

# 本文紀錄Python繪圖的方法-使用 Seaborn

In [295...

```
#匯入必要模組
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
```

## lineplot

```
seaborn.lineplot(*, x=None, y=None, hue=None, size=None, style=None, data=None, palette=None, hue_order=None,
hue_norm=None, sizes=None, size_order=None, size_norm=None, dashes=True, markers=None, style_order=None,
units=None, estimator='mean', ci=95, n_boot=1000, seed=None, sort=True, err_style='band', err_kws=None,
legend='auto', ax=None, **kwargs)
```

說明可見[連結](#)

In [296...

```
#匯入data
fmri = sns.load_dataset("fmri")
```

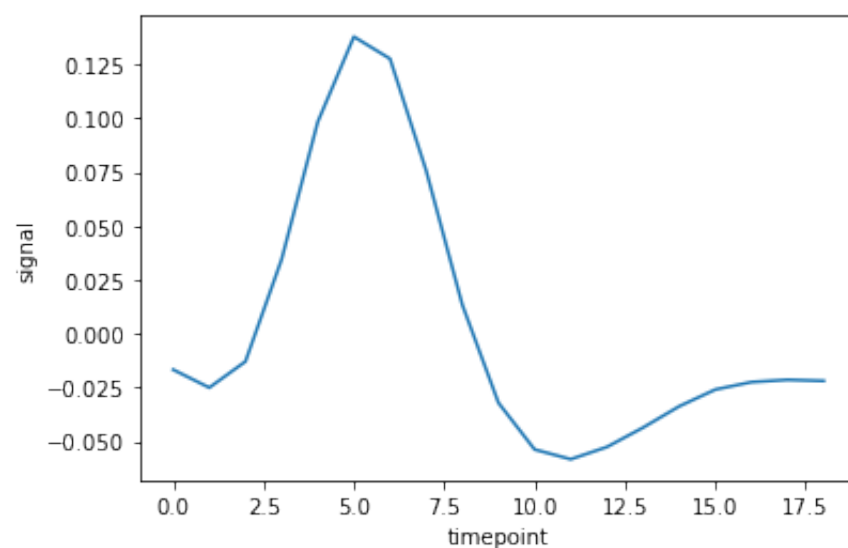
In [297...

```
#觀察fmri的資料型態是pandas
print(type(fmri))
#觀察欄位
print(fmri.head())
```

```
<class 'pandas.core.frame.DataFrame'>
   subject  timepoint  event  region  signal
0      s13          18   stim  parietal -0.017552
1       s5          14   stim  parietal -0.080883
2      s12          18   stim  parietal -0.081033
3      s11          18   stim  parietal -0.046134
4      s10          18   stim  parietal -0.037970
```

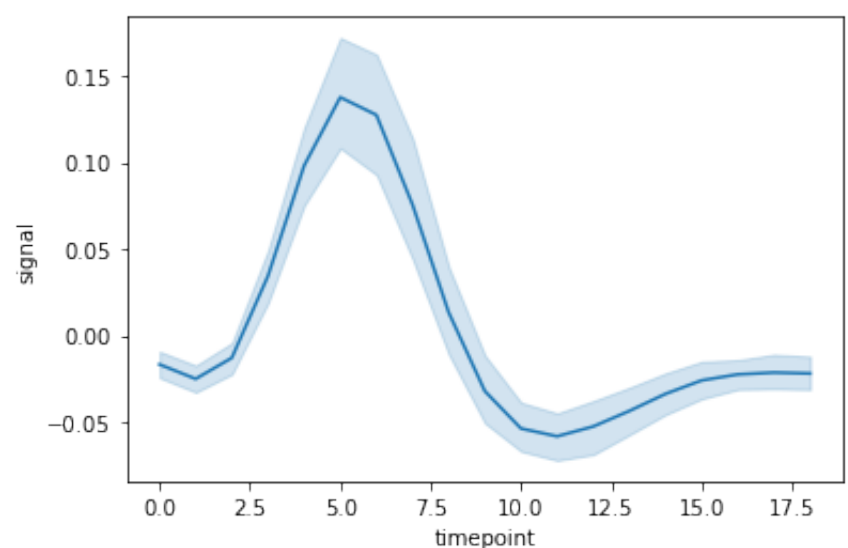
In [298...

```
ax = sns.lineplot(x="timepoint", y="signal", data=fmri, err_style=None)
```



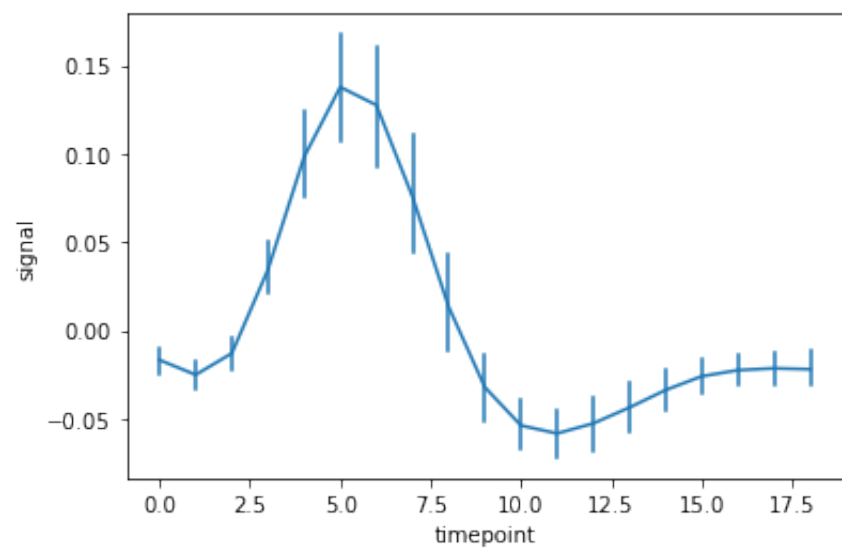
In [299...

```
ax = sns.lineplot(x="timepoint", y="signal", data=fmri, err_style='band')
```



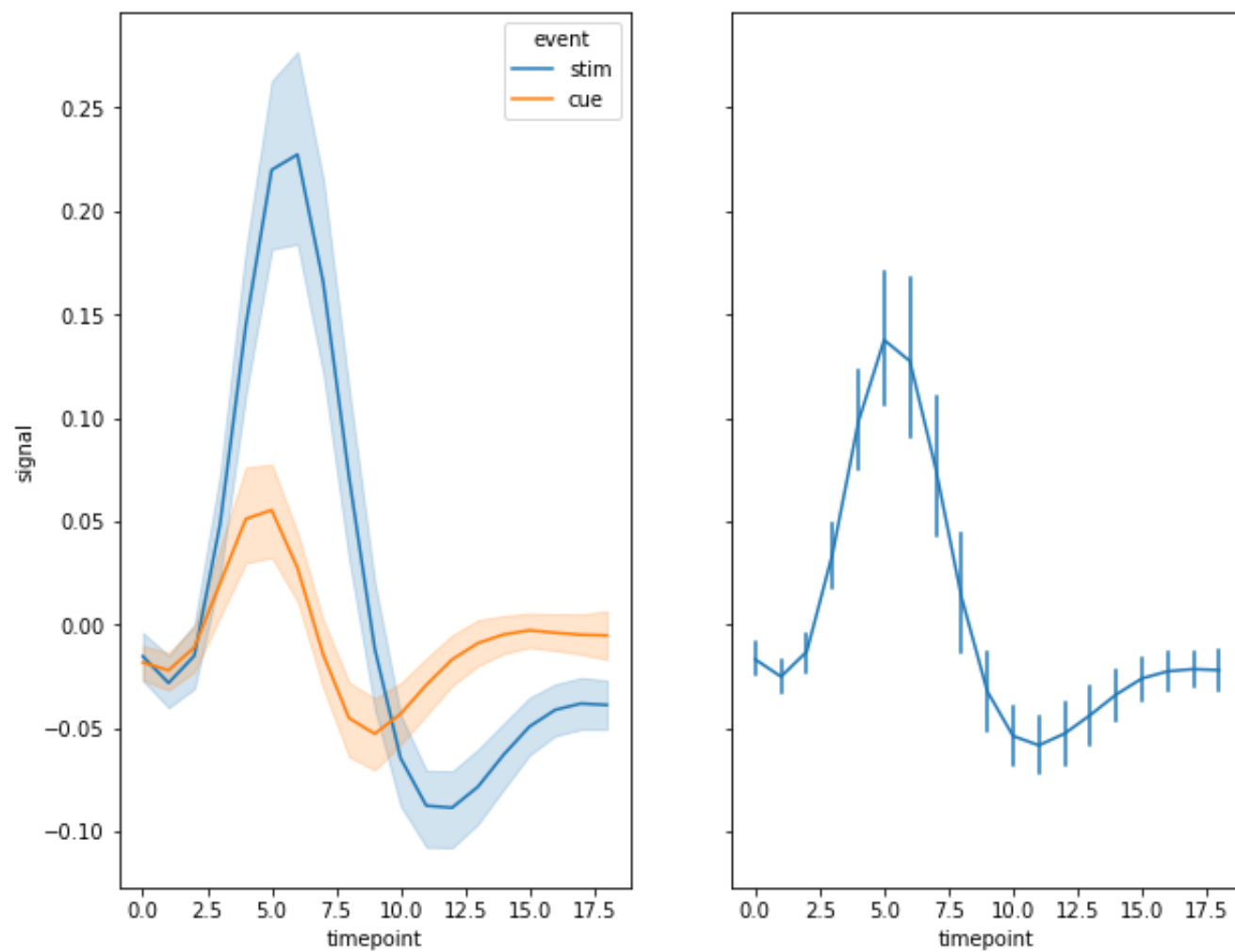
In [300...

```
ax = sns.lineplot(x="timepoint", y="signal", data=fmri, err_style='bars')
```



```
In [301... fig,axs=plt.subplots(1,2,figsize=(10,8),sharey=True)
sns.lineplot(x="timepoint", y="signal", hue="event",data=fmri,ax=axs[0])
sns.lineplot(x="timepoint", y="signal", data=fmri,err_style='bars',ax=axs[1])
#設定hue="event"會畫出，不同的event對應的signal數值vs.timepoint
```

```
Out[301... <AxesSubplot:xlabel='timepoint', ylabel='signal'>
```



```
In [302... flights = sns.load_dataset("flights")
flights.head()
```

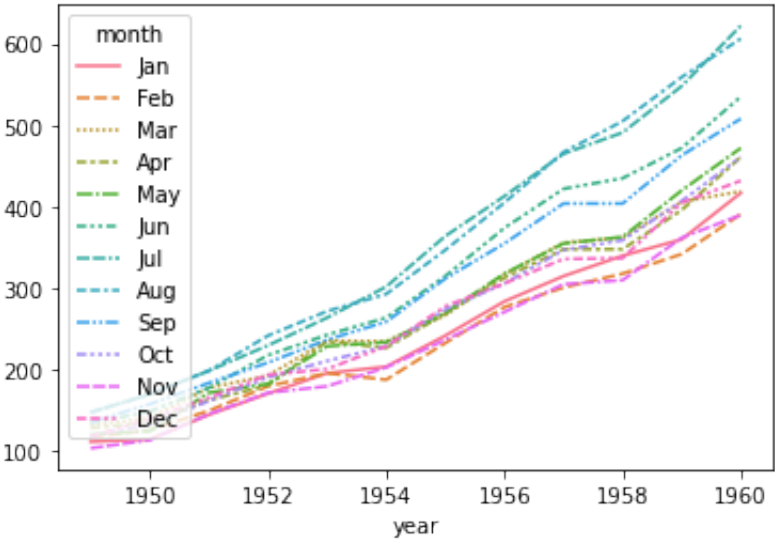
```
Out[302...   year  month  passengers
0  1949   Jan         112
1  1949   Feb         118
2  1949   Mar         132
3  1949   Apr         129
4  1949   May         121
```

```
In [303... flights_wide = flights.pivot("year", "month", "passengers")
flights_wide.head()
```

```
Out[303...   month  Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec
year
1949   112   118   132   129   121   135   148   148   136   119   104   118
1950   115   126   141   135   125   149   170   170   158   133   114   140
1951   145   150   178   163   172   178   199   199   184   162   146   166
1952   171   180   193   181   183   218   230   242   209   191   172   194
1953   196   196   236   235   229   243   264   272   237   211   180   201
```

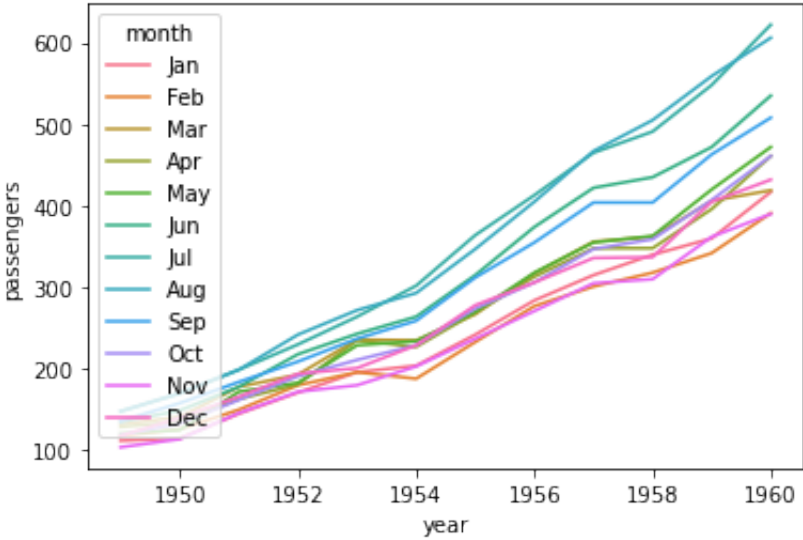
```
In [304... #畫出不同月份乘客人數和年份的關係
sns.lineplot(data=flights_wide)
```

```
Out[304... <AxesSubplot:xlabel='year'>
```



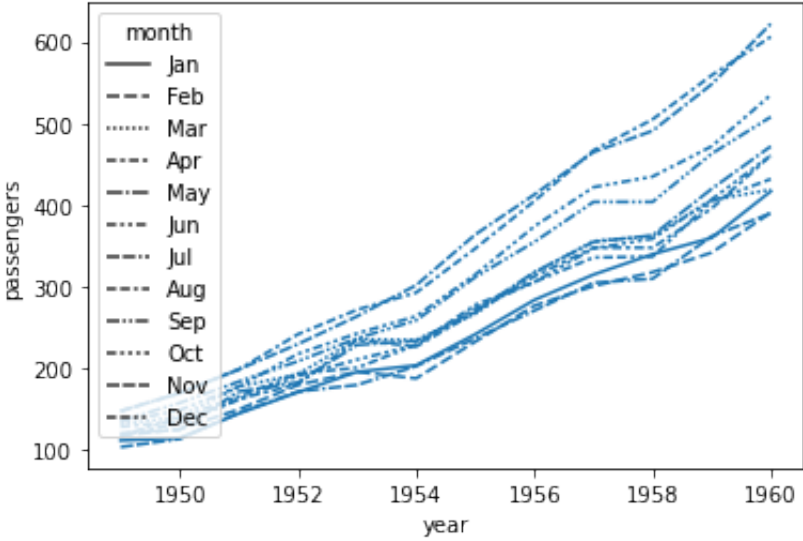
```
In [305... #和上例是等效的，但是每組以不同“顏色”線分開
sns.lineplot(data=flights, x="year", y="passengers", hue="month")
```

```
Out[305... <AxesSubplot:xlabel='year', ylabel='passengers'>
```



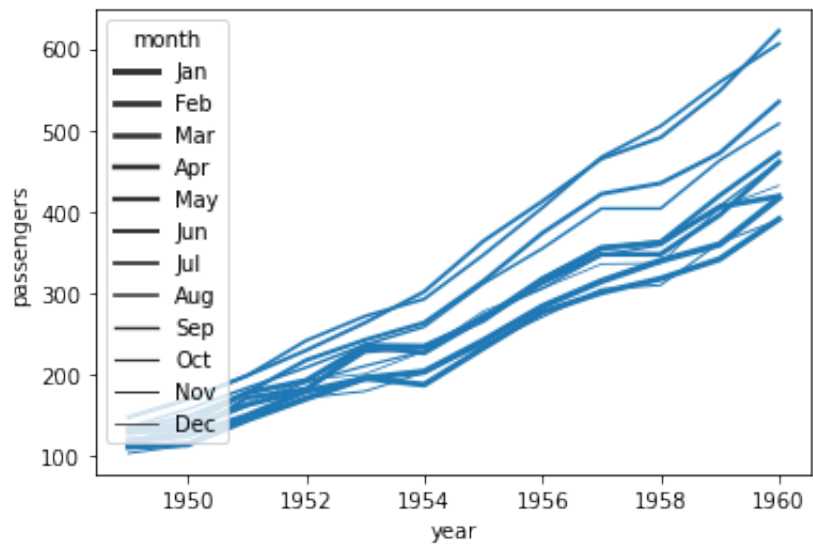
```
In [306... #和上例是等效的，但是每組以不同“破折號”種類分開
sns.lineplot(data=flights, x="year", y="passengers", style="month")
```

```
Out[306... <AxesSubplot:xlabel='year', ylabel='passengers'>
```



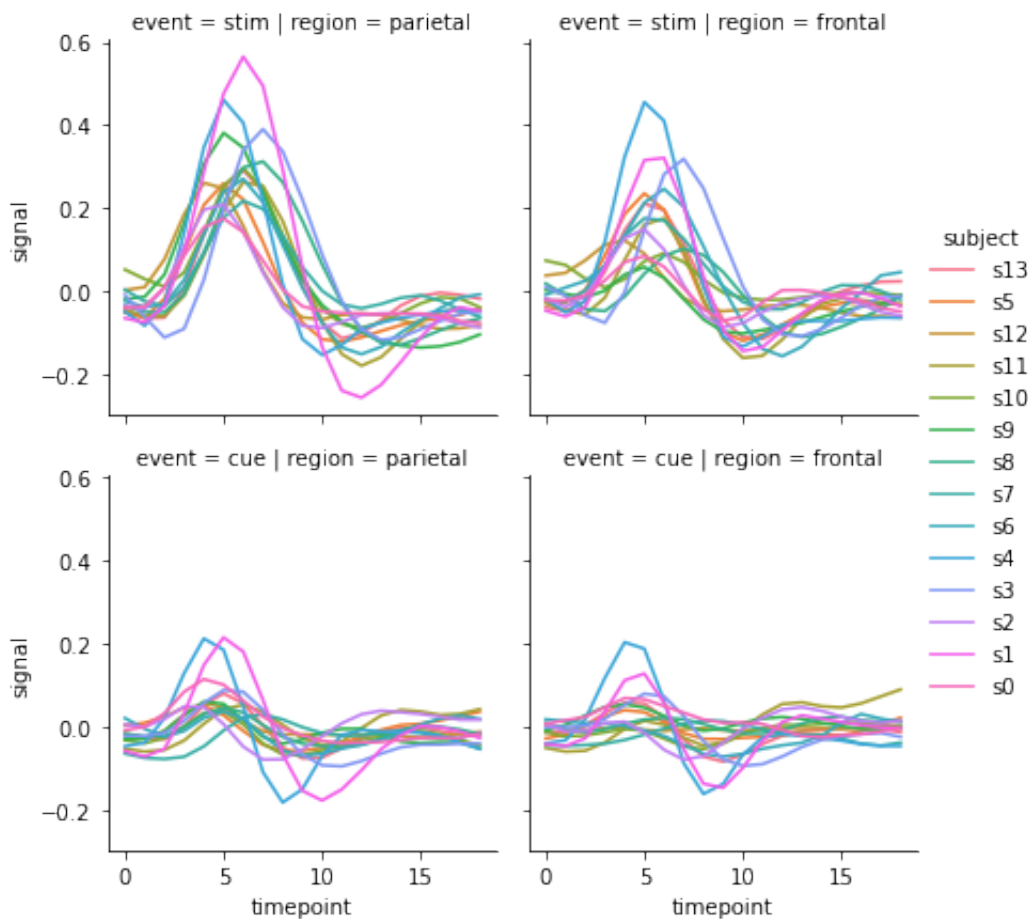
```
In [307... #和上例是等效的，但是每組以不同“粗細的線”分開
sns.lineplot(data=flights, x="year", y="passengers", size="month")
```

Out[307... <AxesSubplot:xlabel='year', ylabel='passengers'>



relplot

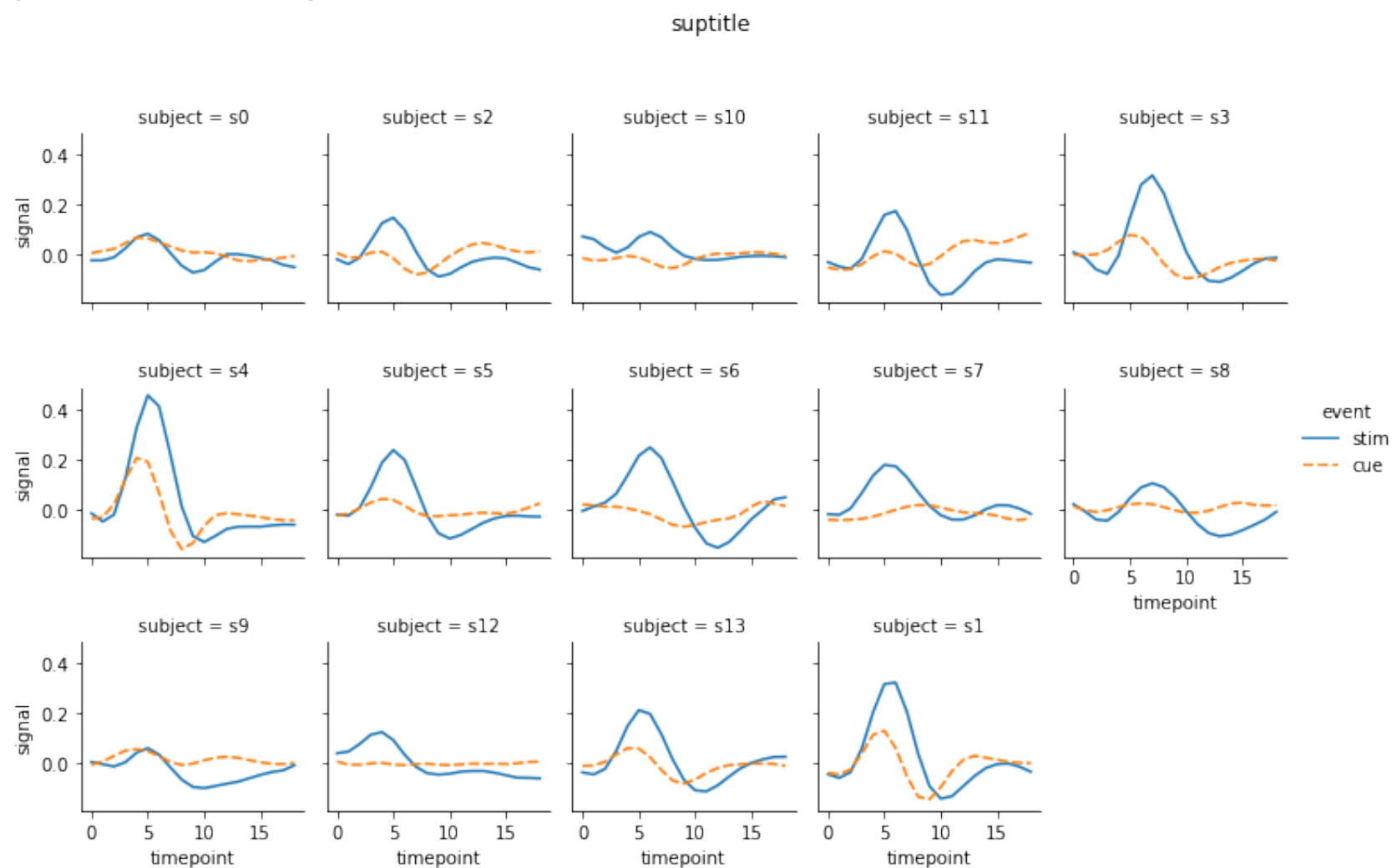
```
In [308... #畫出不同region和event組合下不同的subject的信号 vs. timepoint
sns.relplot(x="timepoint", y="signal", hue="subject", col="region",
            row="event", height=3, kind="line", estimator=None, data=fmri);
```



```
In [309... print(fmri.query("region == 'frontal'"))
#大量水平變量狀況下，若展開多個圖，可以用col_wrap來指定圖片數目達到多少時換行，此利用以5為例
g=sns.relplot(x="timepoint", y="signal", hue="event", style="event",
              col="subject", col_wrap=5,
              height=2, aspect=1, linewidth=1.5,
              kind="line", data=fmri.query("region == 'frontal'"));
#height:圖片高
#aspect:圖片寬
#linewidth:線寬
#kind:指定繪圖方式
g.fig.suptitle('suptitle',x=0.5,y=1.1)
plt.subplots_adjust(wspace=0.1,hspace=0.5)
```

	subject	timepoint	event	region	signal
67	s0	0	stim	frontal	-0.021452
170	s2	6	stim	frontal	0.101050
267	s10	4	stim	frontal	0.030044
268	s11	4	stim	frontal	0.075957
269	s3	0	stim	frontal	0.011056
...	...	...	...	...	...
1058	s1	8	cue	frontal	-0.136059
1059	s0	8	cue	frontal	0.018165
1060	s13	7	cue	frontal	-0.029130
1061	s12	7	cue	frontal	-0.004939
1062	s11	7	cue	frontal	-0.025367

[532 rows x 5 columns]



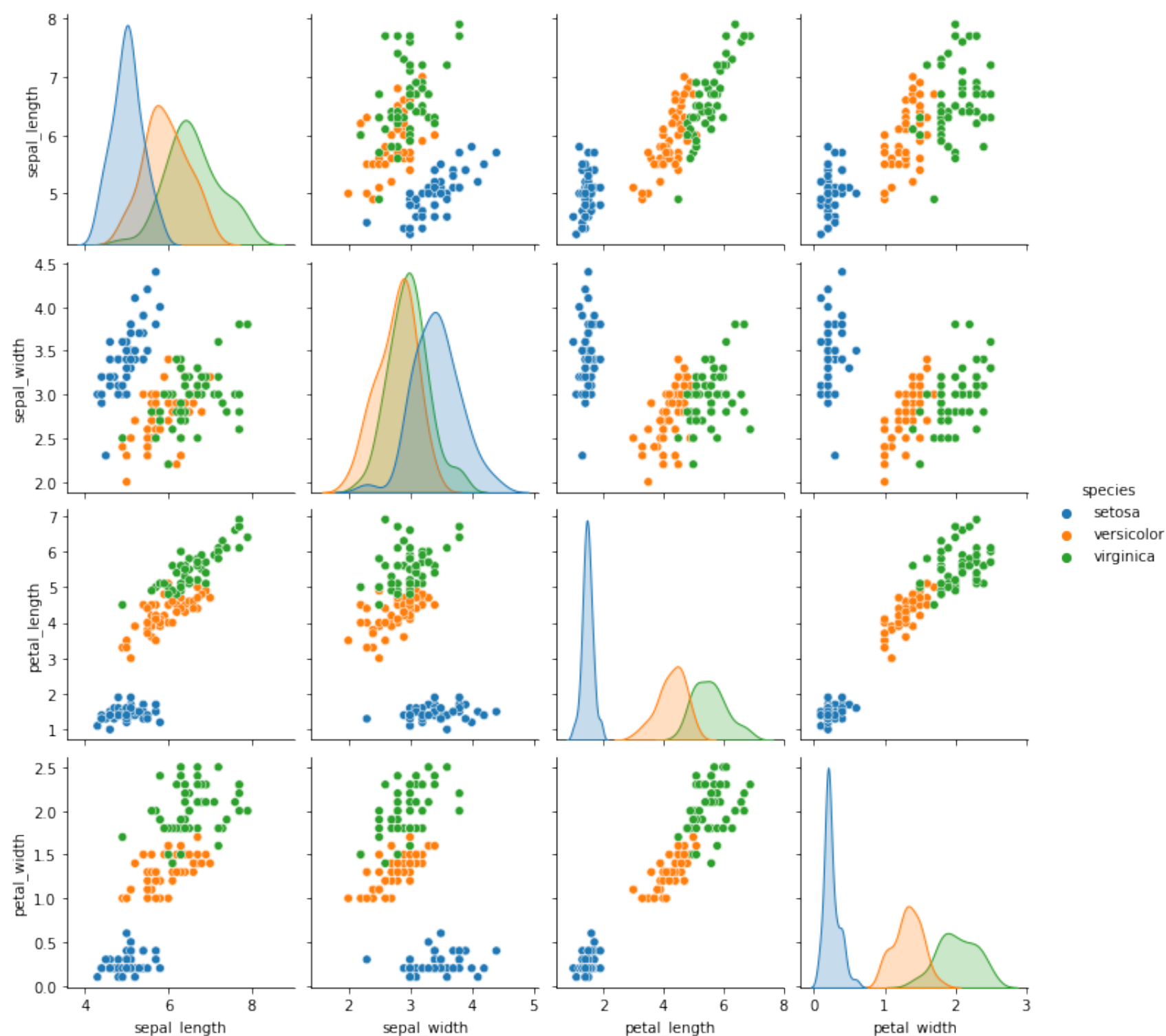
## pairplot

```
iris=sns.load_dataset('iris')
iris.head()
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa

```
sns.pairplot(data=iris,hue="species")
```

Out[311... <seaborn.axisgrid.PairGrid at 0x7fcbb69073d0>



## barplot

seaborn.barplot(\*, x=None, y=None, hue=None, data=None, order=None, hue\_order=None, estimator=<function mean at 0x7fecadf1cee0>, ci=95, n\_boot=1000, units=None, seed=None, orient=None, color=None, palette=None, saturation=0.75, errcolor='!26', errwidth=None, capsize=None, dodge=True, ax=None, \*\*kwargs)

other reference

```
In [312...  
  
