assignment-2-thridiva

September 14, 2023

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ASSIGNMENT-2(MORNING SLOT)

[2]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[4]:
```
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']
```

[5]:
```
df=sns.load_dataset("car_crashes")
df
```

[5]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	\
0	18.8	7.332	5.640	18.048	15.040	784.55	
1	18.1	7.421	4.525	16.290	17.014	1053.48	
2	18.6	6.510	5.208	15.624	17.856	899.47	
3	22.4	4.032	5.824	21.056	21.280	827.34	
4	12.0	4.200	3.360	10.920	10.680	878.41	
5	13.6	5.032	3.808	10.744	12.920	835.50	
6	10.8	4.968	3.888	9.396	8.856	1068.73	
7	16.2	6.156	4.860	14.094	16.038	1137.87	
8	5.9	2.006	1.593	5.900	5.900	1273.89	
9	17.9	3.759	5.191	16.468	16.826	1160.13	
10	15.6	2.964	3.900	14.820	14.508	913.15	
11	17.5	9.450	7.175	14.350	15.225	861.18	
12	15.3	5.508	4.437	13.005	14.994	641.96	
13	12.8	4.608	4.352	12.032	12.288	803.11	
14	14.5	3.625	4.205	13.775	13.775	710.46	
15	15.7	2.669	3.925	15.229	13.659	649.06	
16	17.8	4.806	4.272	13.706	15.130	780.45	
17	21.4	4.066	4.922	16.692	16.264	872.51	

18	20.5	7.175	6.765	14.965	20.090	1281.55
19	15.1	5.738	4.530	13.137	12.684	661.88
20	12.5	4.250	4.000	8.875	12.375	1048.78
21	8.2	1.886	2.870	7.134	6.560	1011.14
22	14.1	3.384	3.948	13.395	10.857	1110.61
23	9.6	2.208	2.784	8.448	8.448	777.18
24	17.6	2.640	5.456	1.760	17.600	896.07
25	16.1	6.923	5.474	14.812	13.524	790.32
26	21.4	8.346	9.416	17.976	18.190	816.21
27	14.9	1.937	5.215	13.857	13.410	732.28
28	14.7	5.439	4.704	13.965	14.553	1029.87
29	11.6	4.060	3.480	10.092	9.628	746.54
30	11.2	1.792	3.136	9.632	8.736	1301.52
31	18.4	3.496	4.968	12.328	18.032	869.85
32	12.3	3.936	3.567	10.824	9.840	1234.31
33	16.8	6.552	5.208	15.792	13.608	708.24
34	23.9	5.497	10.038	23.661	20.554	688.75
35	14.1	3.948	4.794	13.959	11.562	697.73
36	19.9	6.368	5.771	18.308	18.706	881.51
37	12.8	4.224	3.328	8.576	11.520	804.71
38	18.2	9.100	5.642	17.472	16.016	905.99
39	11.1	3.774	4.218	10.212	8.769	1148.99
40	23.9	9.082	9.799	22.944	19.359	858.97
41	19.4	6.014	6.402	19.012	16.684	669.31
42	19.5	4.095	5.655	15.990	15.795	767.91
43	19.4	7.760	7.372	17.654	16.878	1004.75
44	11.3	4.859	1.808	9.944	10.848	809.38
45	13.6	4.080	4.080	13.056	12.920	716.20
46	12.7	2.413	3.429	11.049	11.176	768.95
47	10.6	4.452	3.498	8.692	9.116	890.03
48	23.8	8.092	6.664	23.086	20.706	992.61
49	13.8	4.968	4.554	5.382	11.592	670.31
50	17.4	7.308	5.568	14.094	15.660	791.14

	ins_losses	abbrev
0	145.08	AL
1	133.93	AK
2	110.35	AZ
3	142.39	AR
4	165.63	CA
5	139.91	CO
6	167.02	CT
7	151.48	DE
8	136.05	DC
9	144.18	FL
10	142.80	GA
11	120.92	HI

```
12       82.75      ID
13      139.15      IL
14      108.92      IN
15      114.47      IA
16      133.80      KS
17      137.13      KY
18      194.78      LA
19       96.57      ME
20      192.70      MD
21      135.63      MA
22      152.26      MI
23      133.35      MN
24      155.77      MS
25      144.45      MO
26       85.15      MT
27      114.82      NE
28      138.71      NV
29      120.21      NH
30      159.85      NJ
31      120.75      NM
32      150.01      NY
33      127.82      NC
34      109.72      ND
35      133.52      OH
36      178.86      OK
37      104.61      OR
38      153.86      PA
39      148.58      RI
40      116.29      SC
41       96.87      SD
42      155.57      TN
43      156.83      TX
44      109.48      UT
45      109.61      VT
46      153.72      VA
47      111.62      WA
48      152.56      WV
49      106.62      WI
50      122.04      WY
```

[6]:
```
df.head()
```

[6]:
```
   total  speeding  alcohol  not_distracted  no_previous  ins_premium  \
0   18.8     7.332    5.640          18.048       15.040       784.55
1   18.1     7.421    4.525          16.290       17.014      1053.48
2   18.6     6.510    5.208          15.624       17.856       899.47
3   22.4     4.032    5.824          21.056       21.280       827.34
```

```
4   12.0     4.200    3.360           10.920        10.680        878.41

   ins_losses abbrev
0      145.08     AL
1      133.93     AK
2      110.35     AZ
3      142.39     AR
4      165.63     CA
```

INFERENCE: This is the head function which gives the top 5 data values

[7]:
```
df.tail()
```

[7]:
```
    total  speeding  alcohol  not_distracted  no_previous  ins_premium  \
46   12.7     2.413    3.429          11.049       11.176       768.95
47   10.6     4.452    3.498           8.692        9.116       890.03
48   23.8     8.092    6.664          23.086       20.706       992.61
49   13.8     4.968    4.554           5.382       11.592       670.31
50   17.4     7.308    5.568          14.094       15.660       791.14

    ins_losses abbrev
46      153.72     VA
47      111.62     WA
48      152.56     WV
49      106.62     WI
50      122.04     WY
```

INFERENCE: This is the head function which gives the bottom 5 data values

[8]:
```
sns.__version__
```

[8]:
```
'0.12.2'
```

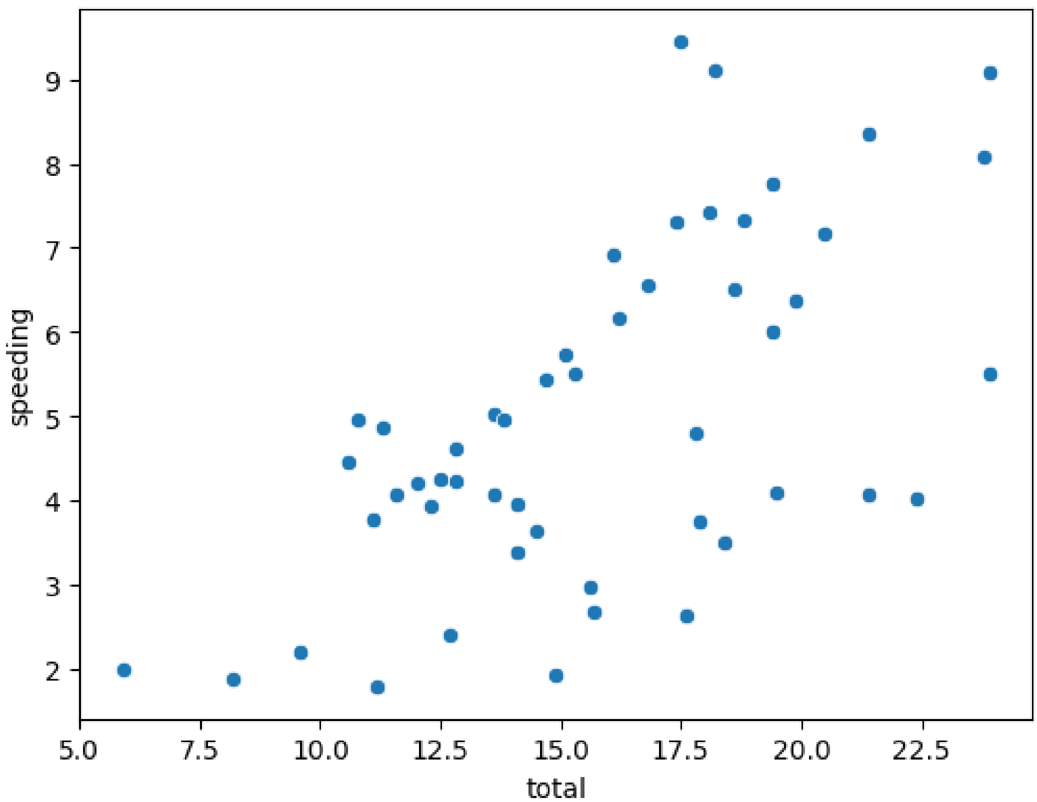
[9]:
```
df.info()
```

```
<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
```

[10]:
```
sns.scatterplot(data=df,x="total",y="speeding")
```

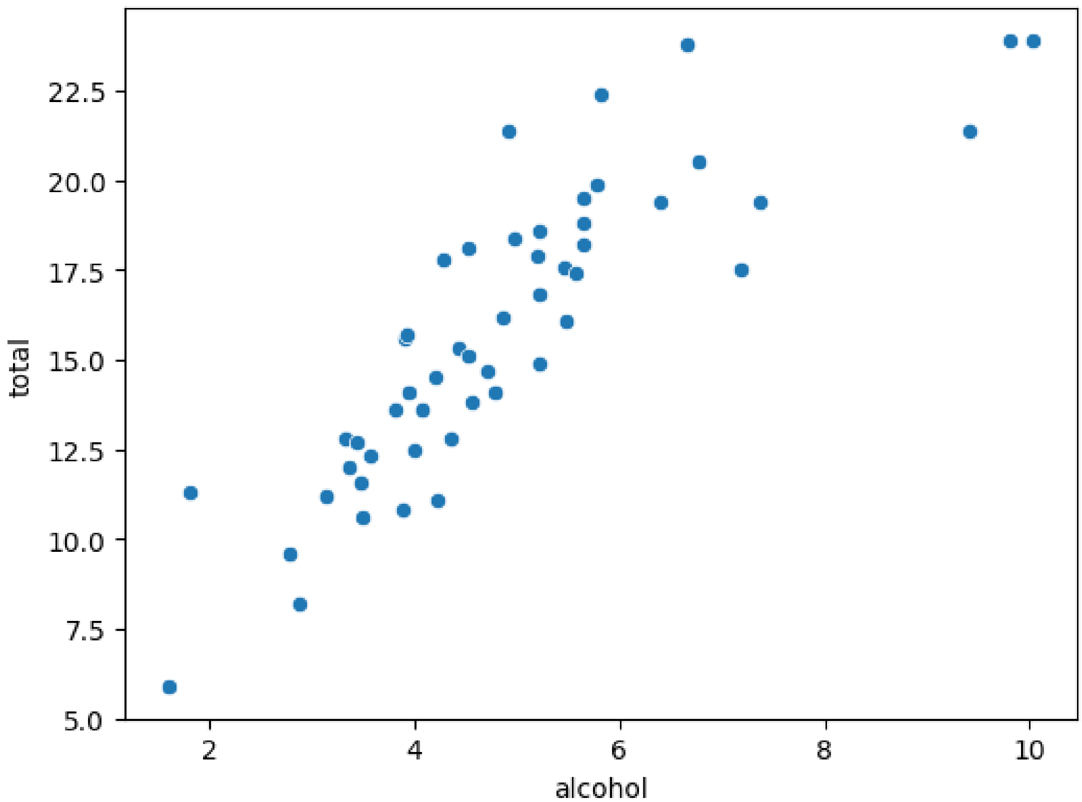
[10]: <Axes: xlabel='total', ylabel='speeding'>



INFERENCE:——> From the above Scatter plot we can say that when the speeding is increasing then total is also increasing !!

[11]:
```
sns.scatterplot(data=df,x="alcohol",y="total")
```

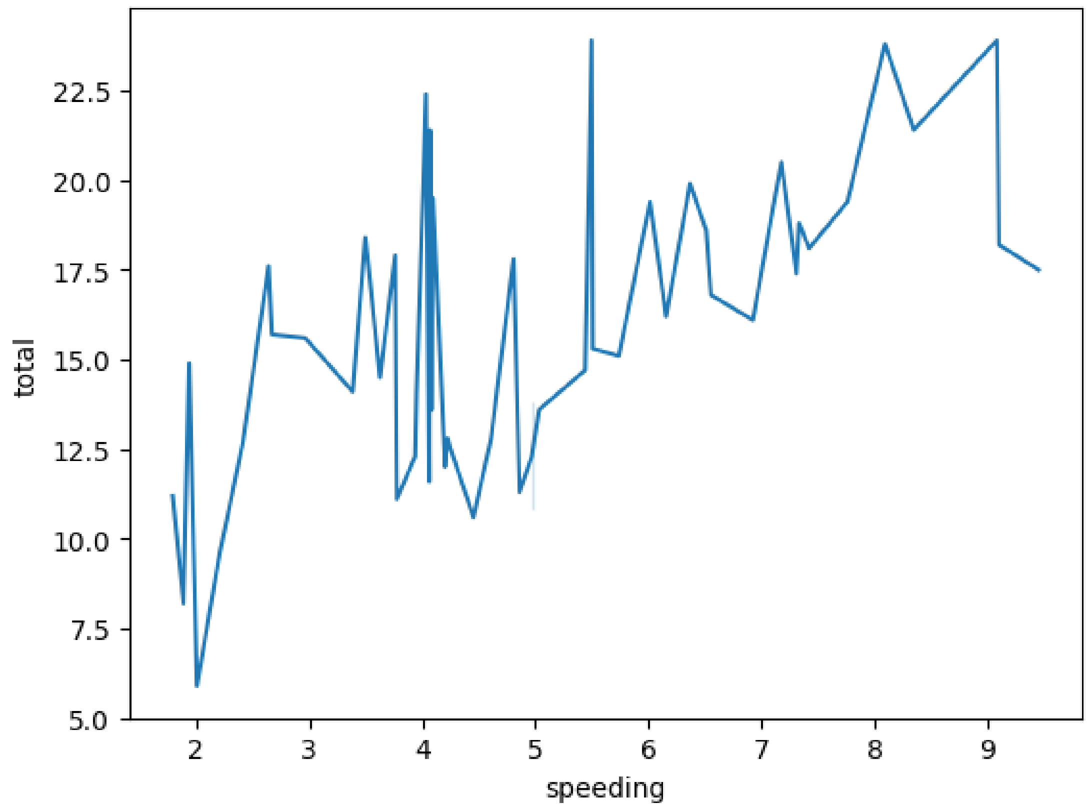
[11]: <Axes: xlabel='alcohol', ylabel='total'>



INFERENCE:——> By the above Scatterplot we can say that alcohol drinkers increasing,total is increasing

