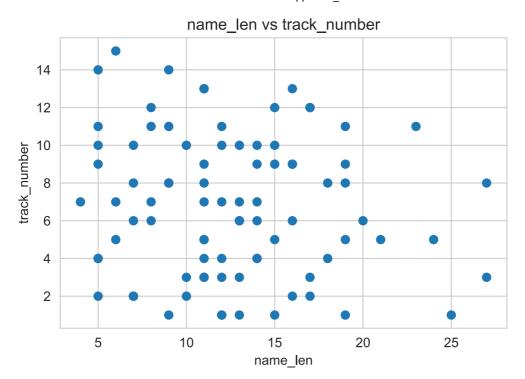
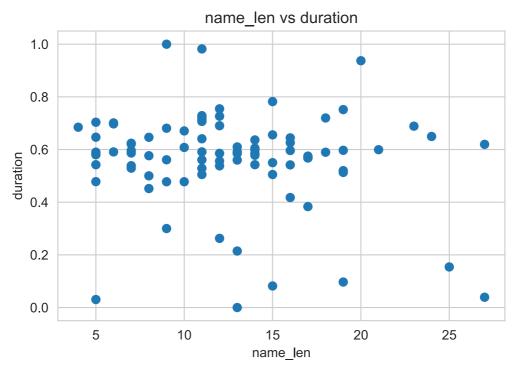
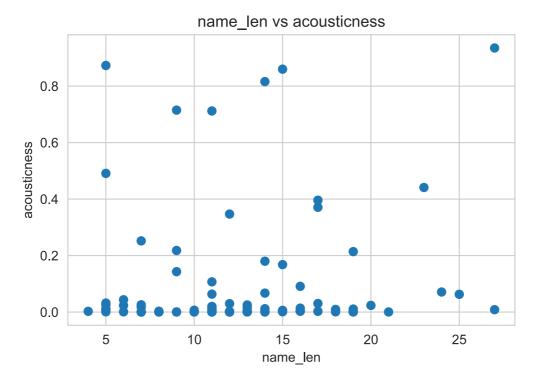
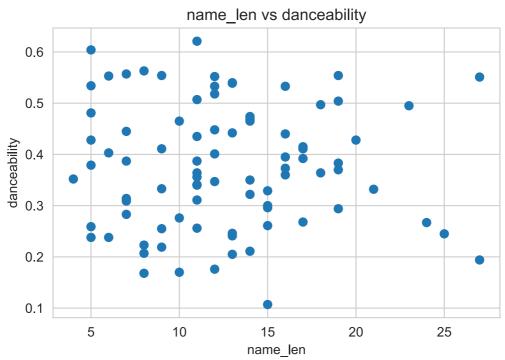
# Appendix II: Numerical explanatory variables plotted against each other

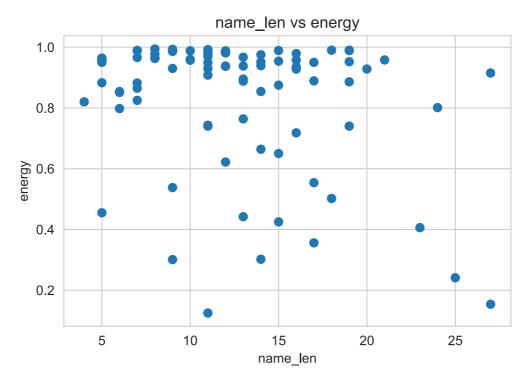
```
In [1]:
         """Imports necessary packages"""
         import itertools
         import math
         from typing import Dict, Iterable, List, Union
         import matplotlib.pyplot as plt
         import numpy as np
         import pandas as pd
         import pylab
         import scipy
         import scipy.stats as stats
         import seaborn as sns
         import statsmodels.api as sm
         from sklearn.model_selection import train_test_split
         sns.set style("whitegrid")
In [2]:
         def make_scatterplot(x_data: Iterable, y_data: Iterable, xlabel: str = "x", ylabel:
             """Prints a scatterplot.
             Args:
                 x_data (Iterable): the one dimensional data to plot on the x axis.
                 y_data (Iterable): the one dimensional data to plot on the y axis.
                 xlabel (str, optional): the label for the x axis. Defaults to "x".
                 ylabel (str, optional): the label for the y axis. Defaults to "y".
                 title (str, optional): the title of the plot. Defaults to "A scatterplot".
             plt.figure()
             plt.scatter(x_data, y_data)
             plt.xlabel(xlabel)
             plt.ylabel(ylabel)
             plt.title(title)
             plt.show()
In [3]:
         data = pd.read csv("D:/School/frequentist-statistics/ITM-song-popularity/database/it
         data = data.drop("Unnamed: 0", axis=1)
In [4]:
         numerical_variables = ["name_len", "track_number", "duration", "acousticness", "dand
         categorical_variables = ["key", "mode", "time_signature", "explicit"]
In [5]:
         num_combs = itertools.combinations(numerical_variables, 2)
         for x, y in num_combs:
             make_scatterplot(data[x], data[y], xlabel=x, ylabel=y, title="%s vs %s" % (x, y)
```

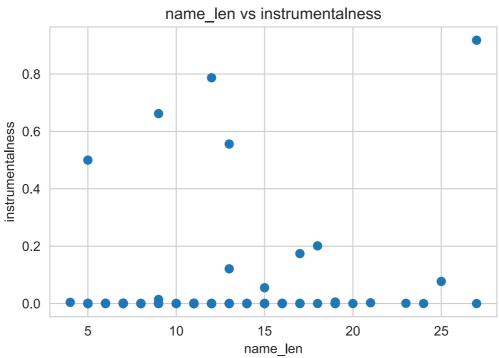


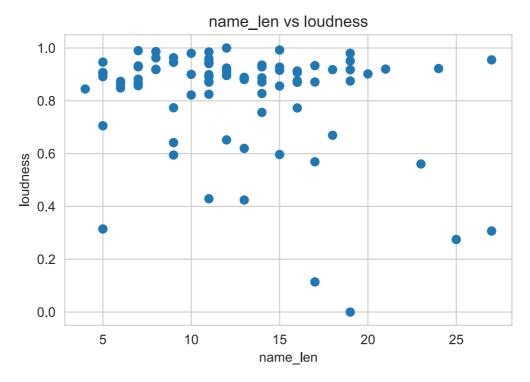


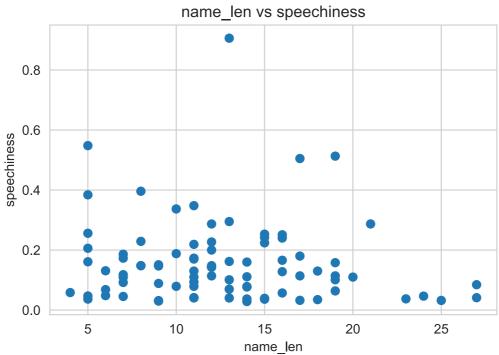


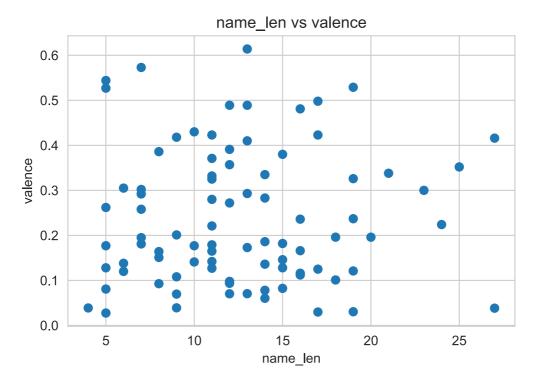


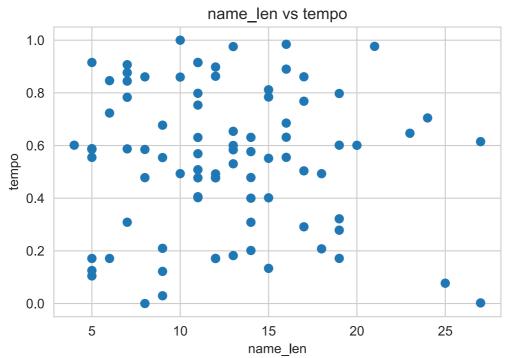


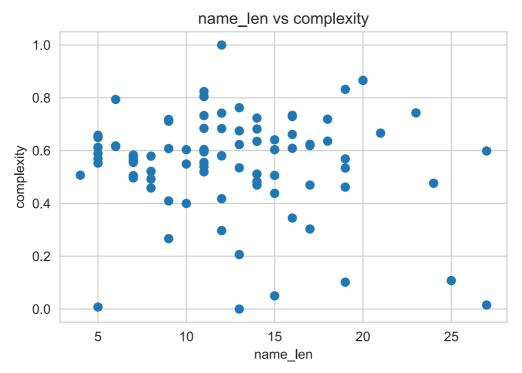


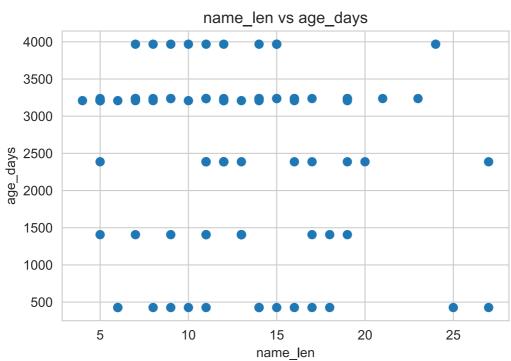


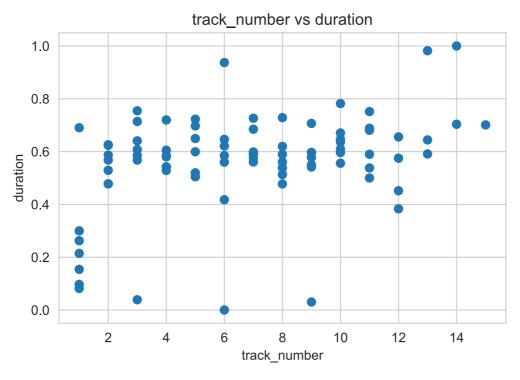


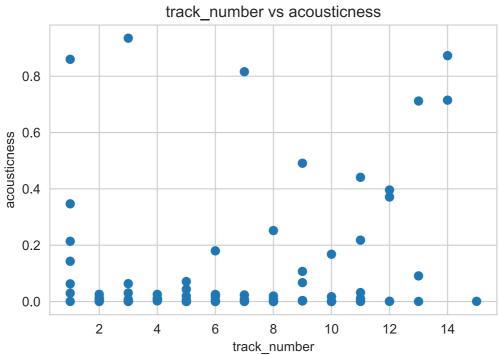


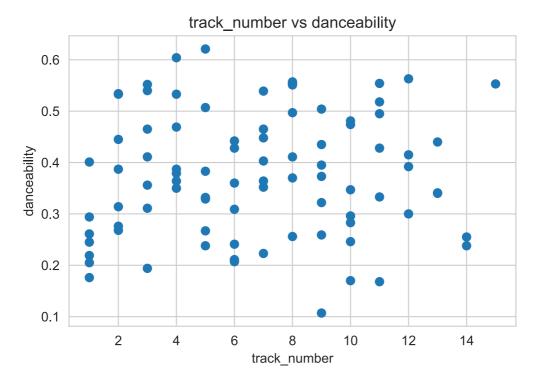


