

# WOTV Shiny Modeling

Chase Sariaslani

NYC Data Science Academy

July 31st, 2020



# Outline

## 1. About Final Fantasy War of the Visions



# Outline

## 1. About Final Fantasy War of the Visions

(a) A-lim/Gumi/Square-Enix



# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics



# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics
  - (c) Why Should We Study This?



# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics
  - (c) Why Should We Study This?
2. WOTV Modeling R Shiny Application



# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics
  - (c) Why Should We Study This?
2. WOTV Modeling R Shiny Application
  - (a) Inspect Data



# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics
  - (c) Why Should We Study This?
2. WOTV Modeling R Shiny Application
  - (a) Inspect Data
  - (b) Uses





# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics
  - (c) Why Should We Study This?
2. WOTV Modeling R Shiny Application
  - (a) Inspect Data
  - (b) Uses
  - (c) Interesting Findings
3. Hypothesis Testing Results



# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics
  - (c) Why Should We Study This?
2. WOTV Modeling R Shiny Application
  - (a) Inspect Data
  - (b) Uses
  - (c) Interesting Findings
3. Hypothesis Testing Results
  - (a) Total Stats Distribution



# Outline

1. About Final Fantasy War of the Visions
  - (a) A-lim/Gumi/Square-Enix
  - (b) Game Mechanics
  - (c) Why Should We Study This?
2. WOTV Modeling R Shiny Application
  - (a) Inspect Data
  - (b) Uses
  - (c) Interesting Findings
3. Hypothesis Testing Results
  - (a) Total Stats Distribution
  - (b) Limited Vs Non-Limited



# The Developers

- ▶ A-Lim was founded in 2013 by combining multiple studios such as Gumi back in 2013.



# The Developers

- ▶ A-Lim was founded in 2013 by combining multiple studios such as Gumi back in 2013.
- ▶ Gumi and A-Lim have made very successful mobile games such as Brave Frontier, Brave Frontier 2, The Alchemist Code and now Final Fantasy Brave Exvius: War of the Visions (WOTV).



# The Developers

- ▶ A-Lim was founded in 2013 by combining multiple studios such as Gumi back in 2013.
- ▶ Gumi and A-Lim have made very successful mobile games such as Brave Frontier, Brave Frontier 2, The Alchemist Code and now Final Fantasy Brave Exvius: War of the Visions (WOTV).
- ▶ WOTV is the successor of Final Fantasy Brave Exvius (FFBE) made by AAA game developer, Square-Enix



## The Developers (Continued)

- ▶ WOTV attempts to appeal to both FFBE players and Final Fantasy Tactics (FFT) players by bringing in characters from FFBE and using FFT's game mechanics.



# The Developers (Continued)

- ▶ WOTV attempts to appeal to both FFBE players and Final Fantasy Tactics (FFT) players by bringing in characters from FFBE and using FFT's game mechanics.
- ▶ WOTV is a 3D Tactical RPG with gacha mechanics to receive characters (gacha is a mechanic where people spend in-game money to purchase a chance to win characters in the game).





## The Developers (Continued)

- ▶ WOTV attempts to appeal to both FFBE players and Final Fantasy Tactics (FFT) players by bringing in characters from FFBE and using FFT's game mechanics.
- ▶ WOTV is a 3D Tactical RPG with gacha mechanics to receive characters (gacha is a mechanic where people spend in-game money to purchase a chance to win characters in the game).
- ▶ The game has over 5 million downloads and has made millions of dollars since its release.



# Game Mechanics



- ▶ The game features turn-based mechanics and standard rpg elements such as attack, agility and magic.
- ▶ It also features a job system as in FFT with three to choose from per character.



# Game Mechanics (Continued)



- ▶ The game also features limited characters by doing collaboration campaigns such as with FFT, FFI, FFIV and more.



# Why Study WOTV?

- ▶ In A-lim's previous game, Brave Frontier, the game introduced a blatant pay-to-win strategy that become known as 'power creeping' in the community.



# Why Study WOTV?

- ▶ In A-lim's previous game, Brave Frontier, the game introduced a blatant pay-to-win strategy that become known as 'power creeping' in the community.
- ▶ As characters/units were released, they would be slightly better than the predecessors, causing you to have to attempt to purchase the unit in order to compete with the game's meta.



# Why Study WOTV?

- ▶ In A-lim's previous game, Brave Frontier, the game introduced a blatant pay-to-win strategy that become known as 'power creeping' in the community.
- ▶ As characters/units were released, they would be slightly better than the predecessors, causing you to have to attempt to purchase the unit in order to compete with the game's meta.
- ▶ Games such as Overwatch, Fortnite and Rocket League have no intrinsic advantage from purchasing content from them and is strictly cosmetic.



# Why Study WOTV?

- ▶ In A-lim's previous game, Brave Frontier, the game introduced a blatant pay-to-win strategy that become known as 'power creeping' in the community.
- ▶ As characters/units were released, they would be slightly better than the predecessors, causing you to have to attempt to purchase the unit in order to compete with the game's meta.
- ▶ Games such as Overwatch, Fortnite and Rocket League have no intrinsic advantage from purchasing content from them and is strictly cosmetic.
- ▶ The questions to ask now are this:



# Why Study WOTV?

- ▶ In A-lim's previous game, Brave Frontier, the game introduced a blatant pay-to-win strategy that become known as 'power creeping' in the community.
- ▶ As characters/units were released, they would be slightly better than the predecessors, causing you to have to attempt to purchase the unit in order to compete with the game's meta.
- ▶ Games such as Overwatch, Fortnite and Rocket League have no intrinsic advantage from purchasing content from them and is strictly cosmetic.
- ▶ The questions to ask now are this:
  1. Have the starting characters been outclassed by the new characters?





# Why Study WOTV?

- ▶ In A-lim's previous game, Brave Frontier, the game introduced a blatant pay-to-win strategy that become known as 'power creeping' in the community.
- ▶ As characters/units were released, they would be slightly better than the predecessors, causing you to have to attempt to purchase the unit in order to compete with the game's meta.
- ▶ Games such as Overwatch, Fortnite and Rocket League have no intrinsic advantage from purchasing content from them and is strictly cosmetic.
- ▶ The questions to ask now are this:
  1. Have the starting characters been outclassed by the new characters?
  2. Are limited characters better than non-limited characters?



# WOTV Shiny Application

You can refer to the video [here](#) for information on the WOTV Modeling Shiny Application.



# WOTV Data

You can refer to this link for a complete list of WOTV data:

[character list](#)

- ▶ Note: modified.hp and total.stats have been added by me and are based on these formulae and only applies to their base stats:

$$\text{modified.hp} = \frac{hp}{\max(hp)} \cdot 100$$

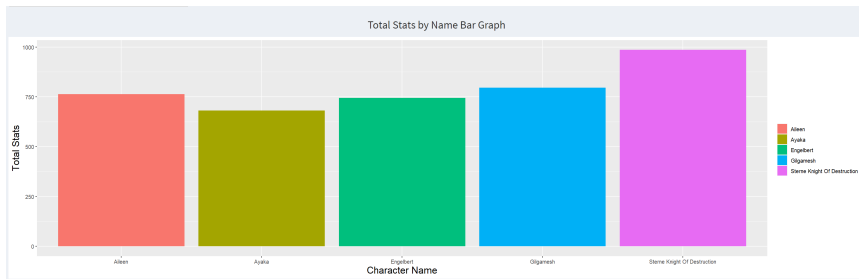
and

$$\text{total.stats} = \text{attack} + \text{magic} + \text{luck} + \text{speed} + \text{dexterity} + \text{modified.hp}$$

- ▶ AP, range, cost and other stats are available; however, they do not directly affect a character's damage amount in battle.



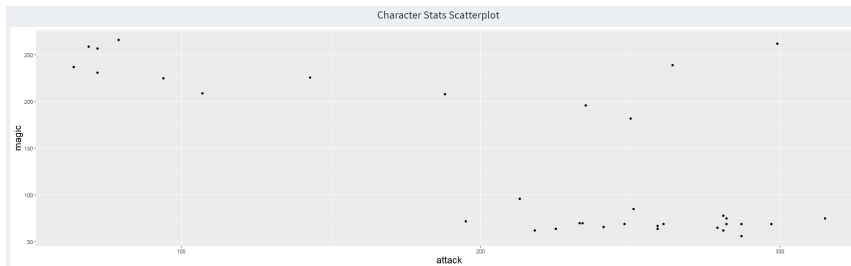
# Interesting Results



- ▶ Sterne Knight of Destruction is a new unit introduced in Japan and will be released later globally.
- ▶ He has a whopping 985 total stat points which is the highest compared to the other four starting UR characters.



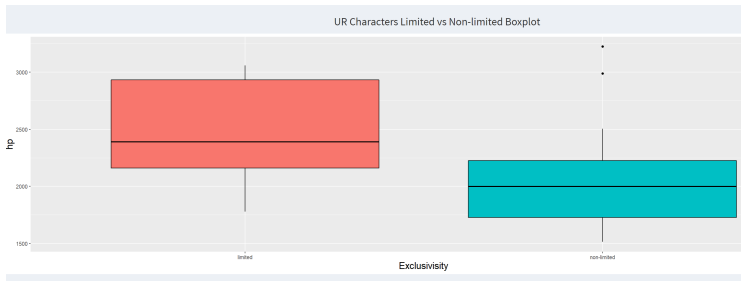
# Interesting Results (Continued)



- ▶ This graph compares UR character's attack and magic stat.
- ▶ We can see three groups where there are mostly attackers and magic users and a select few that can use both.
- ▶ The point in the upper right-hand corner is Sterne Knight of Destruction which shows he is clearly an outlier.



# Interesting Results (Continued)



- ▶ In this box plot, we can see that a lot of the limited characters have more hp than the non-limited in general.
- ▶ This is likely due to the fact that many of the limited characters have been brawlers (high hp and high attack) while many of the non-limited have been assassins and gunners (low hp, high attack, and speed).



# Interesting Findings (Continued)



- ▶ We can see that more clearly when we compare speeds of limited and non-limited characters.



# Hypothesis Testing Claims

- ▶ I looked into common gripes about RPG gacha games especially given A-Lim's reputation. Here were the two I tried to answer:





# Hypothesis Testing Claims

- ▶ I looked into common gripes about RPG gacha games especially given A-Lim's reputation. Here were the two I tried to answer:
  - ▶ Is there power creeping in the game; meaning, are starter units being outclassed by new units?



# Hypothesis Testing Claims

- ▶ I looked into common gripes about RPG gacha games especially given A-Lim's reputation. Here were the two I tried to answer:
  - ▶ Is there power creeping in the game; meaning, are starter units being outclassed by new units?
  - ▶ Are limited time units better than non-limited time units?



# Assumptions

- ▶ I looked at only UR (Ultra Rare) units as those are the ones that cost the most money and are the best units in the game.



# Assumptions

- ▶ I looked at only UR (Ultra Rare) units as those are the ones that cost the most money and are the best units in the game.
- ▶ As mentioned earlier about stats, I only used attack, magic, speed, dexterity, luck and modified hp to calculate the total stats because I would like to assume, given an attack that hits, what is the minimal damage result?



# Assumptions

- ▶ I looked at only UR (Ultra Rare) units as those are the ones that cost the most money and are the best units in the game.
- ▶ As mentioned earlier about stats, I only used attack, magic, speed, dexterity, luck and modified hp to calculate the total stats because I would like to assume, given an attack that hits, what is the minimal damage result?
- ▶ The stats which I used are at max level and max job levels with no stat increases from abilities or how jobs give different distributions based on stats (example: Samurai's damage is based on 120% of the attack stat).



# Results

- ▶ Using a t-test, I was able to conclude that in both cases I could not fail to reject the null hypothesis for now and say that there is power creeping or that limited units are better.



# Results

- ▶ Using a t-test, I was able to conclude that in both cases I could not fail to reject the null hypothesis for now and say that there is power creeping or that limited units are better.
- ▶ In fact, I got the following results for the power creeping claim:



# Results

- ▶ Using a t-test, I was able to conclude that in both cases I could not fail to reject the null hypothesis for now and say that there is power creeping or that limited units are better.
- ▶ In fact, I got the following results for the power creeping claim:
  - ▶ Mean of total stats of starting characters (those that were released in March) was 742.
  - ▶ Mean of total stats of new characters (those from April on) was 786.9.
  - ▶ The p-value turned out to be 0.29 which is not within a 5% margin.





# Results (Continued)

- ▶ I got the following results for the limited characters are better claim:



## Results (Continued)

- ▶ I got the following results for the limited characters are better claim:
  - ▶ Mean of limited characters was 784.83
  - ▶ Mean of non-limited characters was 768.54
  - ▶ This is a little bit surprising considering non-limited UR characters come out more frequently than limited time characters.



# Possible Explorations

- ▶ Some possible questions left to be unanswered that would be interesting to explore is how master abilities affect characters over time.



# Possible Explorations

- ▶ Some possible questions left to be unanswered that would be interesting to explore is how master abilities affect characters over time.
- ▶ Since its release, master abilities have expanded past stat boosts and gone into raising defenses against physical and magical damage as well as raising defense against different types of attacks (piercing, slashing, striking, etc.)



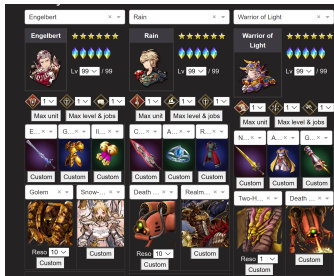
# Possible Explorations

- ▶ Some possible questions left to be unanswered that would be interesting to explore is how master abilities affect characters over time.
- ▶ Since its release, master abilities have expanded past stat boosts and gone into raising defenses against physical and magical damage as well as raising defense against different types of attacks (piercing, slashing, striking, etc.)
- ▶ It would also be interesting to include how vision cards and espers (stat amplifiers) have changed since its release.



# Possible Explorations

- ▶ Some possible questions left to be unanswered that would be interesting to explore is how master abilities affect characters over time.
- ▶ Since its release, master abilities have expanded past stat boosts and gone into raising defenses against physical and magical damage as well as raising defense against different types of attacks (piercing, slashing, striking, etc.)
- ▶ It would also be interesting to include how vision cards and espers (stat amplifiers) have changed since its release.



THANK YOU



# Citations

- ▶ A-lim
- ▶ War of the Visions Income and Reviews
- ▶ Game Mechanics
- ▶ Power Creeping
- ▶ WOTV Calculator

