**Bivariate Statistics**

This section focuses on how some the independent variables like publisher and ESRB rating relate to the dependent variables like Metacritic score and sales. For example, you will see if a game’s genre has any effect on how well it reviews or how many copies it sells. It may get a little repetitive with only two dependent variables that could potentially be affected by all of the remaining independent variables, but it wasn’t too much for me to check everything so I went ahead and did it.

**Genre**

Sports games had the highest average review score with a mean of 76, but nearly a third of those games were Electronic Arts’ sports games that had a mean score of 83. Without EA’s games, the mean review score for sports games drops to 71, around where the means for the other genres are. Even after removing the EA sports games and bringing the sports mean closer to the others, the ANOVA test showed significance for a difference in mean review scores of games for different genres meaning that there is some sort of relationship between genre and review score. The test showed significance, but it still looks close enough that I would argue against it.

Action/Adventure Fighting Other Platformer Racing RolePlaying Shooter Sports

67.85 68.78 67.01 63.42 66.01 73.19 69.25 75.91

Games of different genres sold relatively the same on average. The ANOVA tests showed that the difference in sales of different genres was not large enough to be significant for any of the regions. Sports games sold the fewest copies, but that’s a genre that is almost always multiplatform so sales for those games aren’t going to be as high for an individual console. Fighting games performed the best on average in North America mostly because of success of *Super Smash Bros. Melee*. Role-playing games performed the best in Europe. The cumulative “other” genre sold best in Japan (racing games actually had a higher average, but there were very few games, one of them being *Mario Kart: Double Dash!!*).

**Release Year**

Games reviewed and sold relatively the same each year. The correlations between release year and sales for all regions were all negative, but still so close to zero that there really isn’t much of a relationship between the two. The slight negativity in the relationship with sales is probably just because the games released later have a little less time on the market and they get added to a larger established library of games to compete with. The slight negativity in the relationship with Metacritic score is caused by so few games being released in 2006/2007 with a number of them being lower quality ports of next gen games.

**ESRB Rating**

The ESRB rating had no effect on the way Gamecube games reviewed. T/M rated games did review higher on average compared to E/E10, but only by a single point.

Game critics may not care about the ESRB rating, but the customers do. E/E10 rated games sold significantly better in North America, Europe, and Japan. The biggest difference is in Japan where E/E10 rated games outsold T/M games 2:1. Nintendo consoles are known for being family friendly. I wonder what that relationship looks like on the Xbox and PS2.

**Multiplayer**

Single player and two player games reviewed pretty much the same with mean scores of 67 and 68. Four player games had a 71 average review score which the t-test for difference in means showed to be significantly higher than the two player games. It seems that the addition of multiplayer only really gets noticed by reviews if it’s four player.

The distribution of means sales in all regions across the three levels of multiplayer showed an interesting pattern. Using North America as an example, the mean copies sold for single player games is about 27,000. The mean for two player games drops to about 21,000. Then the mean for four player games rises to about 26,000. Every region follows this same pattern two player games underperforming compared to one and four player games. It doesn’t make sense for anyone to turn down a game because it specifically supports a maximum of two players, so the dip in sales must be because of what types of games end up being two player like the *Jikkyou Powerful Pro* and *Tom Clancy* series.

**Metacritic Score**

The correlation between Metacritic score and sales is positive in all regions which is expected. Better games sell more copies. The question I had is how strong is that relationship is. The correlation between Metacritic score and sales is around a relatively weak .3 for all regions. So there are still plenty of lower quality games selling well and higher quality games selling poorly.

**Exclusivity**

The Gamecube exclusives reviewed better than multiplatform games, but the difference barely missed the pre-determined critical region of .05 with a p-value of .059. This means that the difference in average review scores between exclusives and non-exclusives was very big, but not big enough to call attention to it. The difference is so small that a few missing Metacritic scores or sales numbers could be what kept it just outside the critical region. I’d bet *1080 Avalanche* sold decently well, but there was no sales data for it.

Comparing exclusivity to sales seemed like a difficult to do accurately and it was. The exclusives should sell better on average than multiplatform games because their sales are spread around two or three concoles. Multiplatform games in this dataset can be Gamecube/Playstation 2, Gamecube/Xbox, or Gamecube/Playstation 2/Xbox. The different consoles all had a different percentage of the market and all with different attach rates. I wasn’t able to come up with a way to accurately compare these variables without data for Xbox and PS2 games.