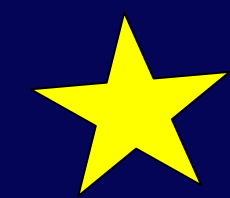




How Does Space Exploration Affect Society?

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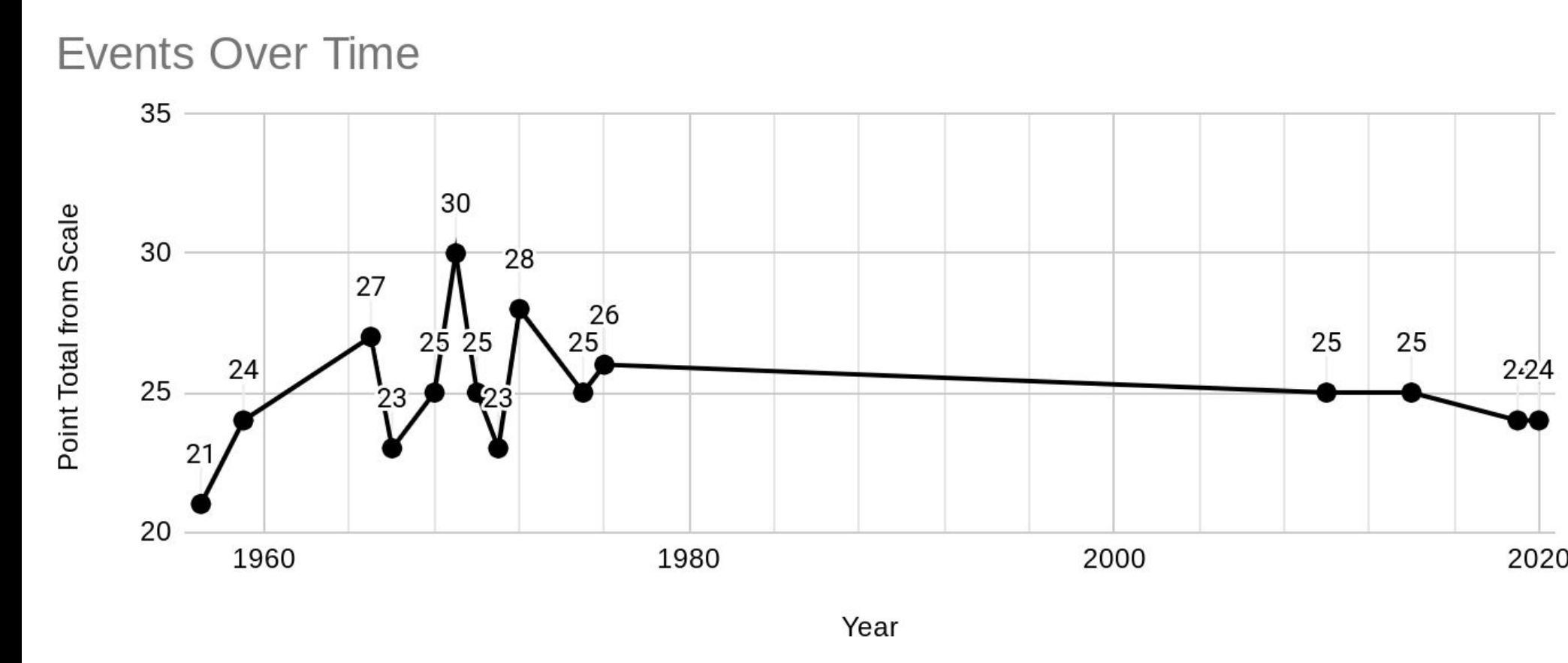
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INTRODUCTION

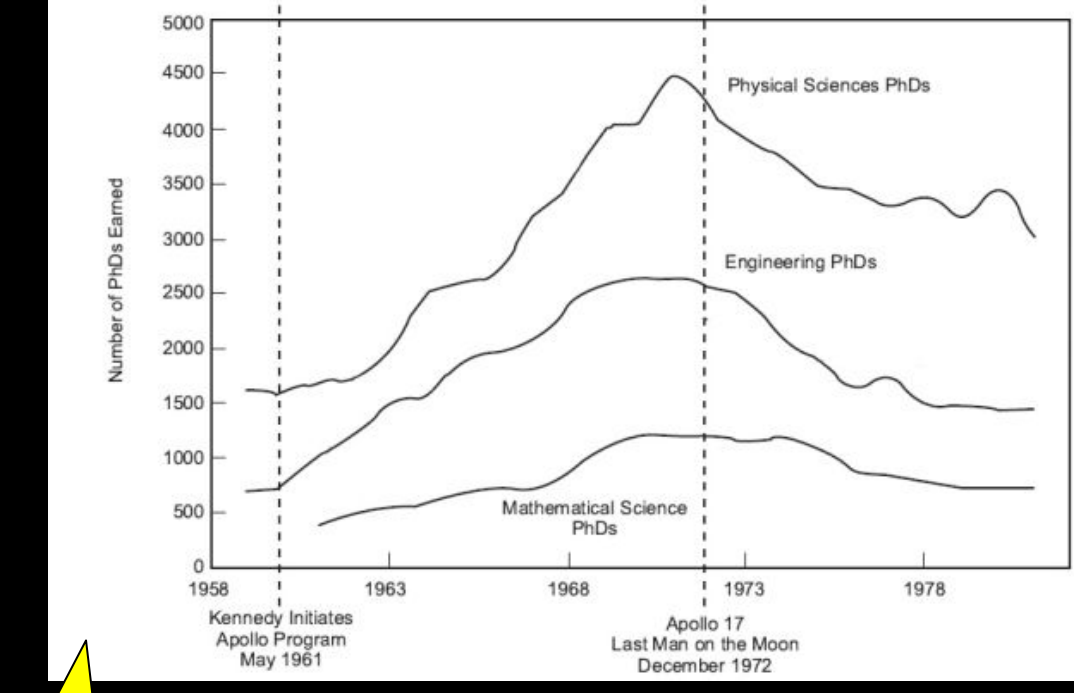
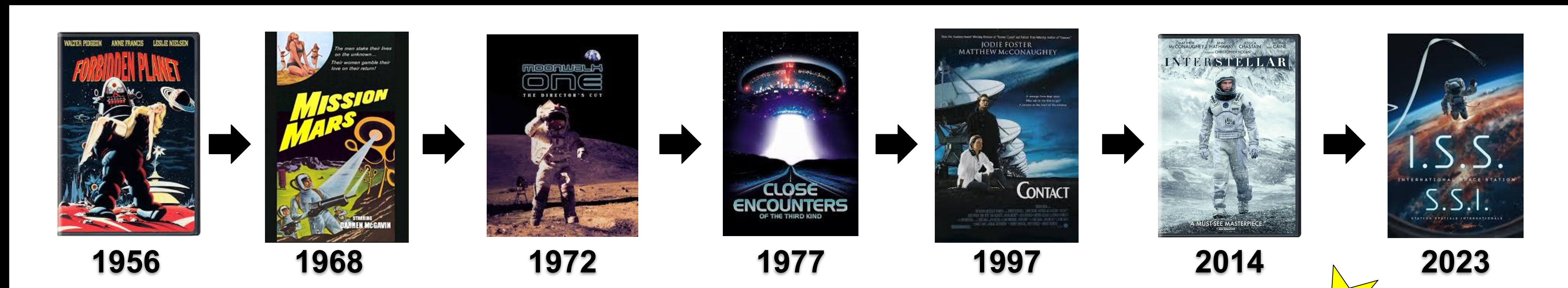
Recent (and not so recent) developments in **technology** have led to groundbreaking **discoveries** and achievements in the **Aerospace field**. As society has developed, so has our ability to learn about space; but how are the two connected? Has the relationship between discoveries in space and how society reacts been measured? Thus, this project was born. Society is a tough entity to measure, so various aspects of what makes up society will be looked at, including the **economy and media** (along with other things). What's more, a deep dive into the **progression of technology** used will be included, along with a **progression of discoveries** found from said technology. **Science vs. fiction** in regards to discoveries will be looked at as well, and at the heart of the project will be a custom scale of how important or **"life changing"** certain discoveries have been. When it is all said and done the results will be **compared**, and a pattern will be seen and **analyzed** between space exploration, it's developments and achievements, and the **societal impacts and changes** that come with them.

DATA AND FINDINGS

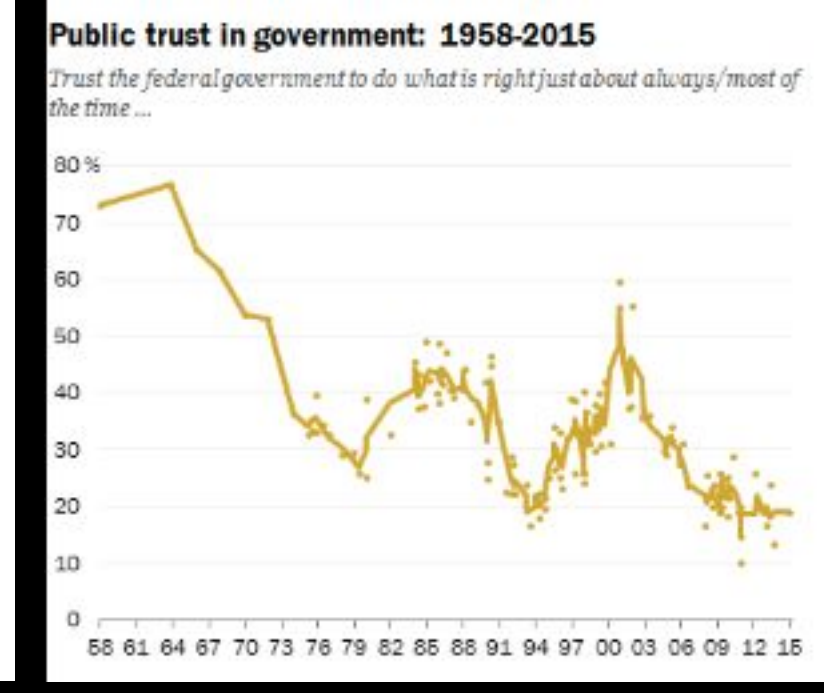


A custom scale was used in order to "rank" or qualify how important events were in the history of space exploration. There are 5 categories each worth weighted amounts of points. (See scale below)

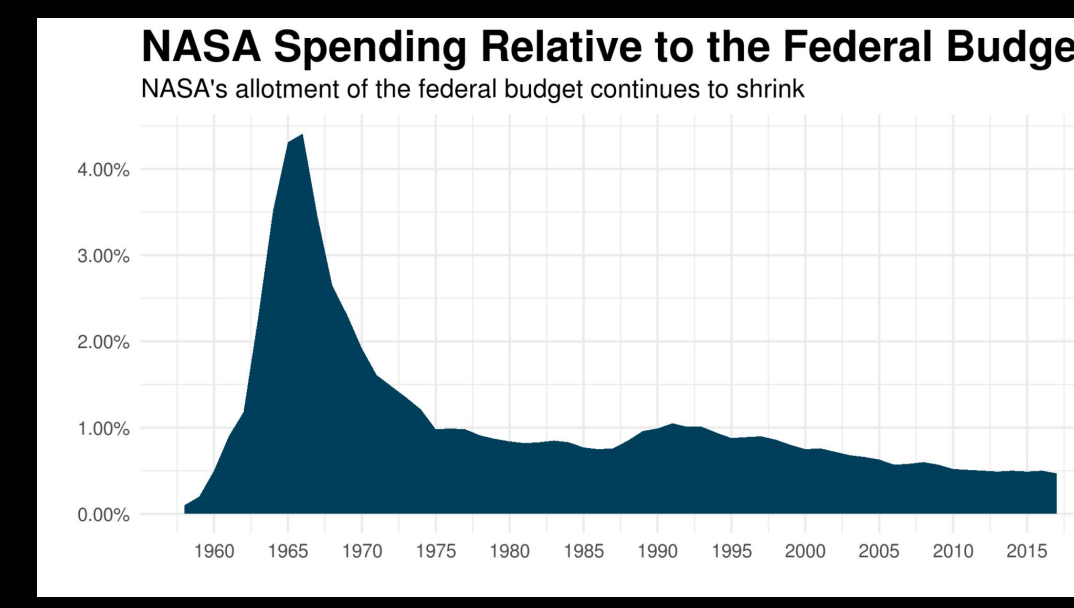
Year	Event	Source	Country	Points
1957	First artificial Earth satellite	Sputnik 1	U.S.S.R.	21
1959	First spacecraft to land on another celestial object (the Moon)	Luna 2	U.S.S.R.	24
1960	First spacecraft to orbit Mars	Mars 2	U.S.	27
1966	First spacecraft to soft-land on the Moon	Luna 9	U.S.S.R.	28
1968	First humans to orbit the Moon	Frank Borman, James Lovell, and William Anders on Apollo 8	U.S.	25
1969	First human to walk on the Moon	Neil Armstrong on Apollo 11	U.S.	30
1970	First return of lunar samples by an unmanned spacecraft	Luna 16	U.S.S.R.	25
1971	First space station launched	Salyut 1	U.S.S.R.	28
1972	First spacecraft to soft-land on Mars	Mars 3	U.S.S.R.	28
1975	First international docking in space	Apollo and Soyuz spacecraft during Apollo-Soyuz Test Project	U.S., U.S.S.R.	25
1976	First pictures transmitted from the surface of Mars	Viking 1	U.S.	25
2003	First spacecraft to return to Earth with samples from an asteroid	Nishinoha	Japan	28
2014	First spacecraft to land on a comet	Philae	European Space Agency	25
2019	Farthest object (2014 MU69) explored by a spacecraft	New Horizons	U.S.	24
2020	First landing on the Moon for sale	Chang'e 4	China	24



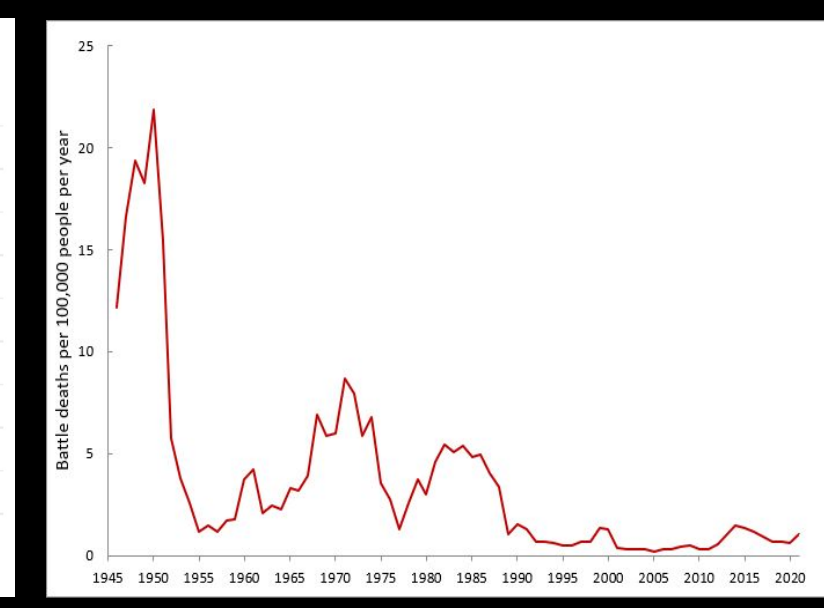
Space Program's effect on number of STEM majors



