The objective of this research is to help game designer understand their customers. How can they retain as many customers as possible and create a pleasant game experience? To do so, the game designer need to understand player interactions and choices, as it relates to in-game design.

The game I chose to analyze is World of Warcraft (developed by blizzard), due to its overwhelming popularity. World of Warcraft captured at some point over 12 million users (Almost half of **all** game subscriptions)

User data can be collected and analyzed to address issues such as **game balance**, **social behavior**, **variation of players online, or subscription analysis.** Having a clear understanding of this data can help game designer create a seamless experience for users. By doing so, they can create value for their product and generate revenue.

In this introduction, I will present only one analysis: the **variation of players online** at any given time.

Here is a link to the full paper:

XXXXX

It covers a lot more content and it is a very comprehensive analysis example for a video game based research paper. Included in the link are source codes (**STATA and python**) developed (by myself, but I authorize any reproduction/modification). The dataset used holds over 26 million observations, collected over 3 years.

**Time - Trend analysis: number of avatars online**

Let’s take a closer look at how many players are connected on this server, and at what times. The change in the count results for characters can give us insight as to when expect more or less demand for the servers. This can be a very useful thing to know for game companies, who can appropriately allocate server space for crowded times, or on the other hand provide incentive for players to connect more frequently or at different times.

Predicting this demand ahead of time will allow for game designers to allocate costs with more accuracy, while still making sure their infrastructure is solid enough to handle the number of players online.

**Daily count: variation of player per hour basis:**

The graph above shows the mean number of player connected to the game servers (as well as minimum and maximum). We can see that variation throughout the day is huge: the mean varies from 84 players at 6AM to 578 at 10PM.

These numbers make sense: even hardcore gamers need to sleep. However we can notice that from 1 to 2 AM, there are still more people connected than during day hours. Most of the World of Warcraft users are people that work, it is interesting to point out they decide to cut hours off their sleep schedules in order to play. Most social guild activities such as donjon raids or player battles will also happen at night, giving players more reason to be connected from 7PM to 2AM. As mentioned by a similar research: “This finding shows that many people play all night, and therefore implies that the game is addictive”[[1]](#footnote-1)

**Monthly count: variation of player per Day basis:**

Unlike hourly counts that held huge variations, the mean number of players connected throughout the month on a daily basis does not change much. We can see the mean is very constant, hovering around 500 players regardless of the day of the month.

**Note**: The minimum and maximum curves offer a lot of variation. However, I believe the 2 occurrences when the minimum hits 0 represents days when World of Warcraft was closed for maintenance. Since these values are the minimum return by the count of every day and there is over 3 years of data, servers were bound to close at some point.

**Conclusion**

Thanks to a simple time trend analysis such as the one performed, game designers can predict crowded times and allocate proper server space. For less crowded times, they can reduce server allocation and save money.

1. http://mmnet.iis.sinica.edu.tw/pub/lee11\_wowah.pdf [↑](#footnote-ref-1)