[12]:
```
sns.lineplot(data=df,x="speeding",y="total")
```

[12]: <Axes: xlabel='speeding', ylabel='total'>

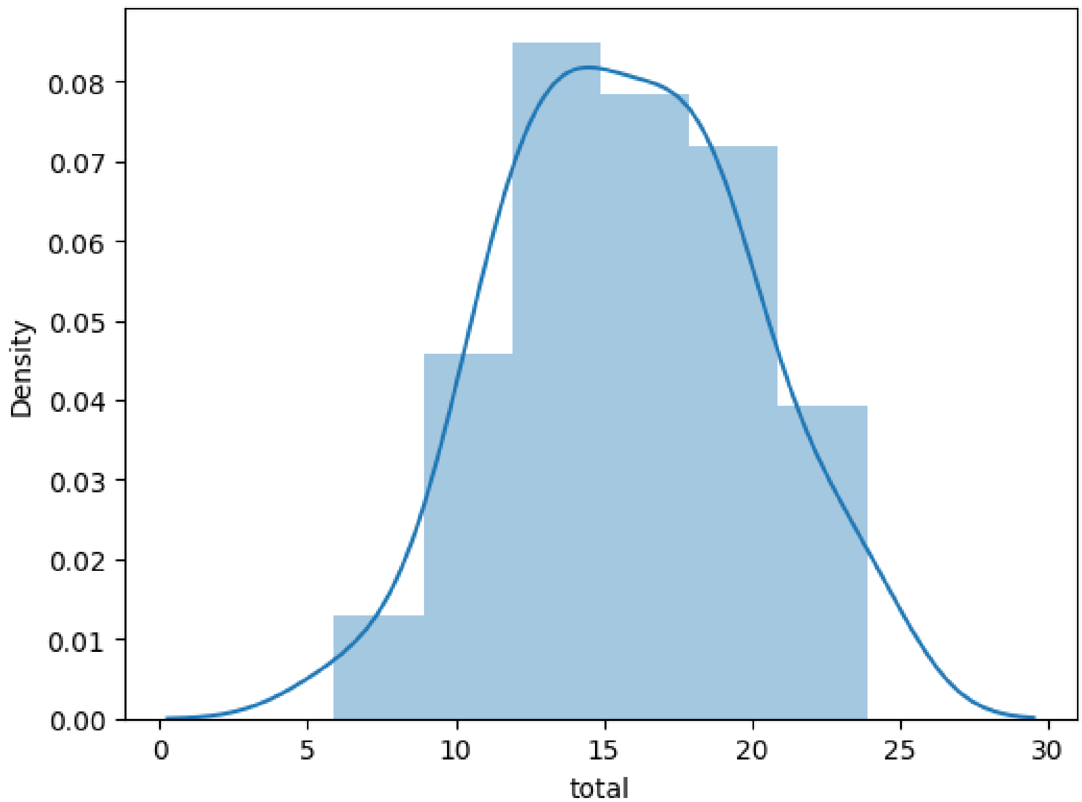


INFERENCE:—–> From the above Scatter plot we can say that when the speeding is increasing then total is also increasing !!

[13]:
```
sns.distplot(df["total"])
```

```
<ipython-input-13-0d5ead9bfd1a>:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751

  sns.distplot(df["total"])
```

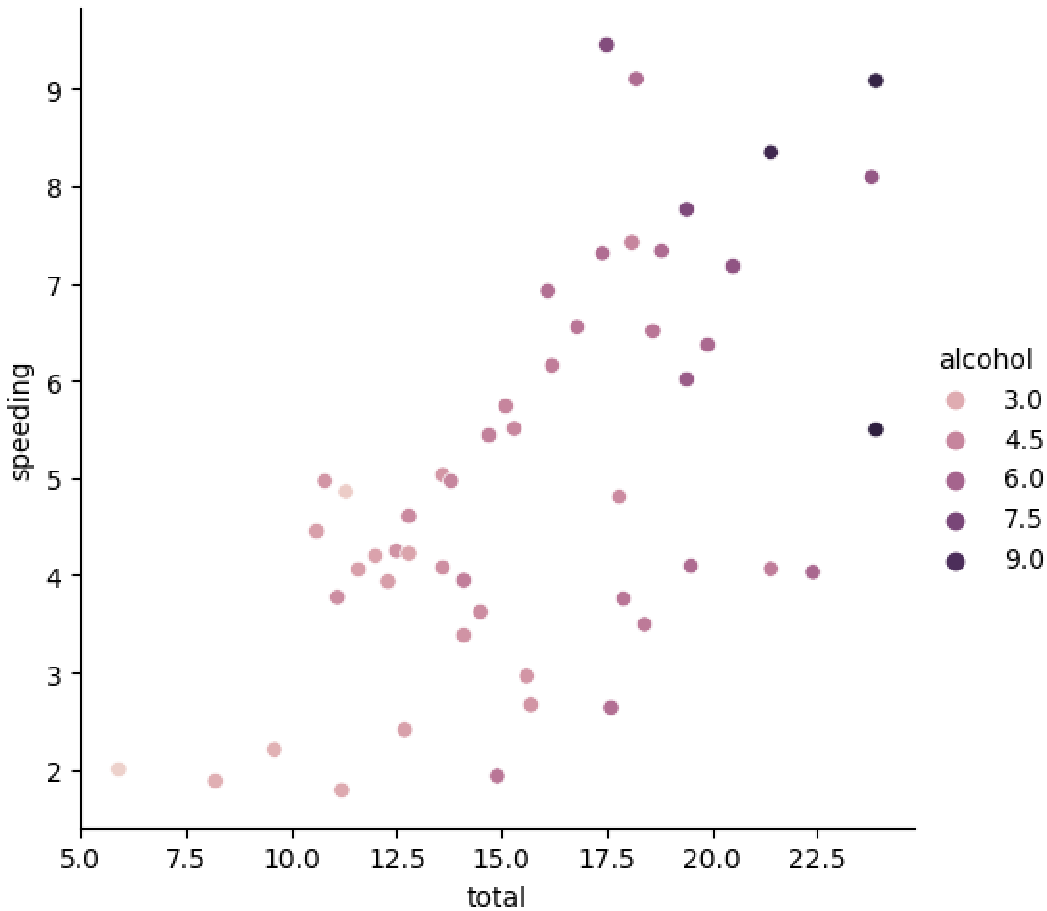
[13]:
```
<Axes: xlabel='total', ylabel='Density'>
```



INFERENCE:——> By the above distplot it gives the histogram combined with kernel density function gives the distplot , By this we can say that the total is mostly ranging from approximately from 12 to 18.

[14]:
```
sns.relplot(data=df,x="total",y="speeding",hue="alcohol")
```

[14]:
```
<seaborn.axisgrid.FacetGrid at 0x7ae557bac940>
```



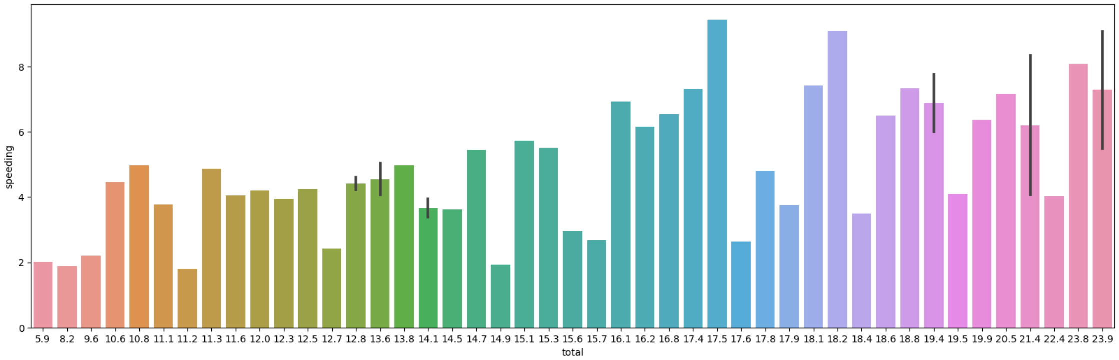
INFERENCE: BY this relational plot we can say that it visualise how variables within a dataset relate to each other. here we can see the relation between the total and speeding going on increasing.

[15]:
```
df["alcohol"].value_counts()
```

[15]:
```
5.208     2
5.640     1
4.218     1
4.704     1
3.480     1
3.136     1
4.968     1
3.567     1
10.038    1
4.794     1
5.771     1
3.328     1
5.642     1
```

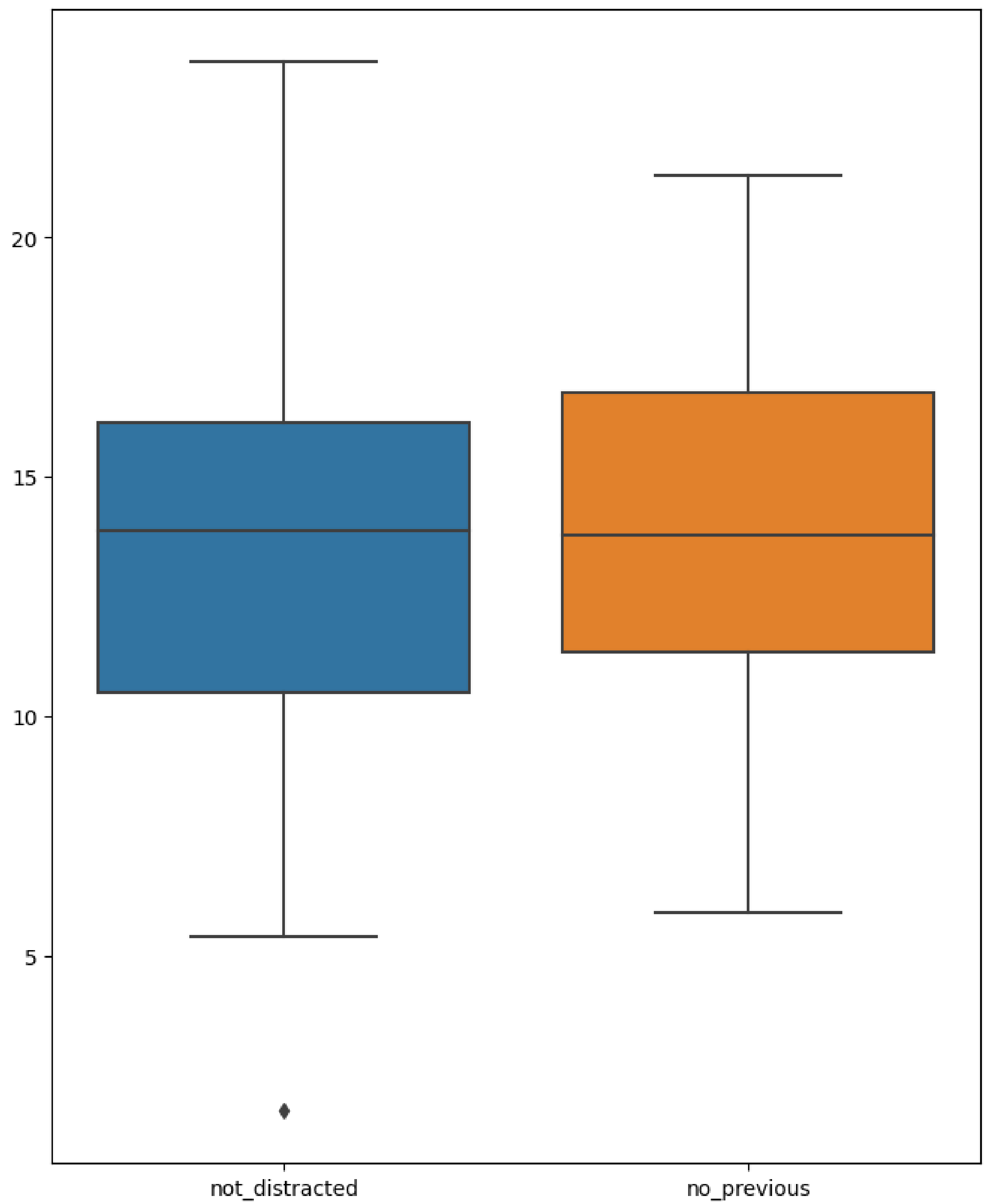
```
9.799     1
9.416     1
6.402     1
5.655     1
7.372     1
1.808     1
4.080     1
3.429     1
3.498     1
6.664     1
4.554     1
5.215     1
5.474     1
4.525     1
5.456     1
5.824     1
3.360     1
3.808     1
3.888     1
4.860     1
1.593     1
5.191     1
3.900     1
7.175     1
4.437     1
4.352     1
4.205     1
3.925     1
4.272     1
4.922     1
6.765     1
4.530     1
4.000     1
2.870     1
3.948     1
2.784     1
5.568     1
Name: alcohol, dtype: int64
```

