In [1]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
print(df)
```

```
              artist                                          song  \
0        Fatman Scoop                                 Be Faithful
1             Madonna  4 Minutes (feat. Justin Timberlake & Timbaland)
2     Alexandra Burke                                   Hallelujah
3     Black Eyed Peas                           I Gotta Feeling
4           Flo Rida                                  Right Round
...              ...                                          ...
1101       Sam Smith          Dancing With A Stranger (with Normani)
1102     Post Malone                                      Circles
1103       t.A.T.u.                       All The Things She Said
1104      Will Smith                                       Switch
1105             NSG                                      Options

      duration_ms  explicit  year  popularity  danceability  energy  key  \
0          164506      True  2009          49         0.649   0.713    7
1          189693     False  2009          71         0.753   0.931    2
2          217826     False  2009          63         0.177   0.425    2
3          289133     False  2009          80         0.743   0.766    0
4          204640     False  2009          74         0.720   0.672    7
...           ...       ...   ...         ...           ...     ...  ...
1101       171029     False  2019          75         0.741   0.520    8
1102       215280     False  2019          85         0.695   0.762    0
1103       214440      True  2020          39         0.527   0.834    5
1104       197666     False  2020          34         0.873   0.900    5
1105       240081      True  2020          57         0.836   0.621    1

      loudness  mode  speechiness  acousticness  instrumentalness  liveness  \
0       -6.488     1       0.2950      0.000787          0.000000    0.3180
1       -4.922     1       0.0652      0.009940          0.006960    0.2340
2       -6.211     0       0.0291      0.654000          0.000000    0.1950
3       -6.375     1       0.0265      0.087300          0.000000    0.5090
4       -6.852     1       0.0551      0.009000          0.000000    0.2320
...        ...   ...          ...           ...               ...       ...
1101    -7.513     1       0.0656      0.450000          0.000002    0.2220
1102    -3.497     1       0.0395      0.192000          0.002440    0.0863
1103    -5.767     0       0.0474      0.041100          0.005990    0.1050
1104    -4.325     0       0.1800      0.010700          0.000502    0.5560
1105    -4.684     0       0.0894      0.389000          0.000092    0.1040

      valence    tempo                      genre
0      0.6290  101.129                    hip hop
1      0.7670  113.029                        pop
2      0.0942  182.571                        pop
3      0.6100  127.960               hip hop, pop
4      0.7050  124.986               hip hop, pop
...       ...      ...                        ...
1101   0.3470  102.998                        pop
1102   0.5530  120.042                    hip hop
1103   0.3810  179.920                        pop
1104   0.4780  102.516               hip hop, pop
1105   0.7620  101.993  World/Traditional, hip hop

[1106 rows x 18 columns]
```

In [2]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
df.shape
```

Out[2]:
```
(1106, 18)
```

In [3]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
df.columns
```

Out[3]:
```
Index(['artist', 'song', 'duration_ms', 'explicit', 'year', 'popularity',
       'danceability', 'energy', 'key', 'loudness', 'mode', 'speechiness',
       'acousticness', 'instrumentalness', 'liveness', 'valence', 'tempo',
       'genre'],
      dtype='object')
```

In [4]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1106 entries, 0 to 1105
Data columns (total 18 columns):
 #   Column            Non-Null Count  Dtype  
---  ------            --------------  -----  
 0   artist            1106 non-null   object 
 1   song              1106 non-null   object 
 2   duration_ms       1106 non-null   int64  
 3   explicit          1106 non-null   bool   
 4   year              1106 non-null   int64  
 5   popularity        1106 non-null   int64  
 6   danceability      1106 non-null   float64
 7   energy            1106 non-null   float64
 8   key               1106 non-null   int64  
 9   loudness          1106 non-null   float64
 10  mode              1106 non-null   int64  
 11  speechiness       1106 non-null   float64
 12  acousticness      1106 non-null   float64
 13  instrumentalness  1106 non-null   float64
 14  liveness          1106 non-null   float64
 15  valence           1106 non-null   float64
 16  tempo             1106 non-null   float64
 17  genre             1106 non-null   object 
dtypes: bool(1), float64(9), int64(5), object(3)
memory usage: 148.1+ KB
```

In [5]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
df=df.astype('category')
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1106 entries, 0 to 1105
Data columns (total 18 columns):
 #   Column            Non-Null Count  Dtype   
---  ------            --------------  -----   
 0   artist            1106 non-null   category
 1   song              1106 non-null   category
 2   duration_ms       1106 non-null   category
 3   explicit          1106 non-null   category
 4   year              1106 non-null   category
 5   popularity        1106 non-null   category
 6   danceability      1106 non-null   category
 7   energy            1106 non-null   category
 8   key               1106 non-null   category
 9   loudness          1106 non-null   category
 10  mode              1106 non-null   category
 11  speechiness       1106 non-null   category
 12  acousticness      1106 non-null   category
 13  instrumentalness  1106 non-null   category
 14  liveness          1106 non-null   category
 15  valence           1106 non-null   category
 16  tempo             1106 non-null   category
 17  genre             1106 non-null   category
dtypes: category(18)
memory usage: 378.6 KB
```

In [6]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
df.isnull()
```

Out[6]:

	artist	song	duration_ms	explicit	year	popularity	danceability	energy	key	loudness	mode	speechiness	acousticness	instrumentalness	liveness
0	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1101	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
1102	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
1103	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
1104	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False
1105	False	False	False	False	False	False	False	False	False	False	False	False	False	False	False

1106 rows × 18 columns

In [7]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
df.isnull().sum()
```

Out[7]:
```
artist              0
song                0
duration_ms         0
explicit            0
year                0
popularity          0
danceability        0
energy              0
key                 0
loudness            0
mode                0
speechiness         0
acousticness        0
instrumentalness    0
liveness            0
valence             0
tempo               0
genre               0
dtype: int64
```

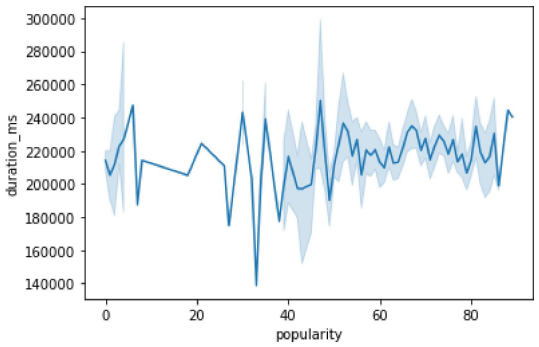
In [8]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
df.describe()
```

Out[8]:

	duration_ms	year	popularity	danceability	energy	key	loudness	mode	speechiness	acousticness	instrumentalness
count	1106.000000	1106.000000	1106.000000	1106.000000	1106.000000	1106.000000	1106.000000	1106.000000	1106.000000	1106.000000	1106.000000
mean	219611.028029	2014.051537	59.550633	0.665689	0.714273	5.422242	-5.433215	0.553345	0.098726	0.129975	0.012443
std	35978.227356	3.124572	24.943405	0.133177	0.150741	3.686813	1.895656	0.497371	0.091302	0.178504	0.078656
min	113000.000000	2009.000000	0.000000	0.177000	0.054900	0.000000	-20.514000	0.000000	0.023200	0.000041	0.000000
25%	198053.750000	2011.000000	57.000000	0.585000	0.618250	2.000000	-6.428750	0.000000	0.040700	0.014500	0.000000
50%	216013.000000	2014.000000	68.000000	0.674000	0.732000	6.000000	-5.238000	1.000000	0.058100	0.054900	0.000000
75%	237210.000000	2017.000000	75.000000	0.753000	0.830000	9.000000	-4.119500	1.000000	0.114750	0.173750	0.000046
max	484146.000000	2020.000000	89.000000	0.964000	0.985000	11.000000	-0.276000	1.000000	0.530000	0.945000	0.925000

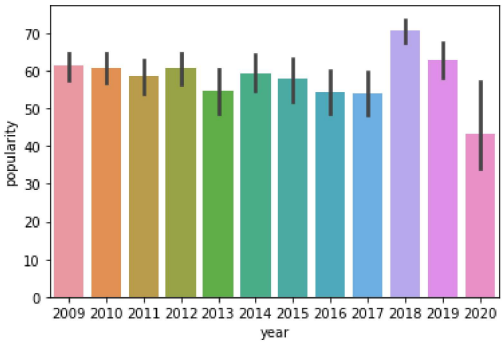
In [9]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.lineplot(x='popularity',y='duration_ms',data=df)
```

Out[9]: <AxesSubplot:xlabel='popularity', ylabel='duration_ms'>



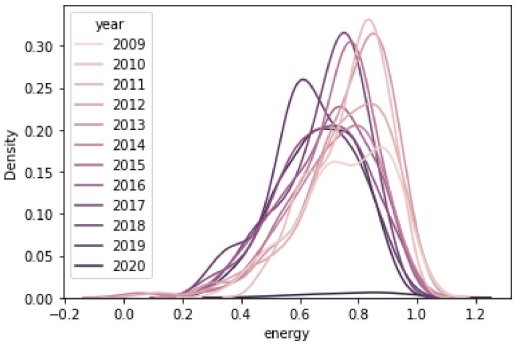
In [10]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.barplot(x='year',y='popularity',data=df)
```

Out[10]: <AxesSubplot:xlabel='year', ylabel='popularity'>



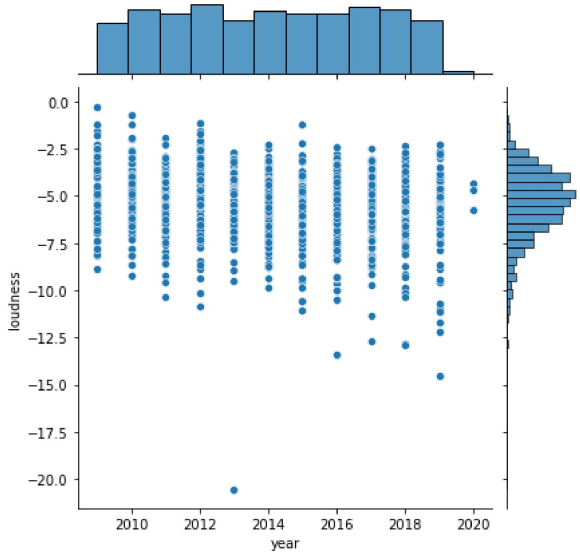
In [11]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.kdeplot(x='energy',hue='year',data=df)
```

Out[11]: <AxesSubplot:xlabel='energy', ylabel='Density'>



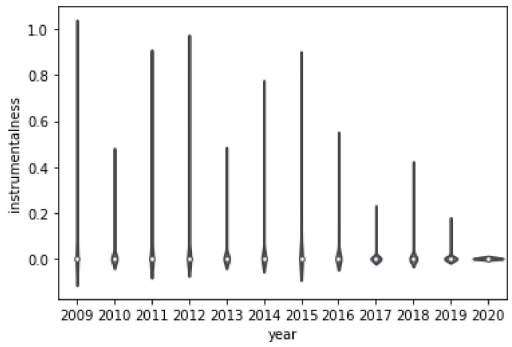
In [12]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.jointplot(x='year',y='loudness',data=df,kind='scatter')
```

Out[12]: <seaborn.axisgrid.JointGrid at 0x2a3b9fce280>



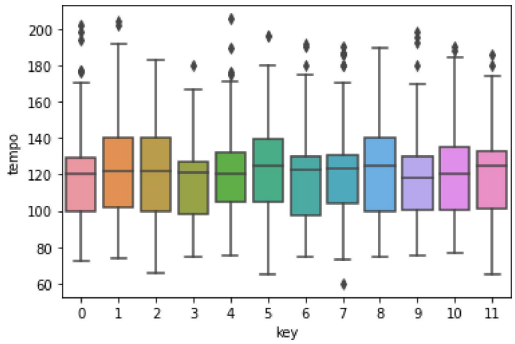
In [14]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.violinplot(x='year',y='instrumentalness',data=df,linewidth=1.9)
```

Out[14]: <AxesSubplot:xlabel='year', ylabel='instrumentalness'>



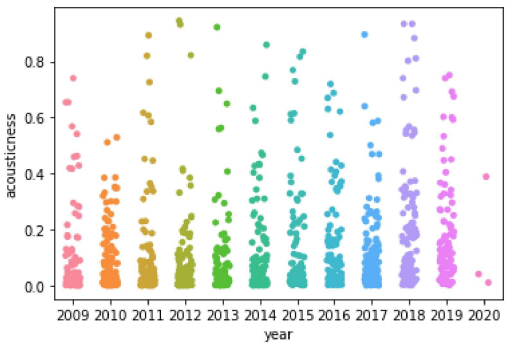
In [15]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.boxplot(x='key',y='tempo',data=df)
```

Out[15]: <AxesSubplot:xlabel='key', ylabel='tempo'>



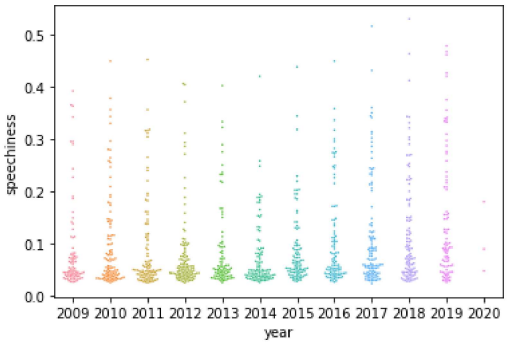
In [16]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.stripplot(x='year',y='acousticness',data=df,jitter='0.2')
```

Out[16]: <AxesSubplot:xlabel='year', ylabel='acousticness'>



In [17]:
```
import seaborn as sns
df=sns.load_dataset('top hits of spotify from 2009 to 2019')
sns.swarmplot(x ='year', y = 'speechiness', data = df, size =1.5)
```

Out[17]: <AxesSubplot:xlabel='year', ylabel='speechiness'>



In [ ]: