assignment-2

September 12, 2023

[1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[3]:
```
dataset = sns.load_dataset("car_crashes")
```

[4]:
```
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	
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
```

[8]:
```
#Printing top 5 rows of the dataset
dataset.head()
```

[8]:

	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

[7]:
```
#Printing bottom 5 rows of the dataset
dataset.tail()
```

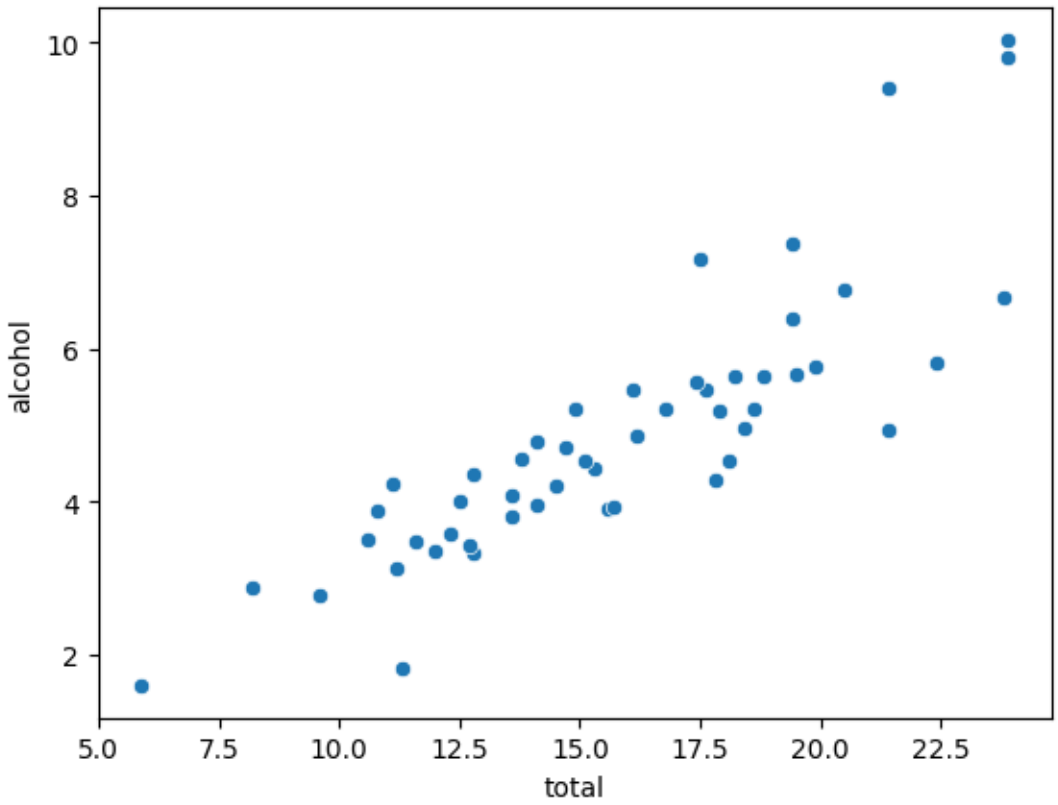
[7]:

	total	speeding	alcohol	not_distracted	no_previous	ins_premium	ins_losses	abbrev
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

Data Visualization

[35]:
```
#1. Scatter plot
sns.scatterplot(x='total', y='alcohol', data=dataset)
```