import numpy as np  
import matplotlib.pyplot as plt  
import pandas as pd  
import seaborn as sns
```

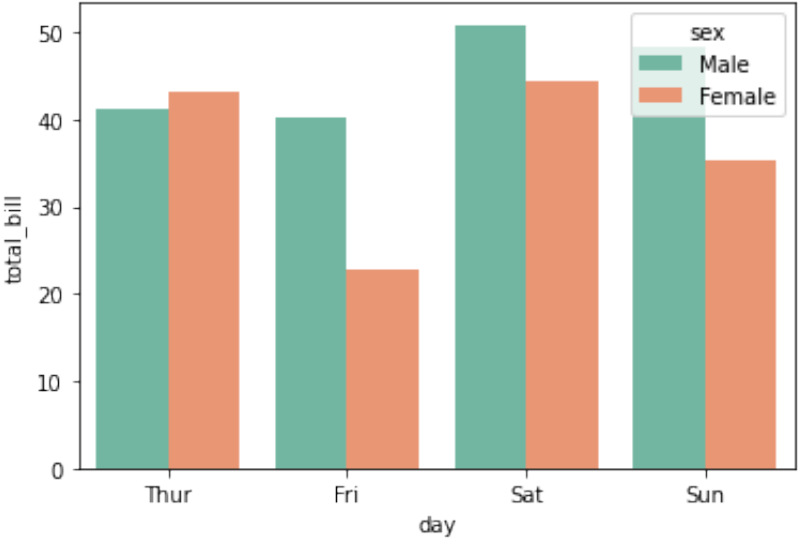
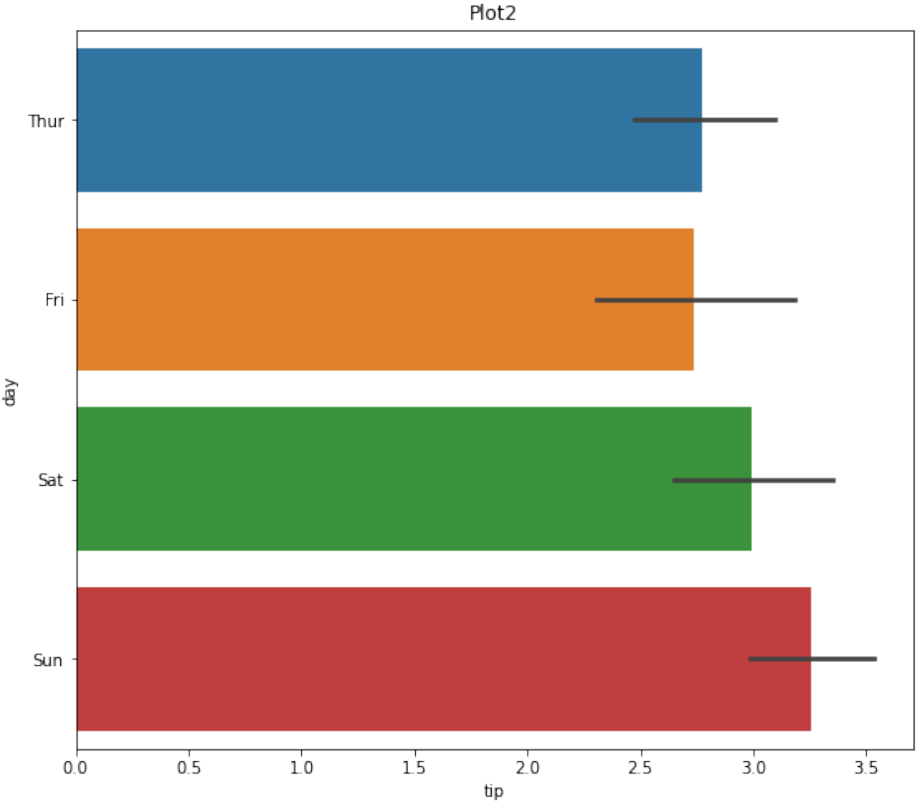
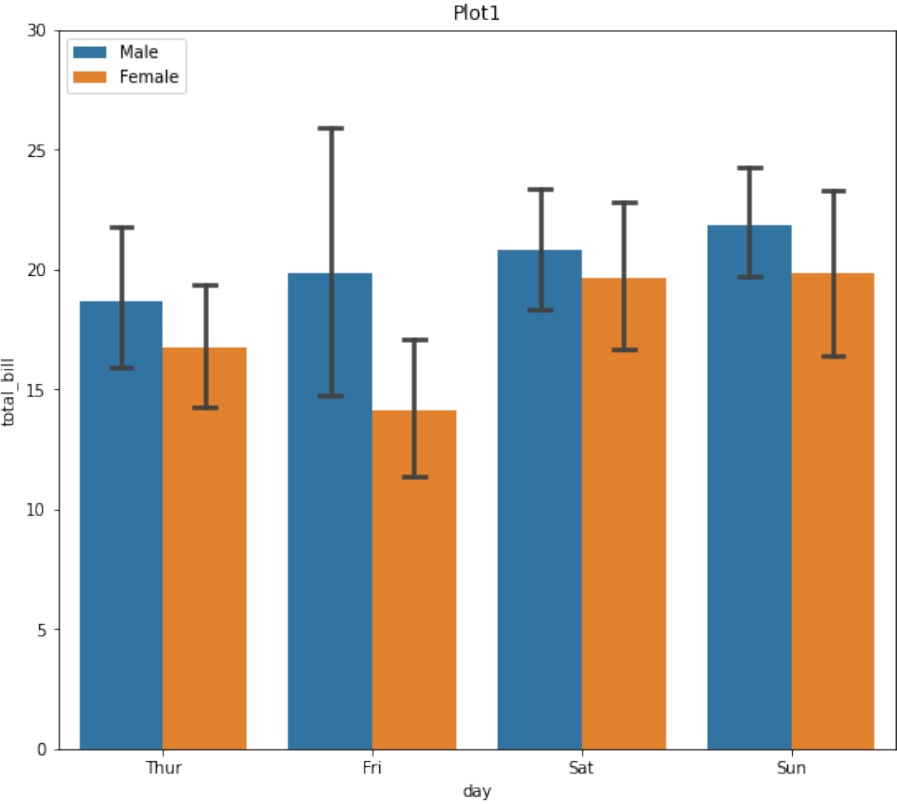
```
In [313...  
  
fig,axs=plt.subplots(1,2,figsize=(20,8))  
data=sns.load_dataset('tips')  
print(data)  
##默認分組取平均值，capsize是設置誤差帽條(可和ci混用，用ci設置信心水準，用capsize設定帽蓋長度)  
sns.barplot(x='day',y='total_bill',hue='sex',data=data,ax=axs[0],capsize=0.1)  
sns.barplot(x='tip',y='day',data=data,ci=95,ax=axs[1])#ci表示信心水準(可設置float,sd,None)  
  
axs[0].set_title('Plot1')  
axs[1].set_title('Plot2')  
  
axs[0].set_ylim(0,30)  
# axs[1].set_xlim(0,4)  
  
axs[0].legend(loc=2)  
plt.subplots_adjust(wspace=0.2)  
  
##若分組想要取其他種類的統計量，要透過estimator  
fig,ax=plt.subplots()  
#palette是著色表，可以參考以下網址  
#https://seaborn.pydata.org/generated/seaborn.color_palette.html#seaborn.color_palette  
sns.barplot(x='day',y='total_bill',hue='sex',ci=None,data=data,estimator=np.max,palette="Set2")
```



	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
..	...	...	...	...	...	...	...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

[244 rows x 7 columns]

Out[313... <AxesSubplot:xlabel='day', ylabel='total\_bill'>



In [ ]:

## histplot

seaborn.histplot(data=None, \*, x=None, y=None, hue=None, weights=None, stat='count', bins='auto', binwidth=None, binrange=None, discrete=None, cumulative=False, common\_bins=True, common\_norm=True, multiple='layer', element='bars', fill=True, shrink=1, kde=False, kde\_kws=None, line\_kws=None, thresh=0, pthresh=None, pmax=None, cbar=False, cbar\_ax=None, cbar\_kws=None, palette=None, hue\_order=None, hue\_norm=None, color=None, log\_scale=None, legend=True, ax=None, \*\*kwargs)

### Other reference

In [314...

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
```

In [315...

```
data=sns.load_dataset("penguins")
print(data)
```

	species	island	bill_length_mm	bill_depth_mm	flipper_length_mm	\
0	Adelie	Torgersen	39.1	18.7	181.0	
1	Adelie	Torgersen	39.5	17.4	186.0	
2	Adelie	Torgersen	40.3	18.0	195.0	
3	Adelie	Torgersen	NaN	NaN	NaN	
4	Adelie	Torgersen	36.7	19.3	193.0	
..	...	...	...	...	...	
339	Gentoo	Biscoe	NaN	NaN	NaN	
340	Gentoo	Biscoe	46.8	14.3	215.0	
341	Gentoo	Biscoe	50.4	15.7	222.0	
342	Gentoo	Biscoe	45.2	14.8	212.0	
343	Gentoo	Biscoe	49.9	16.1	213.0	

	body_mass_g	sex
0	3750.0	Male
1	3800.0	Female
2	3250.0	Female
3	NaN	NaN
4	3450.0	Female
..	...	...
339	NaN	NaN
340	4850.0	Female
341	5750.0	Male
342	5200.0	Female
343	5400.0	Male

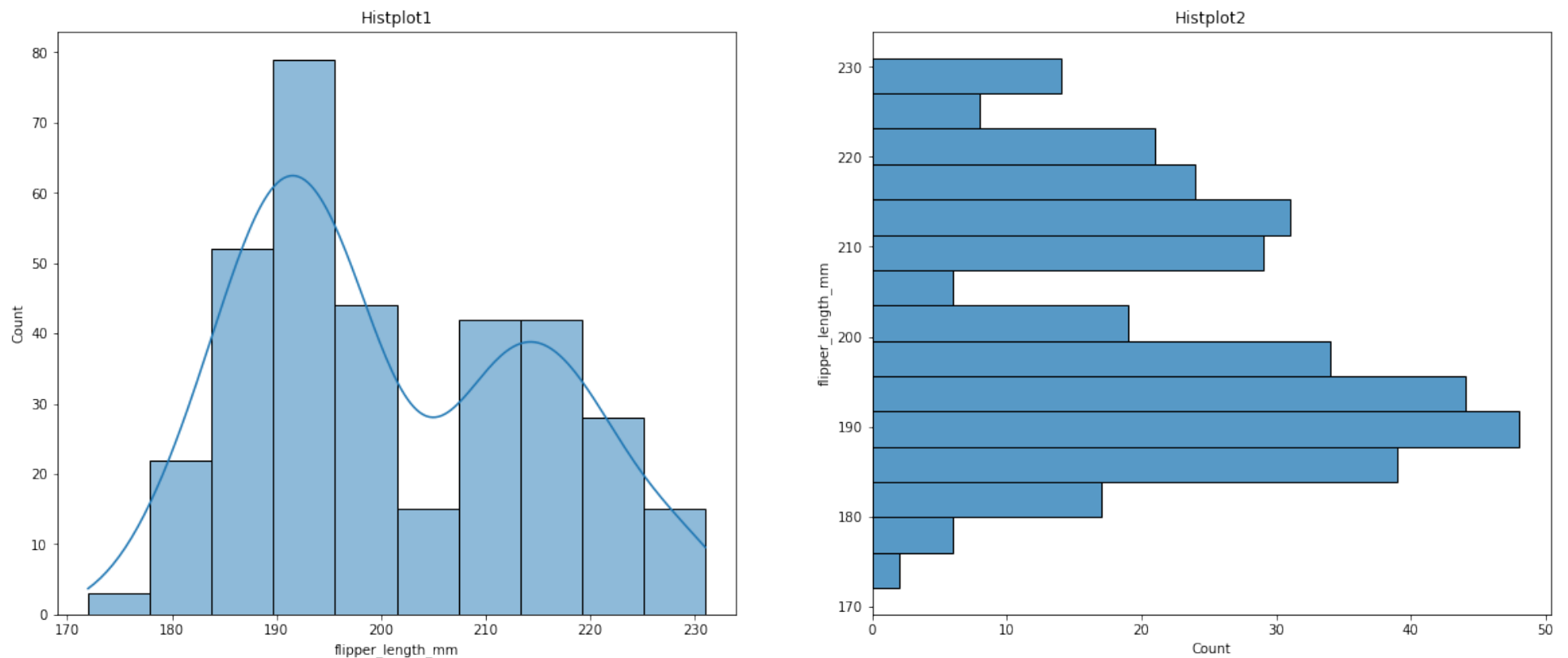
[344 rows x 7 columns]

In [316...

```
fig,axs=plt.subplots(1,2,figsize=(20,8))
sns.histplot(data=data, x="flipper_length_mm",ax=axs[0],kde=True)
sns.histplot(data=data, y="flipper_length_mm",ax=axs[1],bins=15)
axs[0].set_title('Histplot1')
axs[1].set_title('Histplot2')
```

Out[316...

Text(0.5, 1.0, 'Histplot2')



In [317...

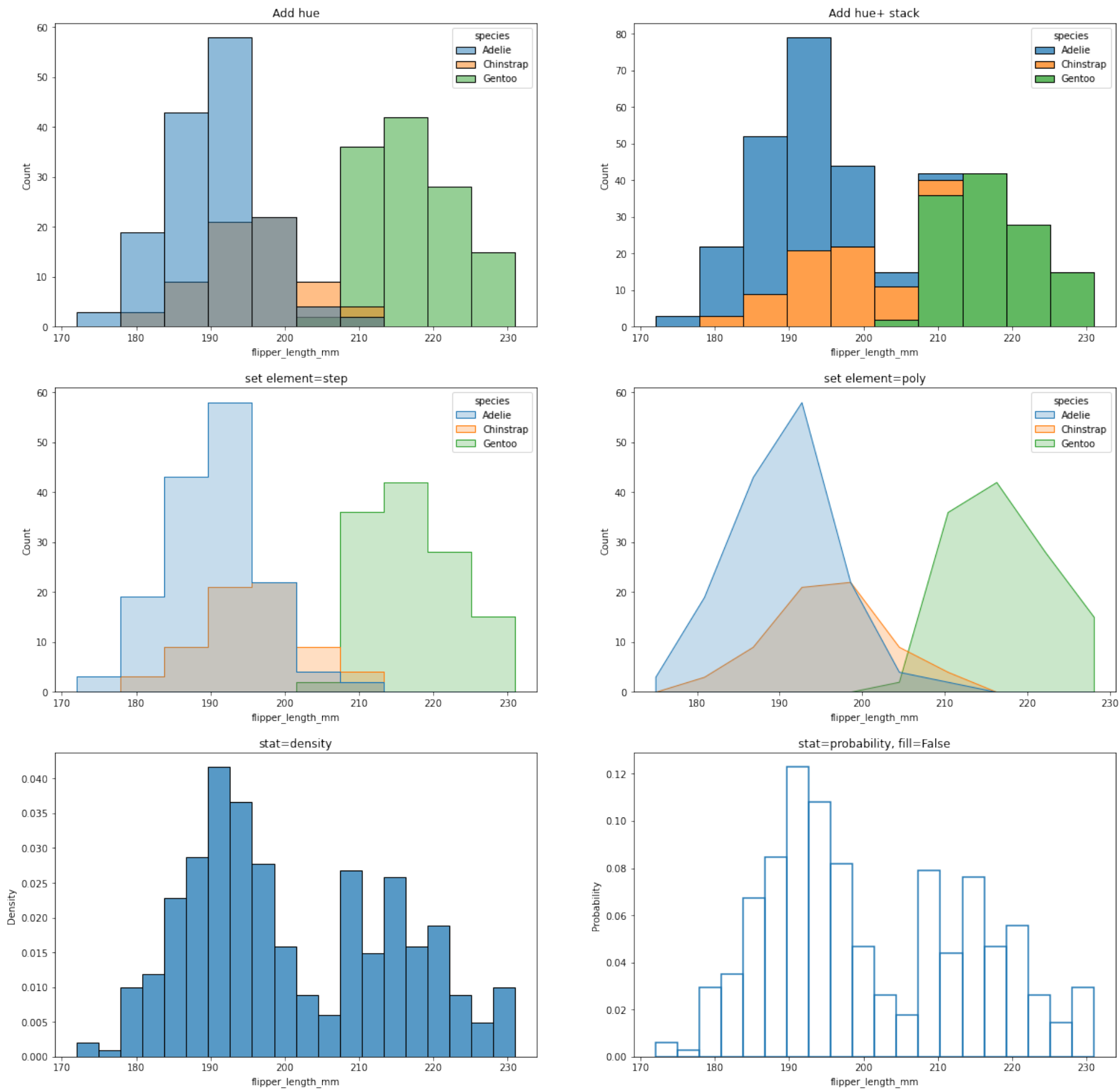
```
fig,axs=plt.subplots(3,2,figsize=(20,20))
sns.histplot(data=data, x="flipper_length_mm", hue="species",ax=axs[0][0])
sns.histplot(data=data, x="flipper_length_mm", hue="species",ax=axs[0][1],multiple="stack")
sns.histplot(data=data, x="flipper_length_mm", hue="species",ax=axs[1][0], element="step")
sns.histplot(data=data, x="flipper_length_mm", hue="species",ax=axs[1][1], element="poly")

axs[0][0].set_title('Add hue')
axs[0][1].set_title('Add hue+ stack')
axs[1][0].set_title('set element=step')
axs[1][1].set_title('set element=poly')

sns.histplot(data=data, x="flipper_length_mm",ax=axs[2][0],bins=20,stat='density')
sns.histplot(data=data, x="flipper_length_mm",ax=axs[2][1],bins=20,stat='probability',fill=False)
axs[2][0].set_title('stat=density')
axs[2][1].set_title('stat=probability, fill=False')
```



```
Out[317... Text(0.5, 1.0, 'stat=probability, fill=False')
```



X 和 Y都指定的histplot

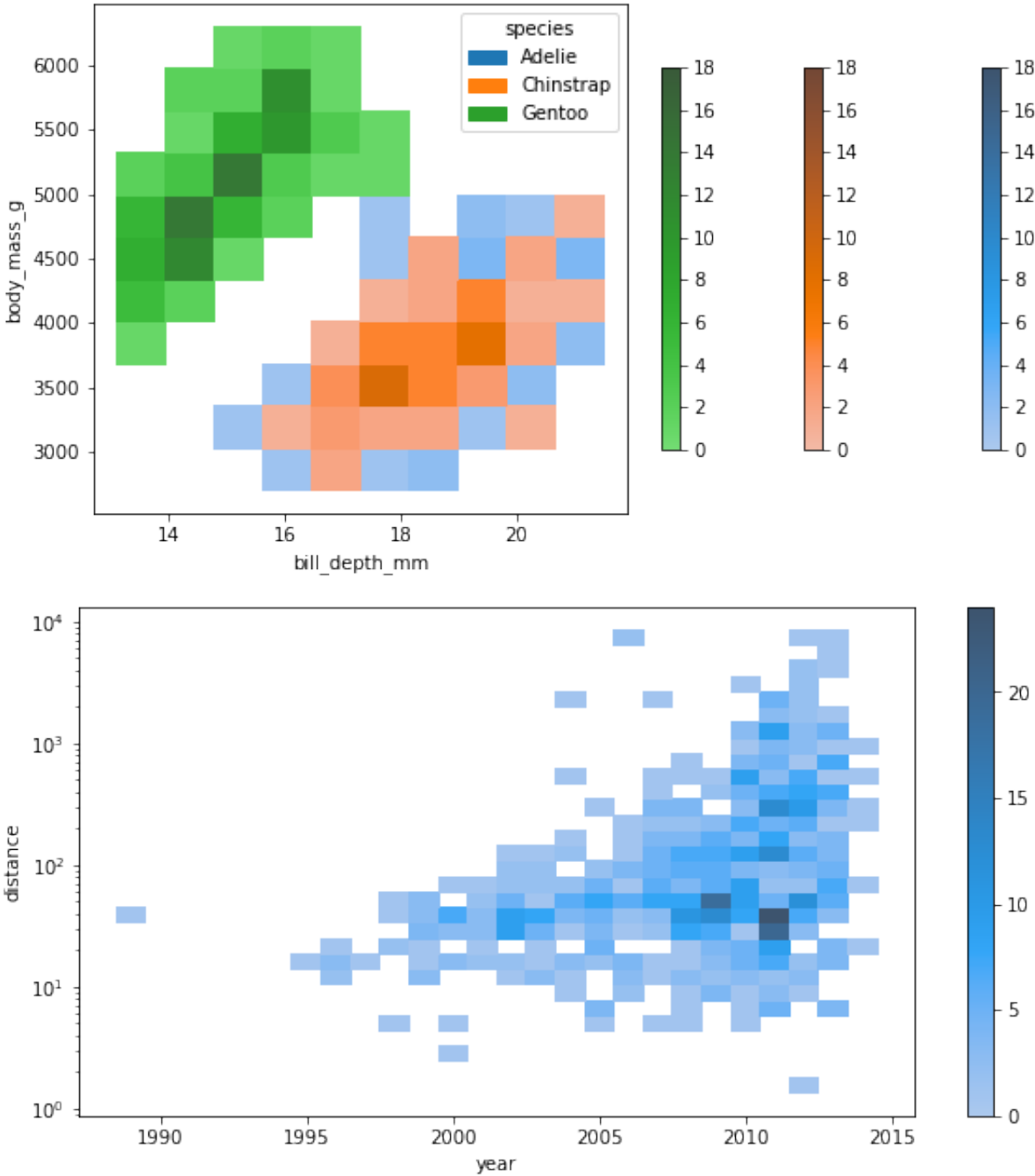
```
In [318... plt.subplots(figsize=(10,5))
data1=data
sns.histplot(data=data1, x="bill_depth_mm", y="body_mass_g", hue="species",cbar=True, cbar_kws=dict(shrink=.75))

plt.subplots(figsize=(10,5))
data2=sns.load_dataset('planets')
print(data2)
#discrete的tuple個對應到x軸和y軸，log_scale同理
sns.histplot(data=data2, x="year", y="distance",bins=30, discrete=(True,False),cbar=True,log_scale=(False, True))
```

	method	number	orbital_period	mass	distance	year
0	Radial Velocity	1	269.300000	7.10	77.40	2006
1	Radial Velocity	1	874.774000	2.21	56.95	2008
2	Radial Velocity	1	763.000000	2.60	19.84	2011
3	Radial Velocity	1	326.030000	19.40	110.62	2007
4	Radial Velocity	1	516.220000	10.50	119.47	2009
...	...	...	...	...	...	...
1030	Transit	1	3.941507	NaN	172.00	2006
1031	Transit	1	2.615864	NaN	148.00	2007
1032	Transit	1	3.191524	NaN	174.00	2007
1033	Transit	1	4.125083	NaN	293.00	2008
1034	Transit	1	4.187757	NaN	260.00	2008

[1035 rows x 6 columns]

Out[318... <AxesSubplot:xlabel='year', ylabel='distance'>



## scatterplot

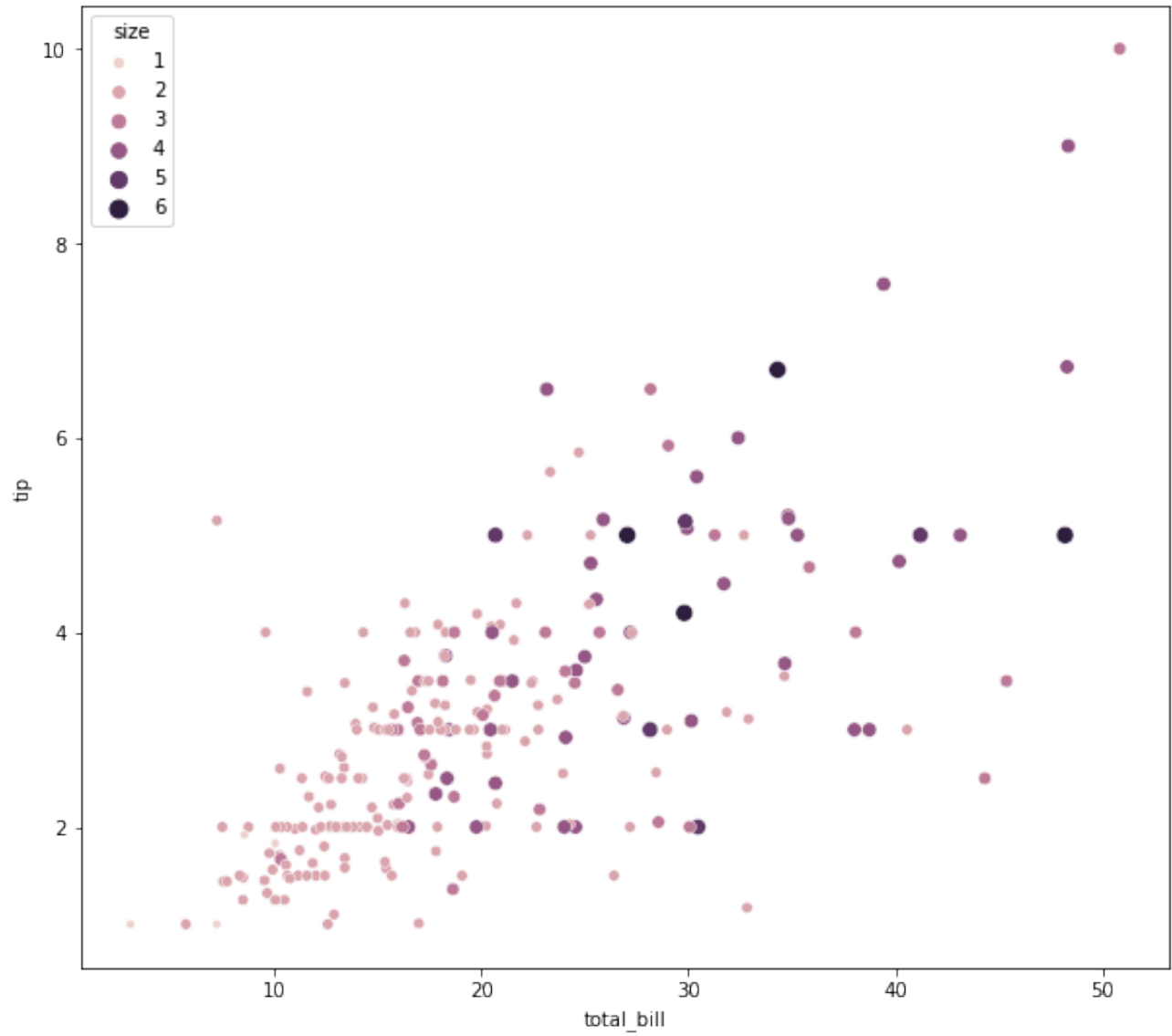
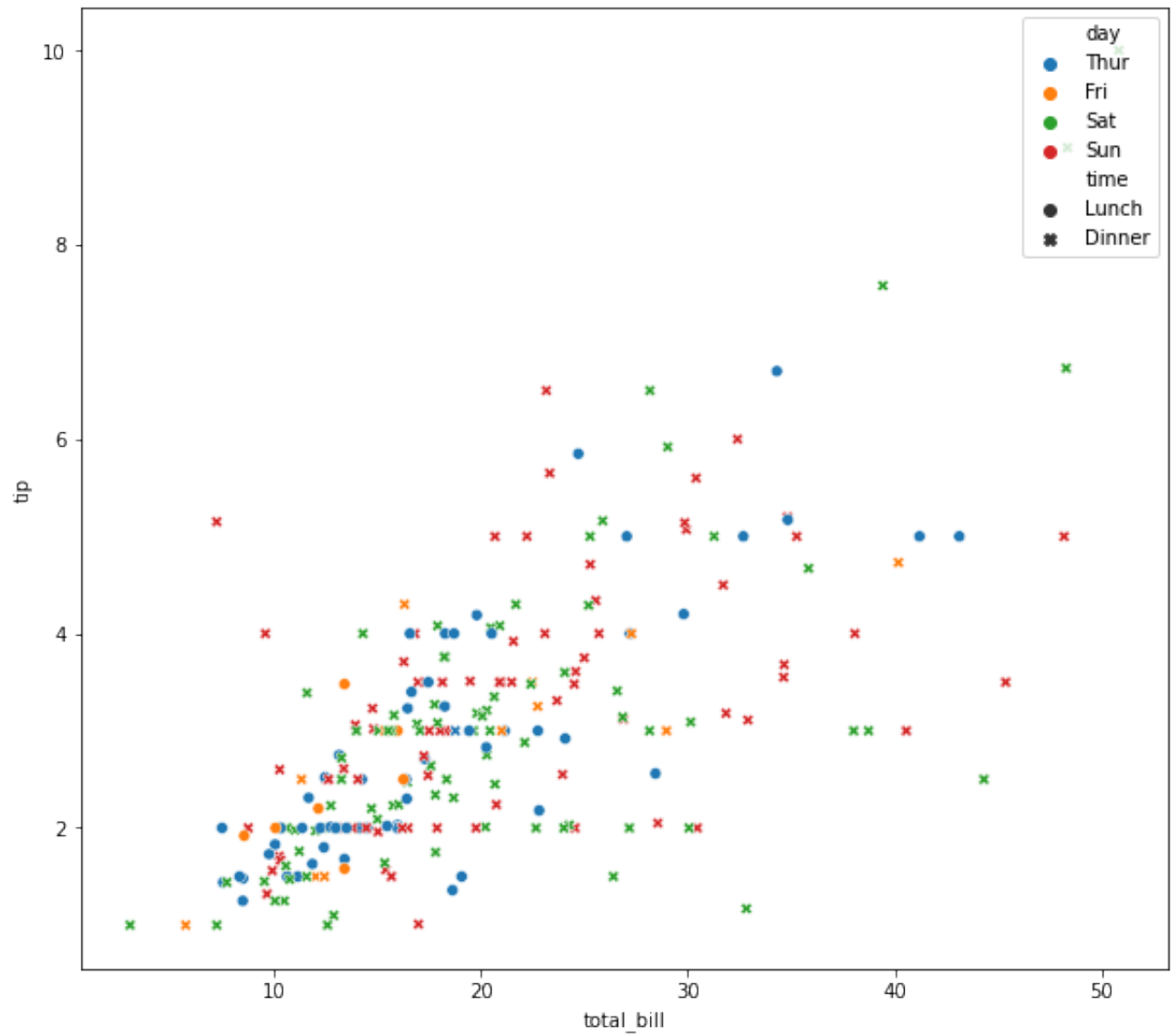
seaborn.scatterplot(\*, x=None, y=None, hue=None, style=None, size=None, data=None, palette=None, hue\_order=None, hue\_norm=None, sizes=None, size\_order=None, size\_norm=None, markers=True, style\_order=None, x\_bins=None, y\_bins=None, units=None, estimator=None, ci=95, n\_boot=1000, alpha=None, x\_jitter=None, y\_jitter=None, legend='auto', ax=None, \*\*kwargs)

```
In [319... import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
In [320... tips=sns.load_dataset('tips')
```

```
In [321... fig,axs=plt.subplots(2,1,figsize=(10,20))
sns.scatterplot(data=tips, x="total_bill", y="tip", hue="day", style="time",ax=axs[0])
sns.scatterplot(data=tips, x="total_bill", y="tip", hue="size",size="size",sizes=(20, 80), legend="full")
axs[0].legend(loc=1)
```

Out[321... <matplotlib.legend.Legend at 0x7fcb9ac10b50>



## boxplot

seaborn.boxplot(\*, x=None, y=None, hue=None, data=None, order=None, hue\_order=None, orient=None, color=None, palette=None, saturation=0.75, width=0.8, dodge=True, fliersize=5, linewidth=None, whis=1.5, ax=None, \*\*kwargs)¶

