A Statistical Analysis: The Academy Awards for Best Actress and Zodiac Signs

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Introduction

The Academy Awards of merit, byname Oscars, are given annually by the Academy of Motion Picture Arts and Sciences(AMPAS), symbolizing a recognition of excellence in cinematic achievements of American films, voted by the Academy's membership. First held in 1929, one of the main categories is called 'The Academy Award for Best Actress'. It is given to an actress with a leading role in a film released that year.

Zodiac signs are based on the position of the sun in relation to the constellations at the time of one's birth. There are 12 zodiac signs, each with their own characteristics and traits.

The main objective of my statistical analysis is to determine if the nominees and winners of the Academy Awards follow any zodiacal patterns, i.e.:

- if there is a sign that is most likely to win/be nominated and what are the most nominated and awarded zodiac signs
- is there a dependence between the nominated zodiac signs and the awarded ones.

Methods & Materials

The data set for my analysis was found by archival research, namely, the list of all actresses nominated and awarded with Oscars from 1927/28 until 2021[1] ,the birth date for each of them. Zodiac signs were assigned manually, following the time frame of each sign individually, being cautious when working with its cusps. Furthermore, data with the ratio of zodiac signs of the USA population is used.[2]

Methods of statistical analysis:

When given a statistical research, a series of factors must be taken into consideration. These include the type and distribution of the data used. The data collected for the analysis is nominal, from which discrete data is derived. Thus, non-parametric tests are an appropriate solution. Namely, the following are performed in RStudio:

1. Chi-squared test
2. Corelation test
3. Wilcoxon test

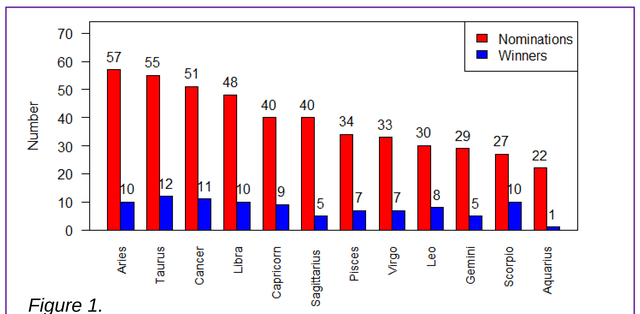

Figure 1.

Results

Firstly, data is grouped by zodiac signs, offering an insight into the ratio of the signs for nominees and winners of the Academy Awards. Astrologically speaking; Leo, Taurus and Pisces, through their love of attention, hustle and natural show-off personality, are supposed to make great actors and movie stars.[3] A first rigid analysis of *Figure 1*, shows that Tauruses have indeed the most wins of an Oscar, yet not being the most nominated. While only 0.125 of actresses which are Sagittarius win, 0.37 of the Scorpio ones do.

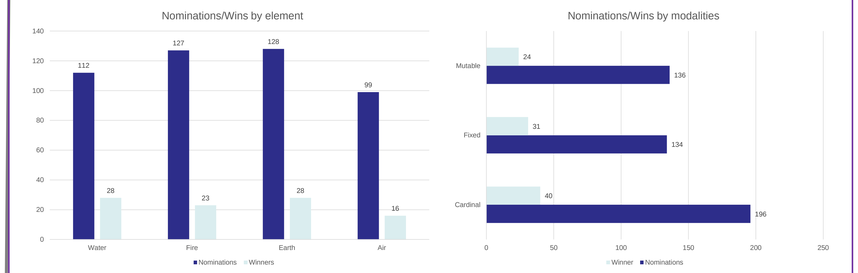

Figure 2.

Next, the discrete data set is grouped by elements and modalities (*Figure 2*). Element-wise, none of them stand out; however, modalities-wise, it is observed that Cardinal signs tend to be nominated and awarded the most. Such an observation approves with the ambition, impulsiveness and enthusiasm that describe the Cardinal signs: Aries, Pisces, Libra and Capricorn.[4]

Analyzing the *barplot (Figure 3)* for both Nominations and Winners, we observe the following:

1. The skewness of Nominations is positive (0.2682757), thus, most of the values are less than the mean, which is 38.83333. Hence, most zodiac signs have been nominated less than 38 times.
2. The skewness of Winners is negative (-0.8029896), so the majority of data is greater than the mean, which is 7.9166. Namely, most zodiac signs have been nominated more than at least 8 times.

Next, *qq plots* are analyzed (*Figure 4*). The data is discrete, so we cannot say if it normally distributed, but a *wilcox test* can be done. The *p-value* is 3.56e-05, concluding that both datasets come from the same distribution. A *chi.squared test* was performed on each variable, concluding that both variables have different probabilities for each sign.

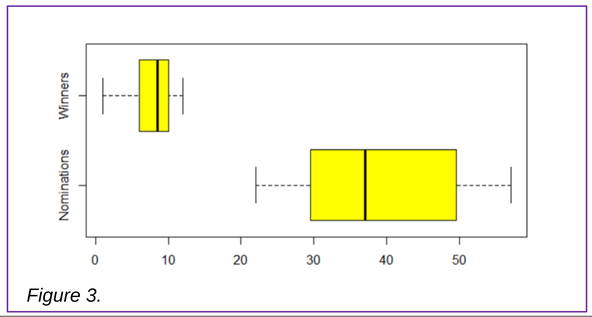

Figure 3.

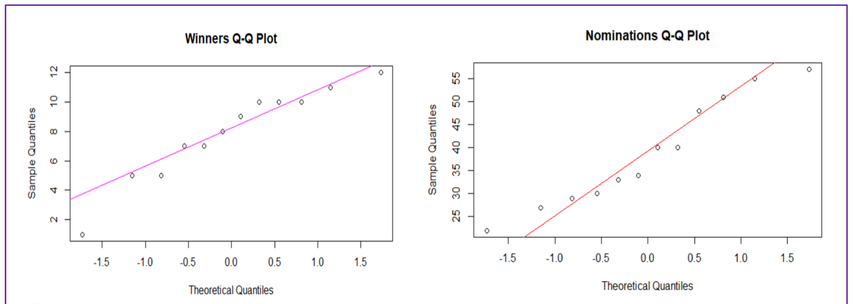

Figure 4.

Corelation and dependence:

In order to decide whether or not the zodiac sign of the winners and nominations corelate and depend on each other, *correlation* and *Fisher* tests were performed.

Firstly, we simulate the *p-value* based on 2000 replicas, given the fact that our sample data is too small. *Fisher.test* yields a *p-value* of 0.4568. Hence, we can accept the null-hypothesis that the two values in the contingency matrix are independent of each other. However, the test checks for a strong independence, hence, a correlation test is performed.

The *p-value* of *cor.test* is 0.638, the *correlation coefficient* is 0.1513 concluding that there is a very low correlation between the signs' number of wins and nominations.

Next, another *correlation test* is performed between the number of sign in population-wins and population-nominations. Both *p-values* are significantly bigger than 0.05 (0.21 and 0.74, respectively), the *correlation coefficient* being in the interval 0.1-0.3, impling that the two variables are the independent and there is no tendency in one variable to decrease or increase, in case one variable does.

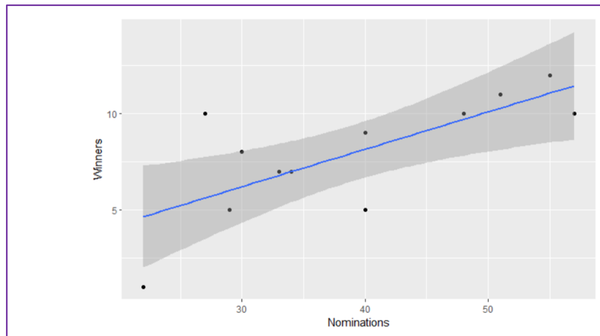

Figure 5. Corelation between Nominations and Winners

Conclusions

The statistical analysis of the Academy Awards for Best Actress and Zodiac Signs has shown that signs do not influence the awarding decision. Thus, we cannot make a prediction based on the research. Furthermore, the analysis displayed that the ratio of zodiac signs awarded does not follow the ration of signs of the population of the USA. Based on the research's display, Aries is the most nominated sign, while Taurus is the most awarded.

References

[1] https://awardsdatabase.oscars.org/

[2] http://faculty.tamucc.edu/sfriday/wordpress/?p=1317

[3] https://www.yourtango.com/2019323864/horoscope-six-zodiac-signs-who-make-best-actors-and-movie-stars-according-astrology

[4] https://www.mindbodygreen.com/articles/cardinal-signs

[5]F. Zaussinger. „*Computational Statistics*" Version: 2021.1