[16]:
```
plt.figure(figsize=(20, 6))
sns.barplot(data=df,x="total",y="speeding")
plt.show()
```



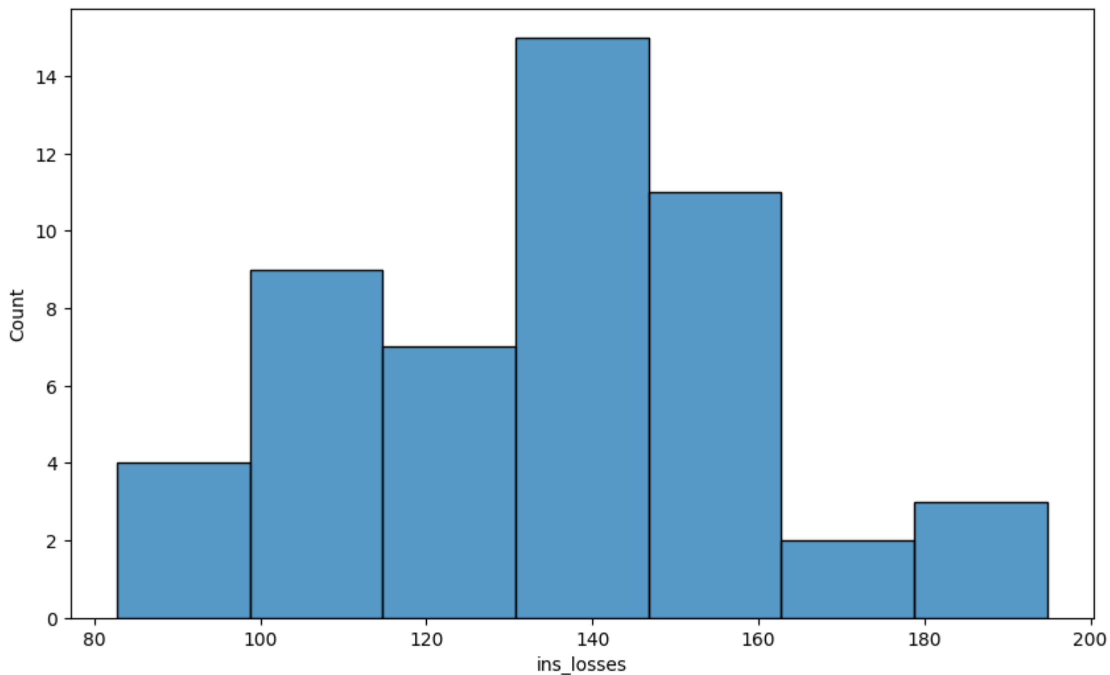
INFERENCE:——> By this barplot we can say that at 17.5(total) the speeding reaches the heightest.

[17]:
```
plt.figure(figsize=(8,10))
sns.boxplot(df[["not_distracted","no_previous"]])
plt.show()
```



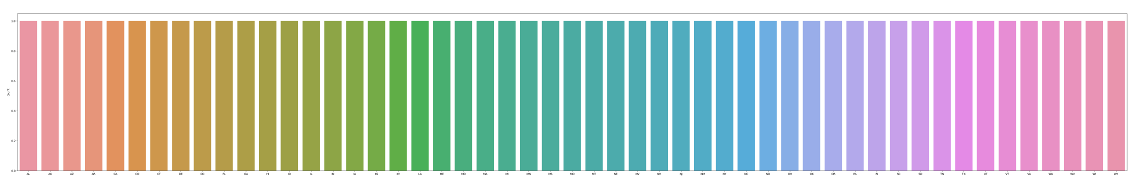
INFERENCE:——> By this boxplot in between not_distracted the we can see a outlayer point in between 1and2

[18]:
```
plt.figure(figsize=(10,6))
sns.histplot(x="ins_losses",data=df)
plt.show()
```



INFERENCE:—-> By this above histplot we can say that in between 130 and 150 (ins_losses) the count reaches heighest.

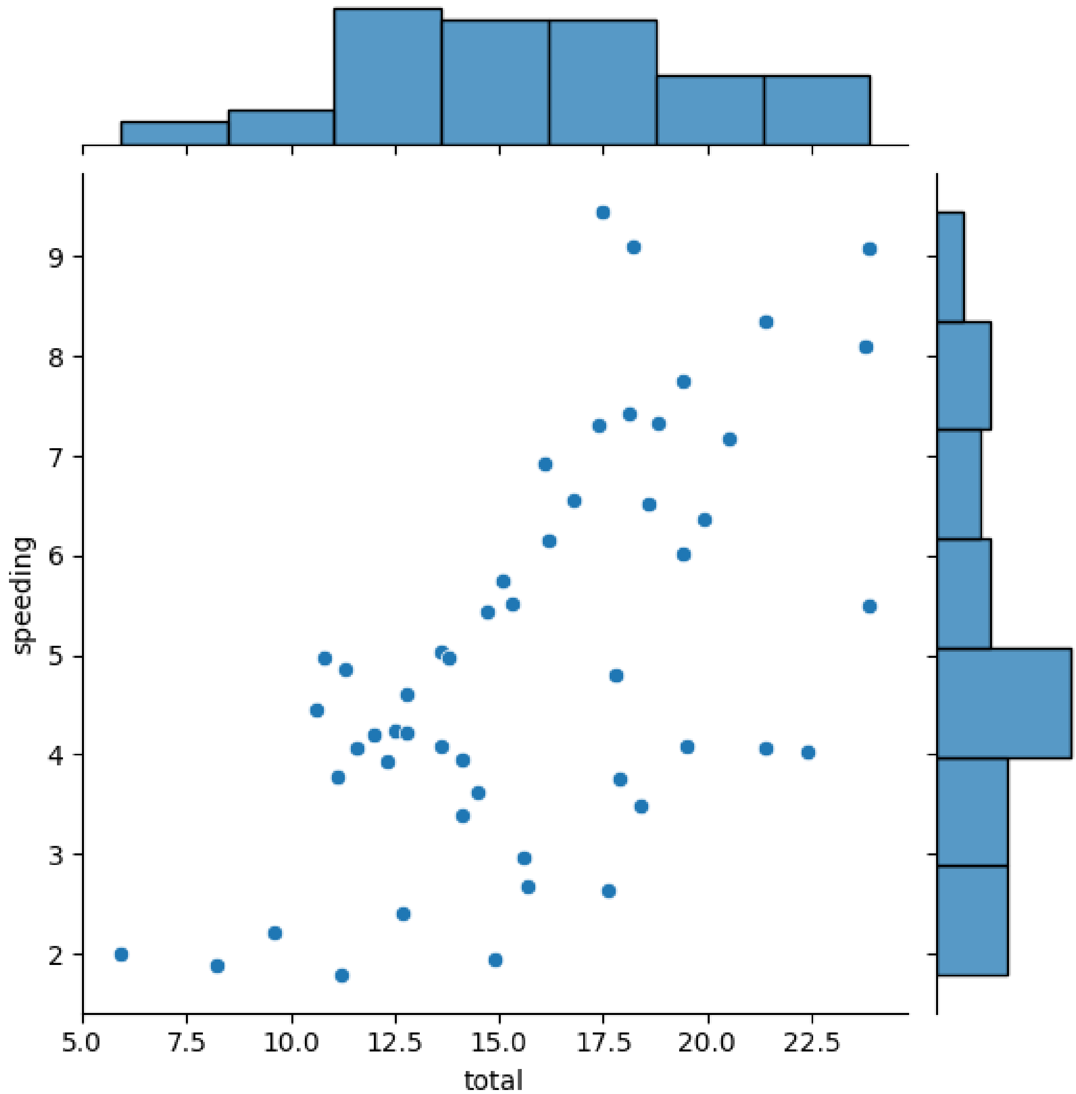
[19]:
```
plt.figure(figsize=(70,10))
sns.countplot(data=df,x="abbrev")
plt.show()
```



INFERENCE: By this count plot we can say that plot occur in categorical variable which we performed on the abbrev data.

[20]:
```
sns.jointplot(x="total",y="speeding",data=df)
```

[20]: <seaborn.axisgrid.JointGrid at 0x7ae5538daa70>



INFERENCE: By the jointplot we can say that it gives the relation between two variables with bivariate and univariate graphs.Here we can see that total and speeding is increasing.

[21]:
```
corr=df.corr()
corr
```

```
<ipython-input-21-7d5195e2bf4d>:1: FutureWarning: The default value of
numeric_only in DataFrame.corr is deprecated. 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=df.corr()
```

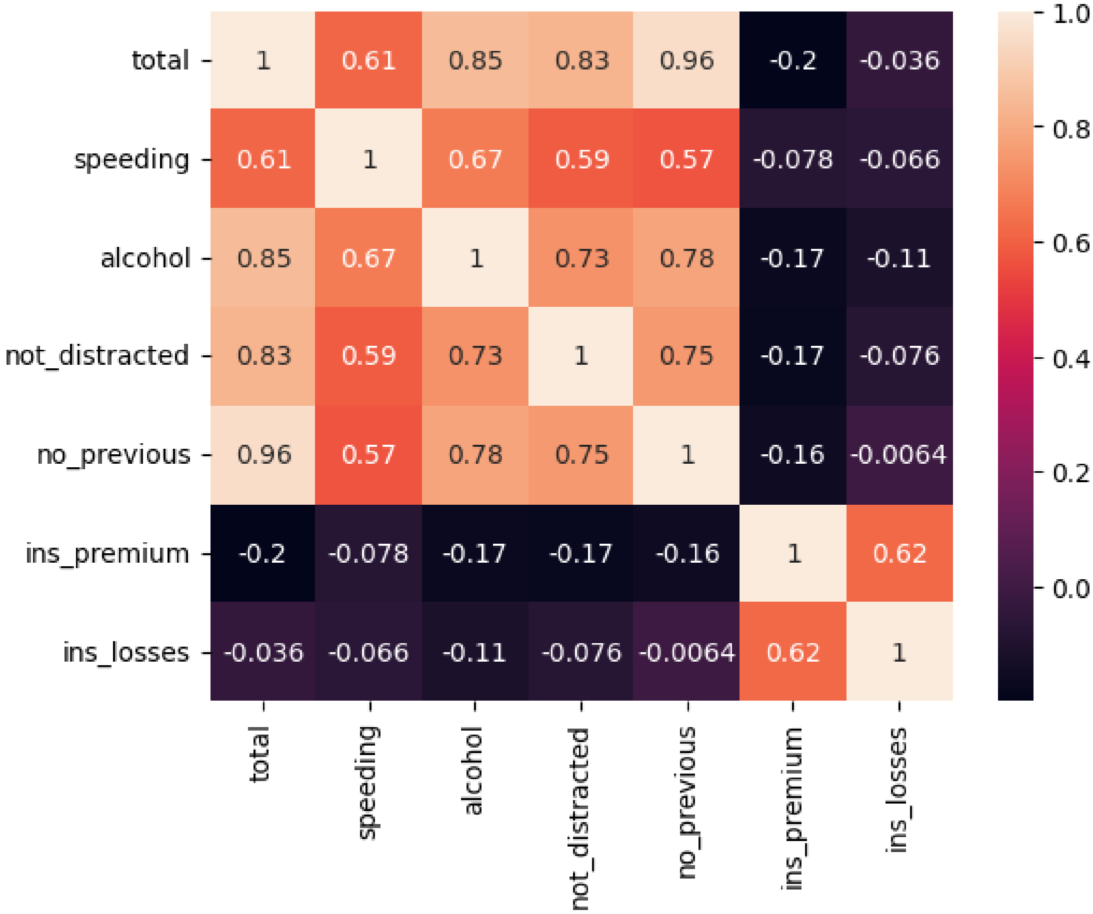
[21]:
```
                      total  speeding   alcohol  not_distracted  no_previous  \
total              1.000000  0.611548  0.852613        0.827560     0.956179
speeding           0.611548  1.000000  0.669719        0.588010     0.571976
alcohol            0.852613  0.669719  1.000000        0.732816     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

                ins_premium  ins_losses
total             -0.199702   -0.036011
speeding          -0.077675   -0.065928
alcohol           -0.170612   -0.112547
not_distracted    -0.174856   -0.075970
no_previous       -0.156895   -0.006359
ins_premium        1.000000    0.623116
ins_losses         0.623116    1.000000
```

INFERENCE: By this we came to know the corelation of the data >0.5 is highly correlated

<0.5 is less correlated

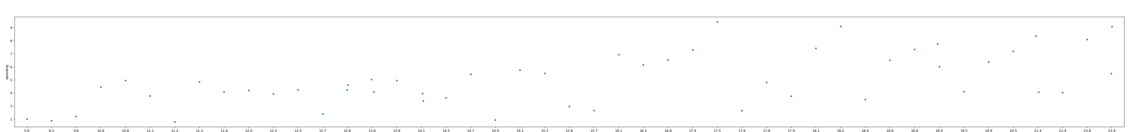
[22]:
```python
sns.heatmap(corr,annot=True)
```

[22]:
```
<Axes: >
```



INFERENCE:——> By this heatmap we can say that the highest correlation is 0.96 this occur in between no_previous and total.

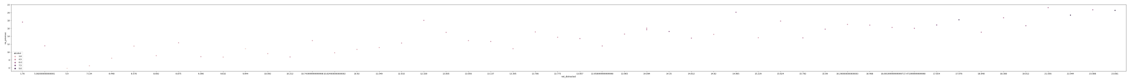
[34]:
```
plt.figure(figsize=(60,6))
sns.stripplot(x="total",y="speeding",data=df)
plt.show()
```



INFERENCE:By this strip plot we can observe that at 17.5(total) it reaches to the highest point nearly 9 at speeding.

[35]:
```
plt.figure(figsize=(100,6))
sns.swarmplot(x="not_distracted", y="no_previous", hue="alcohol", data=df)
```

```
plt.show()
```



INFERENCE: By this swarmplot we can say that it is increasing and at 21.056 (not_distracted) reaches the highest & reaching the (no_previous) side above 20.