Video Game Regression Modelling Project

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Summary

The purpose of this regression model is to predict the Global Sales of Video Games by analysing the Video Game Sales dataset from Kaggle.

Outline

- Business Problem
- Cleaning the Data
- Exploratory Data Analysis
- Models
- Conclusions

Business Problem

How can we predict the Global Sales of Video Games?

In order to solve this problem, I intended to answer the below questions:

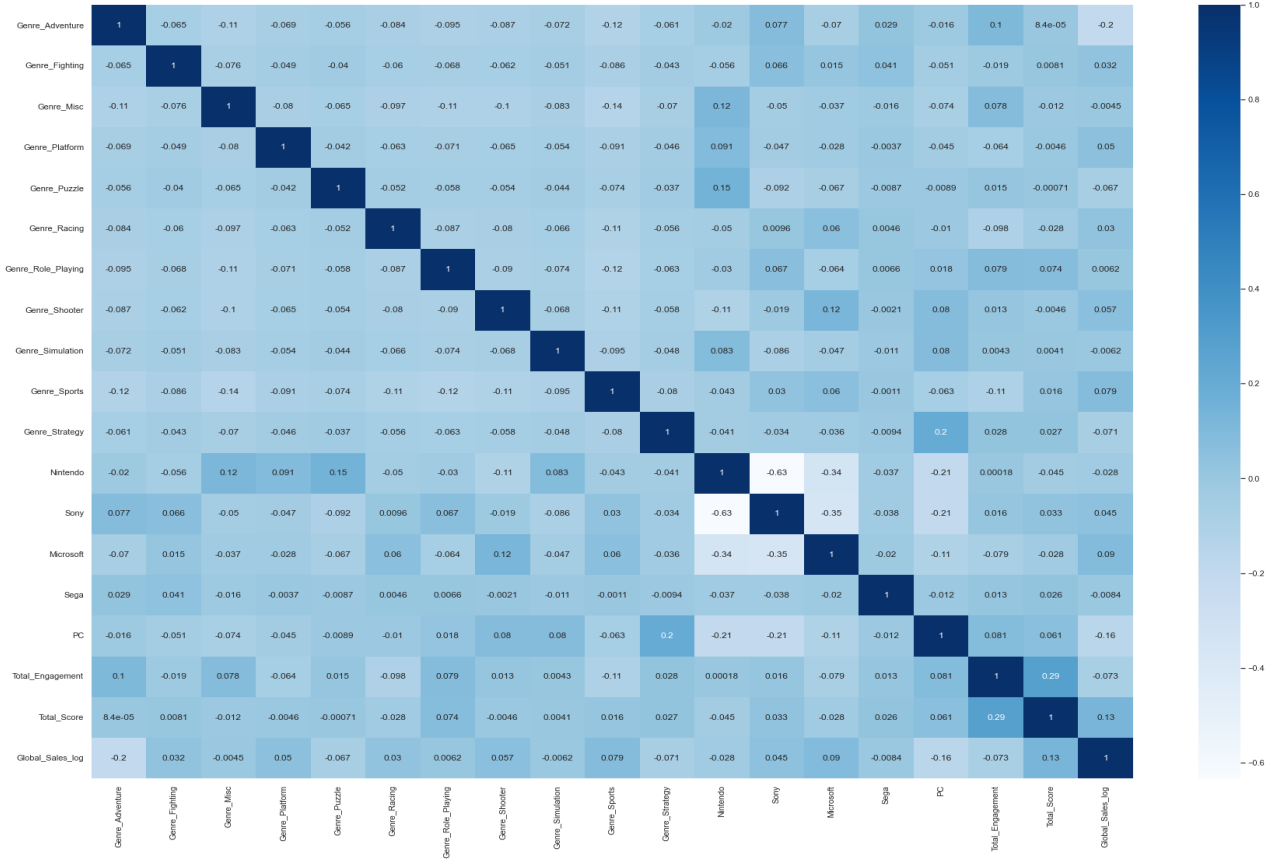
1. Does console impact global sales?
2. Does genre impact global sales?
3. Does publisher impact global sales?

Cleaning the Data

- Dropped unnecessary data
- Replaced or removed null values
- Narrowed data to only include sales between 2000-2016
- Using the empirical formula I removed outliers
- Addressed multicollinearity
- Split data set between continuous and categorical data
- Grouped Publisher data into Small, Medium and Large
- Created additional variables including total engagement and average score

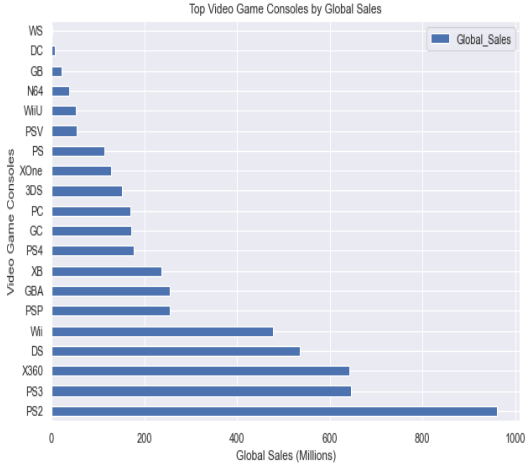
Exploratory Data Analysis

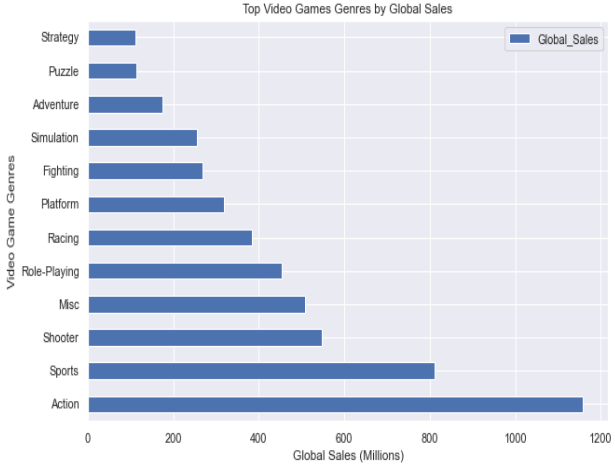
- No key features stood out that showed positive correlation with Global Sales.
- Further analysis required to identify any positive correlation with Global Sales.

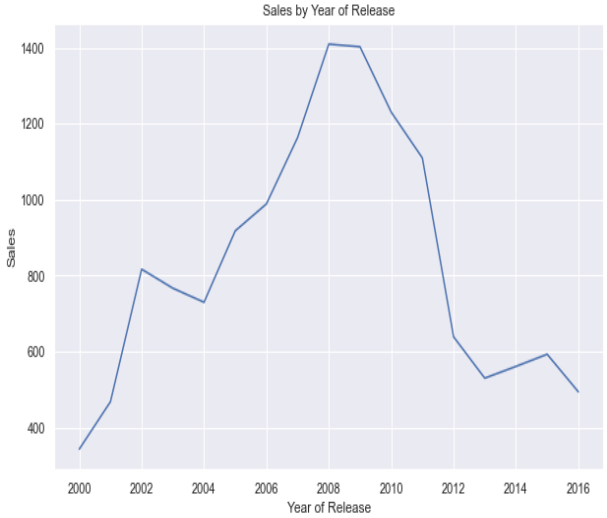


Exploratory Data Analysis

- Global Sales for Video Games are highest on the PS2 console while Action games are the highest selling following by Sports and Shooter
- Using the platform visualization I modelled two sets of data, individual platforms and then grouping platform together by maker e.g. PS, PS2 and PS3 under Sony and XOne, X360 under Microsoft
- Number of games peaked in 2008 and 2009 but had declined since

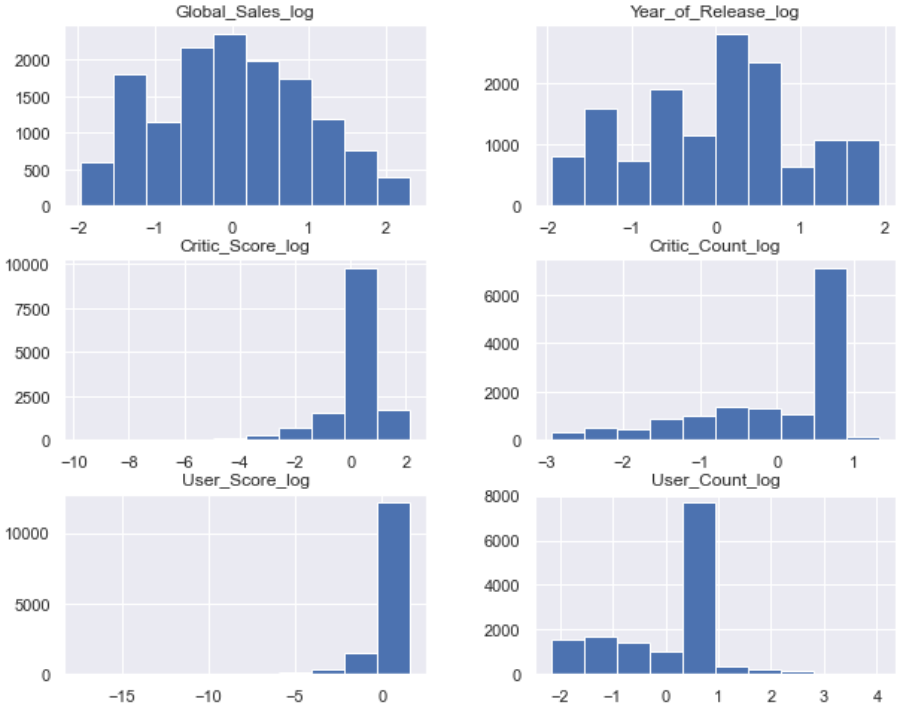






Exploratory Data Analysis

- Used mean normalization to standardise the data
- All features appeared ok however the critic and user variables are somewhat negatively skewed

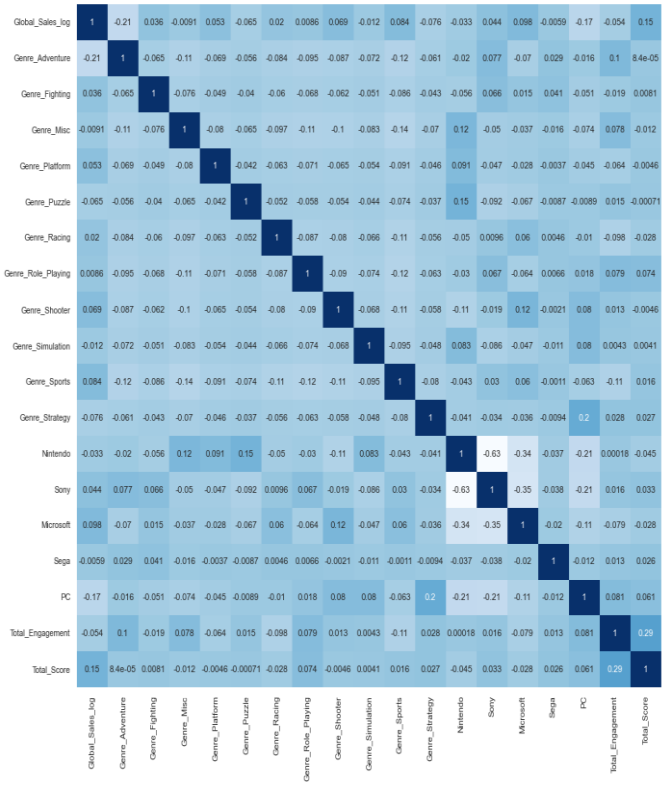


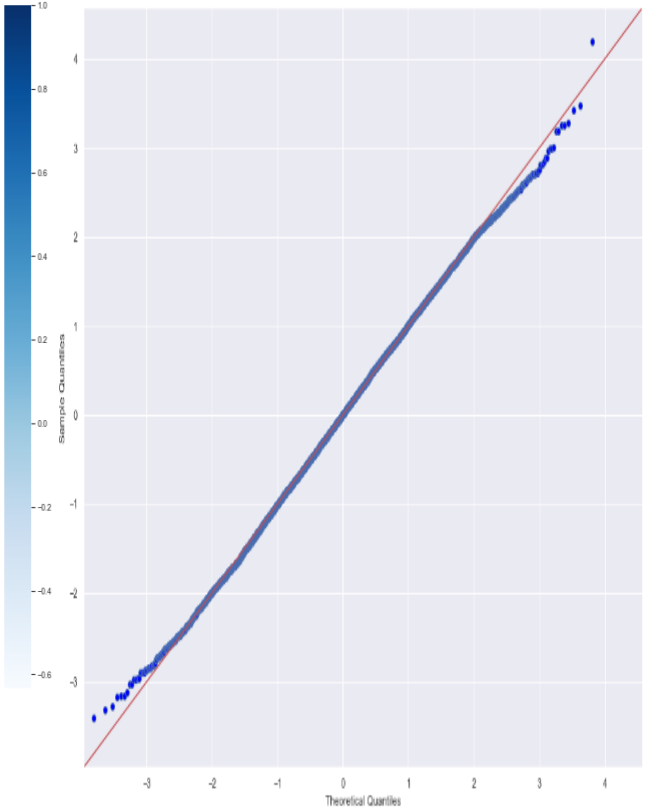
Exploratory Data Analysis

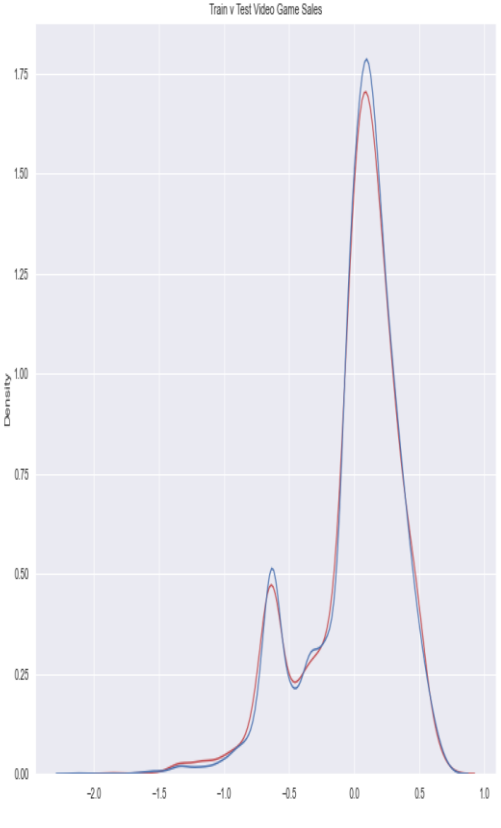
- Unfortunately no models could provide concrete recommendations

Model / Features	R^2	Train MSE	Test MSE
Model 1: All Features	0.28	0.73	0.76
Model 2: All Features minus Publisher	0.19	0.80	0.82
Model 3: Genre, Grouped Platform, Total Engagement, Total Score	0.12	0.88	0.90
Polynomial 1st Degree: All features	0.12	-	-
Polynomial 2nd Degree: All features	0.21	-	-
Polynomial 3rd Degree: All features	-8.02	-	-

Model 1

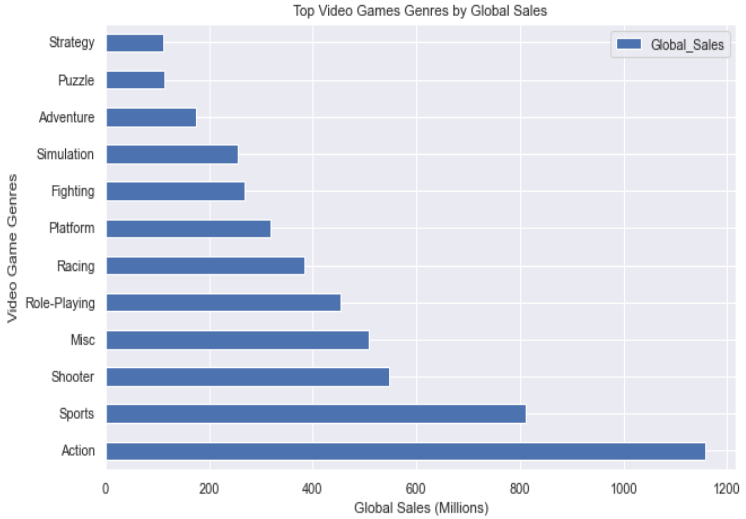

Global_Sales_log
Genre_Adventure
Genre_Fighting
Genre_Misc
Genre_Platform
Genre_Puzzle
Genre_Racing
Genre_Role_Playing
Genre_Shooter
Genre_Simulation
Genre_Sports
Genre_Strategy
Nintendo
Sony
Microsoft
Sega
PC
Total_Engagement
Total_Score

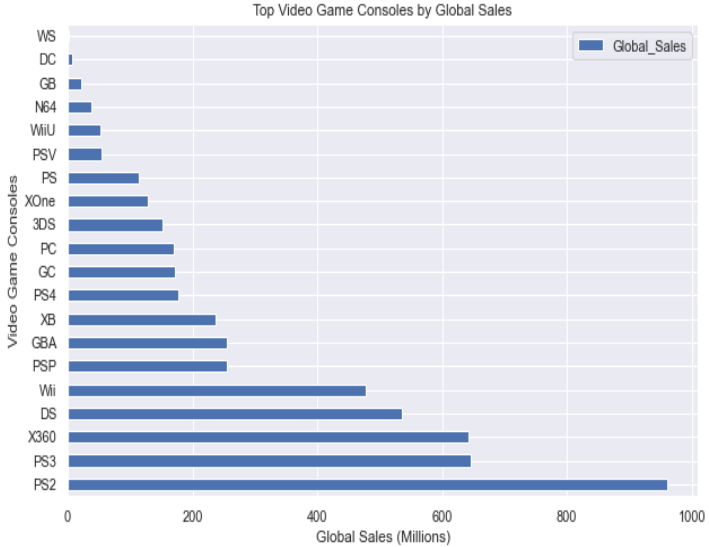

Sample Quantiles
Theoretical Quantiles


Train v Test Video Game Sales
Density

Conclusions

- While there is highly performing genres, platforms and publishers the Global Sales can't be accurately predicted using OLS and Polynomial Regression modelling
- It is suggested that advanced regression models are used to drive decisions
- It is however recommended that insights are used for focus areas such has highly performing genres, engagement and consoles





Thank You!

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