

Sprint 4

Group 6

Julianne Berry-Stoelze (jjb389), Sia Harisingani (ssh96), Jemimah Osei (jko35), Kelly Zhang (kjlz8),
Megan Wong (mww68)

TABLE OF CONTENTS

PART 1: Understanding the Customer.....	2
1A. Hypothesis.....	2
1C. Questionnaire Response Analysis.....	2
PART 2: Product Specifications.....	3
2A. Identifying Metrics.....	3
2B. Creating and Testing Metrics.....	4
2C. Intangible Needs.....	5
PART 3: Consumer Co-Creation.....	6
REFERENCES.....	9
APPENDIX.....	10

PART 1: Understanding the Customer

1A. Hypothesis

People use social media to stay connected and interact with others. This goes along with the premise of humans as inherently social beings, with a natural desire to understand the world around them. Social media satisfies the social aspect by providing a means to stay updated on the lives of friends and family, while also allowing people to share their own thoughts and experiences. Moreover, it is an endless source of information on topics such as current events, trends (fashion, technology, etc.), and new places to explore or things to try. Many users also engage in social media for entertainment purposes, where content consumption often leads to “mindless scrolling,” but still pertains to information processing in a more passive manner.

Ultimately, social media serves as a platform that offers a combination of social connection, information gathering, and entertainment. As a result, it appeals to humans’ innate behaviors, where people use it to engage with others and gain information through a shared digital community.

1C. Questionnaire Response Analysis

The results of our survey represent a demographic of people aged 21-23, with the majority being college students (75%). Of these respondents, we found that most users spend at least 1-2 hours a day on social media, if not more, up to a maximum of around 5 hours. When prompted with statements to rate why they use social media in general, respondents demonstrated that the main reasons were to:

- Connect with friends (75%)
- Decompress or mindlessly scroll (83.3%)
- Find new places to go or new things to try (50%)

Other reasons such as staying updated with what’s happening in the world and updating others on their own lives were split relatively evenly between agree and disagree, and the majority stated that they do not use social media to connect with people with similar interests.

In terms of the most widely used platforms, Instagram was the most popular, followed by TikTok. The main features used on these platforms tended to be posts and stories (both viewing other people’s and posting their own), Instagram reels or TikTok’s “For You Page,” and group chats or DMs to share things such as memes with friends. The most commonly stated reasons for why respondents use their selected platforms included that they provide entertainment, where they could access instant content and a large variety of it, as well as a source of information, where they could view updates on topics they care about. Additionally, respondents said that they use social media because everyone else is on it, and like seeing what their friends are doing, or sharing their own activities.

Looking at the four pleasures in experiencing a product, social media seems to satisfy the socio and ideo pleasures. Socio-pleasure relates to the enjoyment of social interaction, which is generally the main purpose of social media, as it offers a space to engage with communities with various ideas, trends, or beliefs. The majority of survey respondents agreed that they use social media to connect with friends,

allowing them to maintain relationships through messaging or interacting with posts. Through posts, users can share experiences with each other both by sharing updates from their own lives and sharing posts that they think friends might enjoy. At the same time, *ideo-pleasure* is satisfied, which relates to people's values and aspirations. Through social media, users can discover new information and explore different viewpoints, which plays a role in shaping their own personal opinions. This most commonly comes in the form of Reels or TikTok, where "For You Pages" are built with algorithms that expose users to videos that relate to topics they have previously shown interest in. As a result, users are introduced to creators that are like-minded or have similar values. By blending these two pleasures, social media has become an integral part of daily life, appealing to people's desire for social interaction and curiosity.

