Assessing Video Game Mechanics

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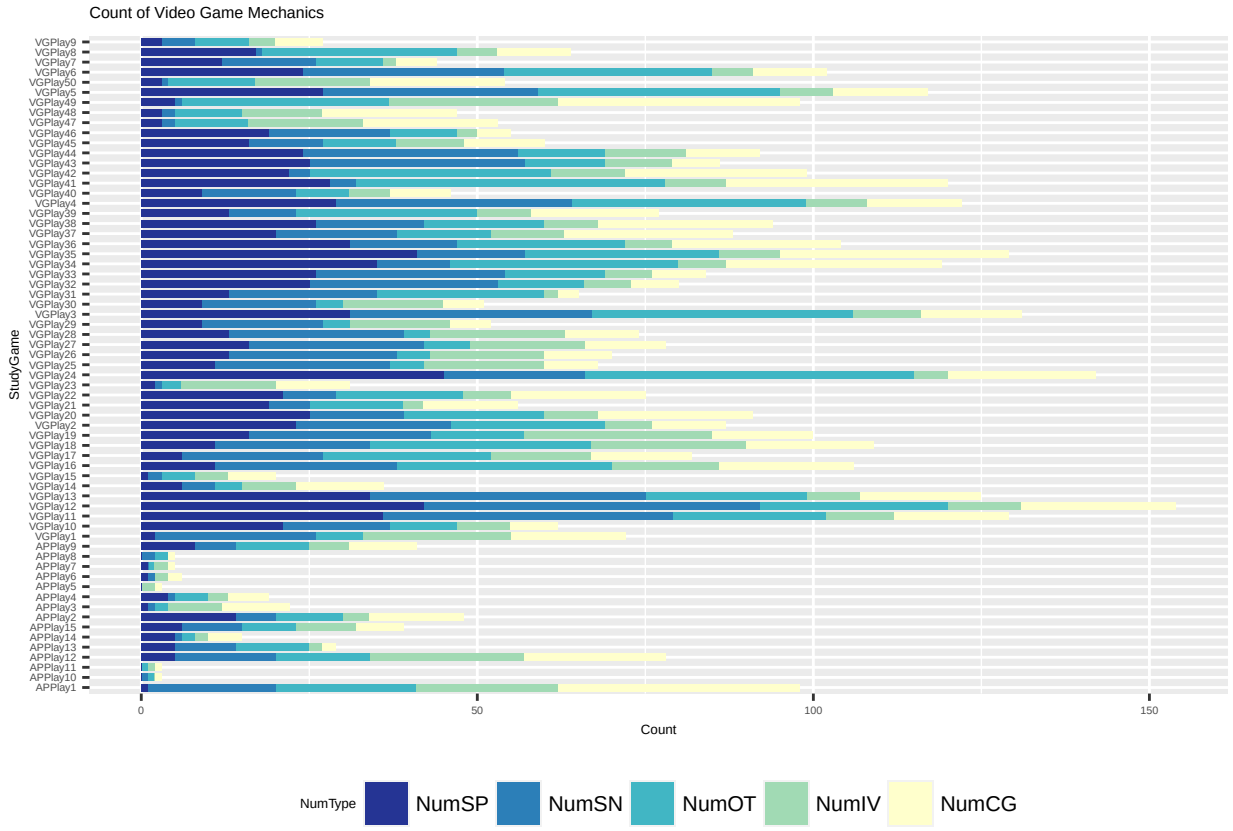
Visualizations

```
# read in the data
game_df <- read_excel("TopSelling_MSSP_July28_GameData.xlsx")
participant_df <- read_excel("TopSelling_MSSP_July28_ParticipantData.xlsx")
```

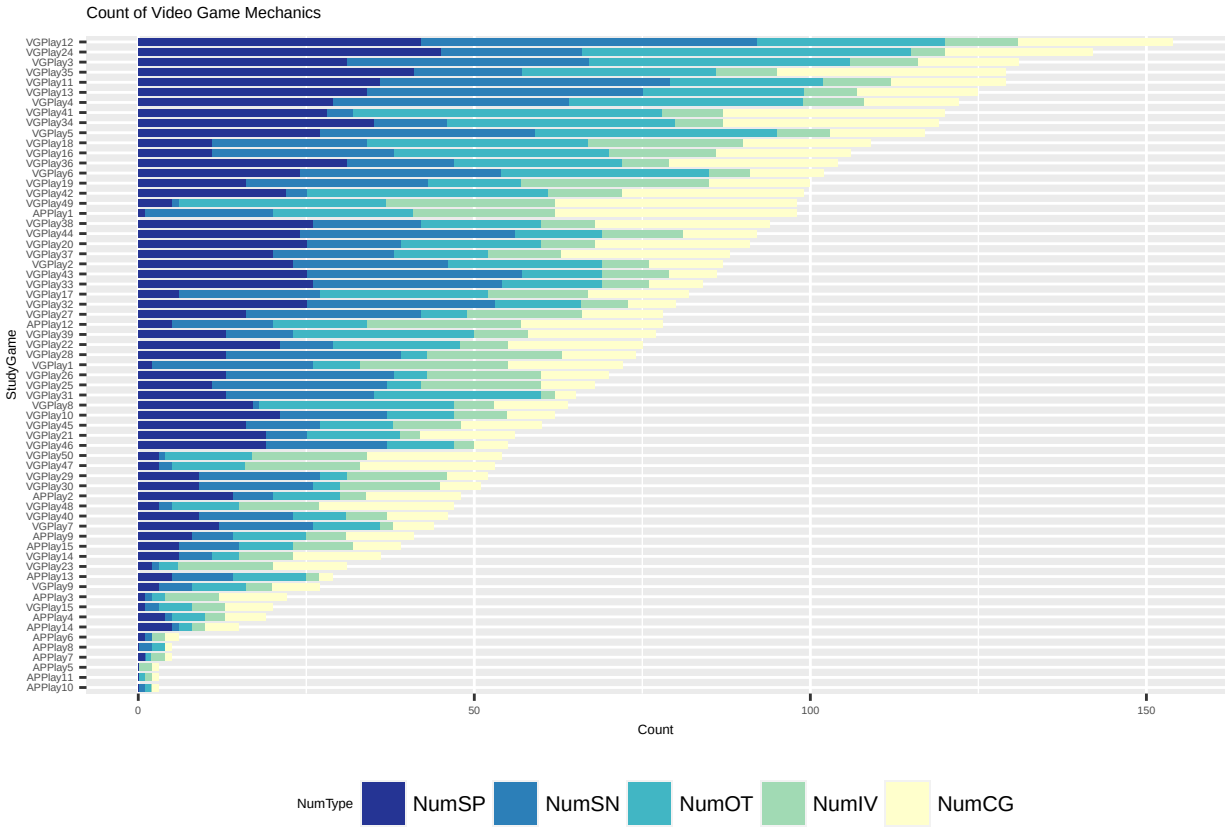
```
# create a subset of the game_df with just Num variables
game_df_num_subset <- game_df %>%
  dplyr::select(StudyGame, GameName, NumFam, NumOT, NumIV, NumSN, NumSP, NumCG)

# pivot data to prep for visualizations
game_df_num_subset_longer <- game_df_num_subset %>%
  pivot_longer(cols = c(NumOT, NumIV, NumSN, NumSP, NumCG),
               names_to = "NumType",
               values_to = "Count"
  )
```

```
# stacked bar chart for the 5 game mechanics
ggplot(data = game_df_num_subset_longer,
       aes(x = StudyGame, y = Count, fill = NumType)) +
  geom_bar(position="stack", stat="identity", width = 0.75) +
  coord_flip() +
  scale_fill_brewer(palette = "YlGnBu", guide=guide_legend(reverse=T)) +
  theme(text = element_text(size=5),
        legend.position = "bottom", legend.box = "horizontal",
        legend.text = element_text(size = 8)) +
  xlab("StudyGame") +
  labs(title = "Count of Video Game Mechanics")
```




```
# order by length of bars
ggplot(data = game_df_num_subset_longer,
       aes(x = reorder(StudyGame, Count, sum), y = Count, fill = NumType)) +
  geom_bar(position="stack", stat="identity", width = 0.75) +
  coord_flip() +
  scale_fill_brewer(palette = "YlGnBu", guide=guide_legend(reverse=T)) +
  theme(text = element_text(size=5),
        legend.position = "bottom", legend.box = "horizontal",
        legend.text = element_text(size = 8)) +
  xlab("StudyGame") +
  labs(title = "Count of Video Game Mechanics")
```




```
# run a principal components analysis (PCA) to see which games are similar
game_df_pca <- game_df %>%
  dplyr::select(StudyGame, starts_with("Pct"))

pca_results <- prcomp(game_df_pca[, -1], scale = FALSE)
pander(summary(pca_results))
```

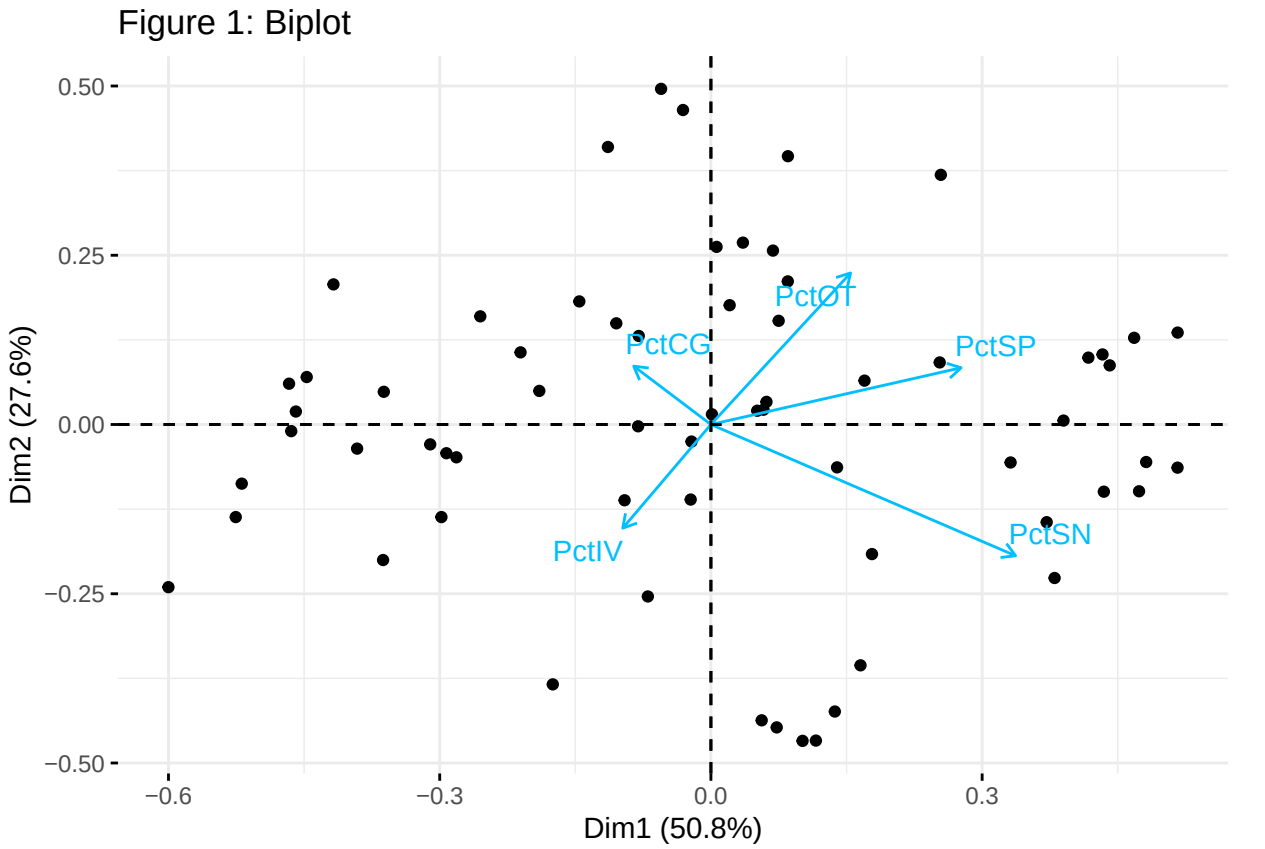
Table 1: Principal Components Analysis

	PC1	PC2	PC3	PC4	PC5
PctOT	0.3215	0.6316	-0.5615	0.3705	0.2125
PctIV	-0.2029	-0.4321	0.04801	0.6428	0.5972
PctSN	0.7014	-0.5471	-0.2174	0.1958	-0.3508
PctSP	0.5761	0.2365	0.7079	-0.02107	0.3326
PctCG	-0.1777	0.2432	0.3661	0.6409	-0.6037

	PC1	PC2	PC3	PC4	PC5
Standard deviation	0.3001	0.2213	0.1359	0.1194	0.075
Proportion of Variance	0.5077	0.2762	0.1041	0.08031	0.03171
Cumulative Proportion	0.5077	0.7839	0.888	0.9683	1

```
# we'd like to visualize the PCA results
fviz_pca_biplot(pca_results,
                repel = TRUE,
```

```
             col.var = "deepskyblue",
             title = "Figure 1: Biplot", geom="point")
```




```
fviz_eig(pca_results,
         title = "Figure 2: Scree Plot")
```

Figure 2: Scree Plot