[35]:
```
<Axes: xlabel='total', ylabel='alcohol'>
```

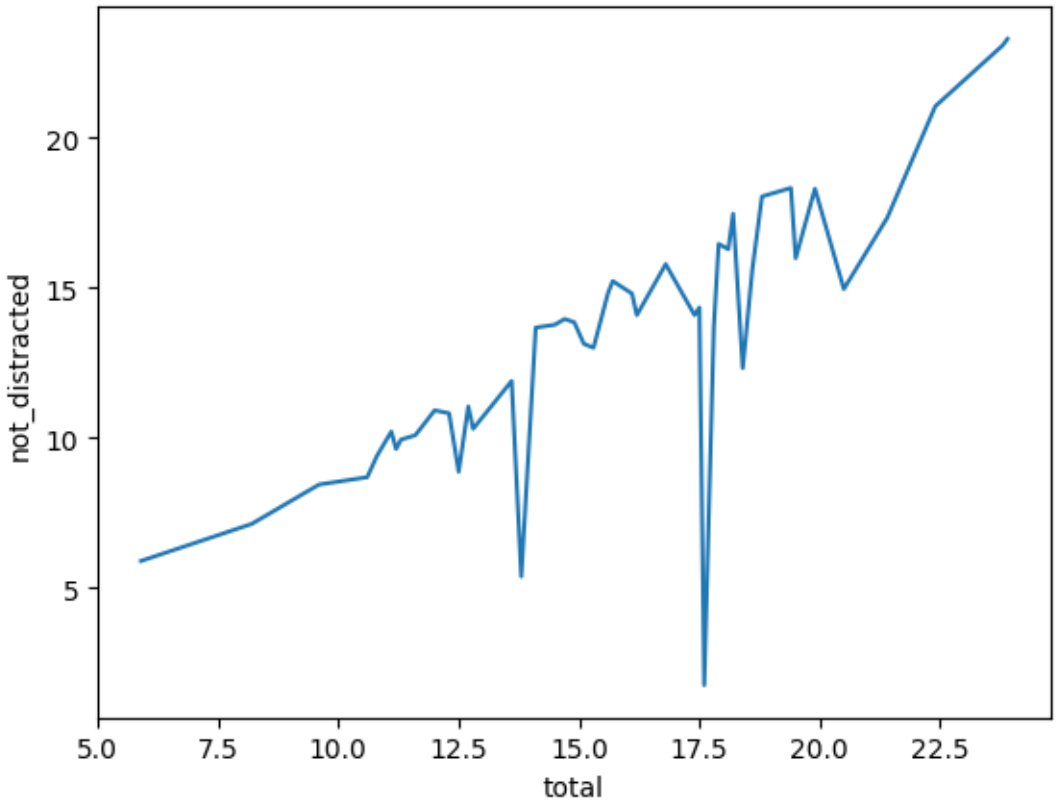


Inference: From the above scatter plot we can conclude that as total accidents are more, the accidents due to alcohol is more

[74]:
```
#2. Lineplot
sns.lineplot(x='total', y='not_distracted', data=dataset,ci=None)
```

```
<ipython-input-74-42e00357a0e1>:2: FutureWarning:

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

  sns.lineplot(x='total', y='not_distracted', data=dataset,ci=None)
```

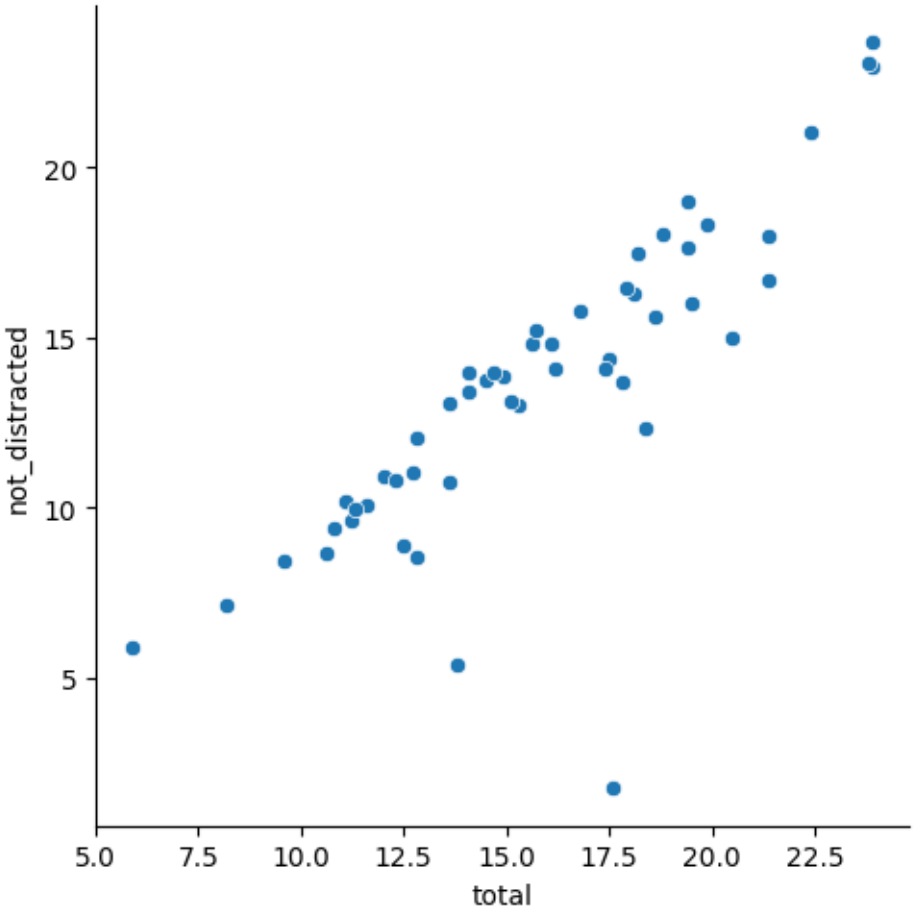
[74]:
```
<Axes: xlabel='total', ylabel='not_distracted'>
```



Inference: In the line plot for the maximum number of accidents, the cause of not distracted is more

[50]:
```
#3. Relational plot
sns.relplot(x='total', y='not_distracted', data=dataset)
```

