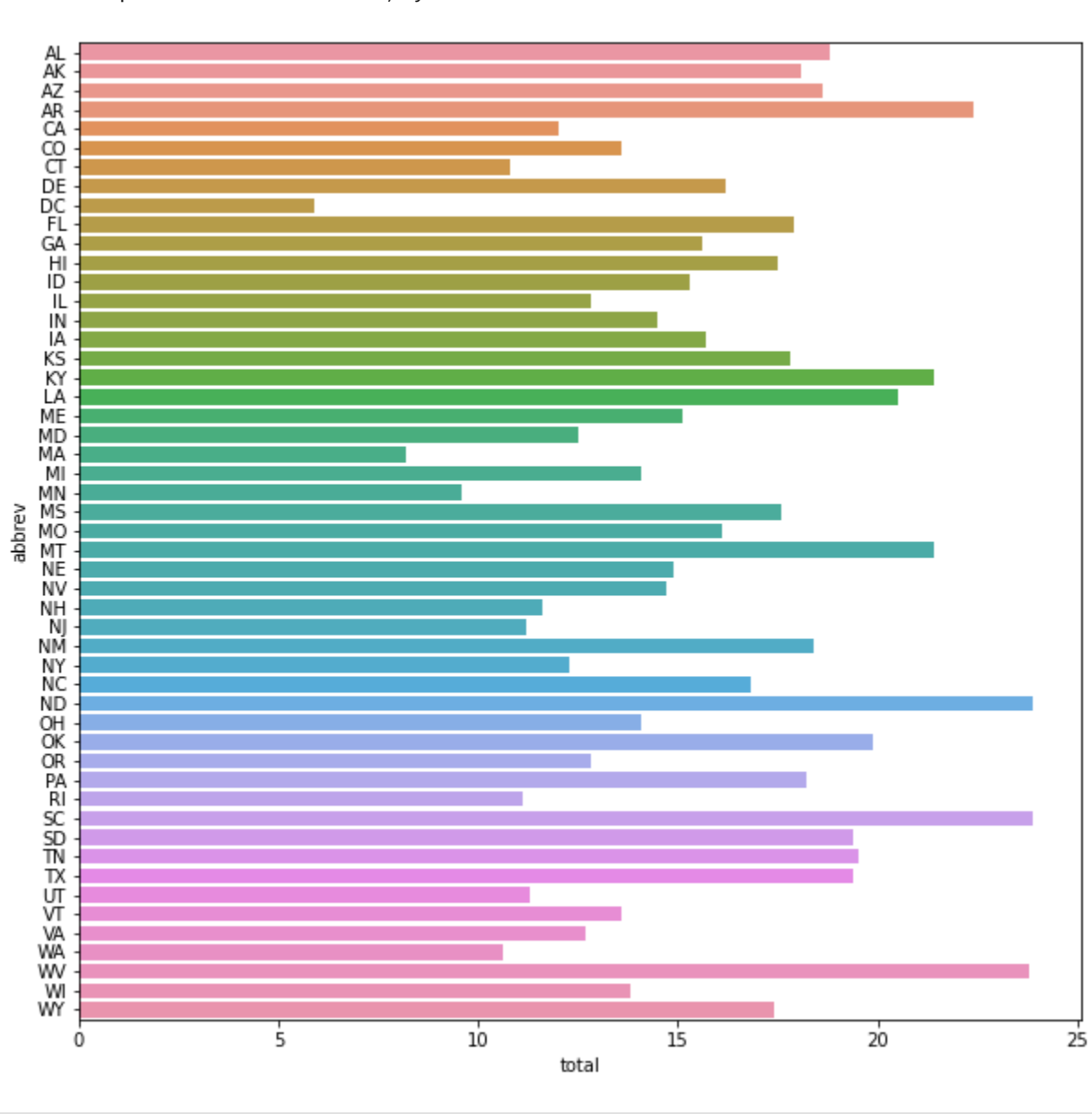



```
Inference: From the plot we can observe that as alcohol consumption increases number of drivers involved in collisions also increase
Therefore, they are directly proportional
```

BARPLOT

```python
import matplotlib.pyplot as plt
fig=plt.figure(figsize=(10,10))
sns.barplot(x="total",y="abbrev",data=df)
```

