Source: https://www.youtube.com/watch?v=GGL6U0k8WYA

Import

In [1]:
```
import pandas as pd
import numpy as np
import chart_studio.plotly as py
import seaborn as sns
import cufflinks as cf
import plotly.express as px

%matplotlib inline
from plotly.offline import download_plotlyjs, init_notebook_mode, plot, iplot
init_notebook_mode(connected=True)
cf.go_offline()
```

Scatter Matrix

In [2]:
```
# https://www.youtube.com/watch?v=GGL6U0k8WYA
# Time: 1:04:00
```

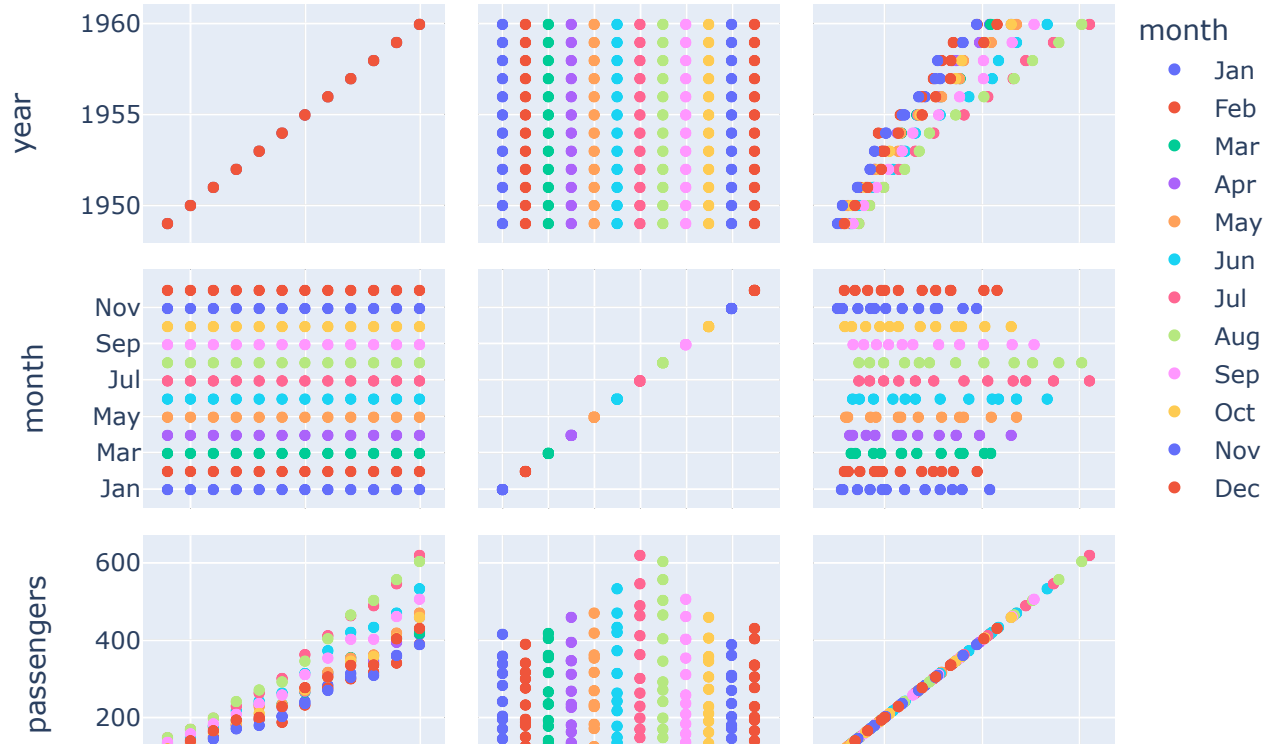
In [3]:
```
flights = sns.load_dataset('flights')

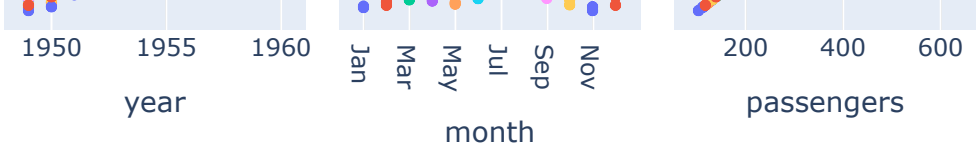
fig = px.scatter_matrix(flights, color='month')

fig
```

```
C:\Users\azizt\anaconda3\lib\site-packages\plotly\express\_core.py:279: FutureWarning:

iteritems is deprecated and will be removed in a future version. Use .items instead.
```





Map Scatter Plot

In [4]:
```
df = px.data.gapminder().query('year==2007')
df
```

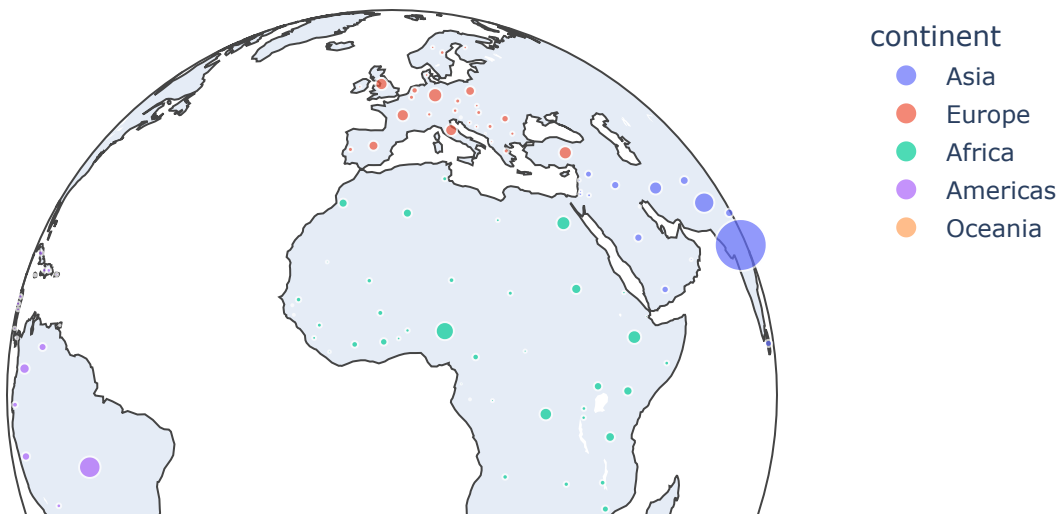
Out[4]:

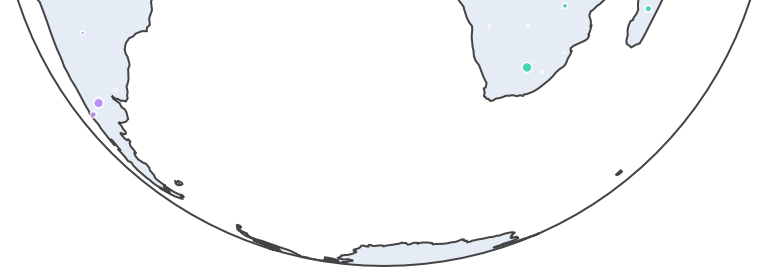
	country	continent	year	lifeExp	pop	gdpPercap	iso_alpha	iso_num
11	Afghanistan	Asia	2007	43.828	31889923	974.580338	AFG	4
23	Albania	Europe	2007	76.423	3600523	5937.029526	ALB	8
35	Algeria	Africa	2007	72.301	33333216	6223.367465	DZA	12
47	Angola	Africa	2007	42.731	12420476	4797.231267	AGO	24
59	Argentina	Americas	2007	75.320	40301927	12779.379640	ARG	32
...	...	...	...	...	...	...	...	...
1655	Vietnam	Asia	2007	74.249	85262356	2441.576404	VNM	704
1667	West Bank and Gaza	Asia	2007	73.422	4018332	3025.349798	PSE	275
1679	Yemen, Rep.	Asia	2007	62.698	22211743	2280.769906	YEM	887
1691	Zambia	Africa	2007	42.384	11746035	1271.211593	ZMB	894
1703	Zimbabwe	Africa	2007	43.487	12311143	469.709298	ZWE	716

142 rows × 8 columns

In [5]:
```
fig = px.scatter_geo(df, locations = 'iso_alpha',
                     color = 'continent',
                     hover_name ='country',
                     size = 'pop',
                     projection = 'orthographic')

fig
```





In [6]:
```
from urllib.request import urlopen
import json
with urlopen('https://raw.githubusercontent.com/plotly/datasets/master/geojson-counties-
    counties = json.load(response)

df = pd.read_csv("https://raw.githubusercontent.com/plotly/datasets/master/fips-unemp-16
df
```

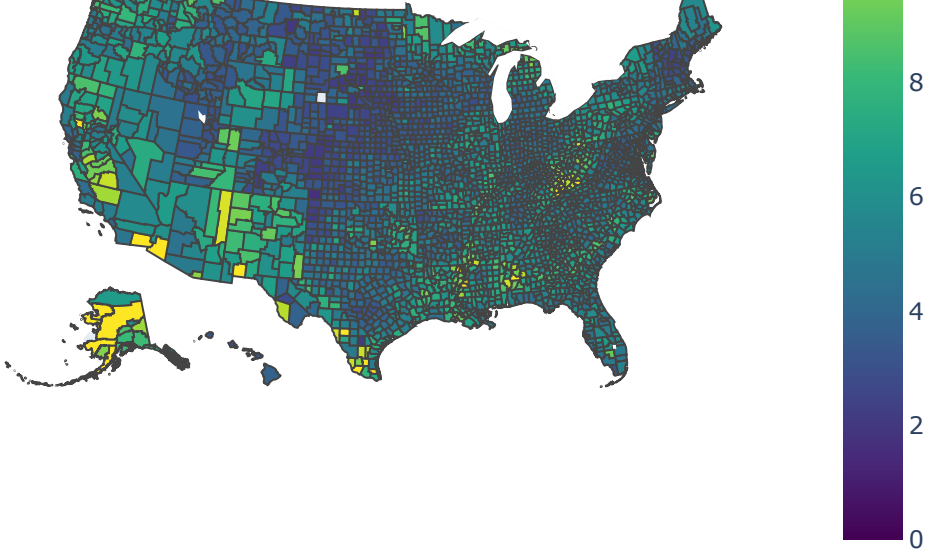
Out[6]:

	fips	unemp
0	01001	5.3
1	01003	5.4
2	01005	8.6
3	01007	6.6
4	01009	5.5
...	...	...
3214	72145	13.9
3215	72147	10.6
3216	72149	20.2
3217	72151	16.9
3218	72153	18.8

3219 rows × 2 columns

In [7]:
```
fig = px.choropleth(df, geojson= counties, locations = 'fips', color = 'unemp',
                    color_continuous_scale='Viridis',
                    range_color=(0,12),
                    scope='usa',
                    labels={'unemp':'employment rate'})
```

In [8]:
```
fig
```



Polar Charts

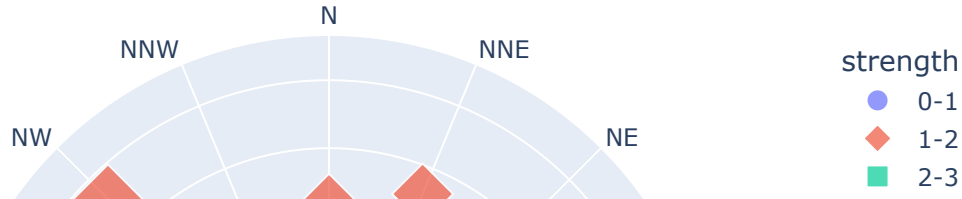
In [9]:
```
df_wind = px.data.wind()
df_wind
```

