In [1]:

```
import pandas as pd
```

In [2]:

```
df = pd.read_csv('FT1000.csv')
```

In [3]:

```
df.head()
```

Out[3]:

	Rank	Name	Ranked2021	Ranked2020	Country	Sector	CAGR	Revenue2020	Revenu
0	1	Swappie	No	No	Finland	Technology	477.43	97611814	5
1	2	Kilo Health	No	No	Lithuania	Health	450.05	57318766	3
2	3	OCI	No	No	UK	Financial Services	409.59	568322073	43
3	4	OnlyFans	No	No	UK	Technology	393.63	316732986	26
4	5	Enpal	No	No	Germany	Energy	386.88	56109613	4

In [4]:

```
df.tail()
```

Out[4]:

	Rank	Name	Ranked2021	Ranked2020	Country	Sector	CAGR	Revenue2020
995	996	peopleForecast	No	No	Germany	Technology	36.59	2086411
996	997	Digitalpa	No	No	Italy	Management Consulting	36.59	1731340
997	998	Faktenkontor	No	No	Germany	Advertising	36.59	30967000
998	999	CLAREO	Yes	Yes	France	Retail	36.58	18854708
999	1000	Laca Trade	Yes	Yes	Italy	Property	36.55	24741510

In [5]:

```
df.shape
```

Out[5]:

```
(1000, 12)
```

In [6]:

```
df.columns
```

Out[6]:

```
Index(['Rank', 'Name', 'Ranked2021', 'Ranked2020', 'Country', 'Sector', 'CAG
R',
       'Revenue2020', 'Revenue2017', 'Employees2020', 'Employees2017',
       'FoundingYear'],
      dtype='object')
```

In [7]:

```
df.duplicated().sum()
```

Out[7]:

```
0
```

In [8]:

```
df.isnull().sum()
```

Out[8]:

```
Rank             0
Name             0
Ranked2021       0
Ranked2020       0
Country          0
Sector           0
CAGR             0
Revenue2020      0
Revenue2017      0
Employees2020    0
Employees2017    0
FoundingYear     0
dtype: int64
```

In [9]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1000 entries, 0 to 999
Data columns (total 12 columns):
 #   Column          Non-Null Count  Dtype  
---  ------          --------------  -----  
 0   Rank            1000 non-null   int64  
 1   Name            1000 non-null   object 
 2   Ranked2021      1000 non-null   object 
 3   Ranked2020      1000 non-null   object 
 4   Country         1000 non-null   object 
 5   Sector          1000 non-null   object 
 6   CAGR            1000 non-null   float64
 7   Revenue2020     1000 non-null   int64  
 8   Revenue2017     1000 non-null   int64  
 9   Employees2020   1000 non-null   int64  
 10  Employees2017   1000 non-null   int64  
 11  FoundingYear    1000 non-null   int64  
dtypes: float64(1), int64(6), object(5)
memory usage: 93.9+ KB
```

In [10]:

```
df.describe()
```

Out[10]:

	Rank	CAGR	Revenue2020	Revenue2017	Employees2020	Employees2017	F
count	1000.000000	1000.000000	1.000000e+03	1.000000e+03	1000.000000	1000.000000	
mean	500.500000	78.881950	2.034009e+07	4.005901e+06	79.948000	26.480000	
std	288.819436	52.471399	7.771805e+07	9.207763e+06	161.448155	63.526161	
min	1.000000	36.550000	1.507867e+06	1.007110e+05	1.000000	0.000000	
25%	250.750000	46.582500	3.186724e+06	6.283870e+05	14.000000	4.000000	
50%	500.500000	61.105000	6.361154e+06	1.271956e+06	30.000000	10.000000	
75%	750.250000	93.522500	1.662410e+07	3.549436e+06	70.000000	23.000000	
max	1000.000000	477.430000	2.120072e+09	1.453982e+08	1798.000000	767.000000	

In [11]:

```
df.nunique()
```

Out[11]:

```
Rank              1000
Name              1000
Ranked2021           2
Ranked2020           2
Country             30
Sector              39
CAGR               931
Revenue2020        999
Revenue2017        999
Employees2020      225
Employees2017      122
FoundingYear        42
dtype: int64
```

In [12]:

```
df['Ranked2021'].unique()
```

Out[12]:

```
array(['No', 'Yes'], dtype=object)
```

In [13]:

```
df['Ranked2021'].value_counts()
```

Out[13]:

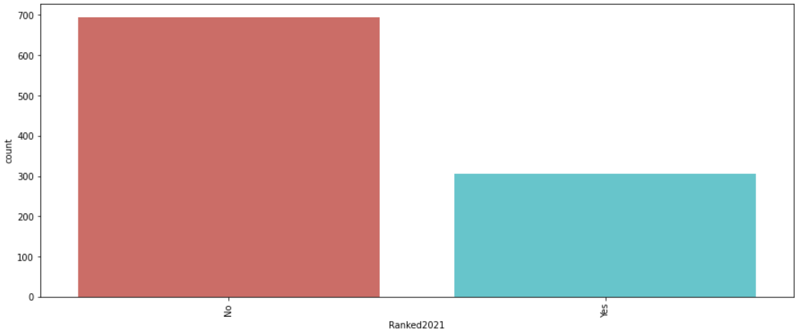
```
No     694
Yes    306
Name: Ranked2021, dtype: int64
```

In [14]:

```
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings("ignore")
```

In [15]:

```
plt.figure(figsize=(15,6))
sns.countplot('Ranked2021', data = df, palette = 'hls')
plt.xticks(rotation = 90)
plt.show()
```



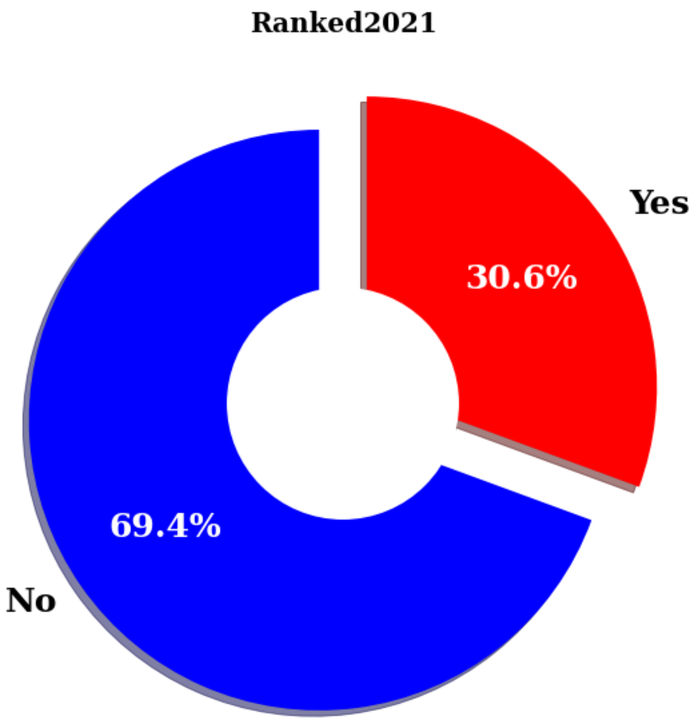
In [16]:

```
label_data = df['Ranked2021'].value_counts()

explode = (0.1, 0.1)
plt.figure(figsize=(14, 10))
patches, texts, pcts = plt.pie(label_data,
                               labels = label_data.index,
                               colors = ['blue', 'red'],
                               pctdistance = 0.65,
                               shadow = True,
                               startangle = 90,
                               explode = explode,
                               autopct = '%1.1f%%',
                               textprops={ 'fontsize': 25,
                                           'color': 'black',
                                           'weight': 'bold',
                                           'family': 'serif' })
plt.setp(pcts, color='white')

hfont = {'fontname':'serif', 'weight': 'bold'}
plt.title('Ranked2021', size=20, **hfont)

centre_circle = plt.Circle((0,0),0.40,fc='white')
fig = plt.gcf()
fig.gca().add_artist(centre_circle)
plt.show()
```



In [17]:

```
df['Ranked2020'].unique()
```

Out[17]:

```
array(['No', 'Yes'], dtype=object)
```

In [18]:

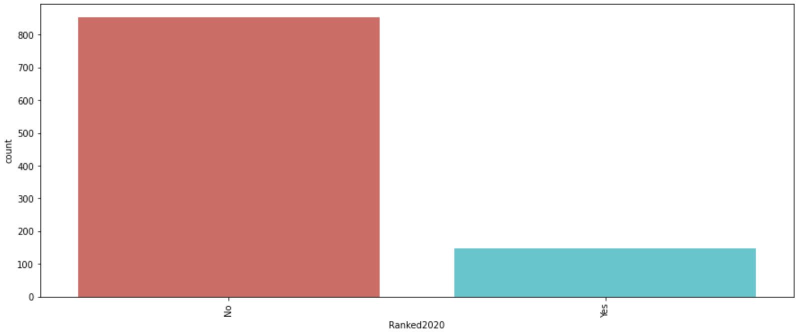
```
df['Ranked2020'].value_counts()
```

Out[18]:

```
No     852
Yes    148
Name: Ranked2020, dtype: int64
```

In [19]:

```
plt.figure(figsize=(15,6))
sns.countplot('Ranked2020', data = df, palette = 'hls')
plt.xticks(rotation = 90)
plt.show()
```



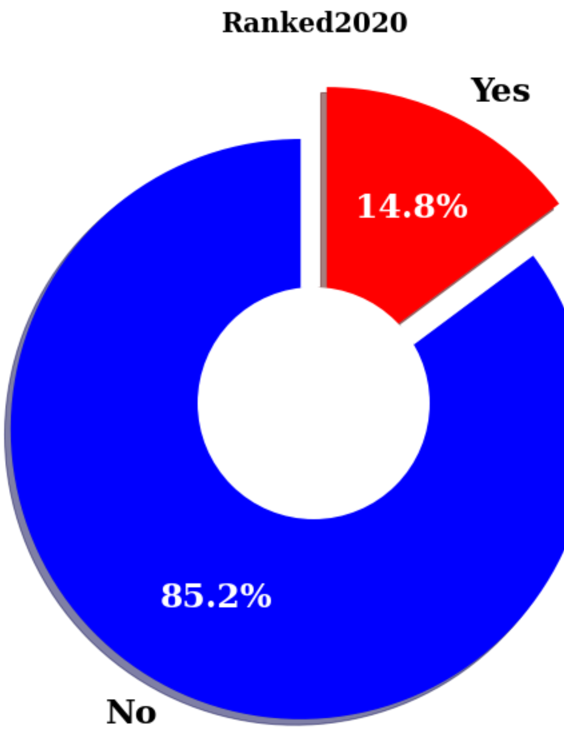
In [20]:

```
label_data = df['Ranked2020'].value_counts()

explode = (0.1, 0.1)
plt.figure(figsize=(14, 10))
patches, texts, pcts = plt.pie(label_data,
                               labels = label_data.index,
                               colors = ['blue', 'red'],
                               pctdistance = 0.65,
                               shadow = True,
                               startangle = 90,
                               explode = explode,
                               autopct = '%1.1f%%',
                               textprops={ 'fontsize': 25,
                                           'color': 'black',
                                           'weight': 'bold',
                                           'family': 'serif' })
plt.setp(pcts, color='white')

hfont = {'fontname':'serif', 'weight': 'bold'}
plt.title('Ranked2020', size=20, **hfont)

centre_circle = plt.Circle((0,0),0.40,fc='white')
fig = plt.gcf()
fig.gca().add_artist(centre_circle)
plt.show()
```



In [21]:

```
df['Country'].unique()
```

Out[21]:

```
array(['Finland', 'Lithuania', 'UK', 'Germany', 'France', 'Italy',
       'Sweden', 'Austria', 'Switzerland', 'Norway', 'Poland', 'Belgium',
       'Latvia', 'The Netherlands', 'Luxembourg', 'Spain', 'Greece',
       'Portugal', 'Denmark', 'Cyprus', 'Hungary', 'Ireland', 'Slovakia',
       'Estonia', 'Czech Republic', 'Croatia', 'Romania', 'Bulgaria',
       'Slovenia', 'Liechtenstein'], dtype=object)
```

In [22]:

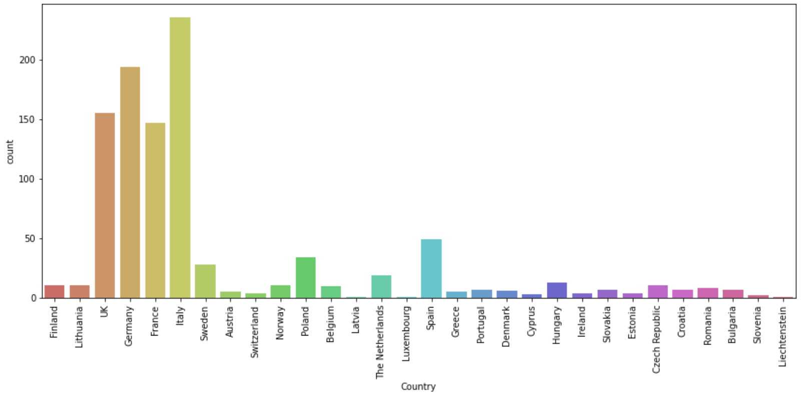
```
df['Country'].value_counts()
```

Out[22]:

```
Italy              235
Germany            194
UK                 155
France             147
Spain               49
Poland              34
Sweden              28
The Netherlands     19
Hungary             13
Czech Republic      11
Lithuania           11
Finland             11
Norway              11
Belgium             10
Romania              8
Bulgaria             7
Portugal             7
Slovakia             7
Croatia              7
Denmark              6
Greece               5
Austria              5
Ireland              4
Switzerland          4
Estonia              4
Cyprus               3
Slovenia             2
Latvia               1
Luxembourg           1
Liechtenstein        1
Name: Country, dtype: int64
```

In [23]:

```
plt.figure(figsize=(15,6))
sns.countplot('Country', data = df, palette = 'hls')
plt.xticks(rotation = 90)
plt.show()
```



In [24]:

```
df['Sector'].unique()
```

Out[24]:

```
array(['Technology', 'Health', 'Financial Services', 'Energy',
       'Waste management & recycling', 'Industrial Goods', 'Ecommerce',
       'Food & Beverage', 'Support Services', 'Fintech', 'Transport',
       'Fashion', 'Retail', 'Games industry', 'Education', 'Property',
       'Management Consulting', 'Advertising', 'Interiors',
       'Pharmaceuticals', 'Personal & Household Goods', 'Automobiles',
       'Cyber Security', 'Construction', 'Batteries', 'Beauty',
       'Chemicals & Pharmaceuticals', 'Media', 'Aerospace & Defence',
       'Sales & Marketing', 'Telecoms', 'Agricultural Commodities',
       'Travel & Leisure', 'Restaurants', 'Insurance', 'Architecture',
       'Law', 'Precious metals', 'Sales and Marketing'], dtype=object)
```

In [25]:

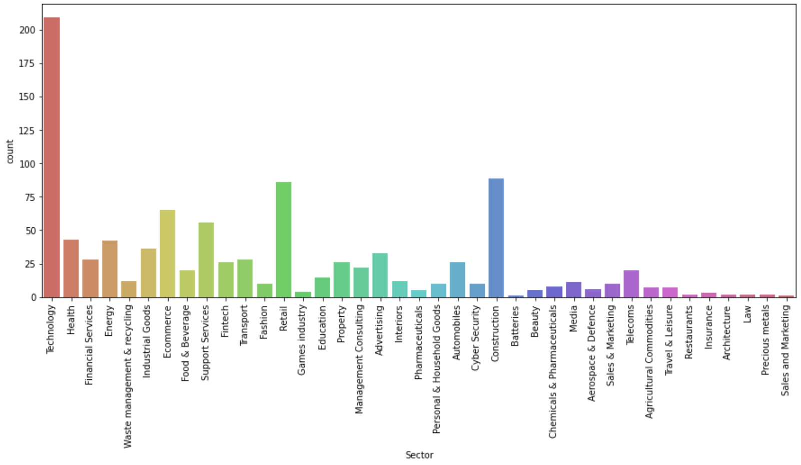
```
df['Sector'].value_counts()
```

Out[25]:

```
Technology                       209
Construction                      89
Retail                            86
Ecommerce                         65
Support Services                  56
Health                            43
Energy                            42
Industrial Goods                  36
Advertising                       33
Transport                         28
Financial Services                28
Fintech                           26
Automobiles                       26
Property                          26
Management Consulting             22
Telecoms                          20
Food & Beverage                   20
Education                         15
Interiors                         12
Waste management & recycling      12
Media                             11
Sales & Marketing                 10
Personal & Household Goods        10
Cyber Security                    10
Fashion                           10
Chemicals & Pharmaceuticals        8
Travel & Leisure                   7
Agricultural Commodities           7
Aerospace & Defence                6
Pharmaceuticals                    5
Beauty                             5
Games industry                     4
Insurance                          3
Restaurants                        2
Architecture                       2
Law                                2
Precious metals                    2
Batteries                          1
Sales and Marketing                1
Name: Sector, dtype: int64
```

In [26]:

```
plt.figure(figsize=(15,6))
sns.countplot('Sector', data = df, palette = 'hls')
plt.xticks(rotation = 90)
plt.show()
```



In [27]:

```
df['FoundingYear'].unique()
```

Out[27]:

```
array([2016, 2013, 2012, 2017, 2015, 2014, 2011, 2000, 2006, 2004, 2001,
       2010, 2008, 2009, 2005, 2007, 2003, 1989, 1996, 1976, 1999, 1990,
       1982, 2002, 1986, 1984, 1994, 1993, 1998, 1979, 1952, 1997, 1983,
       1977, 1965, 1975, 1956, 1995, 1991, 1938, 1992, 1898], dtype=int64)
```

In [28]:

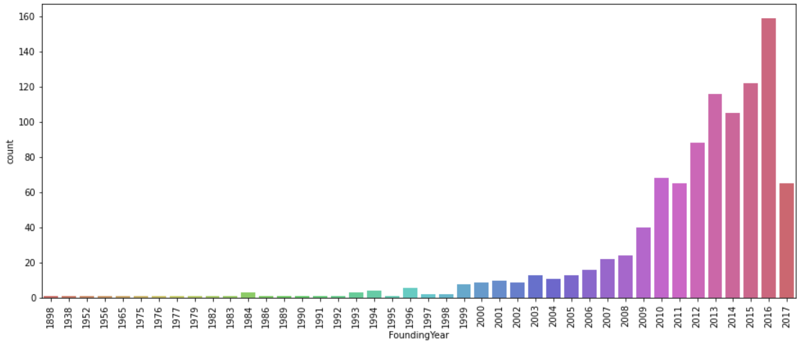
```
df['FoundingYear'].value_counts()
```

Out[28]:

```
2016    159
2015    122
2013    116
2014    105
2012     88
2010     68
2017     65
2011     65
2009     40
2008     24
2007     22
2006     16
2005     13
2003     13
2004     11
2001     10
2000      9
2002      9
1999      8
1996      6
1994      4
1984      3
1993      3
1998      2
1997      2
1938      1
1992      1
1991      1
1977      1
1995      1
1956      1
1975      1
1965      1
1990      1
1983      1
1952      1
1979      1
1986      1
1982      1
1976      1
1989      1
1898      1
Name: FoundingYear, dtype: int64
```

In [29]:

```
plt.figure(figsize=(15,6))
sns.countplot('FoundingYear', data = df, palette = 'hls')
plt.xticks(rotation = 90)
plt.show()
```

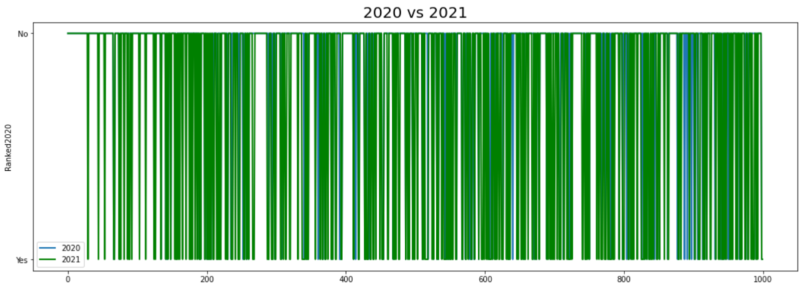


In [30]:

```
import plotly.express as px
import plotly.graph_objects as go
from plotly import tools
from plotly.subplots import make_subplots
from plotly.offline import iplot, init_notebook_mode
```

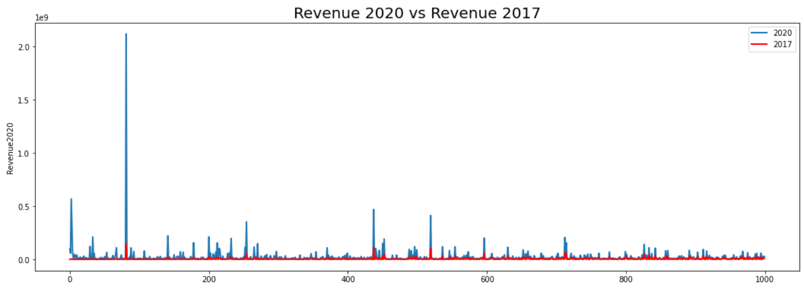
In [31]:

```
plt.figure(figsize=(18,6))
plt.title('2020 vs 2021',fontsize = 20)
sns.lineplot(data=df['Ranked2020'],linewidth = 2, label = '2020')
sns.lineplot(data=df['Ranked2021'],linewidth = 2, label = '2021', color='green')
plt.show()
```



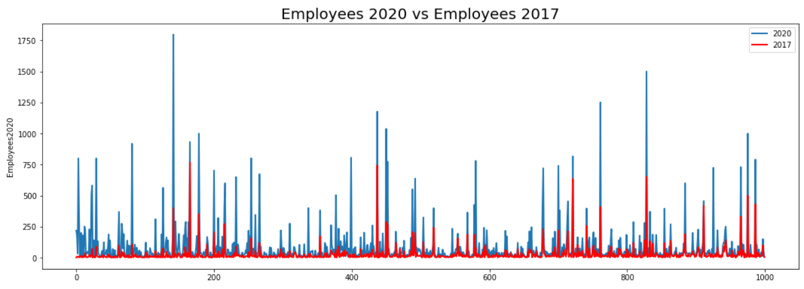
In [32]:

```
plt.figure(figsize=(18,6))
plt.title('Revenue 2020 vs Revenue 2017',fontsize = 20)
sns.lineplot(data=df['Revenue2020'],linewidth = 2, label = '2020')
sns.lineplot(data=df['Revenue2017'],linewidth = 2, label = '2017', color='r')
plt.show()
```



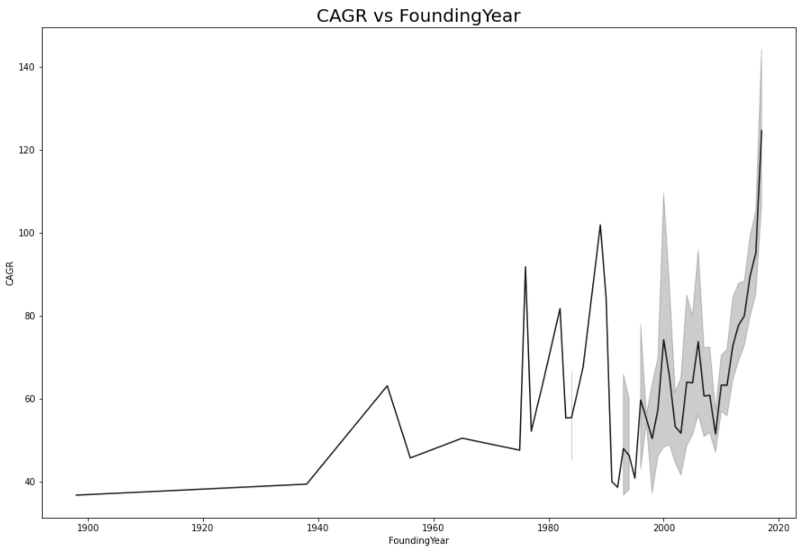
In [33]:

```
plt.figure(figsize=(18,6))
plt.title('Employees 2020 vs Employees 2017',fontsize = 20)
sns.lineplot(data=df['Employees2020'],linewidth = 2, label = '2020')
sns.lineplot(data=df['Employees2017'],linewidth = 2, label = '2017', color='r')
plt.show()
```



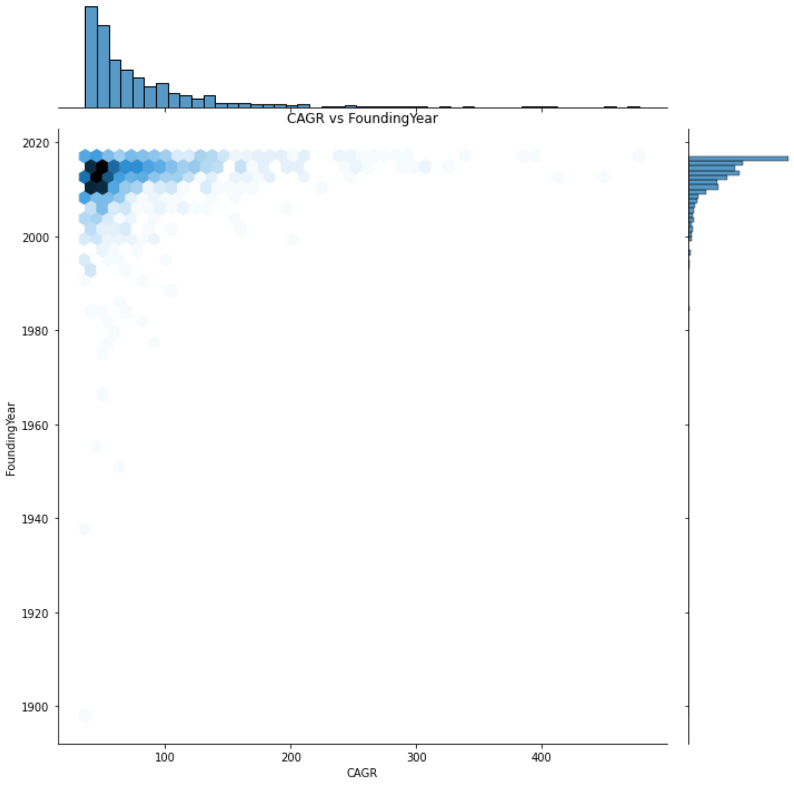
In [34]:

```
plt.figure(figsize=(15,10))
sns.lineplot(data=df, x='FoundingYear', y='CAGR', color='black', alpha=0.9)
plt.title('CAGR vs FoundingYear',fontsize = 20)
plt.show()
```



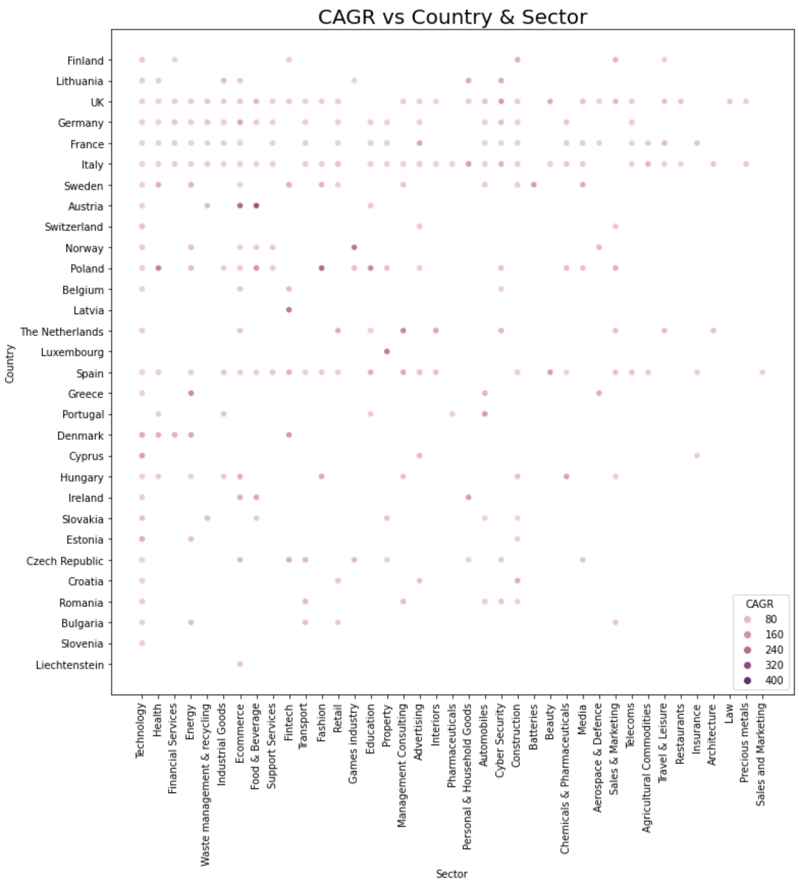
In [35]:

```
sns.jointplot(x='CAGR', y='FoundingYear', data=df , height = 10 , kind='hex')
plt.title('CAGR vs FoundingYear',fontsize = 12)
plt.show()
```



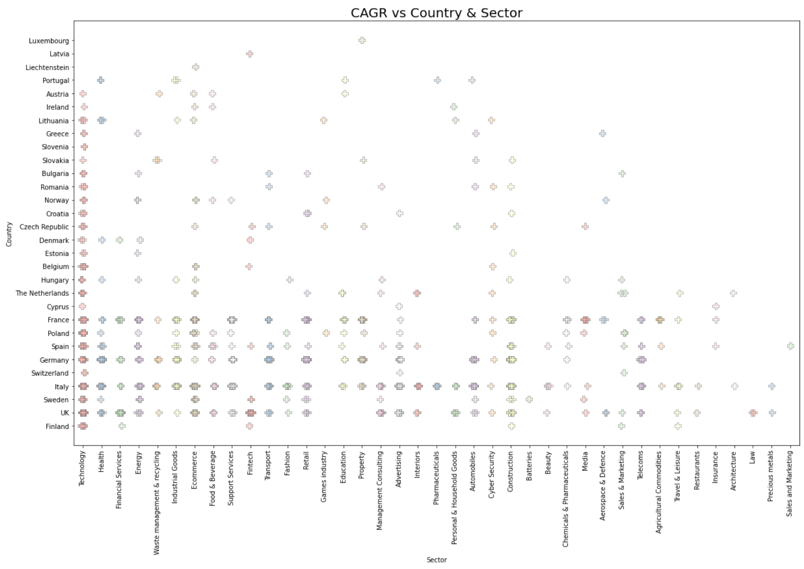
In [36]:

```
plt.figure(figsize=(12,12))
sns.scatterplot(x='Sector',y='Country',hue='CAGR',data=df)
plt.xticks(rotation=90)
plt.title('CAGR vs Country & Sector',fontsize = 20)
plt.show()
```



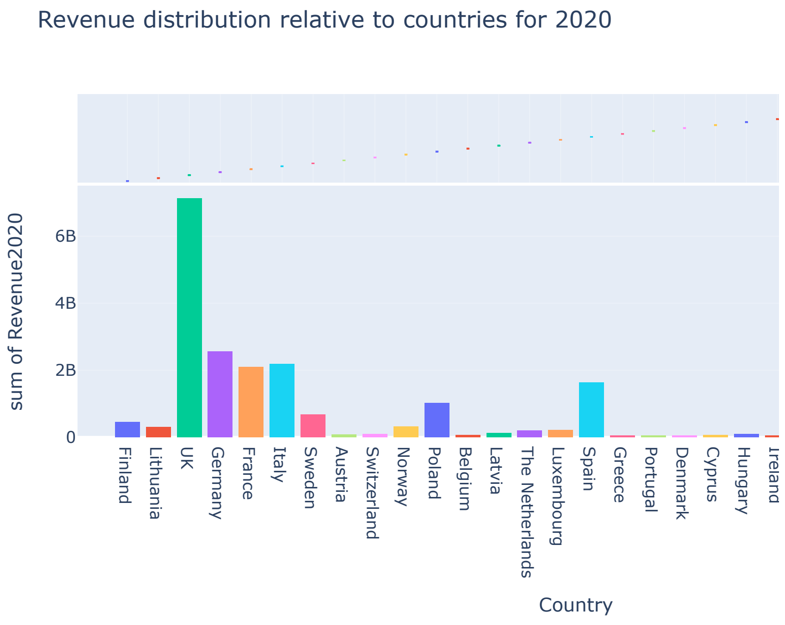
In [37]:

```
fig, ax = plt.subplots(figsize=(20,12))
plt.xticks(rotation=90)
ax = sns.stripplot(y='Country', x='Sector', data=df, palette='Pastel1', s=10, marker='P', li
plt.title('CAGR vs Country & Sector',fontsize = 20)
plt.show()
```



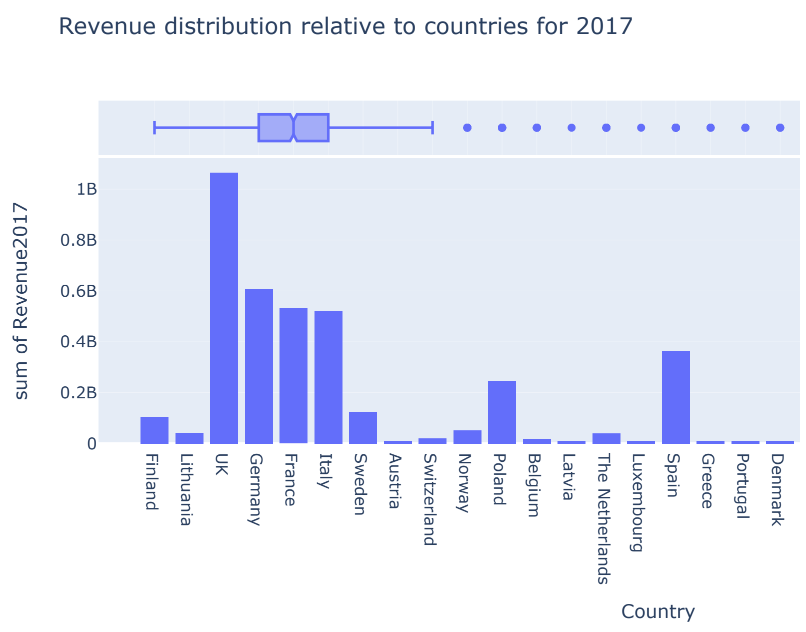
In [38]:

```
fig= px.histogram(df, x='Country',color='Country', y='Revenue2020',marginal='box'
                  ,hover_data=df.columns,title= 'Revenue distribution relative to countries
                  width=1000, height=500)
fig.show()
```



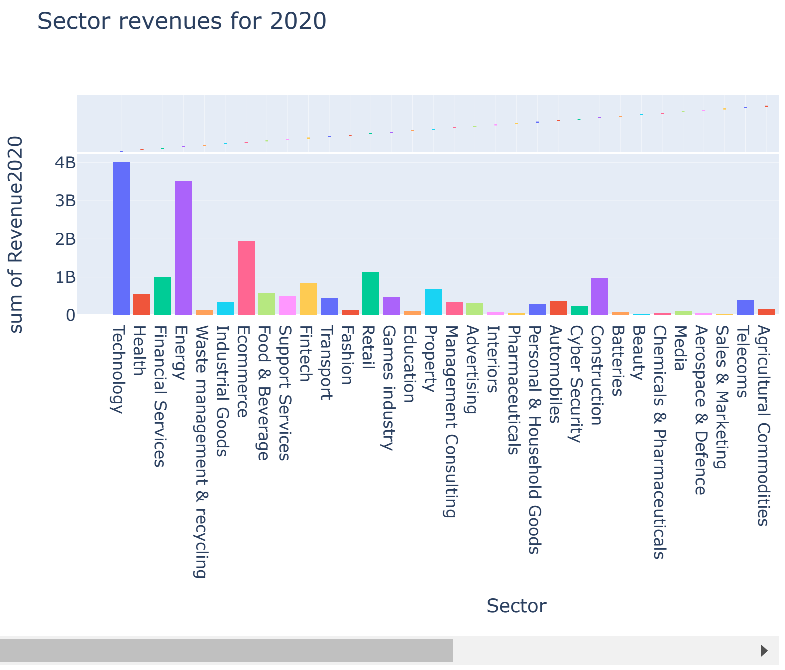
In [39]:

```
fig= px.histogram(df, x='Country', y='Revenue2017',marginal='box',hover_data=df.columns,
                  title= 'Revenue distribution relative to countries for 2017',
                  width=1000, height=500)
fig.show()
```



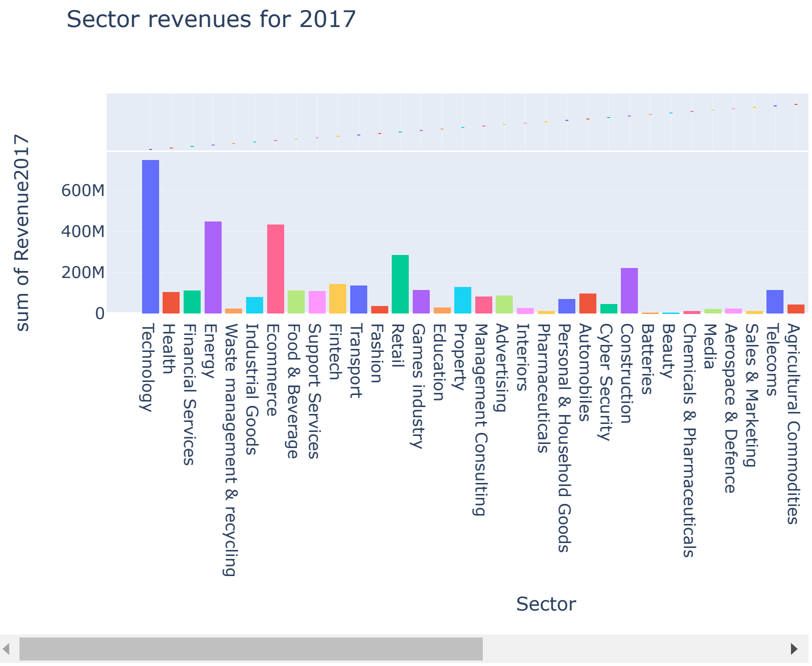
In [40]:

```
fig= px.histogram(df, x='Sector', color='Sector',y='Revenue2020',
                  marginal='box',hover_data=df.columns,
                  title= 'Sector revenues for 2020', width=1000, height=500)
fig.show()
```



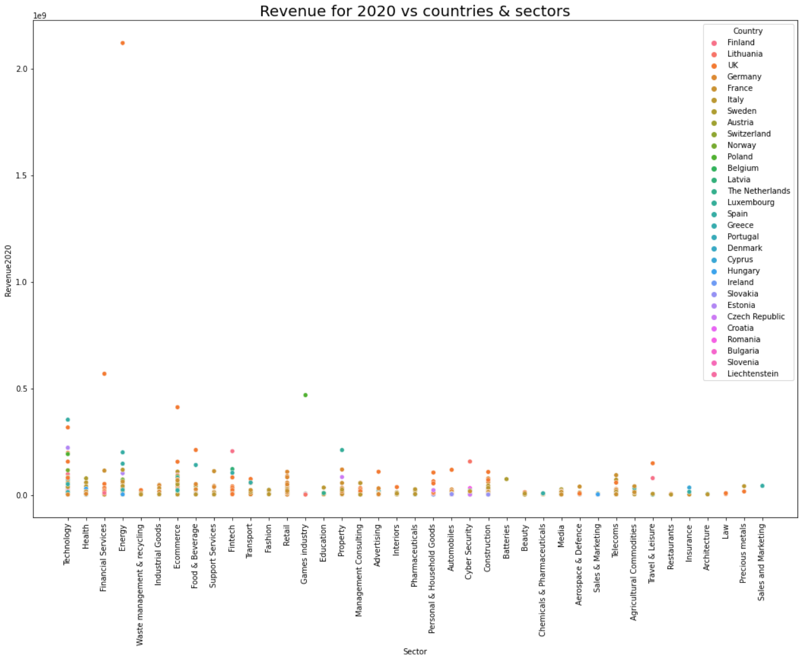
In [41]:

```
fig= px.histogram(df, x='Sector', color='Sector',y='Revenue2017',marginal='box',
                  hover_data=df.columns,title= 'Sector revenues for 2017',
                  width=1000, height=500)
fig.show()
```



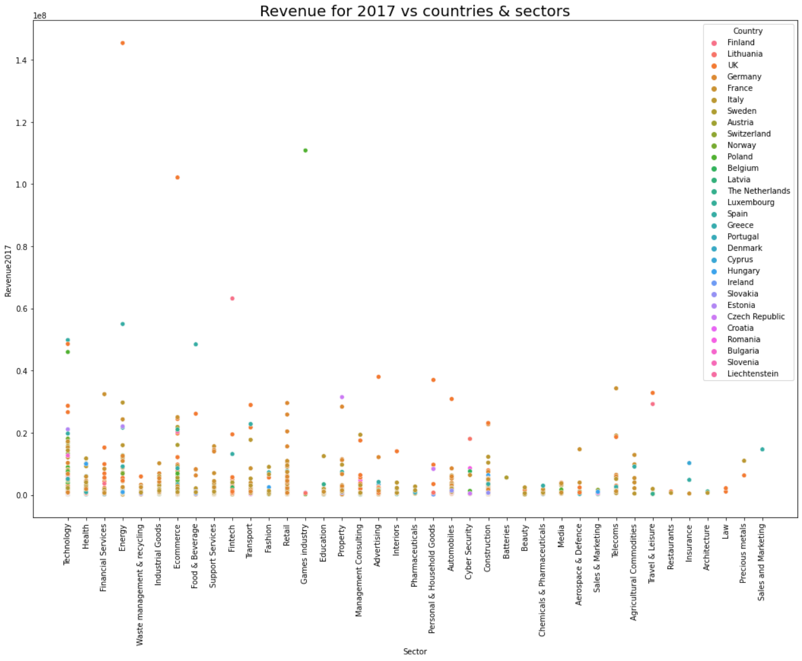
In [42]:

```
plt.figure(figsize=(18,12))
sns.scatterplot(data=df, x='Sector', y='Revenue2020', hue='Country', legend=True)
plt.xticks(rotation=90)
plt.title('Revenue for 2020 vs countries & sectors',fontsize = 20)
plt.show()
```



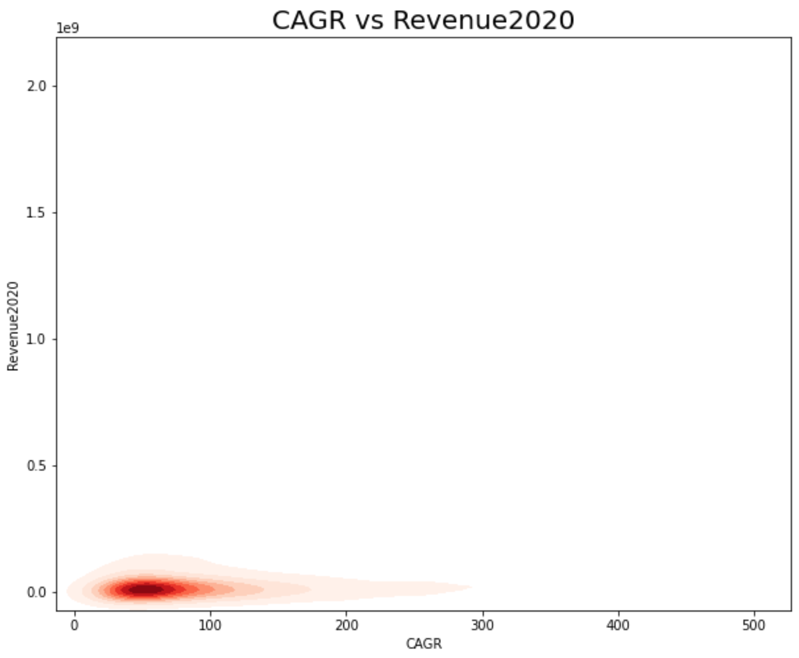
In [43]:

```
plt.figure(figsize=(18,12))
sns.scatterplot(data=df, x='Sector', y='Revenue2017', hue='Country', legend=True)
plt.xticks(rotation=90)
plt.title('Revenue for 2017 vs countries & sectors',fontsize = 20)
plt.show()
```



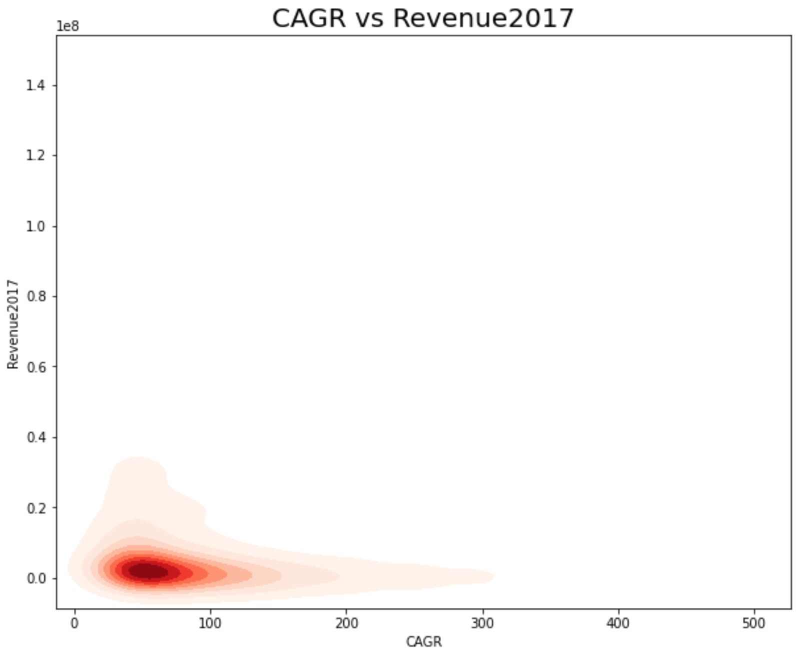
In [44]:

```
plt.figure(figsize=(10,8))
sns.kdeplot(df['CAGR'],df['Revenue2020'],shade=True,cmap='Reds', shade_lowest=False)
plt.title('CAGR vs Revenue2020',fontsize = 20)
plt.show()
```



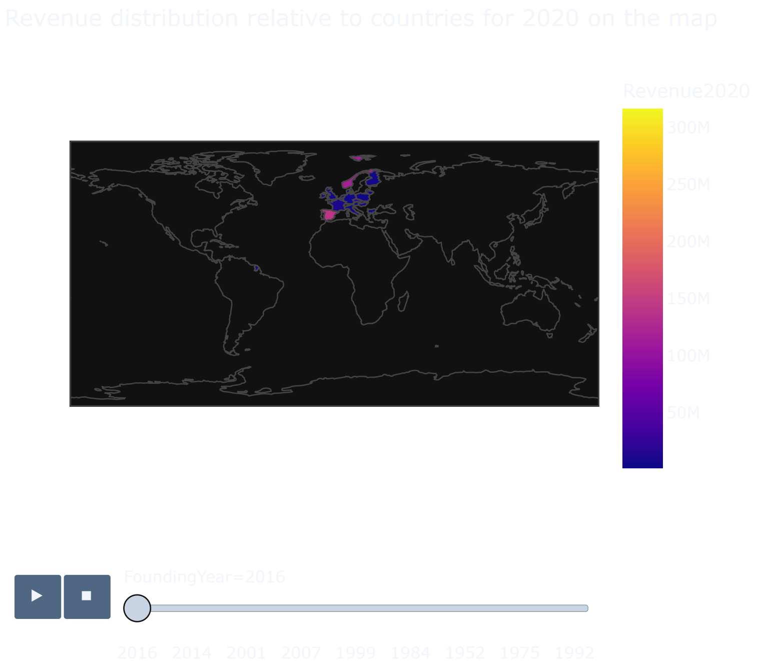
In [45]:

```
plt.figure(figsize=(10,8))
sns.kdeplot(df['CAGR'],df['Revenue2017'],shade=True,cmap='Reds', shade_lowest=False)
plt.title('CAGR vs Revenue2017',fontsize = 20)
plt.show()
```



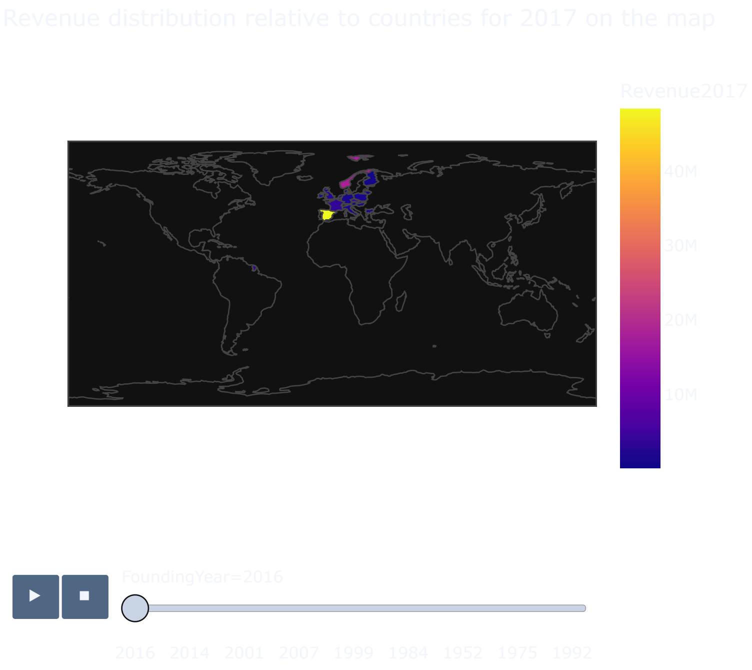
In [46]:

```
fig=px.choropleth(data_frame=df,locations=df['Country'],locationmode='country names',color=d
fig.update_layout(dict1={'title':'Revenue distribution relative to countries for 2020 on the
fig.show()
```



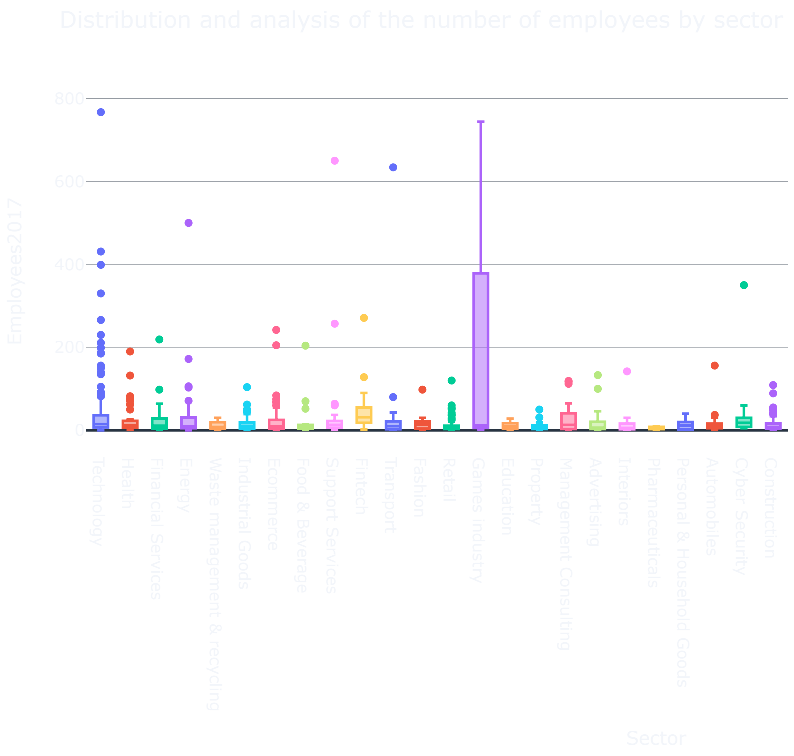
In [47]:

```
fig=px.choropleth(data_frame=df,locations=df['Country'],locationmode='country names',color=d
fig.update_layout(dict1={'title':'Revenue distribution relative to countries for 2017 on the
fig.show()
```



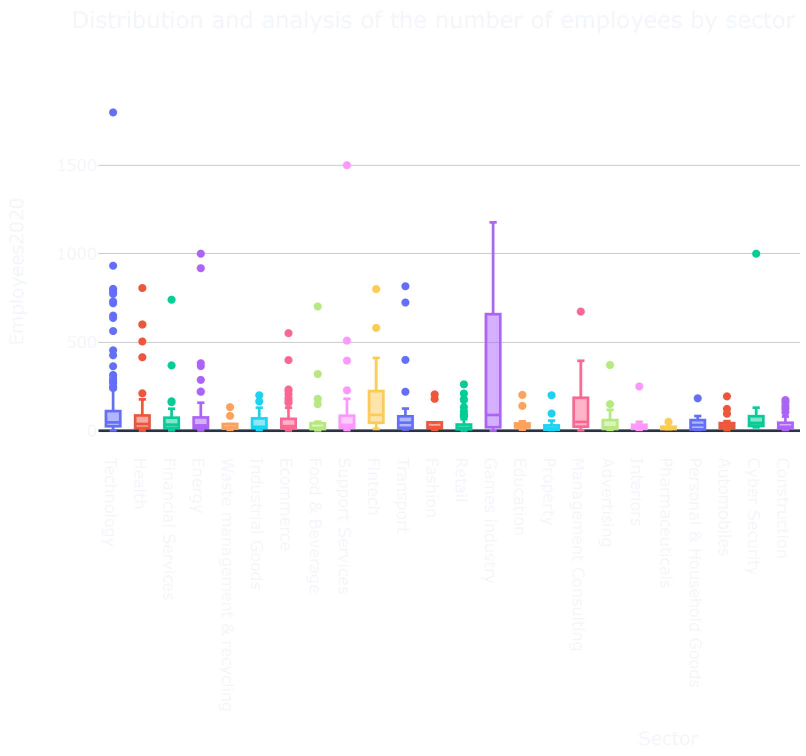
In [48]:

```
fig = px.box(df, x='Sector', color='Sector', y='Employees2017',
             title='Distribution and analysis of the number of employees by sector in 2017',
fig.show()
```



In [49]:

```
fig = px.box(df, x='Sector', color='Sector', y='Employees2020',
             title= 'Distribution and analysis of the number of employees by sector in 2020'
fig.show()
```


Distribution and analysis of the number of employees by sector
Employees2020
Technology
Health
Financial Services
Energy
Waste management & recycling
Industrial Goods
Ecommerce
Food & Beverage
Support Services
Fintech
Transport
Fashion
Retail
Games industry
Education
Property
Management Consulting
Advertising
Interiors
Pharmaceuticals
Personal & Household Goods
Automobiles
Cyber Security
Construction
Sector