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[3]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[4]:
```
dataset=pd.read_csv("car_crashes.csv")
dataset
```

[4]:

	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		
	18.6	6.510	5.208	15.624	17.856	899.47	
	22.4	4.032	5.824	21.056	21.280	827.34	
	12.0	4.200	3.360	10.920	10.680	878.41	
	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
```

[5]:
```
dataset.info()
```

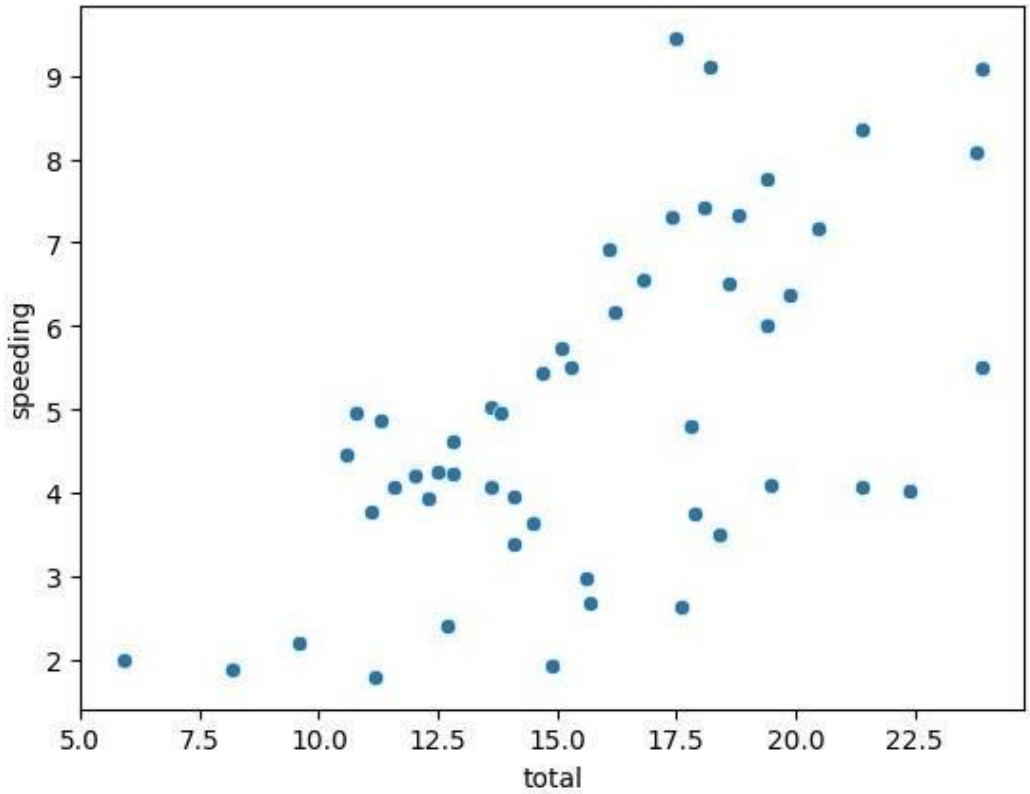
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51 entries, 0 to