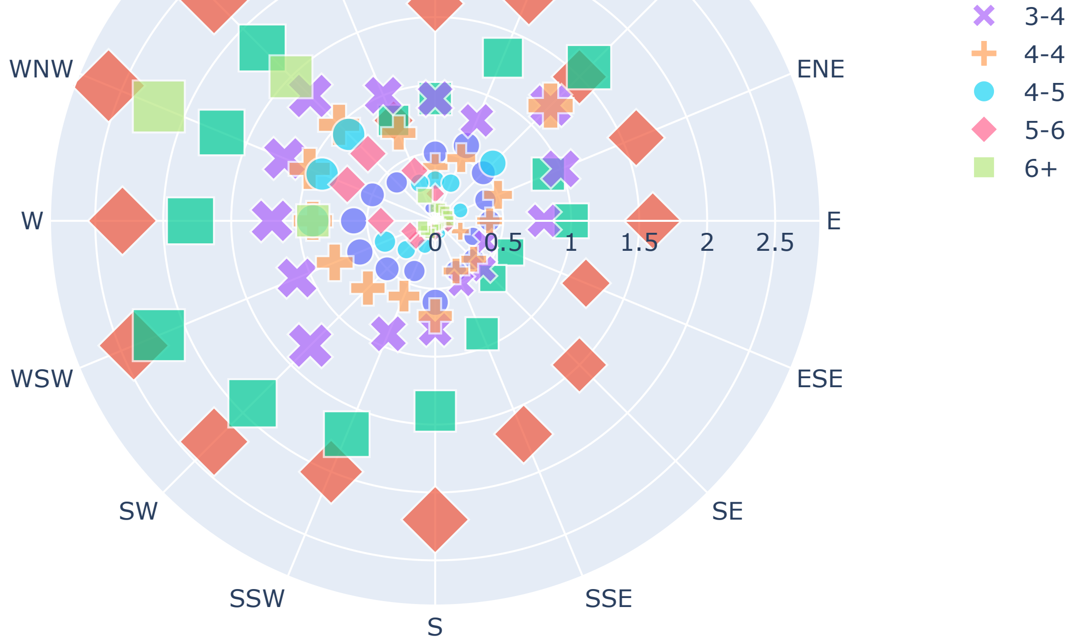
Out[9]:

	direction	strength	frequency
0	N	0-1	0.5
1	NNE	0-1	0.6
2	NE	0-1	0.5
3	ENE	0-1	0.4
4	E	0-1	0.4
...	...	...	...
123	WSW	6+	0.1
124	W	6+	0.9
125	WNW	6+	2.2
126	NW	6+	1.5
127	NNW	6+	0.2

128 rows × 3 columns

In [10]:
```
px.scatter_polar(df_wind, r='frequency', theta='direction', color = 'strength', size = '
```





In [11]:
```
df_wind = px.data.wind()
px.line_polar(df_wind, r="frequency", theta="direction",
              color = "strength", line_close=True,
              template="plotly_dark")

# Time: 1:11:26
```

```
C:\Users\azizt\anaconda3\lib\site-packages\plotly\express\_core.py:271: FutureWarning:

The frame.append method is deprecated and will be removed from pandas in a future versio
n. Use pandas.concat instead.

C:\Users\azizt\anaconda3\lib\site-packages\plotly\express\_core.py:271: FutureWarning:

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```
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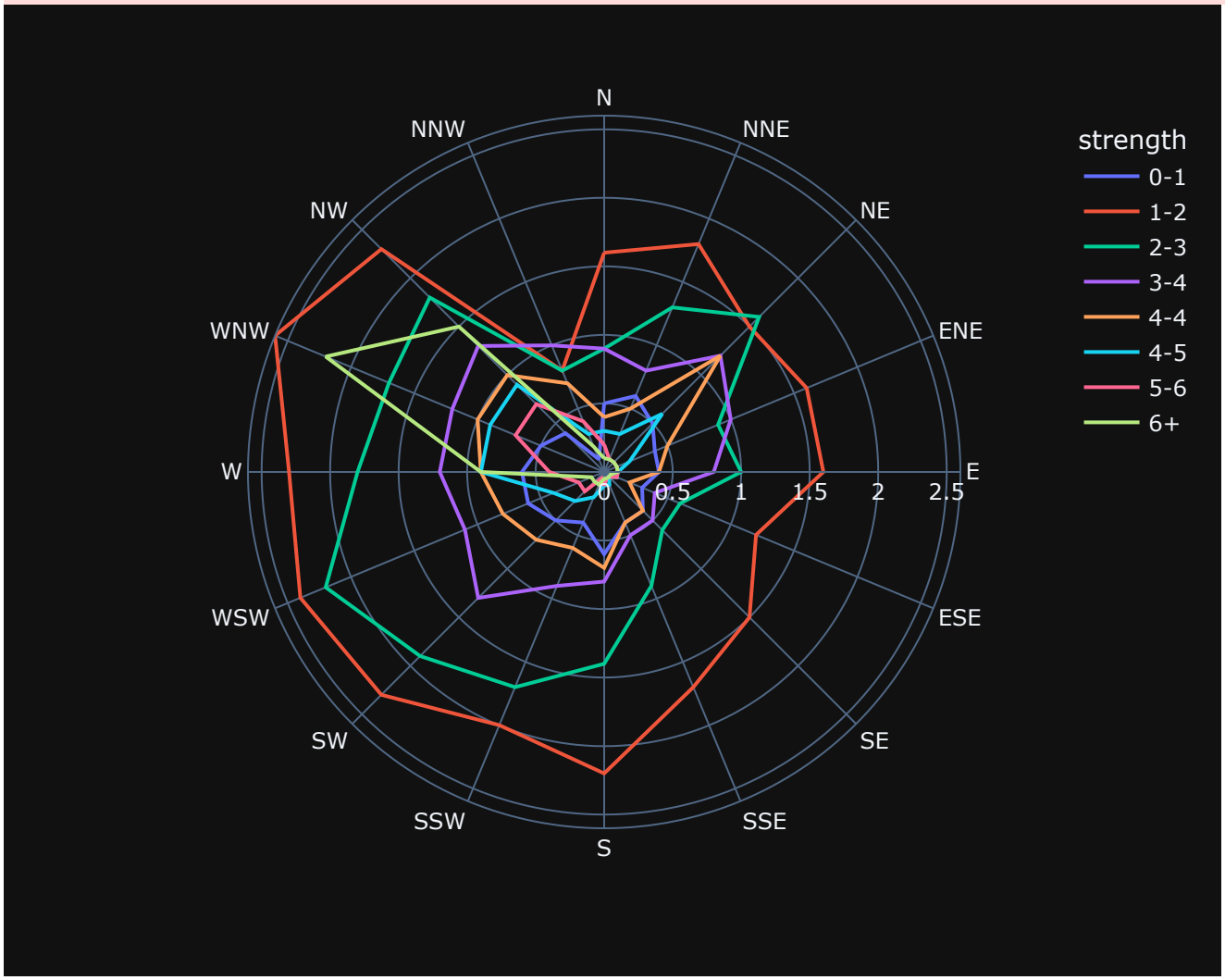
```



Ternary Plots

In [12]:
```
df_exp = px.data.experiment()
df_exp
```

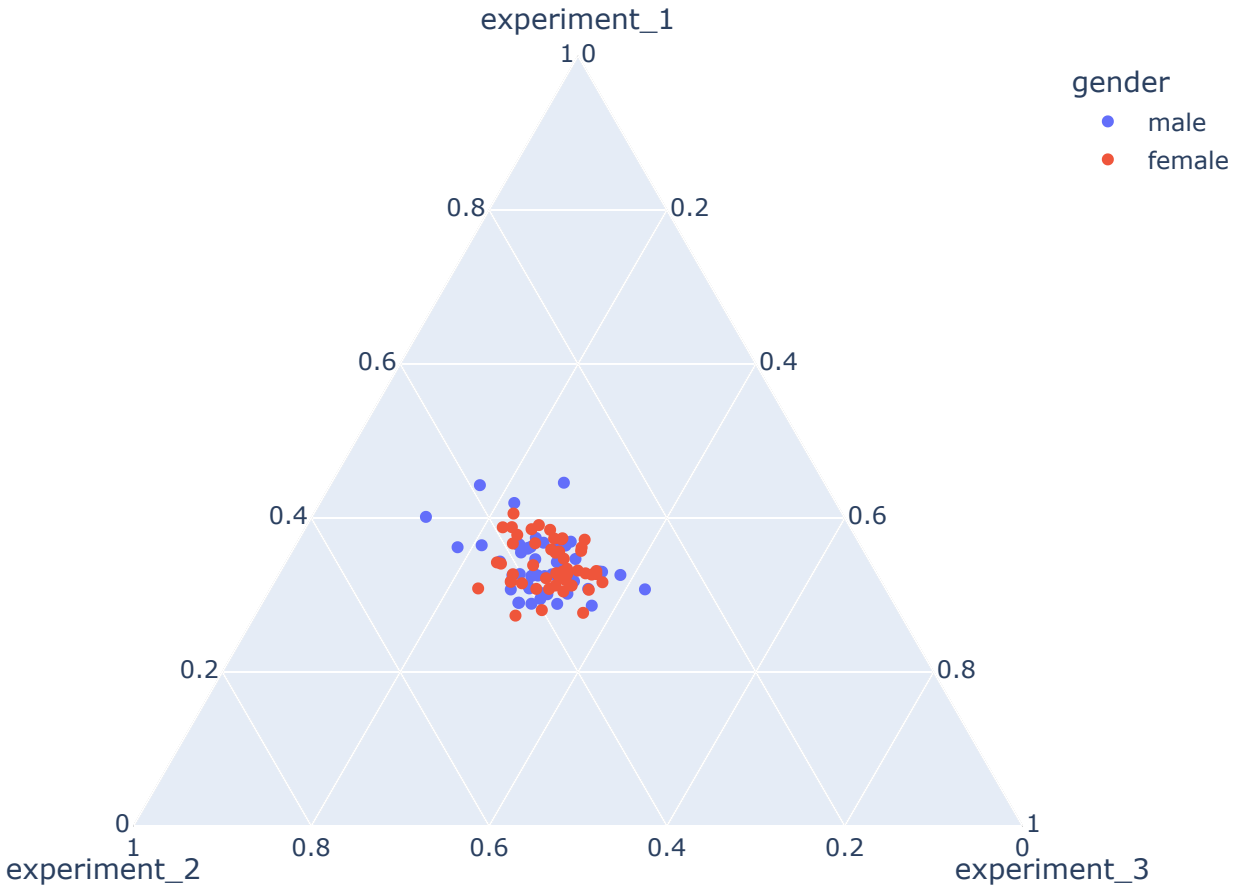
Out[12]:

	experiment_1	experiment_2	experiment_3	gender	group
0	96.876065	93.417942	73.033193	male	control
1	87.301336	129.603395	66.056554	female	control
2	97.691312	106.187916	103.422709	male	treatment
3	102.978152	93.814682	56.995870	female	treatment
4	87.106993	107.019985	72.140292	male	control
...	...	...	...	...	...
95	108.156964	105.971541	64.524029	female	treatment
96	91.739992	111.125377	64.260993	male	control
97	95.410347	84.448322	75.505991	female	control

98	106.362406	115.522382	123.469689	male	treatment
99	94.269237	104.651064	92.387490	female	treatment

100 rows × 5 columns

In [13]:
```
px.scatter_ternary(df_exp, a="experiment_1", b="experiment_2", c="experiment_3", hover_n
```



Facet Plots

In [14]:
```
df_tips = px.data.tips()
df_tips
```

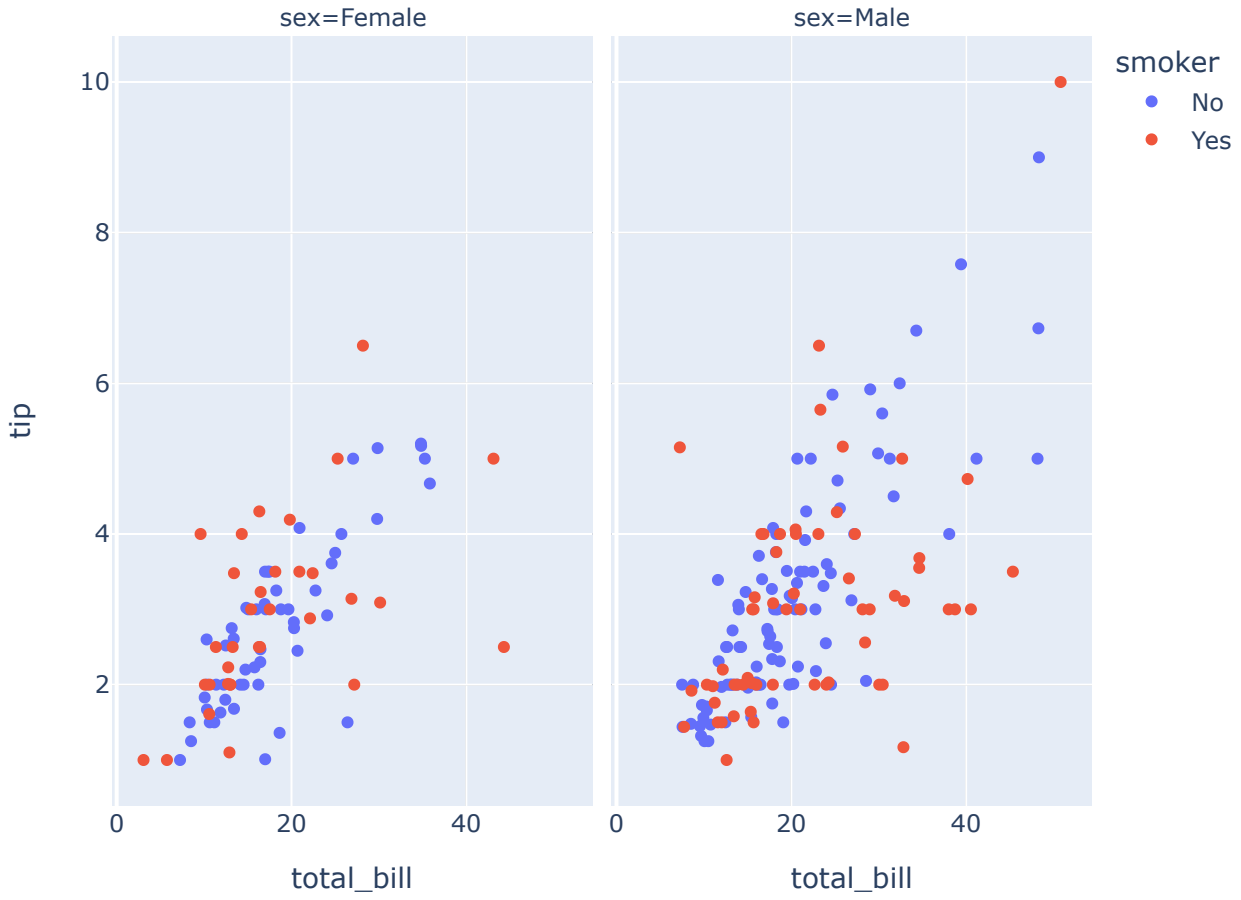
Out[14]:

	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

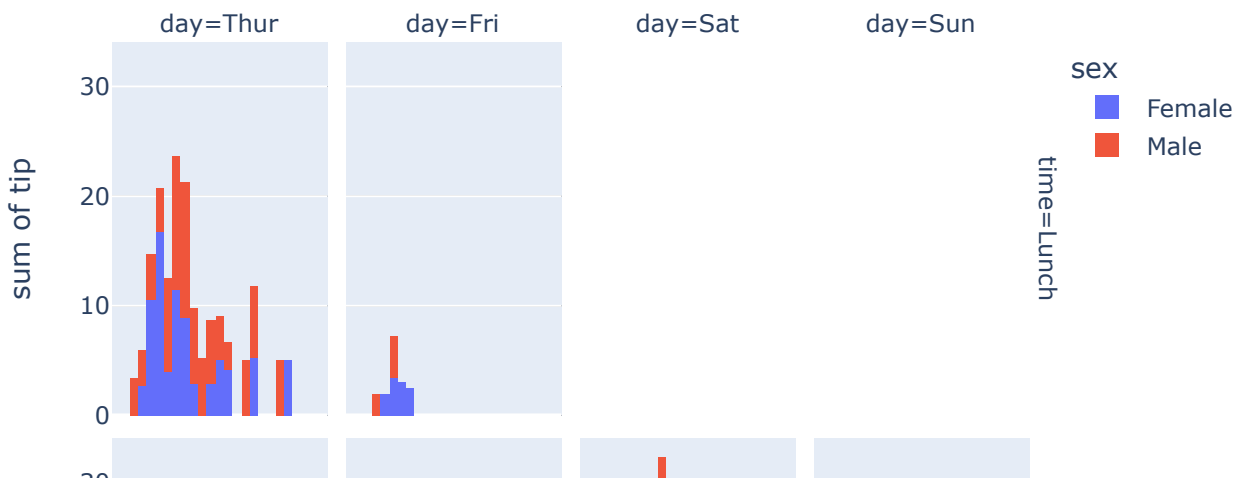
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

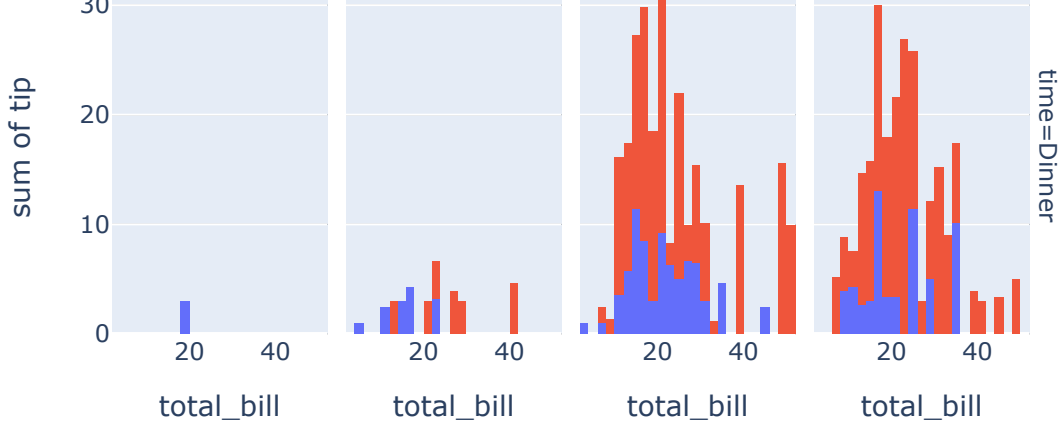
244 rows × 7 columns

In [15]:
```
px.scatter(df_tips, x='total_bill', y='tip', color='smoker', facet_col = 'sex')
```



In [16]:
```
px.histogram(df_tips, x= 'total_bill', y ='tip', color = 'sex', facet_row = 'time', face
             category_orders={'day':['Thur', 'Fri', 'Sat', 'Sun'],
                              'time': ['Lunch', 'Dinner']})
```





In [17]:
```
att_df = sns.load_dataset('attention')
att_df
```

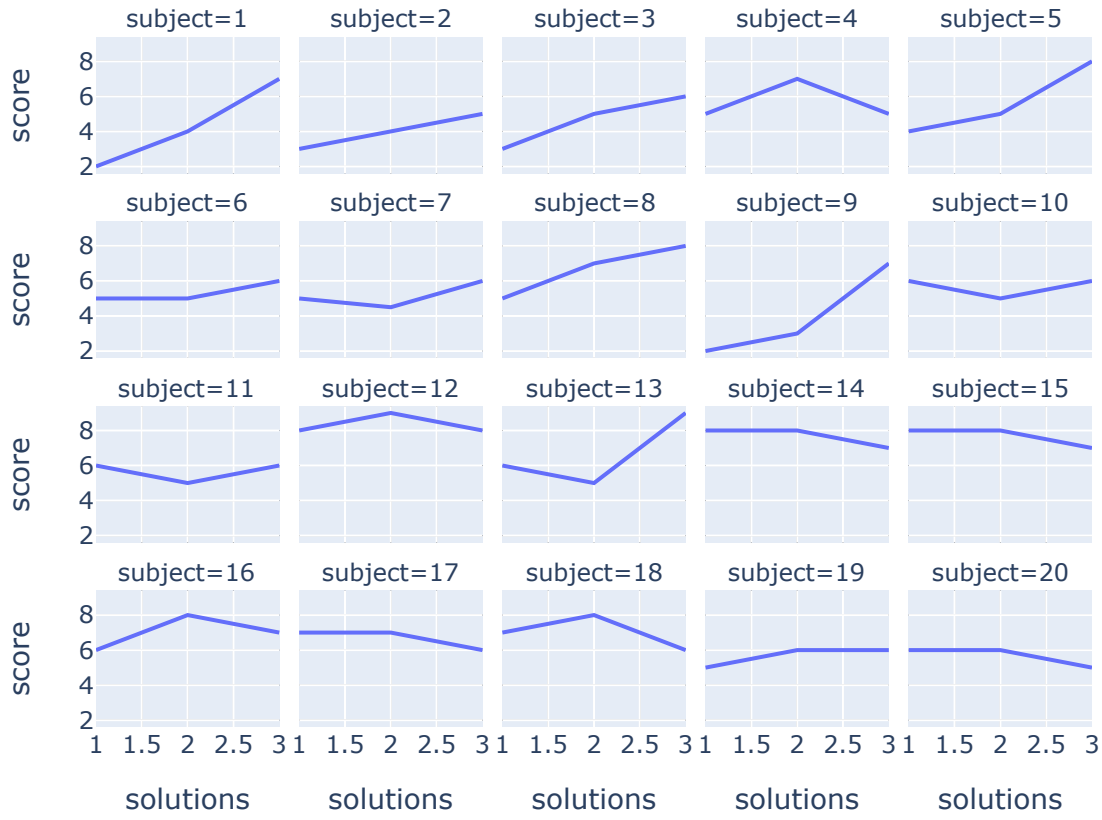
Out[17]:

	Unnamed: 0	subject	attention	solutions	score
0	0	1	divided	1	2.0
1	1	2	divided	1	3.0
2	2	3	divided	1	3.0
3	3	4	divided	1	5.0
4	4	5	divided	1	4.0
5	5	6	divided	1	5.0
6	6	7	divided	1	5.0
7	7	8	divided	1	5.0
8	8	9	divided	1	2.0
9	9	10	divided	1	6.0
10	10	11	focused	1	6.0
11	11	12	focused	1	8.0
12	12	13	focused	1	6.0
13	13	14	focused	1	8.0
14	14	15	focused	1	8.0
15	15	16	focused	1	6.0
16	16	17	focused	1	7.0
17	17	18	focused	1	7.0
18	18	19	focused	1	5.0
19	19	20	focused	1	6.0
20	20	1	divided	2	4.0
21	21	2	divided	2	4.0
22	22	3	divided	2	5.0
23	23	4	divided	2	7.0
24	24	5	divided	2	5.0

25	25	6	divided	2	5.0
26	26	7	divided	2	4.5
27	27	8	divided	2	7.0
28	28	9	divided	2	3.0
29	29	10	divided	2	5.0
30	30	11	focused	2	5.0
31	31	12	focused	2	9.0
32	32	13	focused	2	5.0
33	33	14	focused	2	8.0
34	34	15	focused	2	8.0
35	35	16	focused	2	8.0
36	36	17	focused	2	7.0
37	37	18	focused	2	8.0
38	38	19	focused	2	6.0
39	39	20	focused	2	6.0
40	40	1	divided	3	7.0
41	41	2	divided	3	5.0
42	42	3	divided	3	6.0
43	43	4	divided	3	5.0
44	44	5	divided	3	8.0
45	45	6	divided	3	6.0
46	46	7	divided	3	6.0
47	47	8	divided	3	8.0
48	48	9	divided	3	7.0
49	49	10	divided	3	6.0
50	50	11	focused	3	6.0
51	51	12	focused	3	8.0
52	52	13	focused	3	9.0
53	53	14	focused	3	7.0
54	54	15	focused	3	7.0
55	55	16	focused	3	7.0
56	56	17	focused	3	6.0
57	57	18	focused	3	6.0
58	58	19	focused	3	6.0
59	59	20	focused	3	5.0

In [18]:
```
fig = px.line(att_df, x='solutions', y='score', facet_col='subject', facet_col_wrap=5, t
```

In [19]:
```
fig
```



Animated Plots

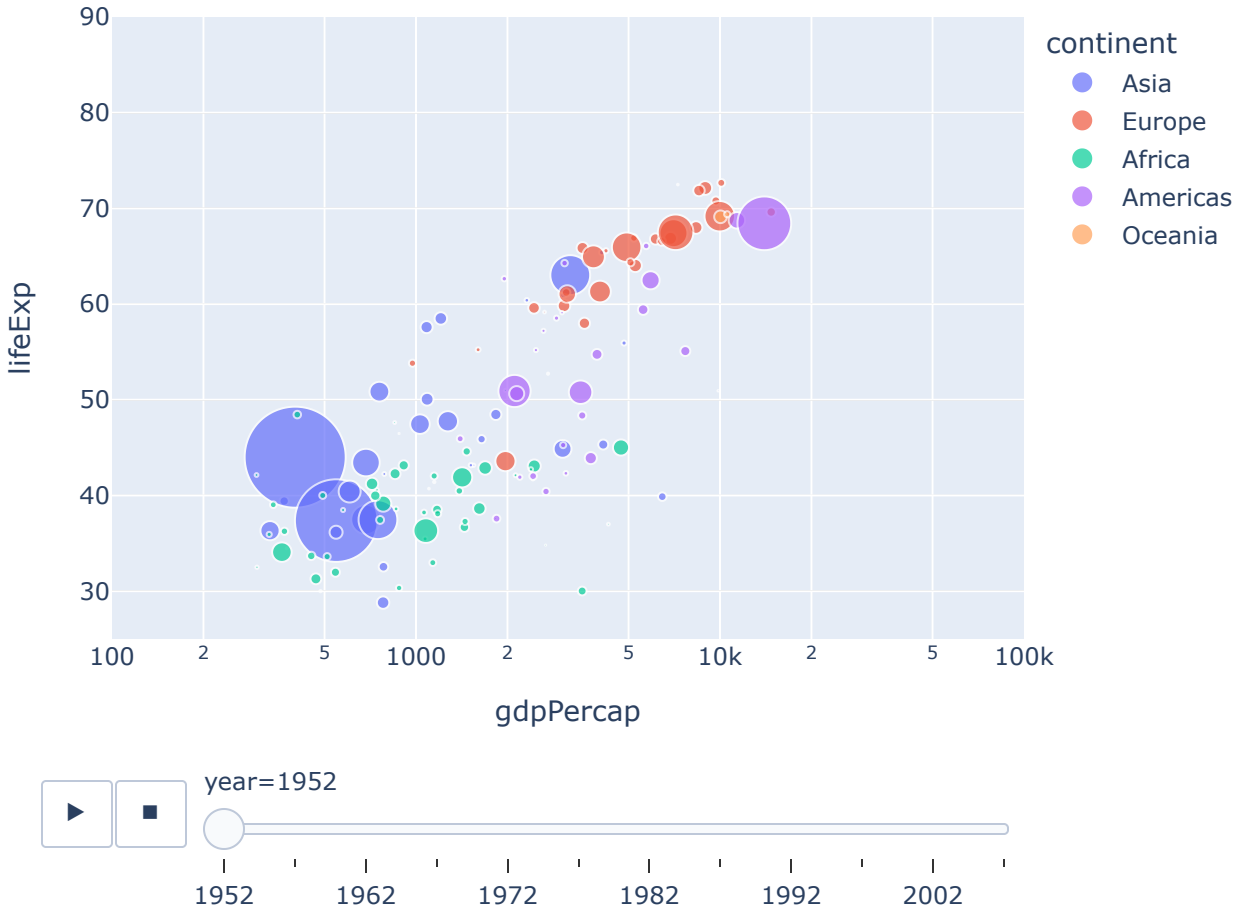
In [20]:
```
df_cnt = px.data.gapminder()
df_cnt
```

Out[20]:

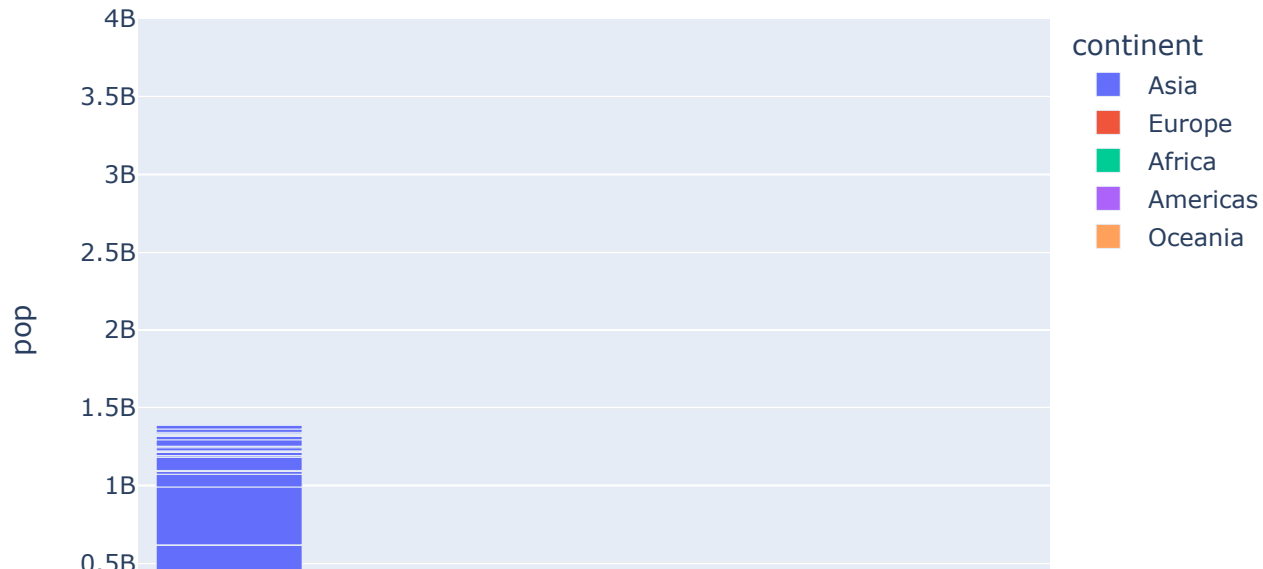
	country	continent	year	lifeExp	pop	gdpPercap	iso_alpha	iso_num
0	Afghanistan	Asia	1952	28.801	8425333	779.445314	AFG	4
1	Afghanistan	Asia	1957	30.332	9240934	820.853030	AFG	4
2	Afghanistan	Asia	1962	31.997	10267083	853.100710	AFG	4
3	Afghanistan	Asia	1967	34.020	11537966	836.197138	AFG	4
4	Afghanistan	Asia	1972	36.088	13079460	739.981106	AFG	4
...	...	...	...	...	...	...	...	...
1699	Zimbabwe	Africa	1987	62.351	9216418	706.157306	ZWE	716
1700	Zimbabwe	Africa	1992	60.377	10704340	693.420786	ZWE	716
1701	Zimbabwe	Africa	1997	46.809	11404948	792.449960	ZWE	716
1702	Zimbabwe	Africa	2002	39.989	11926563	672.038623	ZWE	716
1703	Zimbabwe	Africa	2007	43.487	12311143	469.709298	ZWE	716

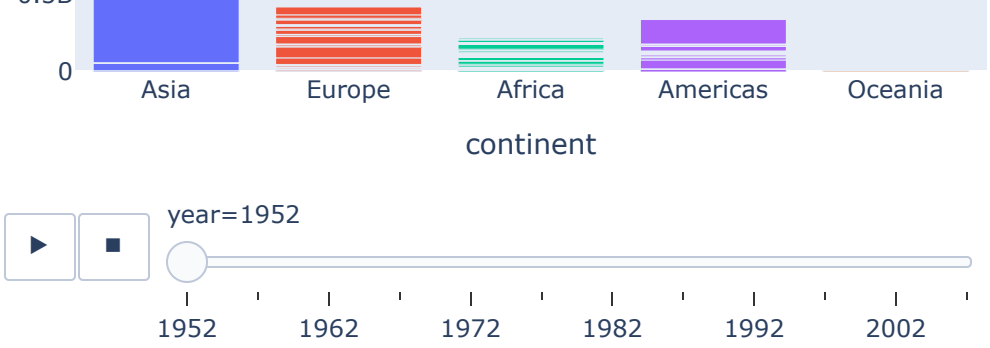
1704 rows × 8 columns

In [21]:
```
px.scatter(df_cnt, x='gdpPercap', y='lifeExp',
           animation_frame = 'year',
           animation_group = 'country',
           size='pop', color='continent', hover_name='country',
           log_x=True, size_max=55, range_x=[100, 100000],
           range_y=[25,90])
```



In [22]:
```
px.bar(df_cnt, x='continent', y='pop', color='continent', animation_frame='year', animat
       range_y=[0, 4000000000])
```




0
Asia
Europe
Africa
Americas
Oceania
continent
year=1952
1952
1962
1972
1982
1992
2002

In [ ]:

In [ ]:

In [ ]: