Sathwik beesetty

ASSIGNMENT 2

```
note: inferences are given as print statements
```

In [1]:
```
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
sns.get_dataset_names()
```

Out[2]:
```
['anagrams',
 'anscombe',
 'attention',
 'brain_networks',
 'car_crashes',
 'diamonds',
 'dots',
 'dowjones',
 'exercise',
 'flights', 'fmri',
 'geyser',
 'glue',
 'healthexp',
 'iris',
 'mpg',
 'penguins',
 'planets',
 'seaice',
 'taxis',
 'tips',
 'titanic']
```

In [3]:
```
df = sns.load_dataset('car_crashes')
```

In [4]:
```
df
```

Out[4]:

	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

In [5]:
```
df.head()
```

Out[5]:

	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

In [6]:
```
df.tail()
```

Out[6]:

	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

In [7]:
```
df.info()
```

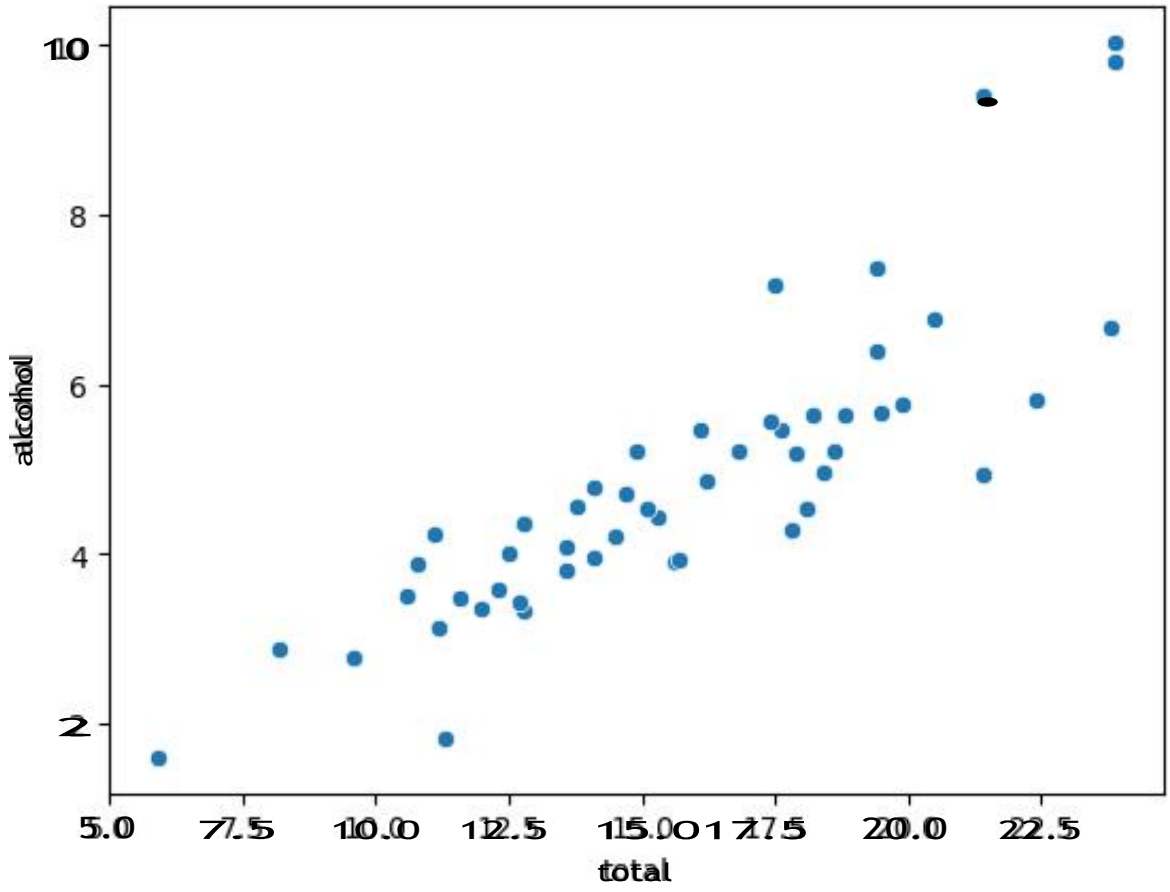
```
<class 'pandas.core.frame.DataFrame'>RangeIndex:
51 entries, 0 to 50
Data columns (total 8 columns):
 #   Column           Non-Null Count  Dtype
---  ---------------------------- -------
 0   total            51 non-null     float64
 1   speeding         51 non-null     float64
 2   alcohol     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

In [8]:
```
df.shape
```

Out[8]: (51, 8)

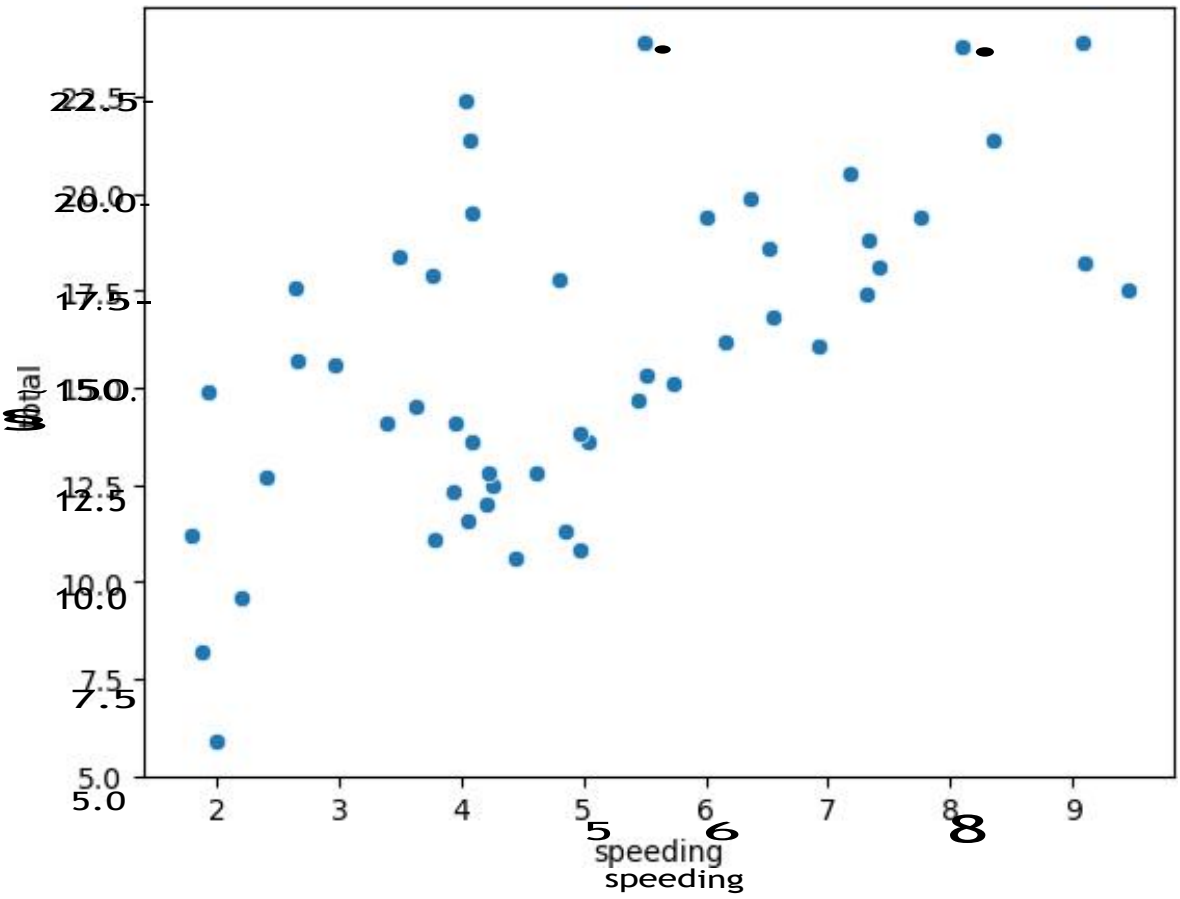
In [32]:
```
sns.scatterplot(x="total" , y ="alcohol",data = df)
print("as alcohol increases total also increases")
```

```
as alcohol increases total also increases
```



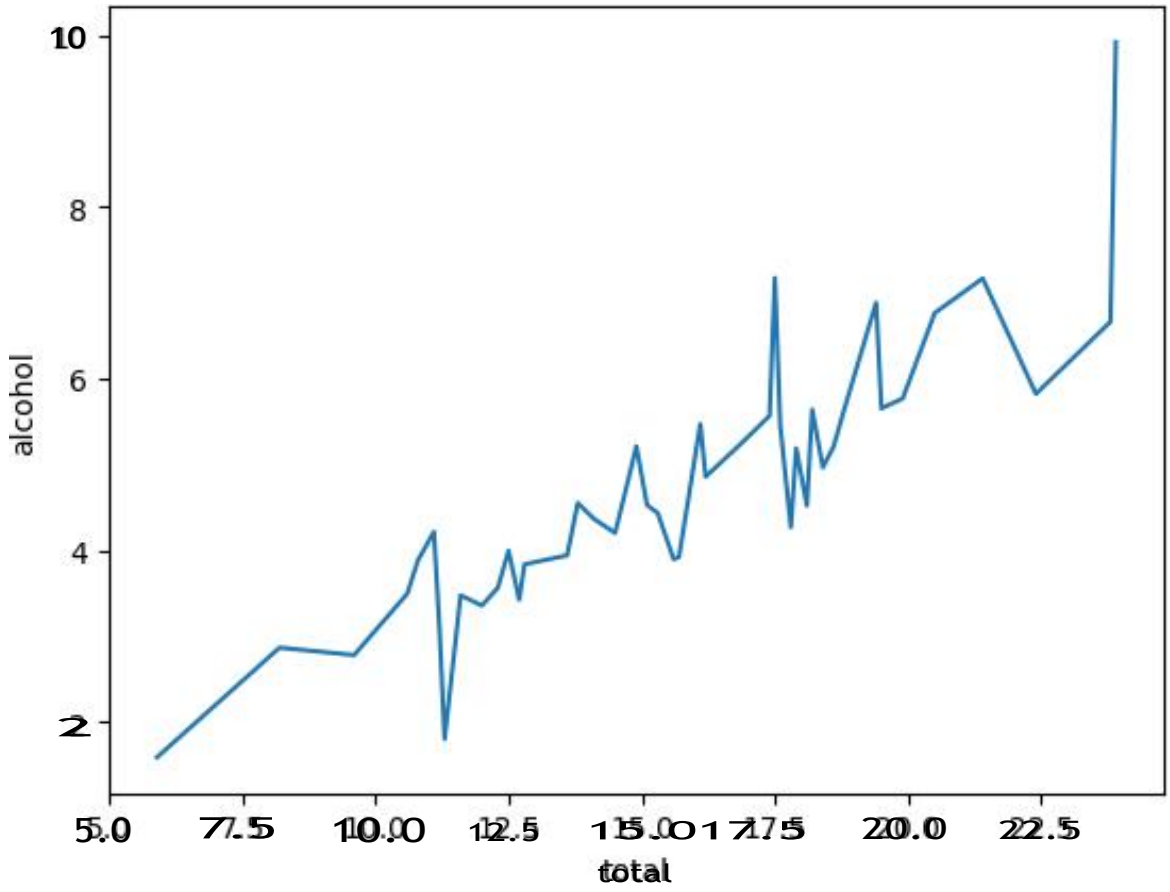
In [34]:
```
sns.scatterplot(x="speeding" , y ="total",data = df)
print("increase in speed increases total but not as alcohol")
```

```
increase in speed increases total but not as alcohol
```



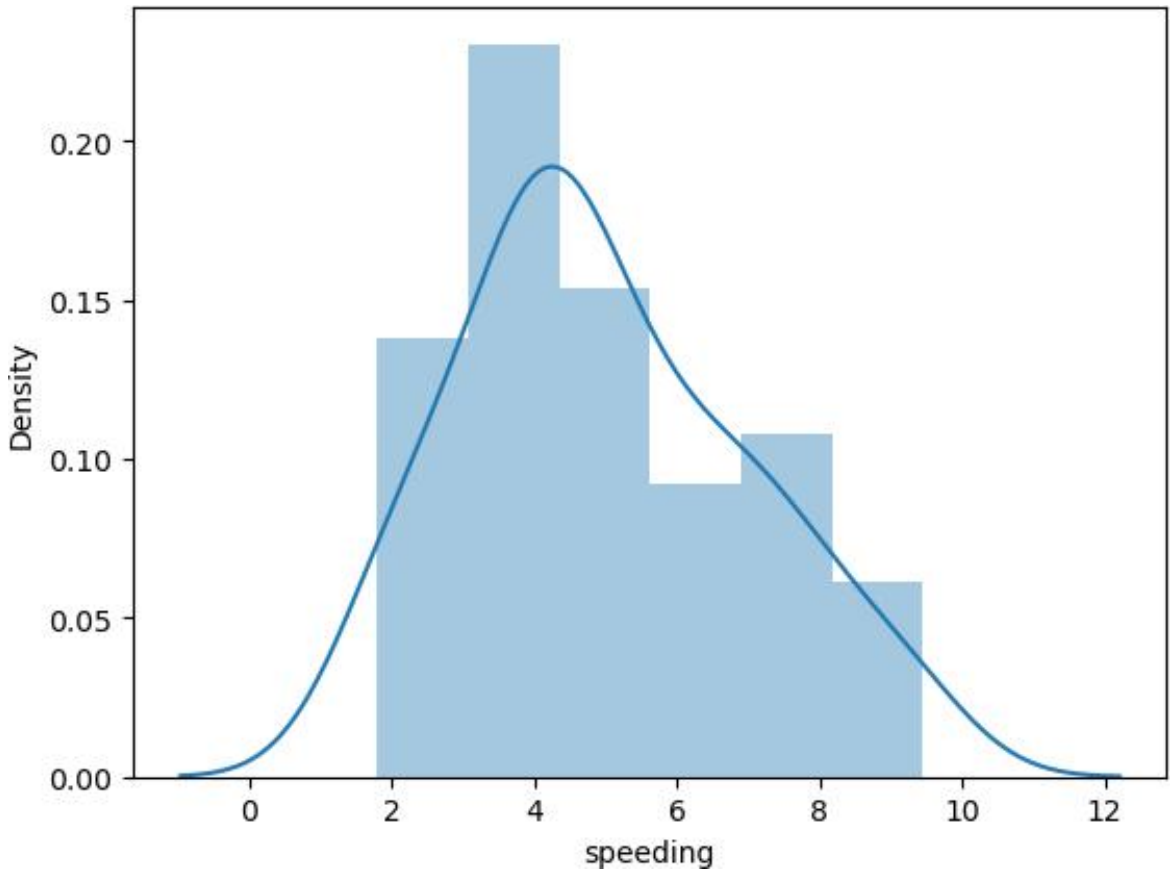
In [36]:
```
sns.lineplot(x="total" , y ="alcohol",data = df,ci= None)
print("here we can see fulcutations but still its they are related"
```

```
here we can see fulcutations but still its they are related

/var/folders/ks/ljk00dm1703810nybztmtjgw0000gn/T/ipykernel_3174/97
9379772.py:1: FutureWarning:

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

  sns.lineplot(x="total" , y ="alcohol",data = df,ci= None)
```



In [12]:
```
sns.distplot(df["speeding"])
print("data distribution of a speeding against the density distribu
```

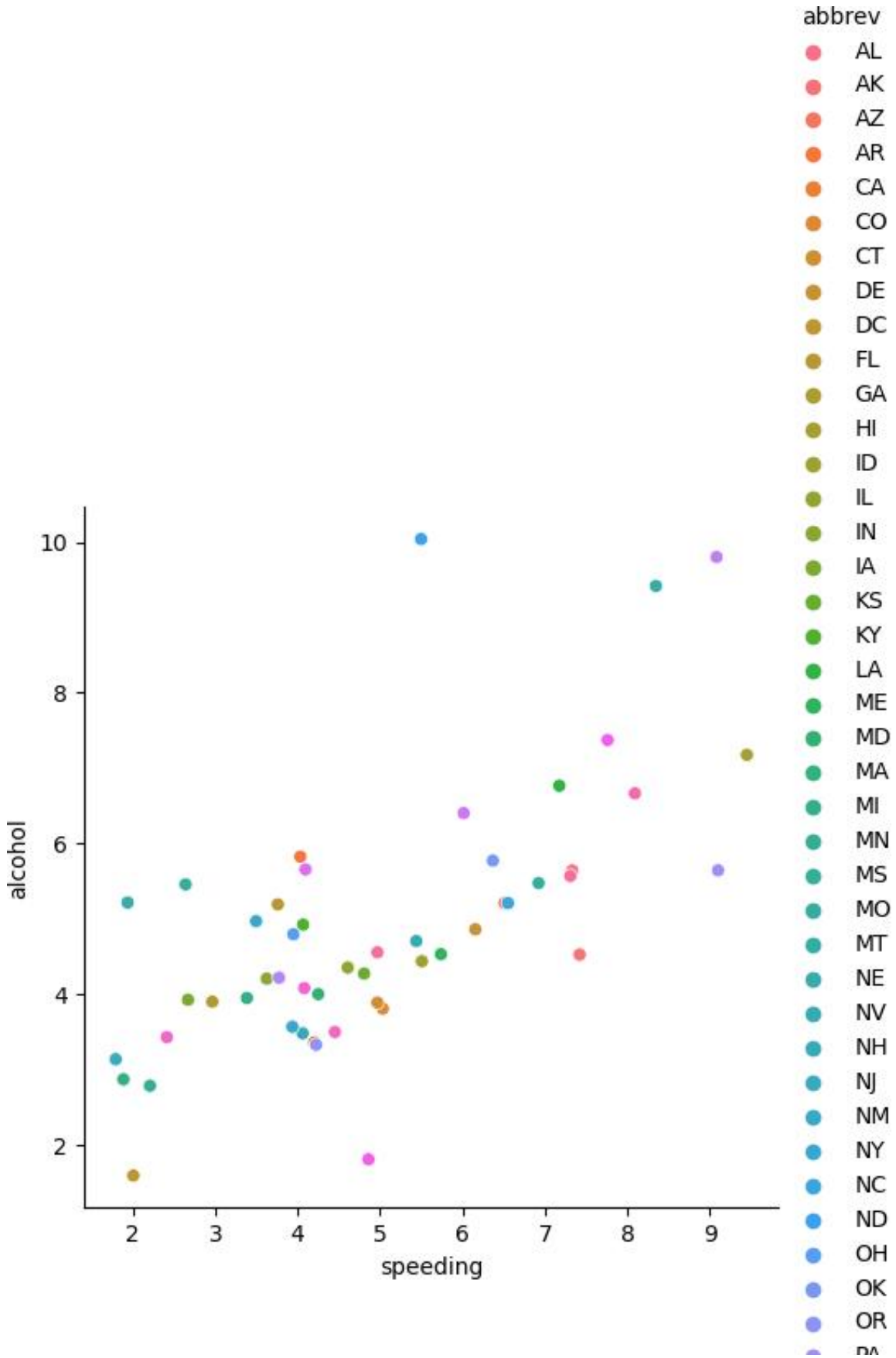
```
data distribution of a speeding against the density distribution.

/var/folders/ks/ljk00dm1703810nybztmtjgw0000gn/T/ipykernel_3174/24
8918521.py: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 fun
ction with
similar flexibility) or `histplot` (an axes-level function for his
tograms).

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

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

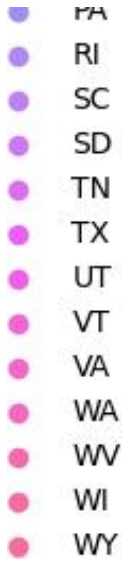


In [13]:
```

```

```
sns.relplot(x="speeding" , y ="alcohol",data =df,hue = "abbrev")
print("using hue we differentiated different categories with colors
```

```
using hue we differentiated different categories with colors
```



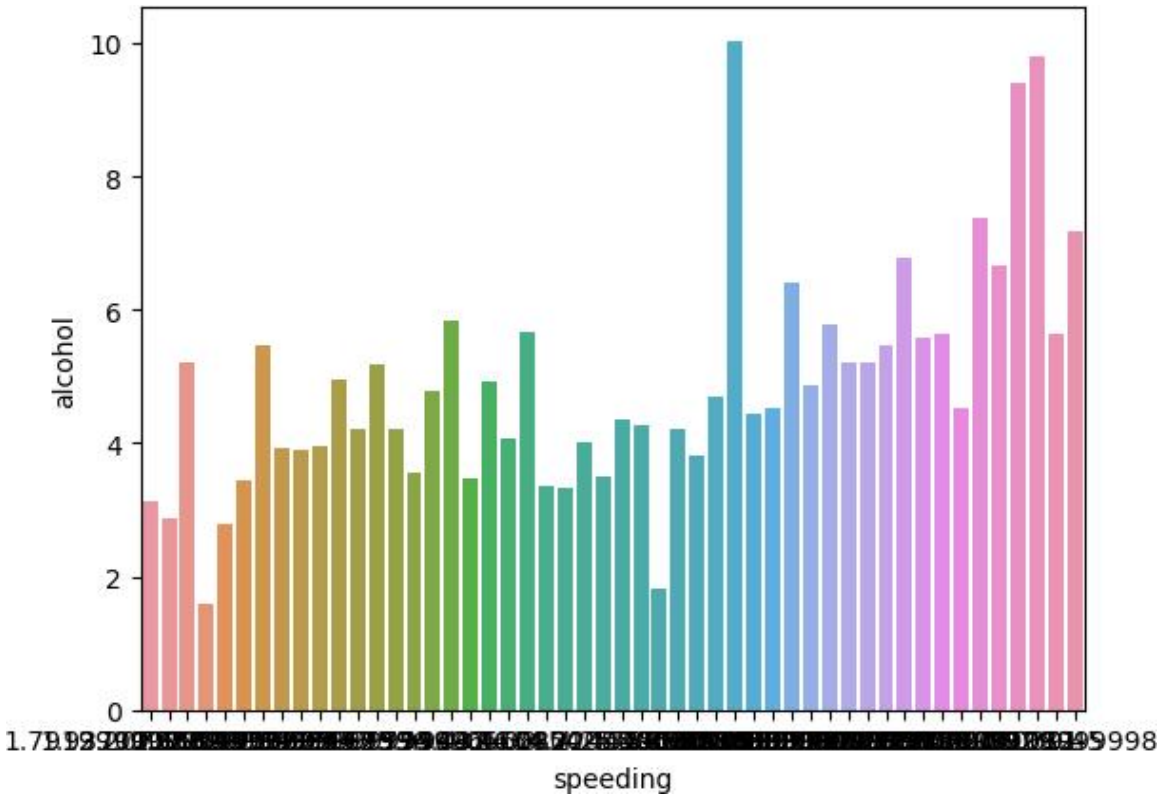


In [14]:
```
df["abbrev"].value_counts()
print("here we get count of all categories. has everything repeated
```

```
here we get count of all categories. has everything repeated only
once we got count 1 for all
```

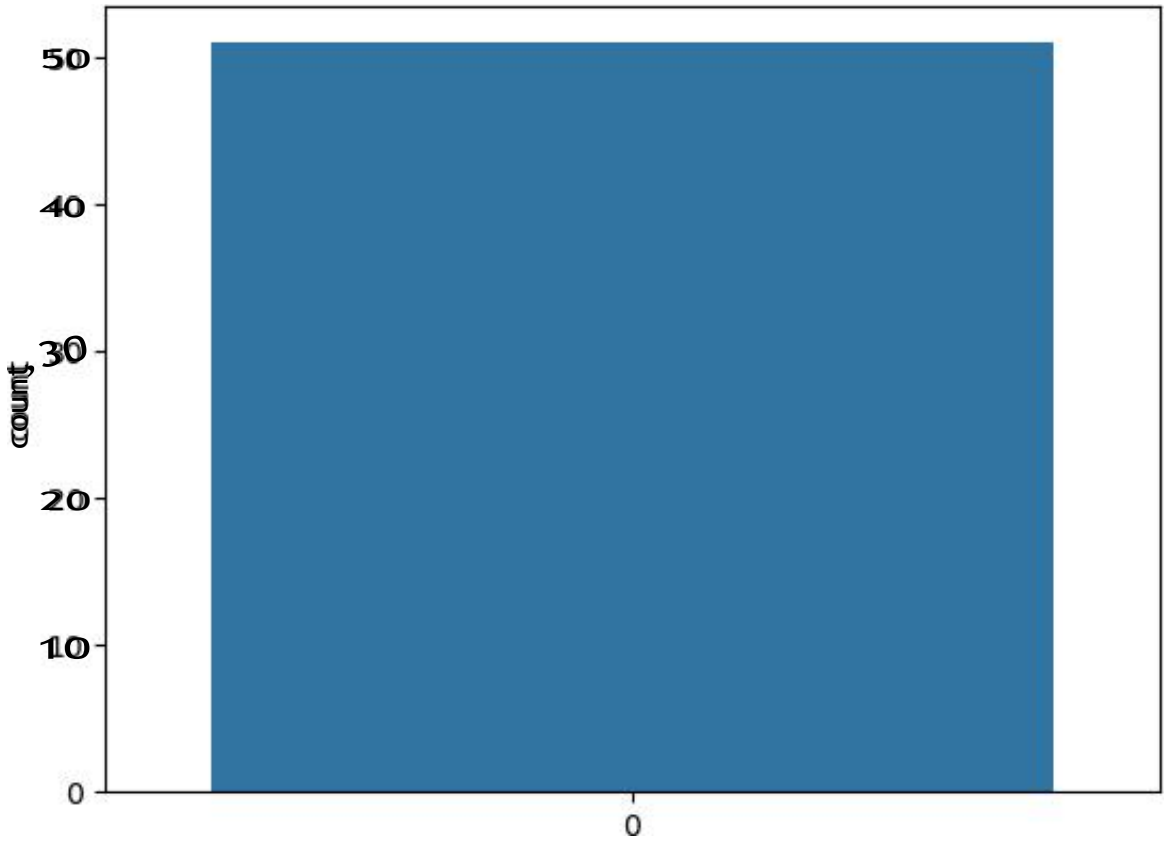
In [15]:
```
sns.barplot(data = df,x = "speeding",y = "alcohol",ci = None)
print("bargraph: speeding vs alcohol")
```

```
bargraph: speeding vs alcohol

/var/folders/ks/ljk00dm1703810nybztmtjgw0000gn/T/ipykernel_3174/82
7836433.py:1: FutureWarning:

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

  sns.barplot(data = df,x = "speeding",y = "alcohol",ci = None)
```



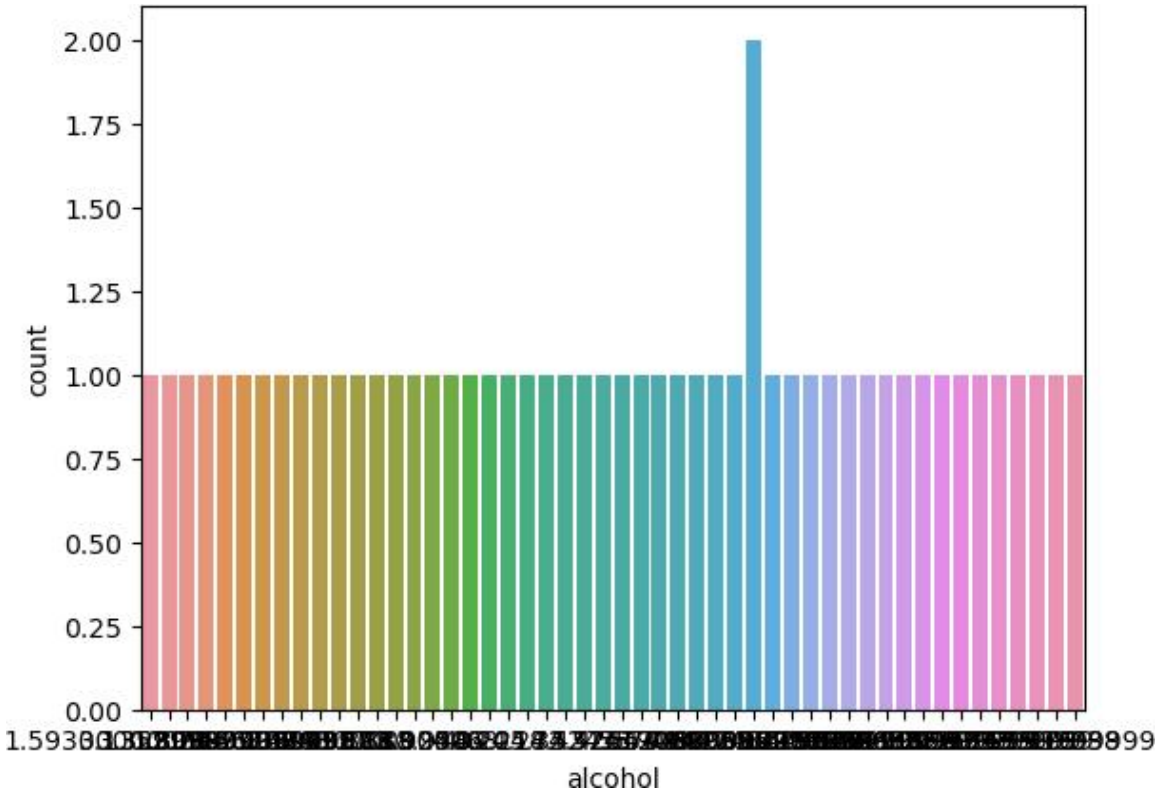
In [28]:
```
sns.countplot(df["total"])
```

Out[28]: <Axes: ylabel='count'>



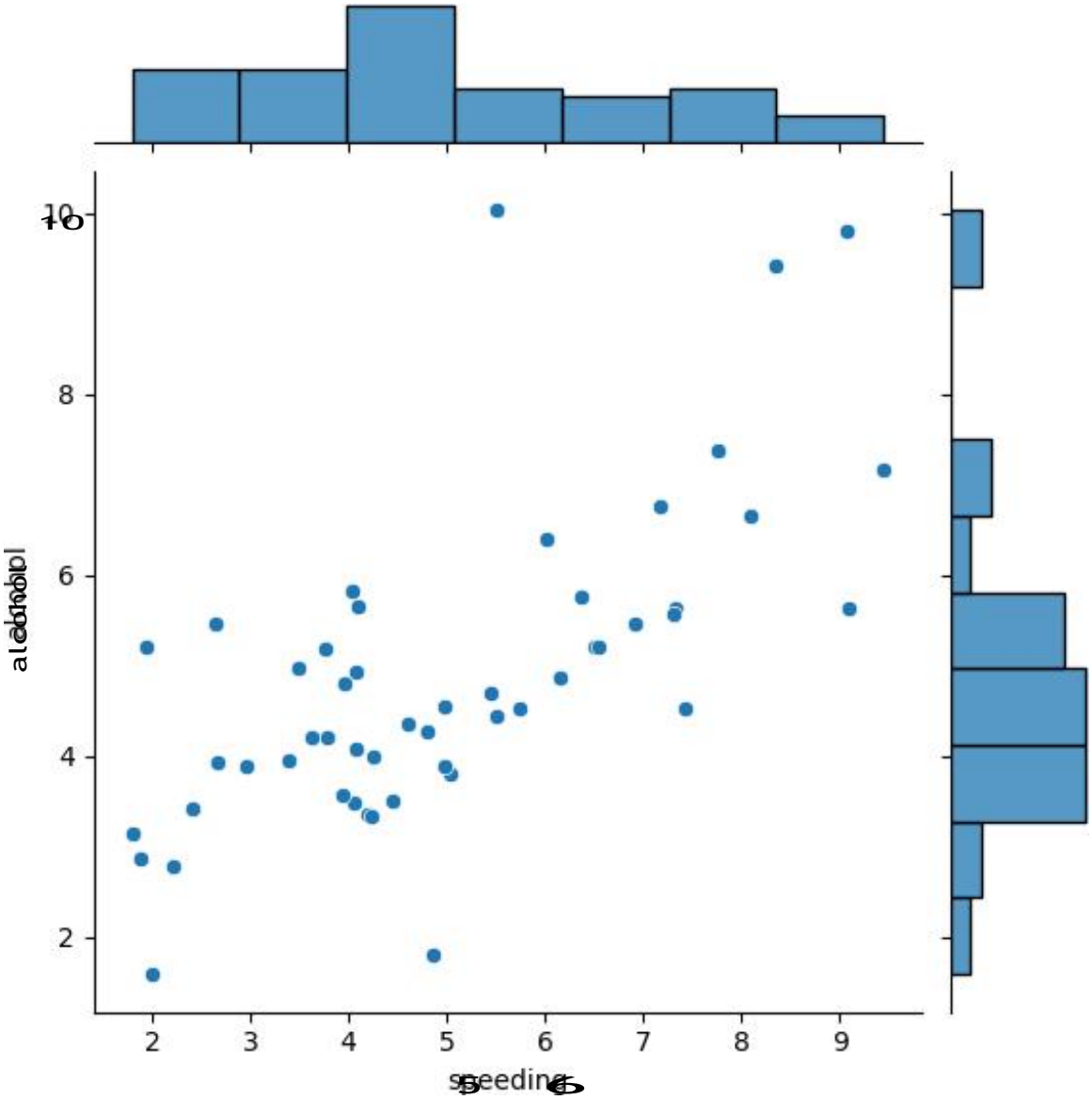
In [17]:
```
sns.countplot(data= df,x = "alcohol")
```

Out[17]: <Axes: xlabel='alcohol', ylabel='count'>



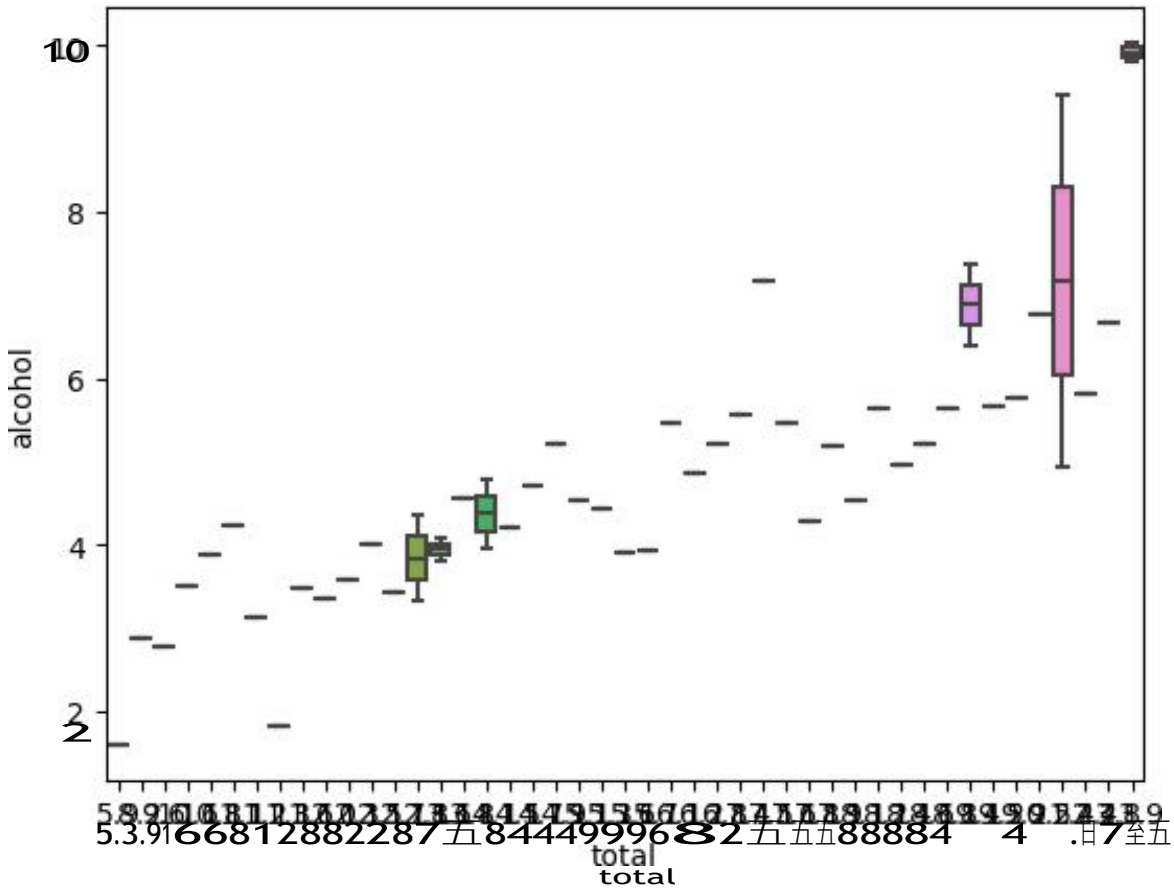
In [18]:
```
sns.jointplot(x="speeding" , y ="alcohol",data =df)
```

Out[18]: <seaborn.axisgrid.JointGrid at 0x13e488d10>



In [19]:
```
sns.boxplot(x="total" , y ="alcohol",data =df)
```

Out[19]: <Axes: xlabel='total', ylabel='alcohol'>



In [20]:
```
corr= df.corr()
corr
```

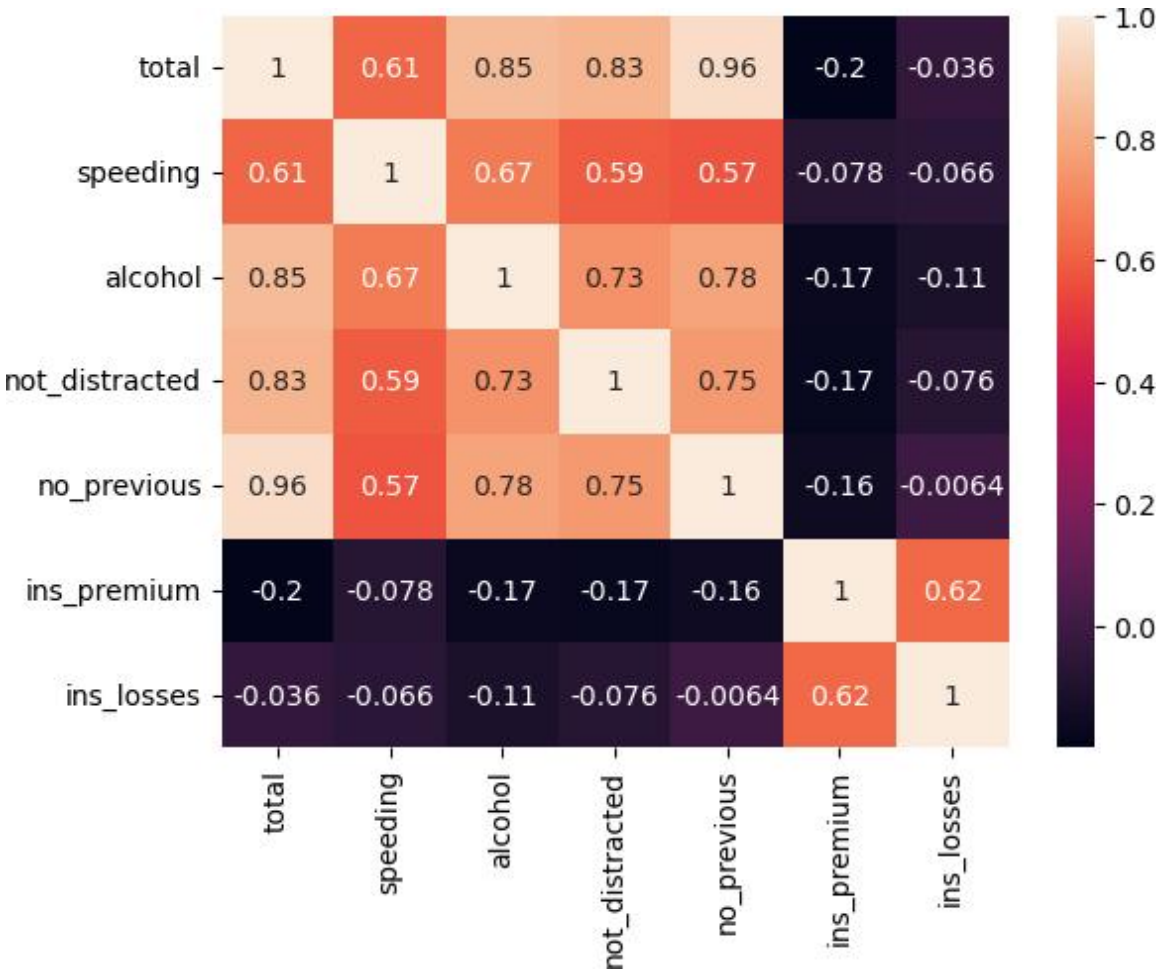
```
/var/folders/ks/ljk00dm1703810nybztmtjgw0000gn/T/ipykernel_3174/98
420504.py:1: FutureWarning: The default value of numeric_only in D
ataFrame.corr is deprecated. In a future version, it will default
to False. Select only valid columns or specify the value of numeri
c_only to silence this warning.
  corr= df.corr()
```

Out[20]:

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

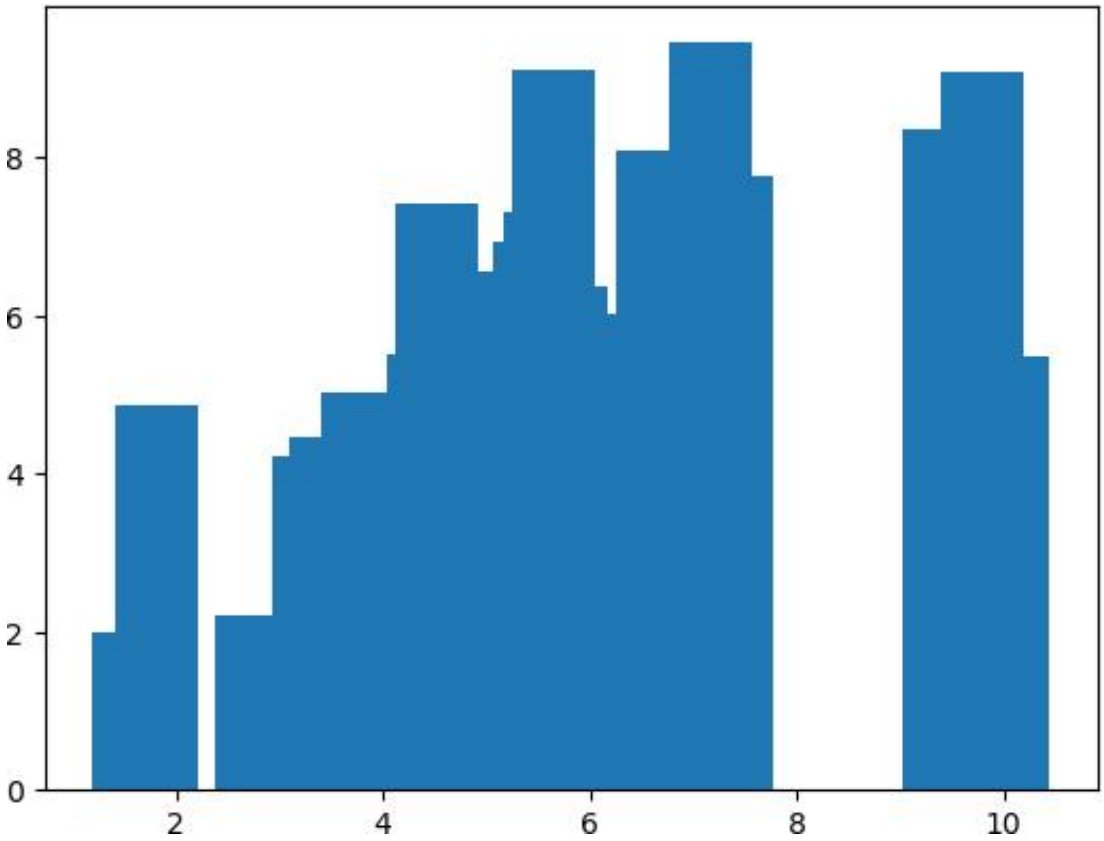
In [21]:
```
sns.heatmap(corr,annot= True)
print("from this heatmap we could infer that ins_premium and ins_los
print("alcohol is effecting out total")
```

```
from this heatmap we could infer that ins_premium and ins_losses a
re not affecting or leasteffecting our other columns
alcohol is effecting out total
```



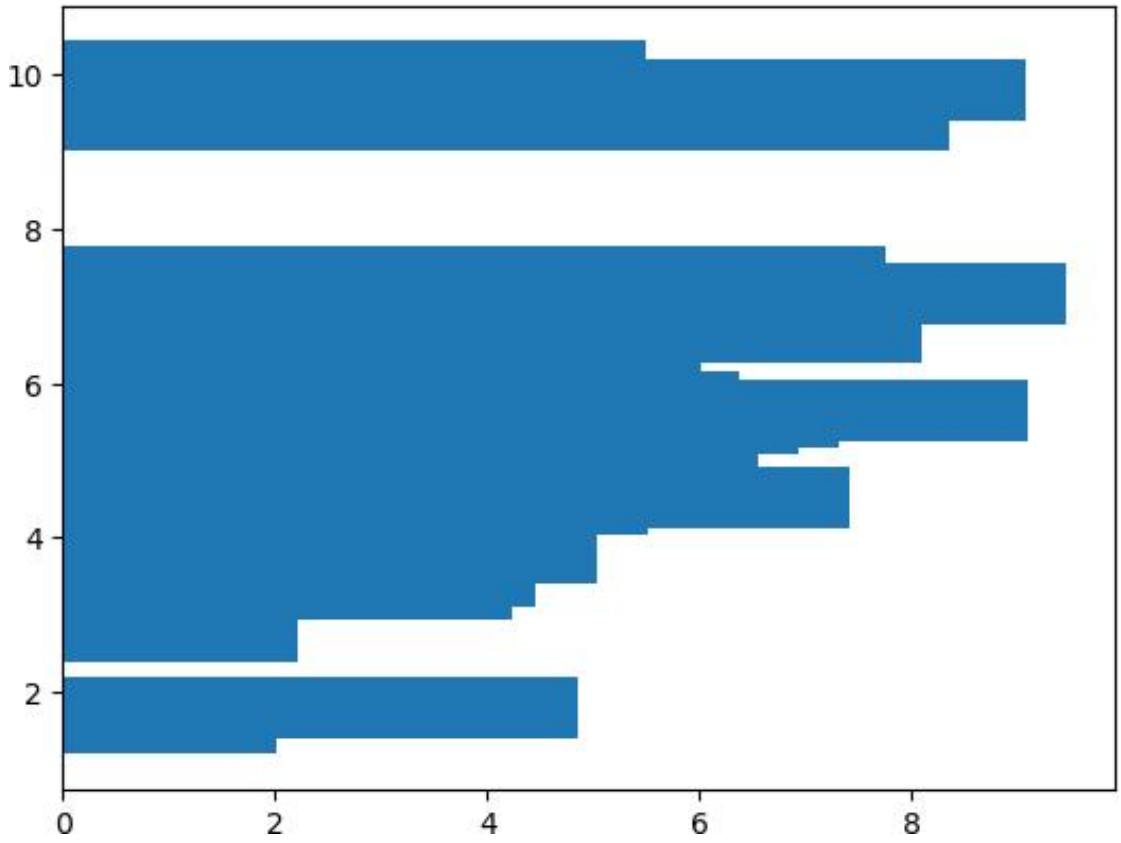
In [22]:
```
x=df["alcohol"]
y = df["speeding"]
plt.bar(x,y)
```

Out[22]: <BarContainer object of 51 artists>



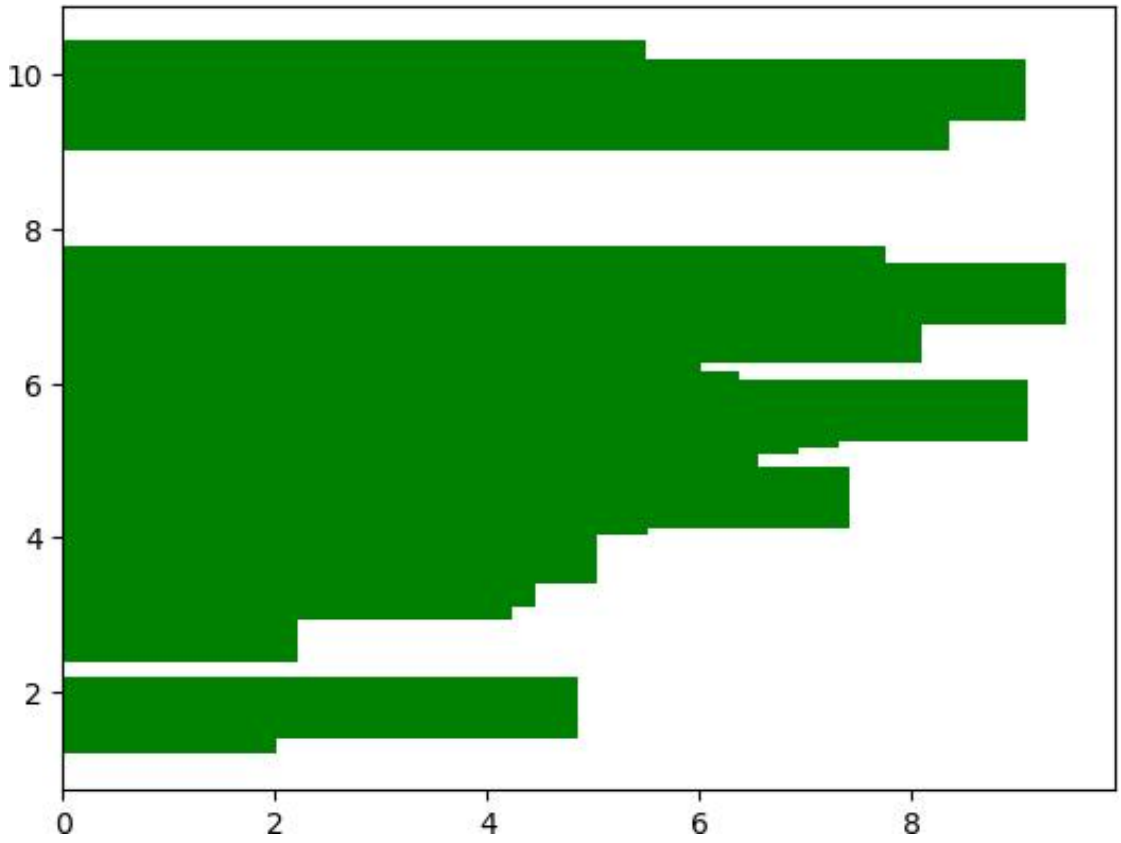
In [23]:
```
plt.barh(x,y)
```

Out[23]:
```
<BarContainer object of 51 artists>
```



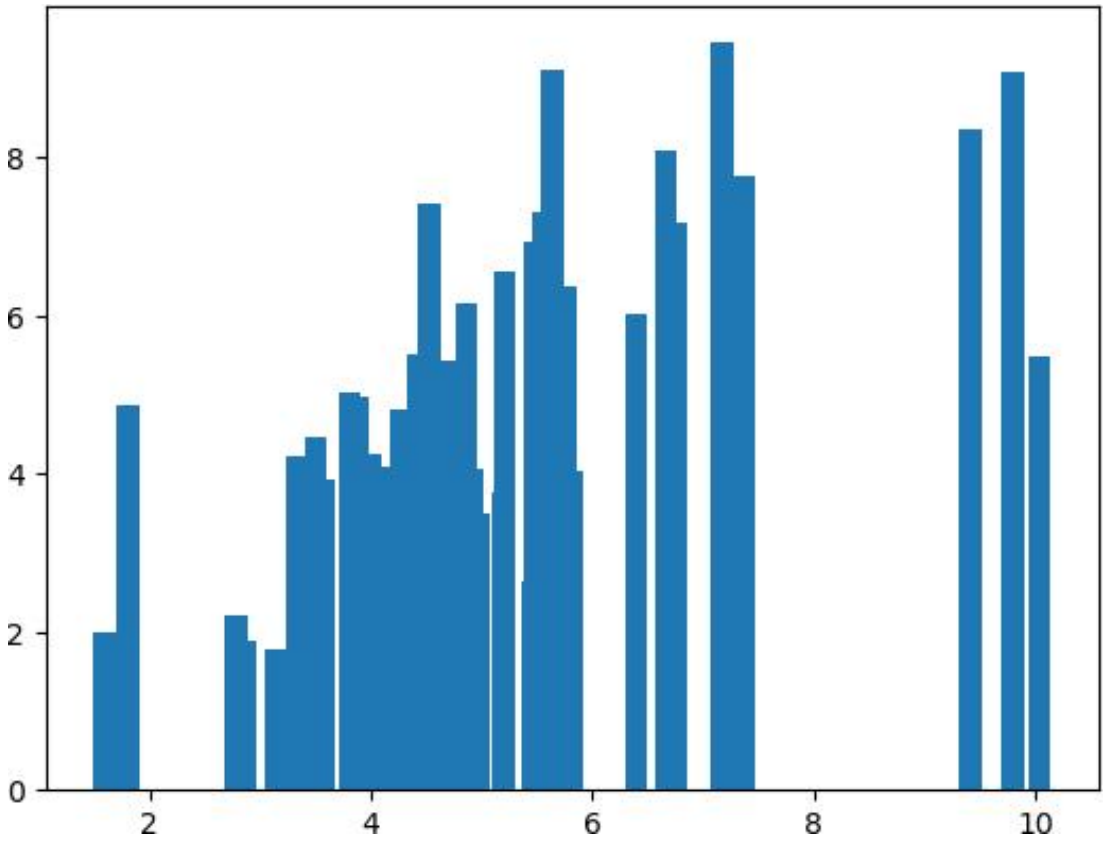
In [24]:
```
plt.barh(x,y,color = 'green')
```

Out[24]:
```
<BarContainer object of 51 artists>
```



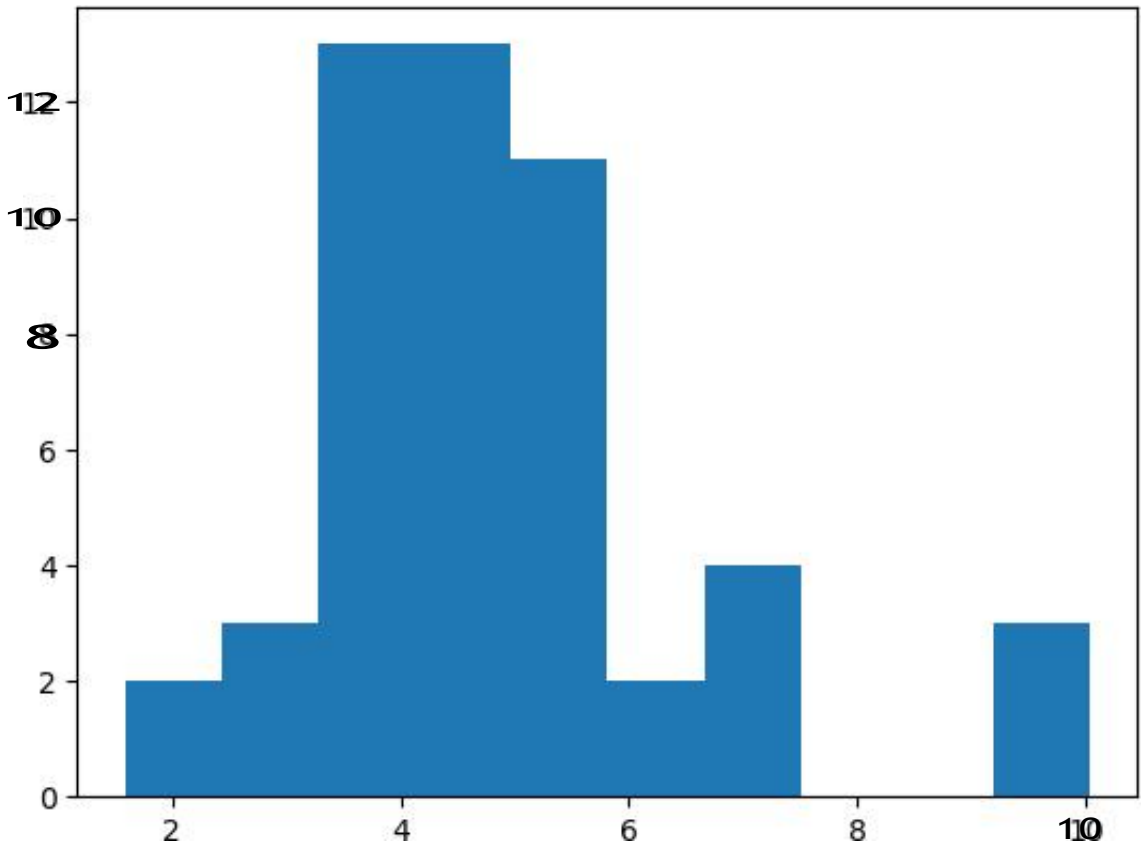
In [25]:
```
plt.bar(x,y,width = 0.2)
```

Out[25]: <BarContainer object of 51 artists>



In [26]:
```
plt.hist(x)
```

Out[26]:
```
(array([ 2.,  3., 13., 13., 11.,  2.,  4.,  0.,  0.,  3.]),
 array([ 1.593 ,  2.4375,  3.282 ,  4.1265,  4.971 ,  5.8155,  6.66  ,
         7.5045,  8.349 ,  9.1935, 10.038 ]),
 <BarContainer object of 10 artists>)
```



In [30]:
```
x1 =(df["alcohol"])
fig = plt.figure()
axes1 = fig.add_axes([0.1,0.1,0.8,0.8])
axes1.pie(x1,y,autopct="%0.2f%%",colors=["red","green"])
```

Out[30]:
```
([<matplotlib.patches.Wedge at 0x167815c50>,
  <matplotlib.patches.Wedge at 0x16a496d10>,
  <matplotlib.patches.Wedge at 0x16a4dc2d0>,
  <matplotlib.patches.Wedge at 0x16a497f50>,
  <matplotlib.patches.Wedge at 0x16a4df690>,
  <matplotlib.patches.Wedge at 0x16a509090>,
  <matplotlib.patches.Wedge at 0x16a50a610>,
  <matplotlib.patches.Wedge at 0x16a50bcd0>,
  <matplotlib.patches.Wedge at 0x16a511490>,
  <matplotlib.patches.Wedge at 0x16a508e90>,
  <matplotlib.patches.Wedge at 0x16a524050>,
  <matplotlib.patches.Wedge at 0x16a525610>,
  <matplotlib.patches.Wedge at 0x16a526bd0>,
  <matplotlib.patches.Wedge at 0x16a534390>,
  <matplotlib.patches.Wedge at 0x16a535890>,
  <matplotlib.patches.Wedge at 0x16a537010>,
  <matplotlib.patches.Wedge at 0x16a540690>,
  <matplotlib.patches.Wedge at 0x16a541dd0>,
  <matplotlib.patches.Wedge at 0x16a543510>,
```

In [ ]: