

TAP TO GO
BACK TO
KIOSK MENU

SAS[®]
**GLOBAL
FORUM**
2020

MARCH 29 - APRIL 1
WASHINGTON, DC



USERS PROGRAM



KENNESAW STATE
UNIVERSITY
ANALYTICS AND
DATA SCIENCE INSTITUTE

Who Are You When Playing World of Warcraft?



TAP TO GO
BACK TO
KIOSK MENU

Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

References

ABSTRACT

Online, you can become whoever you want to be. Some take this as an opportunity to completely rewrite their identity, while others are no different than they would be in person. However, we as a species are fond of looking for patterns, and so this leads to a culture, particularly in video games, of stereotyping in an attempt to better know with whom you are socializing. Avid gamers and data scientists naturally wonder about the amount of truth in these assumptions. World of Warcraft (WoW) is one of the largest massively-multiplayer online role-playing games (MMORPGs) of all time, an ever-expanding experience and social environment made for long-term playing and not limited to a single storyline or campaign that finishes.. This means that players can use the same character for years, which is a far more serious endeavor than a character you're only going to play for 20-50 hours. World of Warcraft can be a very social game with guilds as an in-game association of characters, controlled by players and formed to make finding groups for in game achievements easier, as well as to form social relationships with other players. This study goes beyond simple demographics of gender and age (which are stereotypically thought to be skewed towards young, single males) to examine the way people play WoW and potential correlations and differences with players' deeper demographics such as relationship status, sexual orientation, and relationships in the real world with other WoW players.

Main Author



BACKGROUND

- WoW was released in 2004, an MMORPG based on Blizzards successful Warcraft real-time strategy games. Though Blizzard stopped releasing subscription numbers in 2015, at which point it had 5.5 million subscribers, the game peaked at 12 million subscriptions in 2010 (Makuch, 2015; Grubb, 2015)
- As of the survey, there were two factions, 12 classes, and 22 races. This gives players many choices during character creation. We were curious how a person's real-life demographics affects who and how they play, from their character's design and class to what aspects of the game they focus on.





Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

References

PREVIOUS STUDIES

- Jay Potter looked specifically at gender swapping in WoW, focusing on people who did gender swap and looking at why and how it affected how they played. This study had a small sample size with 48 respondents (Potter, n.d.).
- Ian Mosley looked at personality traits of the player and who they played, including playstyle, race, faction, class, and gender, in 2010. This sample was small with 205 participants (Mosley, 2010).
- Griffiths, Davies, and Chappell conducted two studies in 2003 and 2004, looking at demographics, game behavior, how gaming affects real life, and one's favorite/least aspects of the game. However, the study was on Everquest, a similar MMORPG released in 1999, not WoW. No correlations between variables were mentioned (Griffiths, Davies, & Chappell, 2003; Griffiths, Davies, & Chappell, 2004).
- Hussain and Griffiths in 2008 specifically looked at gender swapping and socialization in multiple, unspecified MMORPGs. They found many differences between male and female gamers: men preferred offline interaction, while women found it easier to converse online. There was also a gap in perception between male and female gamers, with men feeling they were treated better with female avatars while women played male avatars to escape harassment. This sample was small with 119 participants (Hussain & Griffiths, 2008).

HOW OUR STUDY DIFFERS

- Our study can directly correlate responses to a participant, unlike previous studies, and enjoys a sample size of over 2,000 surveys. Though Griffiths, Davies, and Chappell had several thousand responses, there was no way to correlate responses from one question to another, which makes analyzing relationships impossible. We also hope that we have a more representative sample, as our survey was distributed globally across a variety of platforms in an attempt to avoid any selection bias.
- We collected data on sexual orientation, which is something we hypothesize will have an effect and something no other study has looked at.
- We will be looking at more in-depth relationships between variables than the previous studies have.
- The most recent of the studies was from 2010. Considering the game is 16 years old, a ten year old study is worth updating.

HYPOTHESES

- Men and women will both prefer to play character of the same sex as them.
- Gay men and women will be more likely to play the same sex than their heterosexual counterparts.
- Transsexual players will most often play characters that match their gender identity.
- Older players will spend a larger percentage of their gaming time on WoW.
- Players 26 years old and younger and players 58 years old and older will spend a larger portion of their free time on WoW compared to the middle aged players.
- Older players will play more Alliance than Horde.





Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

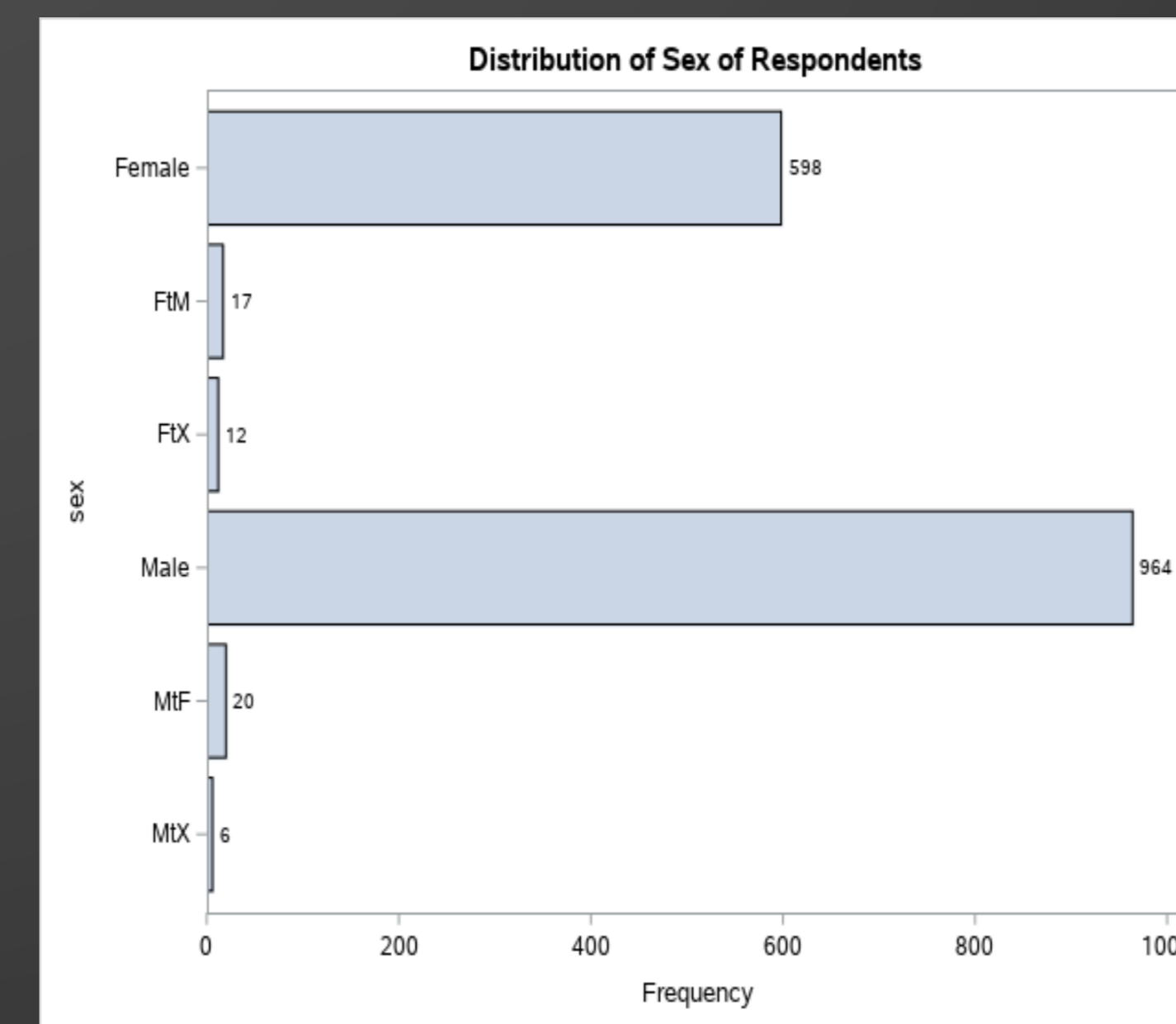
References

SURVEY DISTRIBUTION

- The survey had 73 questions across 9 sections: informed consent, player behavior, socialization, achievement, immersion, player demographics, and three sections of character demographics. Respondents had the option to contribute avatar demographics for up to three characters.
- The survey opened November 12th, 2019 and closed January 28th, 2020. The survey was posted in nine class-specific Discords, which were sponsored by Wowhead, a popular WoW database and forum. A forum post also appeared on Wowhead itself. The survey was also posted on Twitter.
- There was a large spike in respondents when the survey was retweeted by Patty Matson, the voice actress of the very popular WoW character Sylvanas. The survey was then retweeted by Christie Golden, one of the main writers for WoW's novels, as well as several quest writers for the game itself. Many individuals then retweeted from them. In total, the Twitter posts had 368 retweets and 429 likes.
- At the close of the survey, we had 2,089 responses. We dropped everyone who did not agree to the informed consent and everyone under the age of 18. After which we had 1,924 surveys—significantly more than previous studies.

DEMOGRAPHICS

- The survey was 58.53% male, 36.31% female, 3.33% transsexual, 1.82% other/prefer not to answer. Participants were 20.53% bisexual, 68.04% heterosexual, 7.90% homosexual, 3.52% prefer not to answer.
- The mean age was 31.29, ranging from 18 to 90.
- Respondents were allowed multiple choices for race/ethnicity, of which White/European-American was by far the most popular choice (82.89%). The second most popular was Hispanic or Latino (8.57%), and the third most popular was Asian (3.53%). The proportion of White respondents is likely even higher than that, as we also gave respondents the option to self-describe their race, and many of the 6.57% that did so described themselves as White non-Americans, Vikings, Europeans, White Canadians, etc.





Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

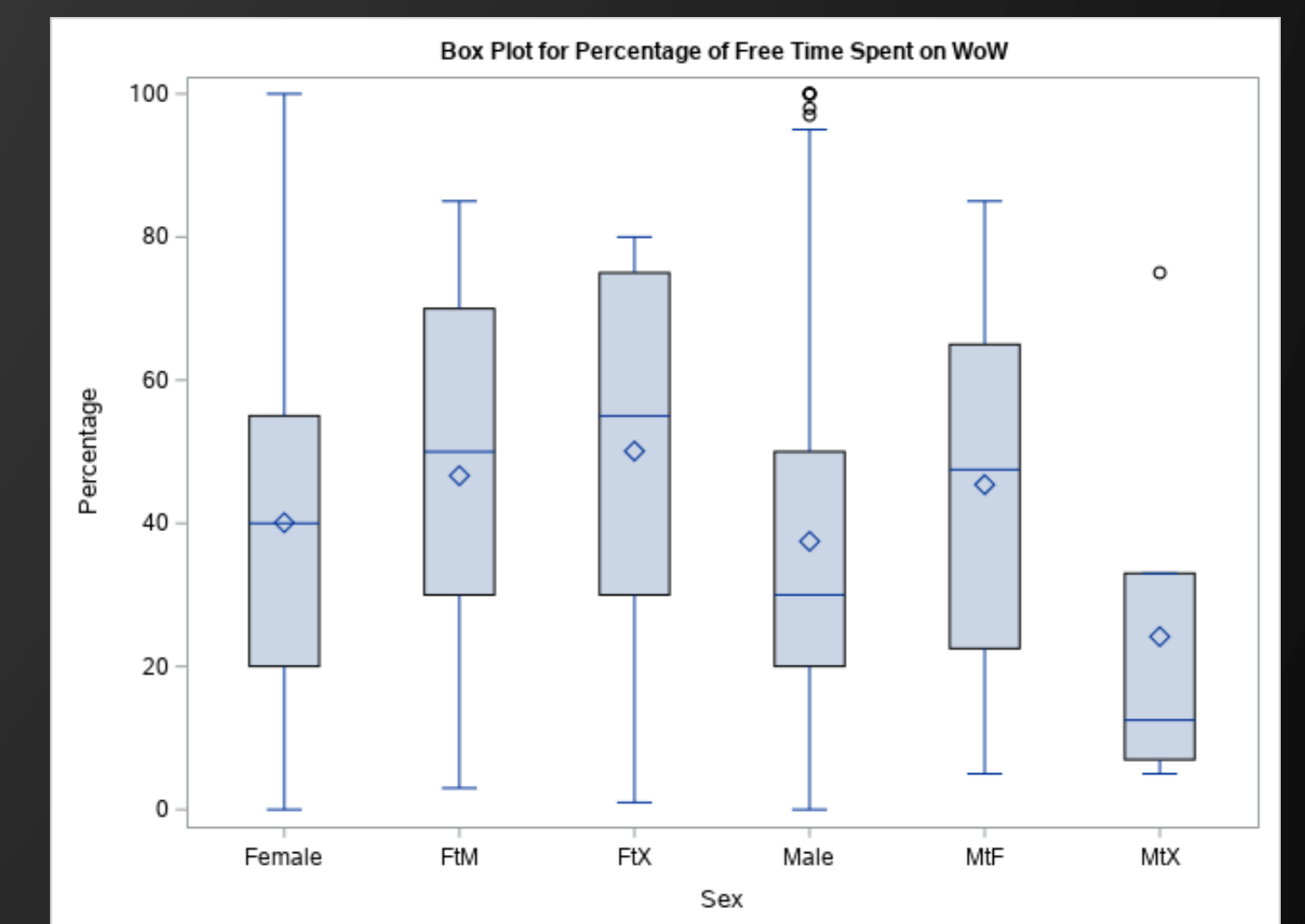
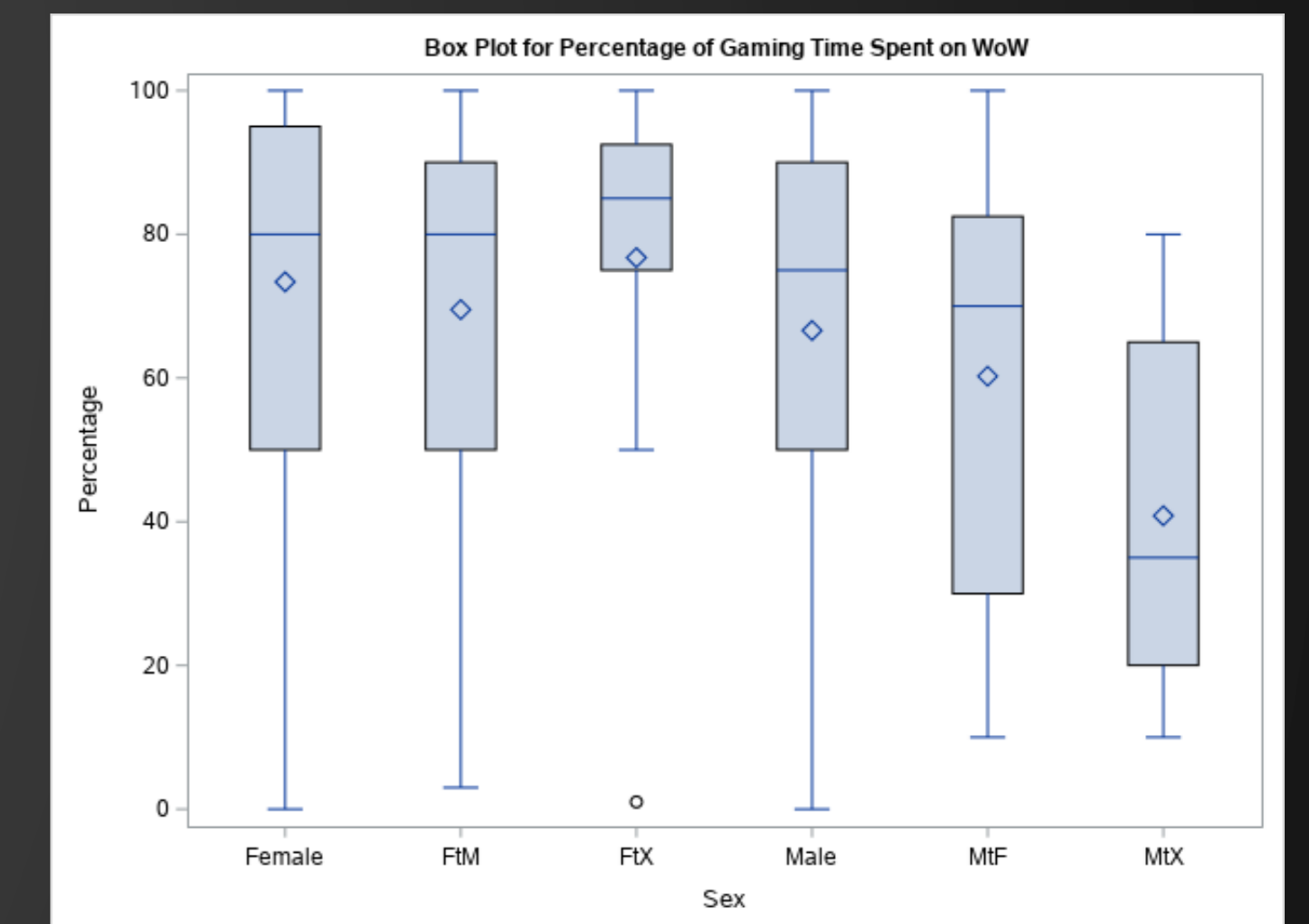
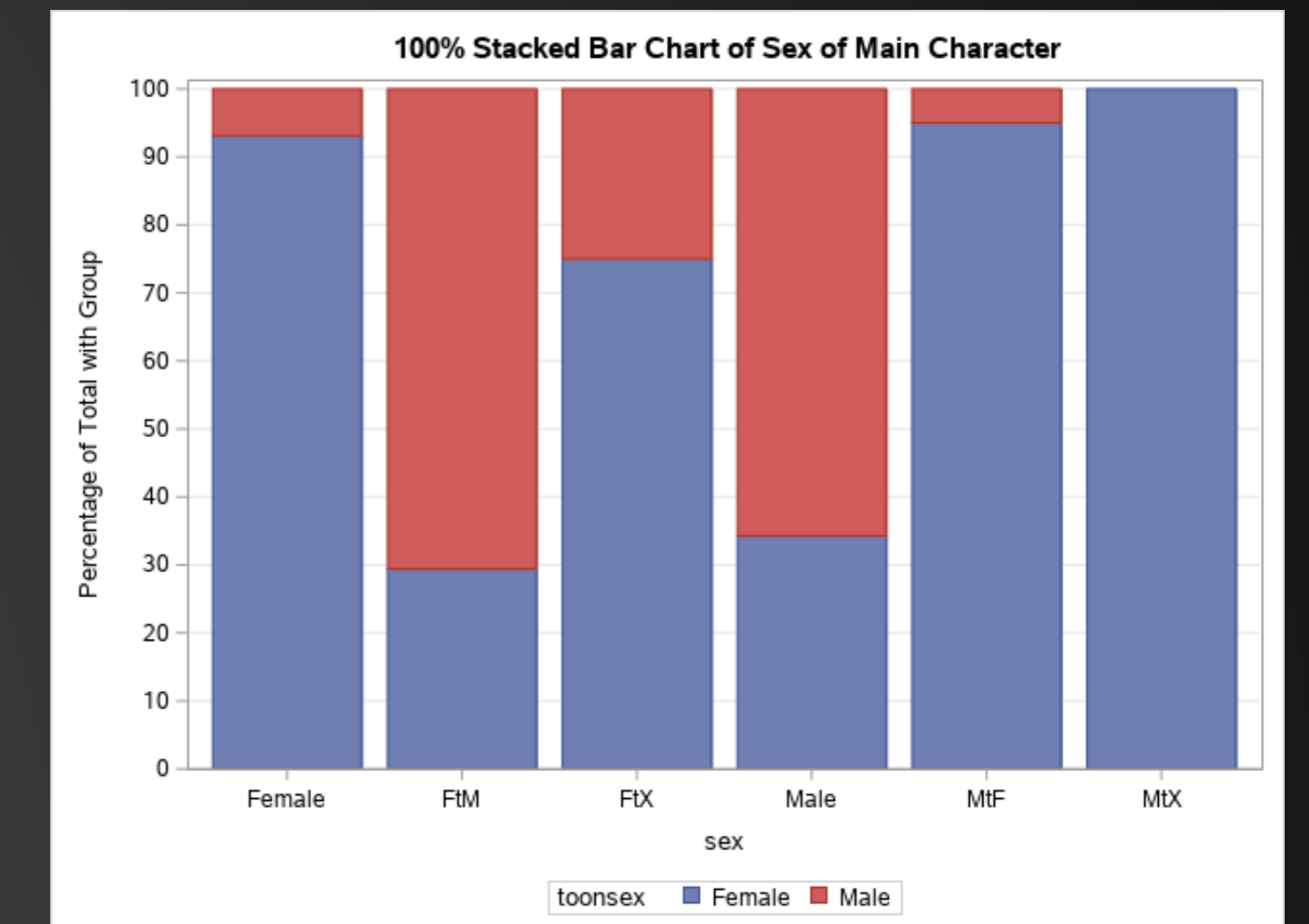
References

EFFECT OF SEX

- Females overwhelmingly played a female main character, at 93.12%. Males preferred to play male characters, but nowhere near the same extent: 65.73% had a male main character. Transsexual players followed the trend of their gender identity, with male-to-females (n = 20) playing 95% female mains and female-to-males (n = 17) playing 70.59% males. Though the numbers were small (n = 18), it is interesting that transsexual players identifying as neither male nor female both preferred to play female mains: 100% of males and 75% of females. 68.97% of those who did not give a gender played a female main.
- Analyzing percentage of free time spent playing WoW, the ANOVA found (p = 0.03) that female-to-x players had the highest percentage (50.08%), followed by female-to-males, male-to-females, females, and males, with male-to-x players playing the lowest percentage (24.17%).
- Using an ANOVA to analyze percentage of gaming time spent on WoW (p < 0.0001), female-to-x players had the highest percentages (76.75%), followed by females, female-to-males, males, and male-to-females, with male-to-x players having the lowest percentages (40.83%).

HYPOTHESIS

- Transsexual players will most often play characters that match their gender identity.
 - TRUE
- Men and women will both prefer to play character of the same sex as them.
 - TRUE





Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

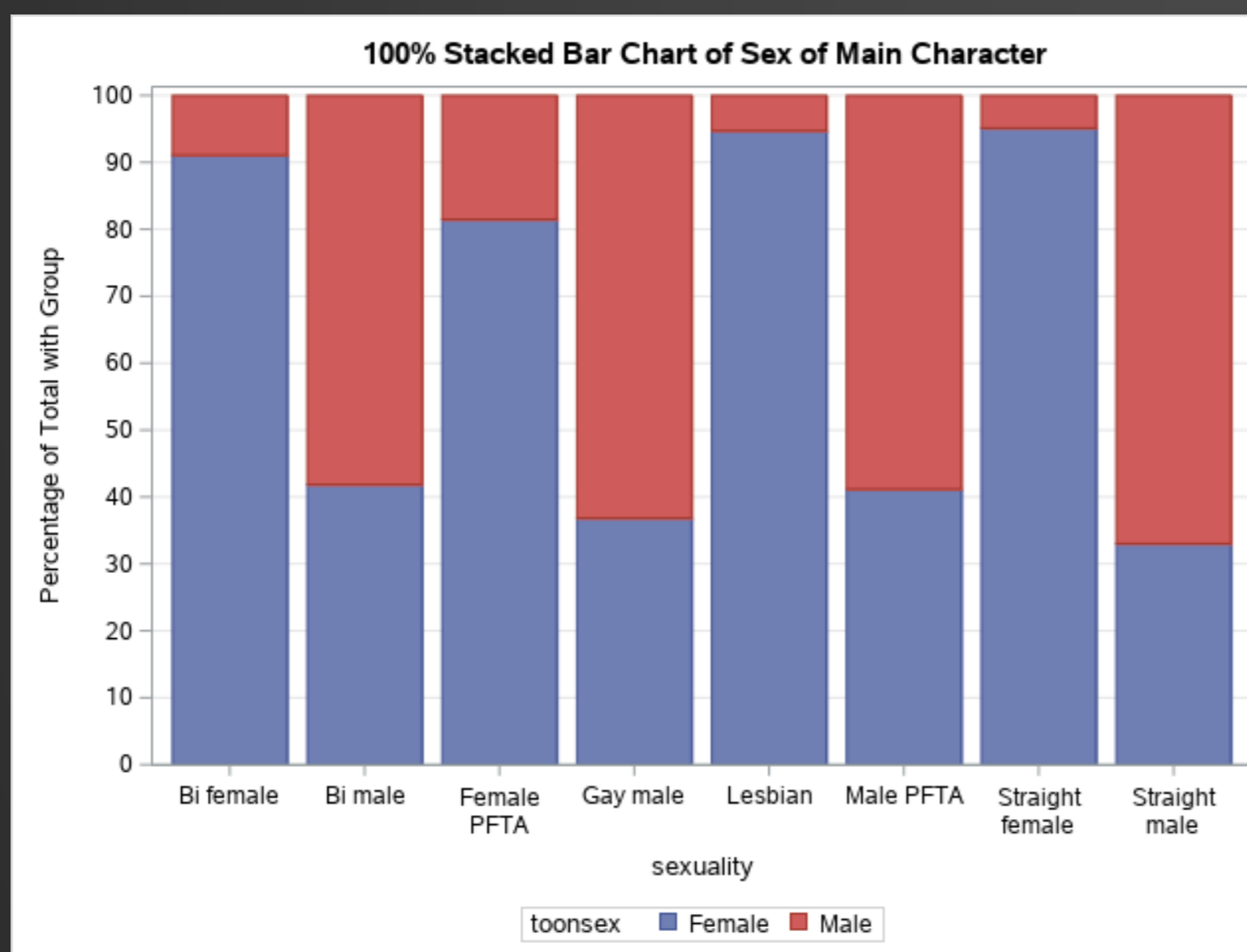
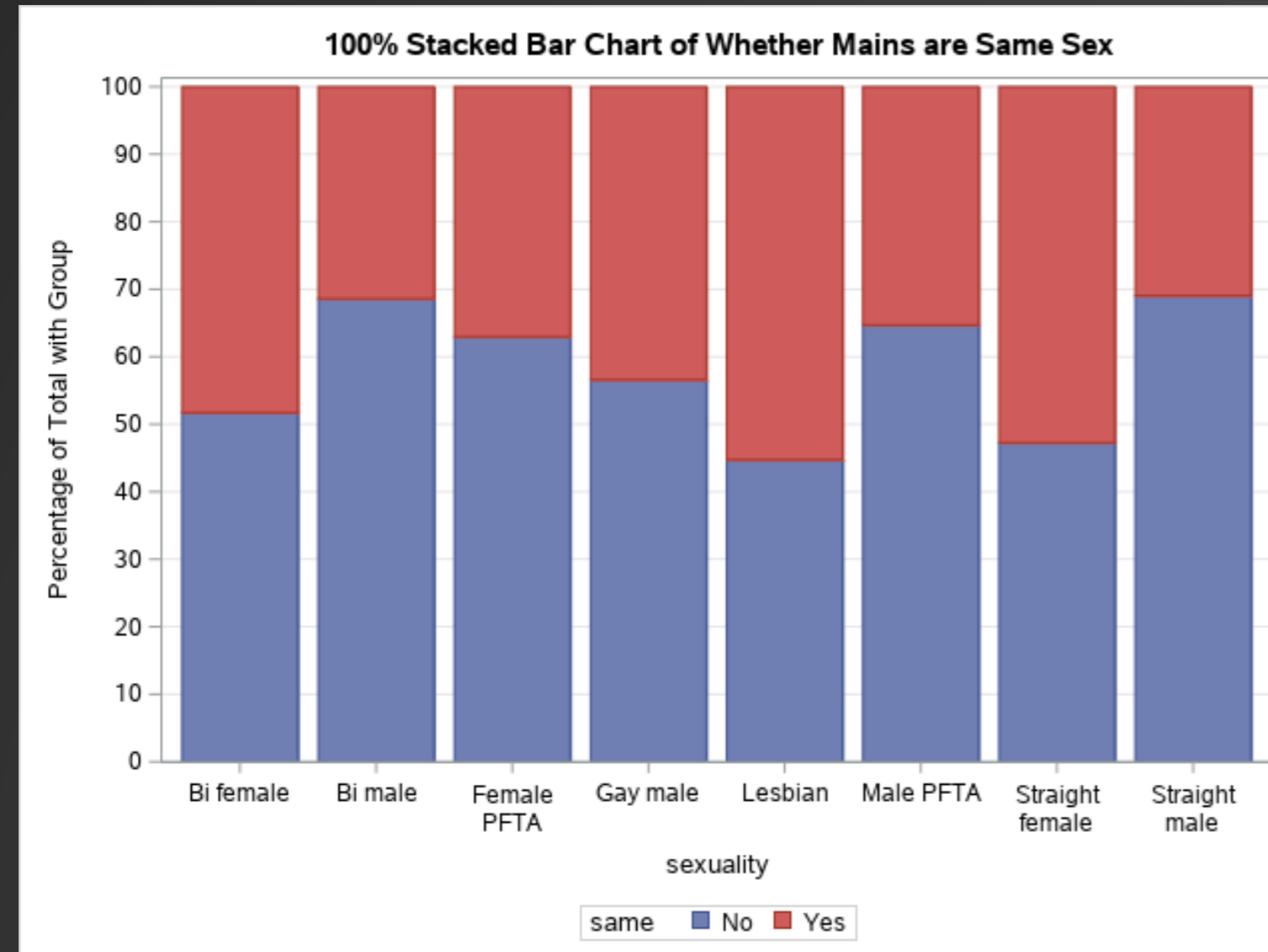
Effect of Sexuality 2

Effect of Age

Conclusion

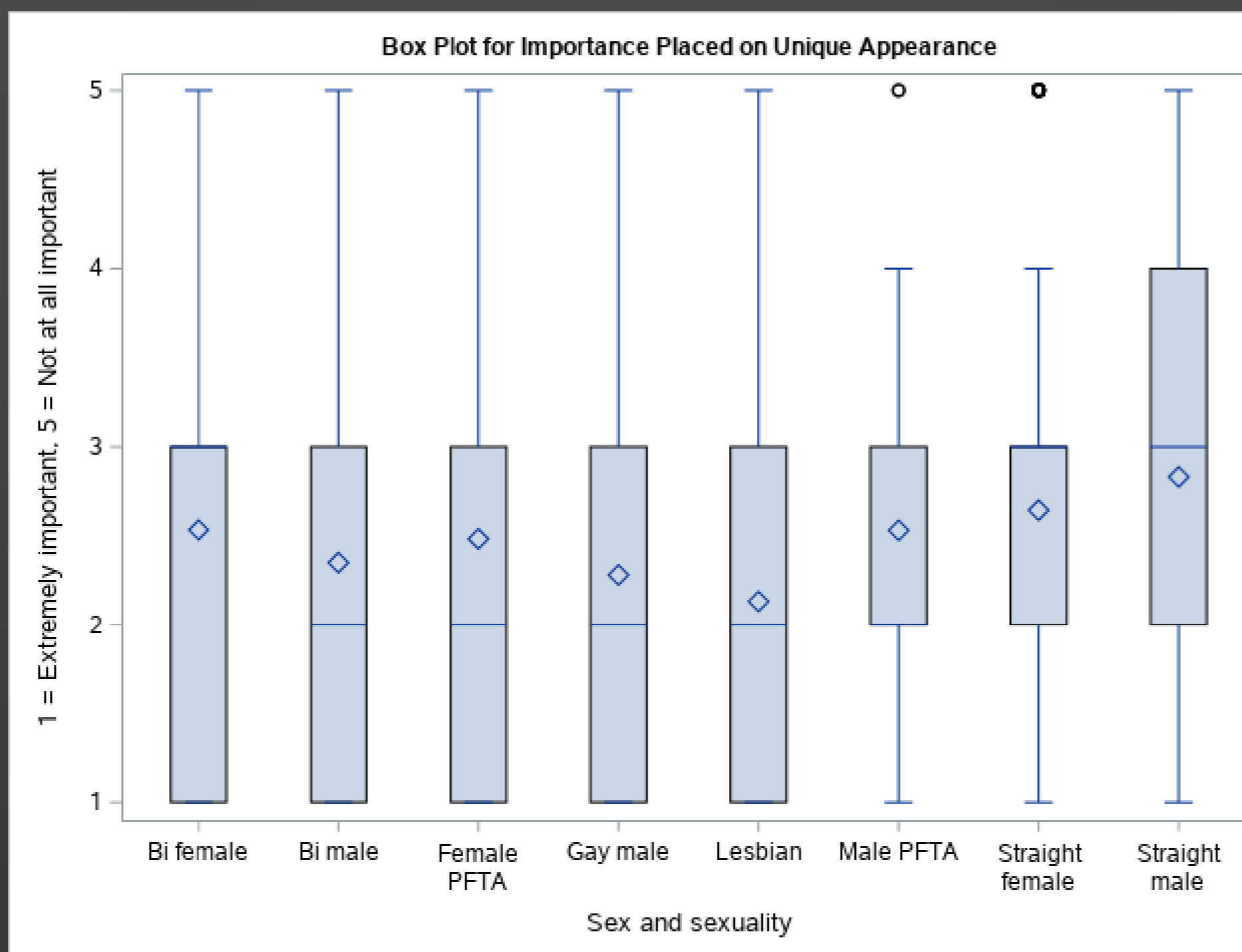
Acknowledgements

References



EFFECT OF SEXUAL ORIENTATION

- Sexuality had no significant difference on what sex their most-played avatar was for males ($p = 0.3461$), but for females there as a significant difference between groups ($p = 0.0261$). Straight women played female avatars the most often (95.14%), followed by lesbians (94.74%), and bisexual women (91.09%), with women who declined to give a sexuality playing female avatars the least often (81.48%).
- Straight women and lesbians were more likely ($p < 0.0001$) to have all the main characters they filled out be the same gender, while bi females, females that did not give a sexuality, and all males were more likely to have at least one main character differ.
- The ANOVA found a significant difference ($p < 0.0001$) between the sexualities when it came to how important they felt it was that their character look different from everyone else. Lesbians cared the most, followed by gay males, bi males, females who didn't give a sexuality, males who didn't give a sexuality, bi females, and straight females, with straight males caring the least.



HYPOTHESES

- Gay men and women will be more likely to play the same sex than their heterosexual counterparts.
 - FALSE



Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

EFFECT OF SEXUAL ORIENTATION

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

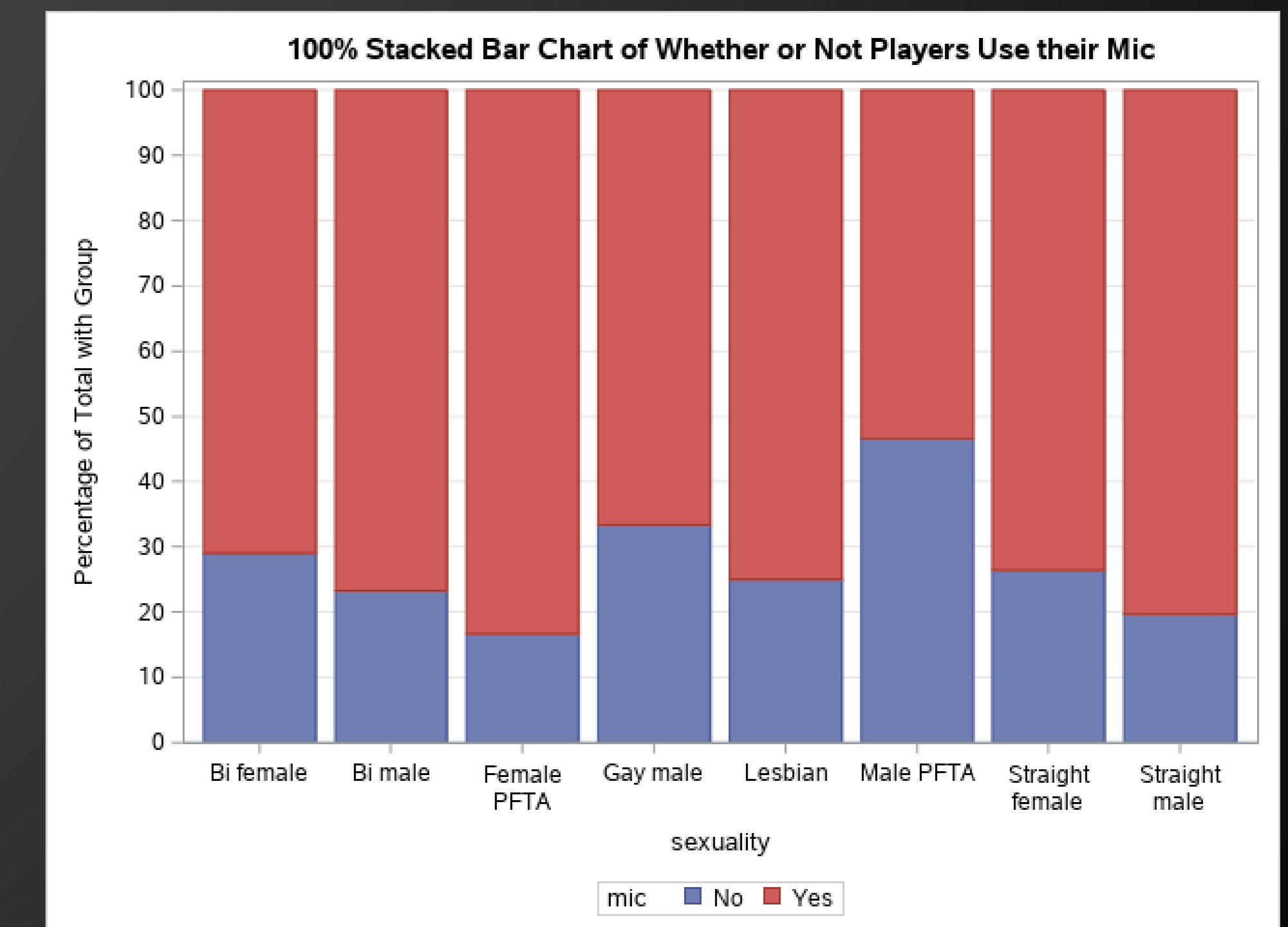
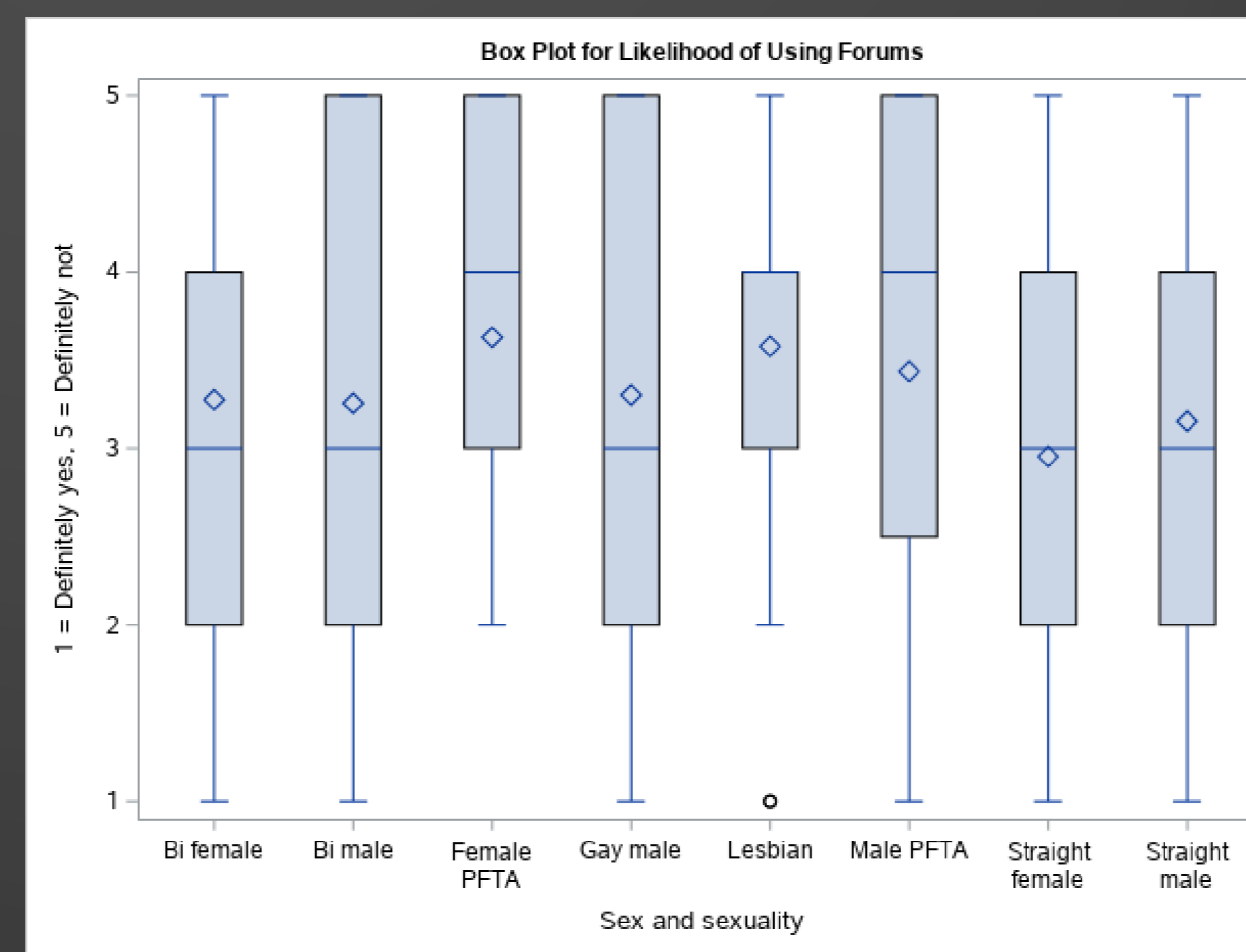
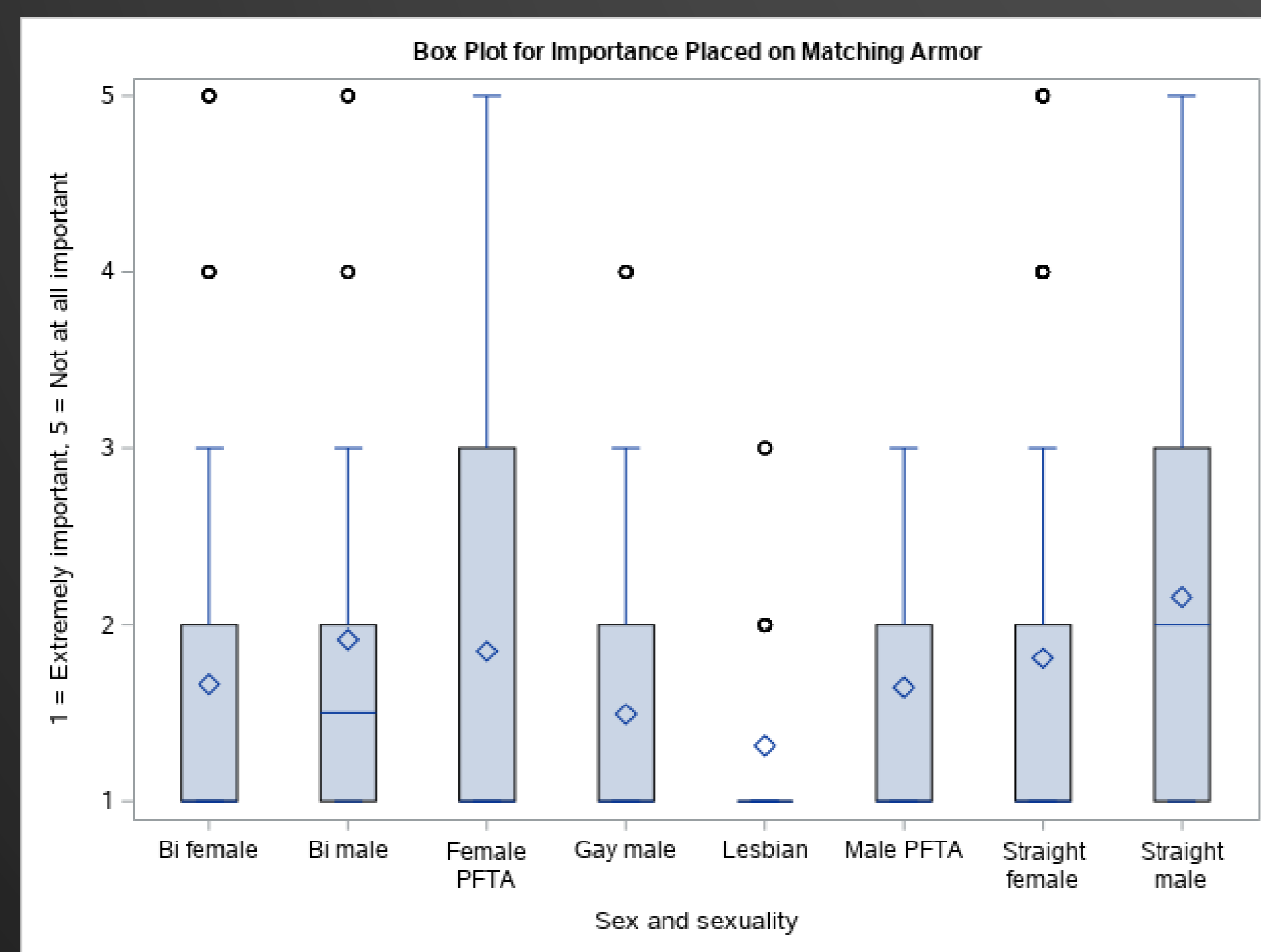
Effect of Age

Conclusion

Acknowledgements

References

- Similarly to how they felt about their character looking unique, when asked how much they cared about their character's armor matching, lesbians cared the most, followed by gay men, males who didn't give a sexuality, bi females, straight females, females who didn't give a sexuality, and bi males, with straight males caring the least ($p < 0.0001$).
- When asked how often they used the WoW forums, the ANOVA found a significant difference between the sexualities ($p = 0.0135$). Straight females were most likely to use the forums, followed by straight males, bi males, bi females, gay males, males who didn't give a sexuality, and lesbians, with females who didn't give a sexuality the least likely to use the forums.
- There was a significant difference between sexualities ($p = 0.0047$) when asked if they used their mic to talk to other players. Females who didn't give a sexuality were the most likely to use their mic (83.33% yes), followed by straight males, bi males, lesbians, straight females, bi females, and gay males, with males who didn't give a sexuality being the least likely to use their mic (53.33% yes).





Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

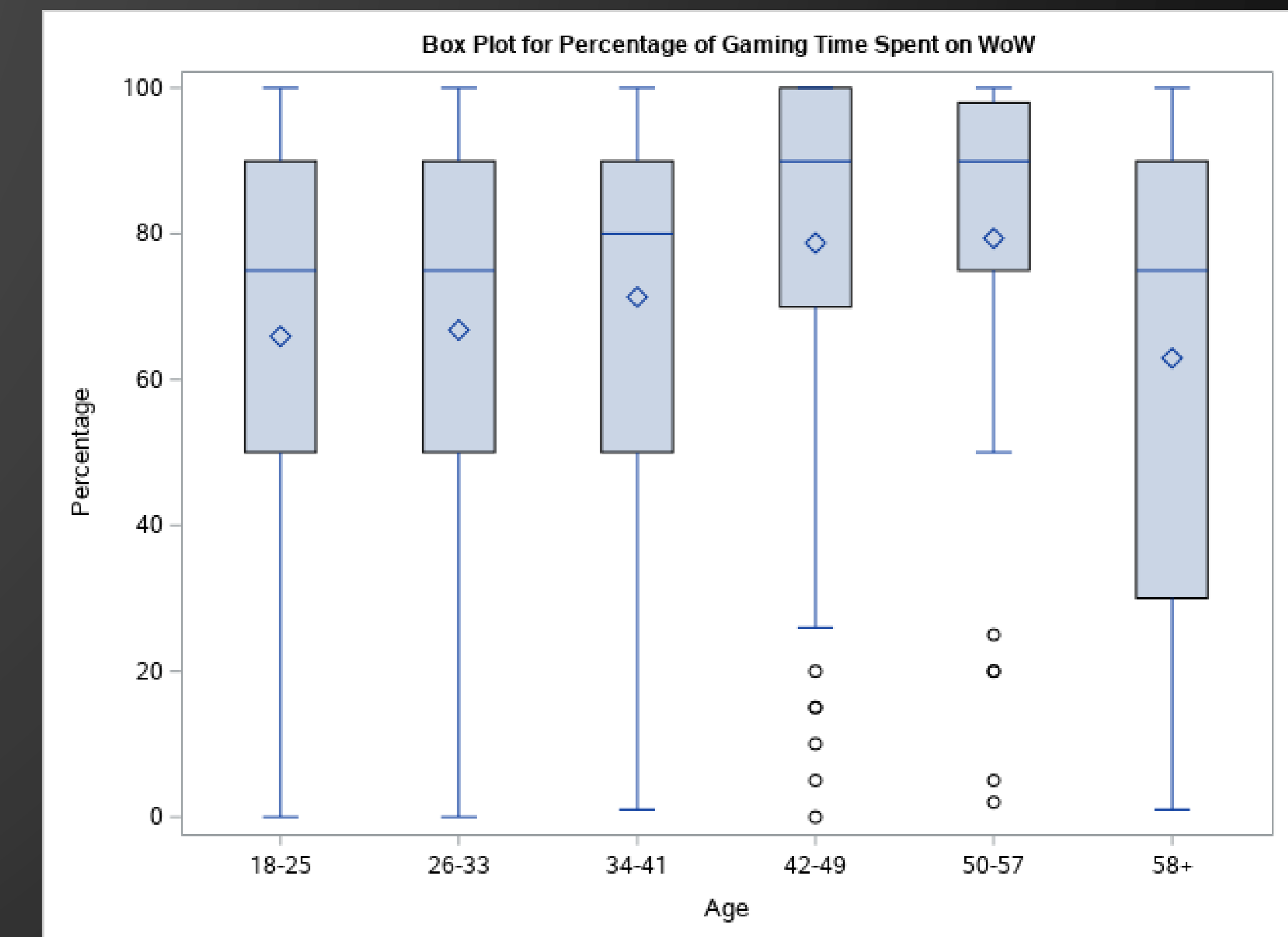
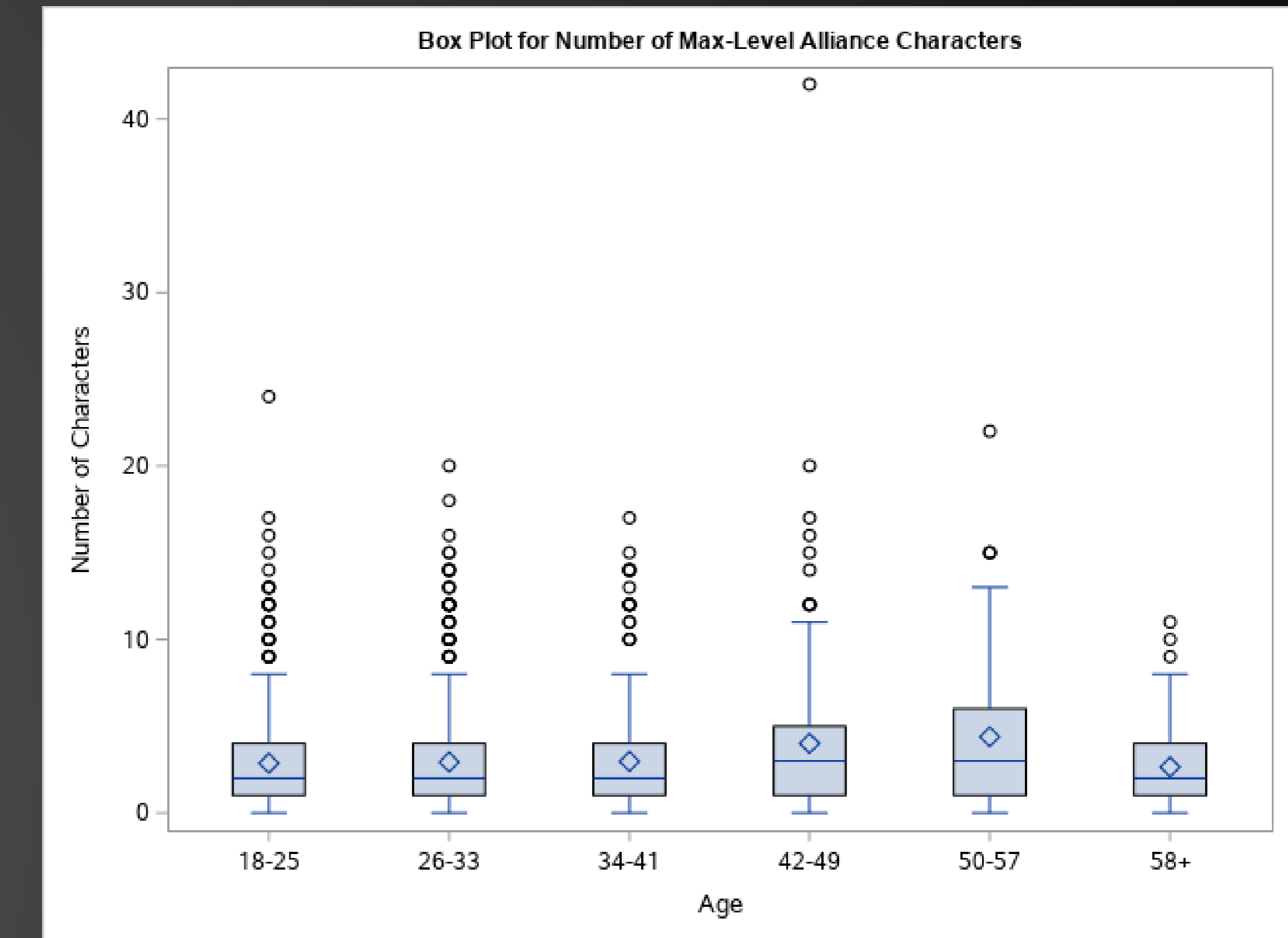
References

EFFECT OF AGE

- Looking at percentage of gaming time spent playing WoW, the ANOVA found there was a significant difference between the groups ($p < 0.0001$), with 50-57 year olds playing the largest percentage (79.39%), followed by 42-49, 34-41, 26-33, and 18-25, with 58+ year olds playing WoW as the smallest percentage of their gaming time (62.97%).
- The ANOVA found there was a significant difference between the groups ($p < 0.0001$) when it came to the number of max-level Alliance characters a respondent had, with 50-57 year olds having the most (4.39), followed by 42-49, 34-41, 26-33, and 18-25, with 58+ year olds having the least (2.65).
- Interestingly, there was no significant difference between age groups when it came to Horde

HYPOTHESIS

- Older players will spend a larger percentage of their gaming time on WoW.
 - TRUE
- Players 26 years and younger and players 58 years old and older will spend a larger portion of their free time on WoW compared to the middle-aged players.
 - INSIGNIFICANT
- Older players will play more Alliance than Horde.
 - TRUE





Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Abstract

Background

Survey, Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

References

CONCLUSIONS

- The hypotheses that men and women will both prefer to play character of the same sex as them was true, more severely with women than with men.
- We thought that gay men and women will be more likely to play the same sex than their heterosexual counterparts, but this was not true at all.
- The hypotheses that transsexual players will most often play characters that match their gender identity was true, though we would've liked a larger sample size.
- Older players did spend a larger percentage of their gaming time on WoW, for the most part. 50-57 year olds spent the largest percentage of their gaming time on WoW, and the average percentage decreased with each age group. The exception is 58+ year olds, who spent the smallest percentage of their gaming time on WoW.
- We hypothesized that players 26 years old and younger and players 58 years old and older will spend a larger portion of their free time on WoW compared to the middle aged players. Because players under 26 are likely in college, this group is stereotyped as spending a lot of time gaming, and players over 58 are more likely to be retired, and therefore would have free time to play. This was inconclusive, as there were no significant differences between groups.
- Due to the researcher's personal experiences as an Alliance main, we hypothesized that older players will play more Alliance than Horde. This was true, in a similar manner to the hypothesis about gaming time: players 50-57 had the most Alliance characters on average, and the number of Alliance characters decreased as player age group decreased, but 58+ players had the overall lowest average number of Alliance characters. Interestingly, this did not mean that younger players played more Horde, as the mean number of Horde characters did not significantly differ between age groups.

FUTURE WORKS

- Our survey had 73 questions, and we were only able to touch on a few of them in this presentation. We plan on looking for further relationships in the future and using this dataset during graduate school.
- Several of our variables allowed respondents to pick more than one options (such as race, what aspects of the game they used, and which in-game races they found most and least attractive). These will be more complicated to analyze, but we plan on doing so.
- We are in the process of writing a paper on our findings, which we hope to publish in the Journal of Cyberpsychology.



KENNESAW STATE
UNIVERSITY
ANALYTICS AND
DATA SCIENCE INSTITUTE

Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

Thanks to...

- SAS Global Forum, for the SAS Student Ambassador award, and Kennesaw State University's Undergraduate Research and Creative Activities Funds for providing us with the funds to attend SAS Global Forum.
- Wowhead, for working with us and allowing us to post our survey on their forum and in their many class Discord servers.
- Patty Matson, Christie Golden, Jennifer Klasing, and everyone else who retweeted our survey.
- The Department of Statistics and Analytical Sciences and the Department of Psychology at KSU, for training me in the skills used throughout this project.
- The 2,085 people who took the time to answer a 73-question survey for no reward other than the joy of having helped someone. Approximately 300 people quit as soon as they saw how many questions there were, and we don't blame them!
- Previous researchers on this topic; we stand on the shoulders of the researchers before us, and reading their studies was very helpful in putting together our own survey.



Abstract

Background

**Survey,
Demographics**

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

References



Who Are You When Playing World of Warcraft?



Alyssa Venn, B.S. in Applied and Computational Mathematics, Joe DeMaio, PhD, Department of Statistics and Analytical Sciences

Kennesaw State University Analytics and Data Science Institute

References

- Griffiths, M., Davies, M., & Chappell, D. (2003). "Breaking the stereotype: The case of online gaming." *CyberPsychology and Behavior*, 6(1). 81-91.
- Griffiths, M., Davies, M., & Chappell, D. (2004). "Demographic factors and playing variables in online computer gaming." *CyberPsychology and Behavior*, 7(4), 479-487.
- Grubb, J. (2015). "World of Warcraft monthly subscribers fall to 5.6M, its lowest level since 2005." *VentureBeat*. Retrieved from <https://venturebeat.com/2015/08/04/world-of-warcraft-monthly-subscribers-fall-to-5-6m/>
- Hussain, Z. & Griffiths, M. D. (2008). "Gender swapping and socializing in cyberspace: An exploratory study." *CyberPsychology & Behavior*, 11(1), 47-53.
- Makuch, E. (2015, Nov. 3). "Blizzard will no longer report World of Warcraft subscriber numbers." *Gamespot*. Retrieved from <https://www.gamespot.com/articles/blizzard-will-no-longer-report-world-of-warcraft-s/1100-6431943/>
- Mosley, I.D. (2010). "Personality and character selection in World of Warcraft." *McNair Scholars Research Journal*, 6(1), 51-63. Retrieved from <https://pdfs.semanticscholar.org/16ca/cb9bd96cb9d7912c6731b4f53ab1154724d7.pdf>.
- Potter, J. (n.d.). "Gender swapping in World of Warcraft: A look into personal relationships and gender identity in the gaming environment." Retrieved from <https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1004&context=iresearch>

Abstract

Background

Survey,
Demographics

Effect of Sex

Effect of Sexuality 1

Effect of Sexuality 2

Effect of Age

Conclusion

Acknowledgements

References

The background of the banner is a scenic view of the Washington Monument at dusk, reflected in the water of the Tidal Basin. The sky is a mix of blue, purple, and orange. In the foreground, there are cherry blossom trees with pink and white flowers, and a stone walkway. A dark teal rectangular box is centered over the image, containing the event title in white and teal text.

SAS[®] GLOBAL FORUM 2020

USERS PROGRAM

MARCH 29 - APRIL 1 | WASHINGTON, DC | #SASGF

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.