Furthermore, social media satisfies needs aligning with Maslow's hierarchy of needs. More specifically, the psychological needs of belongingness and esteem, as well as self-fulfillment. The main reasons people use social media (connecting with others and mindless scrolling to decompress) suggest that these platforms provide both social fulfillment and a digital way to escape real life. Users seek a sense of belonging by staying in touch with friends, sharing experiences, and engaging in entertainment together, such as sending memes or reacting to posts. Additionally, it contributes to esteem needs, allowing individuals to curate their online presence, receive validation through likes and comments, and share achievements or personal updates. Platforms like Strava demonstrate the catering to self-fulfillment needs, as people use it for personal growth in their fitness endeavors by tracking their own activities and participating in shared challenges. It also offers a form of motivation by seeing what other connections have accomplished or are working towards.

These insights highlight opportunities for designing new social media products that enhance user interaction, entertainment, and information-sharing. Since connection is a key motivator, new platforms or features should encourage direct engagement, whether through collaborative content creation, group challenges, or interactive messaging formats. Additionally, because entertainment plays a major role, integrating features like personalized content feeds, gamification, or interactive media formats can increase user retention. Another important takeaway is that users are curious and eager to discover new places, trends, and ideas, which suggests that new products could focus on providing fresh, relevant content that aligns with users' interests. Lastly, given the balance between passive and active engagement, successful platforms should create a seamless experience where users can both consume content effortlessly and participate meaningfully when they choose to engage.

PART 2: Product Specifications

2A. Identifying Metrics

Metric 1:

This first metric measures the friction between the pen and paper. To do this, a pen is held at a 45° angle to a regular sheet of printer paper and pressed onto the page with 5 pounds of force. The amount of force required to move the pen horizontally along the paper is measured, as this movement is working against the friction between the pen and the paper. This entire test can most accurately be performed by a machine with built-in strain gauges, but can more loosely be performed by hand. The friction force is important because it is uncomfortable for consumers to have to use a lot of force while writing, especially when

they are writing for extended periods of time. Additionally, the lower the friction of the pen moving across the paper, the smoother the writing experience will be for a consumer.

Metric 2:

The second metric measures the consistency of the ink flow rate out of the pen by evaluating line thickness. The pen is once again held at a 45° angle to a regular sheet of printer paper. Ten one-foot-long lines are drawn on the paper with a force of 5 pounds. The resulting line thicknesses are analyzed to ensure that they stay within a desired range based on the specifications of the pen. A follow-up test would be writing for 30 minutes with the pen to ensure there are no pauses in the ink flow. An additional visual inspection for air bubbles in the ink tube will also be performed. Overall, testing for ink flow consistency tests for continuous quality in the writing experience. The more ink comes out of the pen, the easier the pen glides across the page. On top of that, consumers would not want to either run out of ink in the middle of writing or have large blobs of ink come out, as this would harm the flow of writing.

Metric 3:

The third metric measures the ability of the pen to write at differing angles to the page. Here a pen is moved across the page as its angle to the page is varied between 15° and 90°. Both the force required for the movement and the resulting line thickness are measured. The test is successful if there is no significant change in the required force (less than a 2% change) and the line thickness remains within the bounds chosen for metric two. Having a pen maintain consistent performance at different angles is important because if a consumer changes the angle between the pen and the page while writing, they would not want that to have an abrupt change or a noticeable difference in the smoothness of writing. Also, everyone has a different writing style and different-sized hands, so the angle of the pen to paper will vary and the smoothness of the writing experience should not change.

2B. Creating and Testing Metrics

A metric that can be used to assess the ability of a roofing material to last for many years is impact resistance. Throughout the lifetime of a roof, it has to survive the impact of weather, such as rain and hail, as well as larger impacts from debris, such as a branch hitting the roof (D. S. B. Construction 2024). After these impacts, it's important to ensure the roof remains structurally sound and waterproof. Of course, unlikely extreme forces, such as a tree falling on the roof, are generally not factored into the design because these would require dramatic increases in prices that would not pay off for the majority of consumers.

The impact resistance of the shingles can be tested by launching a variety of different objects at the shingles with different forces and at different angles. A potential test plan is outlined below. Here the shingles are mounted on a slanted surface to represent a section of a roof on a house, without any additional support than what they would have on a roof itself to as closely mimic real-world scenarios as possible. The entire test takes place in an enclosed chamber.

