**Pandas Homework - Heroes of Pymoli**

**Three Observable Trends Based on Data**

**Trend #1 – Gender Trends**

One noticeable trend in the data is the is the high proportion of male players of the game, as opposed to female and other (or non-disclosed) genders. Male players make up approximately 84% of the total players of the game, while female and other only make up 16%. Further to this, of that 16% there are only roughly 2% of players who are classified as having a gender of other (or non-disclosed) versus 14% of the players being identified as female. This might suggest that the game itself is highly attractive to male players, but much less so to female players and struggles even further to be relevant to those who do not fall into in the traditional binary gender classification.

Examining the gendered data trends further, 652 purchases out of a total of 780 (or roughly 84%) were made by male players, which would be expected given their domination of the total players. 14% (or 113 out of the 780) of the purchases were completed by female players, and nearly 2% were by players of another or non-disclosed gender. This matches exactly with the percentage distribution of the players by gender. However, the average purchase price of an item by female players was $3.20, and $3.35 for other genders. This is somewhat higher than that of the male players, where the figure was $3.02. Furthermore, the average total purchase per person was also higher for female and other genders than male players. Females spent on average $4.47 in the game, and other genders $4.56. Males only spent $4.07. So, while there are much less female and other genders playing the game, they do seem to spend more. This would be another reason to make the game more inviting to non-male players.

**Trend #2 – Age Trends**

Exploring the age demographics of the players based on the prepared table, it can be seen that the 20-24 year old age groups is easily the largest out of all the age groups, registering as having nearly 45% of all the players of the game. Additionally, the ages groups on either side of this group are the next two age groups with the largest percentage of players. The 15-19 groups accounts for nearly 19% of players, and the 25-29 comprises 13%. Collectively these three age groups represent approximately 75% of the total player base of the game. Clearly the game is most popular and appealing for these age groups as opposed to the others listed in the table.

If the data is investigated further via the purchasing analysis by age groups, it can be seen that the three age groups of 20-24, 15-19 and 25-29 also have the three largest total purchase values in terms of spending on in game items and the highest numbers of purchases. These three groups also have quite similar average purchase price for items of $3.05, $3.04 and $2.90 for each of the age groups, respectively. The other age groups have an average purchase price clustered quite closely in magnitude to these age groups with two exceptions. The under 10 age group has an average purchase price of $3.35, and the 35-39 age group has a value of $3.60. If these age groups of players are spending significantly more on average on each item they buy in the game, this could mean that more efforts should be made to reach these age groups and increase their participation in buying items in the game. This trend can also be seen in the average total purchase per person where these two age groups are again the two highest values by a sizeable amount. The under 10 group has a value of $4.54, and the 35-39 age groups is even higher at $4.76 (this age group is likely to have higher disposable income than the under 10 group). It seems that once these age groups are participating in the game, they spend generally spend more than others and hence improved marketing and engagement with these players may prove profitable.

**Trend #3 – Most Popular and Profitable Items**

The prepared table of the most popular items shows two items with purchase counts of 13 and 12, that is “Final Critic” and “Oathbreaker, Last Hope of the Breaking Storm”. There is a clear break between these two items and the other popular items, as the next 15 items in the list all have between 7 and 9 as their purchase counts i.e. the purchase counts are clustered together (this can be seen if more of the table is output). This might suggest that there should be more opportunities to purchase these items in the game due to their popularity with players and their likely ability to generate more profit.

This is further shown in the in the table of most profitable items. Both “Final Critic” and “Oathbreaker, Last Hope of the Breaking Storm” are the two items with the highest total purchase value of $59.99 and $50.76, respectively. Again, there is a clear difference in value between these items and the next items in the most profitable list which should only further strengthen the case for having more of these items available for purchase in the game. One other piece of data worth noting is the third item in the most profitable items table, that of “Nirvana” with a high purchase count of 9, very high item price of $4.90 and the third highest total purchase value of $44.10. This item can possibly be developed further to make it more desirable to purchase in game which would be beneficial due to its high popularity and profitability.