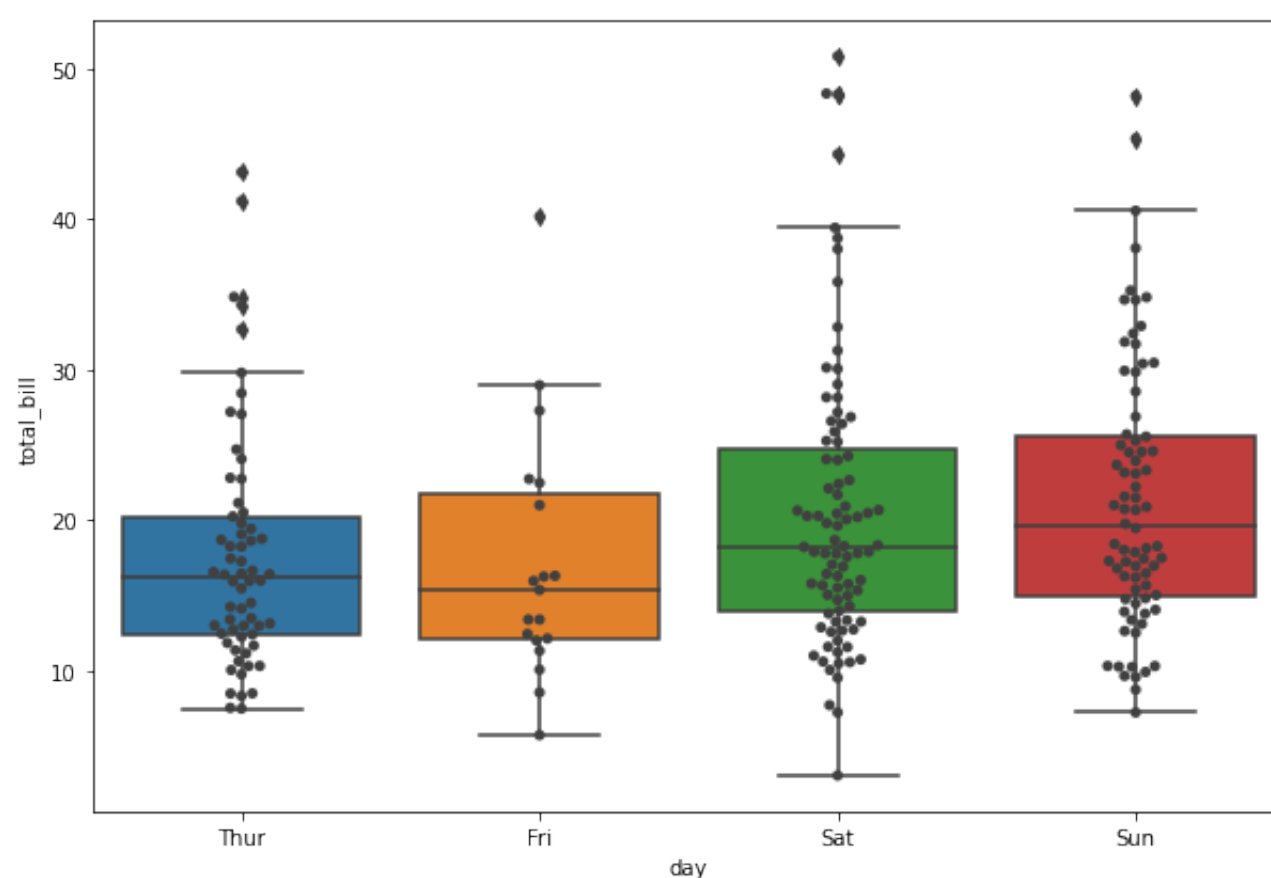
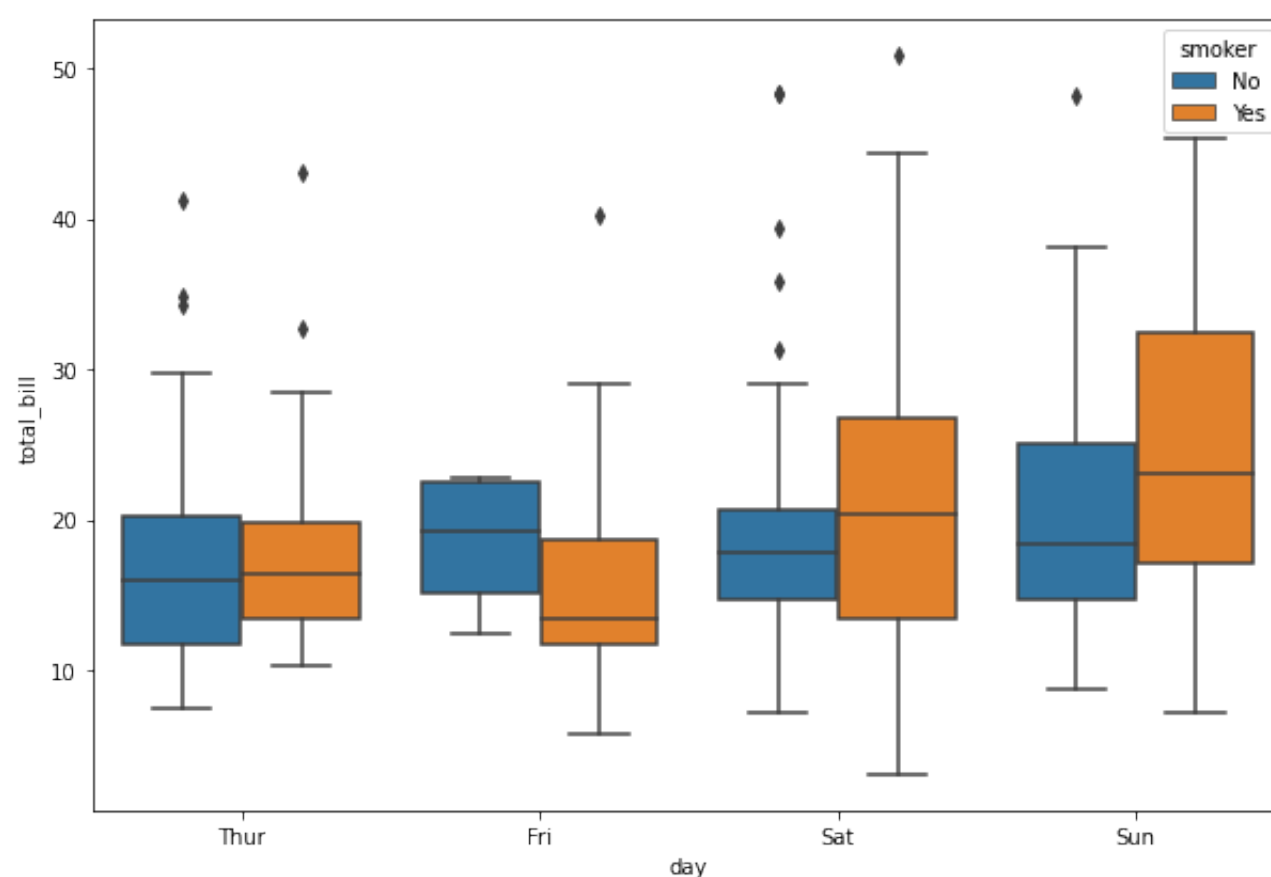
```
In [322...
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [323...

```
fig,axs=plt.subplots(2,1,figsize=(10,15))
tips = sns.load_dataset("tips")
sns.boxplot(x="day", y="total_bill", hue="smoker",data=tips,linewidth=1.5,hue_order=[ 'No', 'Yes'],ax=axs[0])
sns.boxplot(x="day", y="total_bill",data=tips,ax=axs[1])
sns.swarmplot(x="day", y="total_bill",data=tips, color=".25",ax=axs[1])
```

Out[323...

<AxesSubplot:xlabel='day', ylabel='total\_bill'>



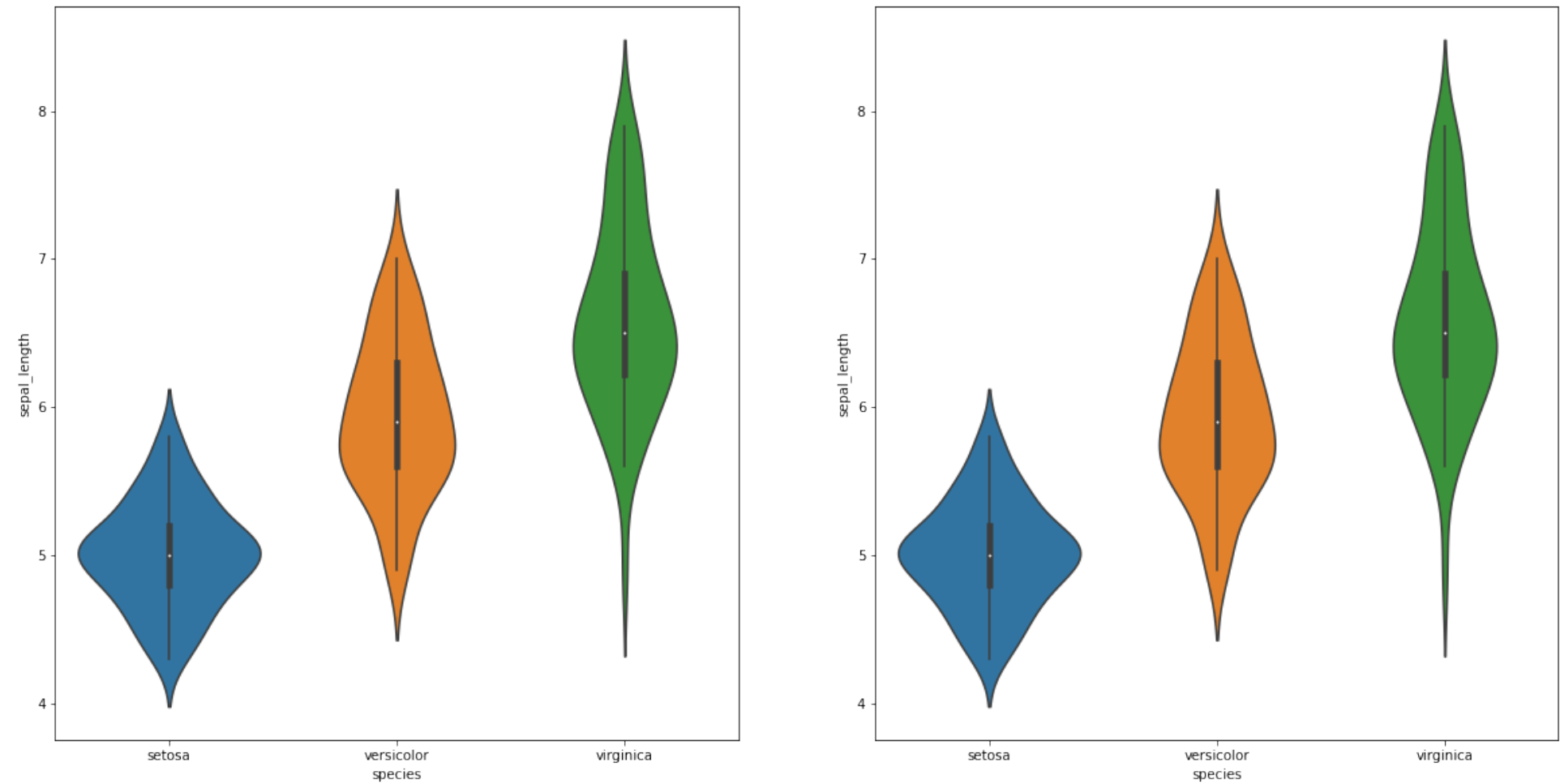
## violinplot

seaborn.violinplot(\*, x=None, y=None, hue=None, data=None, order=None, hue\_order=None, bw='scott', cut=2, scale='area', scale\_hue=True, gridsize=100, width=0.8, inner='box', split=False, dodge=True, orient=None, linewidth=None, color=None, palette=None, saturation=0.75, ax=None, \*\*kwargs)

In [324...

```
fig,axs=plt.subplots(1,2,figsize=(20,10))
iris = sns.load_dataset("iris")
sns.violinplot(x="species", y="sepal_length", data=iris,ax=axs[0])
sns.violinplot(x=iris.species, y=iris.sepal_length,ax=axs[1])
```

Out[324... <AxesSubplot:xlabel='species', ylabel='sepal\_length'>



## catplot

seaborn.catplot(\*, x=None, y=None, hue=None, data=None, row=None, col=None, col\_wrap=None, estimator=<function mean at 0x7fecadf1cee0>, ci=95, n\_boot=1000, units=None, seed=None, order=None, hue\_order=None, row\_order=None, col\_order=None, kind='strip', height=5, aspect=1, orient=None, color=None, palette=None, legend=True, legend\_out=True, sharex=True, sharey=True, margin\_titles=False, facet\_kws=None, \*\*kwargs)

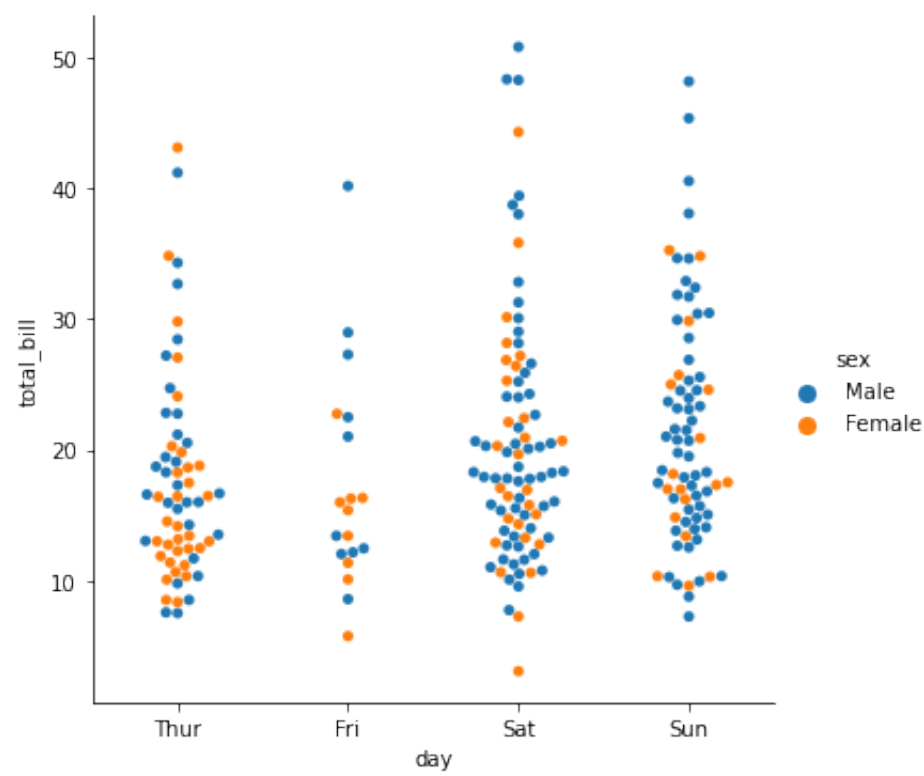
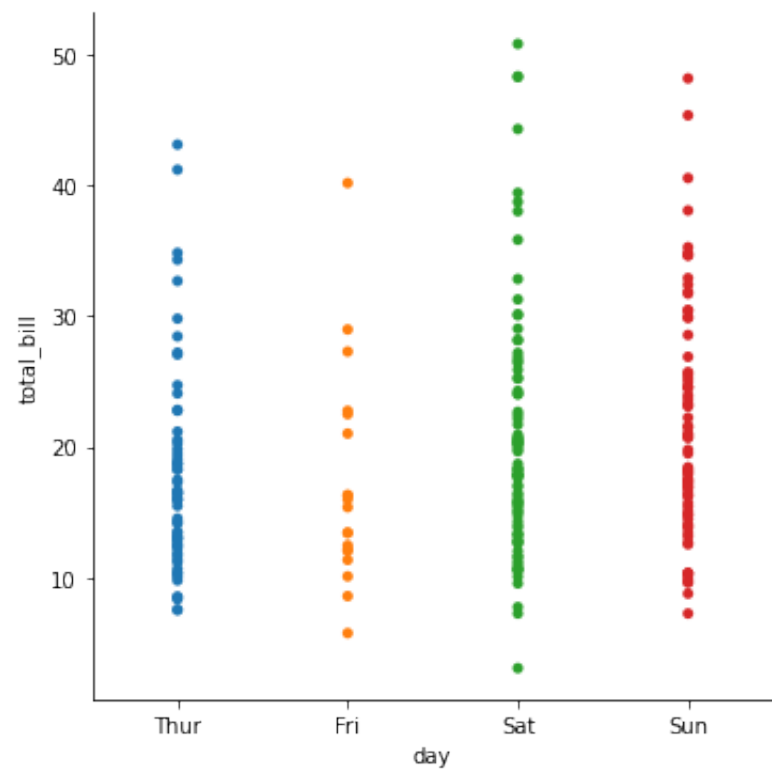
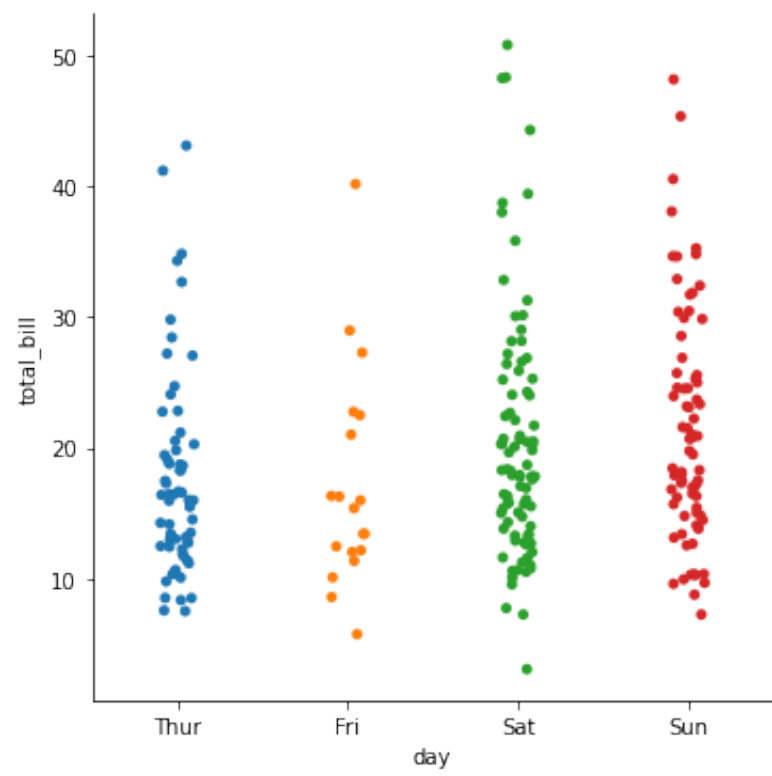
Return: [FacetGrid](#)

[Other reference](#)

```
In [325...
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

```
In [326...
#分類散點圖

#strip plot
sns.load_dataset("tips")
sns.catplot(x="day", y="total_bill", data=tips);
#strip plot + jitter
sns.catplot(x="day", y="total_bill", jitter=False, data=tips);
#swarm plot
sns.catplot(x="day", y="total_bill", hue="sex", kind="swarm", data=tips);
plt.show()
```



In [327...

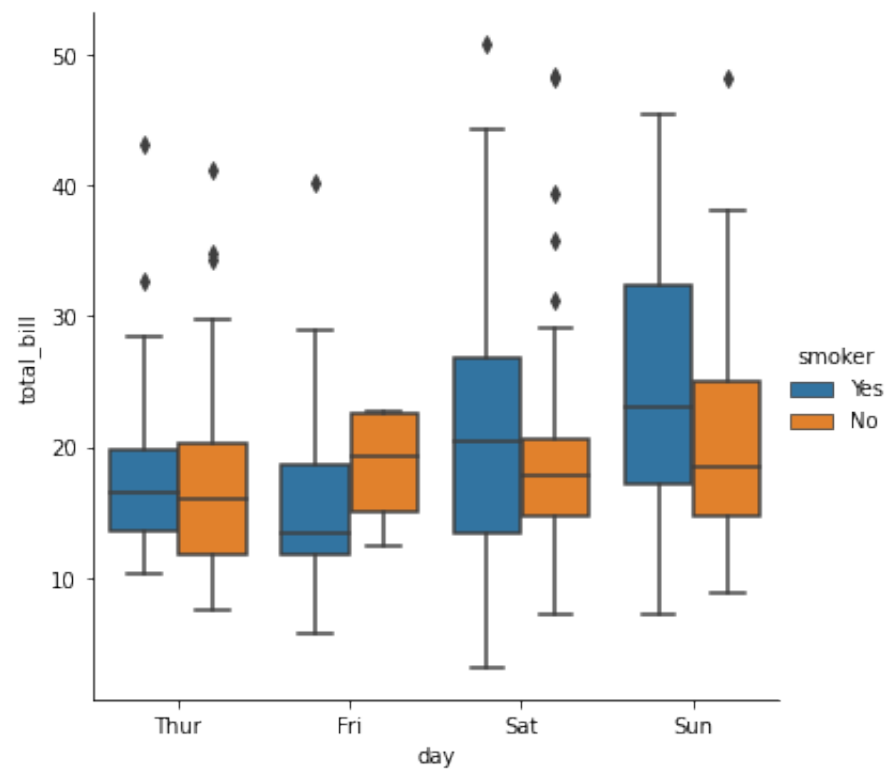
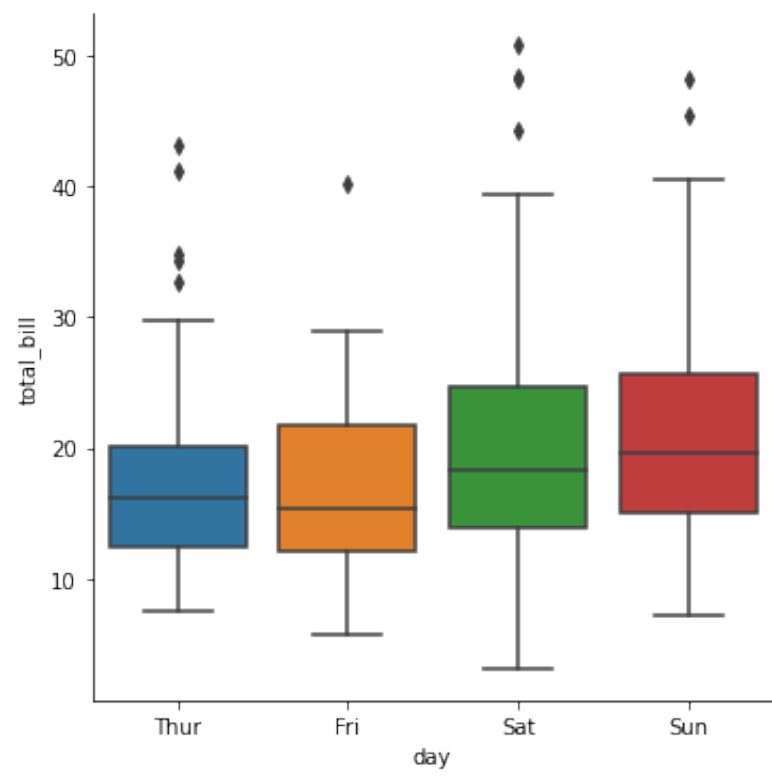
#分類分布圖

##boxplot

```
sns.catplot(x="day", y="total_bill", kind="box", data=tips);
```

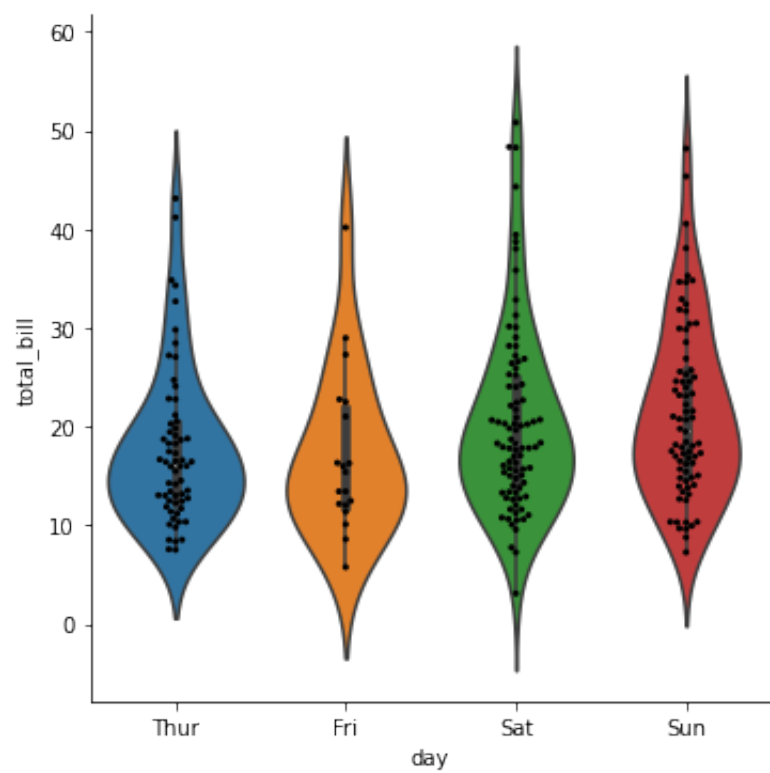
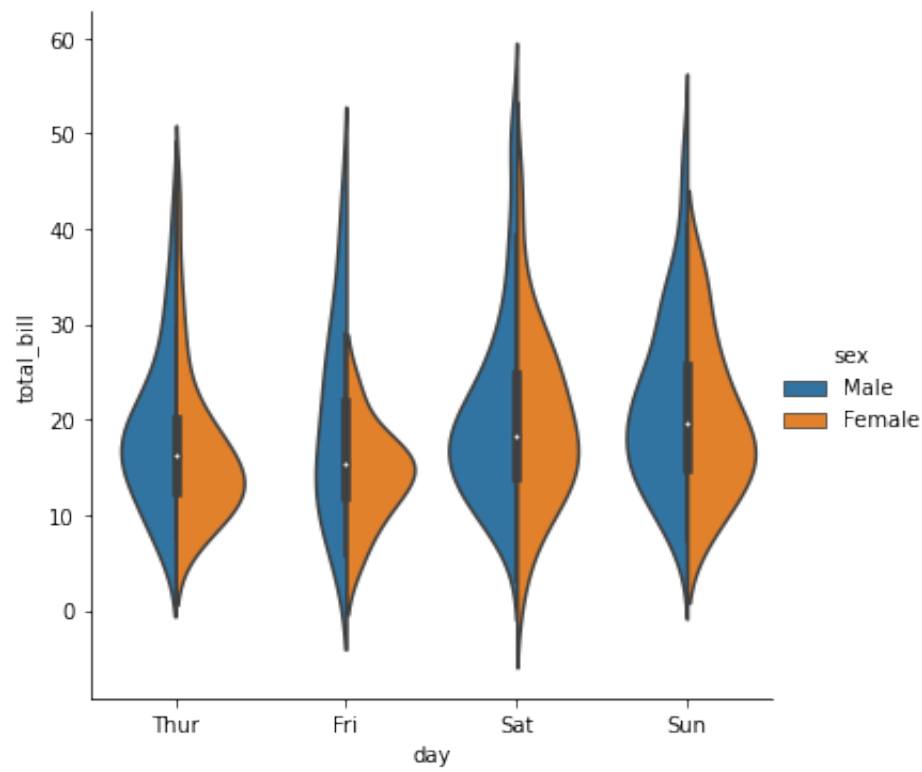
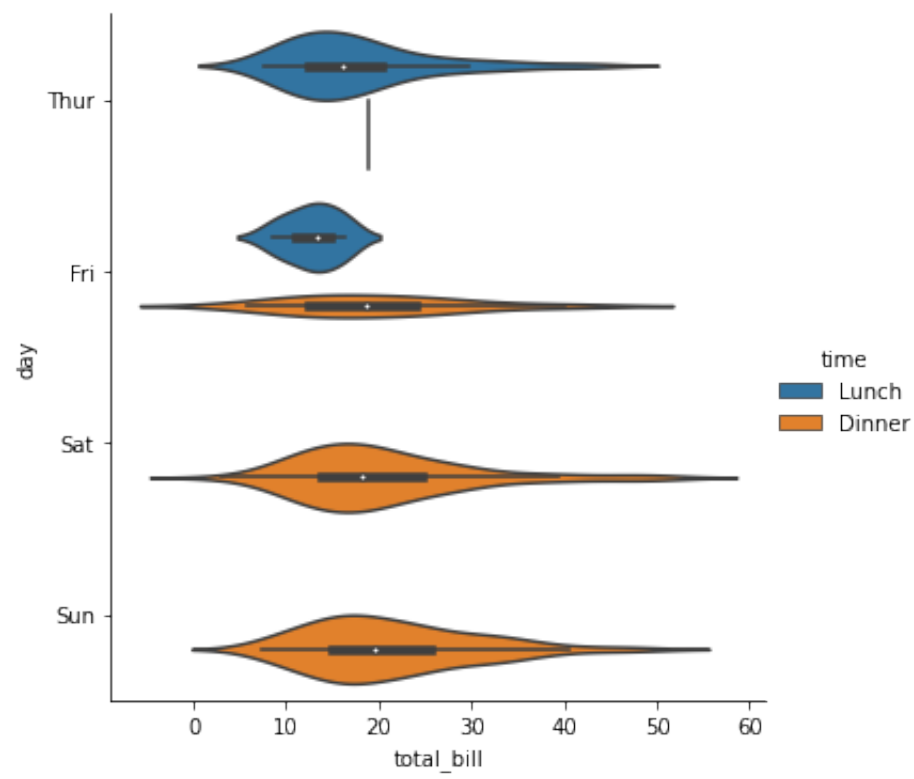
```
sns.catplot(x="day", y="total_bill", hue="smoker", kind="box", data=tips);
```





In [328...

```
#小提琴圖(violin plot)
sns.catplot(x="total_bill", y="day", hue="time", kind="violin", data=tips);
sns.catplot(x="day", y="total_bill", hue="sex", kind="violin", split=True, data=tips);
g=sns.catplot(x="day", y="total_bill", kind="violin", data=tips);
sns.swarmplot(x="day", y="total_bill", color="k", size=3, data=tips, ax=g.ax);
```



In [329...

#分類統計估計圖

#barplot

titanic = sns.load\_dataset("titanic")

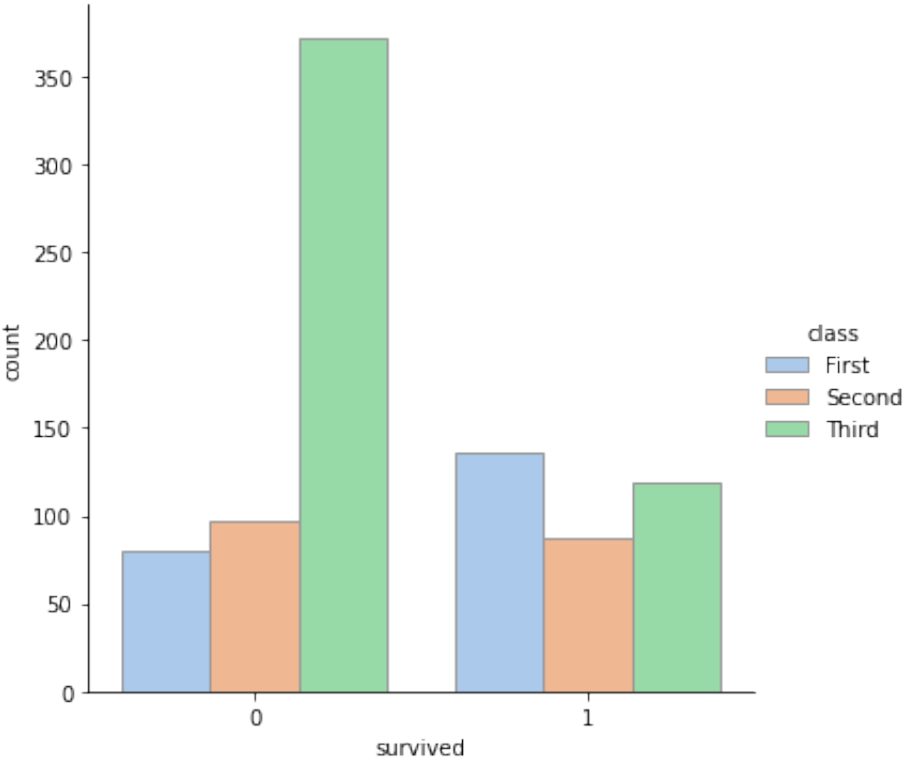
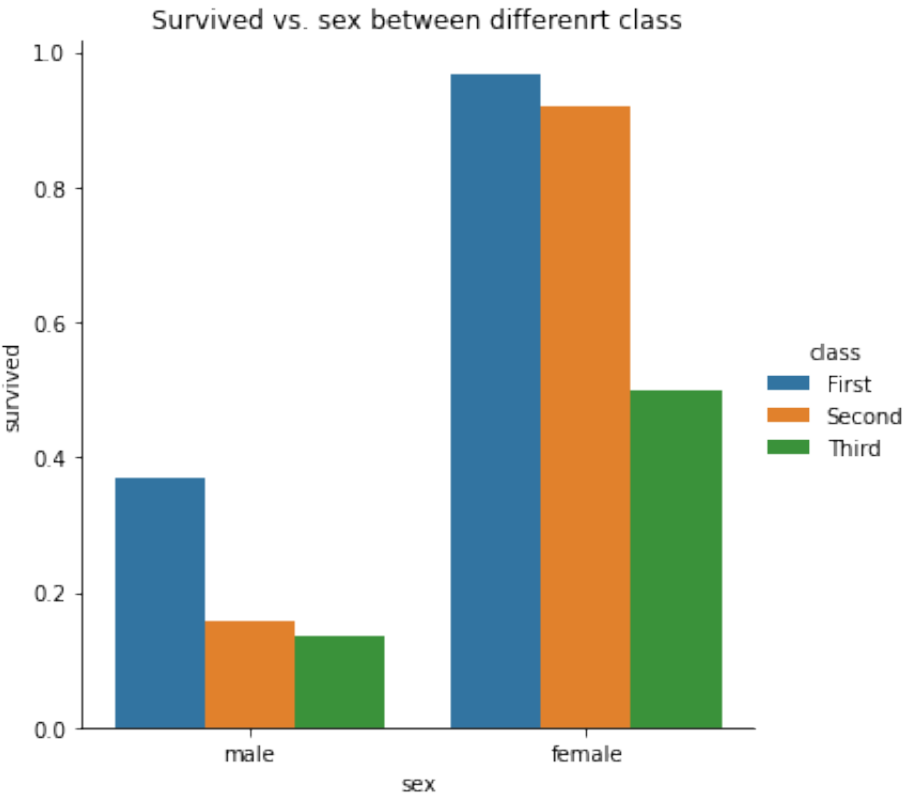
g1=sns.catplot(x="sex", y="survived", hue="class", kind="bar", data=titanic,ci=None);

g2=sns.catplot(x="survived", hue="class", kind="count", palette="pastel", edgecolor=".6", data=titanic);

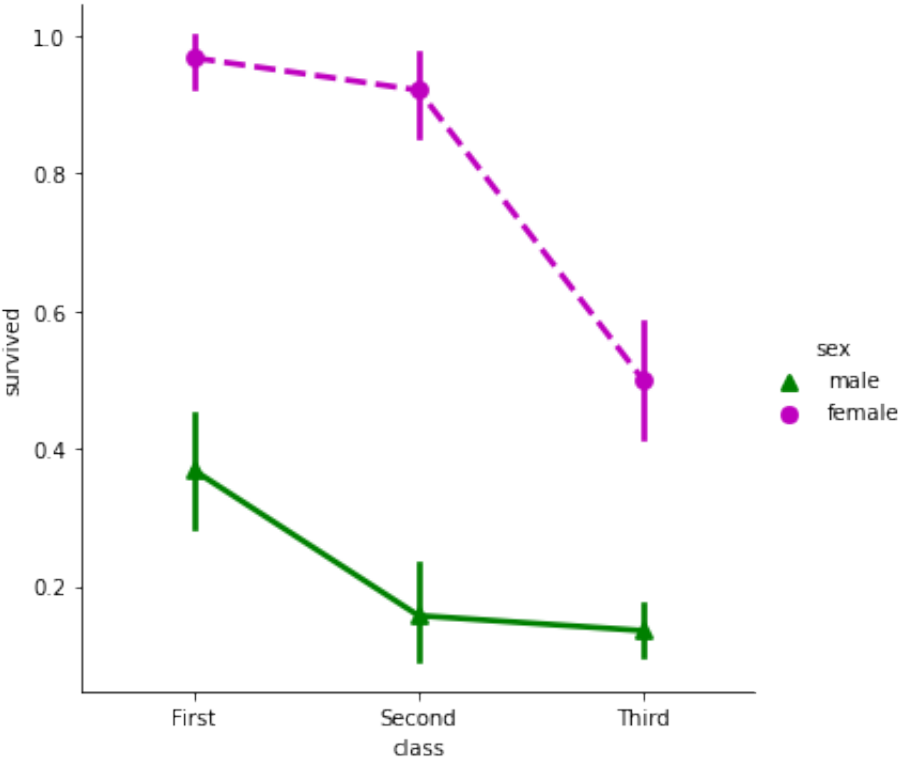
#catplot本身是個FacetGrid

g1.ax.set\_title('Survived vs. sex between differenrt class')

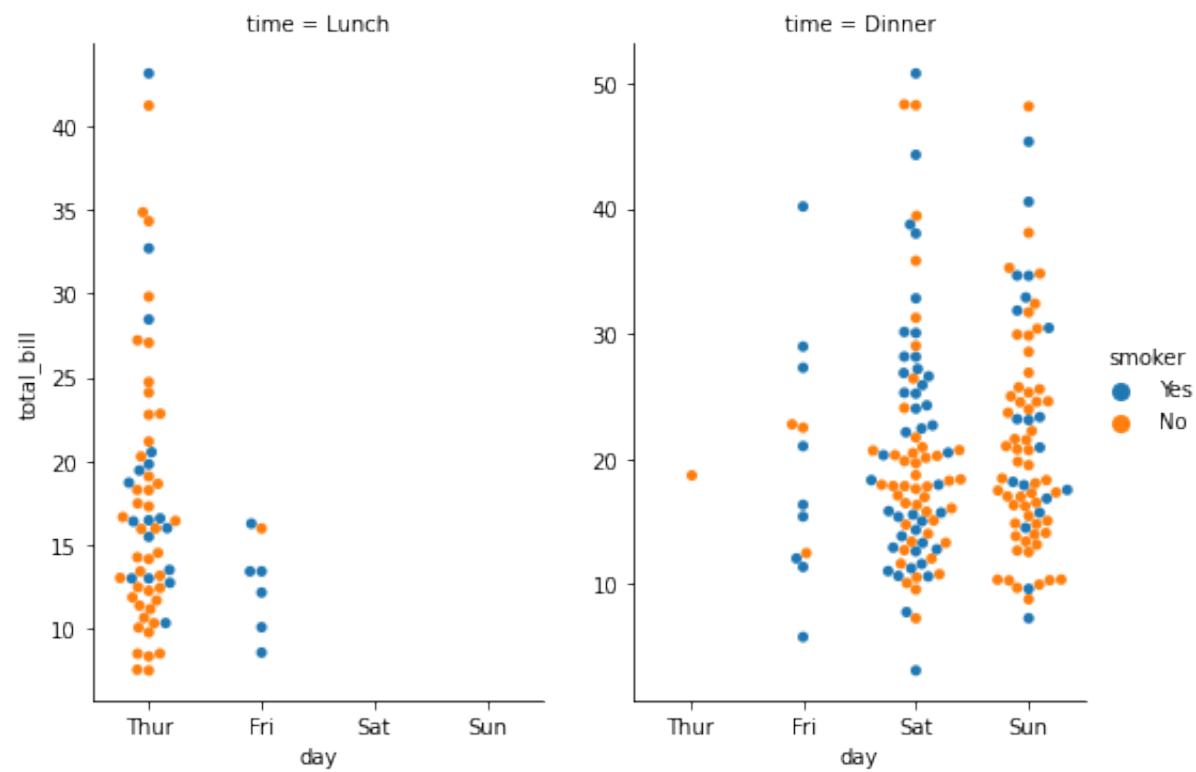
```
Out[329... Text(0.5, 1.0, 'Survived vs. sex between differenrt class')
```



```
In [330... #點圖(point plot)
sns.catplot(x="class", y="survived", hue="sex", palette={"male": "g", "female": "m"}, markers=["^", "o"], linestyle
```



```
In [331... #使用子圖展示多重關係
tips=sns.load_dataset('tips')
sns.catplot(x="day", y="total_bill", hue="smoker", col="time", aspect=0.7, kind="swarm", data=tips,sharey=False);
plt.subplots_adjust(wspace=0.2)
```



## jointplot

seaborn.jointplot(\*, x=None, y=None, data=None, kind='scatter', color=None, height=6, ratio=5, space=0.2, dropna=False, xlim=None, ylim=None, marginal\_ticks=False, joint\_kws=None, marginal\_kws=None, hue=None, palette=None, hue\_order=None, hue\_norm=None, \*\*kwargs)

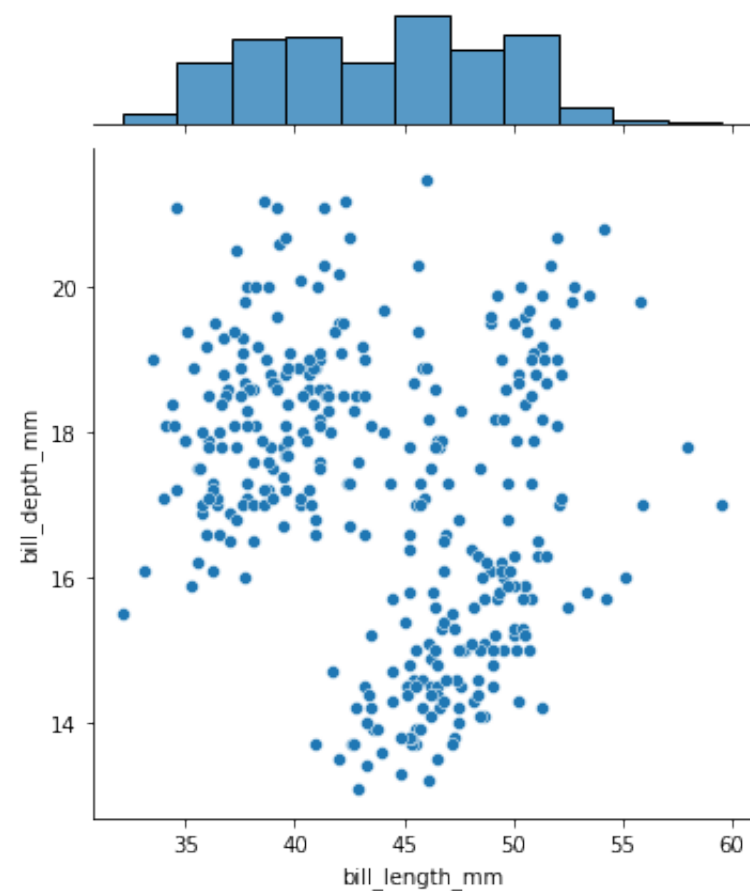
Return: [JointGrid](#)

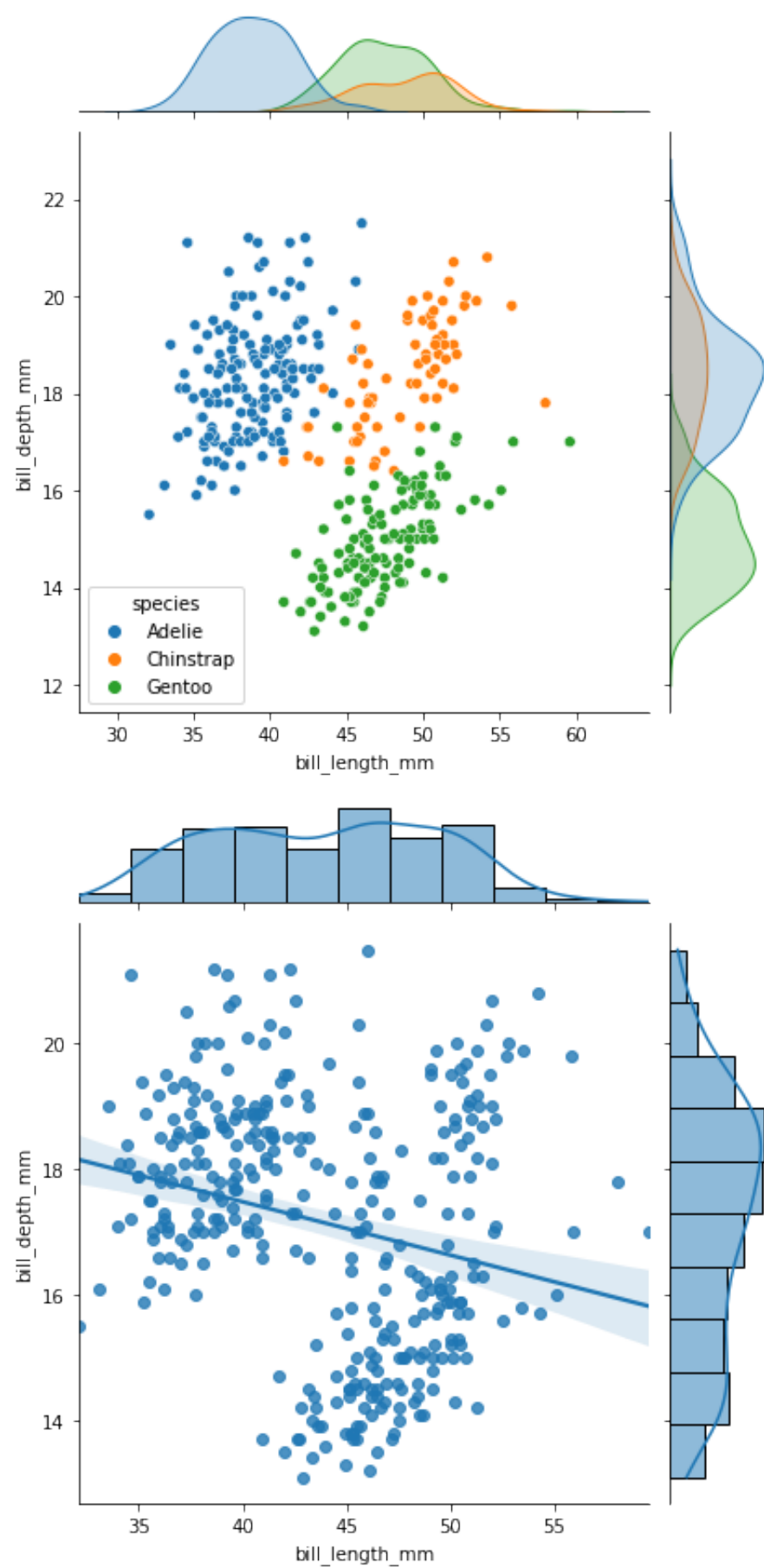
In [332...

```
penguins = sns.load_dataset("penguins")
sns.jointplot(data=penguins, x="bill_length_mm", y="bill_depth_mm")
sns.jointplot(data=penguins, x="bill_length_mm", y="bill_depth_mm", hue="species")
sns.jointplot(data=penguins, x="bill_length_mm", y="bill_depth_mm", kind="reg")
```

Out[332...