- A 10-pound branch is dropped on the roof section from a height of 20ft a total of 20 times
- A 20-pound branch is dropped on the roof section from a height of 20ft a total of 5 times

- Hard half-inch-diameter pellets are launched at the roof section at a speed of 10 m/s for an hour (mainly from above, but with angles varying up to 15°)

Once all the impact testing is complete, the shingles will be inspected to determine if they pass testing. This inspection involves visually checking the shingles for cracks or tears on their surface and hosing them down with a stream of pressurized water to make sure they remain waterproof and don't move under the force of the water. This test ensures that the shingles would survive a branch falling on the roof as well as the force of hail and rain.

Other failure methods of roofs also exist, including the material degradation of the shingles from UV light or organic growth on the roof (D. S. B. Construction 2024). While these should be factored in to gain a better overall understanding of the durability of a roof, the impact resistance of the roof is a good starting point for comparing various roof shingles. Additionally, UV degradation and organic growth are significantly slower-acting failure methods, meaning they will only become an issue later on in the lifetime of a roof if the roof has a high enough impact resistance to survive that long. This makes impact resistance the most important metric of roof durability.

2C. Intangible Needs

Aesthetic:

Our first intangible need is an aesthetically pleasing bicycle. A “nice” looking bicycle needs to meet a specification of a sleek design which includes smooth paint and clean welding. To test whether a bicycle meets the requirements of having an aesthetically pleasing design, we will conduct an experiment in a bicycle store. The method of the experiment will consist of a control bicycle and a bicycle which we would like to test for aesthetic appearance. Most bicycle stores have a bicycle displayed in the store's front window to draw in customers who are window shopping. We will measure how many people enter the store across a time span of one month using the current bicycle they have in the window. Next, we will swap out the current bicycle with one that we think is aesthetically pleasing and compare the number of customers who come in with the previous bicycle. To account for different consumer behaviors at different times of the month, we will run this experiment for both bicycles over the course of a full month. If a bicycle brings in 20% more customers compared to the control bicycle then it will be considered aesthetically pleasing and meet our specification of a sleek design. Drawing from the Kansei engineering concepts in lecture, we believe that aesthetics are an important part of consumer behavior toward products. A consumers' emotional feelings toward a product are just as influential toward purchase behavior as functional capabilities are. Eliciting a positive feeling toward the bicycle could help the consumer imagine a positive user experience before even purchasing the product.

Reliability:

Our next intangible need is reliability. We will define a specification for this need as no functional degradation or structural failure of the bicycle frame throughout a period of 5 years while sustaining intended use in common conditions. The reason we will focus on the bicycle frame is because individual parts such as the gears and brakes could have varying degrees of wear and tear based on frequency of user usage. To test this we'll use fatigue testing under different weather conditions. We'll simulate riding the bicycle in rain, snow, and sunny weather conditions. Road conditions on which the bicycle will be ridden

include gravel, pavement, and dirt. Since we are assuming that our bike is not a specific use bike in extreme conditions such as a mountain bike, we will limit our road conditions to these. Actions on the bike include braking, sharp steering, and forceful pedaling. Measuring the stress at different points of the bike frame can help us to predict whether this sustained stress for the normal riding frequency across 5 years will break the bike or not. If any part of the bike frame bends or breaks during this test or it is enduring unsustainable stress, it will fail to meet the specifications necessary for reliability. If the projected stress on the bike from the test is manageable for the time frame of 5 years of continuous regular use, it will pass the test for reliability. This specification of no functional degradation or structural failure is important for consumers to have confidence in their purchase for long term use. Since individual parts of the bicycle such as the brakes and gears can be replaced, we are focusing on the integrity of the bicycle frame. Additional tests could be conducted for individual parts, and the bicycle company might need to reconsider switching the manufacturers of the parts if they don't withstand the stress of the test.

