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## Click Here Now: The Impact of Color and Size on Advertisements

Isabelle R. Fiore  
*Gettysburg College*

Celia L. Hussar  
*Gettysburg College*

Alexandra E. Lippincott  
*Gettysburg College*

Kerry E. Ullman  
*Gettysburg College*

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### Abstract

Businesses and companies are always trying to find the most effective way to advertise their products to create higher click-through rates, increasing the intent to purchase, and consequently raising sales and revenue. This research examines the effect that several different design elements of an online advertisement have on the attitudes or behaviors of consumers. An online survey was sent out to students at Gettysburg College, consisting of pairs of advertisements differing either in color, hue, or size. Participants in the online survey were asked to click on the image that they preferred. All three of these categories had a significant effect on click-through rates on advertisements. Highly-saturated advertisements were significantly preferred over the low-saturated advertisements. There was a significant difference in size preference, but the average preference was evenly split between square and vertical rectangle sizes in the shape category. Warm colors were marginally preferred over cool colors in the images that were used. These findings are important for businesses in order for them to receive the greatest number of clicks on products advertised because those clicks lead to purchases of the product. Further research could also include the examination of other characteristics of advertisements.

### Keywords

Click-through rate, color, design elements, size, saturation

### Disciplines

Advertising and Promotion Management | E-Commerce | Graphic Design

### Comments

Written for OMS 301: Research Methods

Click Here Now: The Impact of Color and Size on Advertisements

Izzy Fiore, Celia Hussar, Alix Lippincott, and Kerry Ullman

Gettysburg College

### Abstract

Businesses and companies are always trying to find the most effective way to advertise their products to create higher click-through rates, increasing the intent to purchase, and consequently raising sales and revenue. This research examines the effect that several different design elements of an online advertisement have on the attitudes or behaviors of consumers. An online survey was sent out to students at Gettysburg College, consisting of pairs of advertisements differing either in color, hue, or size. Participants in the online survey were asked to click on the image that they preferred. All three of these categories had a significant effect on click-through rates on advertisements. Highly-saturated advertisements were significantly preferred over the low-saturated advertisements. There was a significant difference in size preference, but the average preference was evenly split between square and vertical rectangle sizes in the shape category. Warm colors were marginally preferred over cool colors in the images that were used. These findings are important for businesses in order for them to receive the greatest number of clicks on products advertised because those clicks lead to purchases of the product. Further research could also include the examination of other characteristics of advertisements.

*Keywords: color, saturation, hue, location, click-through rate, banners, size, effectiveness, red and blue, design elements*

### Click Here Now: The Impact of Color and Size on Advertisements

The quickest and easiest way organizations can communicate their products or services to their target audience is through online advertisements. They reach large numbers of people instantly and can have immediate results with just a click of a button. Online advertisements are a hot topic among marketing teams and ad-agencies given how dependent humans have become of their technology, such as laptops, tablets, and cell-phones. As students interested in pursuing careers in the business world, it is important to understand the marketing world and how to best attract consumers in order to increase purchase intent. This led to the overall question, “What affects the success of an advertisement?”. This question can mean many different things: which platform has the best performance of click-through rates (Facebook, Instagram, Twitter, Snapchat, Tik Tok, etc.)? What location on the page is most effective for click-through rates (top banner, middle pop-up, along the side, etc.)? What type of language on advertisements trigger the most emotion (funny, happy, sad, mad, etc.)? And what visual cues affect the click-through rates on advertisements (font, font size, dynamic vs. static, color, size, etc.)? As shown, there are many things that can be manipulated on an advertisement that can impact how successful it is. Based on previous research done by Lohtia and Hershberger (2003), Namin and Rohm (2020), and Fernandez and Rosen (2000), our research will explore the design elements that affect the click-through rate of banner advertisements. More specifically, we will examine the influence of different colors, shades, and sizes of advertisements on the probability of click-through rates.

#### *Color Warm and Cold*

Marketers have hypothesized and studied the impact that different advertisement features have on consumer action for an extended period of time. Color, because of its ability to immediately grab attention and its nearly universal use in advertisement, is of particular interest.