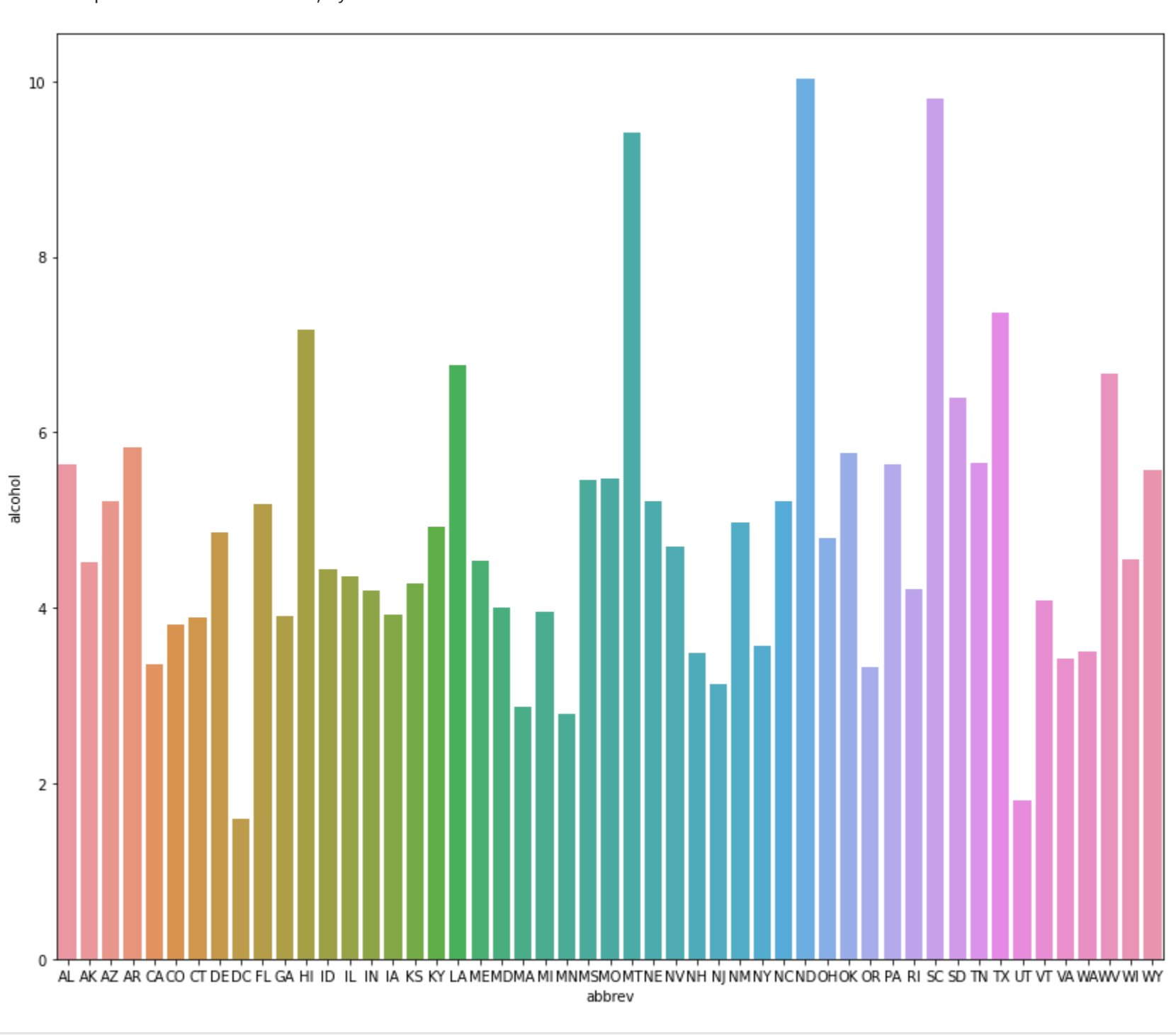
```
<AxesSubplot:xlabel='total', ylabel='abbrev'>
```




```
Inference: The plot is varying between total of 10 and 20 drivers whereas some abbrev have count of more than 20 drivers
```

```python
fig=plt.figure(figsize=(14,12))
sns.barplot(x="abbrev",y="alcohol",data=df)
```

```
<AxesSubplot:xlabel='abbrev', ylabel='alcohol'>
```

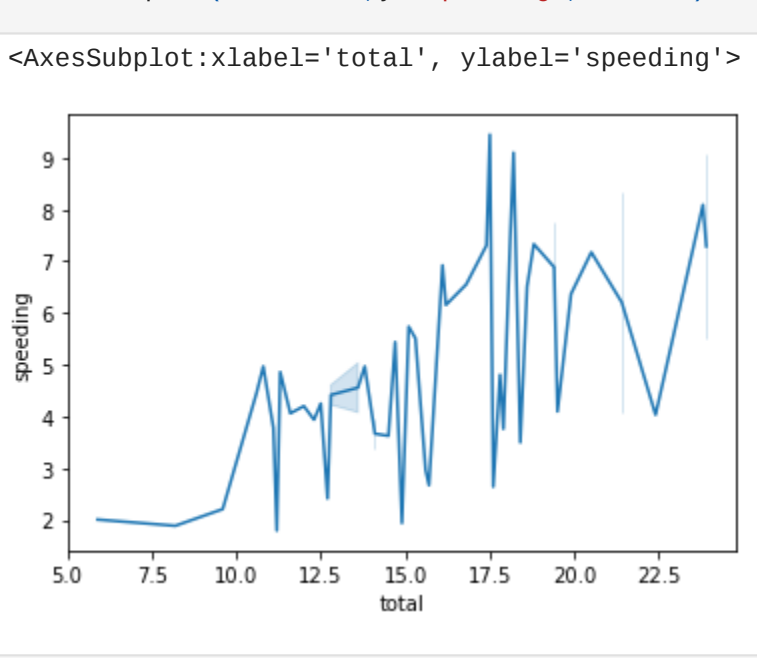



```
Inference: From the plot we can see that the highest accidents occured due to alcohol are in 'ND'and the least accidents are in 'DC'
```

LINEPLOT

```python
sns.lineplot(x="total",y="speeding",data=df)
```

```
<AxesSubplot:xlabel='total', ylabel='speeding'>
```

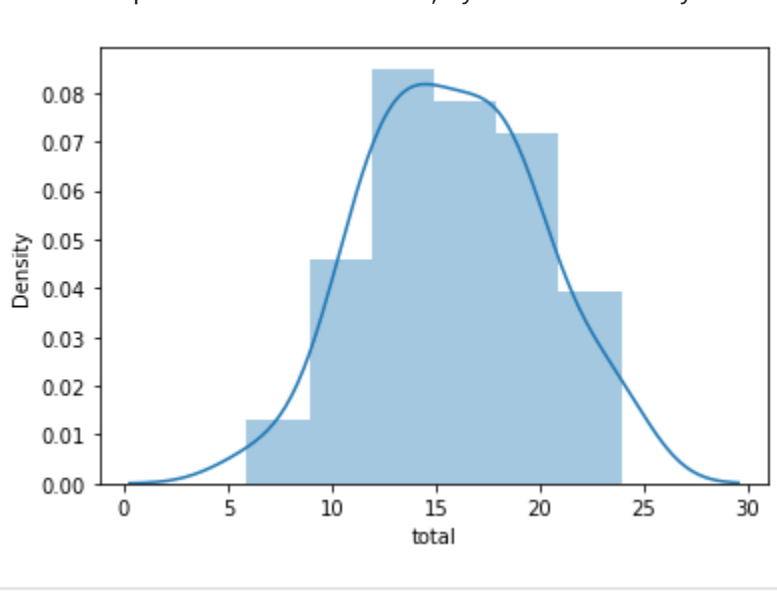



```
Inference: From the plot we can see the different variations between total and speeding
    Some areas are slightly less shaded because of the scattered data points in that region
```

DISTPLOT-- DISTRIBUTION PLOT

```python
#histogram combined with kernel density function
sns.distplot(df["total"])
```

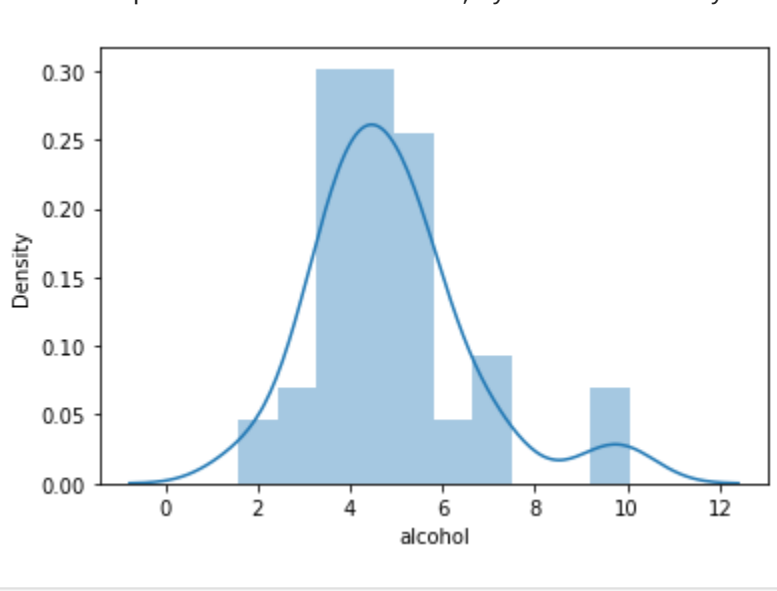
```
<AxesSubplot:xlabel='total', ylabel='Density'>
```




```
Inference: number of car drivers in car crashes are mostly ranging between 10 to 20
```

```python
sns.distplot(df["alcohol"])
```

```
C:\Users\SRUJANA\anaconda3\lib\site-packages\seaborn\distributions.py:2619: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
<AxesSubplot:xlabel='alcohol', ylabel='Density'>
```

