# Predicting Online Game Player Count through SARIMAX

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# Introduction

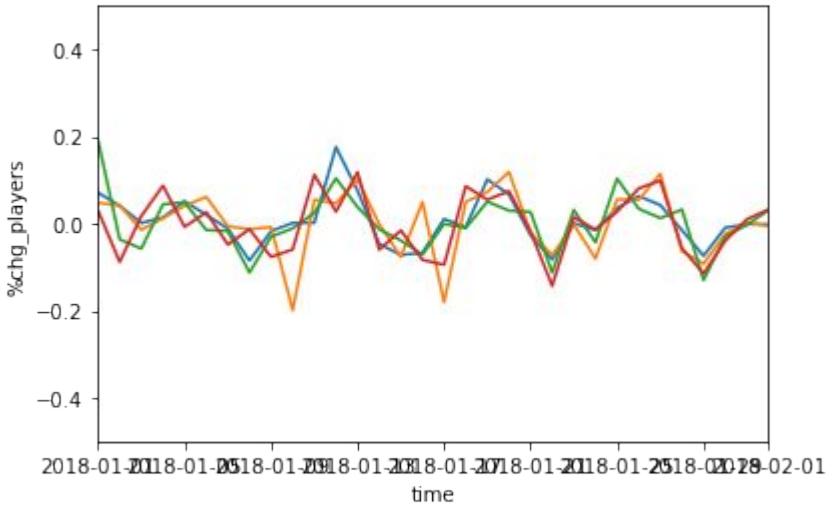
- There are 2.7 billion gamers across the globe
- Businesses must be able to handle changes in this market, moreso now with the impact of COVID-19
- By using time-series data on number of concurrent players, we will be able to make predictions on trends in player counts and suggest how production companies can prepare for the future.

# Data

- Our data comes from SteamDB, or Steam Database.
- Data provides daily statistics on the number of concurrent players
- We used 4 games:
  - CS:GO
  - DOTA 2
  - Rocket League
  - Team Fortress 2

# All our games share the same Trends

- We found that when visualizing trends on a monthly level, it was plain to see that all of our games follow the same trends in changes in player counts.
- This suggests that our data is capable of being modelled in the same way

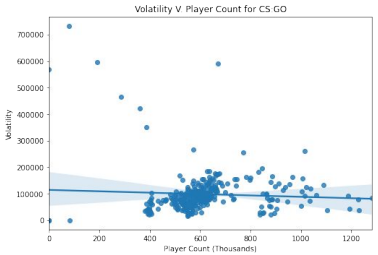


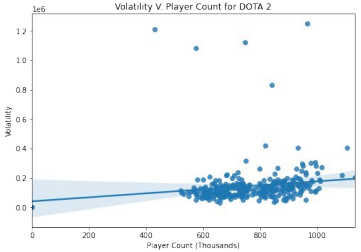
# Events

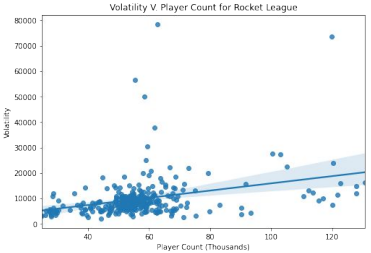
- We found that while events do have a positive impact on number of players, this effect is not significant.
- For viewers, however, events dramatically increase counts.

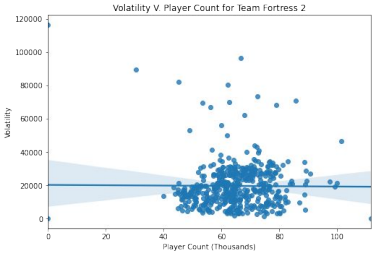
# Volatility trends

- We found that volatility tends to increase as number of players increases
- This suggests that a games maximum number of players increases at a rate greater than average number of players



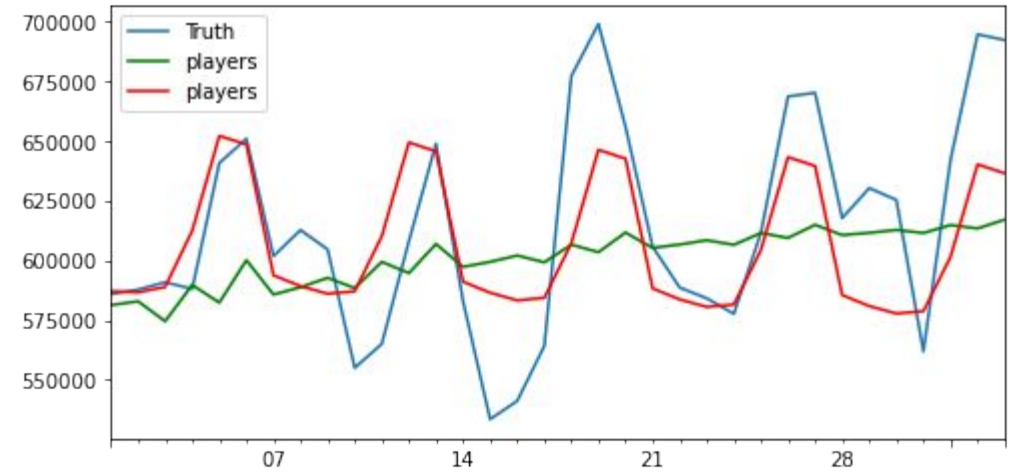
# Modelling Process

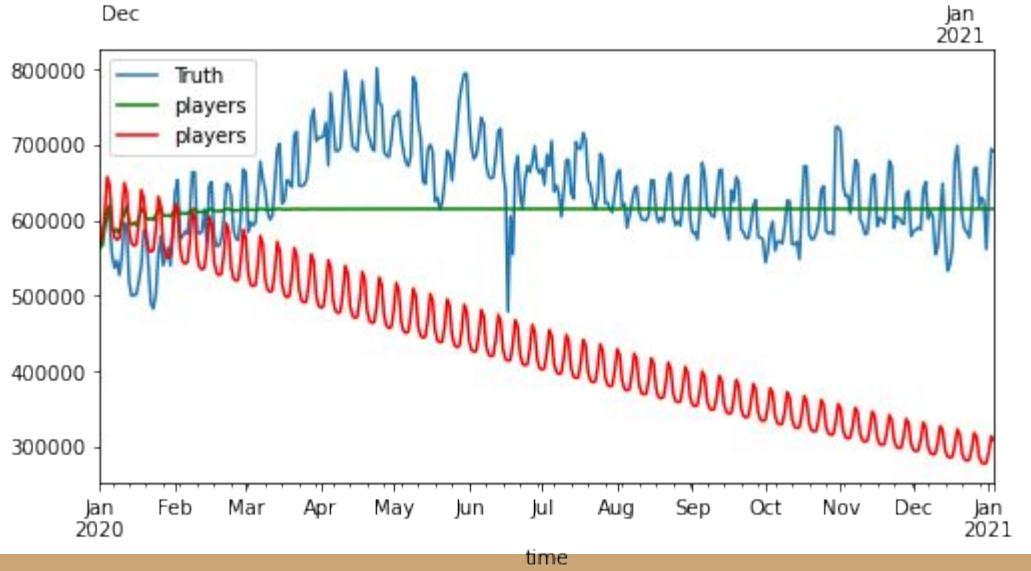
- Two types of models:
    - First, we constructed basic models for each game, training on its own data.
    - Second, we constructed an averaged model, using average percent change in number of players across all games.

# Modelling Results

Each model has strengths and weaknesses, which present in Long Run VS Short Run forecasts

- Our basic models perform best for short run predictions
- Our averaged model performs best for long run predictions



# Recommendations to Production Companies

1. Capital Investment must outpace player growth due to increases in volatility
2. Events are effective at increasing viewership, not player counts.
3. Long-term predictions should be made on market-wide analysis, while short-term predictions are best made by a games own historical data

# Further Work

- Collecting hourly statistics instead of daily statistics

- Event Investigations

- Company investigations

# Thank You!

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