Significant research has been done surrounding the attitudes and emotions generated by colors and there is a growing body of research around the impact that color has on consumers responses to advertising content.

The importance of color on brand image and personality was established in research conducted by Lauren Labrecque and George Milne (2012). While examining color's influence on consumers perception of a brand through brand logos and package design, they found that there is a strong positive relationship between specific colors and perceptions of a brand. (Labrecque & Milne, 2012). Of particular interest to future research was the linkage between the color red and excitement and the color blue and competence. While Labrecque and Milne's research is exciting for marketers because it confirms that color plays a role in consumer's perception of a brand, it did not address how color might influence consumer action, particularly in a digital environment.

The impact of color in a digital environment was initially explored in the context of grabbing a consumer's attention and consumer attitude about the advertisement (Moore, Stammerjohn & Coulter, 2005). There was a strong belief that red banner advertisements would be more likely to capture a consumers' attention than similar banner advertisements in cool colors like blue. Initial research, however, did not support the hypothesis that warm colors (i.e. red) in advertisements had a significant influence on capturing consumer attention online (Moore, Stammerjohn & Coulter, 2005). Detractors of this research point to two limitations in the study that they believe created a bias in the results: the focus on only banner advertisements and the use of a single, fictional company for the advertisements.

While grabbing a consumers' attention is an important first step in measuring an advertisement's success, influencing consumers' intent is what really matters. Research has more

recently evolved to evaluating the impact of color on consumer intent in a digital environment as measured by click-throughs. In one study, researchers monitored click-through rates on banner advertisements for an insurance company during a single calendar year and determined that banner ads that had blue as a primary color generated significantly more click-throughs than banner advertisements that had red as the primary color (North & Ficorilli, 2017). They attributed the results to the positive perception of cool colors and the fact that blue is typically the favorite color of both men and women. A second study yielded contradictory results, red advertisements had significantly higher click-through rates than blue (Sokolik, Magee & Ivory, 2014). The second study incorporated different sizes ads, different ad types and multiple advertisers to attempt to reduce bias. The research also concluded that the impact of color on banner ads was less pronounced, potentially because of the lower level of attention that banner ads receive (Sokolik, Magee & Ivory, 2014).

The research surrounding the psychological and physiological effects of color support two key theories: First, warm colors generate more attention than cool colors (Sokolik, Magee & Ivory, 2014 ) and second, warm colors generate more arousal, while cool colors generate feelings of greater relaxation and pleasure (Moore, Stammerjohn & Coulter, 2005). Our hypothesis is more related to the research conducted by Sokolik, Magee and Ivory (2014) than the work conducted by North and Ficorilli (2017) because the former study reduced the bias associated with a single ad format and a single advertiser found in the later study.

H1: Subjects will be more likely to click on a warm-colored advertisement than a cool-colored advertisement.

### *Color Saturation*

Warm and cool tones are not the only aspect of color that can be looked at in terms of advertising. Past experiments have examined the effect that color, in terms of saturation, has on an advertisement as well. Labrecque and Milne (2012) look broadly into color's importance and effect in marketing, generally. Saturation can be defined as the degree to which something, in this case color, is absorbed in comparison to the maximum degree to which it could possibly be absorbed. Certain marketing techniques use click-through rates as a particular device to measure effectiveness. These researchers used hue, saturation and value, package design, and incremental effects of color to link feelings or ideas about a particular brand with click-through rate. Higher click-through rates are correlated with intent to purchase, whether or not a consumer purchases the item after clicking on the advertisement. There are companies, like H&R Block and Victoria's Secret that have used color to rebrand their advertisements for marketing purposes and researchers are fixed on determining which color shapes consumer perceptions like brand personality, familiarity, likability, and purchase intent (Lohtia, Donthu, & Hershberger, 2003).

Research has suggested that there is an importance of ad execution cues as predictors of the attitudes that a consumer will have towards an advertisement. An ad execution cue is the way in which a marketing appeal is presented or carried out. This was tested again more recently and research has offered information regarding attitudes and behaviors towards web browsers. One of the most important characteristics of banner ads is color, which has a clear impact on consumer attitude (Moore, Stammerjohan, & Coulter, 2005). Another study considered similar aspects of color in advertising. The specific components that were targeted were hue, saturation, and lightness and the emotions that these evoked and attitudes towards them were evaluated (Lichtle, 2007).

The assumption that the influence of color varies based on the individual provides a challenge for researchers when comparing the impact on consumer behavior that saturation invokes. While color may be the main and most prominent factor in an advertisement, there is no way to avoid the presence of other characteristics. Elements in an advertisement that may affect the way a consumer perceives it are shape, font, size, and price of the product. The product category has proven to be a large component because different types of products stimulate different attitudes. In order to determine the effect that saturation has on consumers, it is crucial to keep other characteristics of the advertisement the same. The degree to which the color of the advertisement is absorbed should be the only thing to differ. Besides only testing the difference between the tone of the color as warm or cool, we also wanted to test if the saturation of the color of the advertisement had an effect on consumer preference and intention to click.

H2: Subjects will be more likely to click on a highly-saturated advertisement than a low-saturated advertisement.

### *Size*

Research on the effectiveness of online banner advertisements has also looked at the role of the size of the banner. Size, as discussed in previous research and was used in this study, has to do with the dimensions of pixels on the screen. Although various studies compare different size specifications, their results can often be generalized to broader concepts of smaller and larger advertisements. Earlier findings, like the model for how people process internet advertising created by Chang-Hoan Cho (1999), suggest that for the same product, a larger banner size produces statistically significant higher average intentions to click than smaller banners do in situations of low involvement. Thus, the assumption would be that the larger the advertisement, the higher the click-through rate will be. The more screen space being taken up,

the more likely it is to grab the attention of the viewer. However, this is not always true. In a study comparing various banner sizes of an insurance company's advertisements, it was found that there was a decrease in 0.65 clicks for every increase in 10,000 square pixels (North & Ficorilli, 2017). Potentially, people have grown accustomed to larger ads and are now less likely to click on them.

However, this is not to suggest that all large advertisement sizes are worse off. Namin, Hamilton, and Rohm's (2020) research on banner advertising involvement and effectiveness determined that among the three sizes of 468x60, 240x400, and 120x600, the size of 240x400 had the most positive impact on banner ad involvement through the number of clicks. Of the three compared, this banner would have the largest amount of square pixels, yet it significantly increased the number of clicks in comparison to the others. Similarly, North and Ficorilli (2017) also found that the 300x250 banner generated the most clicks on average, which was neither the largest nor the smallest of the six dimensions tested. In other research on responses to web advertisements, it was found that there were no statistical differences between sizes 234x60 and 468x60, which were also of medium square pixel size among the five sizes tested (Chandon, Chtourou, & Fortin, 2003). The research on the effects of size of online banner advertisements cannot simply be summarized as either larger or smaller will generate more clicks.

There is not a consensus in the current literature on the effect of size of banner advertisements on click-through rates. It seems to point to a middle ground, where ads are favored that are not too large yet not too small. Much of the current research also looks at size in conjunction with another aspect, like shape and type (Kuneinen, 2014). Based on current research, we predict that a banner of middle size in comparison with the other two options will

generate the highest levels of intended clicks. We tested the effect of size on intended clicks controlling for all other aspects of the ads.

H3: Subjects will be more likely to click on a vertical rectangle of 240x400 pixels than a full banner of 468x60 pixels or a square of 300x600 pixels.

### *Methods*

The sample size for this experiment was 60 people. Our sampling frame was students at Gettysburg College, and the only eligibility requirement was being a full or part time student of Gettysburg College over the age of 18. Nonprobability sampling was used, specifically voluntary sampling, and there was no compensation for completing the survey. Snowball sampling was also prevalent because participants were asked to send it to peers. An online survey was sent out to class year Facebook groups, group chats, and the school's daily emails. The survey was available for participants to take anytime between two weeks. At the start, it indicated that by taking and submitting the survey, they are giving their informed consent. It also included that their anonymity will be ensured. There were three neutrally-colored products that are equally displayed in the advertisements: a sweatshirt, water bottle, and phone case.

The survey had 12 total questions with the first nine serving to test our three hypotheses and the last three providing demographic information of gender, age, and class year. The participants were given either 2 (to test H1 and H2) or 3 (to test H3) different images per question and were asked to choose the ad image that they would most likely click on, or they could choose the option "equally likely". Hypothesis 1 incorporated answers from questions 1, 3, and 6. For each of these questions, one of the products was presented on either a blue background, indicating cool-colored, or a red background, indicating warm-colored. The responses from the three questions were aggregated through averaging to compare scores for

warm-colored and cool-colored clicks. Hypothesis 2 incorporated answers from questions 5, 7, and 9. For each of these questions, one of the products was presented against a highly-saturated background and a low-saturated background of either green, blue, or purple. Similarly, the responses from the three questions were aggregated through averaging to compare scores for highly-saturated and low-saturated clicks. Hypothesis 3 incorporated answers from questions 2, 4, and 8. These questions presented one of the products in advertisements of the three different sizes: a full banner of 468x60 pixels, a vertical rectangle of 240x400 pixels, and a square of 300x600 pixels. The responses from the three questions were averaged in order to compare click scores across the three sizes.

Hypothesis one tested the participant's preference for red colors over blue colors and tested preference via one-sample t-test proportions. Cool-colored was coded -1 and warm-colored was coded as 1, with equally likely coded as 0. Hypothesis two also used one-sample t-test proportion to test the participant's preference to highly-saturated advertisements over low-saturated advertisements. Low-saturated was coded as -1 and highly-saturated was coded as 1, with equally likely coded as 0. Hypothesis three tested the preference of a specific size advertisement over another and was tested with a one-sample t-test proportion. A full banner of 468x60 pixels was coded as 1, a vertical rectangle of 240x400 pixels was coded as 2, a square of 300x600 pixels was coded as 3, and equally likely was coded as 4. We tested whether there was a significant difference from the null of equally likely, and then used confidence intervals to test where the preference lies. The data that was collected from these tests determines how the preference of color (red and blue), color saturation, and size affect subjects' likelihood to click on an advertisement.

### *Results*

### *Descriptive Statistics*

The average age of students in the sample was 20.47 years ( $SD = 0.96$ ) with age 21 making up the largest age group of responses (43%). The age range of respondents was between 18 and 22. Age 20 made up the second largest group of respondents (27%), followed by 19 years old (17%), and then age 22 (12%), with only 1% of subjects being age 18. Exactly three quarters (75%) of our sample subjects were female and the rest identified as male. Almost half (48%) of the subjects were in the class year of 2021. The class of 2022 (23%) and 2020 (20%) made up the next largest groups, with 8% being from the class year 2023. On average, there was a 44% preference for warm-colored advertisements, 34% preference for cool-colored advertisements, while 22% did not show a strict preference (see Figure 1). Similarly, there was a 53% average preference for highly-saturated advertisements, 33% preference for low-saturated, while 14% did not show a strict preference for either (see Figure 2). For size, there was an average preference of 24% for a full banner, 37% preference for vertical banner, 38% preference for square, while 1% did not show a strict preference for any size. (see Figure 3).

### *H1- Warm or Cool-colored*

For H1, we hypothesized that subjects would be more likely to click on warm-colored advertisements than cool-colored advertisements. To address this hypothesis, a one-sample t-test was conducted. Our finding marginally supports our initial hypothesis. There is a marginally significant difference in subject's preference for warm-colored advertisements over cool-colored advertisements ( $M = 0.1$ ,  $SD = 0.49$ ),  $t(59) = 1.59$ ,  $p = 0.06$ , 95 % CI [-0.03, 0.23]. The average preference was 10% more for warm-colored advertisements over cool-colored advertisements.

### *H2- Saturation*

For H2, we hypothesized that subjects would prefer highly-saturated advertisements over low-saturated advertisements. To address H2, a one-sample t-test was conducted. Our finding supports our original hypothesis. There was a significant difference in saturation preference, and subjects preferred the highly-saturated advertisements compared to low-saturated advertisements ( $M = 0.2$ ,  $SD = 0.64$ ),  $t(59) = 2.43$ ,  $p = 0.02$ , 95% CI [0.04, 0.36]. The average preference was 20% more for highly-saturated advertisements than low-saturated advertisements.

### *H3- Size*

For H3, we hypothesized that subjects would click on the vertical rectangle of 240x400 pixels rather than a full banner of 468x60 pixels or a square of 300x600 pixels. To address this hypothesis, a one-sample t-test was conducted. Our finding was significant to reject the null hypothesis, but it did not fully support our specific hypothesis. There was a significant difference in advertisement size preference, ( $M = 2.17$ ,  $SD = 0.38$ ),  $t(59) = -37.29$ ,  $p < 0.01$ , 95% CI [2.07, 2.27]. However, there is no clear majority preference across the three options as average preference was pretty evenly split between the vertical banner at 37% and the square at 38%. However, both were preferred to the full banner with the average preference being 13% to 14% higher than that of the full banner.

### *Discussion*

To reiterate the results reported above, our first hypothesis stated that warm color advertisements would be preferred over cool color advertisements. This idea is supported, and the relative frequencies reinforce that warm colors were slightly preferred. Therefore, we can assume that if this experiment was conducted again with a larger sample size, there would be stronger evidence to support our first hypothesis. The second hypothesis assumed that subjects would prefer highly-saturated advertisements over low-saturated advertisements. Results showed

that there was a significant difference for this factor, meaning that our hypothesis was correct because subjects did prefer highly-saturated over low-saturated. Based on findings in past research by North and Fidorilli (2017), our last hypothesis was that subjects would prefer a vertical rectangle over a banner or square size. This hypothesis was not supported, as there was a significant difference in preference for size of advertisements, but there was not a clear majority preference between the three sizes. Still, the majority of preferences were split between a vertical rectangle and square, suggesting that they are still preferred to a full banner.

### *Implications*

The findings from the results are relevant to three groups: advertising and marketing agencies, advertisers, and content publishing groups. These groups can look to these results to pinpoint the importance of size, color and saturation levels on click through rates. Understanding how to use these three aspects of online advertisements is essential for these groups due to how much time consumers are spending on their electronic devices, including during the current global pandemic. During the design process, these groups can implement the results, suggesting that vertical rectangles and square sizes with higher saturation of warm colors are preferred, into their work to increase consumer click-through rates.

With further research, companies will be able to create an extensive portfolio on advertisement best practices to generate the highest consumer click-through rates providing for increased profit. Groups selling their advertising work to other companies can help increase return on spending for advertisements with the increased knowledge on best practices. Lastly, online publisher groups now have the ability to use color, saturation, and size to make their websites or online platforms more appealing.

### *Limitations and Future Research*

Limitations in the study include the diversity of the sample, the overall sample size and the hypothetical nature of the study. Considerably more females than males answered the survey; therefore, our research applies more to female consumers. The participants were 75% female, but with an equal balance in gender, the participants in the survey could have different preferences due to gender. This limitation could be grounds for further research into whether gender affects preference for the categories examined. With only 60 participants in our survey, the sample size is also a limitation in this research study. Increasing the sample size might be most relevant for our marginally significant results on advertisement color in H1. Finally, our survey was conducted using hypothetical advertisements rather than tracking click through rates on live e-commerce sites. A study with actual clicking and purchasing behavior of consumers would have higher validity. Further research on click-through rates could examine other aspects and characteristics of advertisements, such as the placement of an ad on the screen, the specific words used, or the types of images placed within the advertisement.

### *Conclusion*

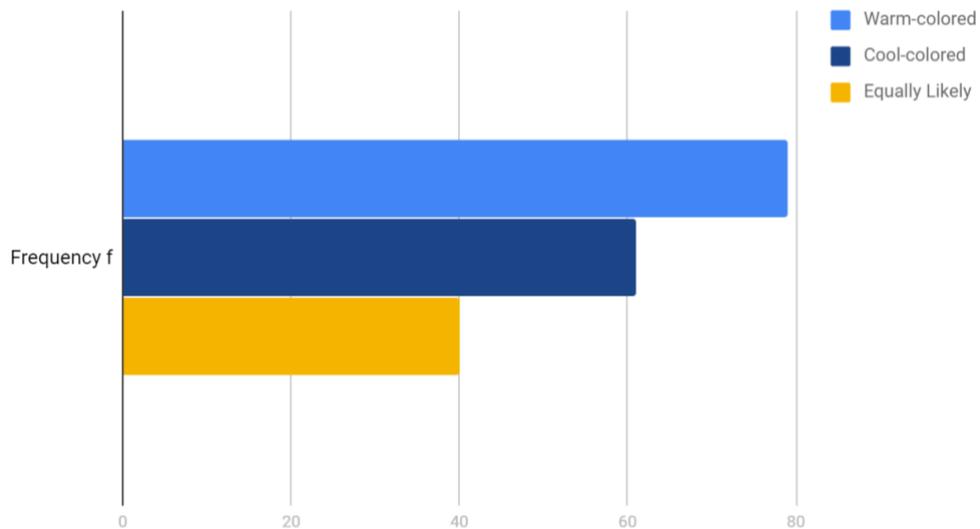
The results of this study demonstrate that color, saturation, *and* size have the potential to positively impact click-through rates. In order to capitalize on the number of clicks that an advertisement will receive, companies should incorporate highly-saturated, warm colors that are formatted in a vertical rectangle or square shape. It is applicable to any managerial field as advertising is prevalent for all products in this period fueled by technology. There is high competitiveness for similar products and so management and marketing need to focus on standing out, with these results suggesting ways to do so.

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## Figures



*Figure 1.* Frequencies of color preference variable. The frequency refers to the totals across the three questions designated to this hypothesis. WC = warm-colored vs. cool-colored variable.

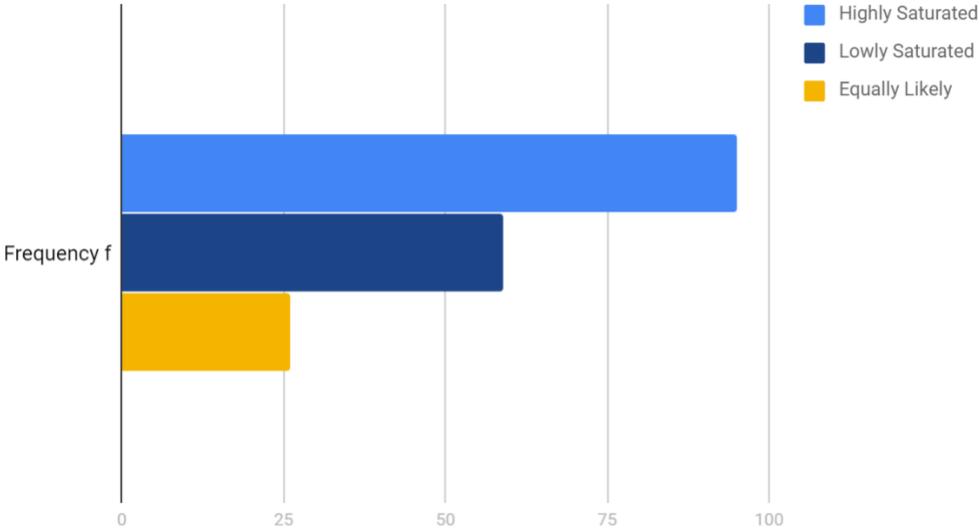


Figure 2. Frequencies of saturation preference variable. The frequency refers to the totals across the three questions designated to this hypothesis.

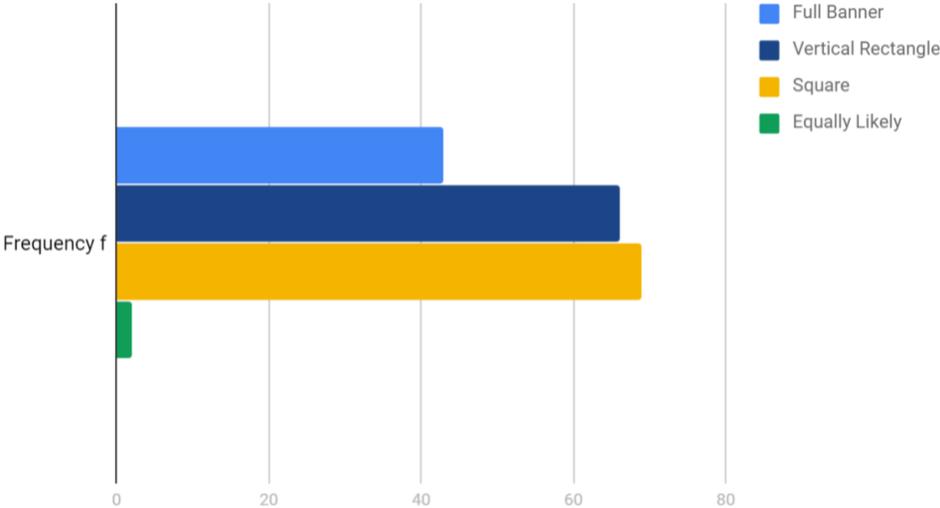


Figure 3. Frequencies of size preference variable. The frequency refers to the totals across the three questions designated to this hypothesis.

Appendix

Thank you for taking this quick survey!

Disclosure: By taking and submitting this survey, you are acknowledging that you are over age 18 and are giving full consent for your responses to be included in an OMS 301 Research Methods study. You and your answers will remain completely anonymous.

For questions 1-9, please choose the ad image you would be most likely to click on:

1.

A.



B.



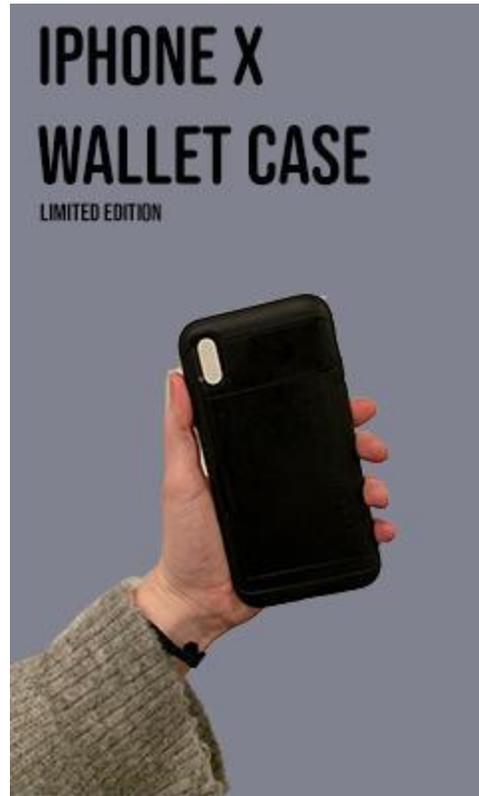
C. equally likely

2.

A.



B.



C.



D. equally likely

3. A.



B.



C. equally likely

4.

A.



B.



C.



D. equally likely

5. A.



B.



C. equally likely

6. A.



B.



C. equally likely

7.

A.



B.

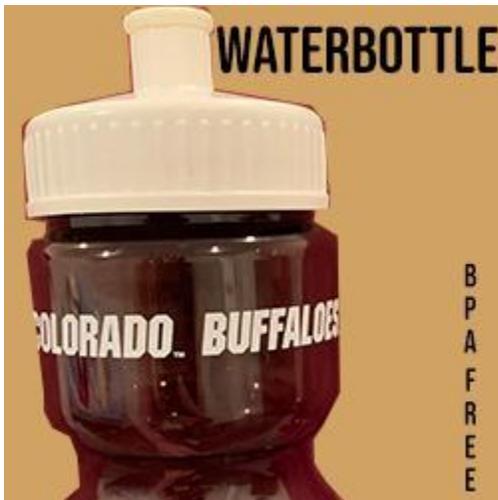
C. equally likely

8.

A.



B.



C.



D. equally likely

9. A.



B.



C. equally likely

10. Please indicate your gender:

- A. Male
- B. Female
- C. Nonbinary/gender-fluid
- D. Other

11. Please indicate your age:

A. 18

B. 19

C. 20

D. 21

E. 22

F. 23

G. 24

Other: \_\_\_\_\_

12. Please indicate your class year

A. 2020

B. 2021

C. 2022

D. 2023

Other: \_\_\_\_\_