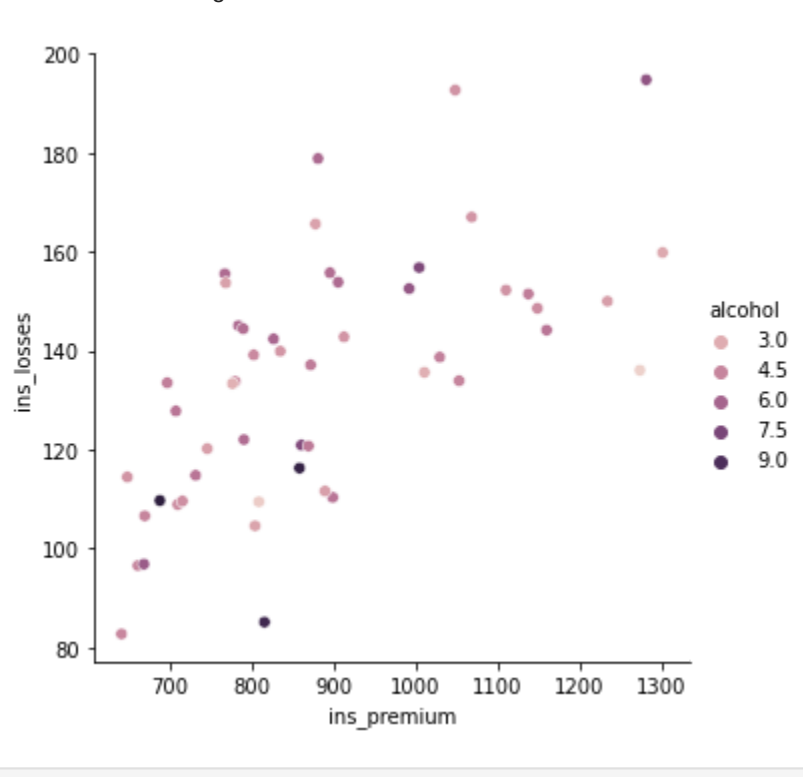



```
Inference:alcohol ranging between 3 to 6
```

RELATIVE PLOT

```python
sns.relplot(x="ins_premium",y="ins_losses",data=df,hue="alcohol")
```

