MacEwan University Students' Attitudes and Views towards Sharks: A Qualitative Analysis

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Abstract

This study sought to determine differences in views on sharks from the MacEwan University student population (the respondents), in addition to determining whether there is an association between attitudes towards sharks and views on shark-related topics. The method used a survey (*n*=134) to gather data. The study found that there was no significant evidence of association between attitudes towards sharks and views on sharks, with two exceptions: (1) owning a pet was associated with positive attitudes towards sharks, and (2) there was an association between positive attitudes towards sharks and holding accountable developed countries for the decline in shark populations. The results also showed differences among MacEwan University students' views on sharks. This was determined with Chi-squared tests for between-variable association and Friedman tests for within-variable differences.

Introduction

Research Problem

What does the public think about sharks? How do attitudes towards sharks associate with views on sharks? I examine the student body from MacEwan University (the respondents) to answer these questions. I sought to compare published studies (López de la Lama et al., 2018; Friedrich et al., 2014; Macdonald et al., 2023; Le Busque et al., 2021) that analyze different views held about sharks and what attitudes were held towards them. A primary gap in existing literature is whether there is an association between attitudes towards sharks and views on sharks. In this paper, "attitude" refers to the generalized perception people have of sharks and is measured as either negative, positive, or neutral; "view" refers to the rankings the respondents assigned to each topic in the administered survey.

Literature Review

López de la Lama et al. (2018) contains a matrix for word associations, allowing for the categorization of attitudes towards sharks as either negative, positive, or neutral. The study used such a system of identifying attitudes then comparing them to other variables of interest (such as shark knowledge or shark meat consumption). I used this method of classifying attitudes and then used other studies to determine what my variables of interest were. Macdonald et al. (2023) examined "views" on sharks: topics of interest for this study included where shark-related information is found, public perception of source reliability, public perception of specific risks towards shark species, and blame or accountability for decline in shark populations (Macdonald et al., 2023). These topics were adjusted to better answer the research question.

To gain an understanding about the formations of attitudes towards and views on sharks, I sought to determine where the respondents sourced their information about sharks

and if they considered the source to be trustworthy. Here, Le Busque et al. (2021) looks at a more general scope of exposure to sharks. This generalization added to the ideas from Macdonald et al. (2023) which examine frequency of specific media use, which informed my inclusion of questions about media in the survey. Shark Week is also a point of concern for shark scientists—focused on its ability to spread either awareness or fear (Evans, 2015)—since, many scientists believe that Shark Week has become more aligned with entertainment than education ("infotainment," Evans, 2015).

Zoos and aquariums provide both educational opportunities and a chance for species to rebound if their populations have diminished (Miranda et al., 2023). While aquariums and zoos have been found to be important in animal conservation (Miranda et al., 2023), it is also important to know the general perception of these institutions (Villaroya et al., 2024). It has been found that how individuals perceive zoos and aquariums depends on cultural context; however, perceptions of aquariums are generally less positive compared to zoos (Villaroya et al., 2024). Animals that are found in aquariums can also be food sources (Braverman, 2019), which may be the reason aquariums are perceived more negatively (Villaroya et al., 2024; Braverman, 2019). However, Braverman (2019) asserts that the main reason aquariums are less popular is that people are less spatially connected to the animals; in zoos, attendees can see animals through fences, rather than inches of glass.

Marine Protected Areas (MPAs) are sections of ocean or coastal environments that have more rigorous rules and regulations (Giakoumi et al., 2018). Though these exist so that aquatic animals have a place to thrive with less risk from human activities, 94% of MPAs still allow fishing (Giakoumi et al., 2018), demonstrating a way in which MPAs are failing in their efforts of aquatic animal conservation along with how there are so few of some aquatic animals for any substantial change to occur (Costello and Ballantine, 2015). Many scientists agree that more resources should be directed to marine reserves rather than MPAs (Giakoumi et al., 2018).

Conservation is a key focus for scientists in recent years, with over 25% of all vertebrate species being classified as threatened (Hoffmann et al., 2010). With the increase of conservation efforts, many species have been able to rebound from the extinction threat list (Hoffmann et al., 2010). For sharks, conservation has not been prioritized in relation to that of other species resulting in an estimated threat of nearly 25% of all sharks and their relatives (Dulvy et al., 2014). However, Costa et al. (2025) share that with youth education, there is an increased understanding of sharks which correlates with a more positive perception of sharks.

Hypotheses

Within the sample, I hypothesize that there would be differences in how the the sample thinks about sharks. I also hypothesize that there would be associations between attitudes and views on sharks. The explanatory variable was attitudes on sharks (measured as either negative, positive, or neutral); the response variables were various views on sharks (ranked on a scale of one to a maximum number of given options).

Purpose

Recent discourse has aided shark conservation and education (Friedrich et al., 2014). If this paper is scaled to a larger population, it could point to further developing conservation strategies and educational processes. However, this study only scratches the surface on how these

attitudes relate to views in a conservation focus. Further study on this topic could inform education and conservation.

Method

Research Design

This study was conducted using a survey of 14 questions (Appendix 1), six of which were demographic and eight of which were based on the research question. The survey was conducted through Google Forms and was open to submissions from MacEwan University institutional email addresses from October 24, 2025 until November 21, 2025. For survey questions relevant to the research topic, the first question defined respondents' attitudes on sharks. The next seven questions were individual categorical response variables.

Procedure

The demographics of the survey collected gender, age, faculty of study, pet ownership status, dietary choices, and Alberta residency. The research question section first asked respondents to write the primary five words they think about related to sharks. This was used to determine their attitudes on sharks. All responses correspond to the below matrix (adapted from López de la Lama et al., 2018) that categorizes to negative, positive, or neutral qualities:

Positive words

- Positive feelings (that reference emotions aligned with positivity)
    - *cute, interesting, misunderstood*
- Positive traits (that reference sharks as a positive object)
    - *smart, beautiful, docile*

Neutral words

- Ecological and biological knowledge (that indicate shark ecology and biology)
    - *conservation, electroreceptors, fish*
- Miscellaneous (not directly associated with sharks and could not be classified in other categories)
    - *whale, Nemo, Hawaii*

Negative words

- Negative outcomes of human-shark interactions (that reference lethal and traumatic outcomes of shark attacks)
    - *blood, overfishing, shark fin soup*
- Negative feelings (that reference emotions aligned with negativity)
    - *scary, stay away, fear*
- Negative traits (that reference sharks as something bad or dangerous)
    - *merciless, violent, killer*

Each of the five words listed by the respondents were given an attitude score (-1 for negative, 1 for positive, 0 for neutral) which corresponded to the sum of a participant's attitude score. The respondents were then provided with seven ranking questions based on their view

on a specific topic. Finally, each respondent's primary three rankings for each question were selected and analyzed.

Statistical Analysis

RStudio was used to organize the data for analysis and perform the Chi-Squared and ANOVA tests. SPSS was used to perform Friedman tests. Both SPSS and Excel were used to create figures. Chi-squared tests were used to determine associations between attitude and demographics (questions #1, #3–6), as well as the primary three rankings of each question (questions #8–14). An ANOVA was used to determine association between attitude and age (question #2). Friedman tests were used to determine within-variable differences; the Bonferroni correction was then used on pairwise comparisons (questions #8–14). A significance level of 5% was used to determine significant results.

Results

General Analysis of Data

Sample demographics are as shown in Table 1. Nine responses were incomplete and excluded from the sample. The age in years of respondents ranged from 18 to 51 ($\bar{x}$ = 22.5). Most participants selected female self-identification and association with the Faculty of Arts and Sciences. Most respondents have lived in Alberta their whole life and have a pet.

Table 1. Demographic information from the sample.

		n	*% of Sample*
Total		143	100%
Total (Full Responses)		134	94%
Age	$\bar{x}$ = 22.5	134	N/A
Gender	Male	42	31%
	Female	85	63%
	Gender non-conforming	6	4%
	Prefer not to say	1	1%
Faculty/School	Arts and Sciences	88	66%

	Fine Arts and Communications	8	6%
	Health and Community Studies	8	6%
	Nursing	14	10%
	Business	15	11%
	Continuing Education	1	1%
From Alberta	Yes	82	61%
	No	52	39%
Pet	Yes	89	66%
	No	45	34%

While individual attitude scores were calculated, I also counted the frequency of each word that was used to answer question #7. While counting, I consolidated similar words (for example: water, sea, and ocean; teeth and tooth).

Table 2. Top five words used in question #7 to determine attitude, along with their classification (López de la Lama et al., 2018)

Word	Frequency	Attitude Score	Attitude	Subcategory
Water/Ocean	61	0	Neutral	Ecological and biological knowledge
Teeth/Tooth	52	0	Neutral	Ecological and biological knowledge
Scary	23	-1	Negative	Negative Trait
Predator	19	0	Neutral	Ecological and biological knowledge
Jaw/Jaws	18	0	Neutral	Ecological and biological knowledge

Figure 1. Word cloud synthesis of answers from question #7, where word size corresponds positively to frequency of appearance.

In total, 130 unique words were used to answer question #7. Of these, 25 were negative, 26 were positive, and 78 were neutral. 59 respondents had negative attitudes towards sharks, 31 had positive attitudes, and 44 had neutral attitudes.

Perspective vs. Variable Tests

There was found to be little statistical significance between respondents' attitudes (negative, positive, neutral) and views (rankings in each question). There were two tests that yielded significant results (Table 3). Those tests looked at attitude and pet ownership, as well as attitude and countries to which respondents attribute the decline in shark populations. The first test had $\chi^2(2) = 6.28$, $p = 0.043$, which shows ownership of a pet has an association with having certain attitudes towards sharks. After looking at the contingency table (Table 4), it showed that the association was between positive attitudes and owning a pet. The second significant test had $\chi^2(2) = 7.22$, $p = 0.027$, which shows that there is an association between attitudes towards sharks and the country respondents ranked accountable for the decline in shark populations. Looking at the contingency table (Table 5), there is association between positive attitudes and developed countries.

*Table 3. Summary of all association tests. D = demographic questions, Q = research questions, R = rank. * [asterisk] = significant.*

Question Subject	Question #	Test-Stat	df	P-value	Test Preformed
Gender	D1	0.13824	2	0.9332	Chi-Squared
Age	D2	0.089	2	0.915	ANOVA
Faculty	D3	9.0821	8	0.3354	Chi-Squared
Pet	D5*	6.2829	2	0.04322*	
AB Lifetime Residency	D6	0.93997	2	0.625	
Source	Q8-R1	2.5346	2	0.2816	
	Q8-R2	3.9517	2	0.1386	
	Q8-R3	3.083	2	0.2141	
Trust	Q9-R1	N/A	N/A	N/A	
	Q9-R2	1.821	2	0.4023	
	Q9-R3	0.39325	2	0.8215	
Threat	Q10-R1	0.53146	2	0.7666	
	Q10-R2	0.77661	2	0.6782	
	Q10-R3	0.33905	2	0.8441	
Endangered	Q11-R1	N/A	N/A	N/A	
	Q11-R2	N/A	N/A	N/A	
	Q11-R3	N/A	N/A	N/A	
Conservation	Q12-R1	N/A	N/A	N/A	

	Q12-R2	N/A	N/A	N/A	
	Q12-R3	N/A	N/A	N/A	
Aquarium	Q13-R1	1.3476	2	0.5098	
	Q13-R2	4.5949	2	0.1005	
	Q13-R3	1..3476	2	0.5098	
Country	Q14-R1*	7.2244	2	0.02699*	
	Q14-R2	2.8669	2	0.2385	
	Q14-R3	2.3641	2	0.2385	

Table 4. Contingency table for Chi-Squared test: attitude–ownership of a pet.

	No	**Yes**
Negative	25	34
Neutral	15	29
Positive	5	26

Table 5. Contingency table for Chi-Squared test: attitude–country of blame for the decline in shark populations.

	Developed	**Developing**
Negative	30	23
Neutral	31	10
Positive	24	5

Descriptive charts were created to observe the distribution of the top three ranks compared to attitude (see Appendix 3 for all descriptive charts).

Within-Variables Friedman Tests

All Friedman tests came back with significant results: for every question asked there were differences in the ranking of options. See Appendix 2 for pairwise comparisons. Question #8 examined where people get their information about sharks. The options were divided into three groups: “high-rank” (Facebook, and X), “low-rank” (documentaries), and “mid-rank” (Instagram, TikTok, scientific articles, Shark Week, and news). The responses within groups are not different from each other, but responses between groups are all different from each other.

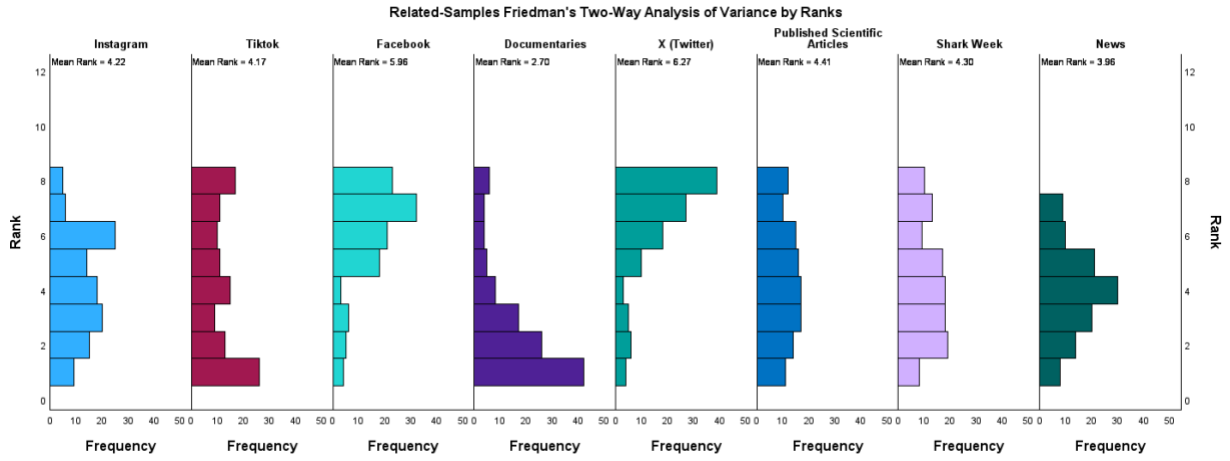

Figure 2. Frequency chart of media rankings in relation to the amount of information about sharks.

Question #9 asked which media respondents thought was trustworthy. It was divided into two groups: “social media” which included Instagram, TikTok, Facebook, and X; and, “more scientific” which included documentaries, scientific articles, Shark Week, and news. The “more scientific” group ranked lower thank the “social media” group.

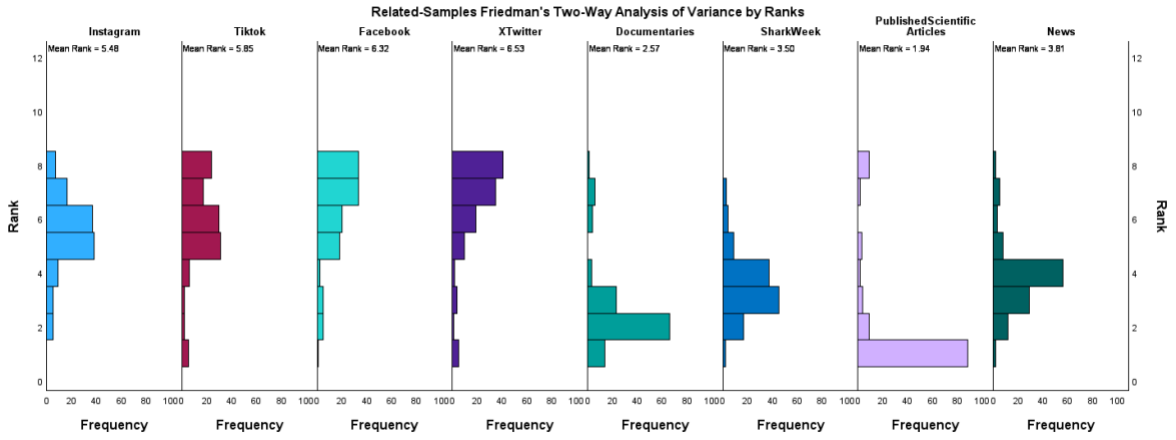

Figure 3. Frequency chart of media rankings in relation to trustworthiness.

Question #10 examined respondents' understanding of the threats to sharks. It had all responses in the mid-rank section, however there were two outliers: recreational fishing (ranked very high) and shark finning (ranked very low).

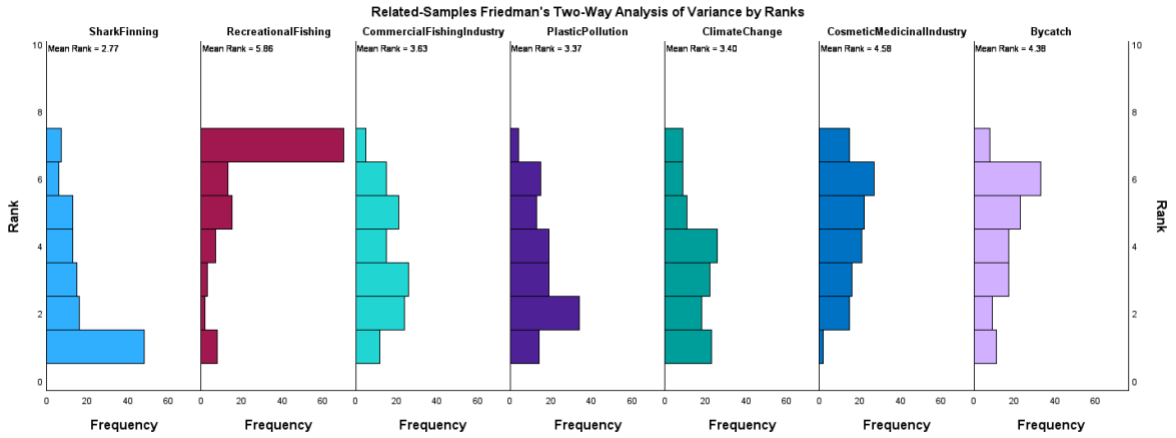

Figure 4. Frequency chart of respondents' rankings as the most concerning threats to sharks.

Question #11 observed which sharks respondents believed were the most endangered and was relatively uniformly mid-ranked. The great white shark was the only species that consistently differed from other species. Great white sharks were ranked as either very high or very low (bimodal distribution), though still higher-ranked as most endangered.

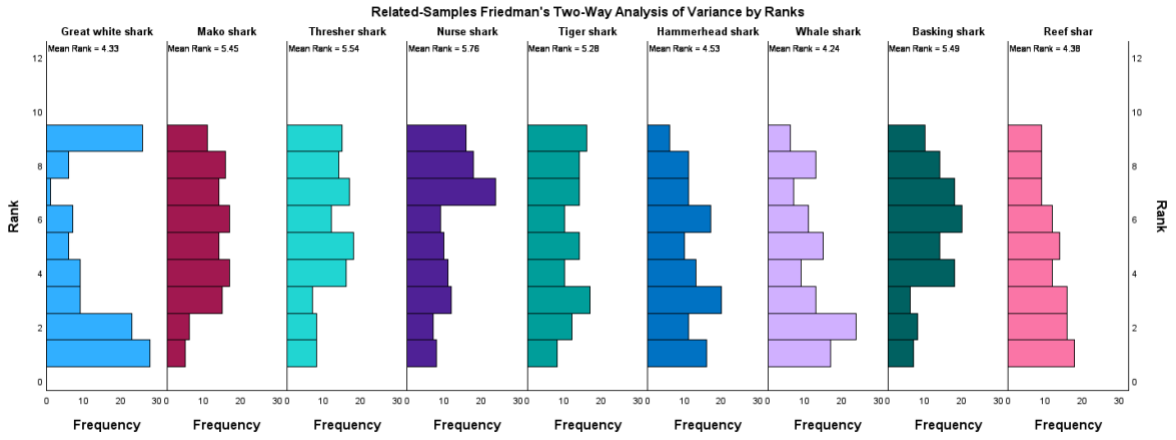

Figure 5. Frequency chart of respondents' rankings for the most endangered shark.

Question #12 observed what respondents thought was the most important factor in shark conservation and was divided into three groups: “high-rank” which included aquariums, and tourism; “low-rank” which included MPAs and governing policy; and “mid-rank” which included media coverage and increased education.

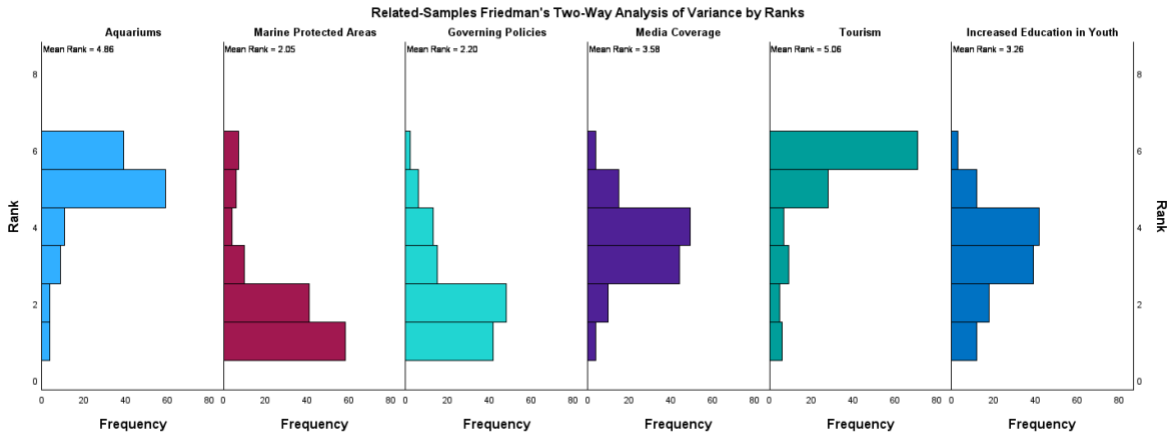

Figure 6. Frequency chart of respondents’ rankings as the most important strategy of shark conservation.

Question #13 asked what respondents thought best represented aquariums and was divided into three groups: “high-rank” which included unsustainable; “low-rank” which included captivity and entertainment; and “mid-rank” which included all other responses.

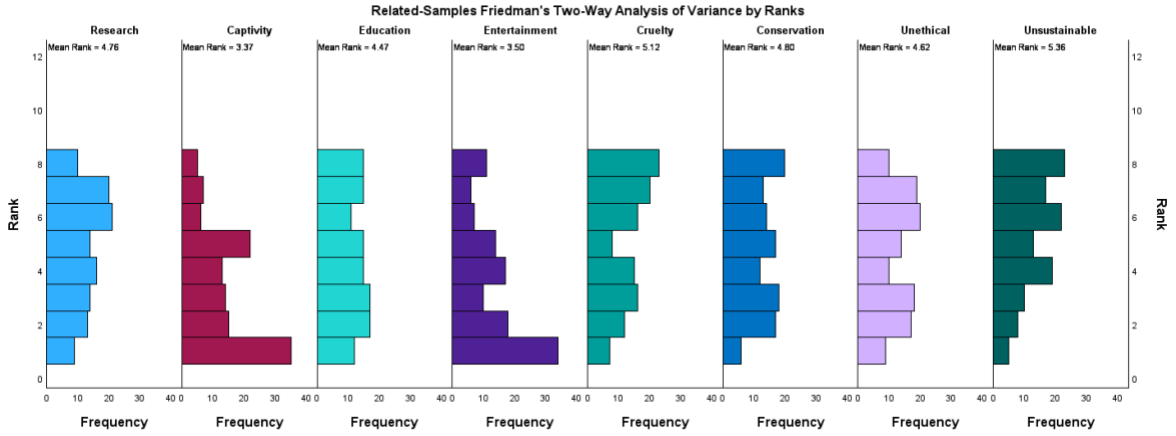

Figure 7. Frequency chart of respondents’ rankings as the most representative component of aquariums.

Question #14 looked at the countries to which people attributed the decline in shark populations and was split into three groups: “high-rank” which included European and African countries; “low-rank” which included developed North American and developed Asian countries; and “mid-rank” which included developing North American, developing Middle Eastern, and South American countries.