Trust in government's actions



NASA spending compared to total government spending



Geopolitical periods of peace and war by deaths

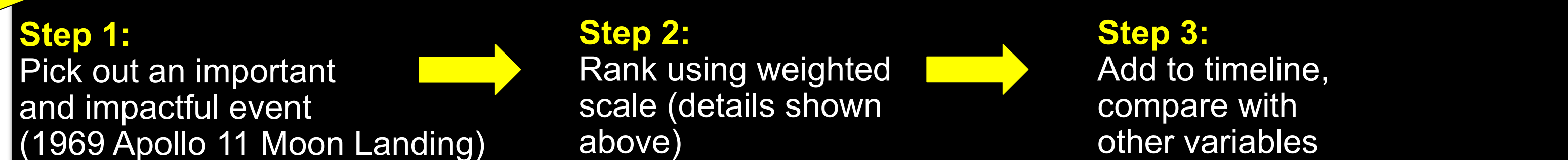
CONCLUSIONS, IMPLICATIONS, AND NEXT STEPS

The data, findings, and patterns discoveries were as I had hoped, and there **is evidence of correlation** between space exploration (discoveries and advancements) and patterns in society, whether that be with the overall economy, or most notably the entertainment sector which highlights overall human opinion of space. These findings in correlation could **help predict** how society might react to future discoveries or revelations, especially if life were to be discovered elsewhere. The next step in this process is to try and **turn the discovery of correlation and causation**, most likely by creating an experiment to test these two variables against each other. One improvement that could be made to the overall project is found in the data section. **The main graph** (along with its scale) could easily be tinkered and refined as a next step as well to get a more accurate, less opinion-based reading of how events compared to each other.

RESEARCH METHODOLOGIES

The data collected was not done using a survey or experiment, but was a large culmination of data into a complete picture or **meta-study**. Patterns in **history**, looking at major events and society's response, and **creating my own scale** will be the basis of how the societal data will be collected. A main graph will be constructed which highlights the most **"important" events and discoveries** under space exploration. Events were graded on a scale of impact based on a set definition and **graphed against other aspects of society** such as the economy, or government spending to determine the correlation between advancements in scientific discovery and society.

The Graph Making Process:



In order to highlight more aspects of society such as the **media, or entertainment**, research (specifically on **movies**) was done, to see any correlation between real life and space depicted on the big screen. Using the same major events and dates, trends in movies were analyzed to see a pattern in **how humans view** outer space as a whole.

SCALE BREAKDOWN: Possibility of Life: **10 pts.** Changed scientific perception: **5 pts.** First of its kind: **5 pts.** Increased likelihood of interplanetary colonization: **5 pts.** Scientific Merit/Validity: **5 pts.** **TOTAL POSSIBLE POINTS: 30**

DISCUSSION, ANALYSIS, AND EVALUATION

Throughout the project process, my essential question, data being looked at, and way of analyzing said data has **shifted dramatically**. At the start, I wanted to physically try and find the place where humanity will live next in outer space. I wanted to sift through data from James Webb (amongst other instruments) in order to come to a conclusion on the best exoplanet for human life; **Earth 2.0** it could be called. As the project progressed, I discovered that that had been done to death, and there was only so much more I could say on the matter of the best planet especially when dozens of world class scientists had already weighed their opinions. I started to look for new angles and new ways to go about researching the topic I love. The project then gradually took a more cultural turn. Instead of pure science, I began looking at **how science and our society and culture interconnect**. Thus, this final overall project was born, where I have looked at how discoveries in space exploration affect society. There are **two main graphics** above that represent data and findings. Looking at the movie timeline in correlation to the events on the graph, a pattern emerges of swings from both positive and negative opinions on outer space, while also looking at aliens vs. our own advancements. Similarly, optimistic vs. pessimistic patterns emerge with positive and negative discoveries. Looking at the graph, **correlation** can be seen between major events such as the moon landing and changes in society. The peak of the moon landing, along with the overall trendline mimic the peaks and valleys of the economy, geo politics (war), and even pop culture.

ACKNOWLEDGEMENTS / REFERENCES

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*****QR Code to Research Paper :**