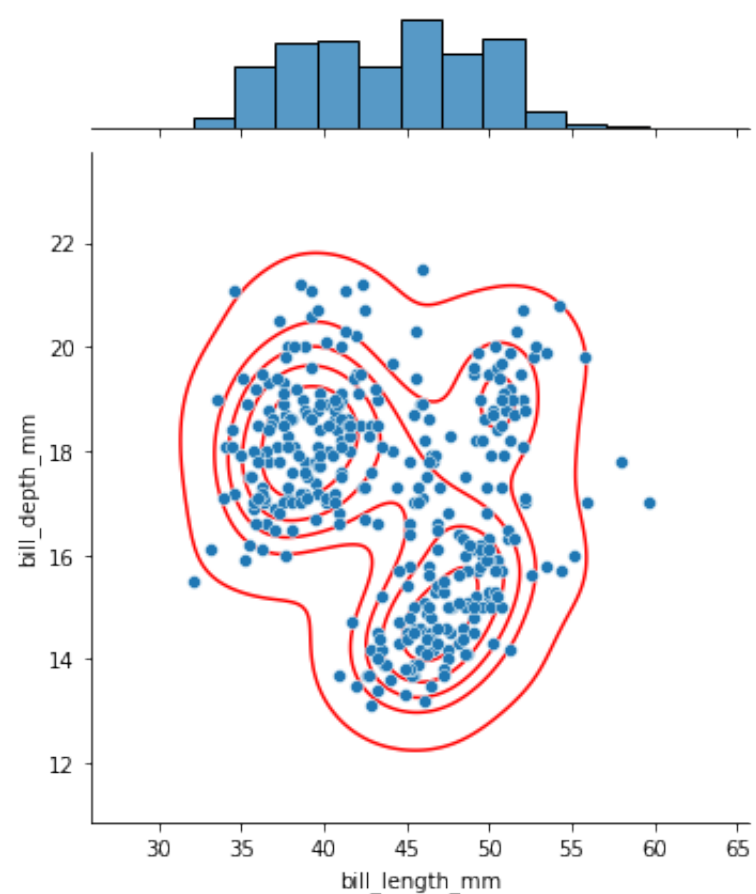
<seaborn.axisgrid.JointGrid at 0x7fcb9be7a310>





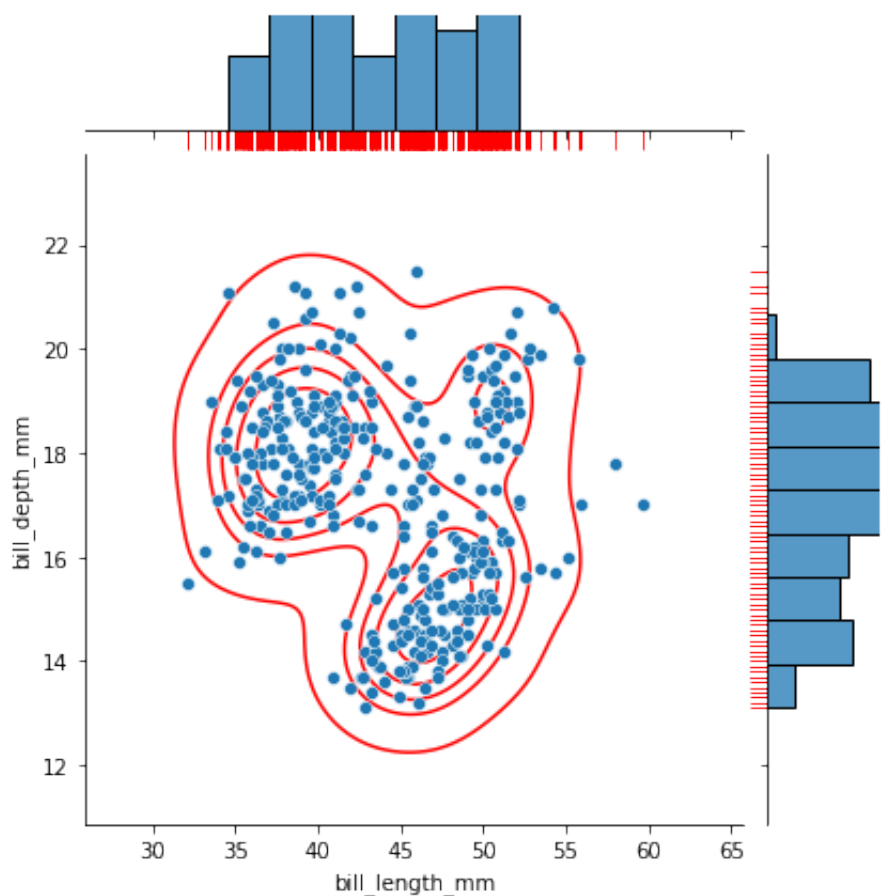
```
In [333... g = sns.jointplot(data=penguins, x="bill_length_mm", y="bill_depth_mm")
g.plot_joint(sns.kdeplot, color="r", zorder=0, levels=6)
# g.plot_marginals(sns.rugplot, color="r", height=-.15, clip_on=False)
```

```
Out[333... <seaborn.axisgrid.JointGrid at 0x7fcb9e4277c0>
```



```
In [334... g.plot_marginals(sns.rugplot, color="r", height=0.15, clip_on=False)
```

```
Out[334... <seaborn.axisgrid.JointGrid at 0x7fcb9e4277c0>
```



## FacetGrid

```
init(self, data, *, row=None, col=None, hue=None, col_wrap=None, sharex=True, sharey=True, height=3, aspect=1,
palette=None, row_order=None, col_order=None, hue_order=None, hue_kws=None, dropna=False, legend_out=True,
despine=True, margin_titles=False, xlim=None, ylim=None, subplot_kws=None, gridspec_kws=None, size=None)
```

## FacetGrid.map

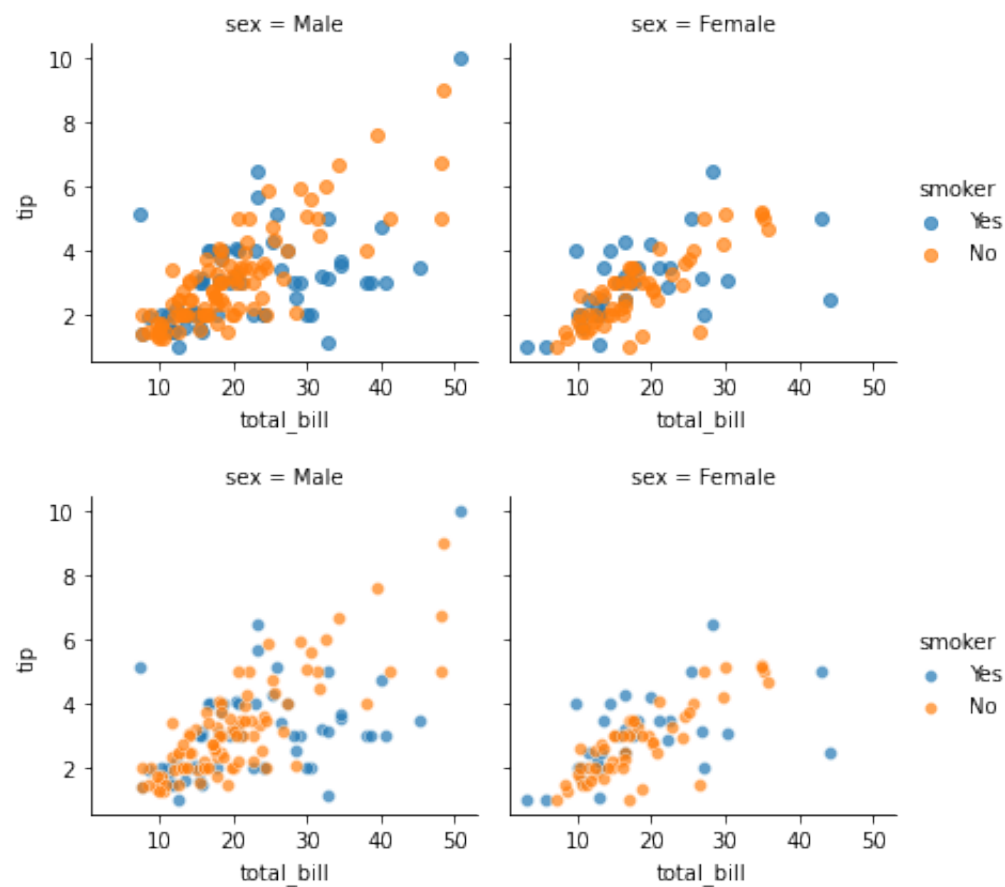
```
FacetGrid.map(self, func, *args, **kwargs)
```

以上兩種搭配一起用

```
In [335... import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
## g.map內的plotting function可以是任何matplotlib, sns繪圖方法
tips=sns.load_dataset('tips')
g1 = sns.FacetGrid(tips, col="sex", hue="smoker")
g1.map(plt.scatter, "total_bill", "tip", alpha=.7)
g1.add_legend();

g2 = sns.FacetGrid(tips, col="sex", hue="smoker")
g2.map(sns.scatterplot, "total_bill", "tip", alpha=.7)
g2.add_legend();
```





In [ ]:

## heatmap

```
seaborn.heatmap(data, *, vmin=None, vmax=None, cmap=None, center=None, robust=False, annot=None, fmt='.2g',
annot_kws=None, linewidths=0, linecolor='white', cbar=True, cbar_kws=None, cbar_ax=None, square=False,
xticklabels='auto', yticklabels='auto', mask=None, ax=None, **kwargs)
```

[Other reference](#)

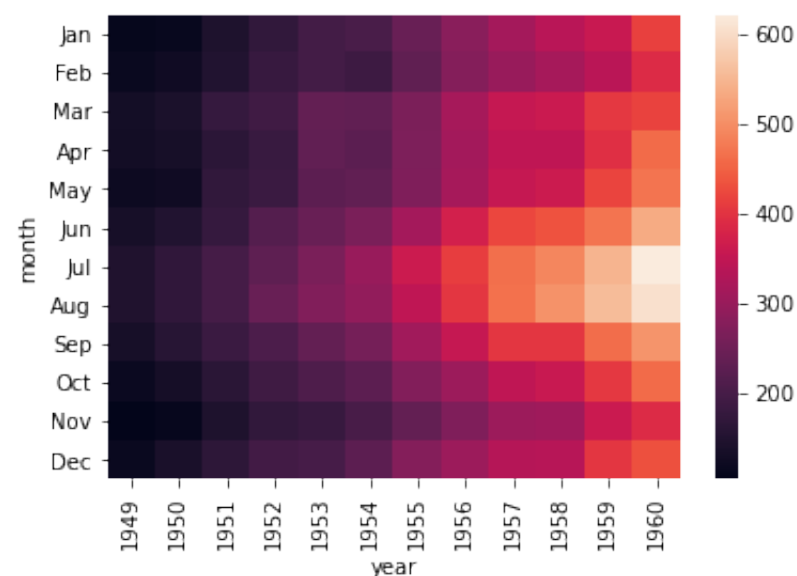
In [336...

```
flights = sns.load_dataset("flights")
flights = flights.pivot("month", "year", "passengers")
print(flights)
```

year	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
month												
Jan	112	115	145	171	196	204	242	284	315	340	360	417
Feb	118	126	150	180	196	188	233	277	301	318	342	391
Mar	132	141	178	193	236	235	267	317	356	362	406	419
Apr	129	135	163	181	235	227	269	313	348	348	396	461
May	121	125	172	183	229	234	270	318	355	363	420	472
Jun	135	149	178	218	243	264	315	374	422	435	472	535
Jul	148	170	199	230	264	302	364	413	465	491	548	622
Aug	148	170	199	242	272	293	347	405	467	505	559	606
Sep	136	158	184	209	237	259	312	355	404	404	463	508
Oct	119	133	162	191	211	229	274	306	347	359	407	461
Nov	104	114	146	172	180	203	237	271	305	310	362	390
Dec	118	140	166	194	201	229	278	306	336	337	405	432

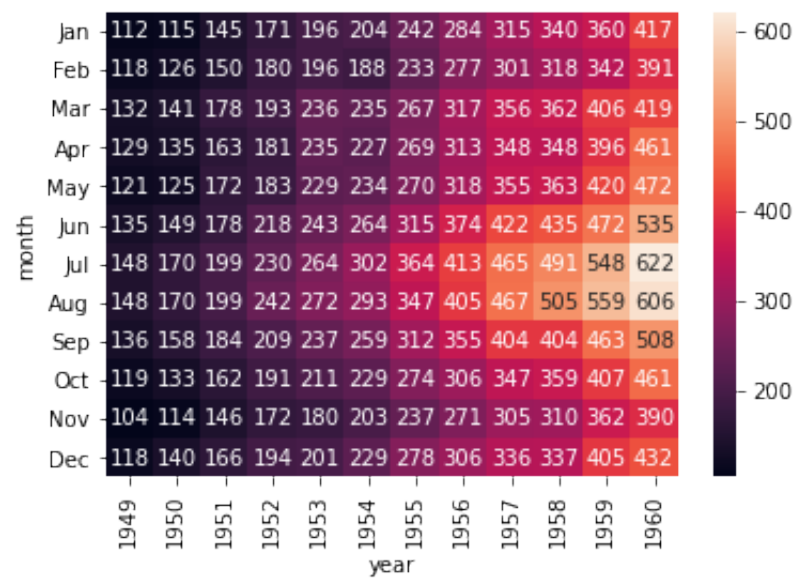
In [337...

```
ax = sns.heatmap(flights)
```



In [338...

```
ax=sns.heatmap(flights, annot=True, fmt="d")
```



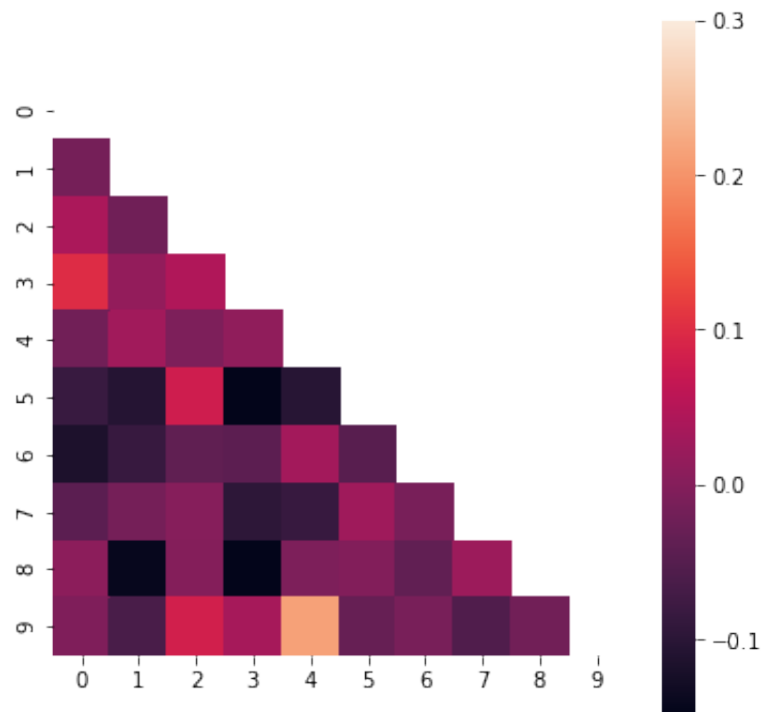
In [339...

```
#用mask來只畫出部分熱力圖
random_data=np.random.randn(10, 200)
corr = np.corrcoef(random_data)
mask = np.zeros_like(corr)
print(mask)
mask[np.triu_indices_from(mask)] = True
print(mask)
fig,ax=plt.subplots(figsize=(6,6))
sns.heatmap(corr, ax=ax, mask=mask, vmax=.3, square=True)
```

```
[[0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]]
[[1. 1. 1. 1. 1. 1. 1. 1. 1. 1.]
 [0. 1. 1. 1. 1. 1. 1. 1. 1. 1.]
 [0. 0. 1. 1. 1. 1. 1. 1. 1. 1.]
 [0. 0. 0. 1. 1. 1. 1. 1. 1. 1.]
 [0. 0. 0. 0. 1. 1. 1. 1. 1. 1.]
 [0. 0. 0. 0. 0. 1. 1. 1. 1. 1.]
 [0. 0. 0. 0. 0. 0. 1. 1. 1. 1.]
 [0. 0. 0. 0. 0. 0. 0. 1. 1. 1.]
 [0. 0. 0. 0. 0. 0. 0. 0. 1. 1.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0. 1.]]
```

Out[339...

<AxesSubplot:>



In [340...

```
grid_kws = {"height_ratios": (.95, .05), "hspace": .3}
f, (ax, cbar_ax) = plt.subplots(2,figsize=(6,6) ,gridspec_kw=grid_kws)
ax = sns.heatmap(flights, ax=ax,cbar_ax=cbar_ax,cbar_kws={"orientation": "horizontal"})
```

