Renjun Zhu(26332920)

Shall We Dance?: A Time Series Perspective of Ballet

I. Question:

The scientific question motivating my work is: can we use a time series model to predict people's appreciation of ballet performances for the next two years?

II. Introduction:

I am new to dance, and I am entranced by the show of ballet. I appreciate the complete performance, especially the synchronicity of ballerinas with the flow of the music, but I wonder if such an attraction will continue to appeal to people over time. One of the reasons I question this, is that every time I sit in the audience, the people around me are considerably older. I often feel that I do not belong there, because I do not see anyone who matches my generation. However, in the moment of the performance, I forget about my surroundings and immerse myself in it. I imagine that the producers of the shows also find themselves doing this. Over the last few years, I have noticed no change in the marketing strategies that they use. This leaves no room for understanding the audience and making sure the productions attract new blood. When the closing act approaches, and I am brought back to real life, I feel afraid that one day, this cultural attraction might die out. I would like to use my knowledge from time series to see if my worries are justified, and that this culture is on a collision course with its own end, or if, perhaps, I'm only overthinking the problem.

III. Data: Google Trend, weekly 2004-2017, world-wide

V. Method:

1) Check data to see if it is stationary: plot, ACF, PACF, EACF
2) If it is not stationary yet, take the transformation such as differences, log, etc…
3) Comparing models, such as Linear, ARIMA, ARIMA+GARCH, Spectral Analysis.
4) Check Residuals normality and independency: histogram, QQ-plot, run Test
5) Forecast: use training data (2004-2015) to forecast (2016-2017), and compare them.

VI. Conclusion:

Answering my question whether people still appreciate Ballet performances, and how does it compare to the past?