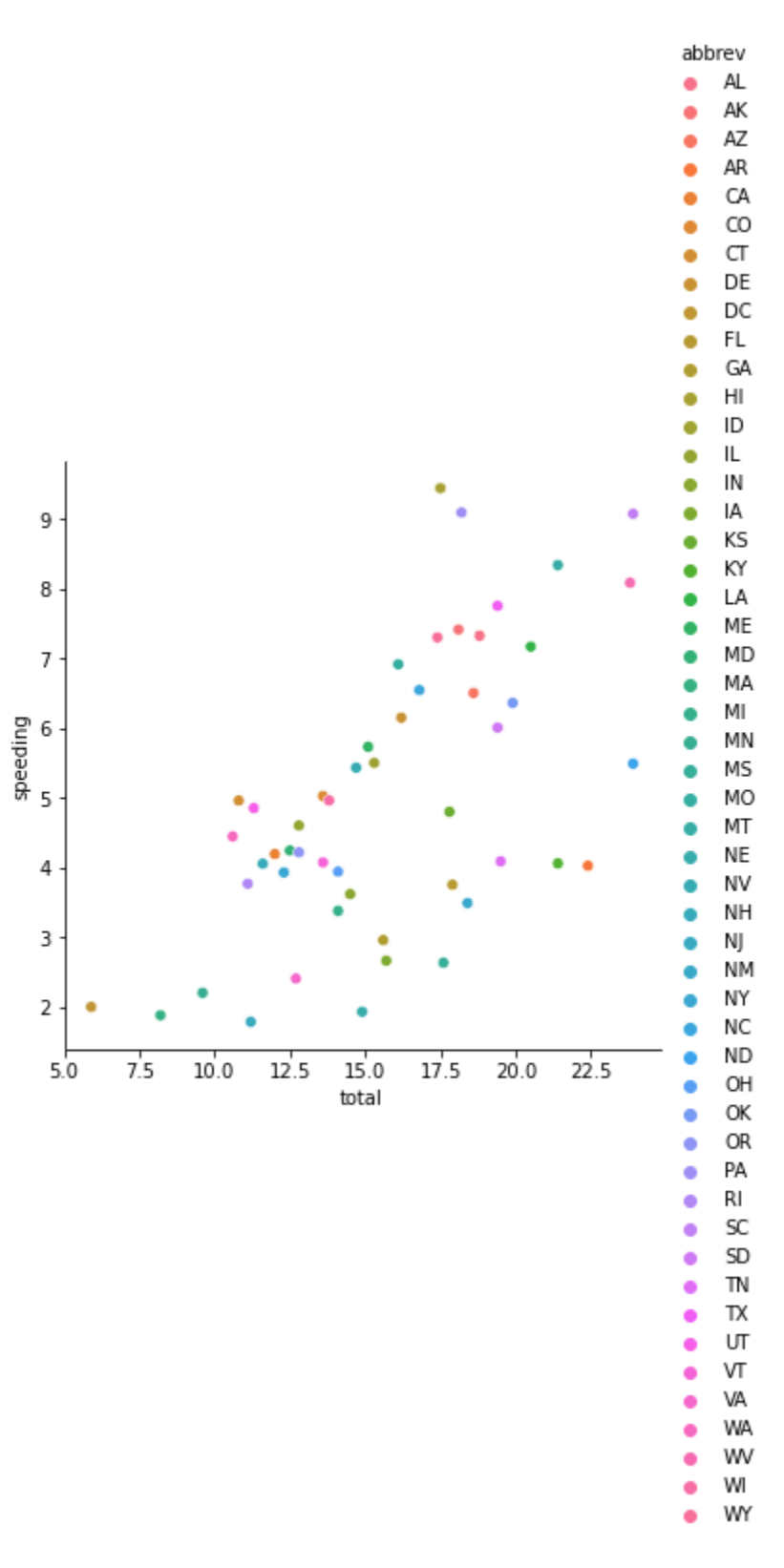
```
<seaborn.axisgrid.FacetGrid at 0x2095622ddc0>
```




```
Inference: From the plot we can observe the increasing positive slope between the 2 attributes
```

```python
sns.relplot(x="total",y="speeding",data=df,hue="abbrev")
```

```
<seaborn.axisgrid.FacetGrid at 0x20957c0a400>
```




```
Inference: From the plot we can see the increasing proportionality of 'total' and 'speeding'
    with the abbrev attribute distinction
```

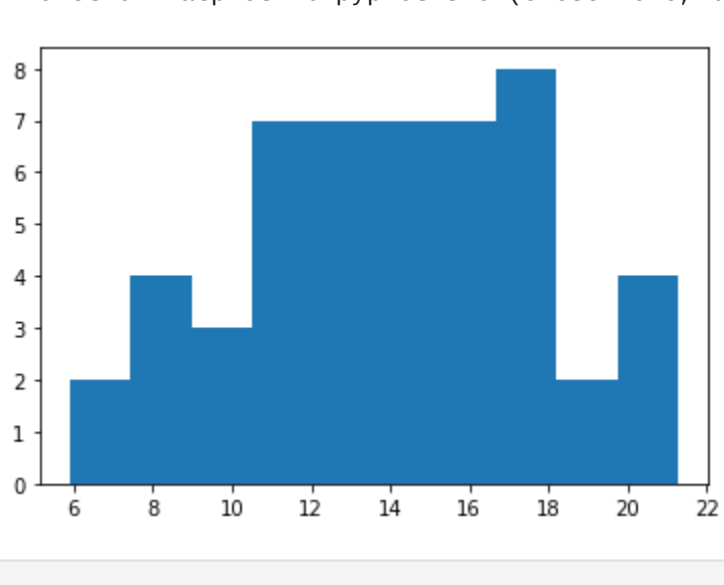
GRID PLOT

```python
df.plot(x="speeding",y="total")
plt.grid()
```

HISTOGRAM

```python
plt.hist(df['no_previous'])
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```

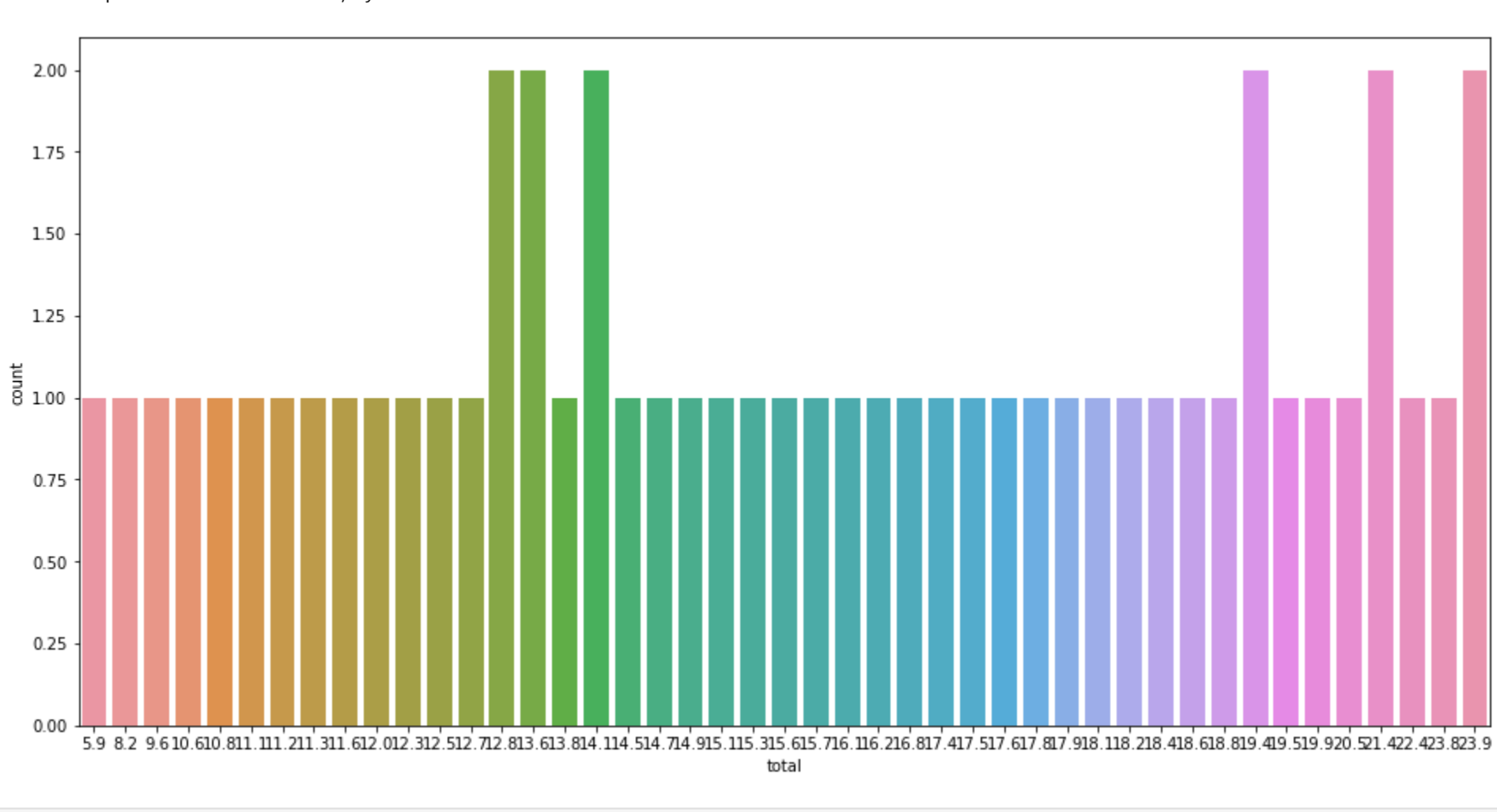


```
Inference: From the plot we can see that most of the drivers did not commit any previous accidents
```

COUNTPLOT

```python
fig=plt.figure(figsize=(16,8))
sns.countplot(x="total",data=df)
```

```
<AxesSubplot:xlabel='total', ylabel='count'>
```

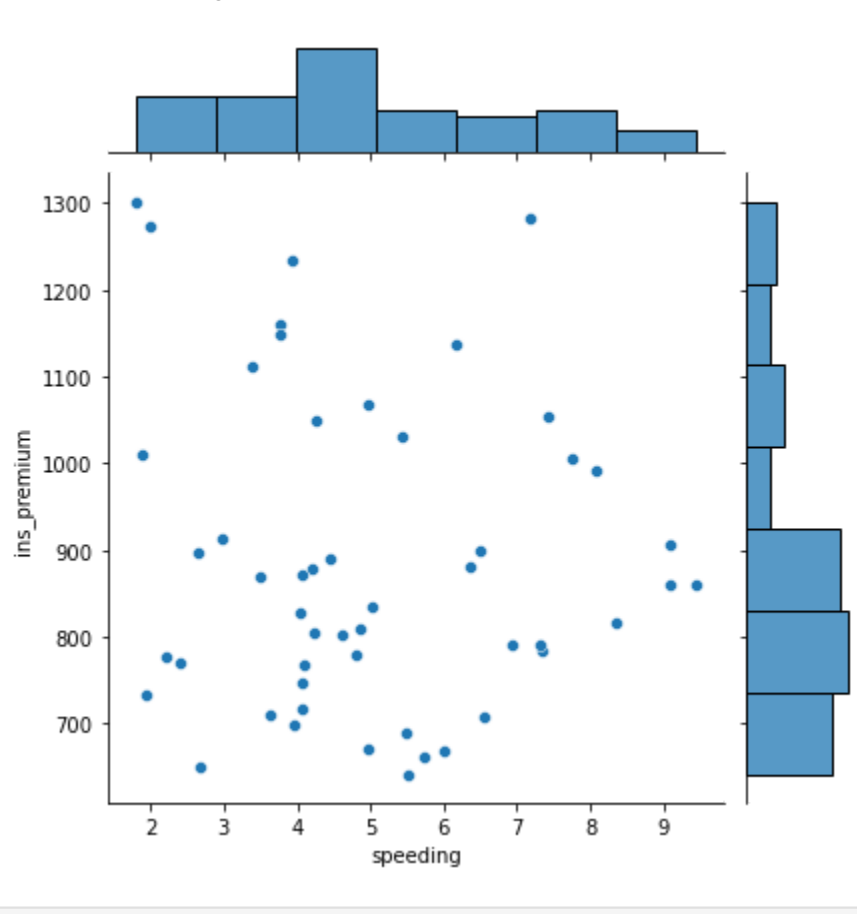



```
Inference: From the plot we can observe the number of occurences of the observation 'total'
    it is generally used for categorical data for beter understanding
```

JOINTPLOT

```python
sns.jointplot(x="speeding",y="ins_premium",data=df)
```

```
<seaborn.axisgrid.JointGrid at 0x2095aad1550>
```

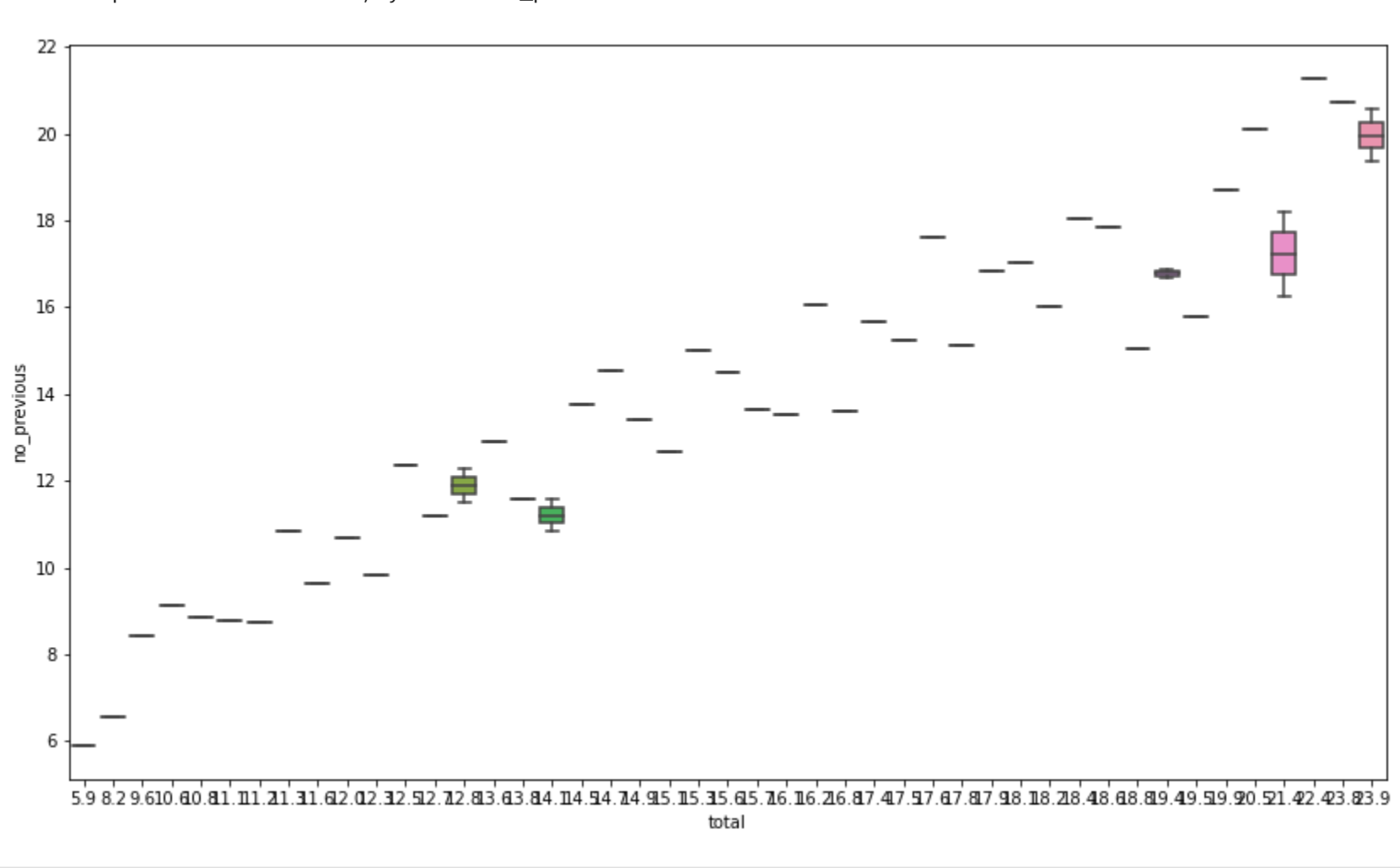



```
Inference: From the plot we can see the univariate analysis of speeding and ins_premium
    along with the scattered plot for bivariate analysis
```

BOXPLOT

```python
fig=plt.figure(figsize=(14,8))
sns.boxplot(x="total",y="no_previous",data=df)
```

```
<AxesSubplot:xlabel='total', ylabel='no_previous'>
```




```
Inference: According to the graph most of the data is positively skewed data since is median is towards the lower quartile
    Also,the median(quartile 2) and two quartiles q1 and q3 are not visible for most of the observations
```

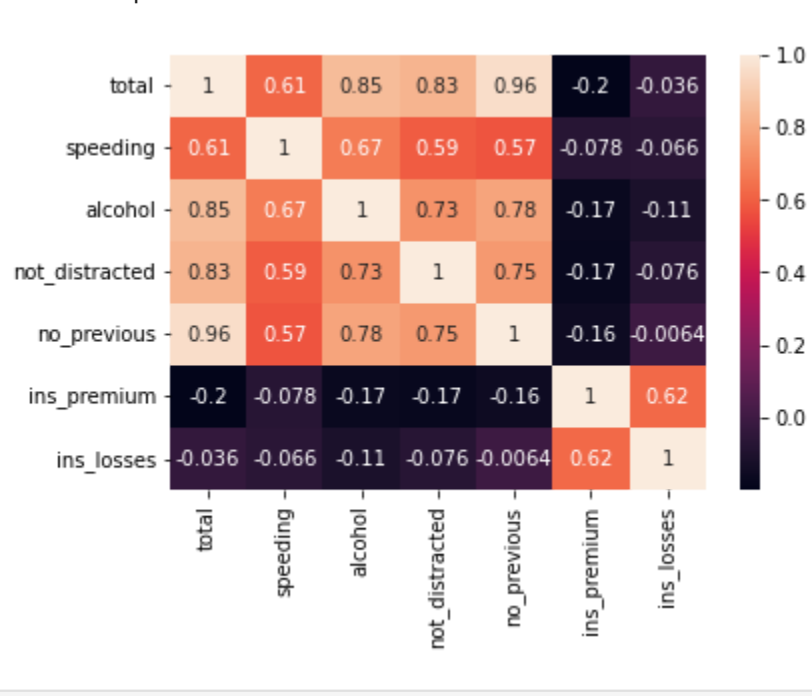
HEATMAP

```python
corr=df.corr()
corr
```

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses
total	1.000000	0.611548	0.852613	0.827560	0.956179	-0.199702	-0.036011
speeding	0.611548	1.000000	0.669719	0.588010	0.571976	-0.077675	-0.065928
alcohol	0.852613	0.669719	1.000000	0.732816	0.783520	-0.170612	-0.112547
not_distracted	0.827560	0.588010	0.732816	1.000000	0.747307	-0.174856	-0.075970
no_previous	0.956179	0.571976	0.783520	0.747307	1.000000	-0.156895	-0.006359
ins_premium	-0.199702	-0.077675	-0.170612	-0.174856	-0.156895	1.000000	0.623116
ins_losses	-0.036011	-0.065928	-0.112547	-0.075970	-0.006359	0.623116	1.000000

```python
sns.heatmap(corr,annot=True)
```

```
<AxesSubplot:>
```




```
Inference: From the plot we can observethe correlation between all the variables
    0 to 1 are positively correlated and above 0.5 are strong positive correlated
    whereas 0 to -1 are negatively correlated
```