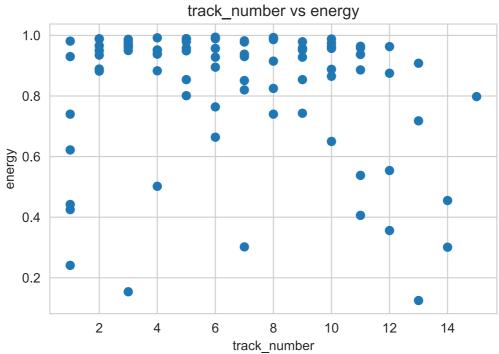




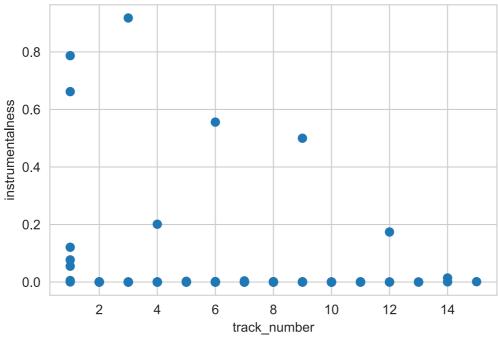


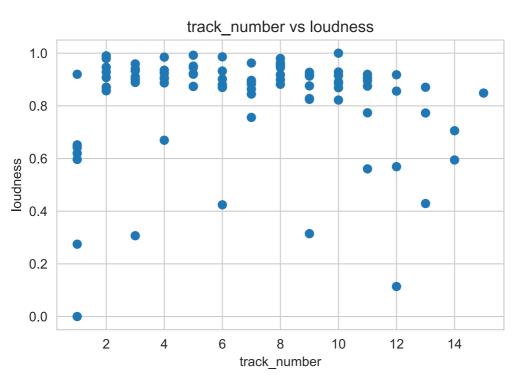


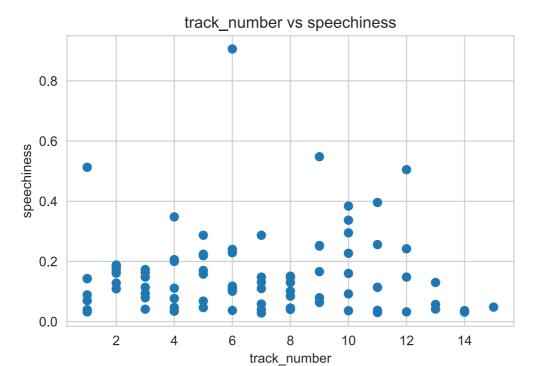


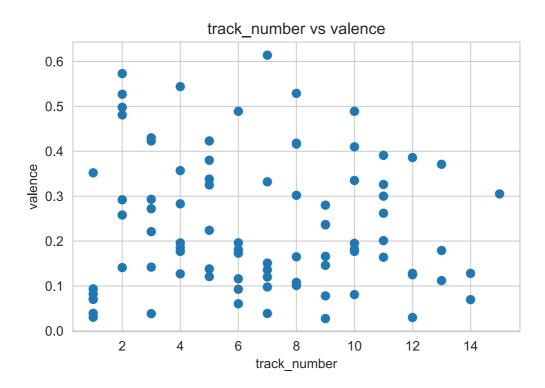


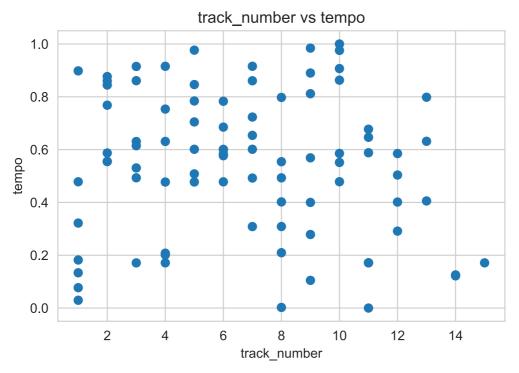


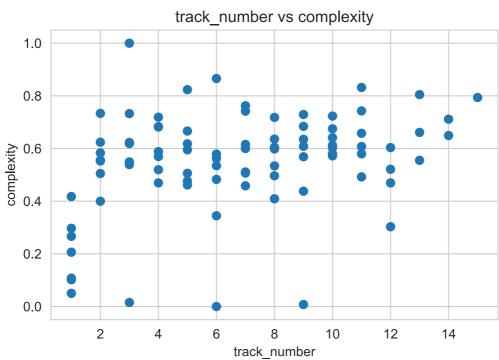


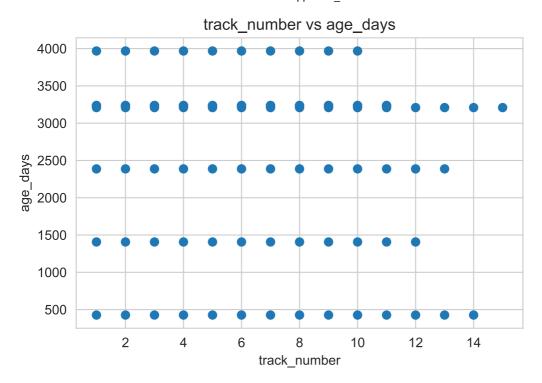


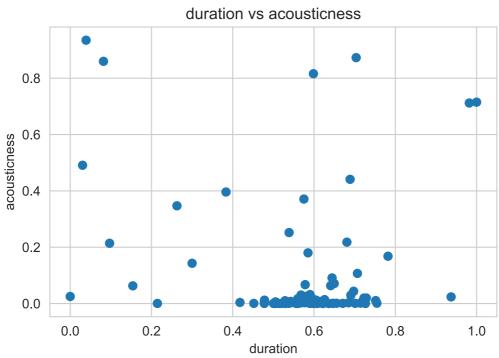


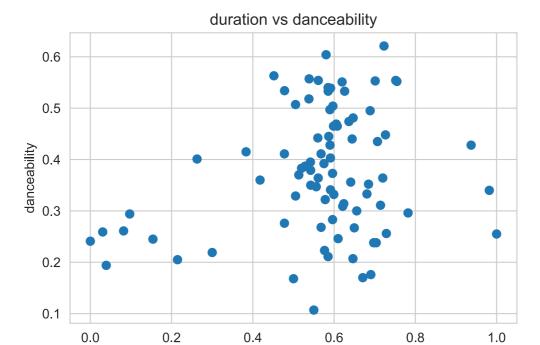


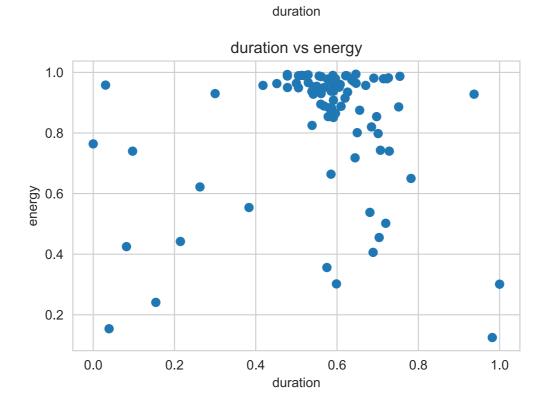




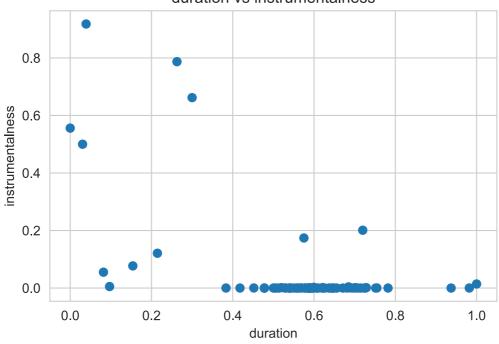


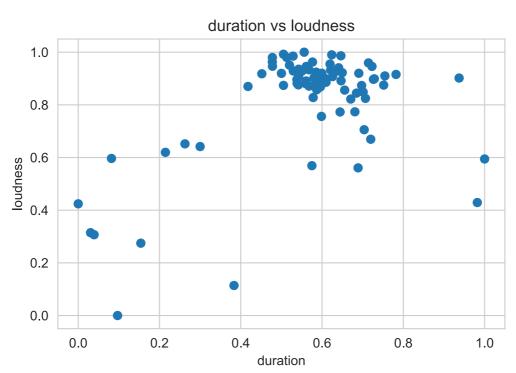




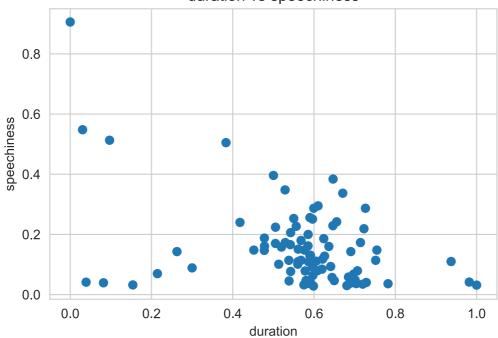


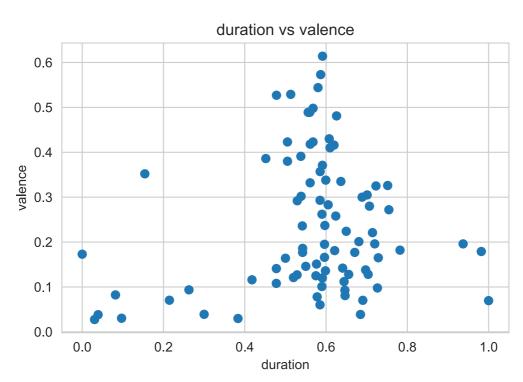
## duration vs instrumentalness

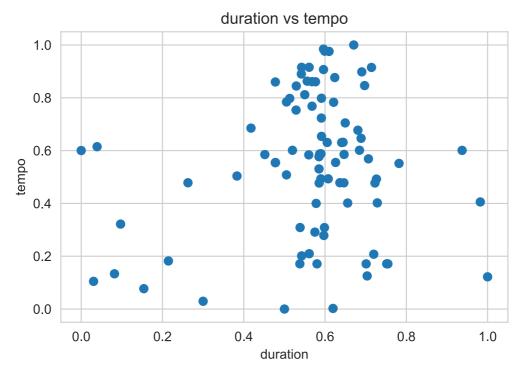


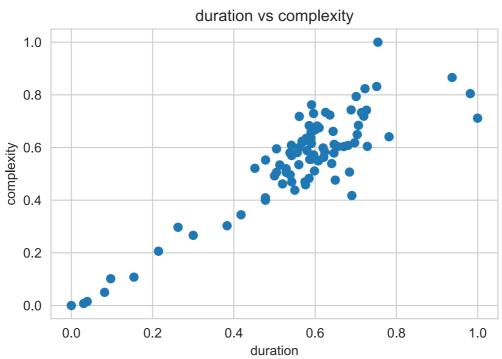


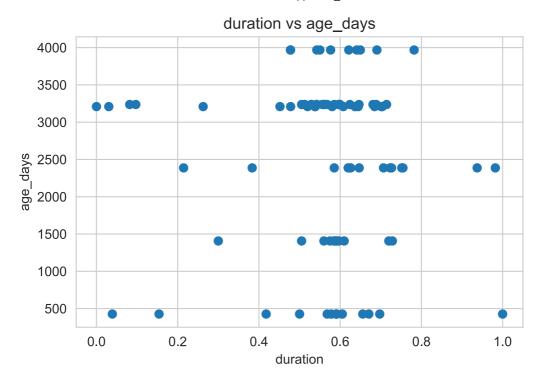


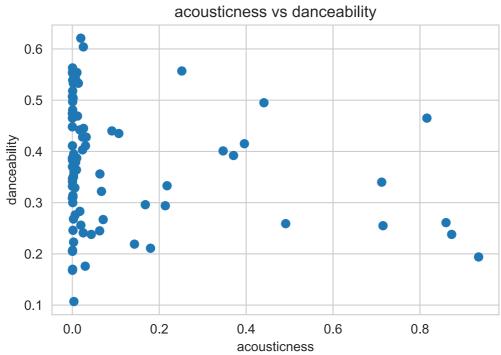






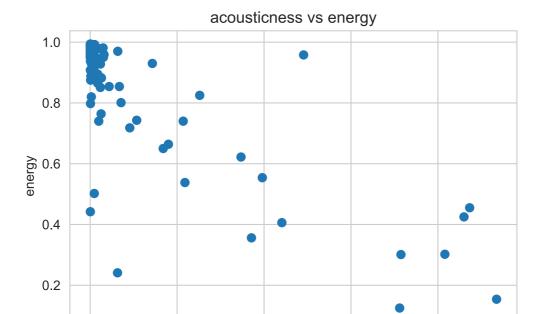






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0.2

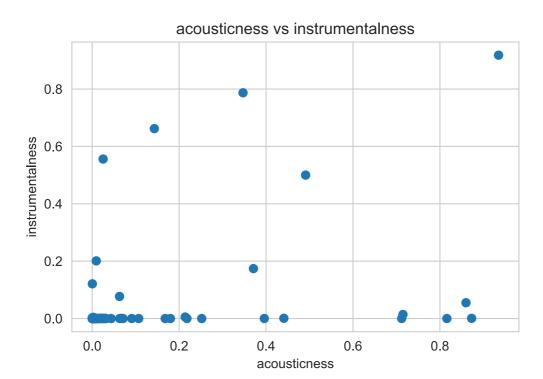


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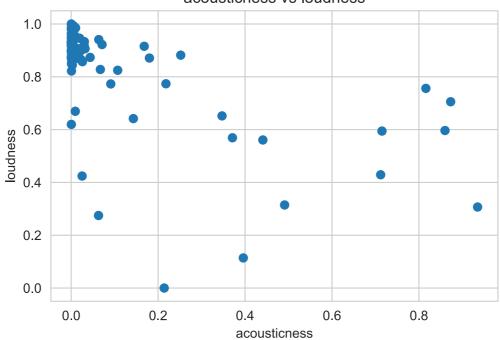
acousticness

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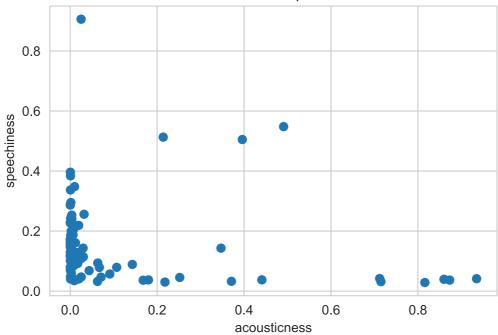
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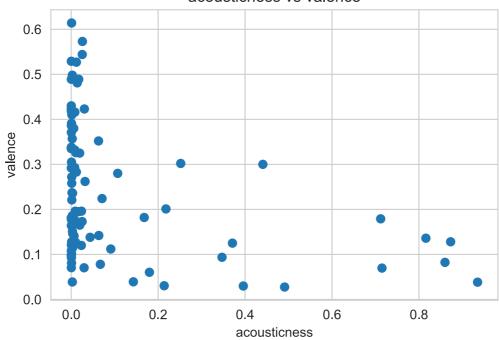
## acousticness vs loudness



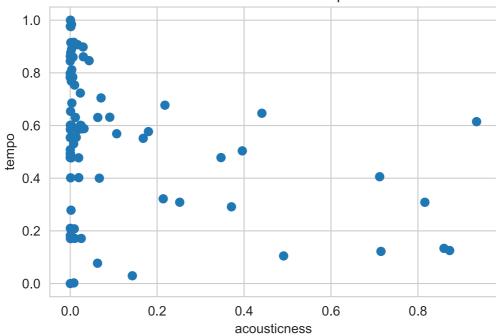
# acousticness vs speechiness







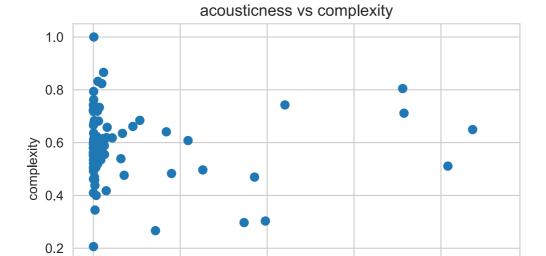
# acousticness vs tempo



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0.0

0.2

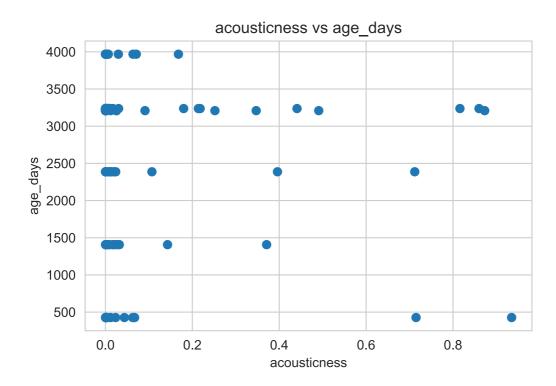


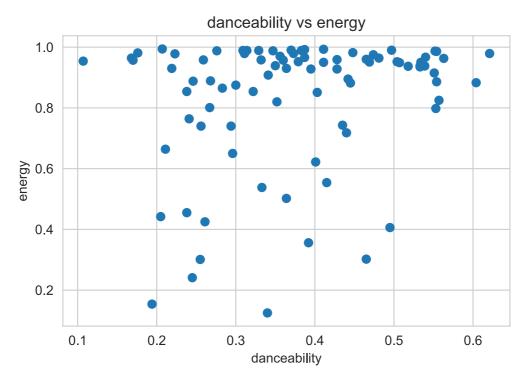
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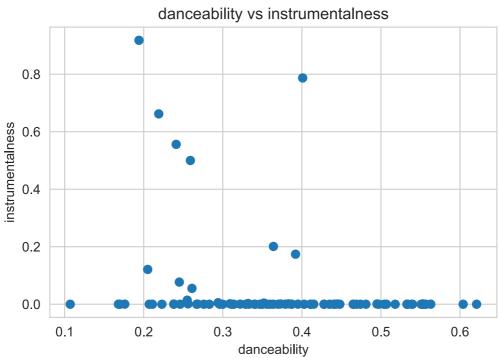
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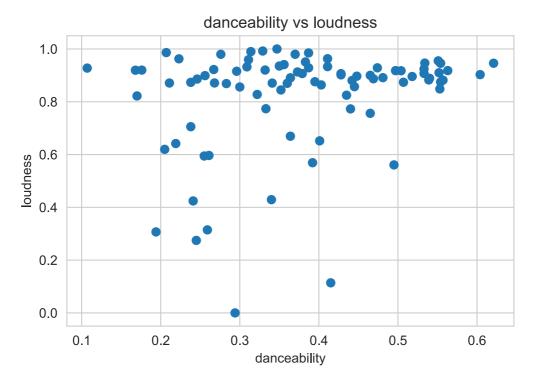
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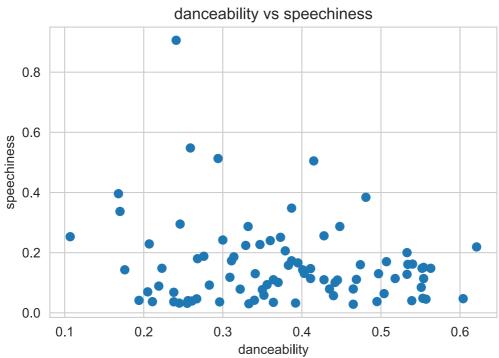
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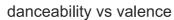


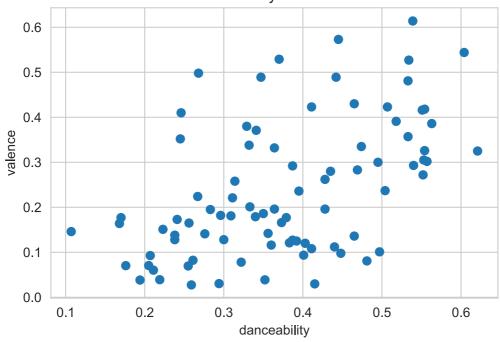




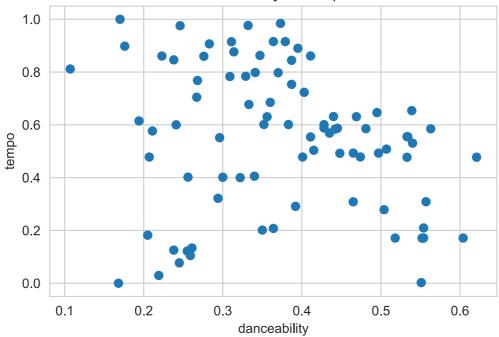


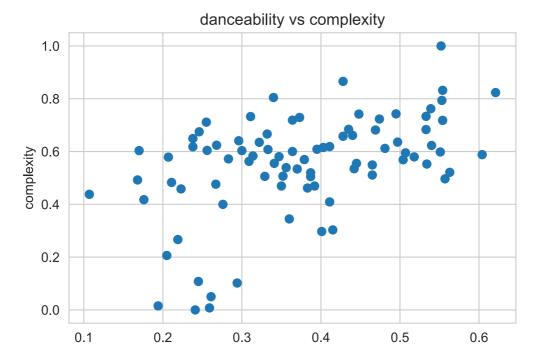


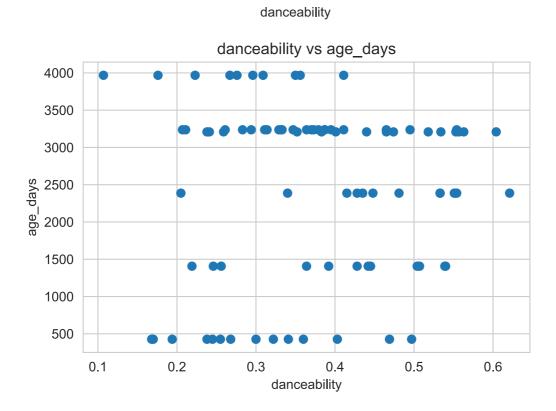


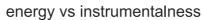


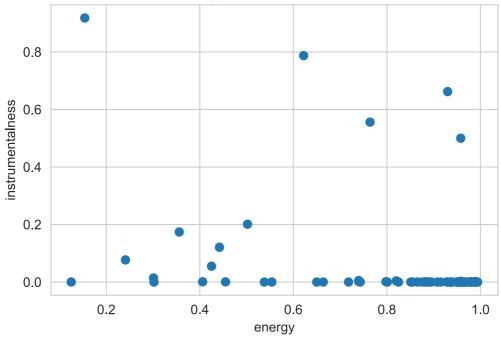
# danceability vs tempo

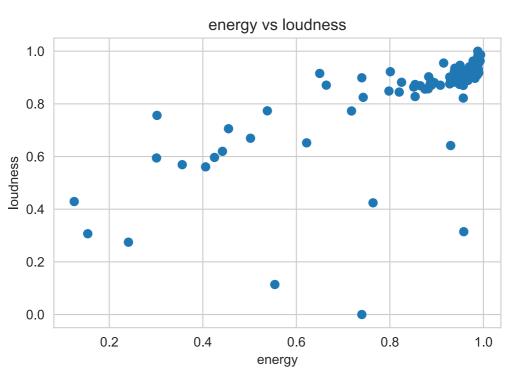






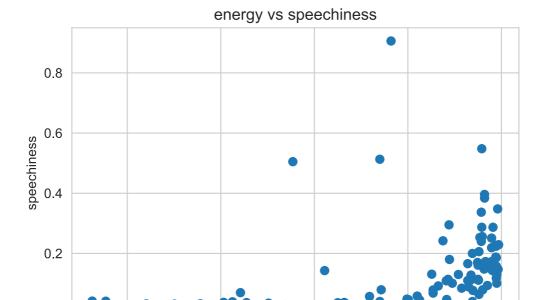






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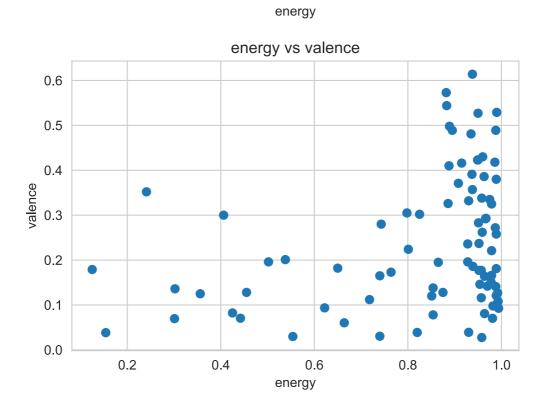


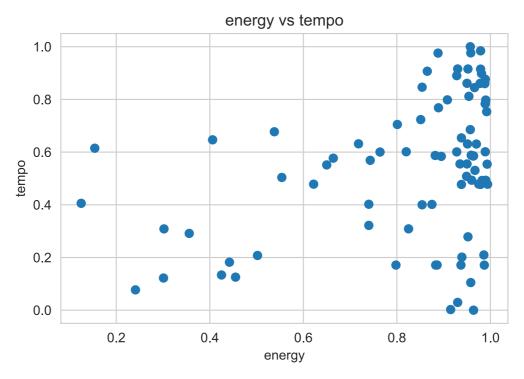
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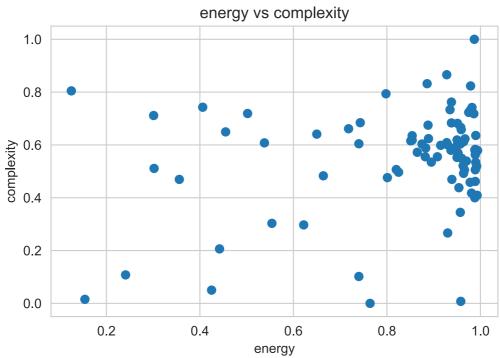
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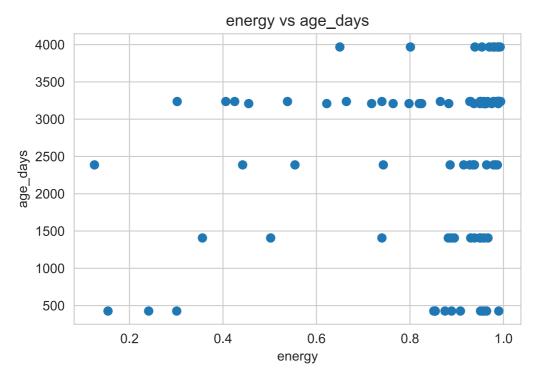
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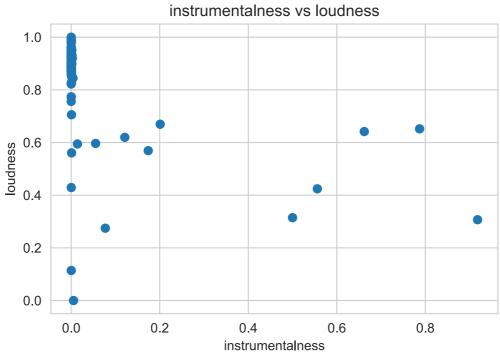
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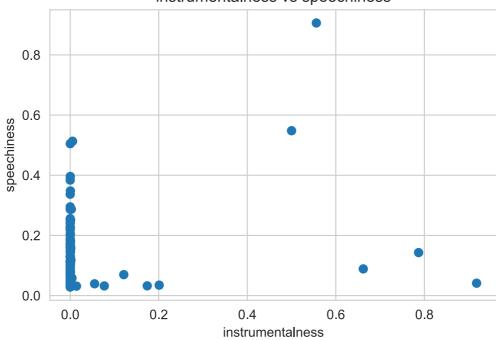




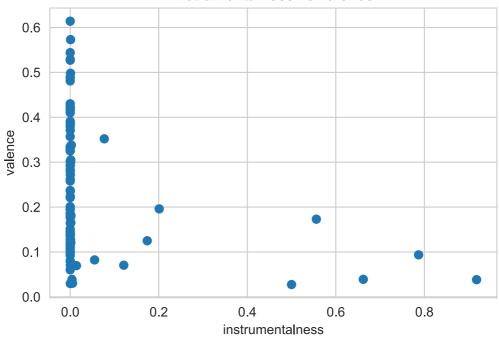




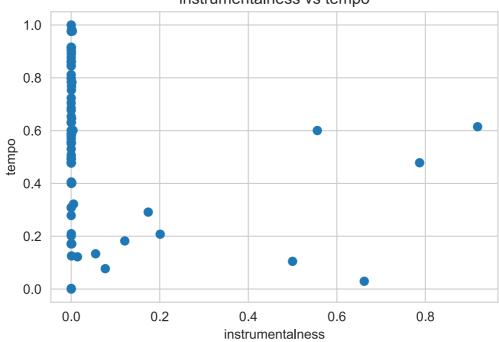
#### instrumentalness vs speechiness



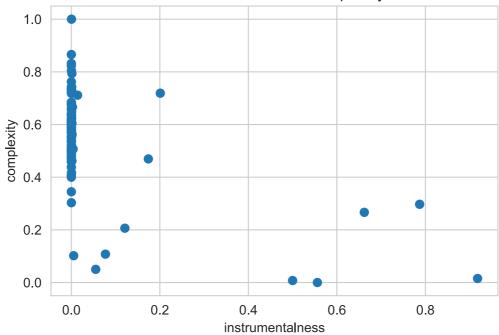
## instrumentalness vs valence

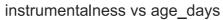


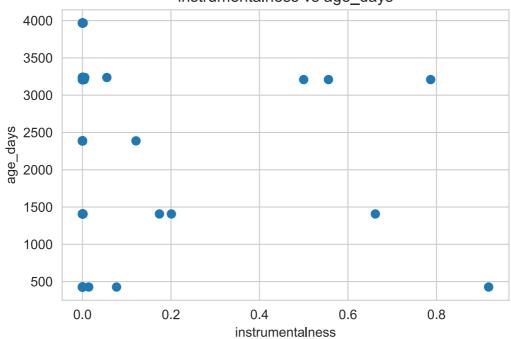




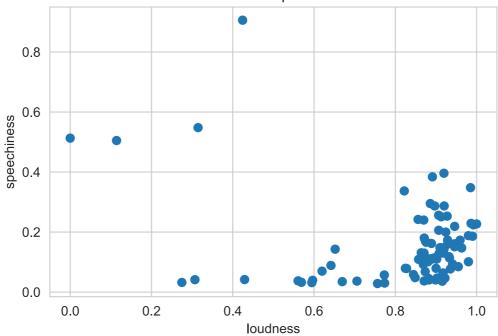
# instrumentalness vs complexity

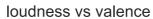


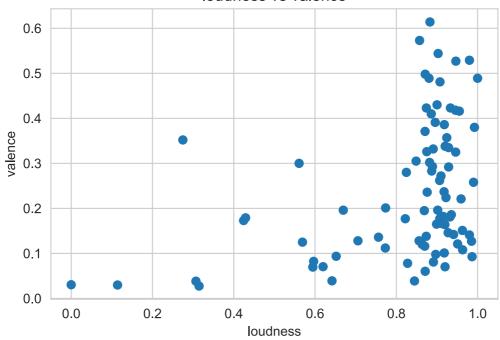


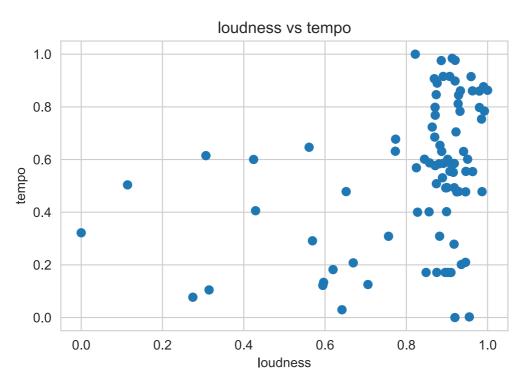


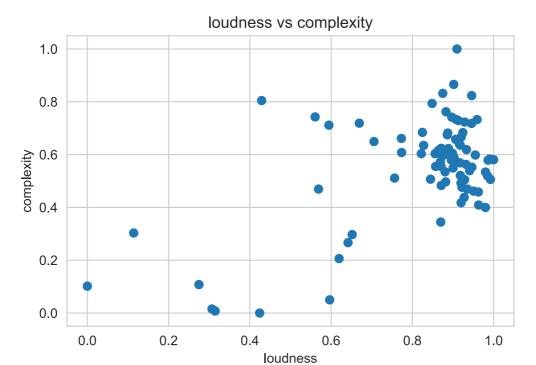
# loudness vs speechiness

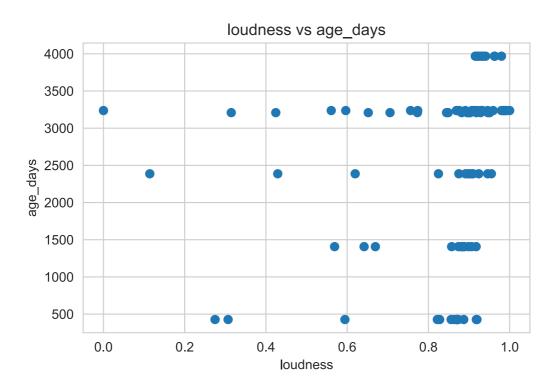




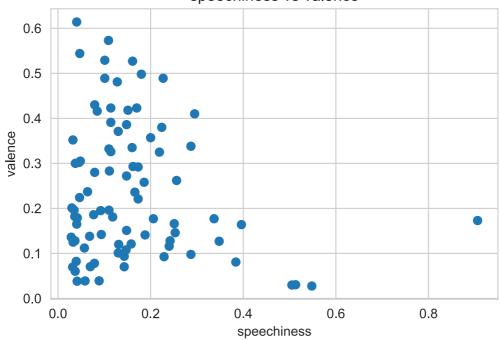












# speechiness vs tempo

