In [1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

Check the version

In [2]:

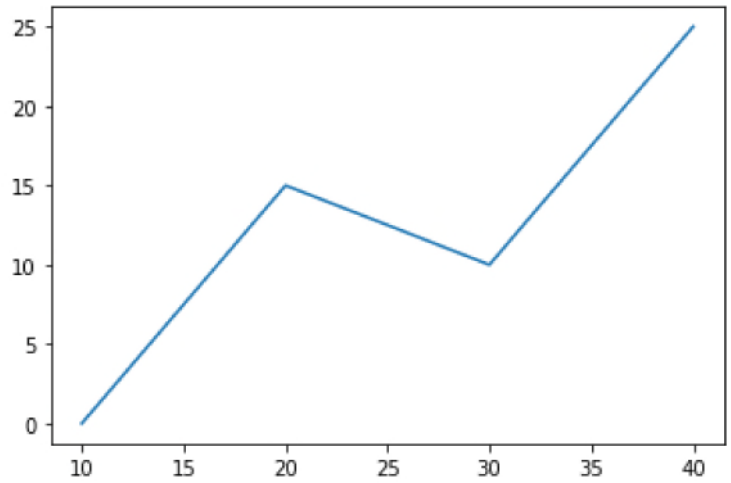
```
sns.__version__
```

Out[2]:

```
'0.11.1'
```

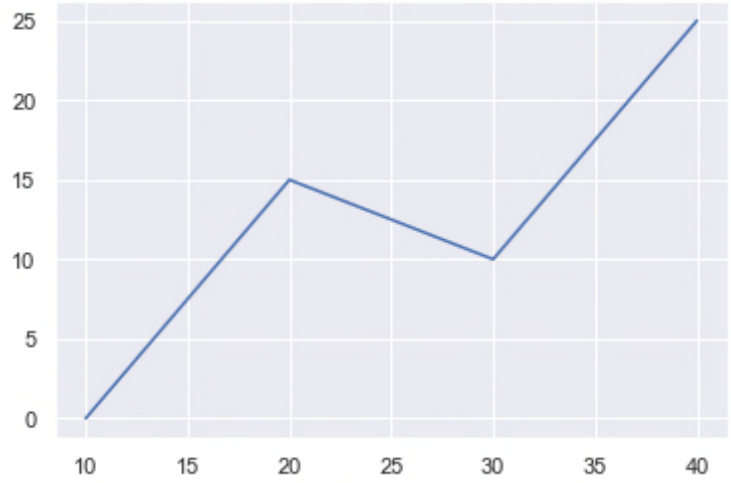
In [3]:

```
x=[10,20,30,40]
y=[0,15,10,25]
plt.plot(x,y)
plt.show()
```



In [43]:

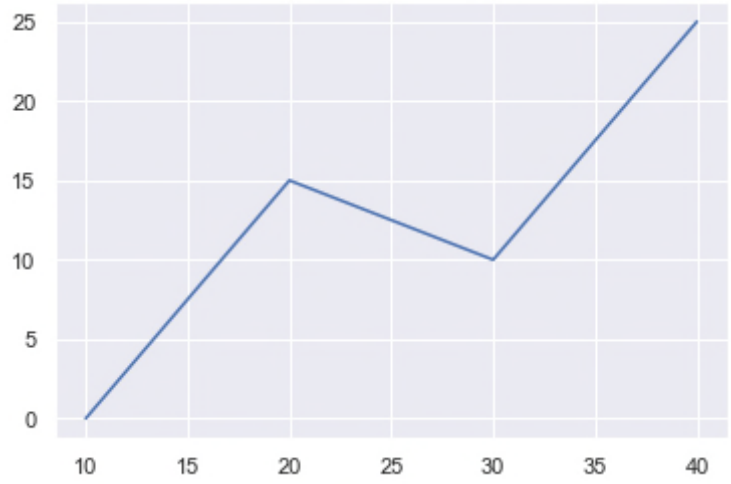
```
sns.set()
plt.plot(x,y)
plt.show()
```



Seaborn style

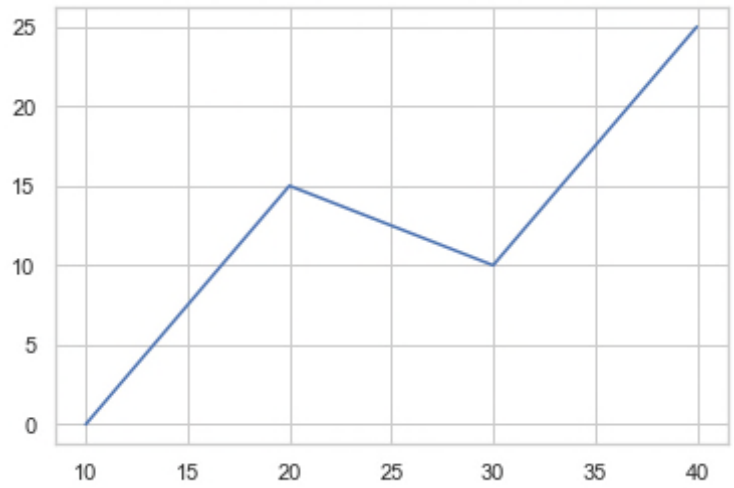
In [44]:

```
sns.set_style('darkgrid')
plt.plot(x,y)
plt.show()
```



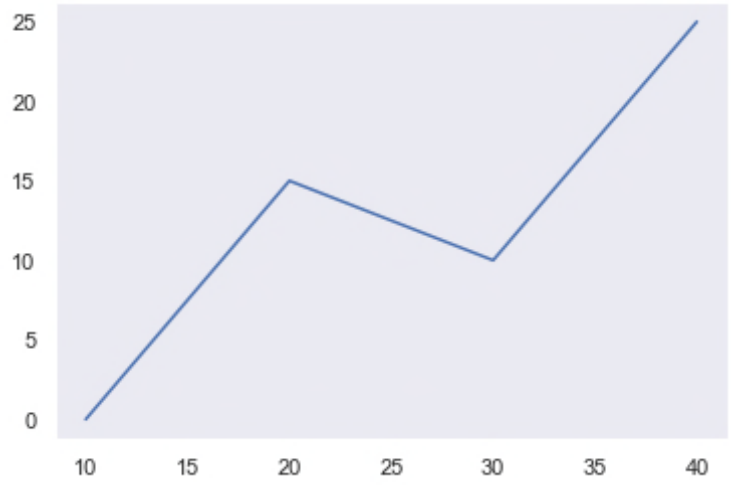
In [45]:

```
sns.set_style('whitegrid')
plt.plot(x,y)
plt.show()
```



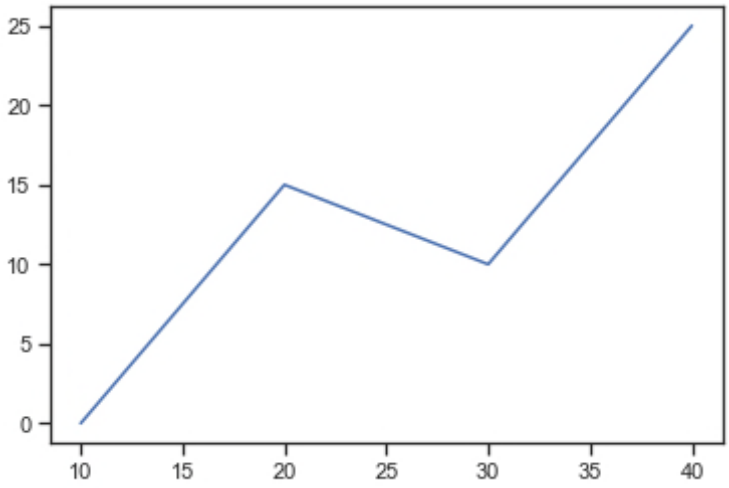
In [46]:

```
sns.set_style('dark')
plt.plot(x,y)
plt.show()
```



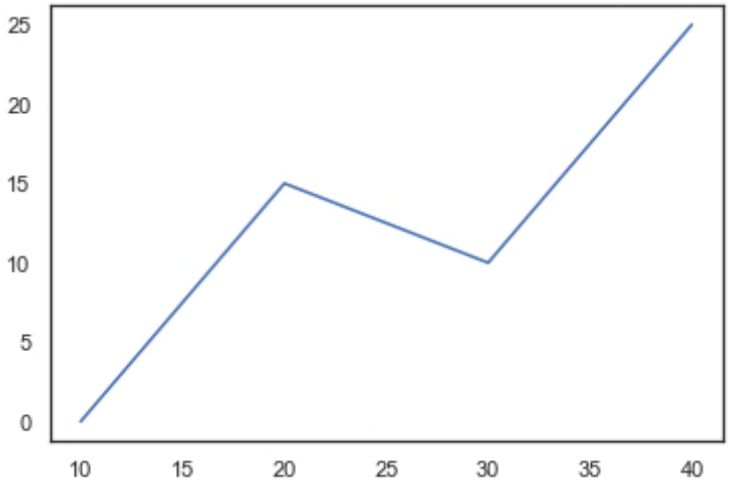
In [47]:

```
sns.set_style('ticks')
plt.plot(x,y)
plt.show()
```



In [48]:

```
sns.set_style('white')
plt.plot(x,y)
plt.show()
```



In [49]:

```
sns.get_dataset_names()
```

Out[49]:

```
['anagrams',
 'anscombe',
 'attention',
 'brain_networks',
 'car_crashes',
 'diamonds',
 'dots',
 'exercise',
 'flights',
 'fmri',
 'gammas',
 'geyser',
 'iris',
 'mpg',
 'penguins',
 'planets',
 'tips',
 'titanic']
```

Load built in Dataset

In [5]:

```
cars=sns.load_dataset('mpg')
cars
```

Out[5]:

	mpg	cylinders	displacement	horsepower	weight	acceleration	model_year	origin	n
0	18.0	8	307.0	130.0	3504	12.0	70	usa	chev che m
1	15.0	8	350.0	165.0	3693	11.5	70	usa	sk
2	18.0	8	318.0	150.0	3436	11.0	70	usa	plym sat
3	16.0	8	304.0	150.0	3433	12.0	70	usa	rebe
4	17.0	8	302.0	140.0	3449	10.5	70	usa	t
...	...	...	...	...	...	...	...	...	
393	27.0	4	140.0	86.0	2790	15.6	82	usa	mus
394	44.0	4	97.0	52.0	2130	24.6	82	europe	pi
395	32.0	4	135.0	84.0	2295	11.6	82	usa	d ram
396	28.0	4	120.0	79.0	2625	18.6	82	usa	ra
397	31.0	4	119.0	82.0	2720	19.4	82	usa	che

398 rows × 9 columns

Type of dataset

In [6]:

```
type(cars)
```

Out[6]:

```
pandas.core.frame.DataFrame
```

number of rows and columns

In [52]:

```
cars.shape
```

Out[52]:

```
(398, 9)
```

Drop the null values

In [53]:

```
cars.dropna(inplace=True)
cars
```

Out[53]:

	mpg	cylinders	displacement	horsepower	weight	acceleration	model_year	origin	n
0	18.0	8	307.0	130.0	3504	12.0	70	usa	chev che m
1	15.0	8	350.0	165.0	3693	11.5	70	usa	sk
2	18.0	8	318.0	150.0	3436	11.0	70	usa	plym sat
3	16.0	8	304.0	150.0	3433	12.0	70	usa	rebe
4	17.0	8	302.0	140.0	3449	10.5	70	usa	t
...	...	...	...	...	...	...	...	...	
393	27.0	4	140.0	86.0	2790	15.6	82	usa	mus
394	44.0	4	97.0	52.0	2130	24.6	82	europe	pi
395	32.0	4	135.0	84.0	2295	11.6	82	usa	d ram
396	28.0	4	120.0	79.0	2625	18.6	82	usa	ra
397	31.0	4	119.0	82.0	2720	19.4	82	usa	che

392 rows × 9 columns

In [54]:

```
cars.head()
```

Out[54]:

	mpg	cylinders	displacement	horsepower	weight	acceleration	model_year	origin	nam
0	18.0	8	307.0	130.0	3504	12.0	70	usa	chevrole chevell malib
1	15.0	8	350.0	165.0	3693	11.5	70	usa	buic skylar 32
2	18.0	8	318.0	150.0	3436	11.0	70	usa	plymout satellit
3	16.0	8	304.0	150.0	3433	12.0	70	usa	am rebel s
4	17.0	8	302.0	140.0	3449	10.5	70	usa	for torin

In [55]:

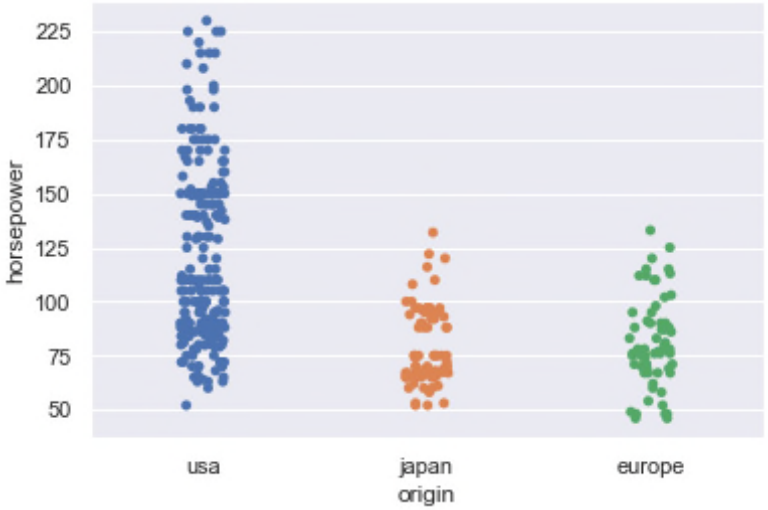
```
cars.tail()
```

Out[55]:

	mpg	cylinders	displacement	horsepower	weight	acceleration	model_year	origin	n
393	27.0	4	140.0	86.0	2790	15.6	82	usa	mus
394	44.0	4	97.0	52.0	2130	24.6	82	europe	pi
395	32.0	4	135.0	84.0	2295	11.6	82	usa	d ramp
396	28.0	4	120.0	79.0	2625	18.6	82	usa	ra
397	31.0	4	119.0	82.0	2720	19.4	82	usa	che

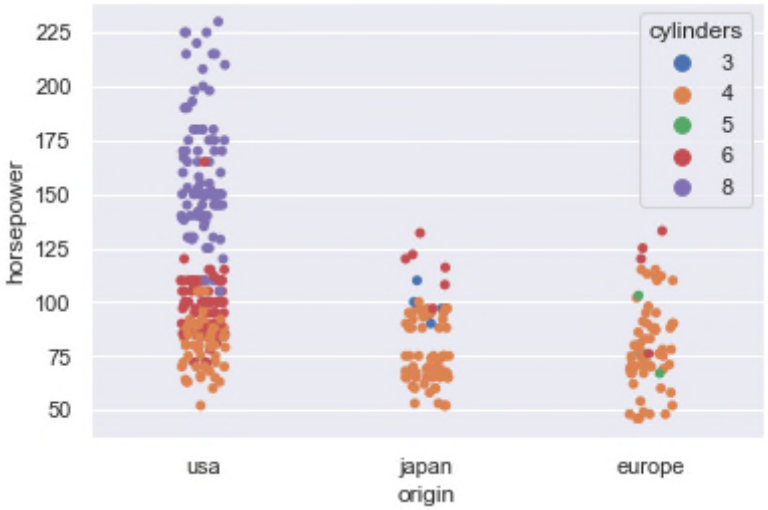
In [56]:

```
sns.set_style('darkgrid')
sns.stripplot(x='origin',y='horsepower',data=cars)
plt.show()
```



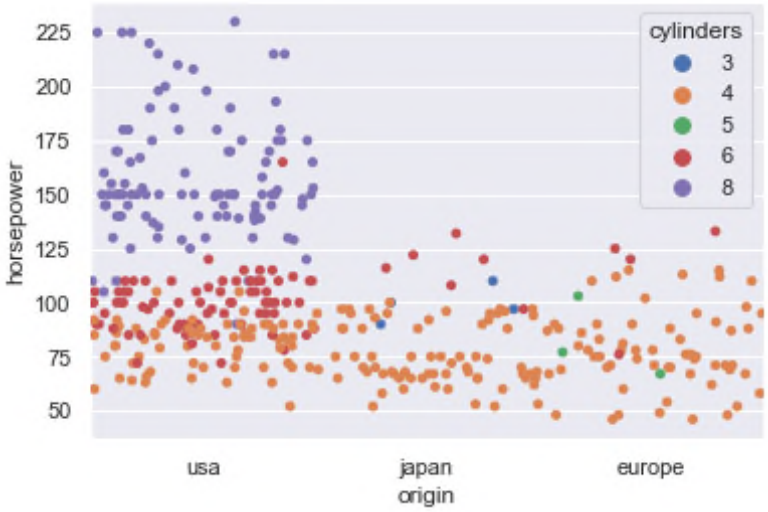
In [57]:

```
sns.set_style('darkgrid')
sns.stripplot(x='origin',y='horsepower',hue='cylinders',data=cars)
plt.show()
```



In [58]:

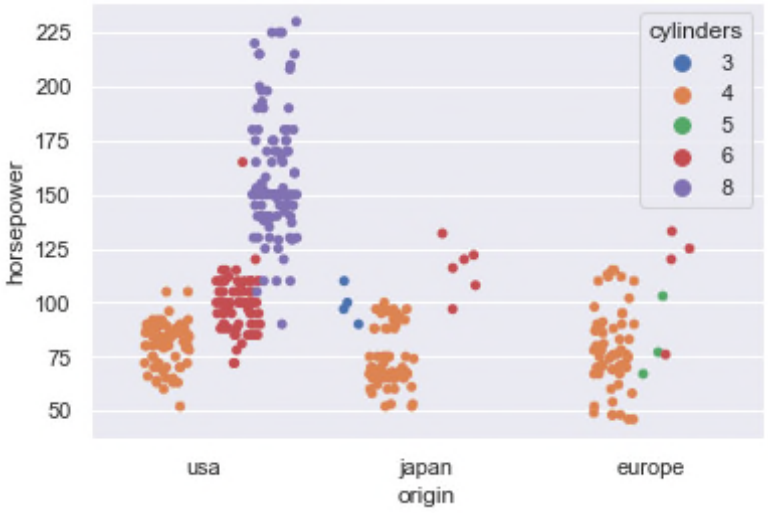
```
sns.set_style('darkgrid')
sns.stripplot(x='origin',y='horsepower',hue='cylinders',jitter=0.50,data=cars)
plt.show()
```



Dodge

In [59]:

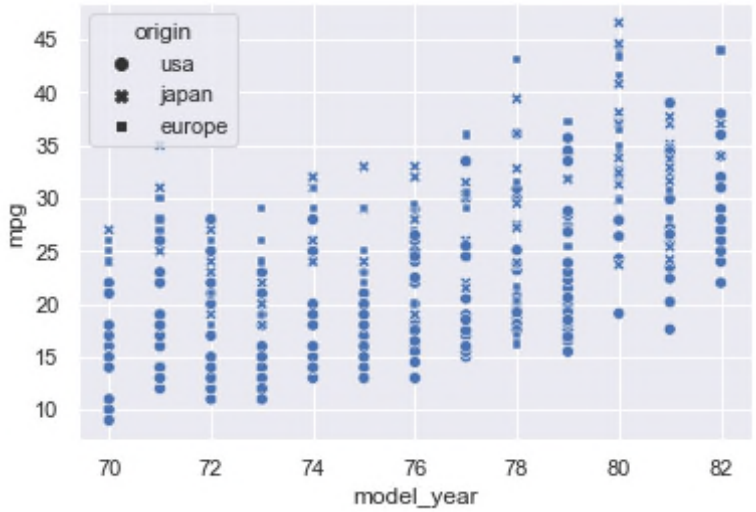
```
sns.set_style('darkgrid')
sns.stripplot(x='origin',y='horsepower',hue='cylinders',jitter=0.5,dodge=True,data=cars)
plt.show()
```



Replot

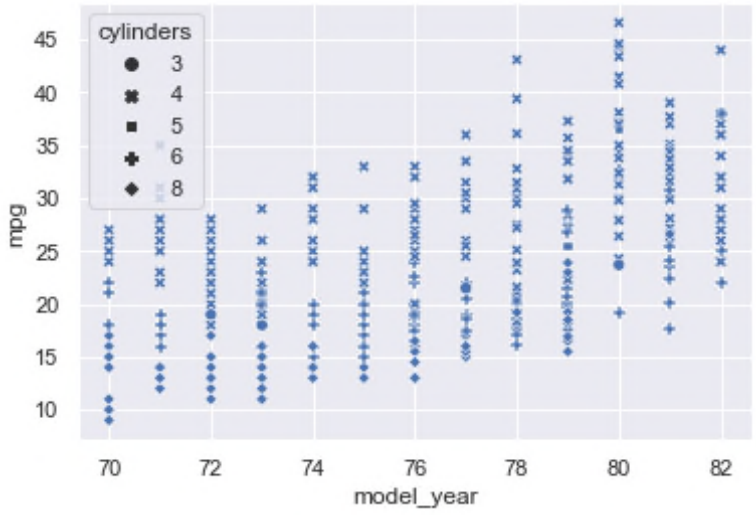
In [60]:

```
sns.scatterplot(x='model_year',y='mpg',style='origin',data=cars)
plt.show()
```



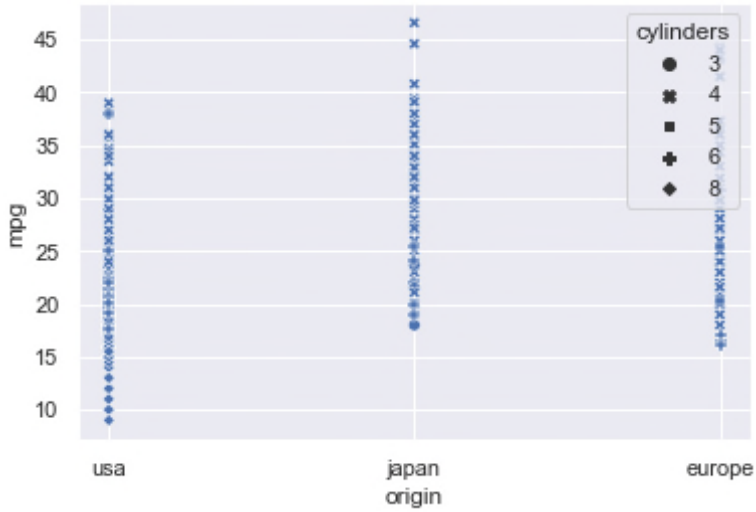
In [61]:

```
sns.scatterplot(x='model_year',y='mpg',style='cylinders',data=cars)
plt.show()
```



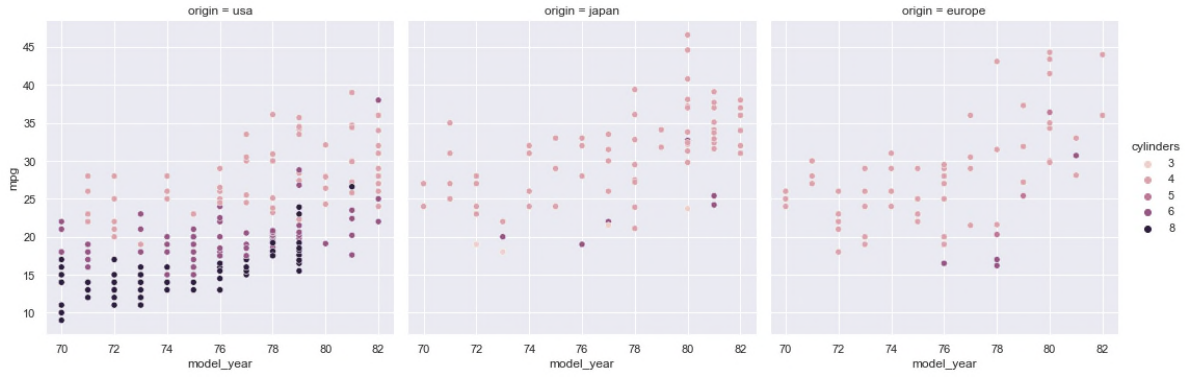
In [62]:

```
sns.scatterplot(x='origin',y='mpg',style='cylinders',data=cars)
plt.show()
```



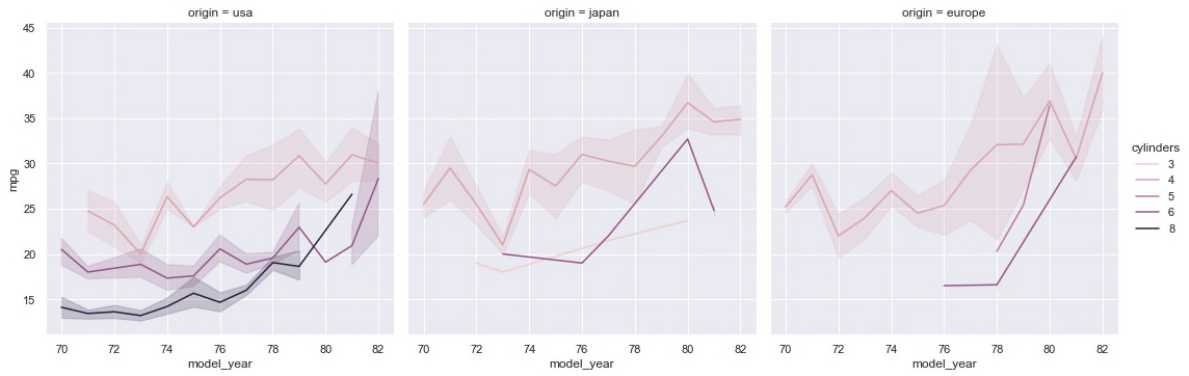
In [63]:

```
sns.relplot(x='model_year',y='mpg',col='origin',hue='cylinders',data=cars)
plt.show()
```



In [64]:

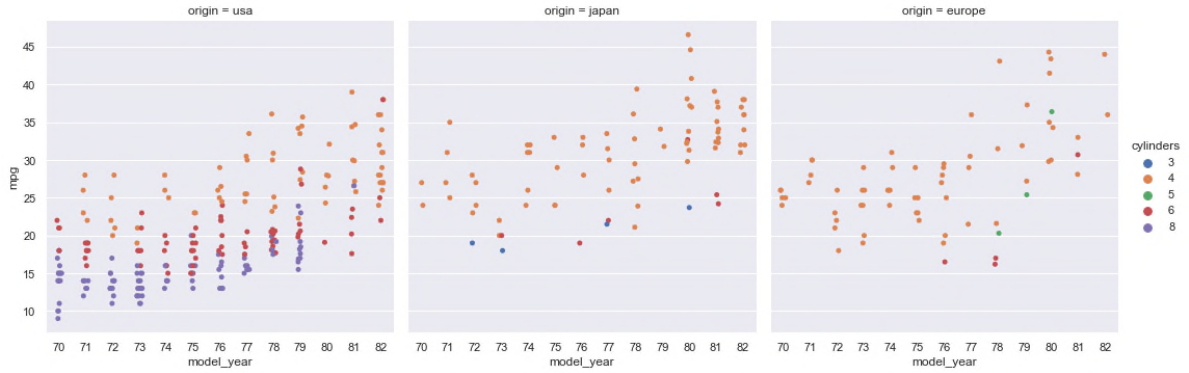
```
sns.relplot(x='model_year',y='mpg',col='origin',hue='cylinders',kind='line',data=cars)
plt.show()
```



catplot

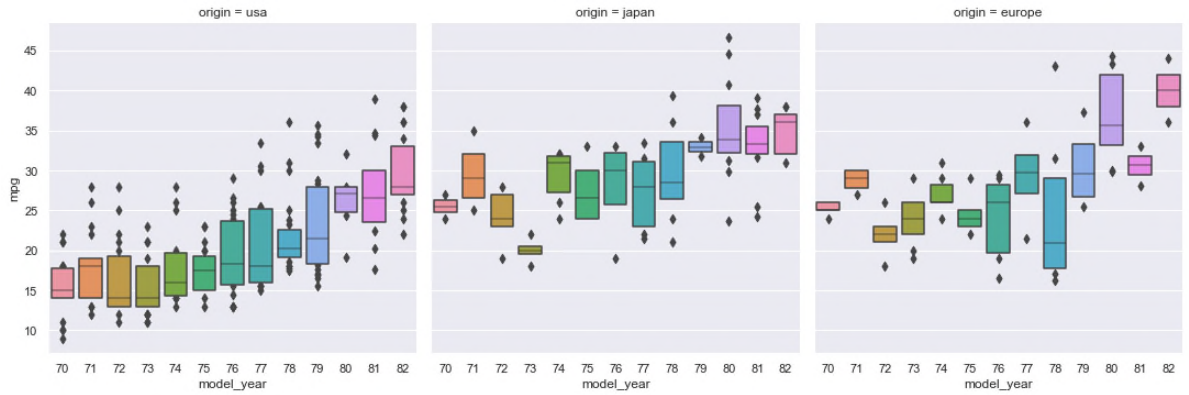
In [65]:

```
sns.catplot(x='model_year',y='mpg',col='origin',hue='cylinders',data=cars)
plt.show()
```



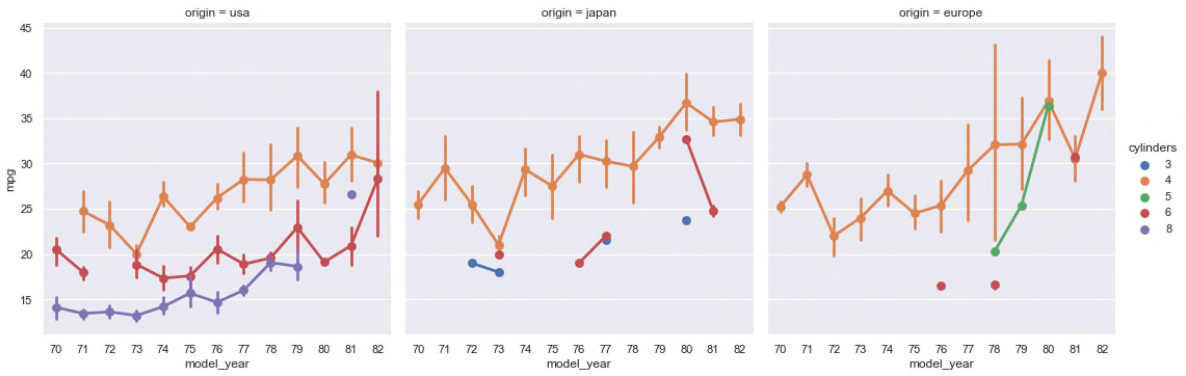
In [66]:

```
sns.catplot(x='model_year',y='mpg',col='origin',kind='boxen',data=cars)
plt.show()
```



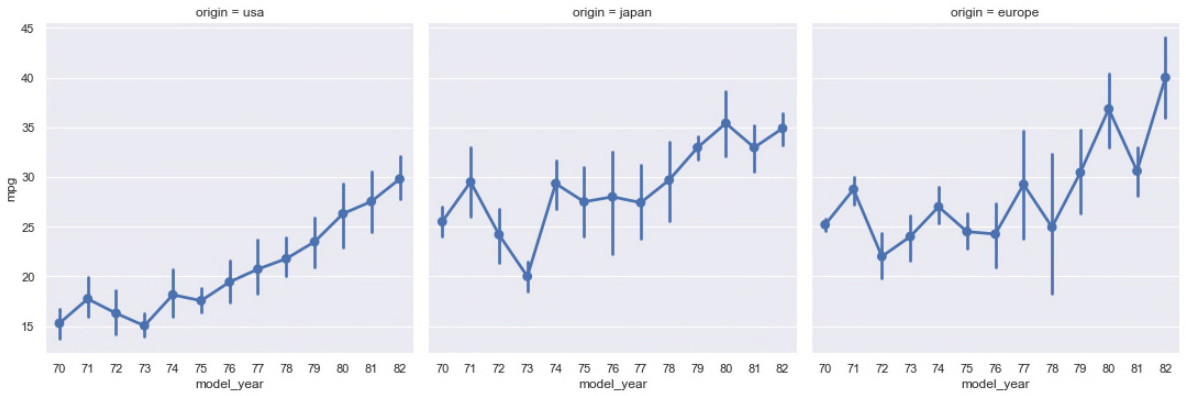
In [67]:

```
sns.catplot(x='model_year',y='mpg',col='origin',hue='cylinders',kind='point',data=cars)
plt.show()
```



In [68]:

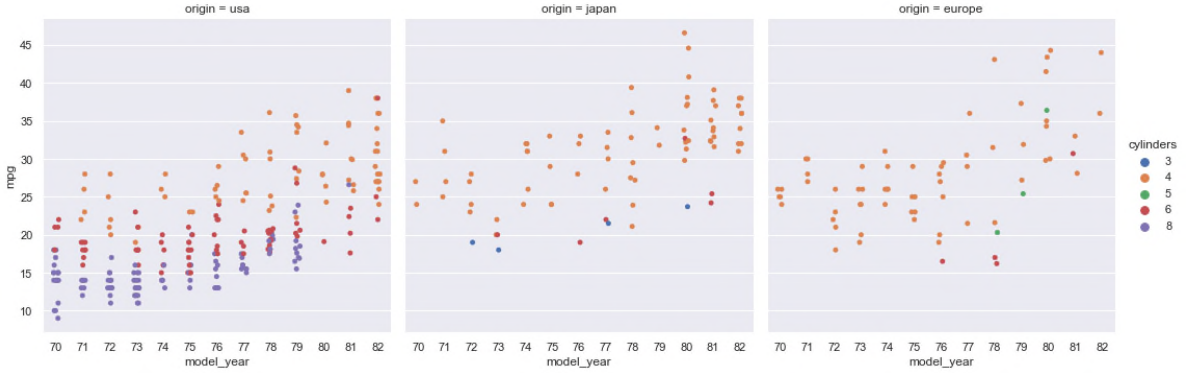
```
sns.catplot(x='model_year',y='mpg',col='origin',kind='point',data=cars)
plt.show()
```



Catplot

In [69]:

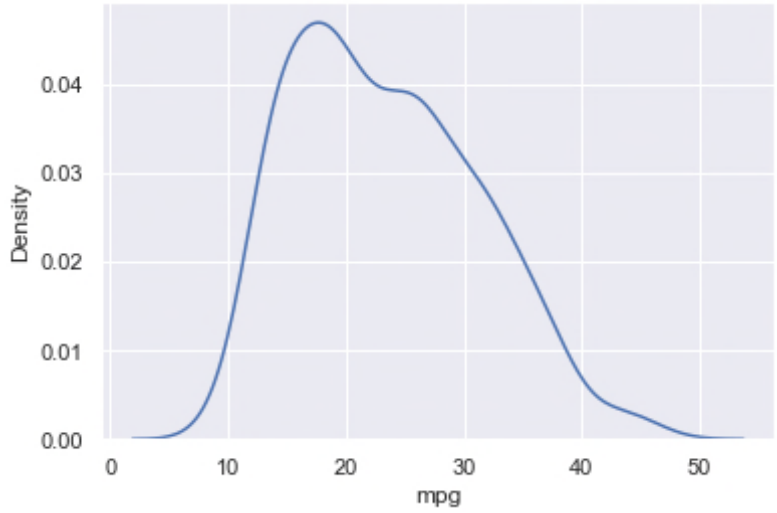
```
sns.catplot(x='model_year',y='mpg',col='origin',hue='cylinders',data=cars)
plt.show()
```



kdeplot

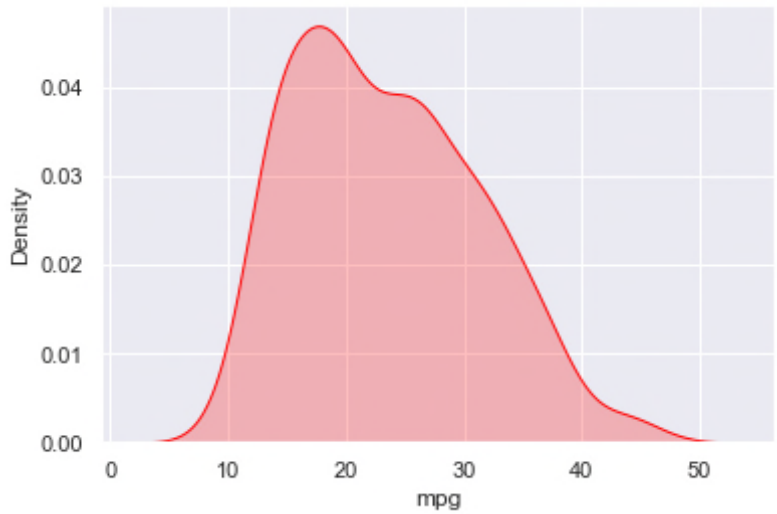
In [70]:

```
sns.kdeplot(cars['mpg'])
plt.show()
```



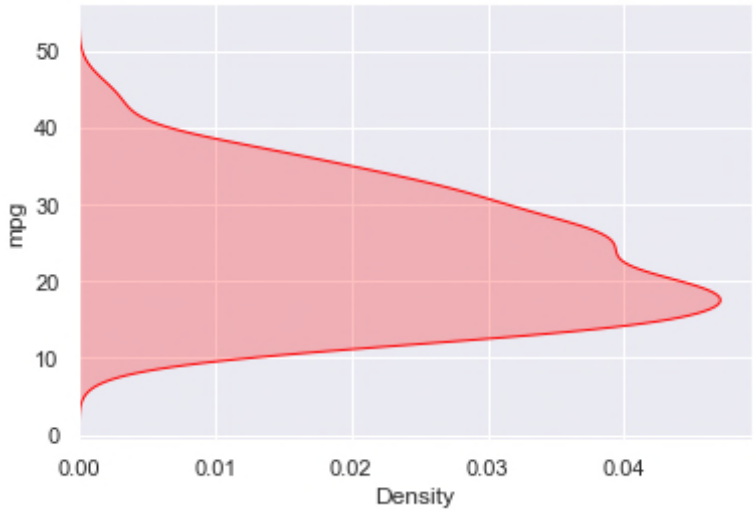
In [71]:

```
sns.kdeplot(cars['mpg'],color='red',shade=True)
plt.show()
```



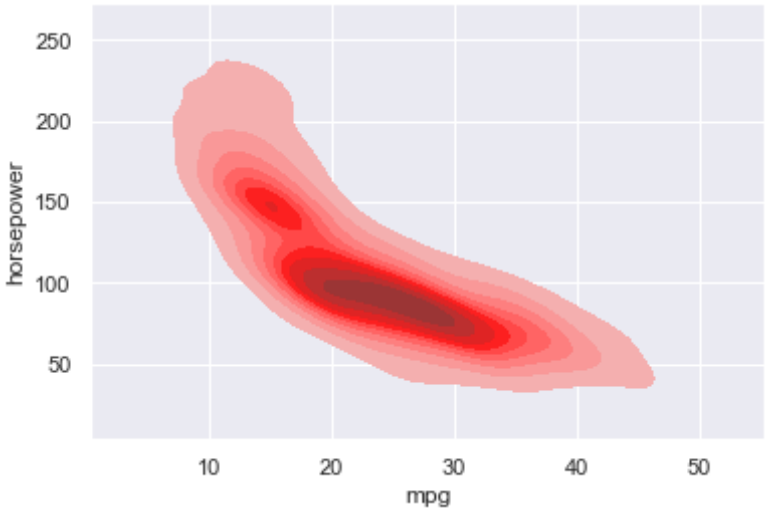
In [33]:

```
sns.kdeplot(cars['mpg'],color='red',vertical=True,shade=True)
plt.show()
```



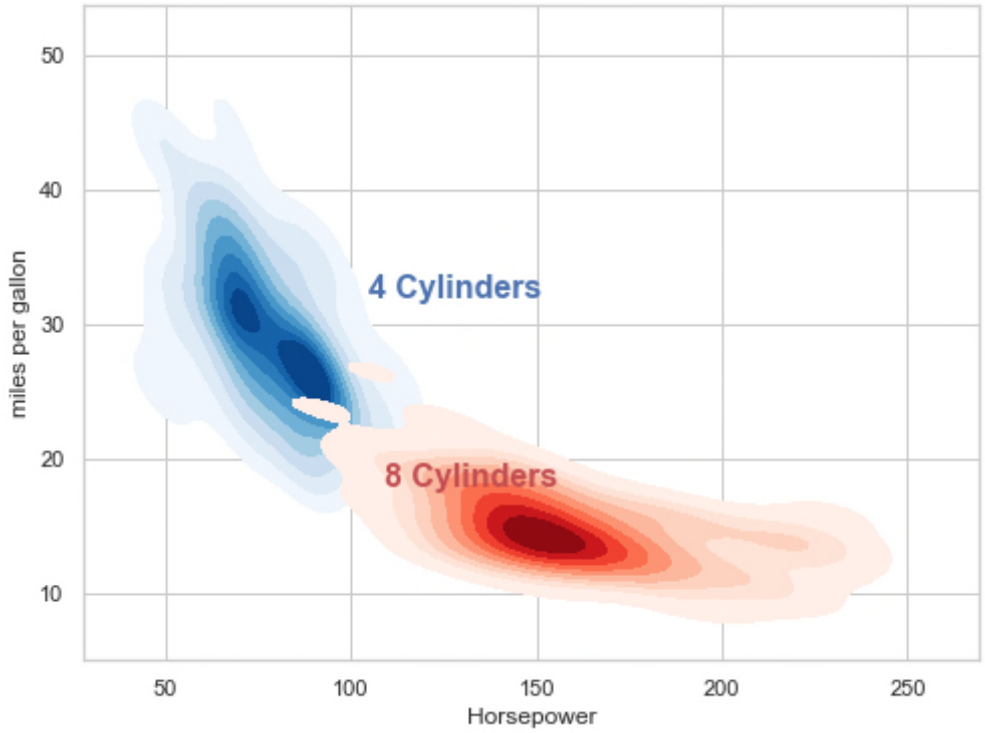
In [72]:

```
sns.kdeplot(cars['mpg'],cars['horsepower'],color='red',shade=True)
plt.show()
```



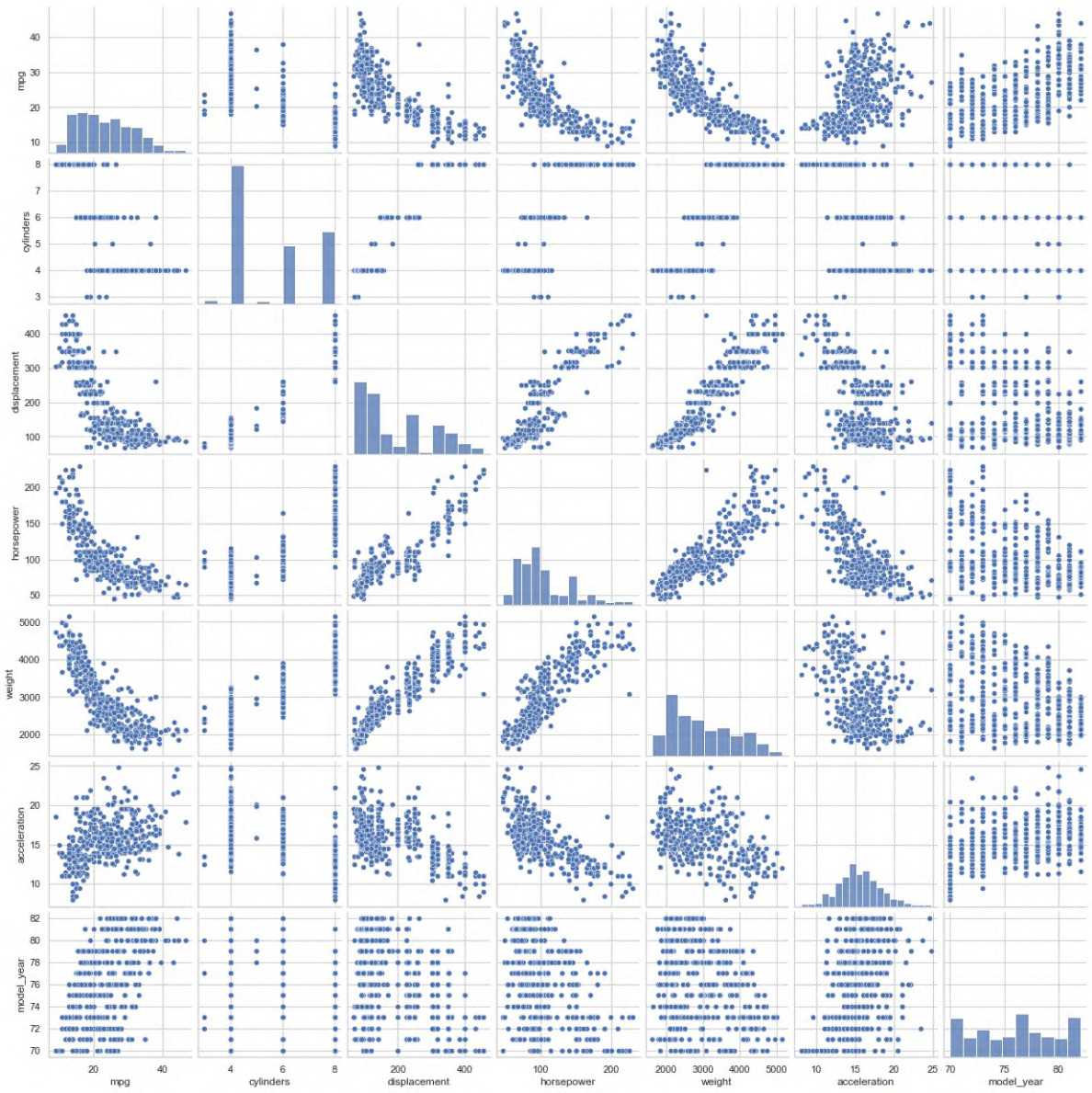
In [73]:

```
sns.set_style('whitegrid')
cyl_4=cars[cars.cylinders==4]
cyl_8=cars[cars.cylinders==8]
plt.figure(figsize=(8,6))
sns.kdeplot(cyl_4.horsepower,cyl_4.mpg,cmap='Blues',shade=True,shade_lowest=False)
sns.kdeplot(cyl_8.horsepower,cyl_8.mpg,cmap='Reds',shade=True,shade_lowest=False)

plt.xlabel('Horsepower')
plt.ylabel('miles per gallon')
plt.annotate('4 Cylinders',(105,32),color='b',fontsize=16,fontweight='bold')
plt.annotate('8 Cylinders',(109,18),color='r',fontsize=16,fontweight='bold')
plt.show()
```



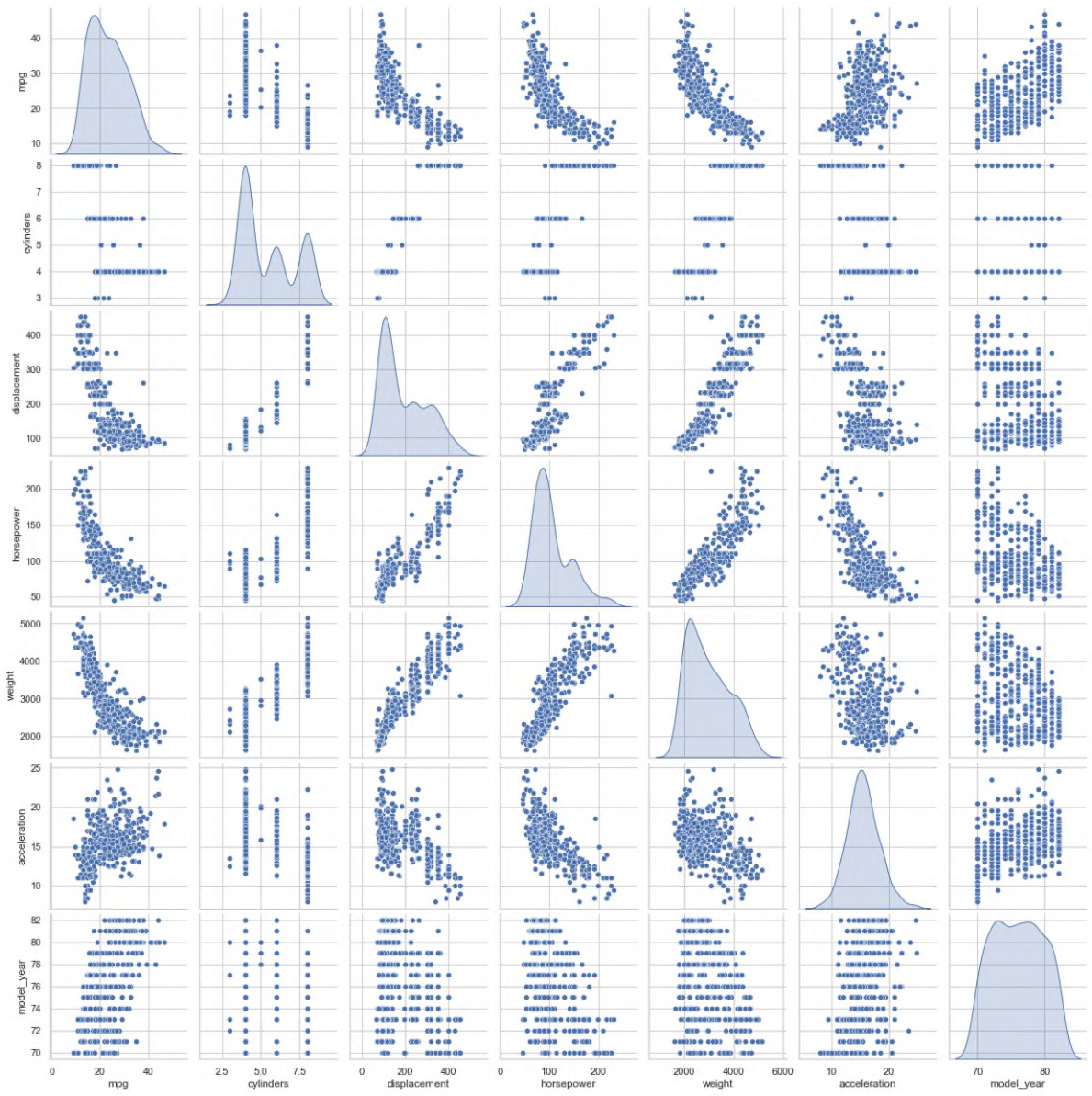
In [74]:

```
sns.pairplot(cars)
plt.show()
```



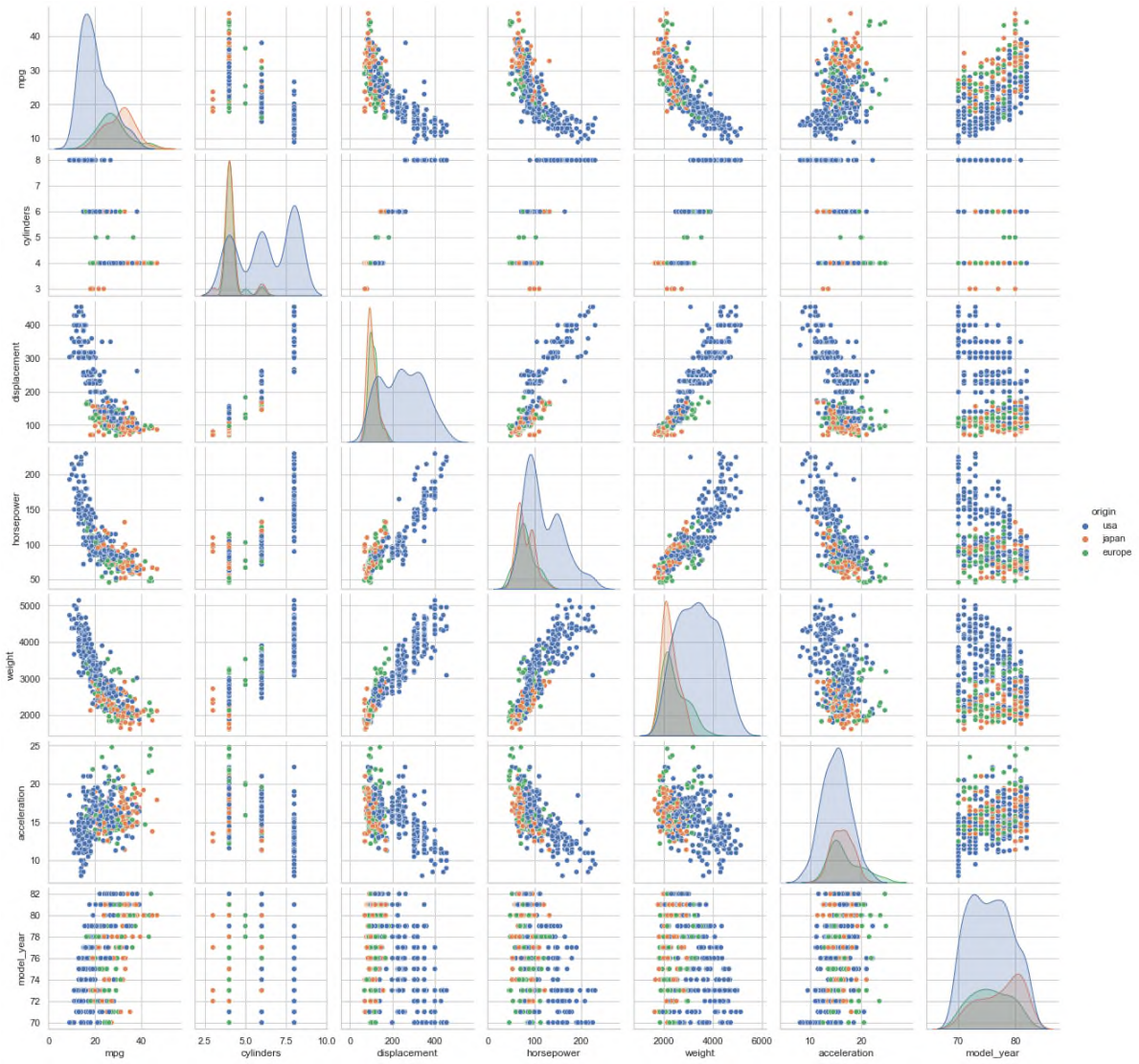
In [75]:

```
sns.pairplot(cars,diag_kind='kde')
plt.show()
```



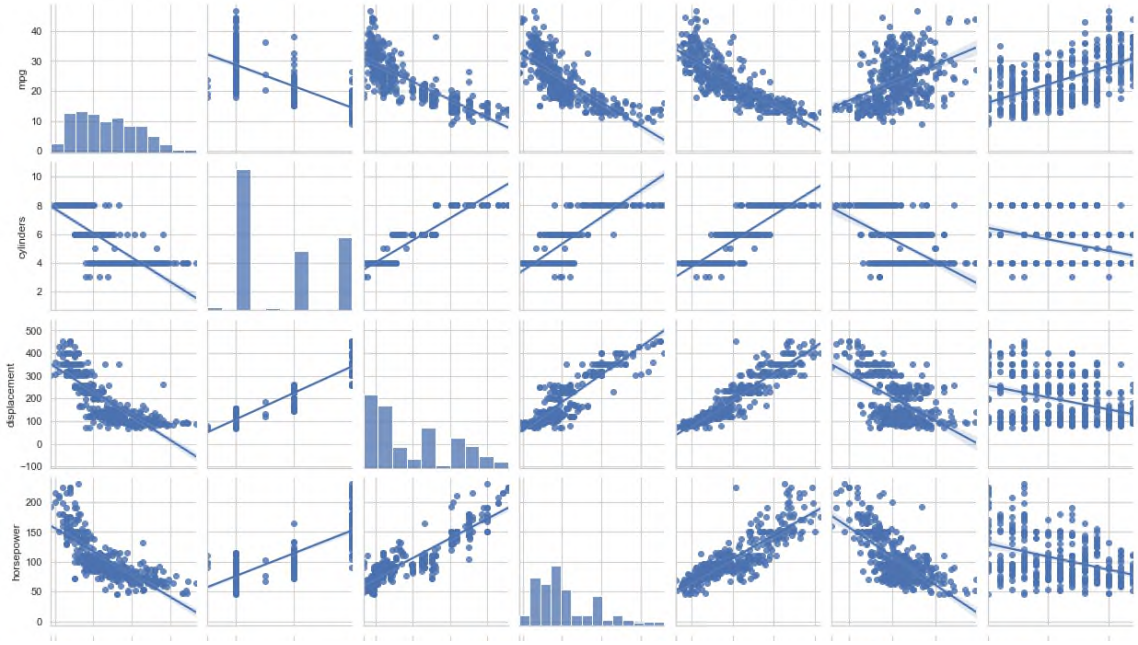
In [76]:

```
sns.pairplot(cars,diag_kind='kde',hue='origin')
plt.show()
```



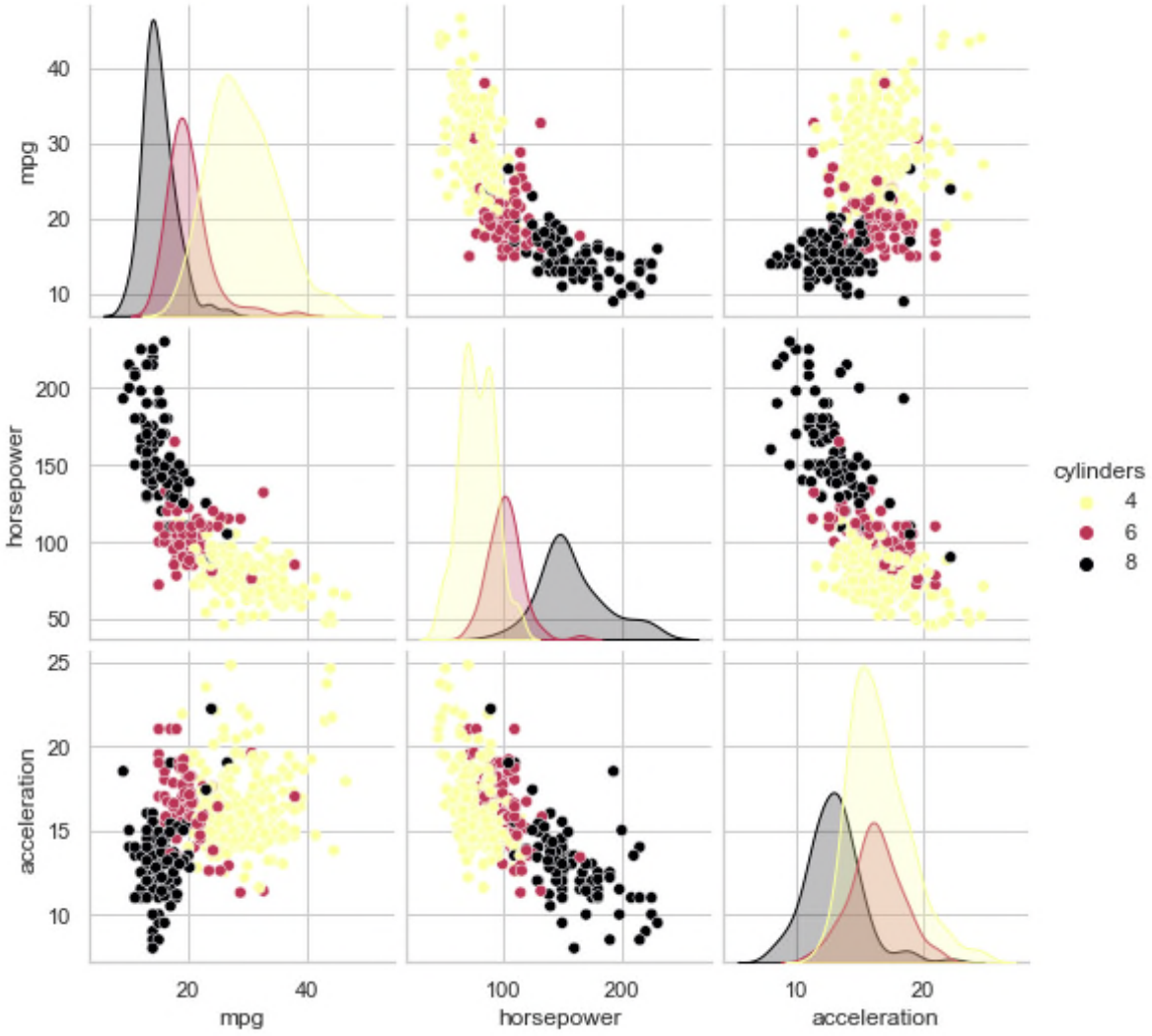
In [77]:

```
sns.pairplot(cars,diag_kind='hist',kind='reg')
plt.show()
```



In [84]:

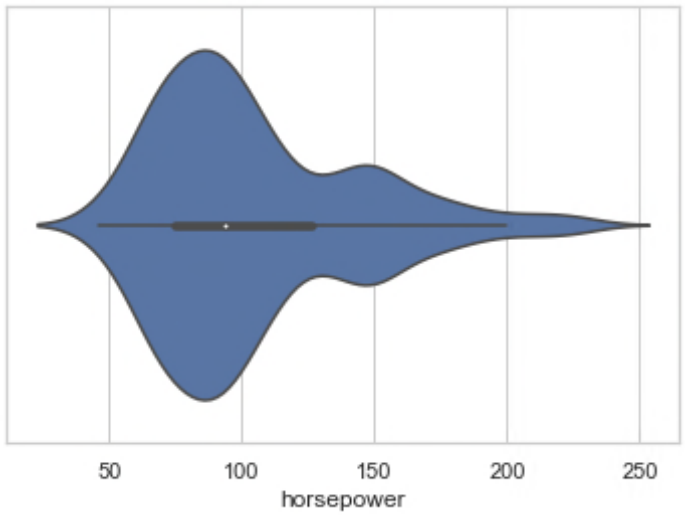
```
sns.pairplot(cars[cars.cylinders.isin([4,6,8])],
             hue='cylinders',
             vars=['mpg','horsepower','acceleration'],
             palette='inferno_r'
             )
plt.show()
```



Violin plot

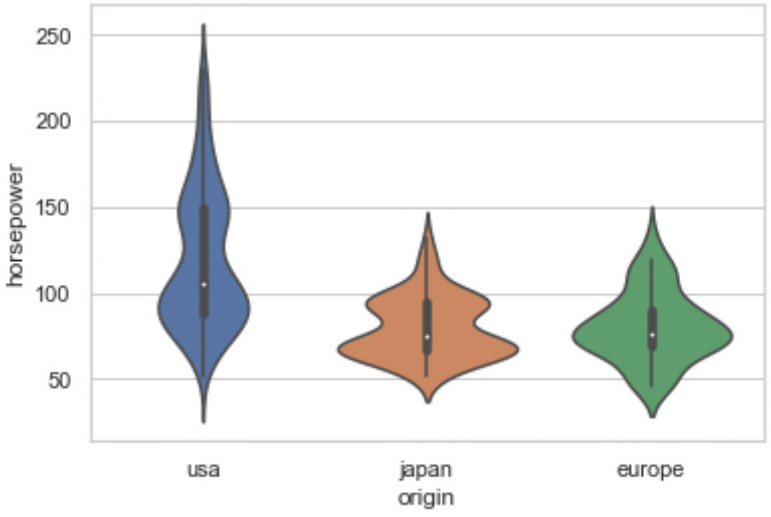
In [86]:

```
sns.violinplot(x=cars.horsepower)
plt.show()
```



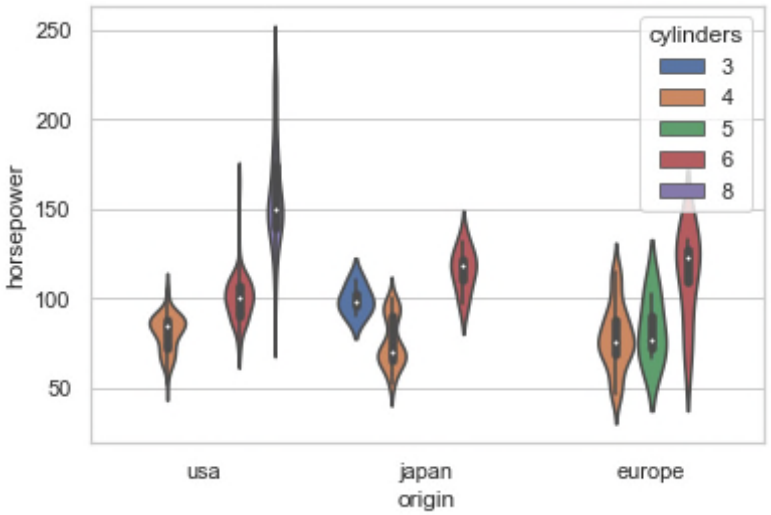
In [87]:

```
sns.violinplot(x='origin',y='horsepower',data=cars)
plt.show()
```



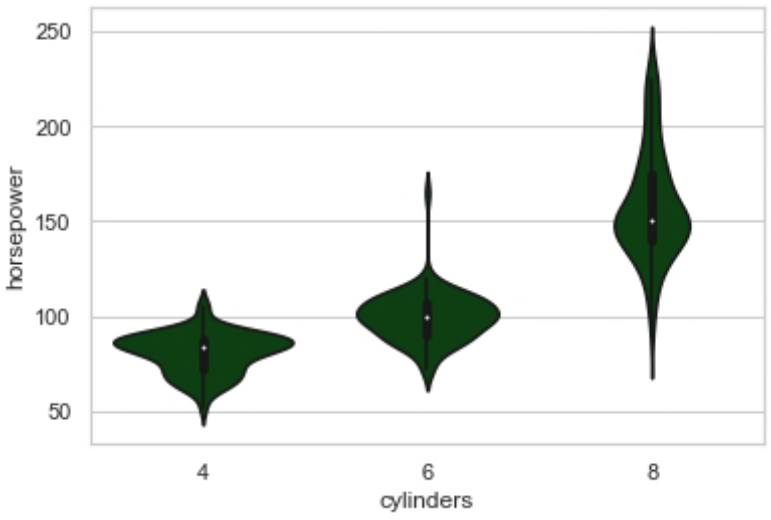
In [89]:

```
sns.violinplot(x='origin',y='horsepower',hue='cylinders',data=cars)
plt.show()
```



In [92]:

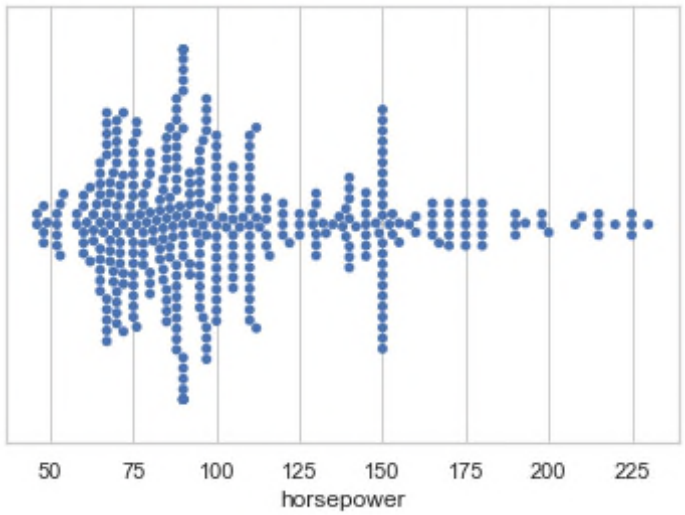
```
usa=cars[cars.origin=='usa']
sns.violinplot(x=usa.cylinders,y=usa.horsepower,color='xkcd:forest green')
plt.show()
```



Swarm plot

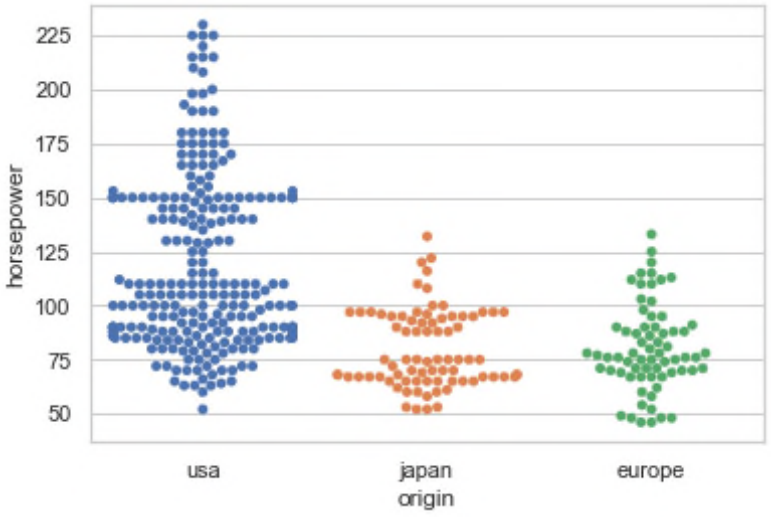
In [93]:

```
sns.swarmplot(cars['horsepower'])
plt.show()
```



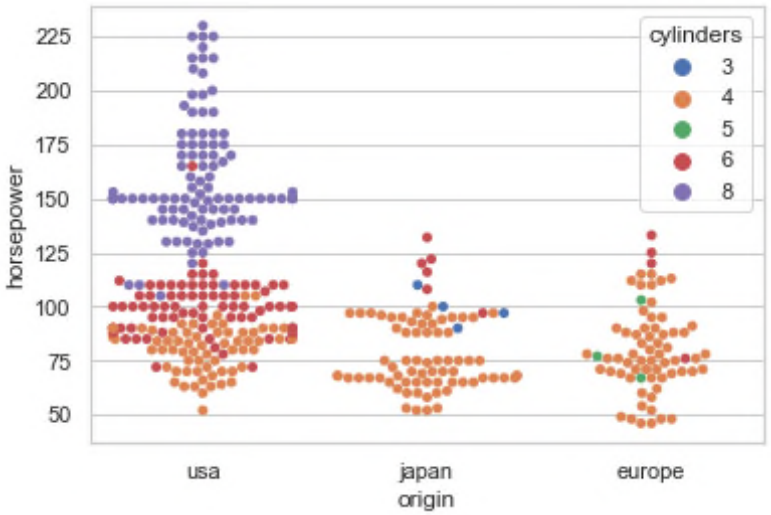
In [94]:

```
sns.swarmplot(x='origin',y='horsepower',data=cars)
plt.show()
```



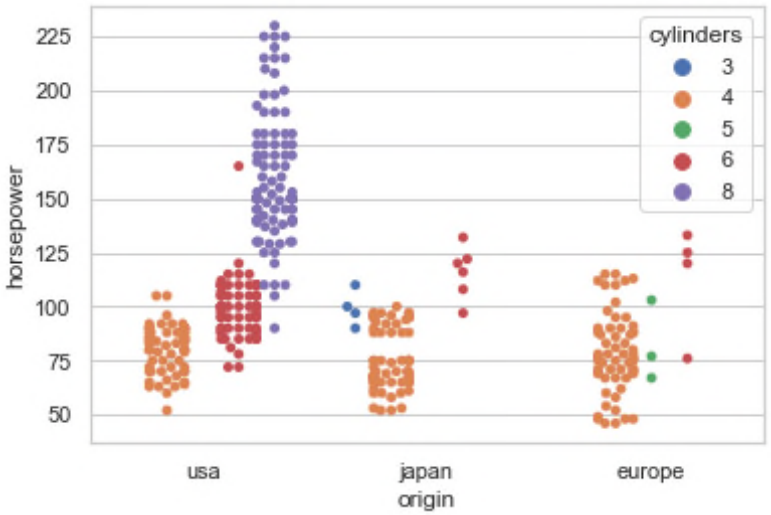
In [96]:

```
sns.swarmplot(x='origin',y='horsepower',hue='cylinders',data=cars)
plt.show()
```



In [97]:

```
sns.swarmplot(x='origin',y='horsepower',hue='cylinders',dodge=True,data=cars)
plt.show()
```

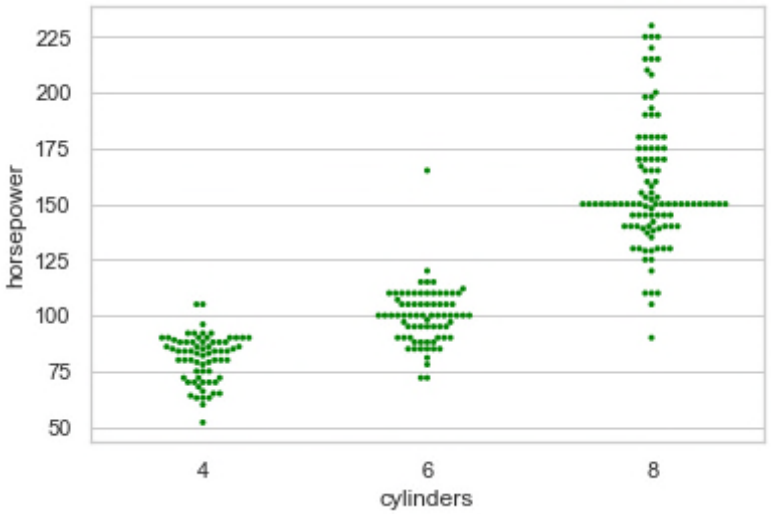


In [98]:

```
usa=cars[cars.origin=='usa']
sns.swarmplot(x=usa.cylinders,y=usa.horsepower,color='green',size=3)
```

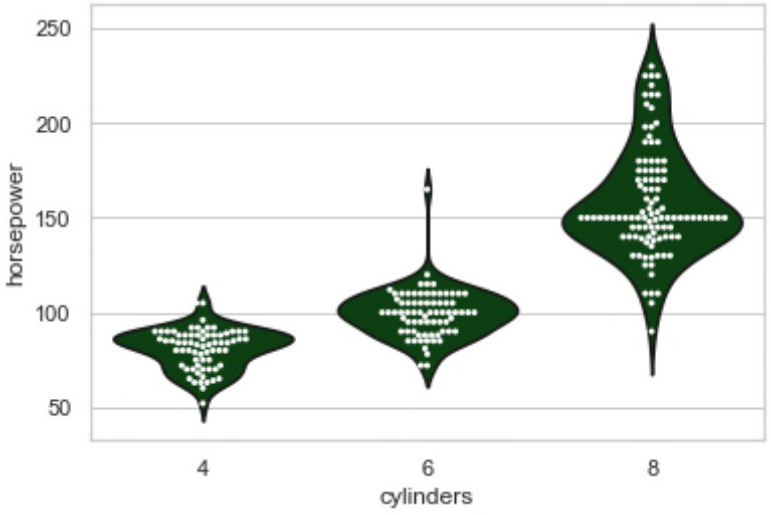
Out[98]:

```
<AxesSubplot:xlabel='cylinders', ylabel='horsepower'>
```



In [99]:

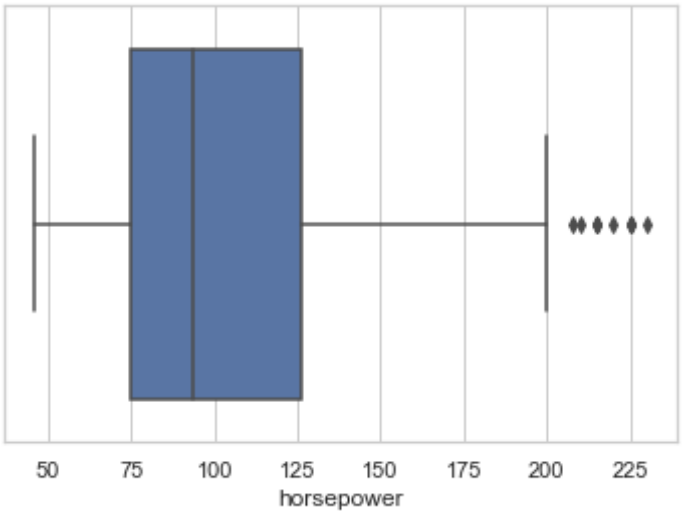
```
usa=cars[cars.origin=='usa']

sns.violinplot(x=usa.cylinders,y=usa.horsepower,scale='width',inner=None,color='xkcd:forest

sns.swarmplot(x=usa.cylinders,y=usa.horsepower,color='white',size=3)
plt.show()
```



Box plot

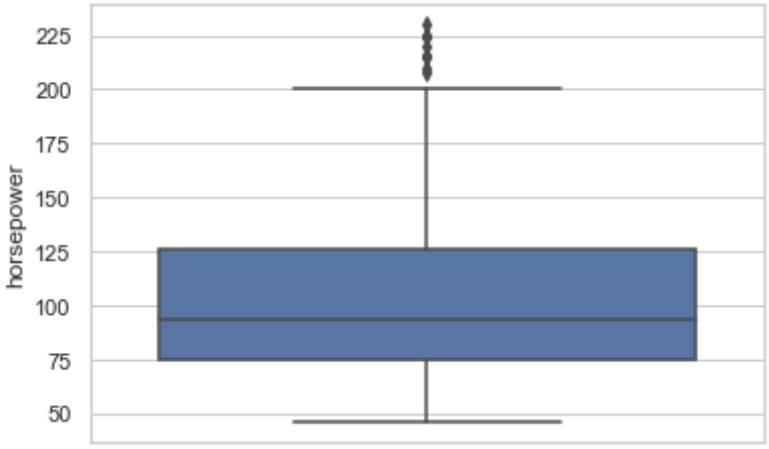
In [100]:

```
sns.boxplot(cars['horsepower'])
plt.show()
```



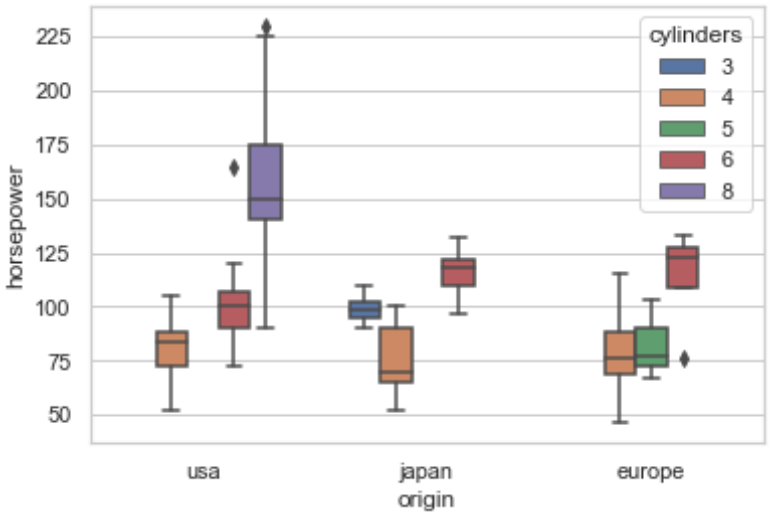
In [101]:

```
sns.boxplot(y=cars['horsepower'])
plt.show()
```



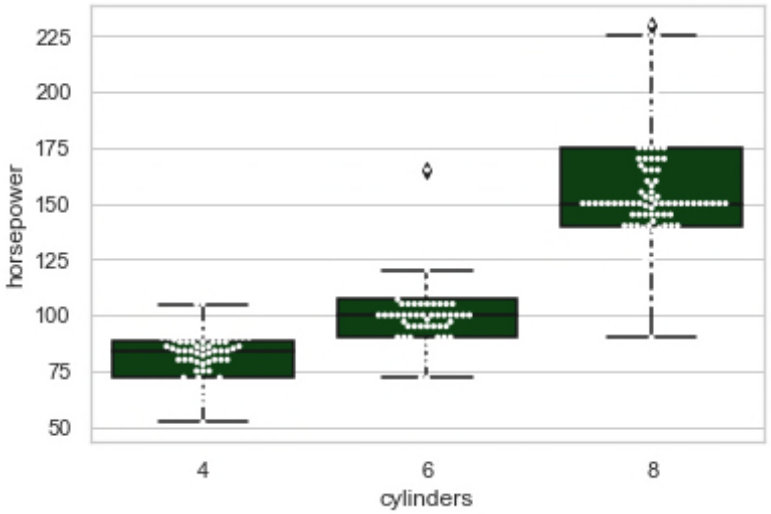
In [102]:

```
sns.boxplot(x='origin',y='horsepower',hue='cylinders',width=0.7,data=cars)
plt.show()
```



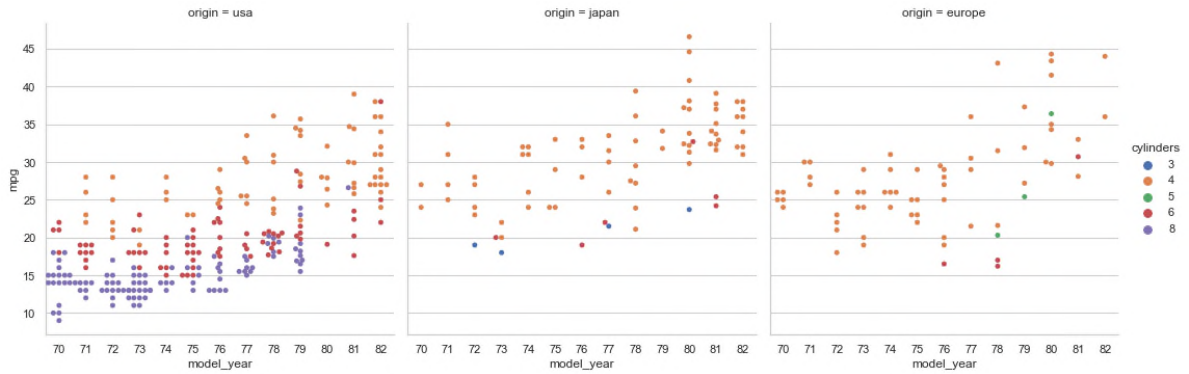
In [103]:

```
usa=cars[cars.origin=='usa']

sns.boxplot(x=usa.cylinders,y=usa.horsepower,color='xkcd:forest green')

sns.swarmplot(x=usa.cylinders,y=usa.horsepower,color='white',size=3)
plt.show()
```



In [104]:

```
sns.catplot(x='model_year',y='mpg',col='origin',hue='cylinders',kind='swarm',data=cars)
plt.show()
```



Heatmap

In [105]:

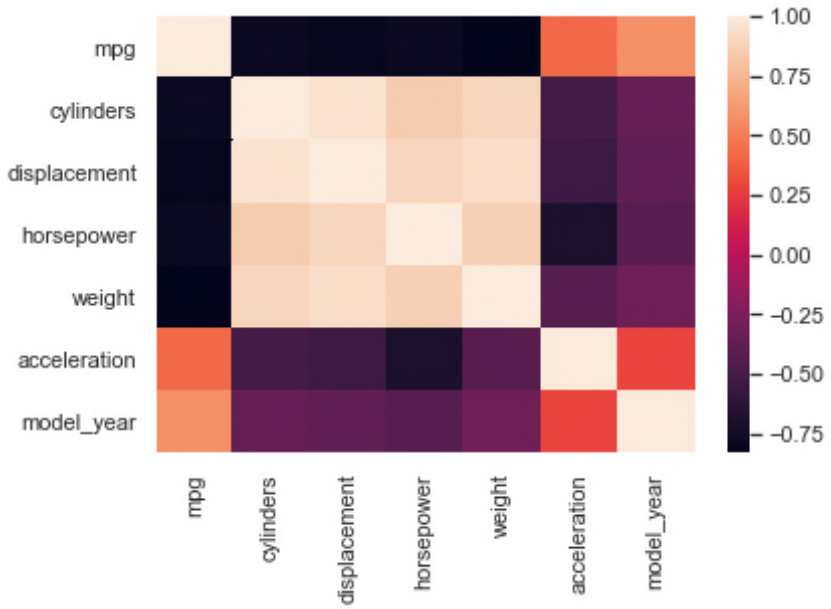
```
cars.corr()
```

Out[105]:

	mpg	cylinders	displacement	horsepower	weight	acceleration	model_y
mpg	1.000000	-0.777618	-0.805127	-0.778427	-0.832244	0.423329	0.580
cylinders	-0.777618	1.000000	0.950823	0.842983	0.897527	-0.504683	-0.345
displacement	-0.805127	0.950823	1.000000	0.897257	0.932994	-0.543800	-0.369
horsepower	-0.778427	0.842983	0.897257	1.000000	0.864538	-0.689196	-0.416
weight	-0.832244	0.897527	0.932994	0.864538	1.000000	-0.416839	-0.309
acceleration	0.423329	-0.504683	-0.543800	-0.689196	-0.416839	1.000000	0.290
model_year	0.580541	-0.345647	-0.369855	-0.416361	-0.309120	0.290316	1.000

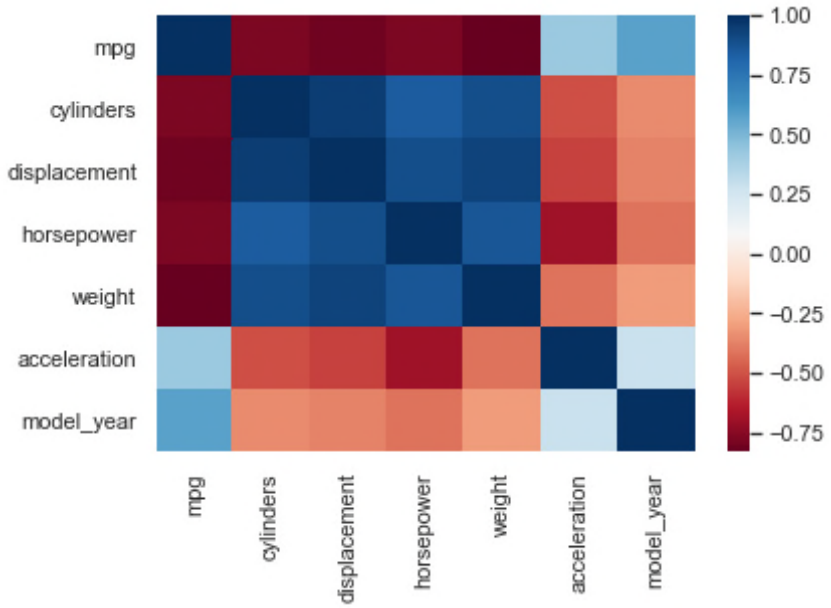
In [106]:

```
sns.heatmap(cars.corr())
plt.show()
```



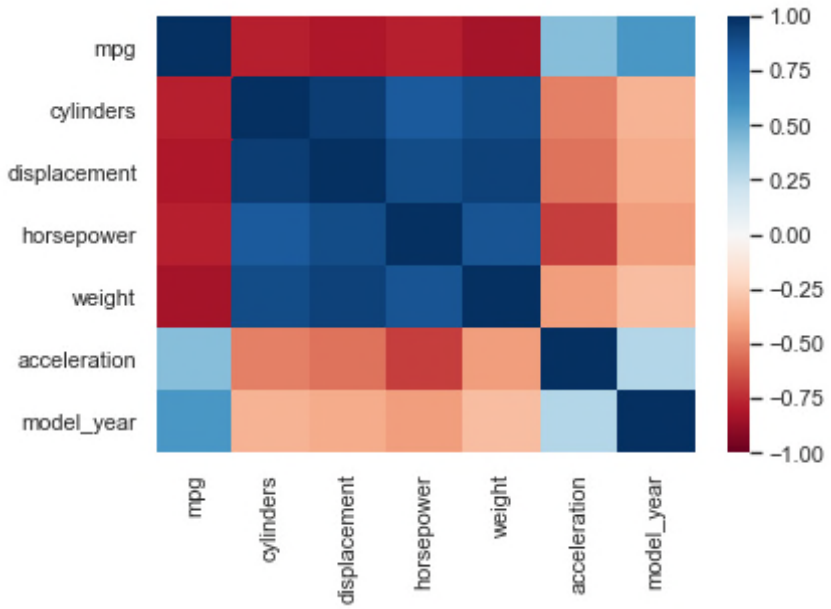
In [108]:

```
sns.heatmap(cars.corr(),cmap='RdBu')
plt.show()
```



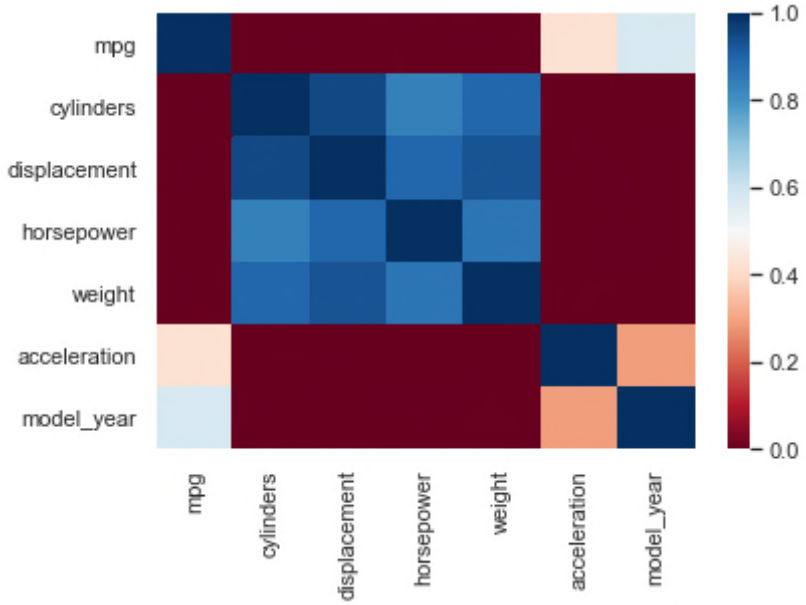
In [109]:

```
sns.heatmap(cars.corr(),cmap='RdBu',vmin=-1,vmax=1)
plt.show()
```



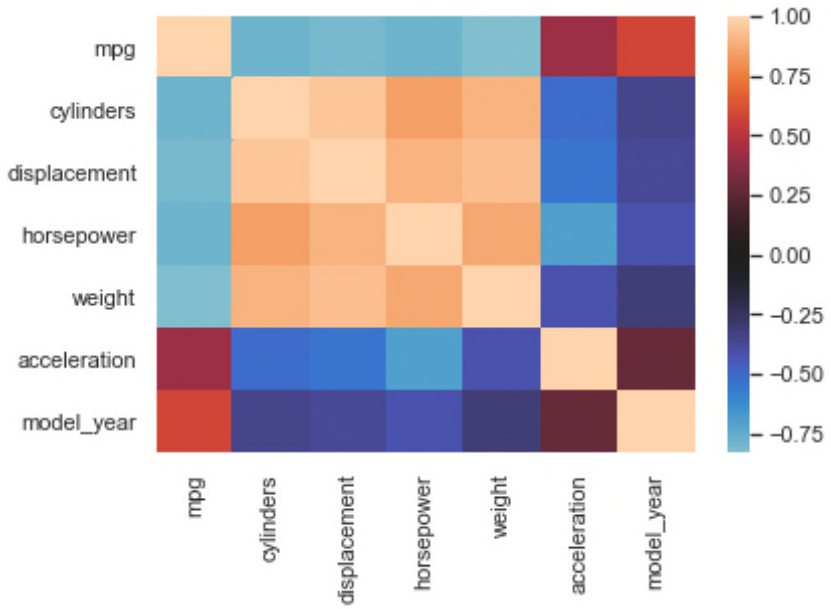
In [110]:

```
sns.heatmap(cars.corr(),cmap='RdBu',vmin=0,vmax=1)
plt.show()
```



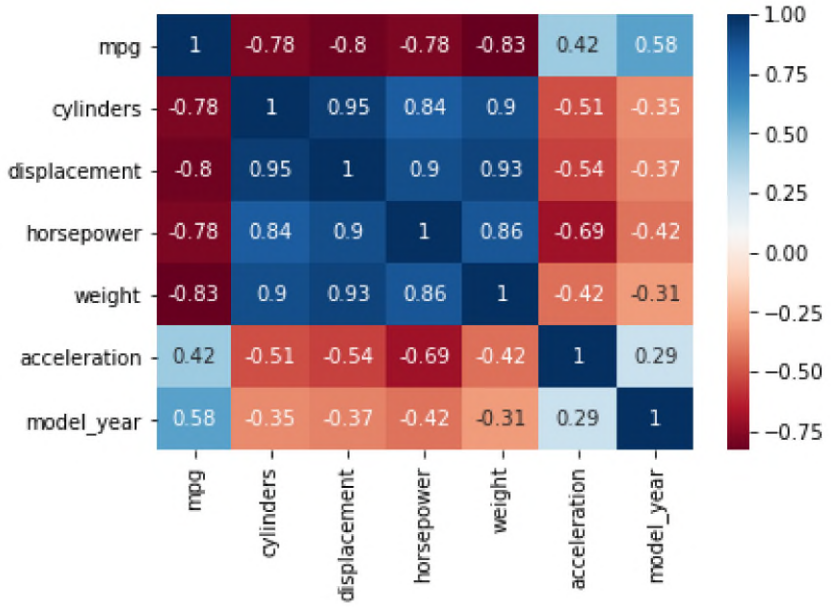
In [111]:

```
sns.heatmap(cars.corr(),center=0)
plt.show()
```



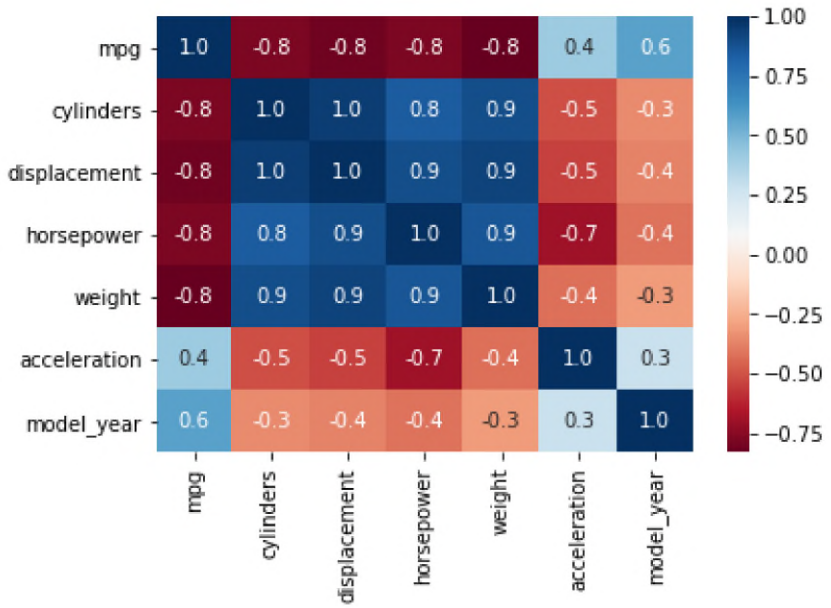
In [7]:

```
sns.heatmap(cars.corr(),cmap='RdBu',annot=True)
plt.show()
```



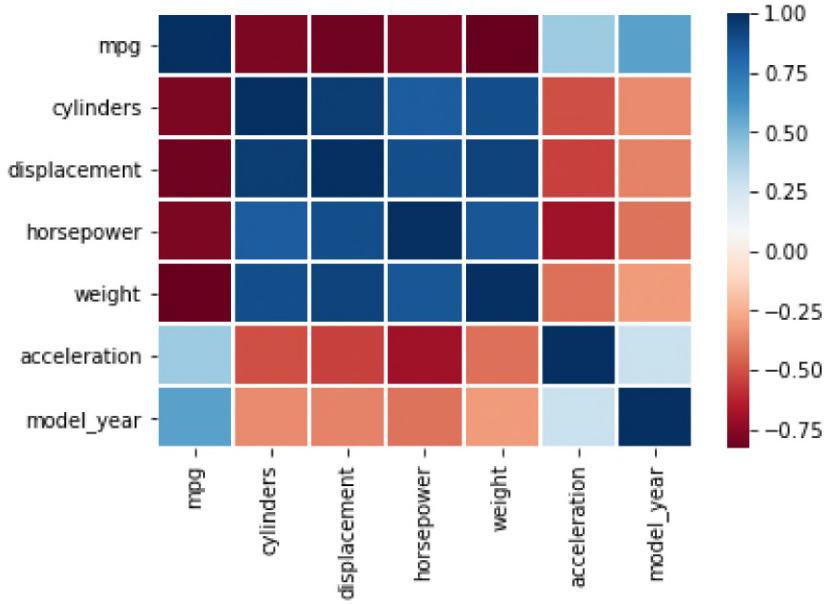
In [9]:

```
sns.heatmap(cars.corr(),cmap='RdBu',annot=True,fmt='.1f')
plt.show()
```



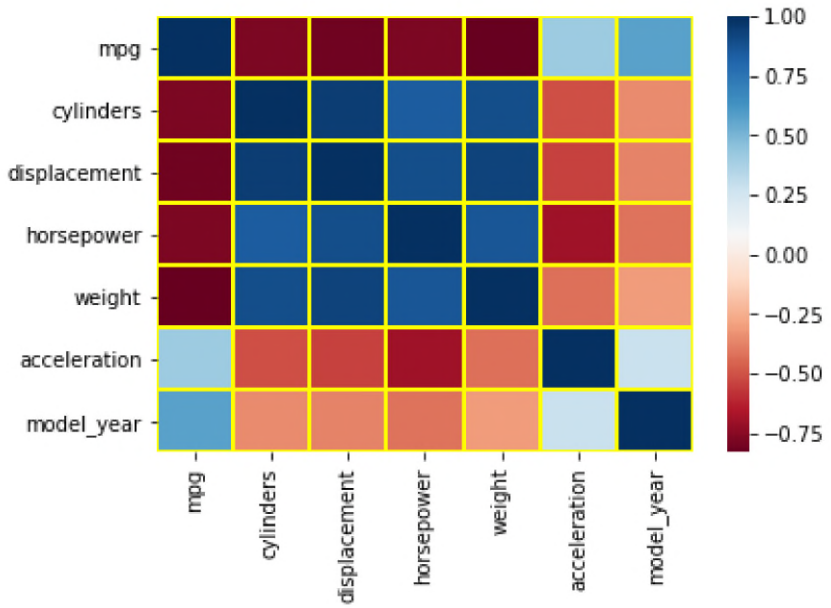
In [13]:

```
sns.heatmap(cars.corr(),cmap='RdBu',linewidth=1)
plt.show()
```



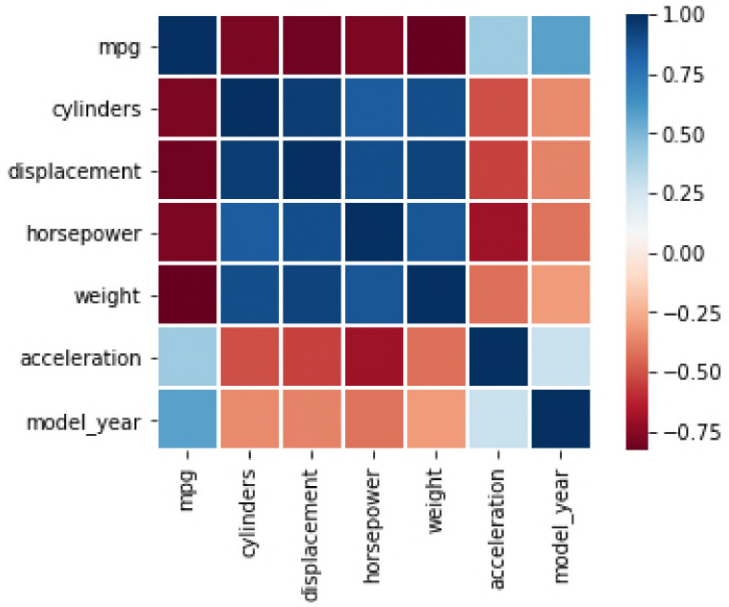
In [12]:

```
sns.heatmap(cars.corr(),cmap='RdBu',linewidth=1,linecolor='yellow')
plt.show()
```



In [14]:

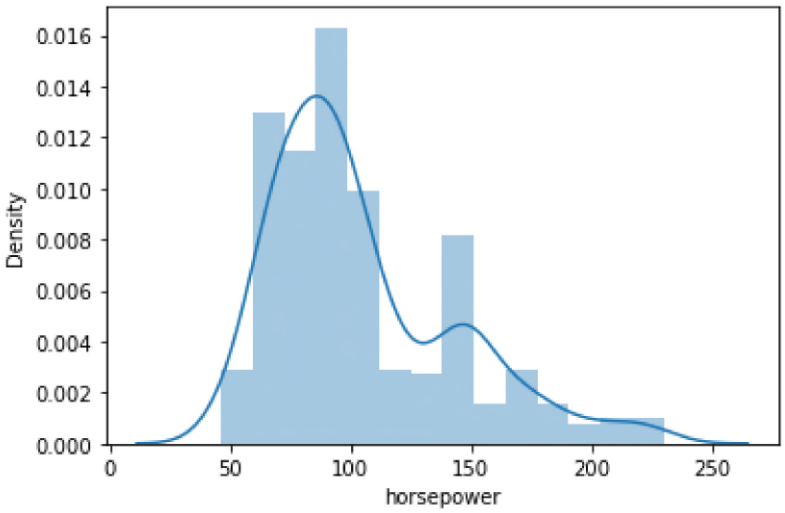
```
sns.heatmap(cars.corr(),cmap='RdBu',linewidth=1,square=True)
plt.show()
```



Distplot

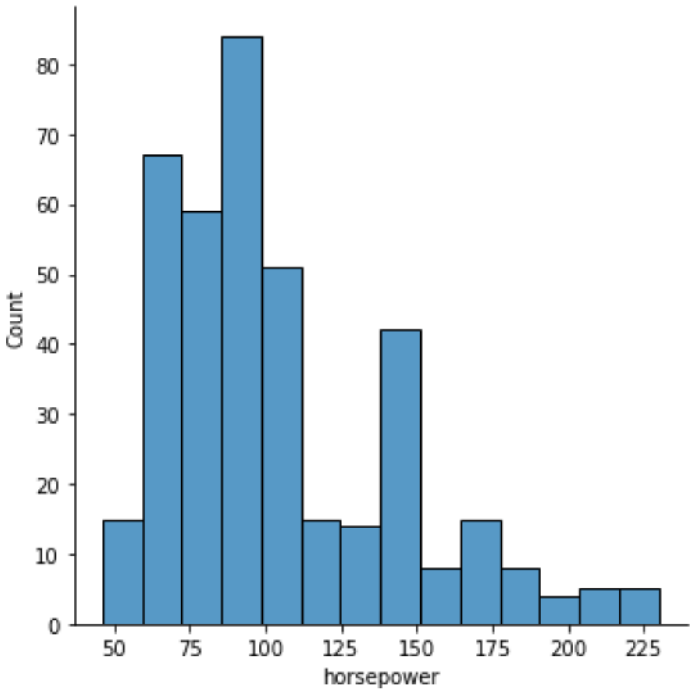
In [15]:

```
sns.distplot(cars.horsepower)
plt.show()
```



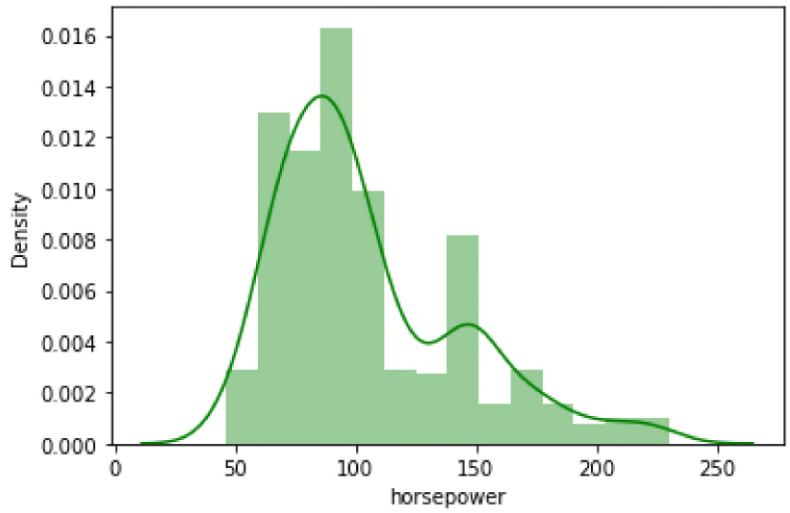
In [18]:

```
sns.displot(cars.horsepower)
plt.show()
```



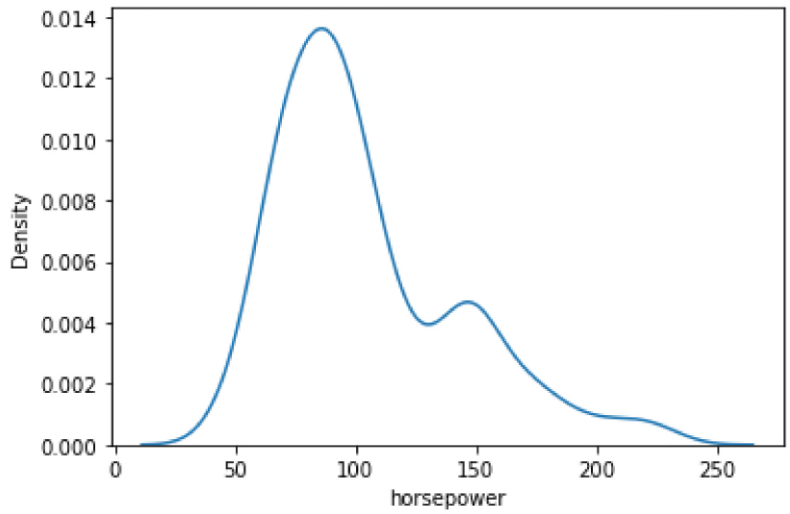
In [20]:

```
sns.distplot(cars.horsepower,color='green')
plt.show()
```



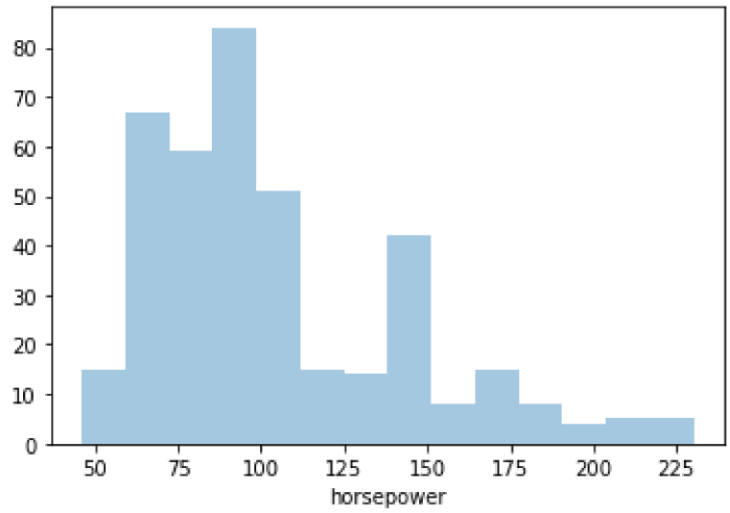
In [22]:

```
sns.distplot(cars.horsepower,hist=False)
plt.show()
```



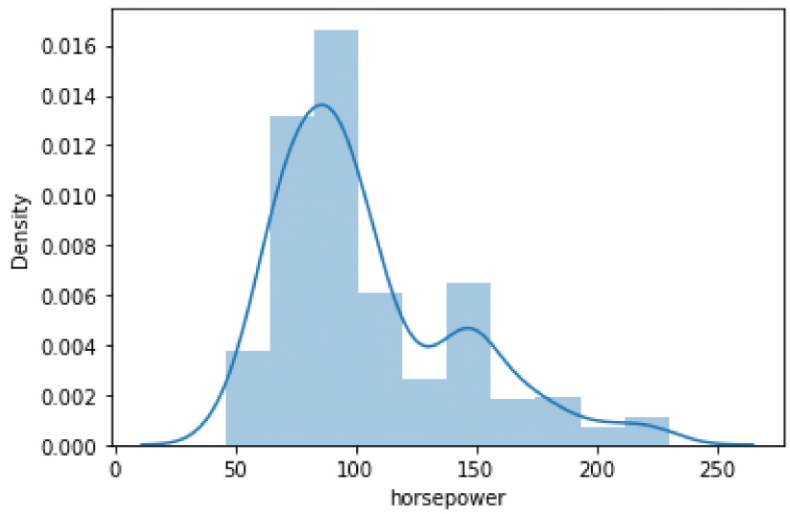
In [23]:

```
sns.distplot(cars.horsepower,kde=False)
plt.show()
```



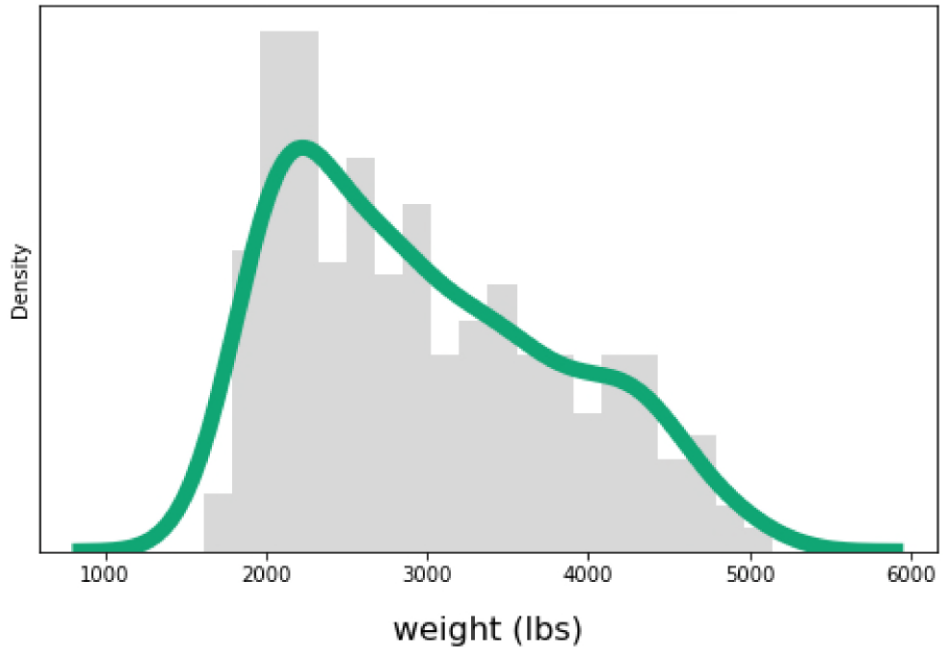
In [24]:

```
sns.distplot(cars.horsepower,bins=10)
plt.show()
```



In [29]:

```
plt.figure(figsize=(8,5))
sns.distplot(cars.weight,
             bins=20,
             kde_kws={'lw':8,'color':'xkcd:bluish green'},
             hist_kws={'alpha':0.3,'color':'gray'}
            )
plt.xlabel('weight (lbs)',fontsize=16,labelpad=15)
plt.yticks([])
plt.show()
```



In [ ]:

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