

Data Visualization

Assignment 3: Report

Team Space

The visualization can be temporarily accessed at <https://woutvissters.dse.nl/>.

Main Theme: **A Tale of Space and Humanity**

Our series of visualization focuses on human interaction with- and slices of knowledge about space. It is organized chronologically with overlaps, to tell the story of how human vision and knowledge of space developed and progressed throughout history, how people think about it now, and what the future holds. The visualizations are accompanied by a short, connected narrative. The story begins with a look into prehistoric and ancient civilizations' gods and artifacts, before moving onto visualizations of the vastness of our immediate solar system and mysterious black holes of the universe, after which it segues into post-industrial developments in space technology. Lastly, it considers the present and its people's outlook on space, as well as the future commercial opportunities of space exploration. *Space, a human tale from faith to profit.*

Sub Topic: **Space in Prehistory and Antiquity**

By: Zino J. Vieth - s2383136

Tools: Flourish, Javascript/SVG, Adobe Illustrator

Sources:

[1] <https://www.godchecker.com/>

[2] https://en.wikipedia.org/wiki/Sky_deity (Collection)

[3] https://www.nasa.gov/vision/universe/solarsystem/sun_earthday.html

[4] <https://www.insightobservatory.com/2017/06/what-are-astronomical-artifacts.html>

Visualization I: Gods of Space

This visualization uses data hand-collected from sources [1] and [2] to display the number of gods associated with certain topics related to space throughout almost all known human civilizations. The data was manually processed and inserted into a flourish sankey chart.

Visualization II: Historic Astronomical Artifacts

This visualization uses hand-collected data from sources [1] and [2] as well as supplementary data collected from wikipedia to show some of the most important known artifacts and architectures related to astronomy throughout the prehistoric and ancient eras, as well as two artifacts from the middle ages. The data was manually inserted into a spreadsheet, manually converted into a CSV, and then converted to JSON format using an online tool. The JSON object is directly imported into the Javascript. The SVG map was taken from <https://simplemaps.com/> and bubbles manually added using Adobe Illustrator, before the SVG was imported into Javascript and manually adapted to correspond to the JSON data.

Sub Topic: **Space Physics**

By: Reinier Davidse -s2397587

Tools: Flourish, Excel

Sources:

[1] <https://theplanets.org/planets/>

[2] <https://blackholes.stardate.org/index.html>

Visualization I: Planets in the Solar System

For this visualization information about the diameter, distance from the sun, the planet type and other facts were gathered from the first source and put into excel. After they were sorted out in excel they were visualized in Flourish in a graph-like manner, with the size of the dots representing the relative diameters of the planets. Flourish easily allows you to add additional data like facts if you hover over the dots which represent a planet. This adds a bit more in-depth and precise information about each planet.

Visualization II: Black Holes

This visualisation was made in a similar way like the first visualisation but uses information from the second source instead. It also has similar features to the first visualization like being able to hover the dots to get more information about a certain Black Hole. I chose to do them both in a similar fashion as I think that displaying floating objects (like planet or black holes) relative to another object (like earth) can be best displayed in such a graph with an x-axis and a y-axis as this allows the you to easily see were these objects lay relative to each other.

Sub Topic: **Space Agencies**

By: Wouter Bollen -s2270005

Tools: Tableau, OpenRefine

Sources:

[1] <https://www.kaggle.com/agirlcoding/all-space-missions-from-1957>

[2] https://en.wikipedia.org/wiki/List_of_government_space_agencies

Visualization I: Launches

This visualization uses data collected from source 1. To display the number of successful and failed launches. In the dataset launches were labeled as success, failed, partial failure and prelaunch failure. The dataset also contains a lot of other information about launches, such as location, company, current status of the mission, mission name, date and time of launch. The partial failure, prelaunch failure and other information were filtered out with the help of OpenRefine.

Visualization II: Number of Space Agencies

This visualization uses the second source and is handmade, since there was a lack of datasets that contained information about space agencies over the years. So this dataset was created by using an Excel sheet and collecting data from the source. The only data that is used from the source is collected from the civilian part of the space agencies list.

Sub Topic: **Satellites**

By: Wout Vissers - s2380285

Tools: Tableau

Sources:

[1] <https://www.ucsusa.org/resources/satellite-database>

Both visualizations have the same source data. The data shows a lot of information about launched and active satellites. Like country of origin and launch date, which is shown in the first visualization. This visualisation is about the purpose with which satellites are launched into orbit. Hopefully, it shows the shift of focus that goes more into the commercial side. The second visualization shows the users of the satellites over time. This visualization has a filter which can cycle through time which gives a sense of global progression in the field of satellite launches.

Sub Topic: **Public Opinion on Space**

By: Quinten van Bommel - s2363976

Tools: Excel, Adobe Photoshop

Sources:

[1] <https://www.pewresearch.org/science/2018/06/06/space-appendix-detailed-tables/>

The same source was used for both visualisations. It is a survey conducted on Americans regarding their opinion on NASA and space travel. The survey contained many more questions, respondents were also divided according to their age, gender, income and political view to look for significant differences.

The first visualization shows people's general interest in going to space, this shows the percentage of people who want to go to space. More interestingly, it also shows the main reasons to (not) go to space.

The second visualization showcases the priorities of NASA according to the general public. The green shape shows the amount of people that think NASA should focus on this specific topic, while the red shape shows the amount of people that think NASA should not focus on this topic.

Sub Topic: **Planets & Future**

By: Luit Meinen - S2285959

Tools: Tableau, OpenRefine, Excel

Sources:

[1] <https://www.planetary.org/space-policy/planetary-exploration-budget-dataset>

[2] <https://www.planetary.org/articles/cost-of-perseverance-in-context>

[3] <http://www.asterank.com/>

Visualization I: Mars missions

For this visualization, the cost of past Mars missions is shown. This shows the progressions over time, and how the total costs are divided. This visualization was made using Excel.

Visualization II: Asteroids

This visualisation was made using tableau and openrefine. It shows the asteroids we know of, the amount of money they would be worth if they could be mined and the profit margin if a mission was set up to actually mine them. This shows that some of the smallest asteroids in terms of value have the biggest profit margin on that value.