[50]: <seaborn.axisgrid.FacetGrid at 0x7d5f03baaef0>

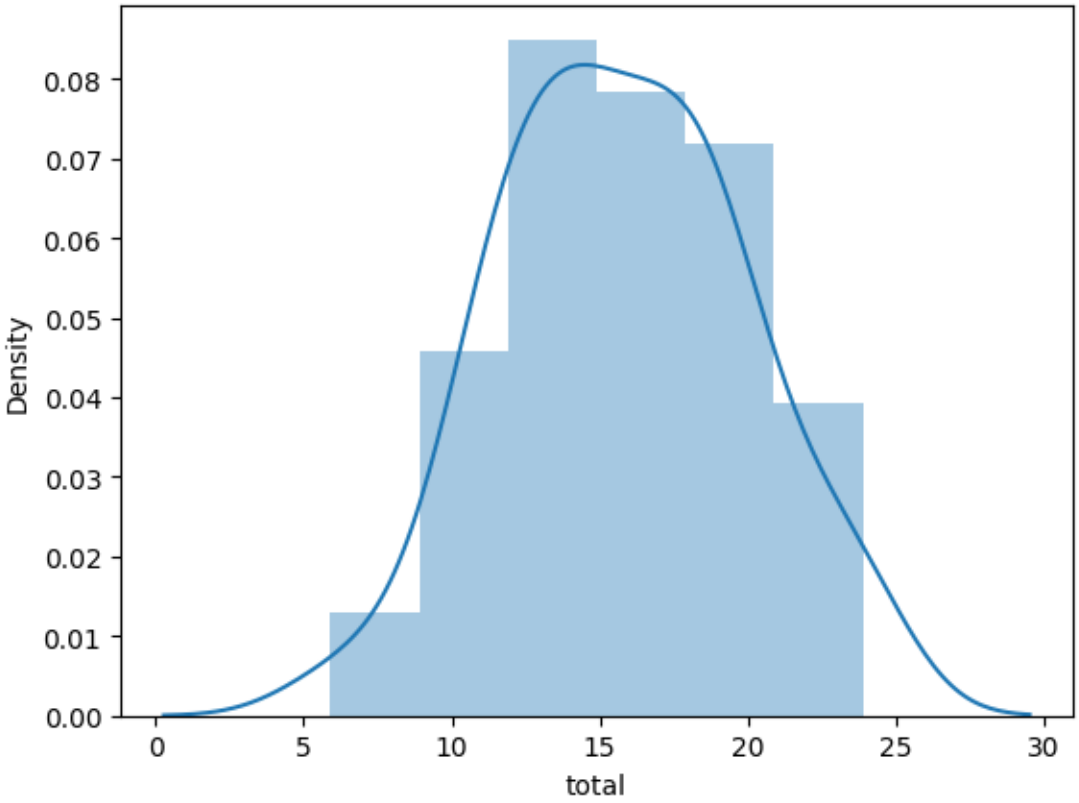


Inference: From above relatinal plot we can conclude that with the increase of total accidents, the number of car crashes where the driver was not distracted also increases.

[52]:
```
#4. Distribution plot
sns.distplot(dataset["total"])
```

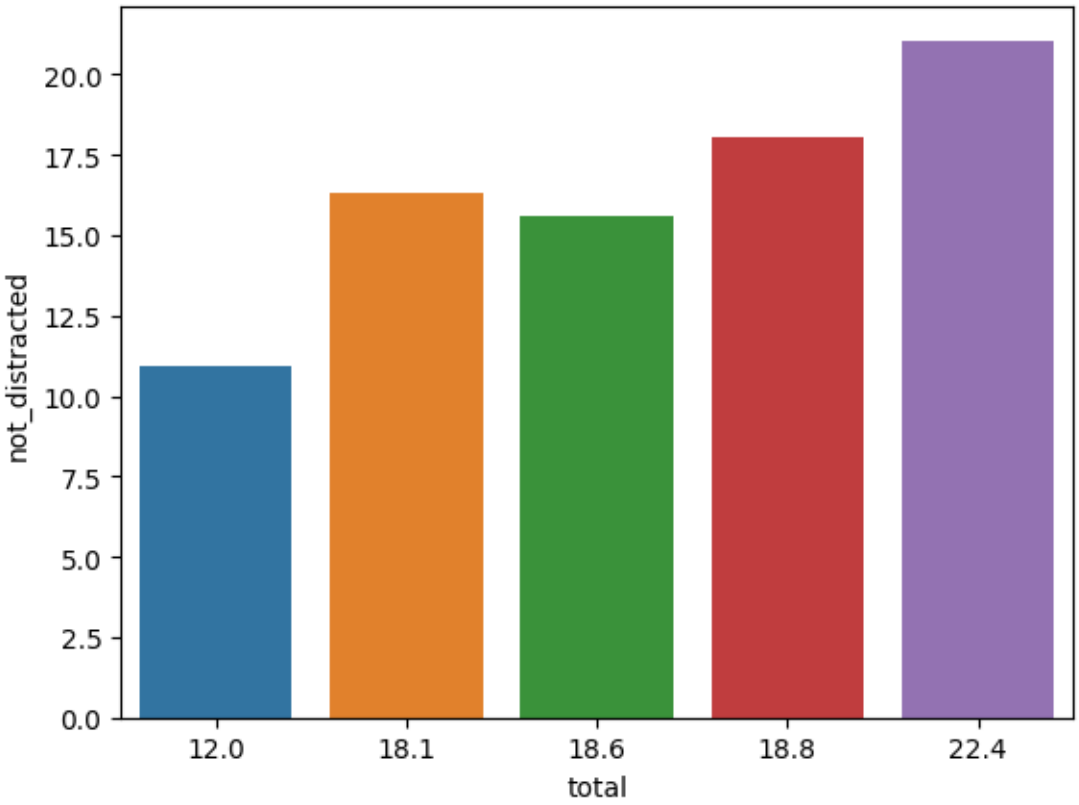
```
<ipython-input-52-f43c1ba18026>:2: UserWarning:

`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(dataset["total"])
```

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



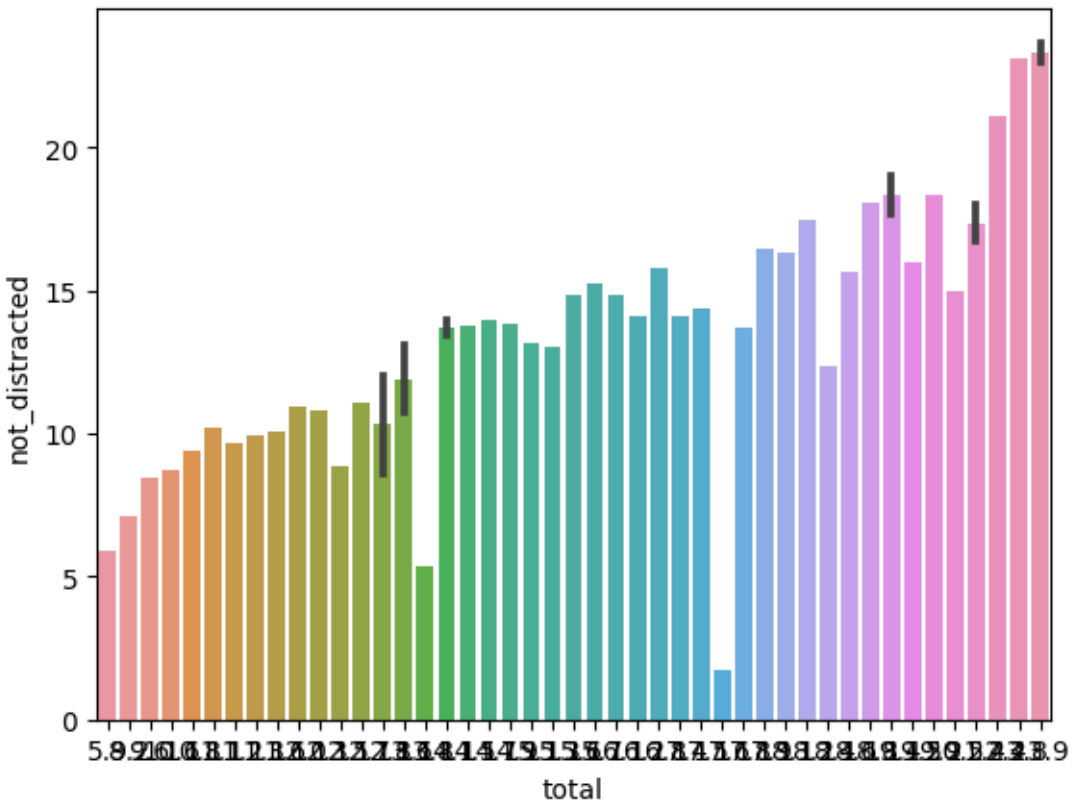
[56]:
```
#5. Bar plot
sns.barplot(x='total', y='not_distracted', data=dataset.head())
```

