NOVA IMS Information Management School

MEGI

MASTER DEGREE PROGRAM IN DATA SCIENCE AND ADVANCED ANALYTICS – MAJOR IN BUSINESS ANALYTICS

Game of Thrones Dashboard

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1. Introduction:

Game of Thrones is an American fantasy drama television series created as an adaptation of the fantasy novels series by George R. R. Martin “A song of ice and fire”. Since its first airing, it was considered a rating success and received an enthusiastic reception from critics, making it the most-viewed HBO series. The series's success and popularity have led to an enormous amount of data available, ready for exploration, contributed by thousands of fans and organizations across the world.
In this project, we will analyze different Game of Thrones datasets available to better explore the numbers behind the series' success in general and dig deeper to cover character-related analysis.

2. Data Description:

To achieve the purposes of this project, we worked with 4 different datasets explained below:

2.1. Episodes:

Variable	Type	Description
seasonNumber	Int	Number of the season
episodeNumber	Int	Number of the episode
episodeTitle	str	Title of the episode
episodeAirDate	Date	Episode air date
episodeDescriptipon	str	Short summary of the episode
millionViewers	float	Number of views in million for each episode

2.2. episode_ratings_got:

This dataset was obtained from IMBD votes and it is similar to the previous one except that it contains ratings for each episode. The ratings were calculated using a weighted average system by IMBD based on votes casted by registered users (on a scale of 1 to 10)
The 2 datasets were merged to be able to visualize the ratings based on the number of views.

2.3. game-of-thrones-deaths:

Game of Thrones is famous for the many deaths per episode. For this purpose, this dataset goes over all the 73 episodes broadcasted over eight seasons and records any murder that occurred.

Variable	Type	Description
Allegiance	str	The dead character house loyalty
Death No.	int	The number of death in the series
Episode	int	Episode Number

Killer	str	The character that did the killing
Killer's House	str	The house that the killer belonged to
Location	str	The location where the death occurred
Method	str	The method of the death
Name	str	Name of the dead character
Season	int	Season Number

2.4. Lines:

Variable	Type	Description
seasonEpisode	str	The season and episode number
speaker	str	The character's name
lineCount	int	Number of lines said
wordCount	int	Number of words said

3. Inspiration:

All the team members of this group share a passion for groundbreaking cinematographic creations, and we all found it interesting to work on a movie or TV show that created an immense impact in the film-making industry. Game of Thrones was one of the first options we thought about as its influence went beyond the unique fantasy plot and the high-quality visual effects, it was a Tv show whose's success affected economies and tourism ratings for certain countries. We figured that not only will it be fun to visualize data about a TV show we enjoy but also intriguing to understand the factors behind its huge success.
After obtaining data about GoT, we started searching for dashboards that worked with a similar concept. The most interesting ones we found were:

- https://public.tableau.com/app/profile/isha.garg/viz/TheonewithdataFriendsTVShowViz/Dashboard1
- https://public.tableau.com/app/profile/pradeepkumar.g/viz/TheShowThatBringsMeJoy/IronViz_2021
- https://towardsdatascience.com/the-office-story-thats-what-the-data-said-224e8a6f47e

In the next step, we looked in the Dash Gallery for some inspiration for the layout and design and were impressed by this dashboard: https://dash.gallery/dash-food-footprint/

4. Layout and Interactivity:

The project is divided into 2 visualization themes. At first, we visualized data relating to the show's general information and success elements such as the number of views and ratings. At the very top, the user will be able to select which season they would like to know more about as well as select a specific episode. Once they do that, information about the episode such as a small description, the air date, number of views, duration… will be displayed.
The second part addressed information regarding the plot itself and the characters, where we visualized the total lines said for each house per season, the TV show's top 5 killers, and the number of kills for each house all while specifying the method and the killers.

5. Visualizations:

The data obtained were of really good quality and allowed us to create interesting visualization with little preprocessing required.

Our Dashboard is divided into 5 visualizations that are displaying information, from a narrative point of view but also from a performance one. We wanted it to be useful and complete so we can have a global overview of the success of GOT, measure its impact, and also be able to compare the seasons with each other. With this in mind, we implemented a Data Filtering where the user can filter the data per season. Here are the main conclusions we could draw from our visualizations.

VISUALIZATION 1: Season viewers per episode (*FIGURE 1 in Annexe*)
Looking at this Line Plot, we can see the number of views (in millions) per episode and per Season. We can clearly notice the difference in views of Season 1 (maximum of 3,04) compared to the last season, which achieved more than 4 times this number (maximum of 13,61). We can also see that for all seasons, the last episode is the one getting the maximum of views, and the first one the less.

VISUALIZATION 2: Summary of each Episode per Season (*FIGURE 2 in Annexe*)
This visualization aims to give basic facts about each episode. From this one, we can observe that all episodes have the same Writer, but not the same Director, it often varies. Also, we can see that the average length of 60 minutes per episode is correct during the first 7 seasons, but not for season 8 where there is the smallest number of episodes (6) but with the longest length (80 minutes per episode).

VISUALIZATION 3: Which Episode has the best ratings? (*FIGURE 3 in Annexe*)
In this bar plot, we can compare the different ratings per episode and per release year. Again, from an overall point of view, we can see the growing success of the episodes among the viewers, with ratings going from 8.00 to 9.90 (out of 10). The only contrasted year was in 2019, matching the last season, where we can see the last episodes having very low ratings (between 4.00 and 6.00), showing the controversy and disappointment of many spectators regarding its final.

VISUALIZATION 4: Total Lines said for each House (*FIGURE 4 in Annexe*)
Number 4 is a vertical Stacked Bar Chart. We used this visualization so we could compare the influence of each House in the show, by displaying how much Dialogue (in terms of lines) each of them has per season. The graph is pretty self-explanatory, we can see that Lannister and Stark are the two main houses

in terms of Dialogue, with Stark being more present only during Season 1. We can also see that house Baratheon is only here until Season 6.

VISUALIZATION 5: Kill or Being Killed (*FIGURE 5 in Annexe*)
In this final Visualization, we wanted to point out a more narrative aspect of GOT, doing a summary of the killing history in the show. We all know that the deaths, treason, and resurrection are one of the main reasons why this show has been able to always surprise its spectators. The first horizontal bar chart displays the top characters with their number of kills, summed up from the 8 seasons. We can see Daenerys is far ahead. The second interactive graph is a sunburst graph, it represents the percentage of all the different weapons used per House to kill, and per character that used it. First, we can see that each big House has its favorite weapon, for example, House Lannister is using Wildfire in the majority (71%), and House Stark, Poison, and Sword (73% cumulated). We can also see that smaller houses or Tribes are using more diverse weapons, such as House Clegean, House Baratheon, White walkers…etc.

6. Project Implementation:

We implemented the project using the programming language Python. For the Python Integrated Development Environment (IDE) we used PyCharm, useful because it supports CSS and HTML that we also used to style and design our Dashboard.
Unfortunately, we were not able to deploy the dashboard on Heroku, however, the code and its details can be found in our GitHub repository.

7. Conclusion:

This project is a simple introduction to the world of Game of Thrones. Our main goal was to build a straightforward dashboard showing the most common variables used to determine success, which in our case were the views and ratings. One thing that was immediately noticed, is that GoT maintained a very high number of views and ratings for each episode up until the last season. While some episodes in previous seasons managed to obtain an almost excellent rating, the last episode of the last season witnessed a major drop falling down to 4/10. This rating was accompanied by the highest number of voters which indicates that the majority of people share the same opinion.
Our second goal was to understand the success factors. And we acknowledged that throughout the seasons, GoT gained popularity due to the amazing dialogue and the unexpected plot (Exp: the deaths of main characters). We tried to focus on these 2 criteria by showing a detailed description of the number of kills and methods, which represents interesting information for any fan following the TV show. Added to that, we addressed the dialogue criteria by showing the houses that had the most lines in the whole show. One house that immediately stood out was the Lannister and we can all testify to how amazing the discussions were between the Lannisters' characters.

Despite achieving the goals of the project, we encountered some limitations that required some adjustments from the initial plan. Indeed, we first started the project by elaborating a visualization plan (*FIGURE 6 in Annexe*). We had to think about what kind of information of the show we wanted to display, what could be interesting to see, and most importantly, which visualization would be the most appropriate to convey the information. However, we can see that our initial draft is not exactly the same as the final product. The main reasons were that some plots were showing similar information so we decided to regroup them, but also because we were missing some data (for instance the viewers per

country, or traits of the characters). These constraints have led to a simpler work than what we initially intended and it would be interesting, in future work, to add and display those additional information.

8. References:

- Dabbas, E., n.d. Interactive Dashboards and Data Apps with Plotly and Dash.
- Munzner, T. and Maguire, E., 2015. Visualization analysis & design. Boca Raton, FL: CRC Press.
- Tkalec, M., Zilic, I. and Recher, V., n.d. The effect of film industry on tourism: Game of Thrones and Dubrovnik.
- Tan, S., 2015. An illustrated guide to all 6,887 deaths in 'Game of Thrones'. [online] Available at: <https://www.washingtonpost.com/graphics/entertainment/game-of-thrones/>

ANNEXE

Figure 1: Season viewers per episode

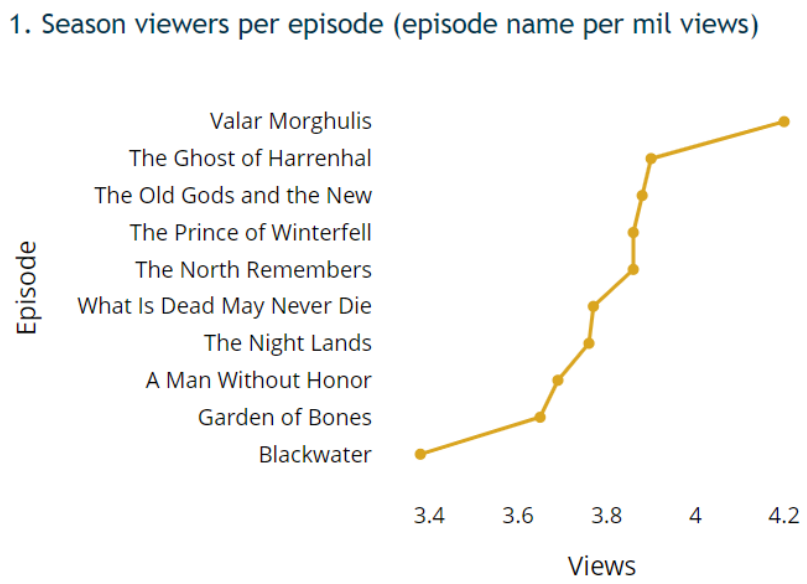


Figure 2: summary of each Episode per Season

Figure 3: Which Episode has the best ratings?

3. Which Episode has the best ratings ?

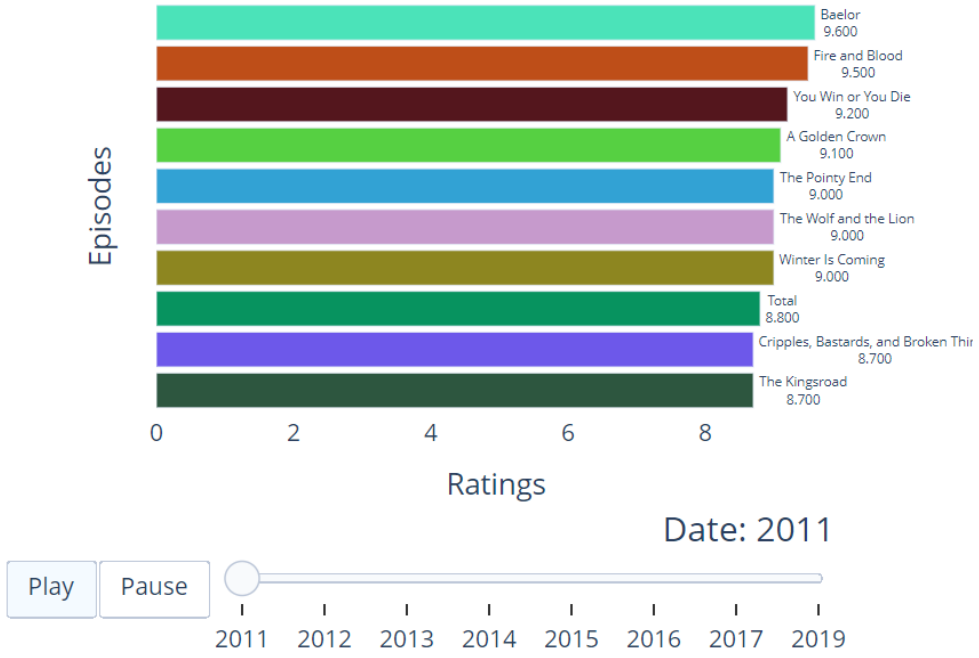


Figure 4: Total Lines said for each House

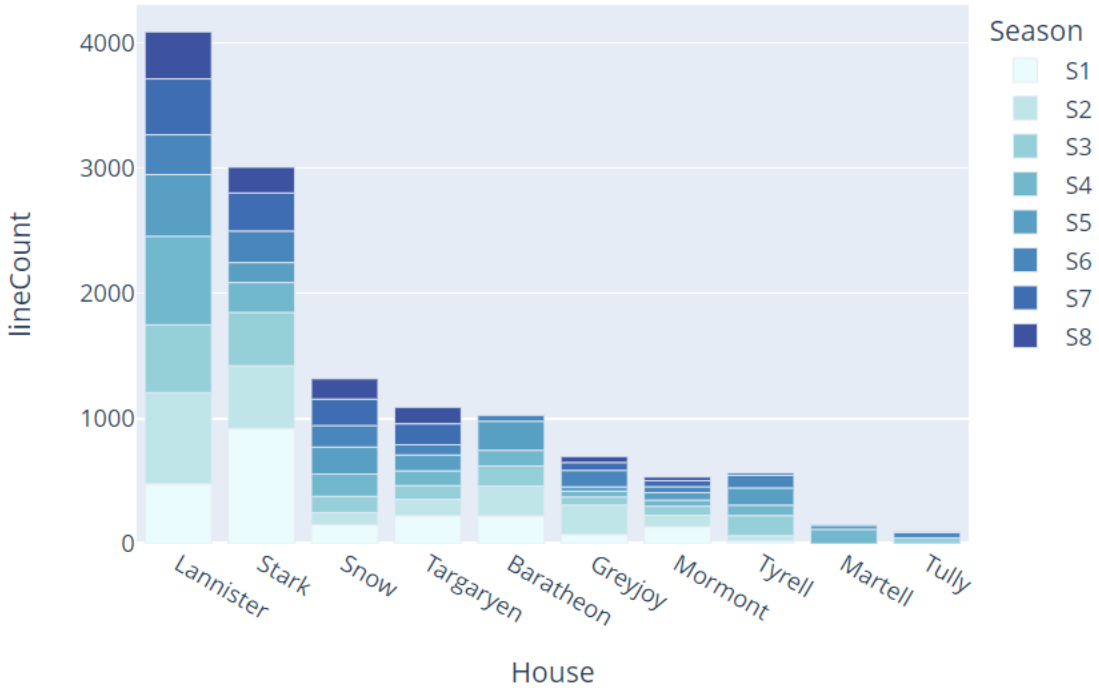
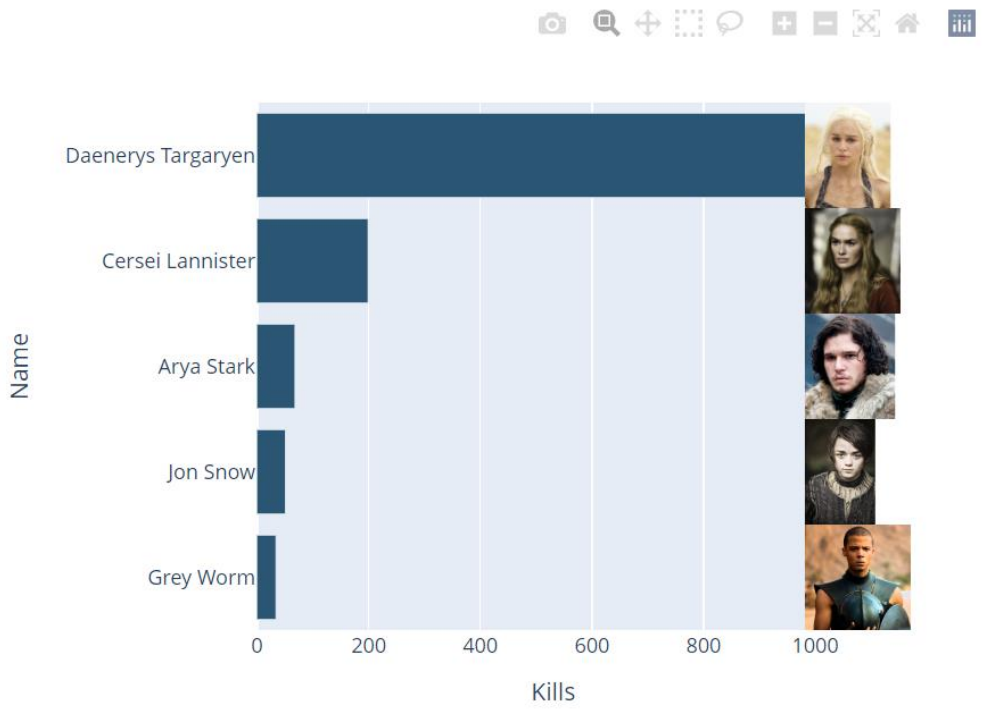


Figure 5: Kill or Being killed

4.1 Top Killers



4.2 Type of Kills per House

Select the House:

House Lannister

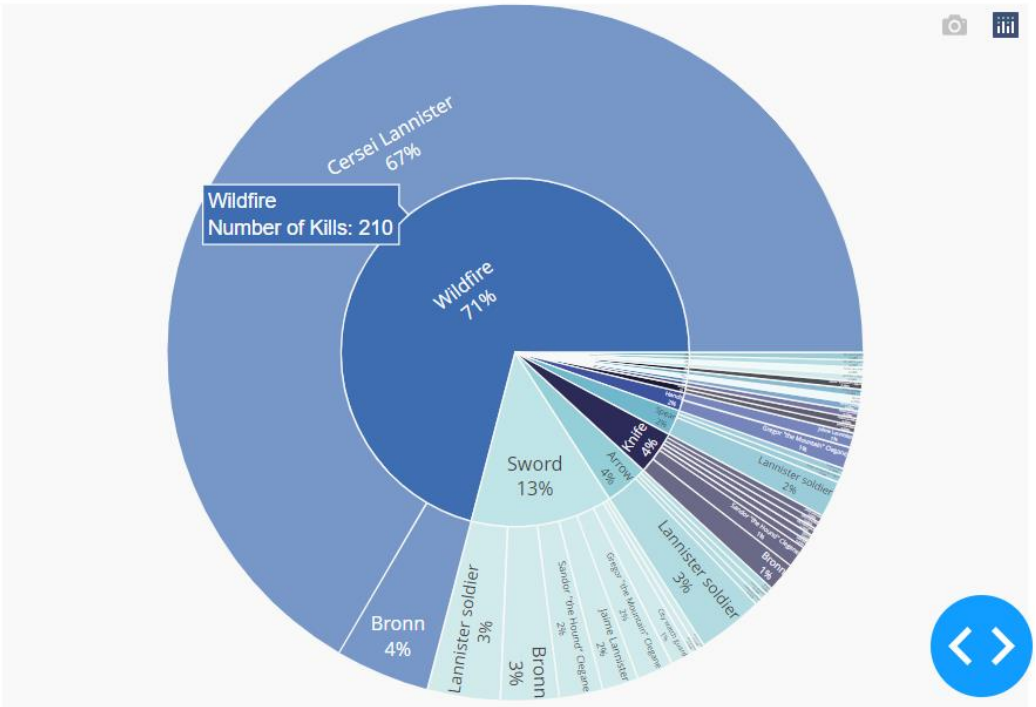


Figure 6: First Draft (Visualization Plan) of The Game of Thrones interactive Dashboard

Title

GOT's Banner + quick description

+ Interactive "choose the season" plus option TOTAL

1 2 ... 8 TOTAL

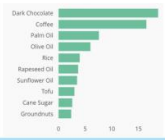
1. Overall Summary of the Season X (or TOTAL)

1.1 Top 3 rated episodes with Star 1 of the episode

1.2 Summary per Episode: From [GOT_episodes_v4]

Release_date, rating note, number of people voting, duration, summary

1.3 Viewers for Season X per ep



1.3 Viewers for Season X per country

2. Choose your TOP character

Get famous Traits, House and Appearance



Traits: Loyal, Strong
House: Lanister
Appearance: From season X to X

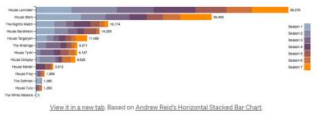


From [houses_v1] and [characters]

3. Dialogues

3.1 Which House is the star ?

From [Lines] and [characters]

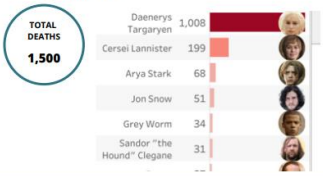


3.2 Top Lines

From [Lines]
Get the total words of all season per TOP character

4. Kill or Being Killed ?

4.1 Top Killers



4.2 Favourite Methods to kill + number of deaths + total deaths

FILTER
add a filter per characters

From [game-of-thones-deaths]

TOTAL KILL


51