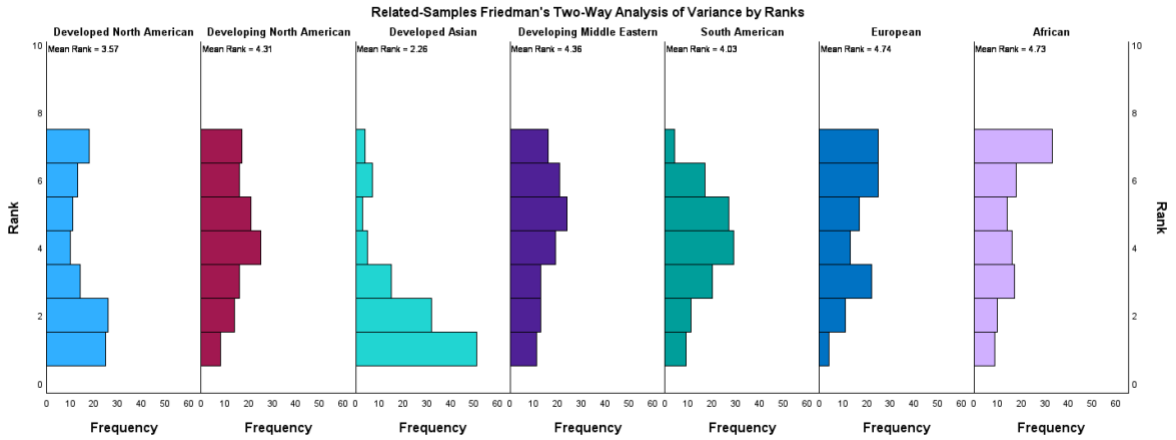

Figure 8. Frequency chart of countries to which respondents attributed the decline in shark populations.

Discussion

I found that most of the sample had negative attitudes towards sharks (44%), which aligned with what I expected to see based on López de la Lama et al. (2018). This is likely due to the long history of sharks’ portrayal as evil. I found that “scary” was the third most common word response from the survey. Overall, I found that, compared to López de la Lama et al. (2018), respondents exhibited had fewer negative attitudes towards sharks, either because of attitude shift over time, or coincidence in overall sample.

Perspective vs. Variable Tests

A lack of significance when observing the association between attitudes and their views on sharks is not necessarily a bad thing. For questions #8 and #9 (see Appendix 1) which looked at views on media, I found that there was no association between attitudes and views. This means that respondents of all attitudes have the same views of sharks on the basis of where they get their media and which media sources are trustworthy. Respondents get of their information about sharks from documentaries and that scientific media which they deem are the most trustworthy sources.

A positive attitude was associated with owning a pet. Also, there is an association between positive attitudes and attributing the decline in shark populations to developed countries. This shows that respondents with a positive attitude towards sharks are more educated about the source of shark threats. Developed Asian countries were ranked as the most to hold accountable for the decline in shark populations by participants with all attitudes, but the majority of respondents with positive attitudes assigned large amounts of accountability.

This shows that they are educated on the topic because it is seen that developed Asian countries are, in fact, the largest contributors to commercial shark fishing (Macdonald et al., 2023).

Within-Variable Friedman Tests

The Friedman test on question #8 exhibited significance and the post-hoc test divided it into three groups. This test presents that most respondents gain their information about sharks from somewhat reliable sources (documentaries); they will see more positive information rather than potentially negative information. However, since some documentaries have become infotainment, negative, fear-based attitudes may be increased (Evans, 2015). Alternatively, question #9 found that respondents believe science-based sources are the most trustworthy, meaning that they find documentaries and scientific articles the most reliable sources for sharks.

Results from question #10 explicate that respondents ranked recreational fishing as a high threat and shark finning as a low threat. The most likely reason respondents believe recreational fishing is the least threat is because Alberta is not as populated in sharks. However, having shark finning ranked as the greatest threat to sharks is positive, since it shows that people are somewhat educated on what is happening to sharks (Hoffmann et al., 2010). This connects to results of question #14, where people attributed developed Asian countries as the ones contributing the most to shark population decline. Seeing that the respondents have knowledge of sharks shows that perhaps their negative attitude towards sharks is not because they do not know enough about them, but because the information they receive does not present sharks in a positive way.

Question #12 exhibited that respondents thought that aquariums and tourism were least important for shark conservation. This is consistent with Villaroya et al.'s (2024) findings that people have negative attitudes towards aquariums. However, Miranda et al. (2023) argues that aquariums can be an important factor in shark conservation; respondents' impressions of aquariums may be motivated by the lack of opportunities to visit aquariums locally and learn about aquarium-based conservation efforts. In Edmonton, there is only one aquarium located in West Edmonton Mall, and it only has two types of sharks. For this survey population, respondents may receive the majority of their shark-related knowledge from the media: question #13 found that people thought captivity and entertainment best represented aquariums and that research and conservation did not represent aquariums, therefore unknowledgeable about conservation efforts by aquariums (Miranda et al., 2023).

According to question #12, respondents thought that MPAs and governing policies were the most important factor in shark conservation (that direct intervention is needed in shark conservation). Looking at the findings of questions #10 and #14, this further shows that respondents have knowledge of the threats to sharks and awareness of conservation projects (Giakoumi et al., 2018; Dulvy et al., 2014).

Question #11 found that respondents thought great white sharks were either the most or least endangered. It also found that most other shark species were middle-ranked. The sharks that respondents thought were most endangered compared to the IUCN red list (Fig. 9) we see

that the respondents were not correct: they ranked the great white shark as more threatened and the hammerhead shark as less threatened, which is not consistent with the IUCN list. This agrees with the literature that the shark species that appear the most in media often become perceived to be the most threatened (Macdonald et al., 2023; Dulvy et al., 2014). Since the public gets most of their information about sharks from documentaries (and that great white sharks are seen most frequently in shark documentaries), we can see that the order respondents ranks the shark is consistent with sources (Evans, 2015). This shows that to better protect the species at the greatest risk, its exposure in common and popular media must increase.

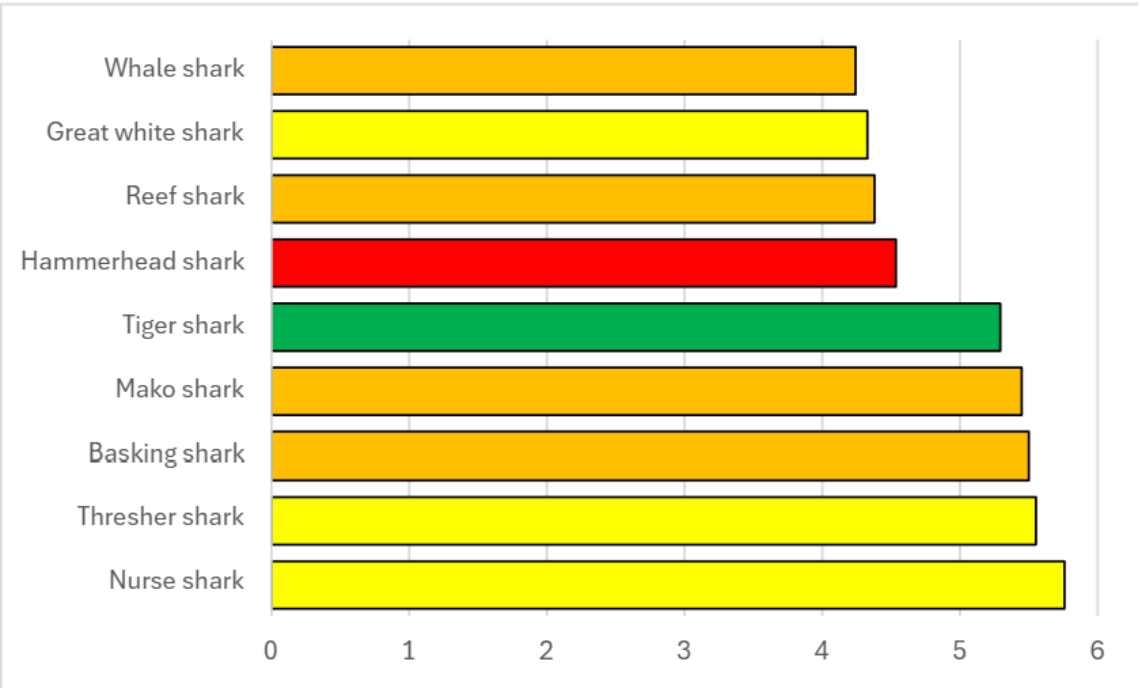

Figure 9. Bar chart of average rank for question #11. The colour represents IUCN population status (International Union for Conservation of Nature and Natural Resources, 2025). Red = Critically Endangered, Orange = Endangered, Yellow = Vulnerable, Green = Near Threatened. If a group of sharks had multiple species the most common classification was used.

Limitations and Recommendations for Further Research

The sample size was limited to few students from MacEwan University. This study could not take place for longer than four weeks. I would recommend sampling outside of a university population and targeting a greater sample size. I would recommend using higher-level statistical tests to better interpret statistical data.

Conclusion

Do MacEwan University students have differing views on sharks? Is there an association between attitudes on sharks and views on sharks? This study concludes that there are differences among students' views on sharks, but less so that there is an association between attitudes towards sharks and views on sharks. The method also exhibit that students have a general knowledge about shark endangerment, as well as threat mitigation. I also found that MacEwan University students have negative perspectives on aquariums and do not believe they are imperative for conservation. The insights from this study may assist educators and conservationists by providing a deep understanding of how to best educate the public on sharks, since this study found a need for solutions-based, positive shark advocacy efforts.

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Appendix 1: Survey Questions and Options

Question #	Question Sentence	Options
1	What gender do you identify as?	male; female; prefer not to say; gender non-conforming
2	What is your age in years?	open answer
3	What Faculty/School do you belong to?	Faculty Of Arts & Sciences; School of Business; Faculty of Nursing; School of Continuing Education; Faculty of Fine Arts and Communications; Faculty of Health and Community Studies
4	Are you vegan or vegetarian?	yes; no
5	Do you have a pet?	yes; no
6	Have you lived in Alberta all your life?	yes; no
7	What are the first five things you think about when you think about sharks?	open answer

8	Rank sources based on where you get the most information about sharks	Instagram; TikTok; Facebook; X (Twitter); documentaries; Shark Week; published scientific articles; news
9	Rank sources based on which you think is most trustworthy	Instagram; TikTok; Facebook; X (Twitter); documentaries; Shark Week; published scientific articles; news
10	Rank factors based on what you think is the biggest threat to sharks	shark finning; recreational fishing; commercial fishing industry; plastic pollution; climate change; cosmetic/medicinal industry; bycatch
11	Rank species of sharks based on what you think is most endangered	great white shark; mako shark; thresher shark; nurse shark; tiger shark; hammerhead shark; whale shark; basking shark; reef shark
12	Rank based on what you think is most important in shark conservation	aquariums; Marine Protected Areas; tourism; governing policies; media coverage; increased education in youth
13	Rank words based on what you think best represents aquariums	research; captivity; education; entertainment; cruelty; conservation; unethical; unsustainable
14	Rank countries based on who you attribute the decline in shark populations to	developed North American countries (Canada, USA); developing North American countries (Costa Rica); developed Asian countries (China, Japan); developing Middle Eastern countries (India, Indonesia); South American countries (Peru, Brazil); European countries (Spain, France, England); African countries

Appendix 2: Pairwise Comparisons after Friedman Tests

Appendix 2.1: Pairwise Comparisons Specific to Question #8

Pairwise Comparisons

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Documentaries-News	-1.268	.327	-3.873	<.001	.003
Documentaries-Tiktok	1.473	.327	4.501	<.001	.000
Documentaries-Instagram	1.527	.327	4.664	<.001	.000
Documentaries-Shark Week	-1.607	.327	-4.910	<.001	.000
Documentaries-Published Scientific Articles	-1.714	.327	-5.237	<.001	.000
Documentaries-Facebook	3.268	.327	9.983	<.001	.000
Documentaries-X (Twitter)	-3.571	.327	-10.911	<.001	.000
News-Tiktok	.205	.327	.627	.530	1.000
News-Instagram	.259	.327	.791	.429	1.000
News-Shark Week	.339	.327	1.037	.300	1.000
News-Published Scientific Articles	.446	.327	1.364	.173	1.000
News-Facebook	2.000	.327	6.110	<.001	.000
News-X (Twitter)	2.304	.327	7.038	<.001	.000
Tiktok-Instagram	.054	.327	.164	.870	1.000
Tiktok-Shark Week	-.134	.327	-.409	.682	1.000
Tiktok-Published Scientific Articles	-.241	.327	-.736	.461	1.000
Tiktok-Facebook	-1.795	.327	-5.483	<.001	.000
Tiktok-X (Twitter)	-2.098	.327	-6.410	<.001	.000
Instagram-Shark Week	-.080	.327	-.245	.806	1.000
Instagram-Published Scientific Articles	-.188	.327	-.573	.567	1.000
Instagram-Facebook	-1.741	.327	-5.319	<.001	.000
Instagram-X (Twitter)	-2.045	.327	-6.246	<.001	.000
Shark Week-Published Scientific Articles	.107	.327	.327	.743	1.000
Shark Week-Facebook	1.661	.327	5.074	<.001	.000
Shark Week-X (Twitter)	1.964	.327	6.001	<.001	.000
Published Scientific Articles-Facebook	1.554	.327	4.746	<.001	.000
Published Scientific Articles-X (Twitter)	1.857	.327	5.674	<.001	.000
Facebook-X (Twitter)	-.304	.327	-.927	.354	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Appendix 2.2: Pairwise Comparisons Specific to Question #9

Pairwise Comparisons

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
PublishedScientificArticles-Documentaries	.632	.320	1.975	.048	1.000
PublishedScientificArticles-SharkWeek	1.556	.320	4.857	<.001	.000
PublishedScientificArticles-News	-1.872	.320	-5.845	<.001	.000
PublishedScientificArticles-Instagram	3.538	.320	11.049	<.001	.000
PublishedScientificArticles-Tiktok	3.915	.320	12.223	<.001	.000
PublishedScientificArticles-Facebook	4.376	.320	13.664	<.001	.000
PublishedScientificArticles-XTwitter	4.590	.320	14.331	<.001	.000
Documentaries-SharkWeek	-.923	.320	-2.882	.004	.111
Documentaries-News	-1.239	.320	-3.870	<.001	.003
Documentaries-Instagram	2.906	.320	9.074	<.001	.000
Documentaries-Tiktok	3.282	.320	10.248	<.001	.000
Documentaries-Facebook	3.744	.320	11.689	<.001	.000
Documentaries-XTwitter	3.957	.320	12.357	<.001	.000
SharkWeek-News	-.316	.320	-.987	.323	1.000
SharkWeek-Instagram	1.983	.320	6.192	<.001	.000
SharkWeek-Tiktok	2.359	.320	7.366	<.001	.000
SharkWeek-Facebook	2.821	.320	8.807	<.001	.000
SharkWeek-XTwitter	3.034	.320	9.474	<.001	.000
News-Instagram	1.667	.320	5.204	<.001	.000
News-Tiktok	2.043	.320	6.378	<.001	.000
News-Facebook	2.504	.320	7.820	<.001	.000
News-XTwitter	2.718	.320	8.487	<.001	.000
Instagram-Tiktok	-.376	.320	-1.174	.240	1.000
Instagram-Facebook	-.838	.320	-2.615	.009	.250
Instagram-XTwitter	-1.051	.320	-3.283	.001	.029
Tiktok-Facebook	-.462	.320	-1.441	.150	1.000
Tiktok-XTwitter	-.675	.320	-2.108	.035	.980
Facebook-XTwitter	-.214	.320	-.667	.505	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Appendix 2.3: Pairwise Comparisons Specific to Question #10

Pairwise Comparisons

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Whale shark-Great white shark	.087	.361	.241	.810	1.000
Whale shark-Reef shar	-.139	.361	-.385	.700	1.000
Whale shark-Hammerhead shark	.287	.361	.795	.427	1.000
Whale shark-Tiger shark	1.035	.361	2.865	.004	.150
Whale shark-Mako shark	1.209	.361	3.347	<.001	.029
Whale shark-Basking shark	-1.243	.361	-3.443	<.001	.021
Whale shark-Thresher shark	1.296	.361	3.587	<.001	.012
Whale shark-Nurse shark	1.513	.361	4.189	<.001	.001
Great white shark-Reef shar	-.052	.361	-.144	.885	1.000
Great white shark-Hammerhead shark	-.200	.361	-.554	.580	1.000
Great white shark-Tiger shark	-.948	.361	-2.624	.009	.312
Great white shark-Mako shark	-1.122	.361	-3.106	.002	.068
Great white shark-Basking shark	-1.157	.361	-3.202	.001	.049
Great white shark-Thresher shark	-1.209	.361	-3.347	<.001	.029
Great white shark-Nurse shark	-1.426	.361	-3.949	<.001	.003
Reef shar-Hammerhead shark	.148	.361	.409	.682	1.000
Reef shar-Tiger shark	.896	.361	2.480	.013	.473
Reef shar-Mako shark	1.070	.361	2.961	.003	.110
Reef shar-Basking shark	1.104	.361	3.058	.002	.080
Reef shar-Thresher shark	1.157	.361	3.202	.001	.049
Reef shar-Nurse shark	1.374	.361	3.804	<.001	.005
Hammerhead shark-Tiger shark	.748	.361	2.071	.038	1.000
Hammerhead shark-Mako shark	.922	.361	2.552	.011	.385
Hammerhead shark-Basking shark	-.957	.361	-2.648	.008	.291
Hammerhead shark-Thresher shark	1.009	.361	2.793	.005	.188
Hammerhead shark-Nurse shark	1.226	.361	3.395	<.001	.025
Tiger shark-Mako shark	.174	.361	.482	.630	1.000
Tiger shark-Basking shark	-.209	.361	-.578	.563	1.000
Tiger shark-Thresher shark	.261	.361	.722	.470	1.000
Tiger shark-Nurse shark	.478	.361	1.324	.185	1.000
Mako shark-Basking shark	-.035	.361	-.096	.923	1.000
Mako shark-Thresher shark	-.087	.361	-.241	.810	1.000
Mako shark-Nurse shark	-.304	.361	-.843	.399	1.000
Basking shark-Thresher shark	.052	.361	.144	.885	1.000
Basking shark-Nurse shark	.270	.361	.746	.455	1.000
Thresher shark-Nurse shark	-.217	.361	-.602	.547	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Appendix 2.4: Pairwise Comparisons Specific to Question #11

Pairwise Comparisons

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
SharkFinning-PlasticPollution	-.602	.281	-2.139	.032	.680
SharkFinning-ClimateChange	-.627	.281	-2.230	.026	.541
SharkFinning-CommercialFishingIndustry	-.856	.281	-3.043	.002	.049
SharkFinning-Bycatch	-1.610	.281	-5.725	<.001	.000
SharkFinning-CosmeticMedicinalIndustry	-1.814	.281	-6.448	<.001	.000
SharkFinning-RecreationalFishing	-3.093	.281	-10.999	<.001	.000
PlasticPollution-ClimateChange	-.025	.281	-.090	.928	1.000
PlasticPollution-CommercialFishingIndustry	.254	.281	.904	.366	1.000
PlasticPollution-Bycatch	-1.008	.281	-3.586	<.001	.007
PlasticPollution-CosmeticMedicinalIndustry	-1.212	.281	-4.309	<.001	.000
PlasticPollution-RecreationalFishing	2.492	.281	8.859	<.001	.000
ClimateChange-CommercialFishingIndustry	.229	.281	.814	.416	1.000
ClimateChange-Bycatch	-.983	.281	-3.495	<.001	.010
ClimateChange-CosmeticMedicinalIndustry	-1.186	.281	-4.219	<.001	.001
ClimateChange-RecreationalFishing	2.466	.281	8.769	<.001	.000
CommercialFishingIndustry-Bycatch	-.754	.281	-2.682	.007	.154
CommercialFishingIndustry-CosmeticMedicinalIndustry	-.958	.281	-3.405	<.001	.014
CommercialFishingIndustry-RecreationalFishing	2.237	.281	7.955	<.001	.000
Bycatch-CosmeticMedicinalIndustry	.203	.281	.723	.470	1.000
Bycatch-RecreationalFishing	1.483	.281	5.273	<.001	.000
CosmeticMedicinalIndustry-RecreationalFishing	1.280	.281	4.550	<.001	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Appendix 2.5: Pairwise Comparisons Specific to Question #12

Pairwise Comparisons

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Marine Protected Areas-Governing Policies	-.151	.236	-.640	.522	1.000
Marine Protected Areas-Increased Education in Youth	-1.214	.236	-5.152	<.001	.000
Marine Protected Areas-Media Coverage	-1.532	.236	-6.499	<.001	.000
Marine Protected Areas-Aquariums	2.810	.236	11.920	<.001	.000
Marine Protected Areas-Tourism	-3.008	.236	-12.762	<.001	.000
Governing Policies-Increased Education in Youth	-1.063	.236	-4.512	<.001	.000
Governing Policies-Media Coverage	-1.381	.236	-5.859	<.001	.000
Governing Policies-Aquariums	2.659	.236	11.280	<.001	.000
Governing Policies-Tourism	-2.857	.236	-12.122	<.001	.000
Increased Education in Youth-Media Coverage	.317	.236	1.347	.178	1.000
Increased Education in Youth-Aquariums	1.595	.236	6.768	<.001	.000
Increased Education in Youth-Tourism	1.794	.236	7.610	<.001	.000
Media Coverage-Aquariums	1.278	.236	5.421	<.001	.000
Media Coverage-Tourism	-1.476	.236	-6.263	<.001	.000
Aquariums-Tourism	-.198	.236	-.842	.400	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Appendix 2.6: Pairwise Comparisons Specific to Question #13

Pairwise Comparisons

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Captivity-Entertainment	-.137	.320	-.427	.669	1.000
Captivity-Education	-1.103	.320	-3.443	<.001	.016
Captivity-Unethical	-1.248	.320	-3.896	<.001	.003
Captivity-Research	1.393	.320	4.350	<.001	.000
Captivity-Conservation	-1.436	.320	-4.484	<.001	.000
Captivity-Cruelty	-1.752	.320	-5.471	<.001	.000
Captivity-Unsustainable	-1.991	.320	-6.218	<.001	.000
Entertainment-Education	.966	.320	3.016	.003	.072
Entertainment-Unethical	-1.111	.320	-3.469	<.001	.015
Entertainment-Research	1.256	.320	3.923	<.001	.002
Entertainment-Conservation	-1.299	.320	-4.057	<.001	.001
Entertainment-Cruelty	-1.615	.320	-5.044	<.001	.000
Entertainment-Unsustainable	-1.855	.320	-5.791	<.001	.000
Education-Unethical	-.145	.320	-.454	.650	1.000
Education-Research	.291	.320	.907	.364	1.000
Education-Conservation	-.333	.320	-1.041	.298	1.000
Education-Cruelty	-.650	.320	-2.028	.043	1.000
Education-Unsustainable	-.889	.320	-2.776	.006	.154
Unethical-Research	.145	.320	.454	.650	1.000
Unethical-Conservation	.188	.320	.587	.557	1.000
Unethical-Cruelty	.504	.320	1.575	.115	1.000
Unethical-Unsustainable	-.744	.320	-2.322	.020	.567
Research-Conservation	-.043	.320	-.133	.894	1.000
Research-Cruelty	-.359	.320	-1.121	.262	1.000
Research-Unsustainable	-.598	.320	-1.868	.062	1.000
Conservation-Cruelty	.316	.320	.987	.323	1.000
Conservation-Unsustainable	-.556	.320	-1.735	.083	1.000
Cruelty-Unsustainable	-.239	.320	-.747	.455	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Appendix 2.7: Pairwise Comparisons Specific to Question #14

Pairwise Comparisons

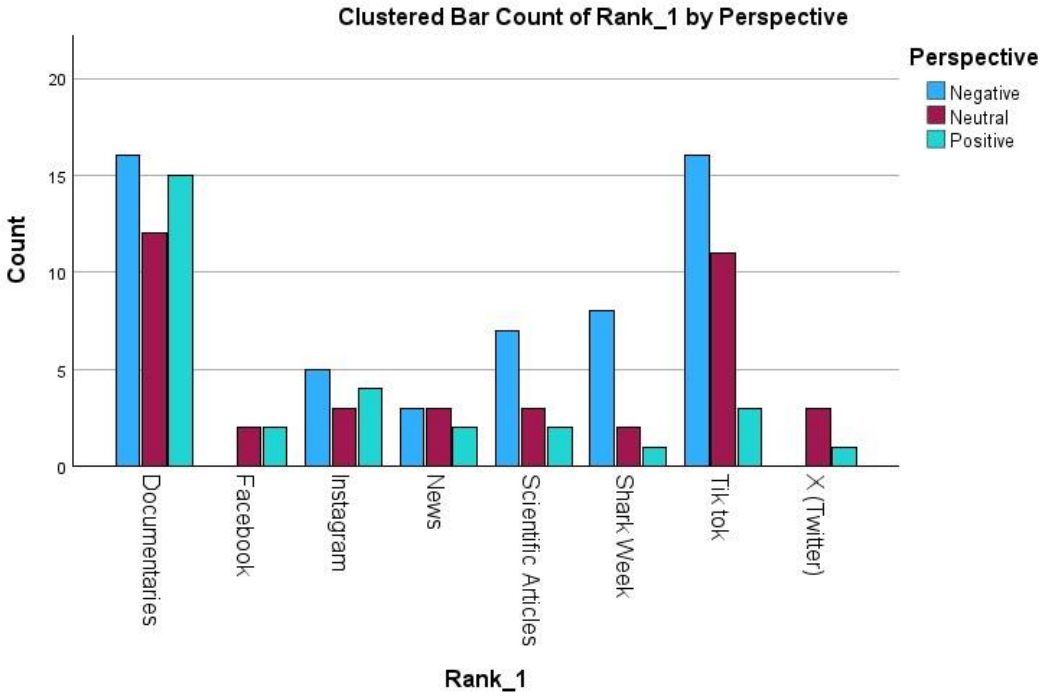
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Developed Asian-Developed North American	1.308	.282	4.630	<.001	.000
Developed Asian-South American	-1.769	.282	-6.264	<.001	.000
Developed Asian-Developing North American	2.043	.282	7.232	<.001	.000
Developed Asian-Developing Middle Eastern	-2.094	.282	-7.414	<.001	.000
Developed Asian-African	-2.462	.282	-8.715	<.001	.000
Developed Asian-European	-2.470	.282	-8.746	<.001	.000
Developed North American-South American	-.462	.282	-1.634	.102	1.000
Developed North American-Developing North American	-.735	.282	-2.602	.009	.194
Developed North American-Developing Middle Eastern	-.786	.282	-2.784	.005	.113
Developed North American-African	-1.154	.282	-4.085	<.001	.001
Developed North American-European	-1.162	.282	-4.116	<.001	.001
South American -Developing North American	.274	.282	.968	.333	1.000
South American -Developing Middle Eastern	.325	.282	1.150	.250	1.000
South American -African	-.692	.282	-2.451	.014	.299
South American -European	-.701	.282	-2.481	.013	.275
Developing North American -Developing Middle Eastern	-.051	.282	-.182	.856	1.000
Developing North American -African	-.419	.282	-1.483	.138	1.000
Developing North American -European	-.427	.282	-1.513	.130	1.000
Developing Middle Eastern -African	-.368	.282	-1.301	.193	1.000
Developing Middle Eastern -European	-.376	.282	-1.332	.183	1.000
African -European	.009	.282	.030	.976	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.

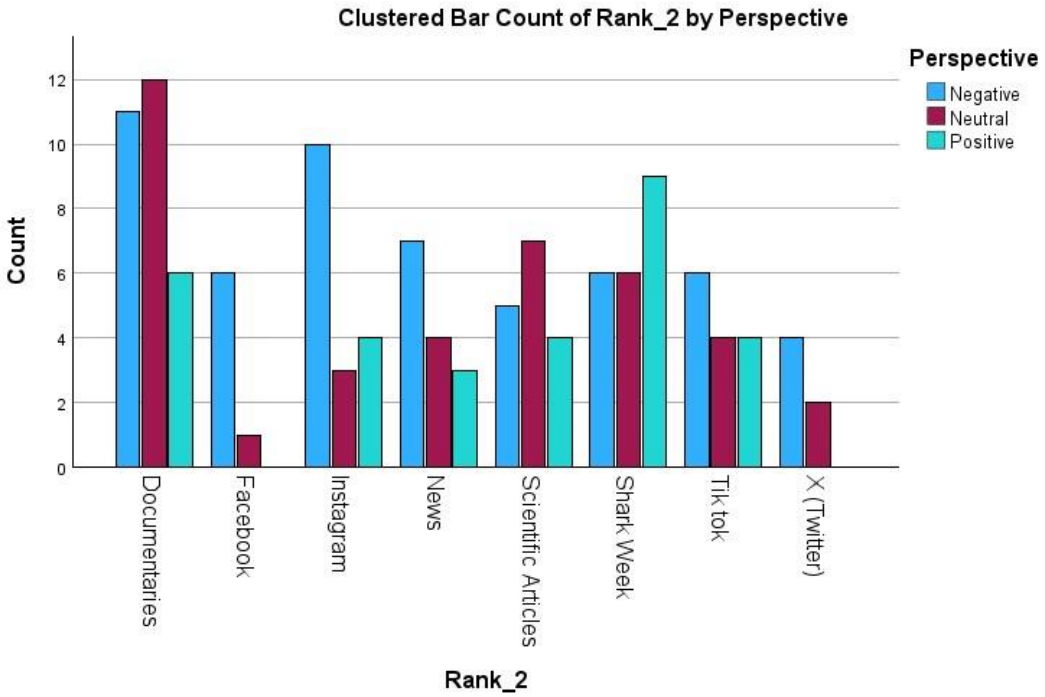
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Appendix 3: Descriptive Statistics for Chi-Squared Tests

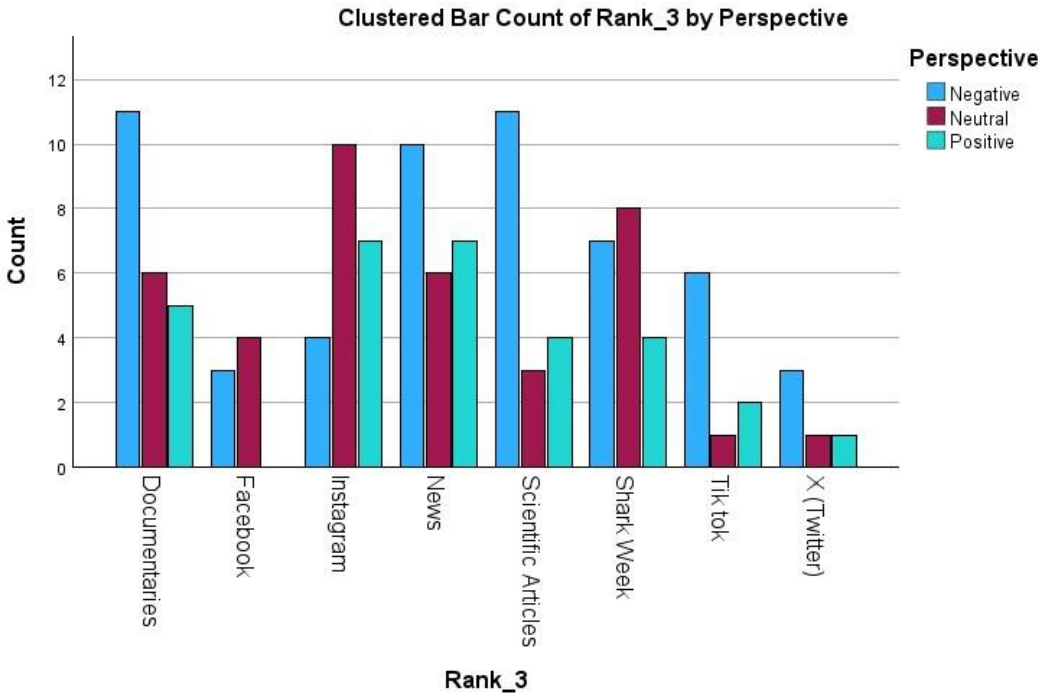
Appendix 3.1: Rank 1, Attitude vs. Information Source



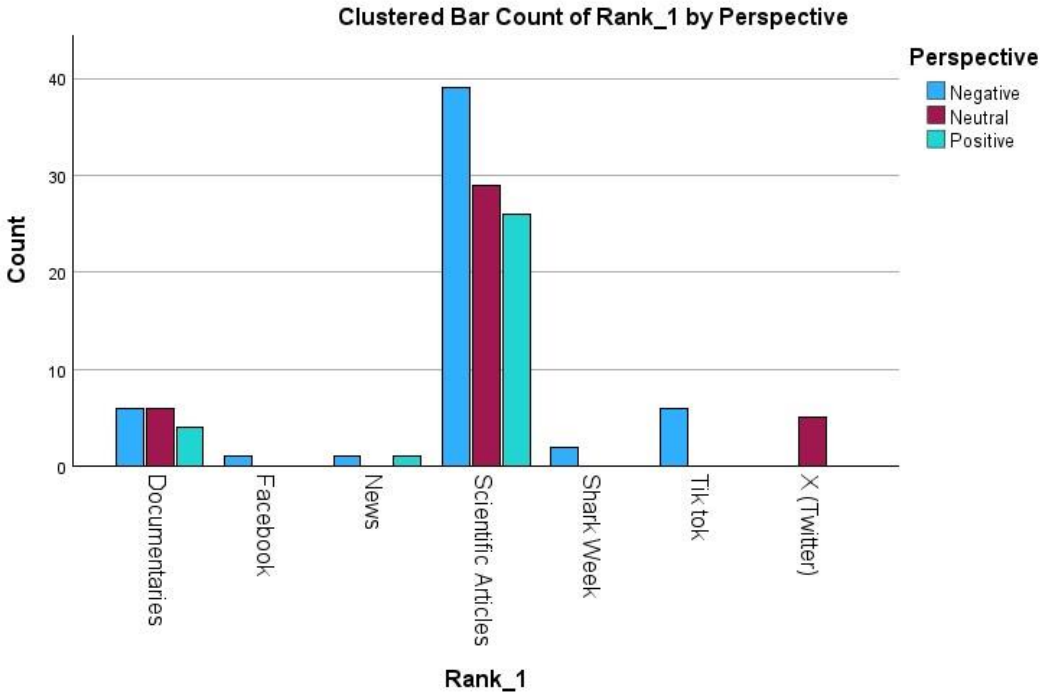
Appendix 3.2: Rank 2, Attitude vs. Information Source



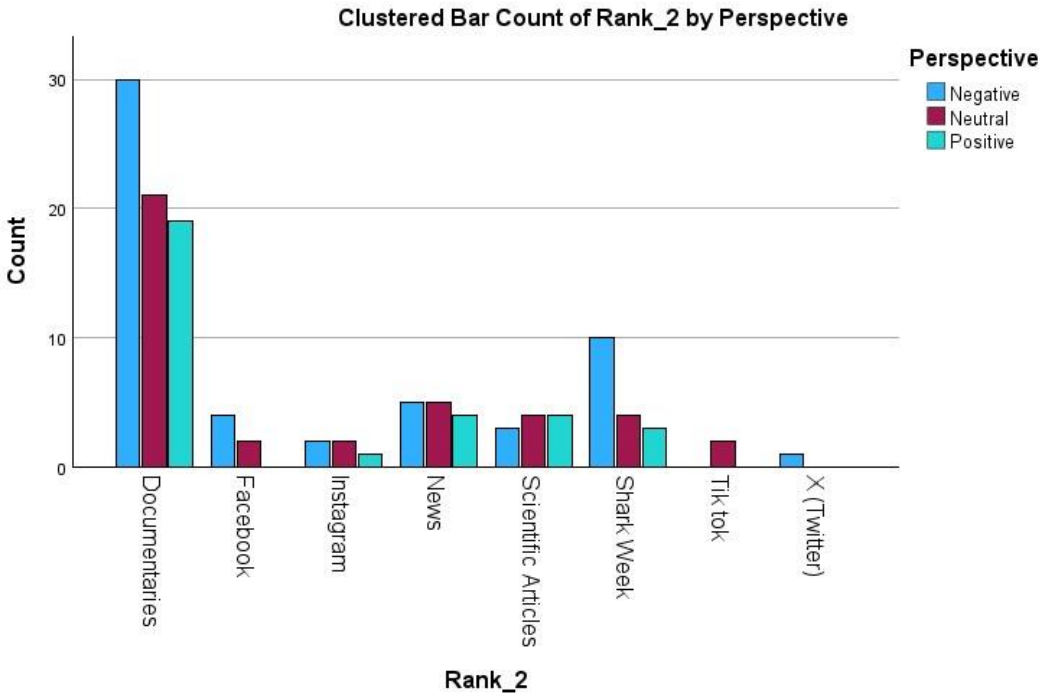
Appendix 3.3: Rank 3, Attitude vs. Information Source



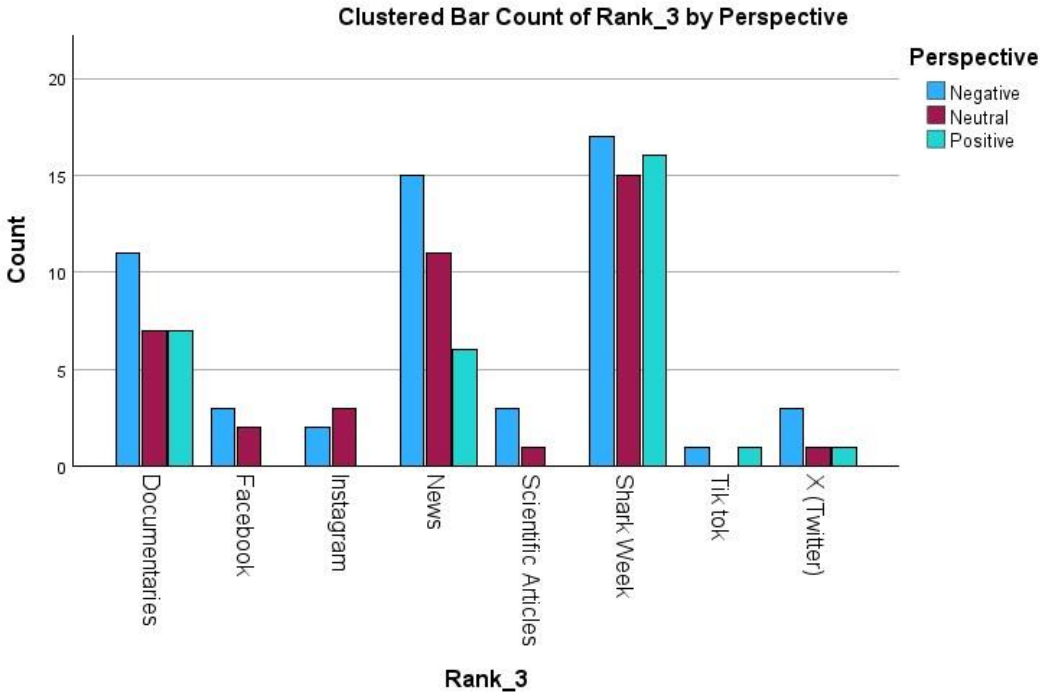
Appendix 3.4: Rank 1, Attitude vs. Source Trust



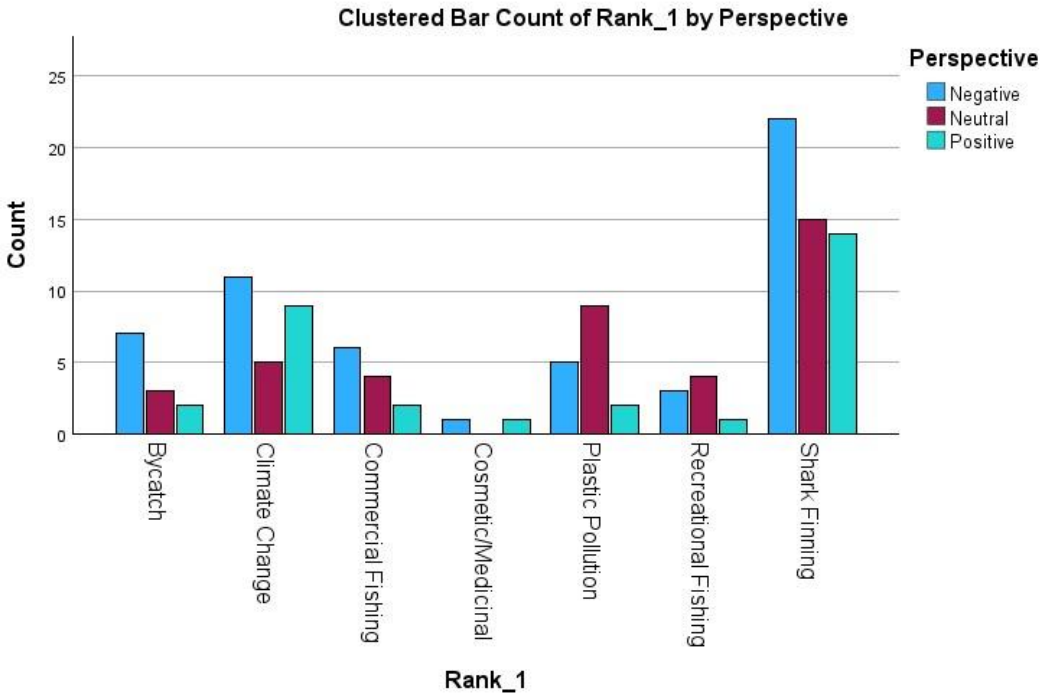
Appendix 3.5: Rank 2, Attitude vs. Source Trust



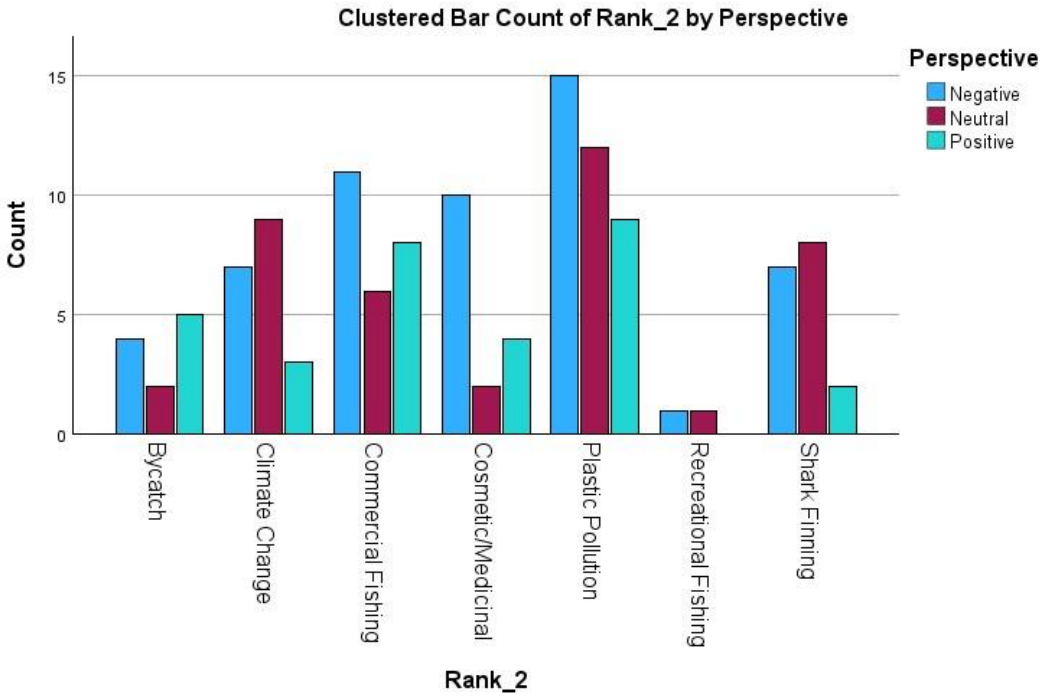
Appendix 3.6: Rank 3, Attitude vs. Source Trust



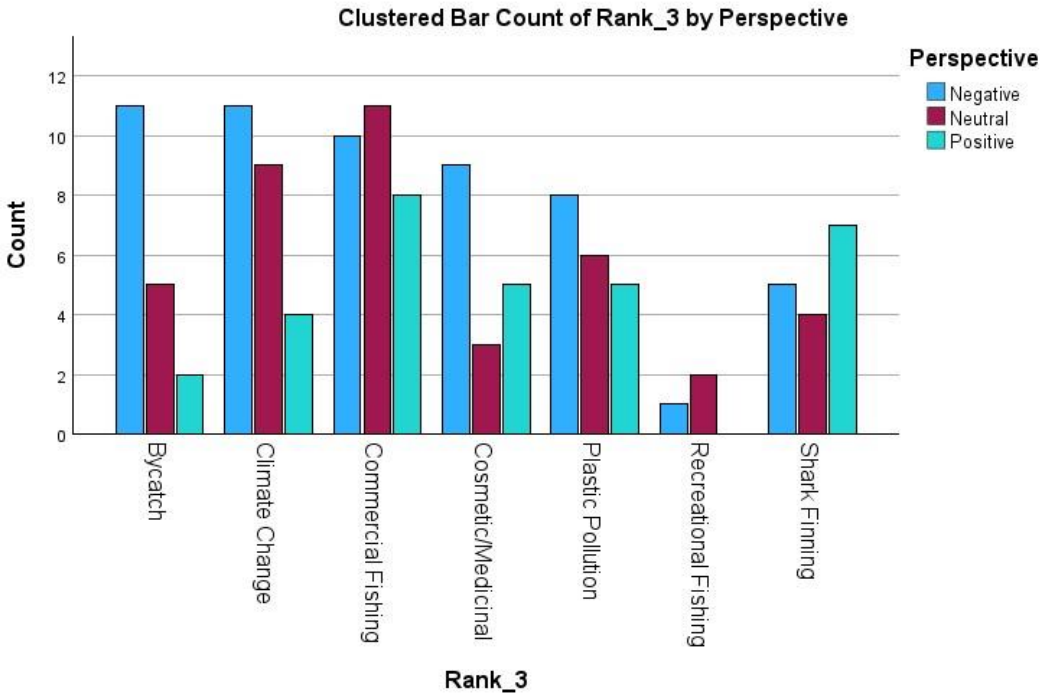
Appendix 3.7: Rank 1, Attitude vs. Understanding of Threats to Sharks



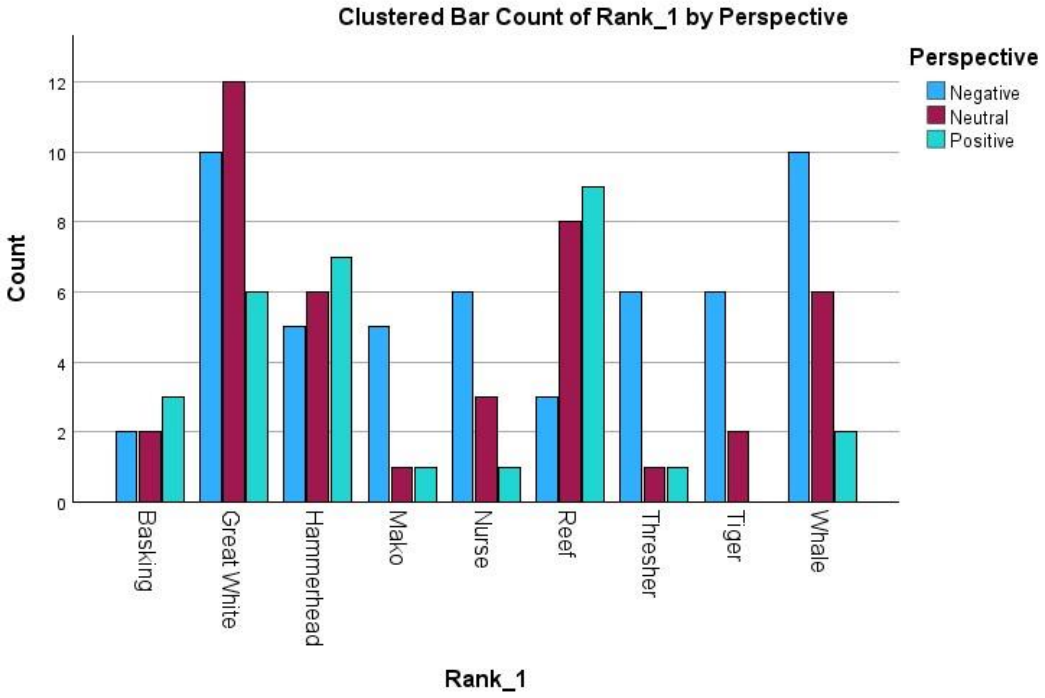
Appendix 3.8: Rank 2, Attitude vs. Understanding of Threats to Sharks



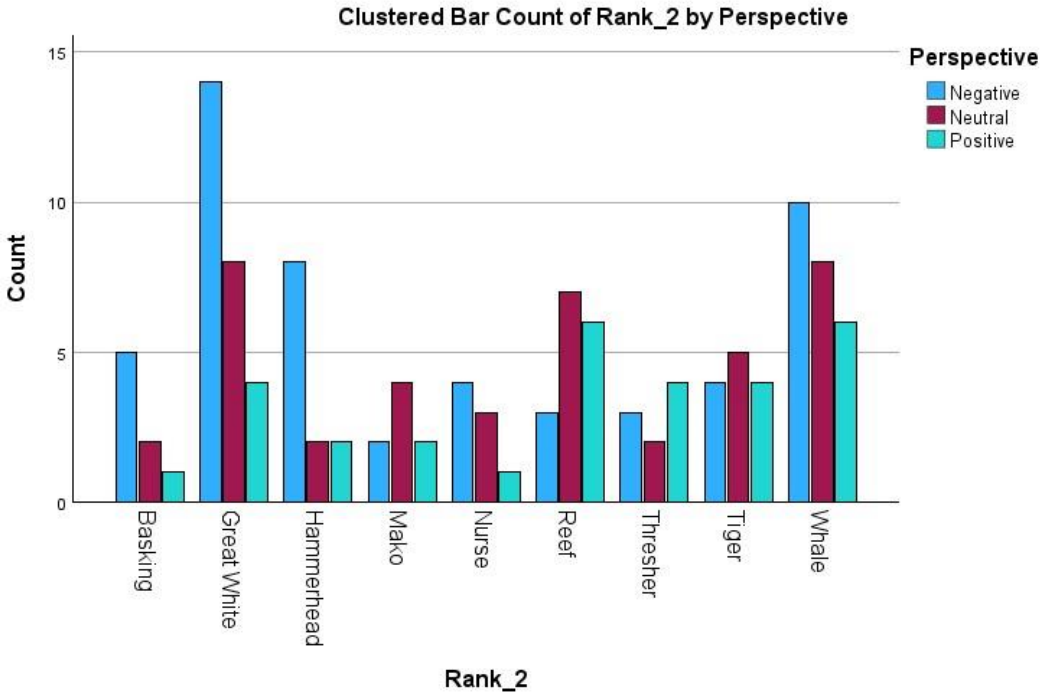
Appendix 3.9: Rank 3, Attitude vs. Understanding of Threats to Sharks



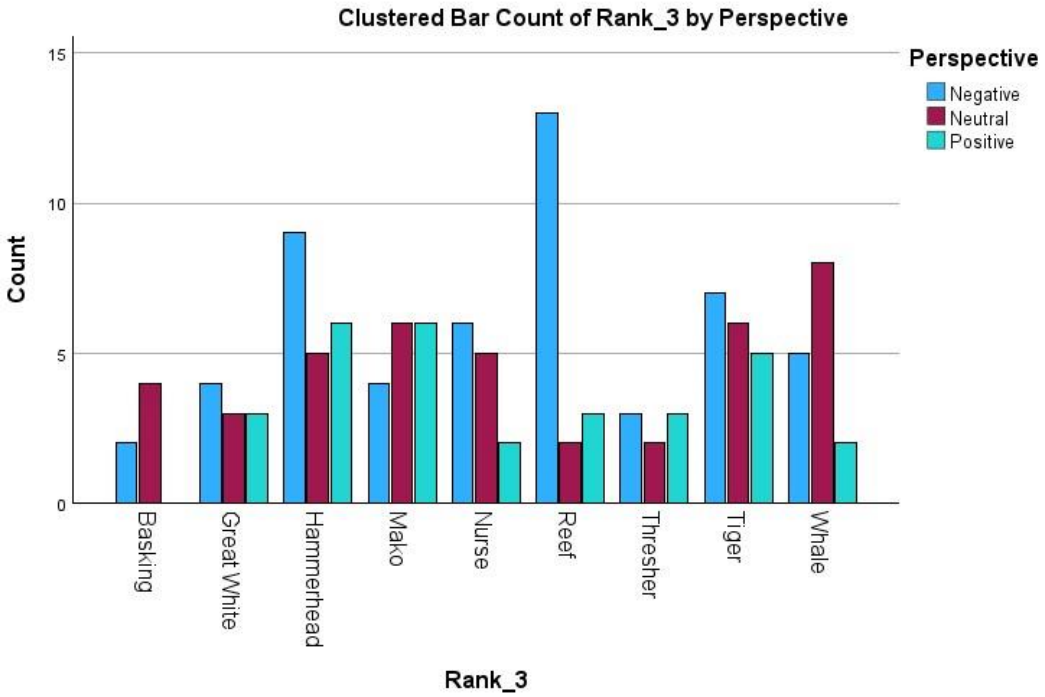
Appendix 3.10: Rank 1, Attitude vs. Knowledge of Specific Shark Endangerment



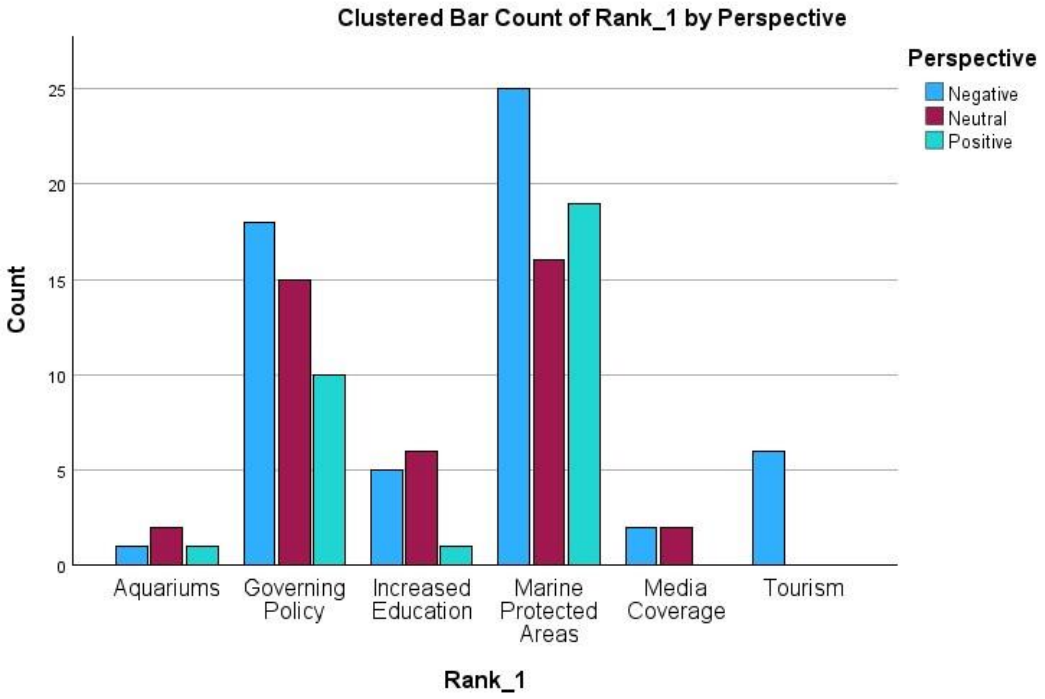
Appendix 3.11: Rank 2, Attitude vs. Knowledge of Specific Shark Endangerment



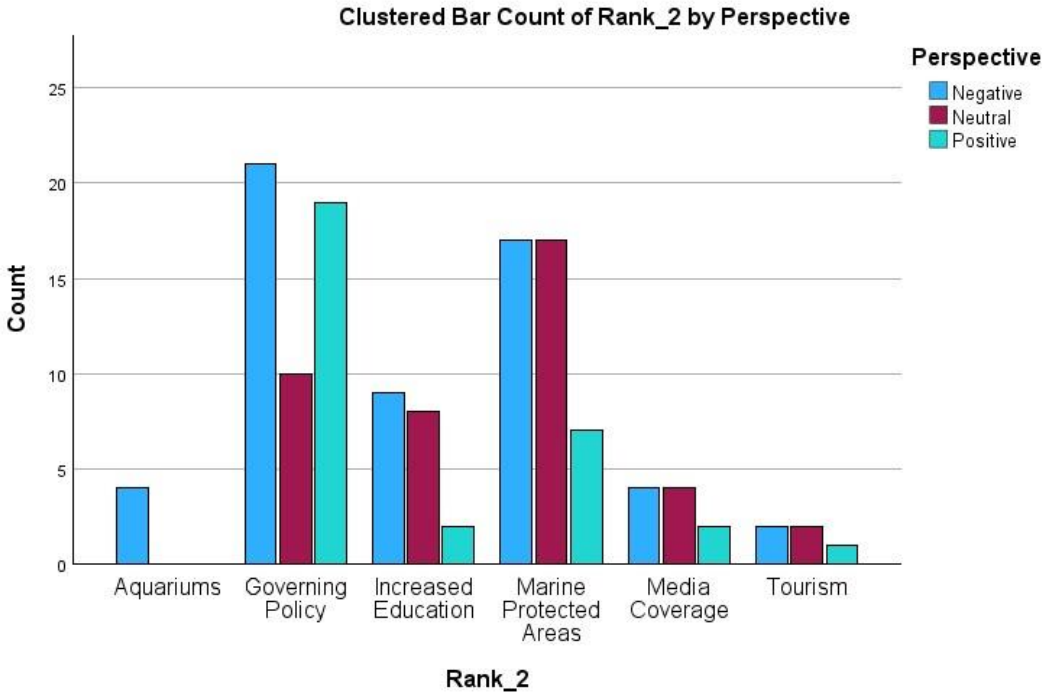
Appendix 3.12: Rank 3, Attitude vs. Knowledge of Specific Shark Endangerment



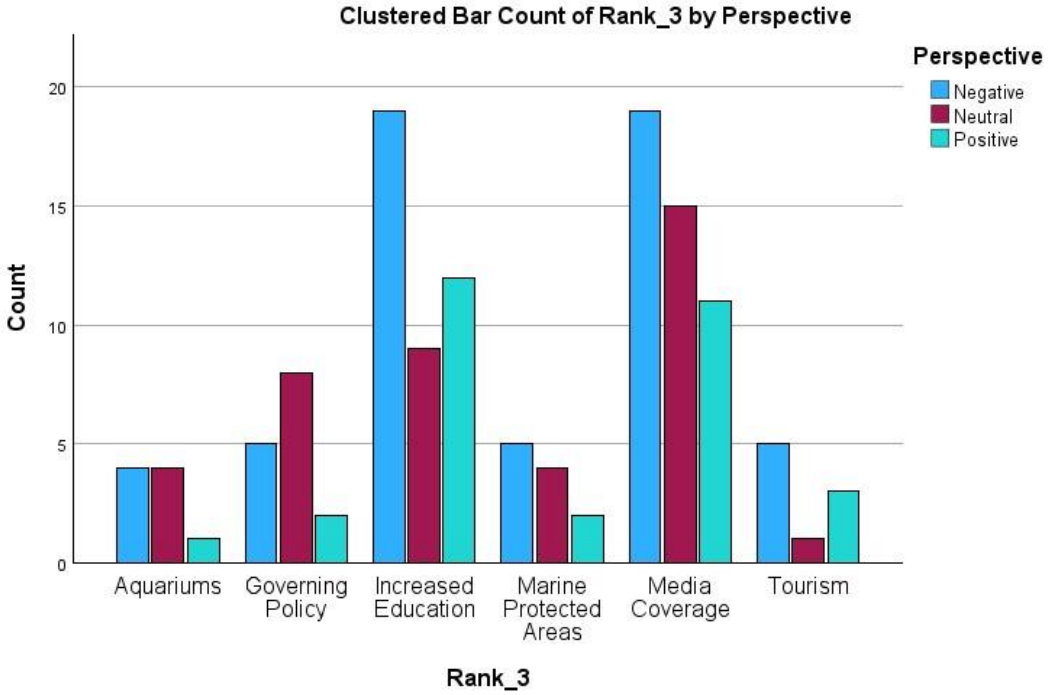
Appendix 3.13: Rank 1, Attitude vs. Understanding of Conservation Strategies



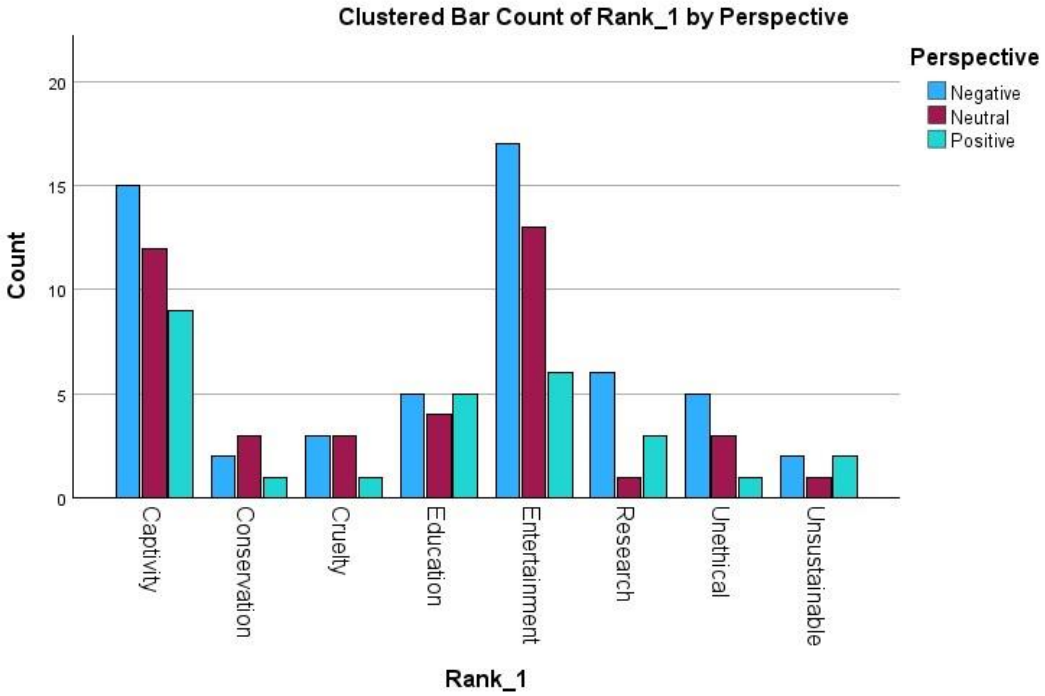
Appendix 3.14: Rank 2, Attitude vs. Understanding of Conservation Strategies



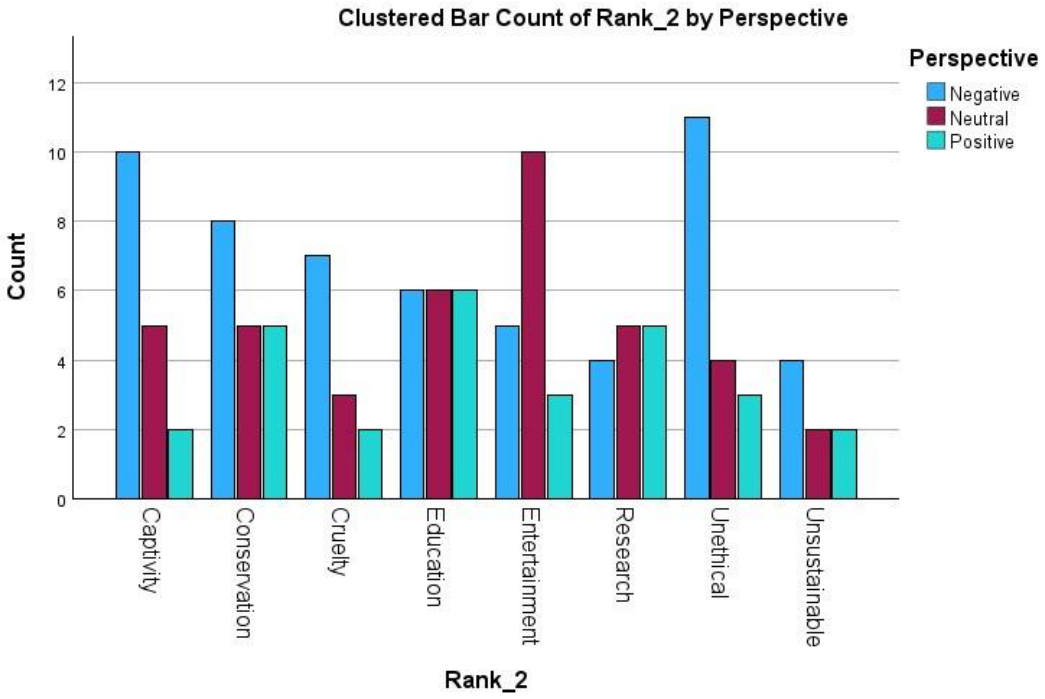
Appendix 3.15: Rank 3, Attitude vs. Understanding of Conservation Strategies



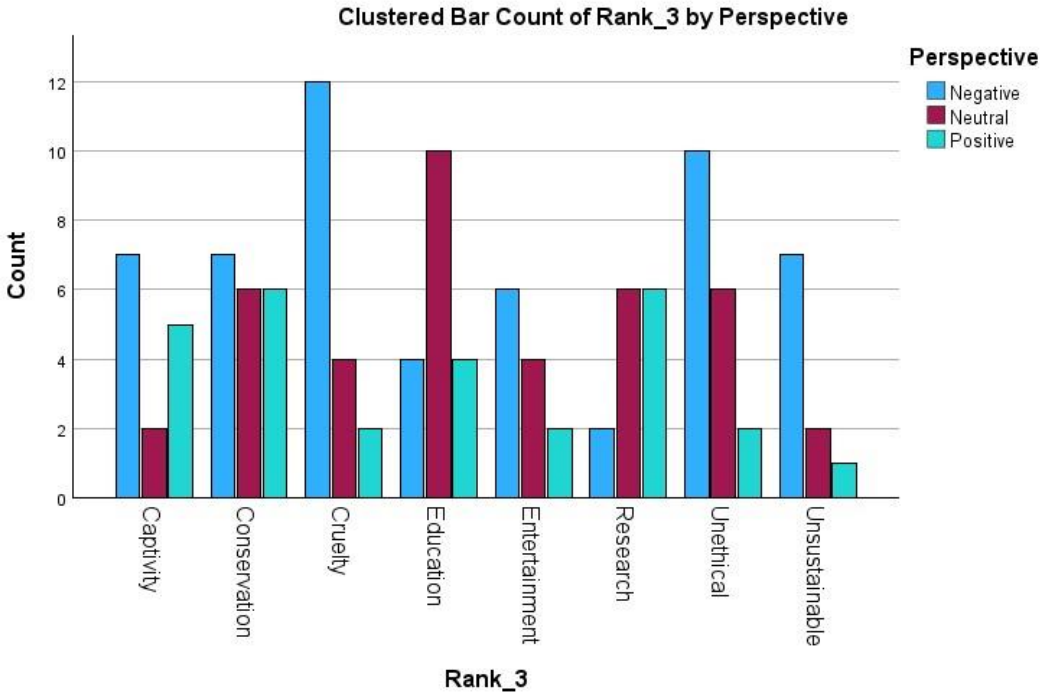
Appendix 3.16: Rank 1, Attitude vs. Perceptions of Aquariums



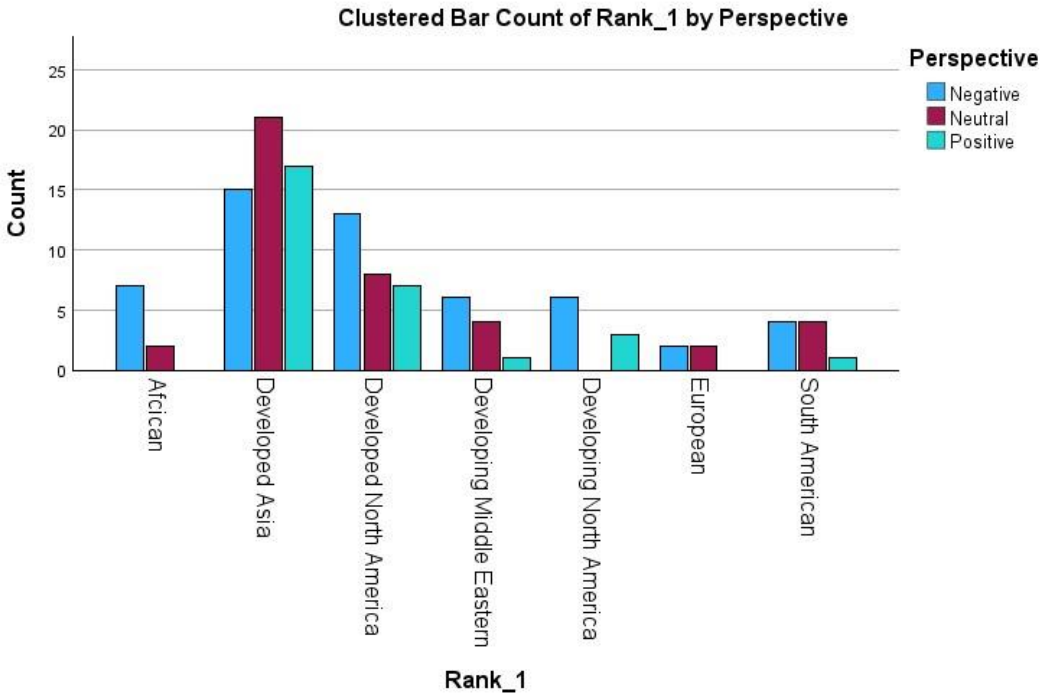
Appendix 3.17: Rank 2, Attitude vs. Perceptions of Aquariums



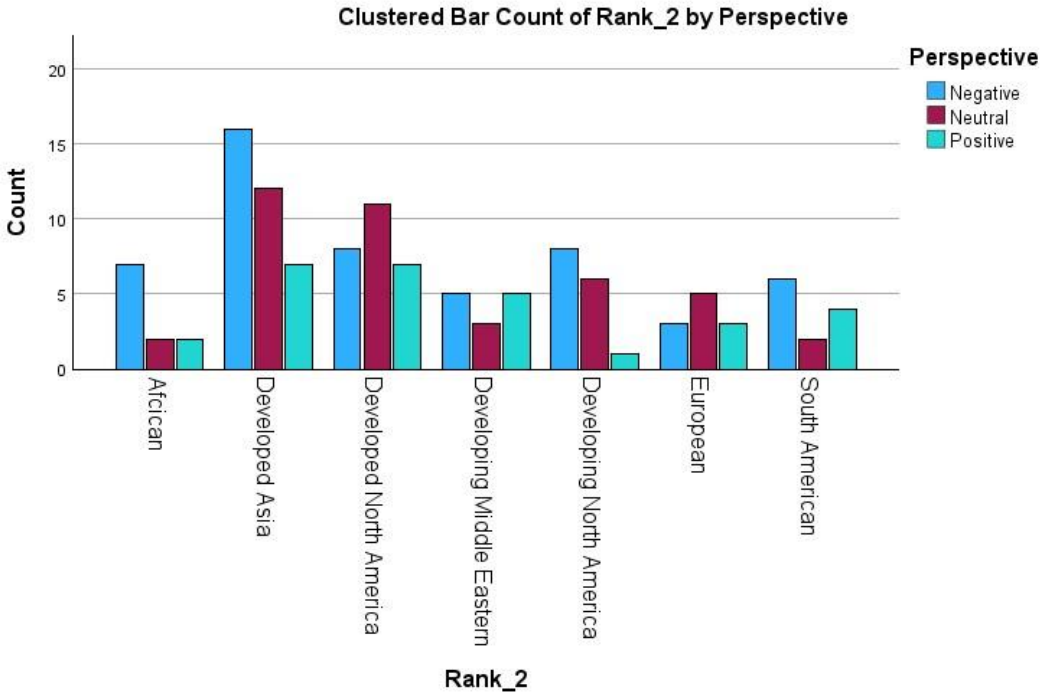
Appendix 3.18: Rank 3, Attitude vs. Perceptions of Aquariums



Appendix 3.19: Rank 1, Attitude vs. Nation-Associated Blame



Appendix 3.20: Rank 2, Attitude vs. Nation-Associated Blame



Appendix 3.21: Rank 3, Attitude vs. Nation-Associated Blame