50 Data columns (total 8
columns):
#   Column         Non-Null Count Dtype
----- ------------         ----------- -----
0   total          51 non-null   float64
1   speeding       51 non-null   float64
2   alcohol        51 non-null   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
```

[6]:
```
dataset.head(8)
```

[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
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

   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
```

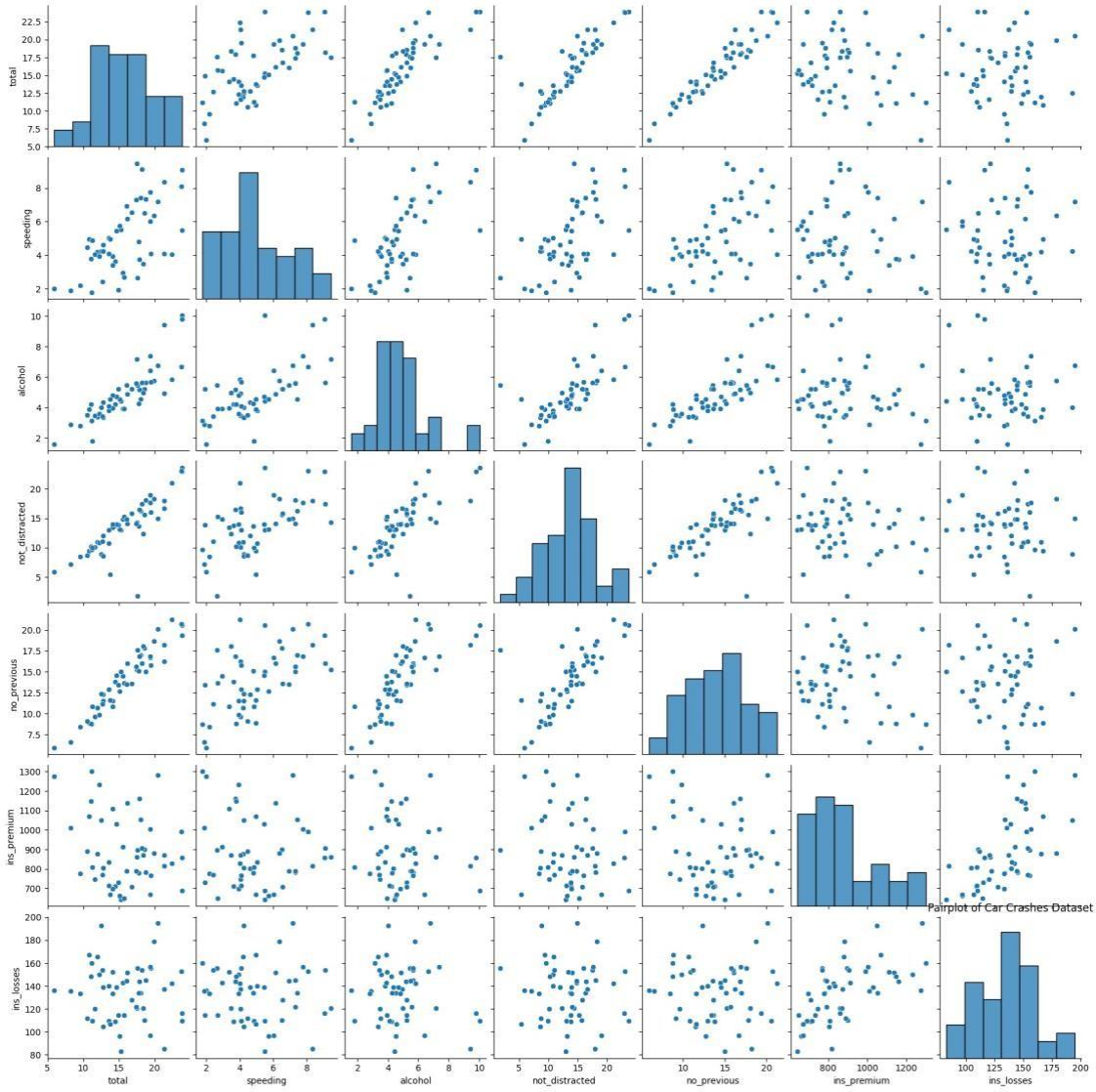
[7]:
```
sns.scatterplot(x="total",y="speeding",data=dataset)
```

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



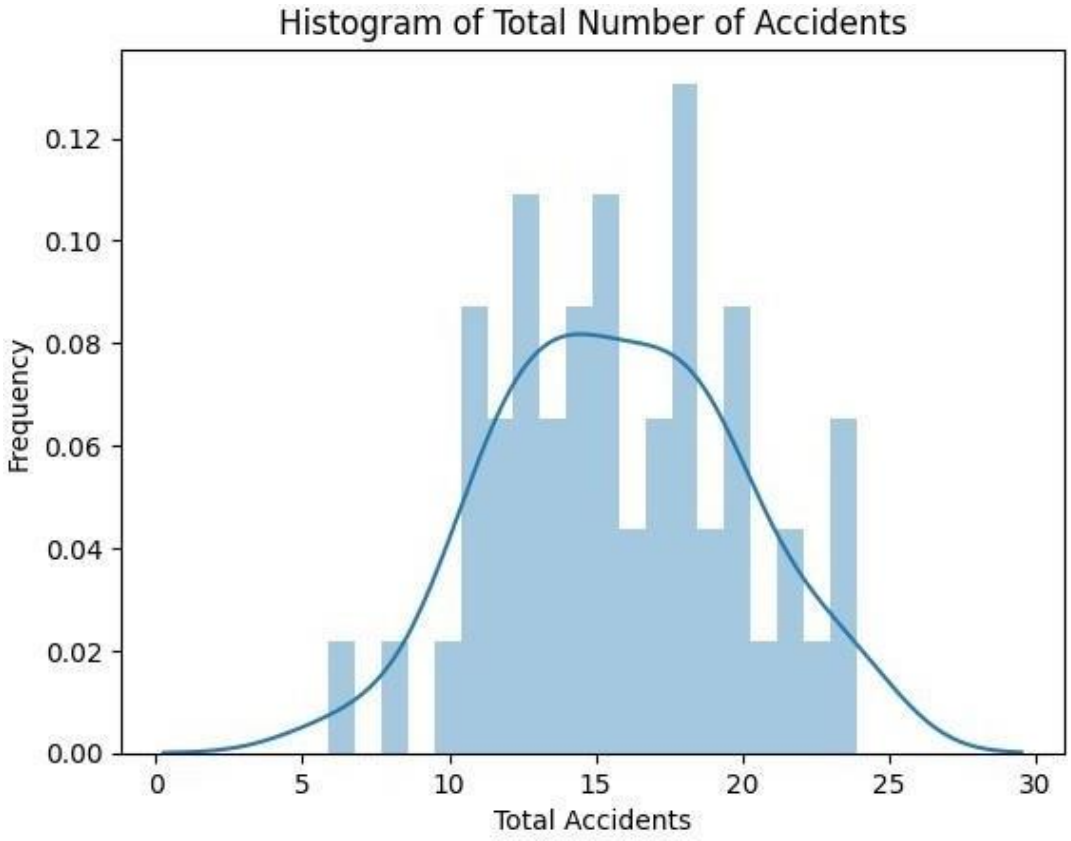
[8]:
```
# Inference:from the plot we can say that as the total increases speeding is␣
↪decreases
```

[10]:
```
sns.pairplot(dataset)
plt.title("Pairplot of Car Crashes Dataset ")
plt.show()
```



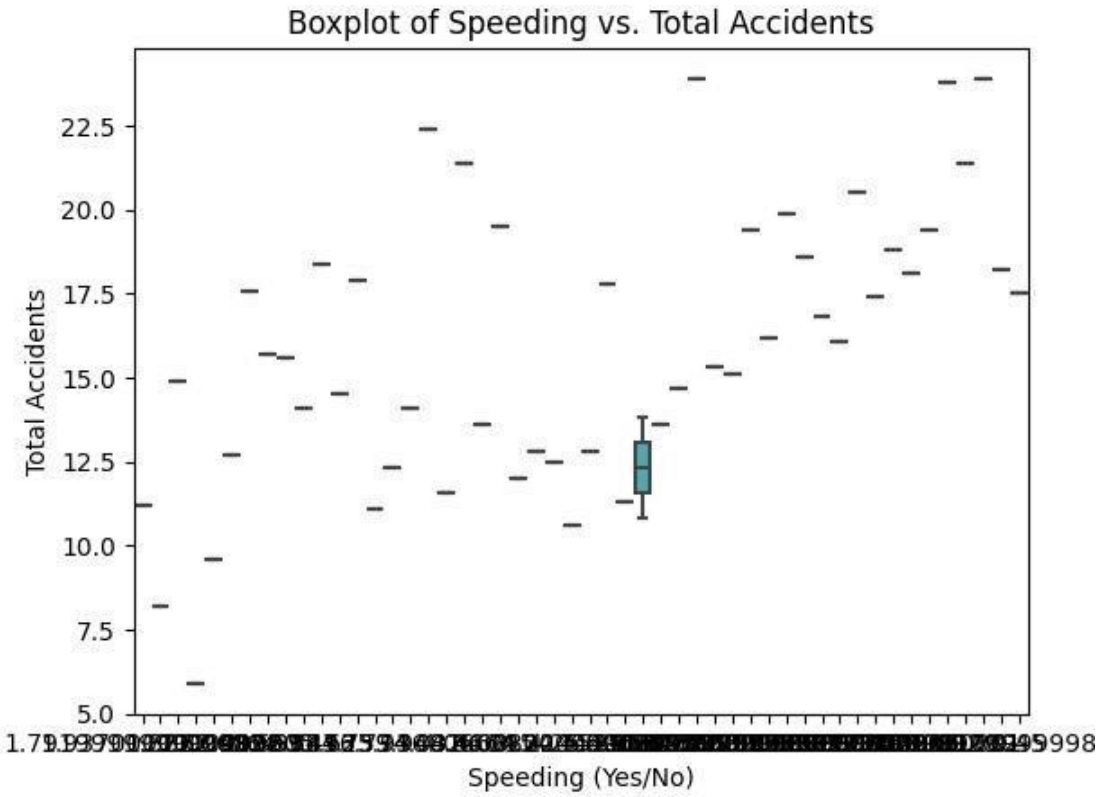
[11]:
```
# Inference: The pairplot provides a quick overview of the
relationships␣ ↪between numeric variables in the dataset. It helps
identify potential␣ ↪correlations or patterns.
```

```
[24]: sns.distplot(dataset["total"], bins=20, kde=True)
      plt.title("Histogram of Total Number of Accidents")
      plt.xlabel("Total
      Accidents")
      plt.ylabel("Frequency")
      plt.show()

      <ipython-input-24-c2887f4da83f>: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/de44147ed2974457ad6372750bbe5

      751 sns.distplot(dataset["total"], bins=20, kde=True)
```



[13]:
```
# Inference: The histogram shows the distribution of total
 accidents. Most␣ ↪states have a relatively low number of accidents,
 with a few outliers with␣ ↪significantly higher accident counts.
```

[15]:
```
sns.boxplot(x="speeding", y="total", data=dataset)
plt.title("Boxplot of Speeding vs. Total Accidents")
plt.xlabel("Speeding (Yes/No)")
plt.ylabel("Total Accidents")
plt.show()
```



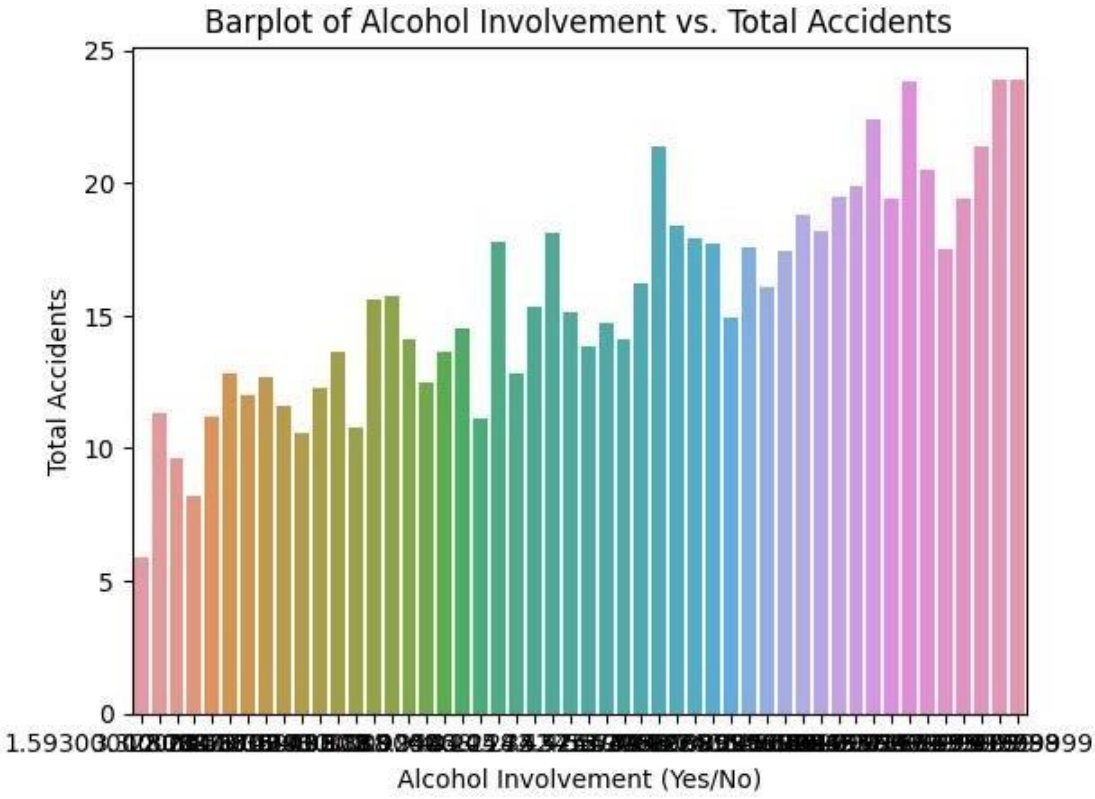
[16]:
```
# Inference: The boxplot illustrates the relationship between
 speeding (yes/no)␣ ↪and the total number of accidents. It indicates
 that states with higher␣ ↪speeding rates tend to have a higher
 median total number of accidents.
```

[19]:
```
sns.barplot(x="alcohol", y="total", data=dataset,
ci=None) plt.title("Barplot of Alcohol Involvement vs.
Total Accidents") plt.xlabel("Alcohol Involvement
(Yes/No)") plt.ylabel("Total Accidents") plt.show()
```

```
<ipython-input-19-e9d4c62a021d>:1: FutureWarning:
```

```
The `ci` parameter is deprecated. Use `errorbar=None` for the same
                                effect.
```

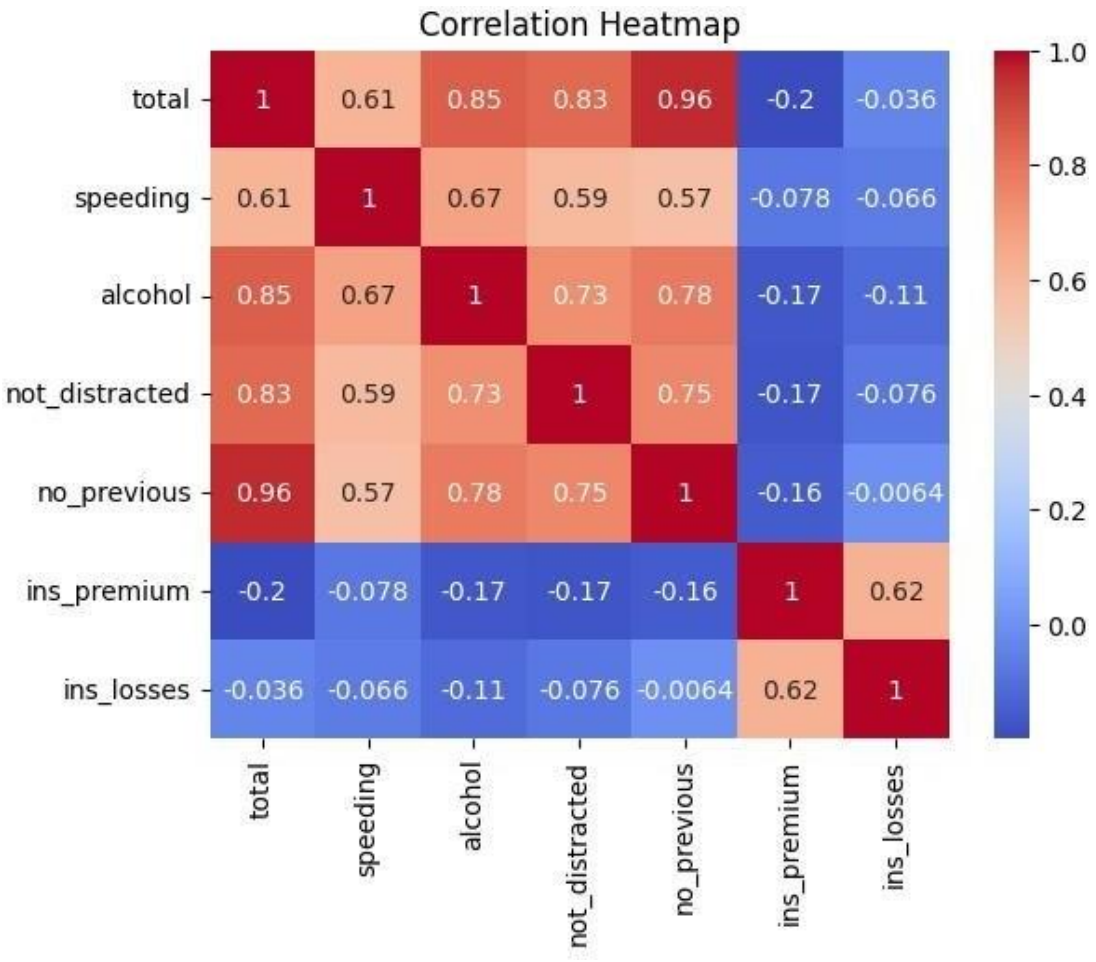
```
sns.barplot(x="alcohol", y="total", data=dataset, ci=None)
```



[18]:
```
# Inference: The barplot compares the total number of accidents for
 states with␣ ↪and without alcohol involvement. It suggests that
 states with alcohol␣ ↪involvement tend to have a higher average
 number of accidents.
```

[21]:
```
correlation_matrix = dataset.corr()
sns.heatmap(correlation_matrix, annot=True,
cmap="coolwarm") plt.title("Correlation Heatmap")
plt.show()
```

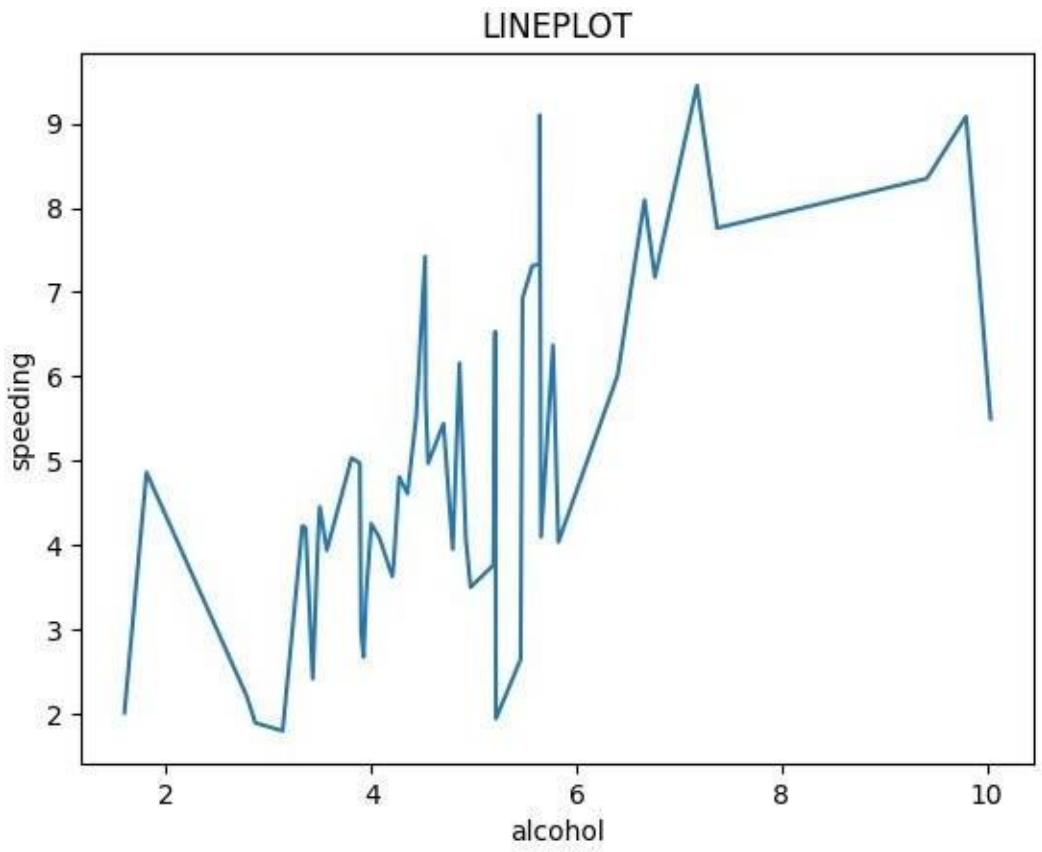
```
<ipython-input-21-f966e5b914d1>:1: FutureWarning: The default value of
numeric_only in DataFrame.corr is deprecated. In a future version, it
will default to False. Select only valid columns or specify the value
of numeric_only to silence this warning.
  correlation_matrix = dataset.corr()
```



[22]:
```
# Inference: The heatmap displays the correlation between numeric variables in␣
 ↪the dataset. Positive correlations are shown in warmer colors, while␣ ↪negative correlations are in cooler colors. It helps identify potential␣ ↪relationships between variables.
```

[26]:
```
sns.lineplot(x="alcohol",y="speeding",data=dataset)
plt.title("LINEPLOT")
```

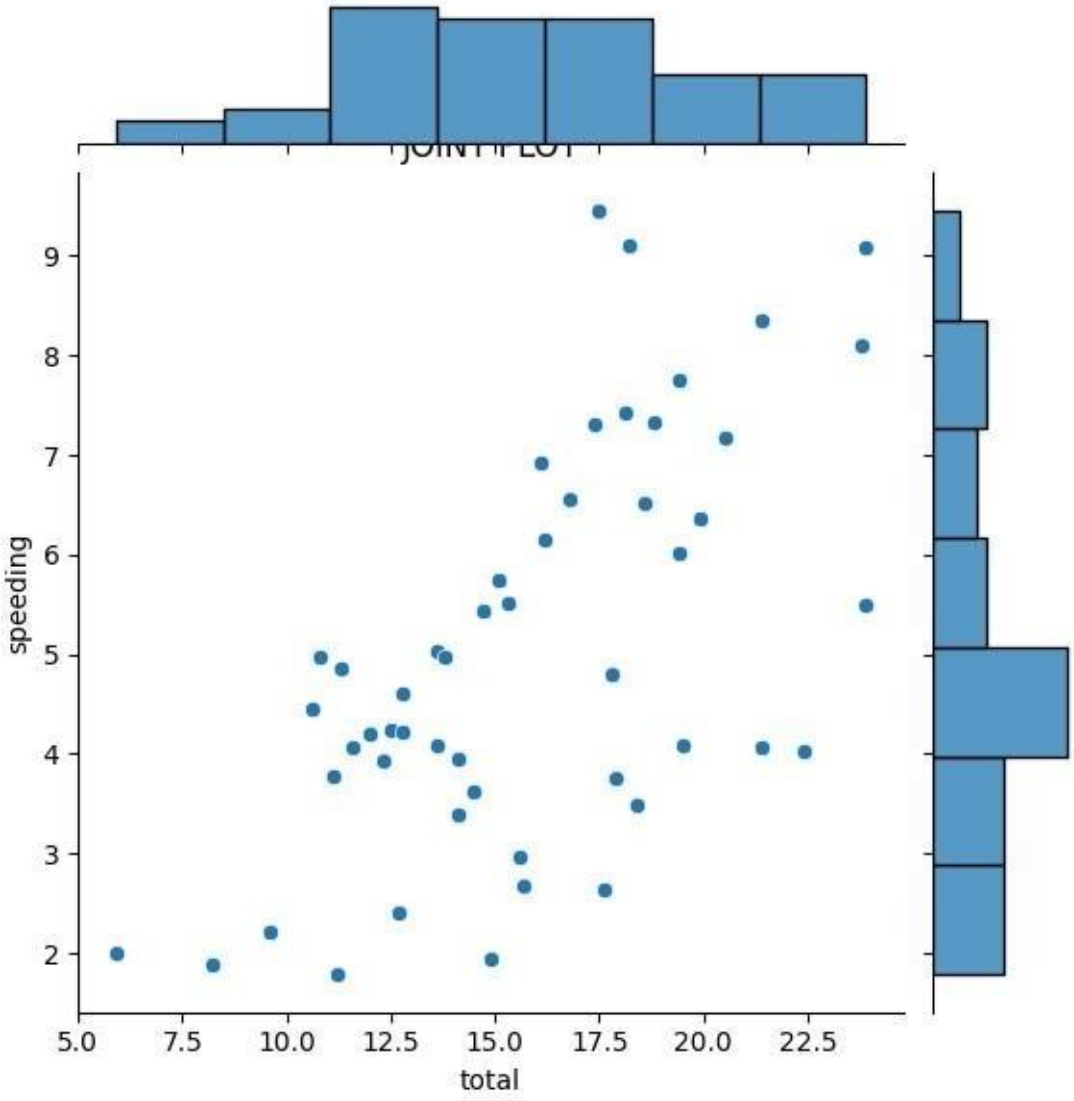
[26]:
```
Text(0.5, 1.0, 'LINEPLOT')
```



[ ]:
```
# Inference: The line plot comparing "Alcohol" and "Speeding"
 incidents in car␣ ↪crashes shows that alcohol with higher value
 have higher speeding value.
```

[27]:
```
sns.jointplot(x="total",y="speeding",data=dataset)
plt.title("JOINT")
```

[27]:
```
Text(0.5, 1.0, 'JOINT PLOT')
```



[28]:
```
# INFERENCE :States with a higher rate of "Speeding" incidents tend to have a␣ ↪wider range of total accidents, as indicated by the larger interquartile␣ ↪range (IQR) and the presence of outliers.
```

[ ]:
```

```