[56]: <Axes: xlabel='total', ylabel='not_distracted'>



[75]:
```
sns.barplot(x='total', y='not_distracted', data=dataset)
```

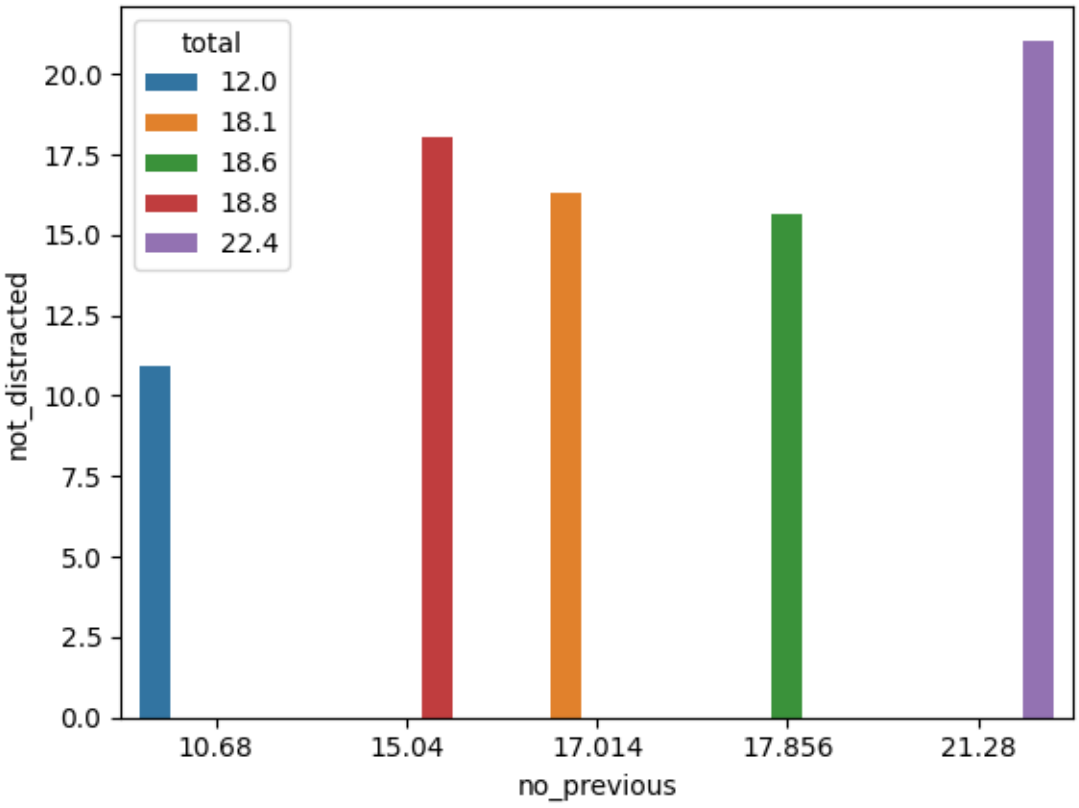
[75]:
```
<Axes: xlabel='total', ylabel='not_distracted'>
```



Inference: As for the total dataset the graph is not clear, we had represented only for the first five data values of the dataset.

[77]:
```
sns.barplot(x='no_previous', y='not_distracted', data=dataset.head(),␣
↪hue="total")
```

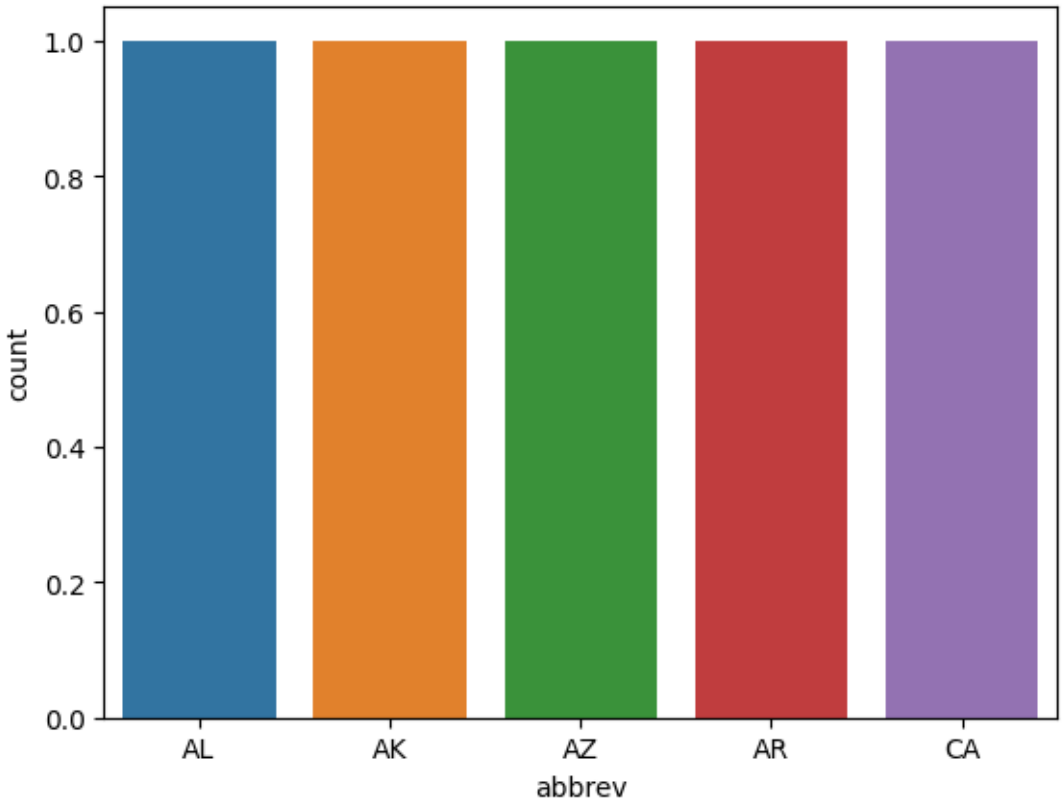
[77]:
```
<Axes: xlabel='no_previous', ylabel='not_distracted'>
```



Here among the total accidents, we plotted graph for the accidents that was occured due to no distractions and no previously occured accidents.

[60]:
```
#6. Count plot
sns.countplot(x='abbrev',data=dataset.head())
```

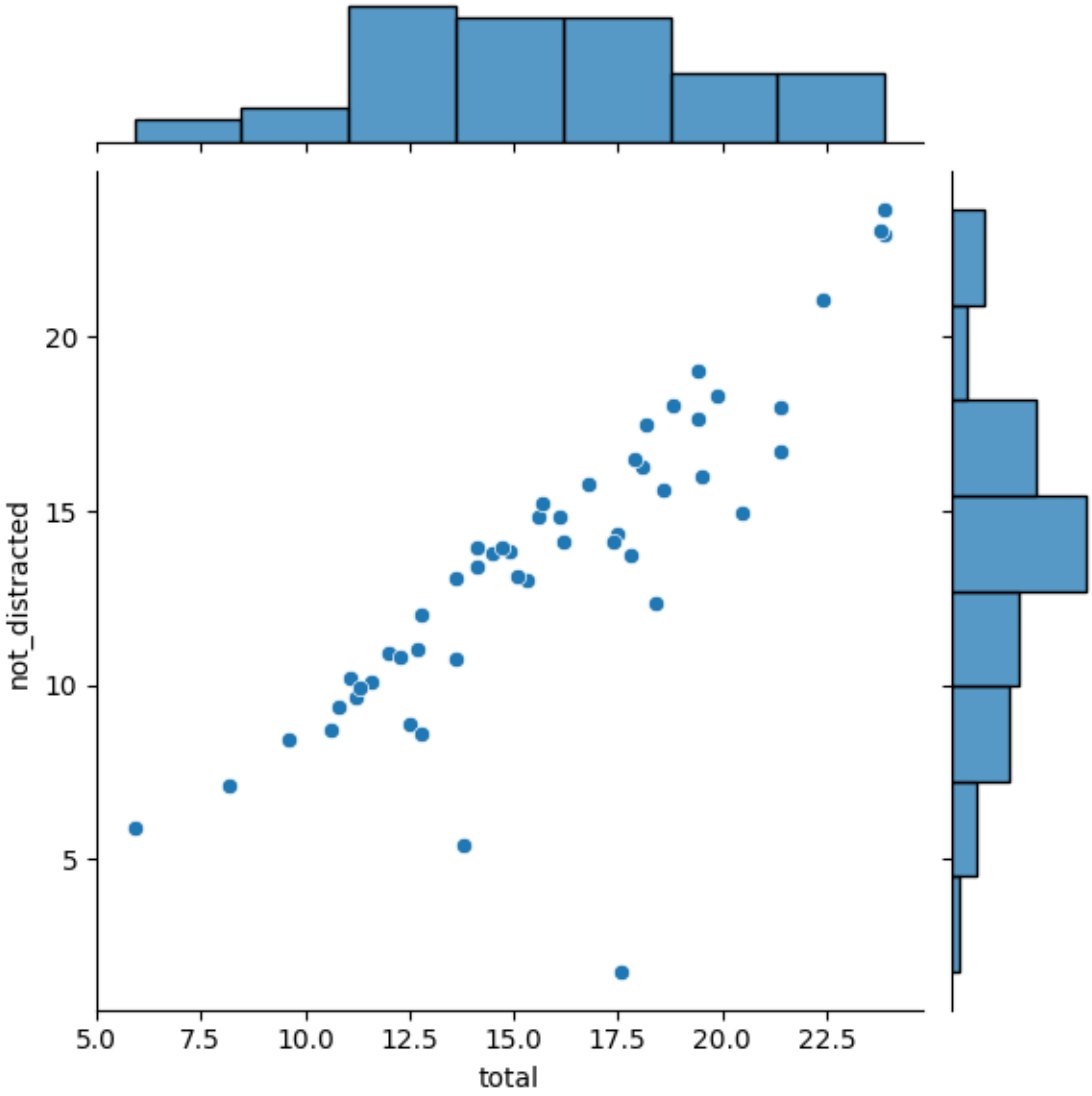
[60]:
```
<Axes: xlabel='abbrev', ylabel='count'>
```



Inference: In count plot we consider categorical values to figure out the count of those values.

[63]:
```
#7. Joint plot
sns.jointplot(x='total', y='not_distracted', data=dataset)
```

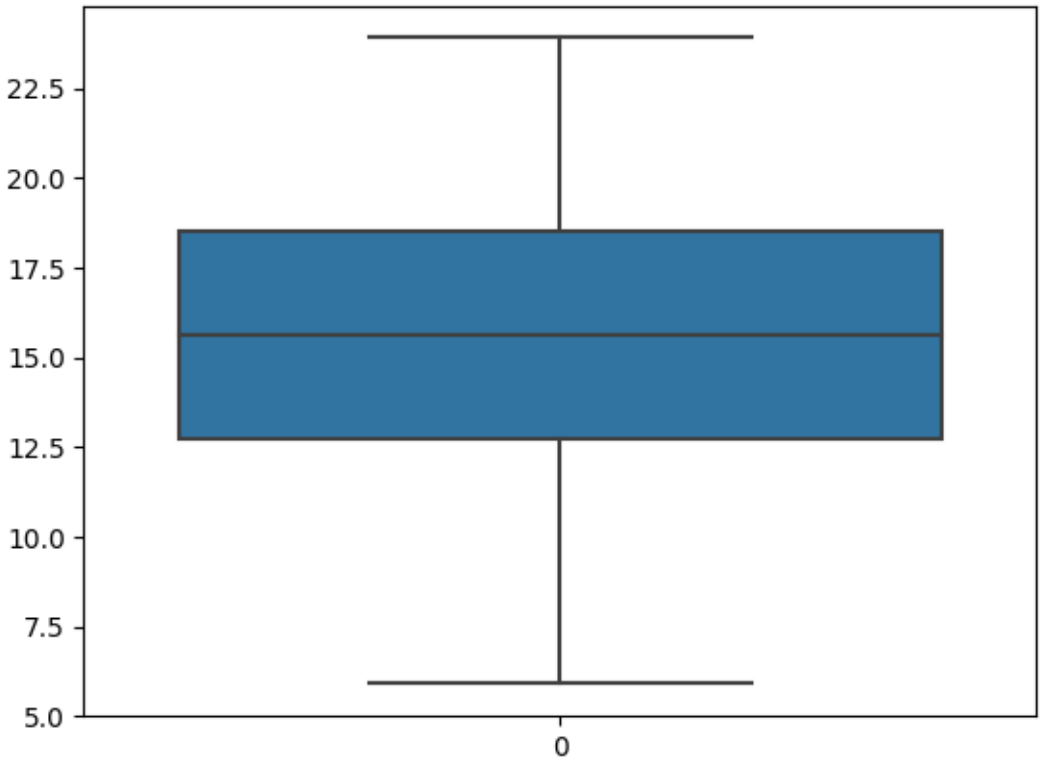
[63]:
```
<seaborn.axisgrid.JointGrid at 0x7d5f02e4fc70>
```



In this joint plot, we will be able to plot more than one type of plot. Here we had scatter plot and bar plot.

[71]:
```
#8. Box plot
sns.boxplot(dataset.total)
```

[71]: <Axes: >

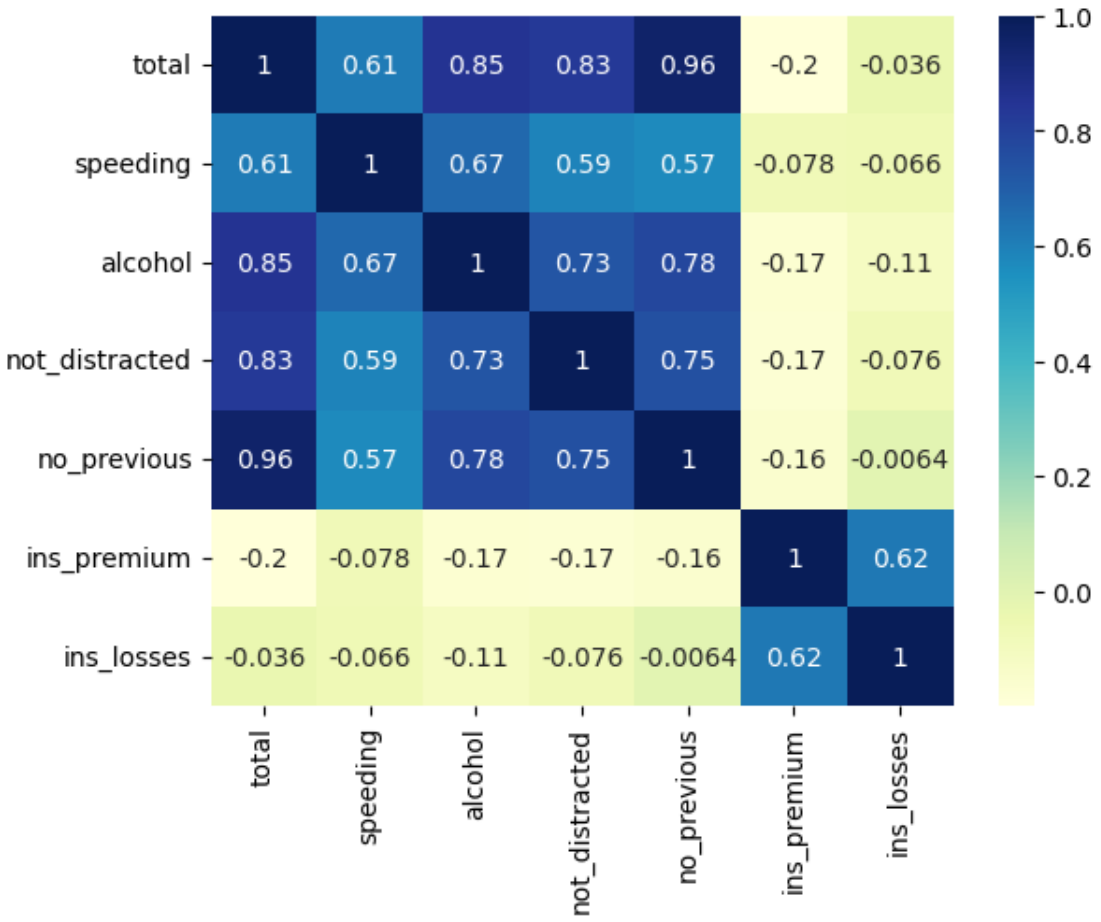


In box plot we had considered total number of accidents that occured.

[67]:
```
#9. Heatmap
corr=dataset.corr()
sns.heatmap(corr,annot=True,cmap="YlGnBu")
```

```
<ipython-input-67-7b82f191201d>:2: 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=dataset.corr()
```

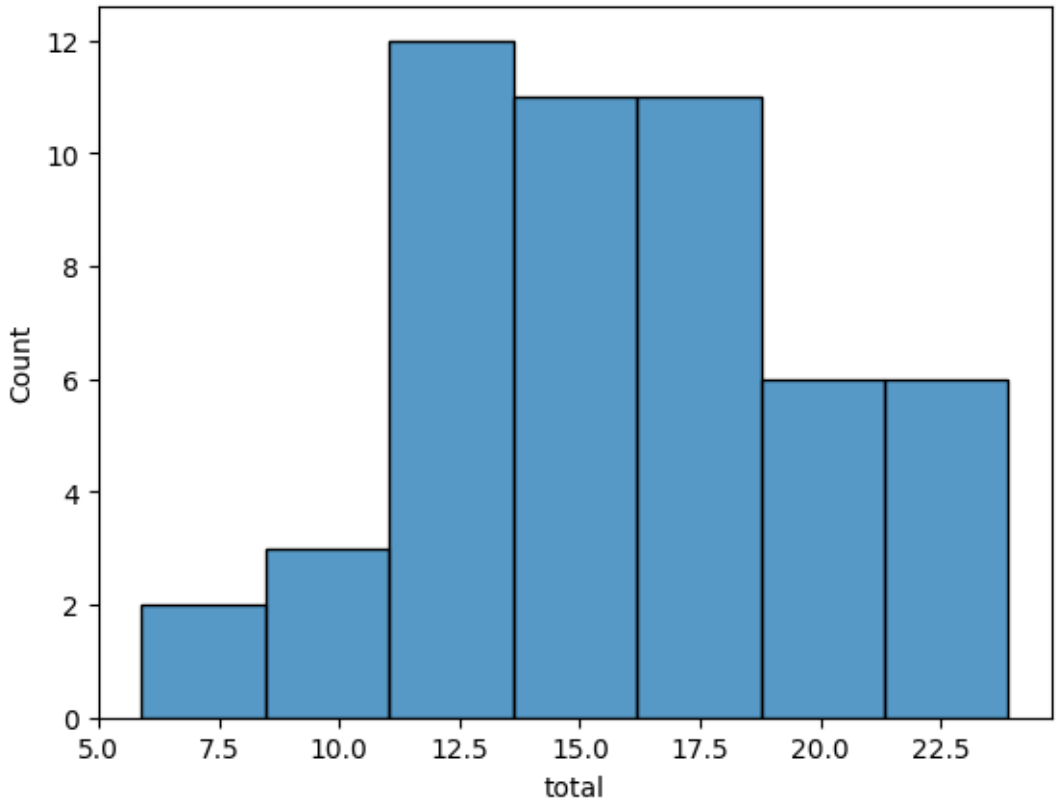
[67]: <Axes: >



In heatmap, first we calculate correlation and we plot those values using heatmap.

[81]:
```
#10. Histogram
sns.histplot(data=dataset, x='total')
```

[81]:
```
<Axes: xlabel='total', ylabel='Count'>
```



In histogram, it represents how frequently that particular number of accidents were occured.

[ ]: