

Understanding Player Retention Strategies in Animal Crossing: New Horizons

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ABSTRACT

In this paper, we present an exploration of player retention strategies found in *Animal Crossing: New Horizons*. In particular, this paper seeks to understand the effect that non-playable characters (NPCs), which are often integral to the single-player experience, have on player retention. A qualitative study was executed to understand how and why *Animal Crossing* has had sustained success over a year after it launched. More specifically, data was collected via a survey focusing on gameplay features and player experience, including the interactions with the NPCs known as villagers in the game. This data was fit into a regression model, and it was concluded that while the villagers do play an important role in the retention of players, it is not the most significant gameplay factor; other factors such as frequent content updates and adding new items to collect also influenced retention. These preliminary results help us to better understand the retention strategies at play in a popular game, thereby providing lessons for future single player games to develop better retention strategies.

CCS CONCEPTS

• Human-centered computing → User studies; • Applied computing → Computer games.

KEYWORDS

player retention, non-playable character (NPC), animal crossing

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1 INTRODUCTION

Player retention has always been one of the most challenging problems that game designers have faced. Maintaining player interest for long periods of time is a design challenge for both single and multi-player games. Retention is a key goal for publishers and investors to achieve financial success, especially now that the games as a service model has grown in popularity. Failure to properly entice existing players to return to play can be catastrophic for games that follow this model. *Marvel's Avengers* for instance lost over 90% of its player base within months of release[5]. There are many factors of the play experience that can keep players coming back. In multi-player games, for example, it can be the social motivation to play with players around the world and build a community. With regards to designing successful retention strategies, multi-player games such as *World of Warcraft* and *League of Legends*, have historically done this quite well. These games continuously engage or re-engage returning players by offering expansion packs, in-game cosmetics, and limited time events with enticing rewards, which contributes to these games' ongoing popularity.

However, the modern gaming landscape has seen retention also become a key consideration in single player games as well. AAA single player games are now expected to provide content and new experiences for players beyond those initially shipped on the disk. These new experiences come in the form of downloadable content (DLC) or expansion packs that can be released months after the initial game [4]. Despite this trend, the design of successful retention strategies in single player games is still not well understood. Multi-player games have an advantage when it comes to retaining players due to decades of game design iteration that has found retention strategies that work. Successful retention design in single player games, on the other hand, is an understudied area in games research, and requires further attention to meet the new demands in the games industry.

Nintendo is a publisher well-known for producing popular single player games that are not only popular at launch, but continue to be played well after release. In this paper, we will be focusing on one of the Nintendo Switch's best-selling games, *Animal Crossing: New Horizons* (ACNH). Mid-March 2020 marked the start of quarantine for most of the world which limited many in-person interactions and activities. ACNH was released shortly after the start of quarantine, giving the locked-down community a sense of escapism to a deserted island where they can interact with villagers, visit their

friends' islands, and even host virtual weddings. This desire for escapism may have helped drive the sales of *ACNH* in its first month of release [1], however the game continues to retain a large number of players over a year after launch. While *ACNH* has multi-player features, such as the ability to visit other players' islands, its core mechanics are mostly single player-oriented. Given how *ACNH* has successfully maintained its player base, the game presents an opportunity to examine what successful retention mechanics look like in a modern single-player game. In this paper, we share our preliminary examination of *ACNH*'s gameplay mechanics to inform future work towards formulating effective retention strategies for single-player games.

ACNH's design and player affordances provide multiple avenues for us to study its retention strategies. However, we are particularly interested in the role that the non-playable characters (NPCs) play in retention. As with many single-player games, NPCs form a critical part of the *ACNH*'s gameplay structure. Players are often interacting with the NPC villagers throughout their gameplay. This emphasis on the collaborative relationship between the player and the villagers makes the NPCs a primary pillar of the game. The centrality of NPCs in a single player game experience is nothing new in the medium, and it is common for single player games to have NPC interaction be central to the experience. *ACNH* is thus an interesting game to study the relationship between player retention and NPCs. Considering this, given *ACNH*'s successful player retention metrics that multiplayer games like *Fortnite* or *World of Warcraft* have been able to achieve, it is critical to examine how an NPC-focused game like *ACNH* has been able to do what few single player games have done.

Our initial examination of *ACNH* is in the form of a quantitative study. A survey was distributed to *ACNH* players across the world, and the results were analyzed to determine to what extent interactions with NPCs play a role in retaining players. We share the results from the analysis in this report. Examining the retention strategies in a game like *ACNH* will shed light on successful retention mechanisms beyond those used in popular first-person shooters or MMOs, and with this work, we have gained insight on how to retain players in more game genres in the single player game space.

2 RELATED WORK

ACNH is also one of Nintendo's top-selling first party games and still has regular monthly patches with events that go along with the seasons. The game provides players daily tasks to do in real time such as digging up fossils, fishing, talking to villagers, and collecting fruit. While these tasks seem rather simple and mundane to someone who has not played the game, the game implements a reward system that lets players access new mechanics and items by completing these daily tasks. One of the main features of *ACNH* is the wide variety of villagers that players can interact with. The actions that you take in the game do not go unnoticed by the villagers, and every improvement on the island unlocks more interactions with them while also raising their friendship levels. Player inaction may also affect these villagers, causing them to feel unwelcome and wanting to leave your community. A motivating factor for pursuing this research question is that despite the *Animal Crossing*

series' popularity, there is very little literature about the franchise in general. Each new release of *Animal Crossing* introduces new villagers that players can interact with, which serves to keep the existing player base engaged and excited by the new content.

Many researchers have touched upon the subject of player retention and specific factors that play into it, however much of the work has been in concerned with multi-player retention. Debeauvais et. al's survey approach led to the their player retention model within *World of Warcraft*, which emphasizes the importance of multiplayer functionality and the in-game communities [2]. These characteristics, specific to games with online functionality as a core pillar, significantly propelled retention success. Even though *ACNH* has multiplayer functionality as well, this is more of a secondary feature and not an essential mechanic of the game's design like in *World of Warcraft*. To help bridge the gap in the literature surrounding single-player retention, we were inspired by Debeauvais et. al's methods and survey approach that captured data representative of the *World of Warcraft* community. We use a similar survey structure to investigate what makes *ACNH* successful even though it does not on the multiplayer model as much as a game like *World of Warcraft*.

The novelty of a game experience can be exciting and can draw people in. However, continued engagement requires more than enjoyment in the first few hours of play, and after a period of time the novelty is not enough to keep players from slowly disengaging from the game as shown in Straat et. al's work [6]. Straat et. al's longitudinal study on how players' attitudes towards a game change over time played a big factor in determining the success of the player retention model. Since the study was done through game experience journaling and interviews, the results are more qualitative in nature, an aspect we chose to incorporate in our survey to help enrich the data set.

Looking at the role NPCs play in the game experience, previous work has not looked at NPCs through the lens of retention. There is a large variety of NPCs that players can encounter in role playing games and *Animal Crossing* is a prime example of a game abundant with unique NPCs. Emmerich et. al focuses on the design of game companions, the NPCs who usually accompany the players and provide assistance when needed [3]. Their work delves into the dialogue and interactions players can have with the game companions and how these interactions let the players empathize with the companions as they get to know them better during the storyline progression. Emmerich et. al also conducted a survey on what traits players look for in a game companion (i.e., would they rather have a talkative companion or a silent helper?). The focus on traits in the study design is one we were inspired by since the villagers in *ACNH* have their own unique traits and quirks as well.

3 METHODS

To answer our research question, we were inspired by the work Debeauvais et. al conducted in *World of Warcraft* [2]. A survey¹ distributed to the *ACNH* fan groups across Reddit, Discord, Facebook, and other social media channels on the internet for broader reach. The survey was also distributed amongst the student population and participation pool at our university. This method of

¹Anonymous link to survey: https://cmu.ca1.qualtrics.com/jfe/form/SV_a8XkzBmR05IDSC

distribution will ensure that we reach a large amount of the target respondents. Before participants can answer the survey questions, they first had to read, confirm that they are 18 years or older, and consent to having their responses used for this study. Participation in the study was voluntary and participants could stop at any point if they chose to. No personally identifiable features were collected. We targeted respondents who have played *ACNH* for at least a week (7 consecutive days), since this is usually the point when they have unlocked more interaction options with villagers. The survey was distributed in March 2021, and received 160 responses.

The survey questions consist of demographic questions, however it largely focuses on gameplay experience questions related to duration of play and villager encounter information. Additional questions were asked about villagers such as “Do you try to interact with your villagers every day?” and “Could you give an example of when you had an interaction with a villager that stood out to you?” Such questions may help us understand why respondents strongly like or dislike certain villagers in *ACNH* and how that may play into the player retention model. This is especially important given that there are a large number of villagers in the game, and not all players have the same villagers arrive at their island. To quantify interactions, we ask questions using a 1-5 scale. These are supplemented with qualitative questions like “What features of the villagers do you like the most? Explain why”, giving us a more reflective insight into why players felt the way they did.

ACNH is set up to have a different villager from a player’s island leave every few weeks. This mechanism motivates players to keep talking to the villagers they like so they would not ask to leave the island. It also serves to give players an opportunity to meet new villagers. By studying what factors play into what makes a player return to *ACNH*, this could further tune the player retention model and help us explore our research question of whether NPCs have an effect on player retention. We ask questions specific to the villagers of *ACNH* in order to see whether players see them as an essential pillar for the game. Asking such questions helps clarify why players may actively avoid the villagers that they dislike or actively engage with the villagers that they do like. This plays into how motivated a player would be when it comes to interacting with their villagers on a daily basis. If players do not seem to have a strong preference towards the villagers or may not regularly interact with them, we asked questions to learn what other gameplay features the players deemed important for them to keep playing.

Our survey was also targeting players who have returned to play after a hiatus. We explored the reasoning behind players returning to *ACNH* after a long period of time in order to see whether the players return because of the villagers or other factors. As Debauvais et. al have shown, even in games like *World of Warcraft*, most players do drop out of play at some point only to return at a later date [2]. Thus, it was necessary to see if players returned to *ACNH*, and if so, why they did. To this end, the survey is structured to split into three different sets of questions: one for current players, one for players who stopped playing, and one for players who stopped for a period of time but resumed gameplay. By structuring the survey this way, we gained insight on what keeps the current players consistently active, why ex-players decided to step away from *ACNH*, and why returning players have decided to revisit their island and their villagers. We had hoped to see responses along

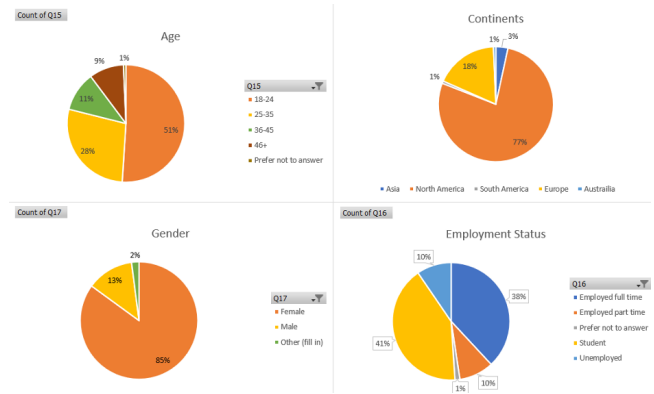


Figure 1: A breakdown of the demographics of the survey respondents

the lines of players missing their villagers or wanting to meet new villagers as they explore the game.

We fit the data to a regression model to see whether these interactions help the player retention. A regression model was used since we wanted to see whether certain variables such as whether a player likes their villagers had a relationship with whether players have continued or stopped playing *ACNH*. Since our dependent variable is whether players continued or stopped, thus making the results binary, we fitted a logistic regression model. The hypothetical model would include positive and negative terms that represent how these features affect player retention (i.e., having villagers that players enjoy interacting with is a positive term, lack of new content would be a negative term). We anticipated that participating in limited time events and collecting exclusive in-game items would have a strong positive relationship with higher retention, but we were interested to see how much interacting with villagers affects the player retention model. Specifically, we wanted to see whether players wanted to retain their favorite villagers, avoid their least favorite villagers, or to interact/receive gifts from villagers, etc.

4 DATA AND RESULTS

As shown in figure 1, we see that 51% of respondents are age 18-24, 85% are female, 77% are from North America (92% of North American players are from the U.S. while 8% are from Canada), and 41% are students. 82.3% of respondents have a Nintendo Online subscription which would let them use multiplayer to play with friends or trade with other players online. 61.22% of players have played past *Animal Crossing* games before *ACNH* with *New Horizons*, *New Leaf*, and *Wild World* having the most amount of gameplay. 92.5% of players found that playing *ACNH* had a positive effect on them during the COVID-19 pandemic and 85% of players would play *ACNH* even if the pandemic did not occur. Players who started playing in Spring and Summer 2020 proved to have the greatest amount of gameplay some yielding over 500 hours of gameplay. These players tend to play more than 11 hours per week, which could be explained by the pandemic keeping most players at home. With nothing else to do, it is natural that players during this time period would have logged many hours into the game, which could have affected our results.

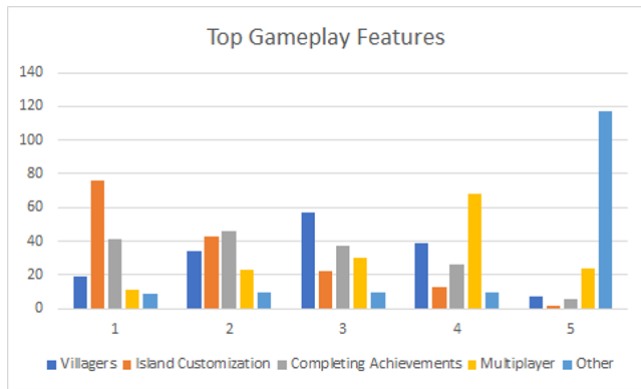


Figure 2: A bar graph of the top 5 gameplay features that respondents favored in gameplay

Based on this analysis, the vast majority of players surveyed started *ACNH* in Spring 2020 (68.55%) which is when the game first launched. The average rating of the game is 4.49/5, indicating that the game is well liked by the respondents. The top 3 most liked features were island customization, completing the museum, and recruiting villagers to their islands (figure 2). This highlights how villagers are an important aspect of gameplay, but that the feature works in conjunction with other mechanics to facilitate a successful retention strategy. About a third of the respondents play 1-5 hours per week on average, with 74.84% of respondents have played 100+ hours total since they started the game. 72.32% of respondents played *ACNH* the most during Spring and Summer of 2020 which is when the COVID-19 lockdown occurred. 67.9% of respondents have stopped playing *ACNH* for at least a week and out of those respondents who have stopped, 56.4% have resumed playing the game. This pattern is similar to what Debeauvais et. al revealed in their work; the majority of players will stop playing the game for a period of time, but some will return later.

The top three reasons for players to resume gameplay were new content updates, wanting to update their island decoration/layout, and to see their villagers. The top three reasons why players did not continue playing *ACNH* were lack of new content, not enjoying the game, and other reasons such as being too busy or wanting to play other games. This finding highlights the importance of villagers in the retention of players who resumed play. 86.67% of respondents liked the villagers that they have on their island and 80.74% of respondents talked to villagers every day. 44.2% of players have a villager that they dislike and 57.03% of players avoid the villagers that they do not enjoy interacting with. The top three reasons why players do not like specific villagers were their personality, character design, and dialogue. Despite how almost half of respondents have villagers that they do not like, only 2.6% of respondents felt like villagers had some negative effect on the gameplay and 54.97% of players felt like villagers had a large positive effect on the gameplay.

From the survey results ², player retention was measured based on the total amount of gameplay spent on *ACNH* which ranged

²Data can be made available upon request

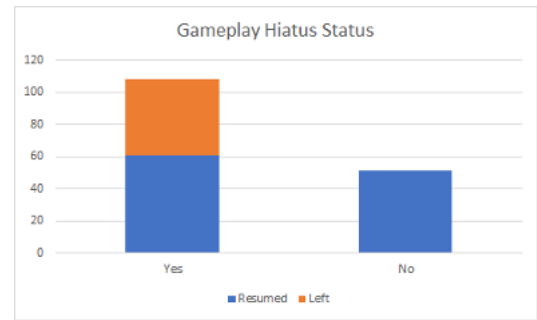


Figure 3: A bar chart highlighting counts of players who have continued, resumed, or stopped gameplay

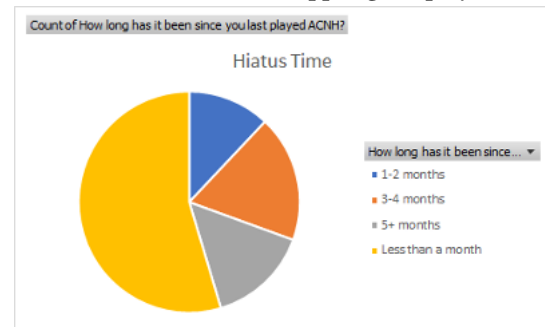


Figure 4: A pie chart of how much time players took off from playing *ACNH*

from 4-1000+ hours. We fit a linear regression model and found that villagers having a positive impact on gameplay and is positively correlated with gameplay time. However, other features of villagers were largely overshadowed by the plethora of in-game items and customization options. Doing a full model with all the variables yielded a R-squared value of approximately 0.79, while doing a condensed model with villager-specific variables decreased the R-squared value to 0.45. While most of the villager-related variables did not have a significant effect (i.e. p-value > 0.05) on the player retention model, having all of these villager variables almost accounted for half of the relationship. This is supported by the survey results, where 89.4% of respondents felt that villagers had some positive effect on the gameplay. However, it seems like the villagers are still not the strongest motivating factor for why players continue playing the game. These findings were generated with a margin of error of approximately 8%.

5 DISCUSSION AND FUTURE WORK

Even though the villagers play an integral part of the *Animal Crossing* franchise, our data shows that for *ACNH*, players enjoy the island customization and collection features more than the villager mechanics. Some players have pointed out that the villagers' personalities have changed to become more boring compared to past installments of the game, meaning the role of NPCs in retention could have changed across *Animal Crossing* iterations. The dialogue would get repetitive, and players would only talk to villagers since

it is one of the daily tasks to do in the game or to increase friendship levels to obtain certain items.

Some motivations for why players play each new edition of *Animal Crossing* include exploring new customization features, meeting new villagers, experiencing improved graphics, and discovering new fossils, bugs, and fish. The *Animal Crossing* franchise will continue to succeed and attract more new players as long as they continue improving these features. This in of itself is a form of player retention and other games can learn how to iterate properly to maintain and grow their player base. Based on the results that players found the customization options and achievement-driven gameplay more retaining, this may also be the case in future *Animal Crossing* games as well if the developers keep going with the customization trend. However, this could change if developers decide to invest more time into making the villagers more interesting and more personable, which may make the villagers have a more significant role in the player retention model. Even though *Animal Crossing* started as a game that focused on essentially gentrifying a barren land and improving relationships with the villagers, it seems like newer editions of the game have shifted its focus to the more creative aspect of how much a player can customize their land. It may be helpful to see how villagers play a role in player retention for older versions of the game that may not have had as much of a focus on customization. This study could have benefited from more survey responses if given more time and additional participant pools. Additional games that can be studied based on the topic of NPC's effect on player retention could be the Harvest Moon/Story of Seasons/Rune Factory series, Stardew Valley, and the Fire Emblem series. Additional topics that could have been explored relating to *Animal Crossing* are the experience of resuming gameplay after a certain period of time, how the game has retained such a strong fanbase despite its seemingly monotonous gameplay, or the psychological effects of playing *Animal Crossing*. After concluding this research, we gained insight into how NPCs play a role in player retention and how it depends on how the NPCs are designed in terms of creative visuals and script. In other games, players would actively interact with NPCs to see new dialogue after every interaction and to possibly unlock random events that occur that give insight to a NPCs story background. Overall, through this study, we applied a survey technique that is novel to single-player games and would benefit future research and we have gained some insight into how single-player games can design NPCs to better retain players and what features in general tend to attract players to resume gameplay after a hiatus or to continue gameplay.

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