Comfort:

Our last intangible need is a comfortable bicycle. A specification for measuring comfort in the bicycle is maintaining a smooth ride for the rider despite uneven textures in riding paths. To test for this requirement we will conduct an experiment where riders of different body sizes ride the bicycle for 2 consecutive hours while sensors measure vibrations and ergonomic sensors to measure seat comfort. Riders will also be surveyed on their perceived comfort level on a scale of 1-10. The bicycle will be ridden over bumpy surfaces including gravel and potholes to test its ability to absorb and shield the rider from impacts. If the bicycle is able to absorb at least 70% of impact forces and riders report a mean score of at least an 8 out of 10 rating in perceived comfort then the bicycle will pass the comfort test. We think this specification is important to the user experience because comfort dictates how often an owner will ride a bike after purchasing. Low comfort might deter riders from frequently using their bicycle as a mode of transportation. This will impact our retention rates as customers will likely not be repurchasing a bicycle in the future. Comfort is a basic necessity to the user experience of riding a bike, so it is a must-be feature based on the Kano model.

PART 3: Consumer Co-Creation

3A. “Fuzzy Front End”

The "fuzzy front end" refers to the early stage in the new product development (NPD) process. It starts when an opportunity for a new product is identified and ends when the concept is defined well enough to move into development (Tidd and Bessant, 2009). What makes it “fuzzy” is its high levels of ambiguity—there’s often no clear path, and ideas are still forming.

In the context of consumer co-creation, the fuzzy front end serves as a key opportunity area. Rather than relying solely on internal R&D or marketing, companies can invite real consumers to help shape early-stage ideas. Involving consumers at this stage helps generate fresh, original, and feasible ideas that the company’s internal team might not have imagined Filieri (2013). For a brand like Lay’s, where flavor

and novelty are core to the product's appeal, inviting consumers into the idea-generation process ensures the end product better reflects real cravings and market desires.

3B. Co-development methods

To develop a new Lay's flavor that resonates with consumers, we would like to use co-development methods that reflect how people already engage with food, flavor, and brands.

- **Small-group flavor meetups**

Lay's could partner with grocery stores or cafés to host experimentation events where consumers build flavors using either physical ingredients (mixing herbs and spices to explore seasoning) or a digital touchscreen interface (selecting spice level and ingredients via an interactive screen). Lay's could then use this data to identify emerging preferences and flavor combinations.

- **Flavor input cards in chip bags or QR codes**

Lay's could place QR codes inside chip bags that link to a simple 3-question form: "What's your favorite dish?", "What spice do you love?", "What would you call your chip?" This is based on Filieri's findings that consumers contribute freely when it's easy, informal, and transparent. This continuously generates fresh consumer ideas.

- **TikTok collaborations**

Lay's could partner with popular food creators to issue flavor prompts like "Turn your childhood meal into a chip." Fans stitch or comment with ideas, and the creator selects a few flavors to experiment with using various ingredients from their kitchen, on camera.

- **Grocery store taste testing**

Taking a cue from Fuller (2010), Lay's could set up temporary tasting booths in high-traffic areas such as supermarkets or college campuses, offering mini samples of unreleased chip flavors. Shoppers vote using a tablet or QR code, and the most-liked ones advance to limited-edition testing.

3C. What role do marketing research agencies play in the facilitation process of consumer co-creation? How could you leverage one to ensure a good outcome?

Marketing research agencies are key facilitators in the consumer co-creation process, ensuring consumer co-creation is possible especially in the early, uncertain stages of new product development. Hughes, Vafeas and Hilton (2018) describe marketing agencies as resource integrators that serve to mediate the operant resources of brands and audience members and guide the co-creative efforts between the two. In this capacity, agencies assist clients (such as Lay's) in discovering meaningful insights, defining design challenges and listening to feedback from diverse consumer voices. One important insight of the study is that the success of co-creation is reliant not only on the resources contributed by each party but also on their organization's penchant for integrating and leveraging each other's resources with time (Hughes et al., 2018, Section 6.2). Research organizations can help integrate diverse consumer feedback into meaningful insights, empowering clients to make consumer-driven strategic decisions. An agency might analyze TikTok challenge replies, categorize them into themes, and determine which are most relevant to current market trends and Lay's brand equity. Additionally, the study highlights the need for agencies to engage in trust-building and creative competence with their client relationships so that their long-term value is guaranteed (Hughes et al., 2018, Section 6.3). This comes in handy especially when clients such

as Lay's might not be equipped to judge creative flavor ideas from consumers. This evaluation process can be guided by an experienced agency to balance feasibility with innovation. Finally, the research calls for using a resource integration framework (Hughes et al., 2018, Section 7.3) to structure feedback sessions and post-project evaluations, which would enable Lay's to modify its internal processes and future co-creation campaigns iteratively. In essence, marketing research agencies do much more than gather data, they amplify the brand's capacity to co-create, synthesize, and act on consumer-driven ideas with impact. For integrating and leveraging each other's resources with time (Hughes et al., 2018, Section 6.2)

3D. From the 'CB As I See It' article, explain the concerns you may have of letting consumers know that other consumers were involved in the decision making process. Although she speaks particularly about ad creation, extrapolate her general findings and apply them towards the product you are wanting to release.

According to Debora Thompson's research, disclosing consumer co-creation can lead to suspicion about the contributors' competency, especially if they believe it requires culinary or branding experience to make an effective product. Announcing a new flavor co-created with consumers might be counterproductive for a business like Lay's if not strategically positioned. Lay's could position contributors as passionate and informed food enthusiasts with shared beliefs, rather than "random consumers." Marketing initiatives can boost trust by highlighting customers' backgrounds, favorite flavors, or brand loyalty.

3E. Please include one more aspect of consumer co-creation that you happen to find that would be relevant to helping you create a great product for your consumers by working with them on it.

Providing shafts of transparency, as a key element of consumer co-creation, engenders trust. Demonstrating how customer input drives the development of the products they build fosters greater bonds, and feelings of connectedness, between brands and customers. According to Füller (2010), individuals are driven toward co-creation if they perceive that their contributions have value and can influence the end product. For Lay's, transparent communication of the flavor idea review, test and selection process could make those who submitted ideas feel like they were heard and appreciated. This process makes the product more relevant and bridges the gap between the brand and consumers.

REFERENCES

- [1] D. S. B. Construction (2024, August 2). 5 common causes of shingle damage and deterioration. D.S. Bahr Construction, Inc. <https://www.dsbahr.com/5-common-causes-of-shingle-damage-and-deterioration>
- [2] Hughes, T., Vafeas, M., & Hilton, T. (2018). Resource integration for co-creation between marketing agencies and clients. *European Journal of Marketing*, 52(5/6), 1329-1354.
- [3] Filieri, R. (2013). Consumer co-creation and new product development: a case study in the food industry. *Marketing Intelligence & Planning*, 31(1), 40-53.
- [4] Füller, J. (2010). Refining virtual co-creation from a consumer perspective. *California management review*, 52(2), 98-122.
- [5] Tidd, J. and Bessant, J. (2009), *Managing Innovation: Integrating Technological, Market and Organizational Change*, Wiley, New York, NY.

APPENDIX

Questionnaire

Social Media Questionnaire

Please fill out this quick survey!

* Indicates required question

How old are you? *

Your answer

Are you a college student? *

☐ Yes

☐ No

What gender do you identify as? *

☐ Male

☐ Female

☐ Other:

On average how many hours do you spend on social media a day? *

☐ Less than 1

☐ 1-2

☐ 2-3

☐ 3-4

☐ 4-5

☐ 5+

Social Media Questionnaire

* Indicates required question

Consumer Beliefs

On a scale of 1-5 how much do you agree with the following statements?

I use social media to connect with friends. *

1 2 3 4 5
Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

I use social media to update people about my life. *

1 2 3 4 5
Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

I use social media as a way to decompress/mindlessly scroll. *

1 2 3 4 5
Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

I use social media to stay updated on what is happening in the world. *

1 2 3 4 5
Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

I use social media to connect with people that have the same interests as me. *

1 2 3 4 5
Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

I use social media to find new places to go or new things to try. *

1 2 3 4 5
Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

Back

Next

Clear form

Social Media Questionnaire

* Indicates required question

Consumer Behaviors

What social media platforms do you visit the most? *

- ☐ Instagram
- ☐ Snapchat
- ☐ Facebook
- ☐ Strava
- ☐ TikTok
- ☐ X (formerly Twitter)
- ☐ Other: _____

Why do use this platform? *

Your answer _____

What features of this platform do you use the most? *

Your answer _____

What social media platforms do you visit the second most? *

- ☐ Instagram
- ☐ Snapchat
- ☐ Facebook
- ☐ Strava
- ☐ TikTok
- ☐ X (formerly Twitter)
- ☐ Other: _____

Why do you use this platform? *

Your answer _____

What features of this platform do you use the most? *

Your answer _____

[Back](#)

[Submit](#)

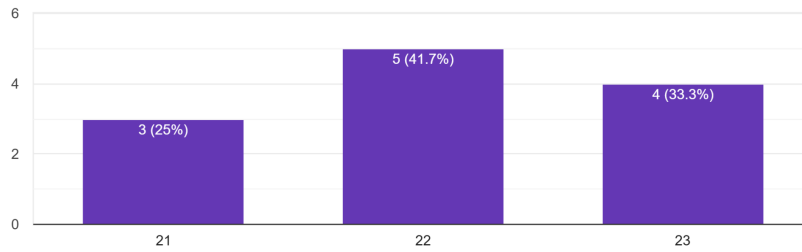
[Clear form](#)

Never submit passwords through Google Forms.

Questionnaire Responses

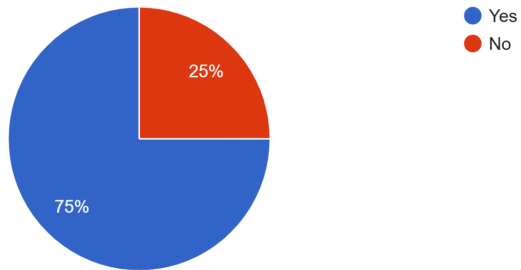
How old are you?

12 responses



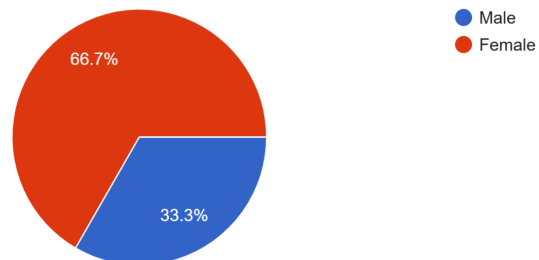
Are you a college student?

12 responses



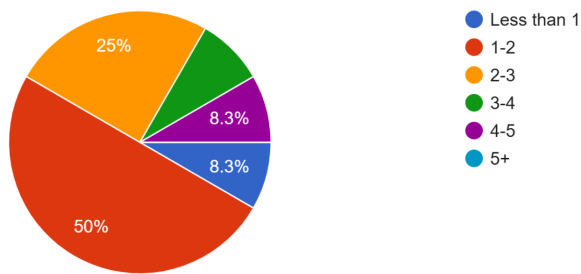
What gender do you identify as?

12 responses



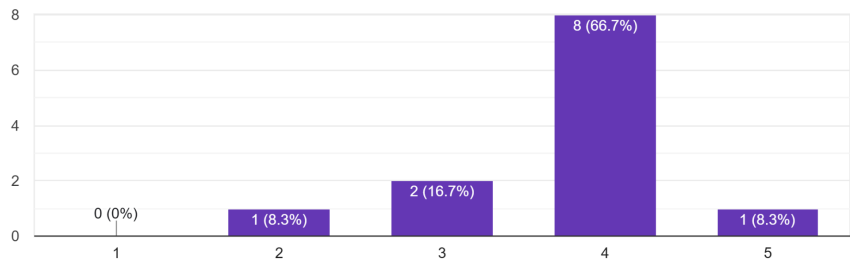
On average how many hours do you spend on social media a day?

12 responses



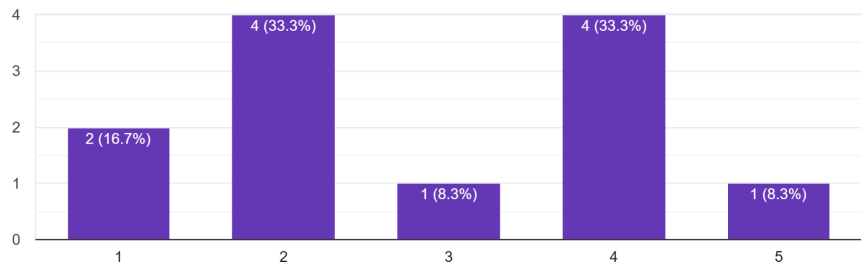
I use social media to connect with friends.

12 responses



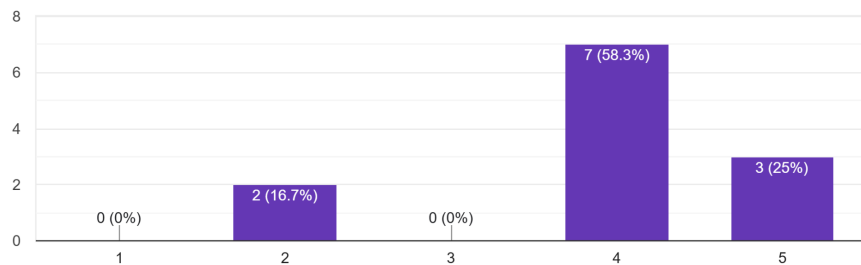
I use social media to update people about my life.

12 responses



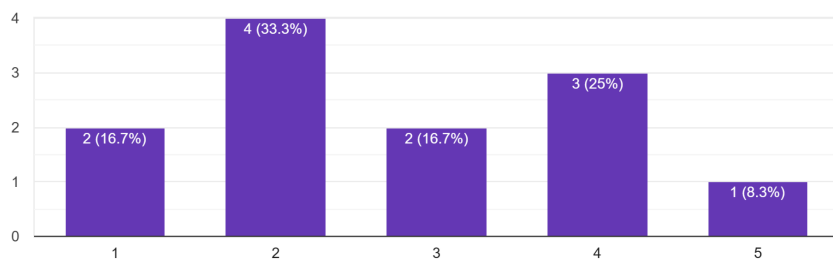
I use social media as a way to decompress/mindlessly scroll.

12 responses



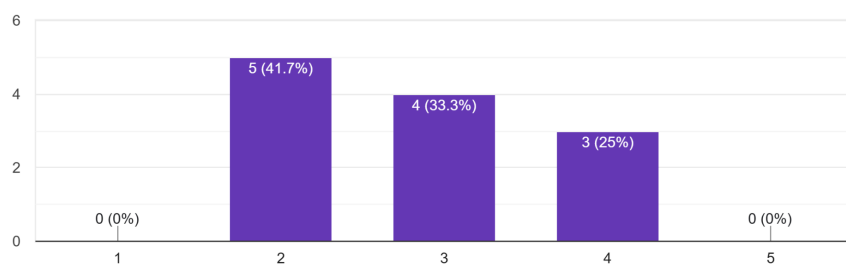
I use social media to stay updated on what is happening in the world.

12 responses



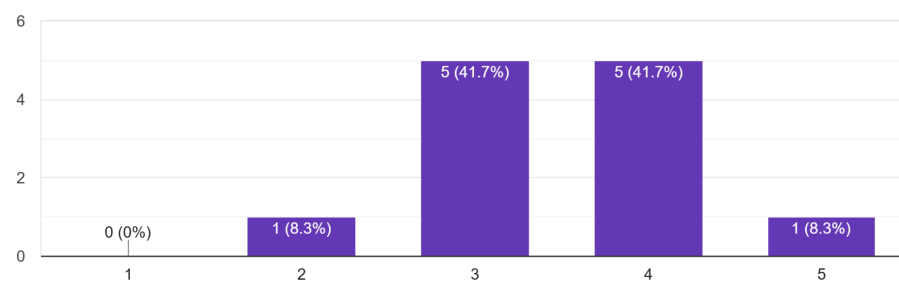
I use social media to connect with people that have the same interests as me.

12 responses



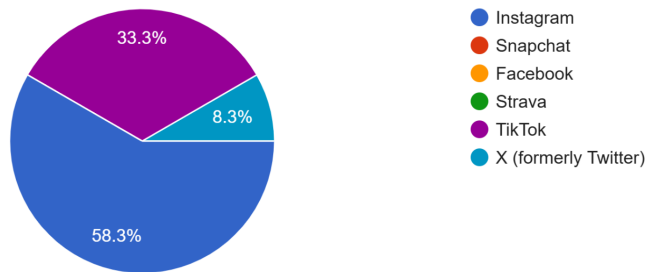
I use social media to find new places to go or new things to try.

12 responses



What social media platforms do you visit the most?

12 responses



Why do you use this platform?

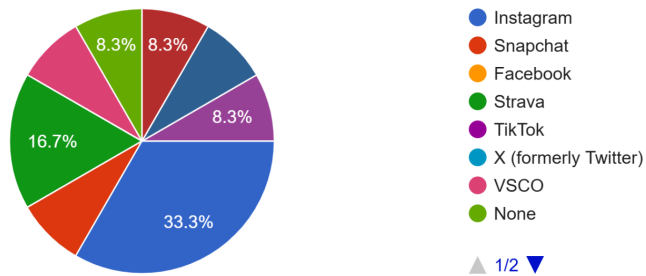
- Helps me learn about new places when I'm traveling
- Almost all businesses, people, etc are on it actively
- I like seeing what my friends are doing and exploring content about things I'm interested in
- Everyone I know is on it
- Mostly for entertainment / to mindlessly scroll
- suggestions
- Instant content and few ads that get in the way
- Art accounts are pretty there
- It's the only one I have
- I like being able to find new niches of the topics I'm interested in and I like how the algorithm presents a wide variety of creators
- Friends like to send memes
- To watch videos

What features of this platform do you use the most?

- The search tab
- Stories and reels and photos
- Reels and stories
- Posts / stories
- The main home page
- for you page
- Instagram Reels
- Looking at ppl's posts
- Reels
- For you page, saved videos, share with friends
- Reels
- Fyp

What social media platforms do you visit the second most?

12 responses



Why do you use this platform?

- To stay in touch with my international friends
- I love uploading my activities and seeing what other people are up to, and where they are
- I like posting about my workout activity because it keeps me accountable and I enjoy seeing what my friends are accomplishing athletically.
- To post pictures
- N/A
- connections
- Watching content about news or my hobbies
- Other people use it
- Interesting updates on things I care about
- I like being able to view my friends updates and post my own
- Connect with friends
- Connect with people

What features of this platform do you use the most?

- Insta reels and dms
- Keeping track of my own activities and seeing what other people do
- Mainly just posting an activity and media, there is not much else I do
- Posting
- N/A
- for you page
- Looking at videos in my recommended section
- Posting images
- Just reading posts
- stories, secondary ig (finsta)
- Voice chat
- Groupchats