

ACCESSIBLE OUTDOOR BAG DESIGN & FORM INNOVATION FOR NATURE ENTHUSIASTS

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1. Project Overview

This project is aimed to research, design and develop form solutions for the collection of bags. As people are influenced by form and style of a product, changing a shape from a monotonous design to a more interesting form inspires users and rises a positive feeling (Bond, 2017).

Additionally, abstract forms, which are a simplified version of freeform and asymmetrical organic freeform shapes, should associate with their original form and be a symbolic in nature. Lastly, circular, and elliptical shapes, if used in freeform design, show unity and protection to the product user. (Wang, 2015)

2. Problem Statement

The problem statement is focusing on how we can design bag solutions to empower 30-45-year-old nature and photographer enthusiasts during hiking and photographing. The goals will be providing an opportunity to efficiently pack and access items while protecting valuable and/or heavy items. Also, the final design will be versatile to provide universal carry by considering weight distribution and storage placement, while creating a safe space for common items being carried.

3. Glamping History

As far as history of “Glamping”, the word was first used in 2005 in the United Kingdom and was added to the Oxford English Dictionary by 2016. (John Bailey, n.d.) However, the first luxury camping tent was designed in Scotland, located in Scottish Highlands, at 16th century by John Stewart, 3rd Earl of Atholl, for King James V and his mother. (Gh, 2019) The tent was filled by their own luxury furniture and included amenities. (Gh, 2019)

4. Market Size

Glamping is an opportunity to introduce leisure, glamorous camping and outdoor experience to those who do not engage in the traditional camping. As it is shown in the figure 6, 44% of travelers who do not intend to camp have desire to do glamping, and 57% of campers have desire to experience glamping (CBRE: Commercial Real Estate Services, 2020) Thus, glamping is not only a platform for those who do not like to do traditional camping, but also an opportunity offering a new experience of camping to the current campers. (CBRE: Commercial Real Estate Services, 2020) Additionally, the current trend in figures 6 and 7 shows rising interest in glamping specifically between Millennials, Gen x, and couples. (CBRE: Commercial Real Estate Services, 2020)

Moreover, hiking/backpacking, sightseeing and birdwatching show growth in the future forecast in figure 11 among all the other glamping/camping activities. (Glamping Market Size, Share & Trends Analysis Report, 2021; Cairn Consulting Group, 2019; CBRE: Commercial Real Estate Services, 2020)

The estimation for glamping market size in 2020 was 1.88 billion at USD, and it is expected to rise to USD 5.4 billion in 2028. (Glamping Market Size, Share & Trends Analysis Report, 2021; Cairn Consulting Group, 2019)



Figure 1. Interest in glamping in future among glampers, campers and travelers who never do glamping

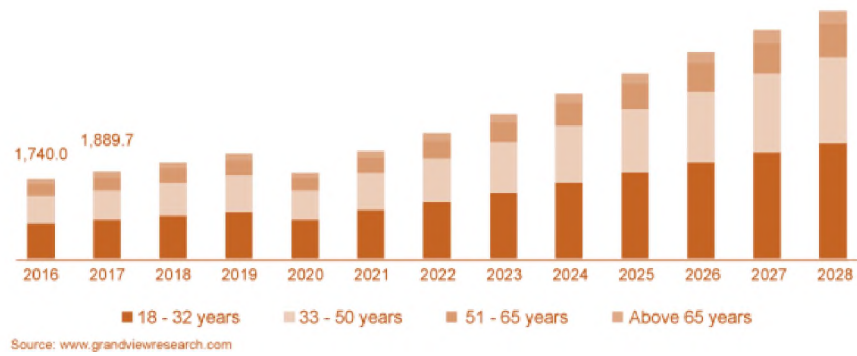


Figure 2. Global Glamping Market size, by age group, 2016 -2028 (USD Million)

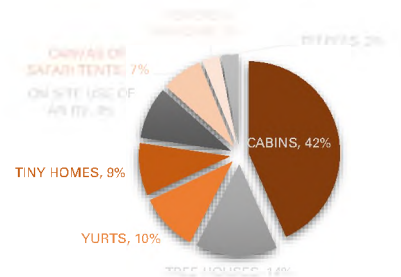


Figure 3. Accommodations sought by travelers interested in glamping

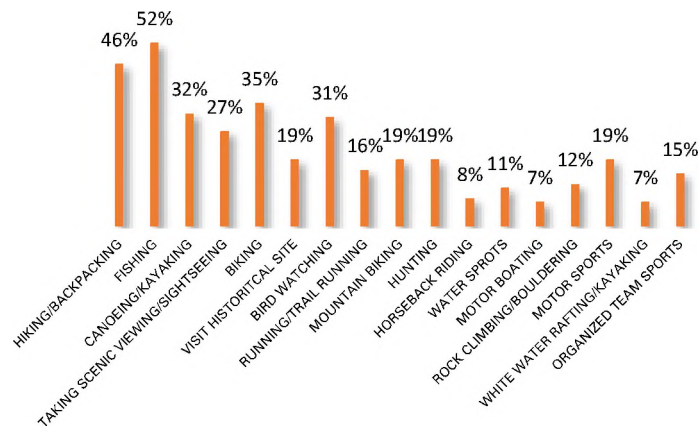


Figure 4. Participation in recreation while camping and glamping in 2020

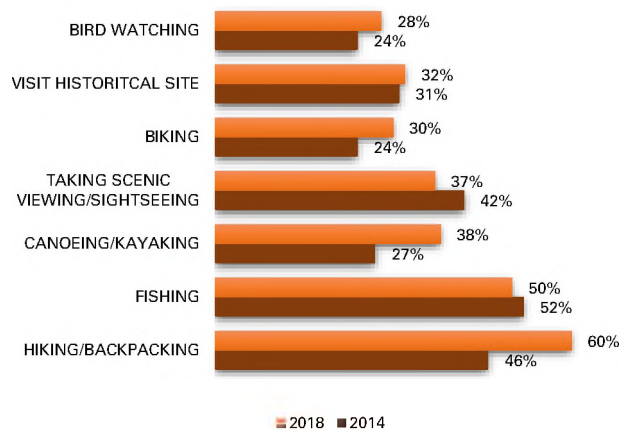


Figure 5. Recreational activities participated during glamping/camping 2014 & 2018

5. Environment

The environment considered for this project is Northwest of United States, Deschutes National Forest and Willamette National Forest at Oregon State from April to September that are the busiest months with good weather conditions. (Championtraveler, 2019) Temperature and weather condition for Willamette National Forest are shown in the following figures. This location provides opportunities to do hiking in different trails, especially towards waterfalls. For instance, one of the trails is South Breitenbush Gorge National Recreation Trail, which is 2.5 miles.

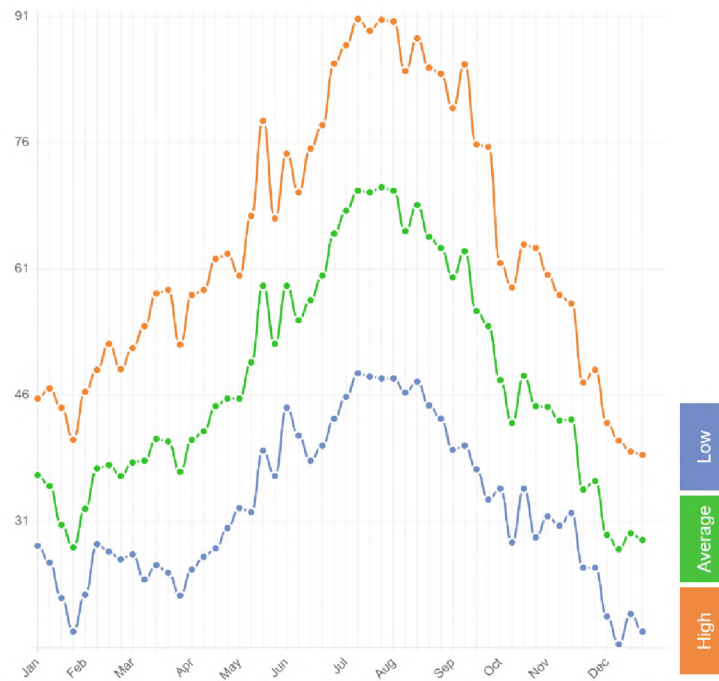


Figure 6. Willamette National Forest Temperatures

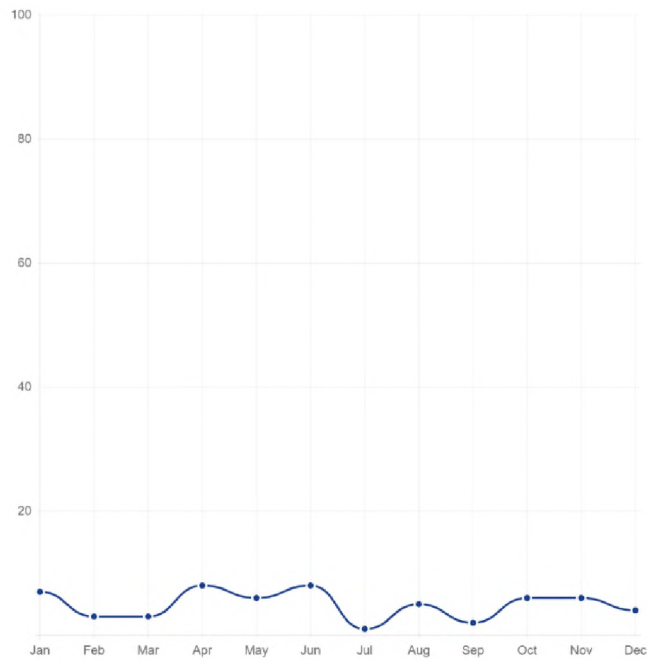


Figure 7. The percentage chance of rain and snow per year in Willamette National Forest

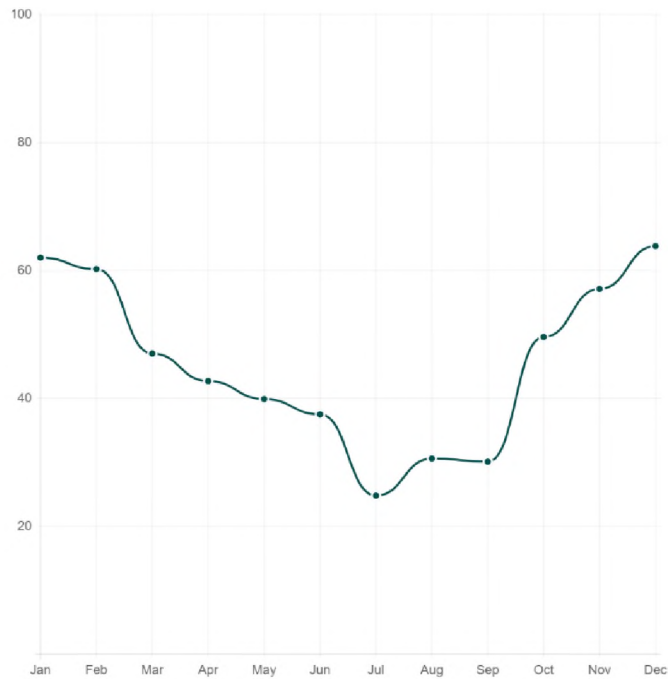


Figure 8. Average relative humidity in Willamette National Forest

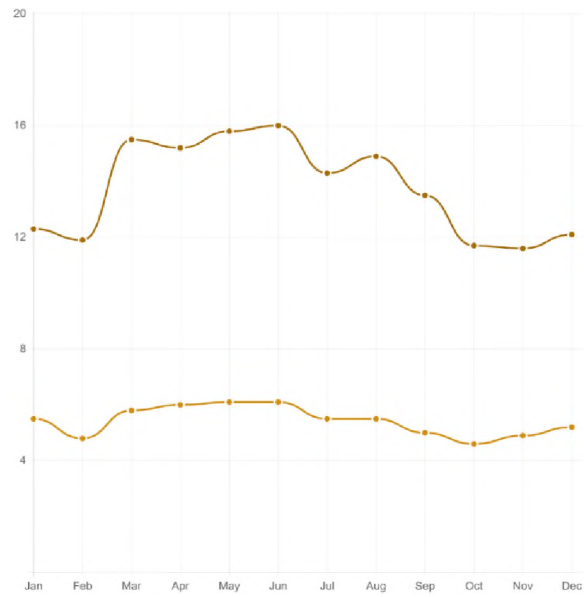


Figure 9. Wind speed (max and average) in knots in Willamette National Forest

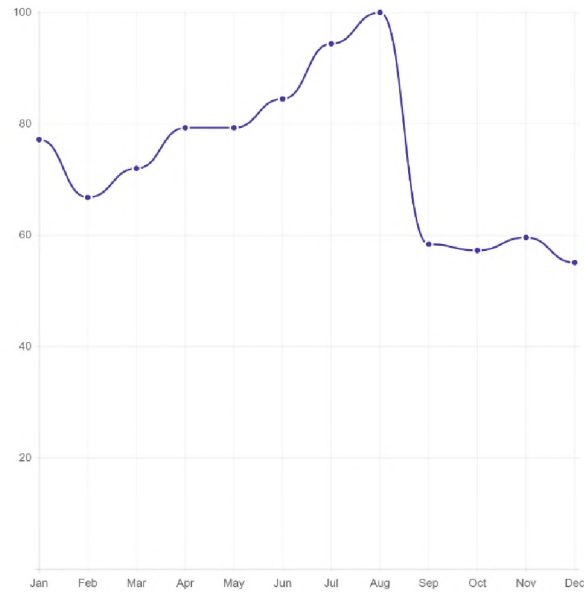


Figure 10. Most popular months to visit Willamette National Forest

Overall, the items that glampers usually require to pack are being listed as follows.

GLAMPING PACKING LIST

Clothes + Accessories ☐ T-shirts ☐ Sweatshirt ☐ Shorts ☐ Activewear Bottoms ☐ Jeans ☐ Lightweight Jacket ☐ Pjs ☐ Bras + Underwear ☐ Socks ☐ Swimsuit + Cover-up ☐ Hat ☐ Rain Jacket ☐ Sunglasses ☐ Shoes ☐ Sneakers ☐ Flip Flops or Sandals ☐ Hiking boots ☐ Rain boots - ? ☐ Slippers/Indoor Shoes	Toiletries ☐ Toothbrush + paste ☐ Face lotion + cleanser ☐ Sunscreen ☐ Make-up ☐ Hair brush ☐ Dry shampoo ☐ Shampoo + conditioner ☐ Leave-in conditioner ☐ Scrunchy/hair ties ☐ Deodorant ☐ Hand Sanitizer ☐ Meds ☐ Prescriptions ☐ Advil ☐ Imodium/Pepto ☐ Eye drops ☐ Chapstick	Essentials ☐ Flashlight ☐ Water bottle ☐ First Aid Kit ☐ Bug Spray ☐ Cooler ☐ Food + Drinks ☐ Blankets Other ☐ Phone + Charger ☐ Speaker ☐ Outdoor games - ? ☐ Card + Board Games - ? ☐ Books + Magazines ☐ Laptop + Charger - ? ☐ DVDs or Movies ☐ Portable WiFi - ? ☐ Camera Gear - ? ☐ Drone - ?
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Figure 11. Glamping packing list (Bancroft, 2021)

6. User Demographic

Bag users in this project are glampers as high-end sports gear consumers who appreciate good design. They do glamping more than two times per year and stay less than 7 nights. Also, they

are a couple of one woman and one man of age 30 to 45 years old. The users are selected according to the data extracted from Commercial Real Estate Services Report on campground trend in 2020 which is shown in the following figures.

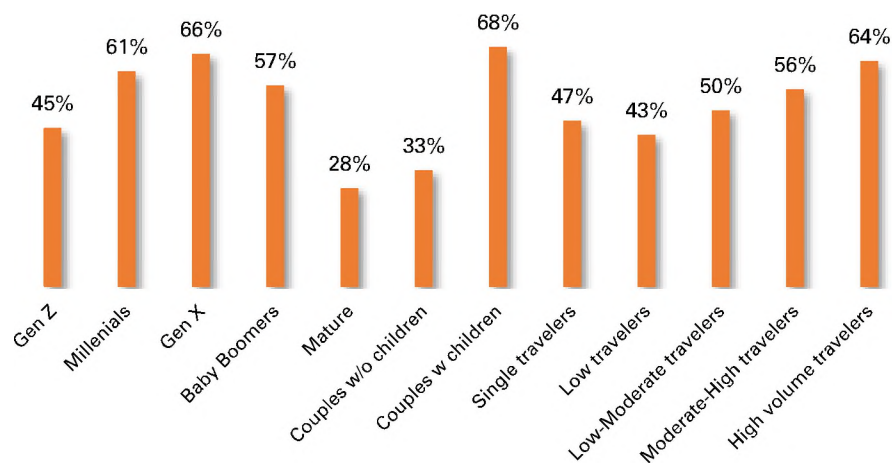


Figure 12. Interest in glamping in future

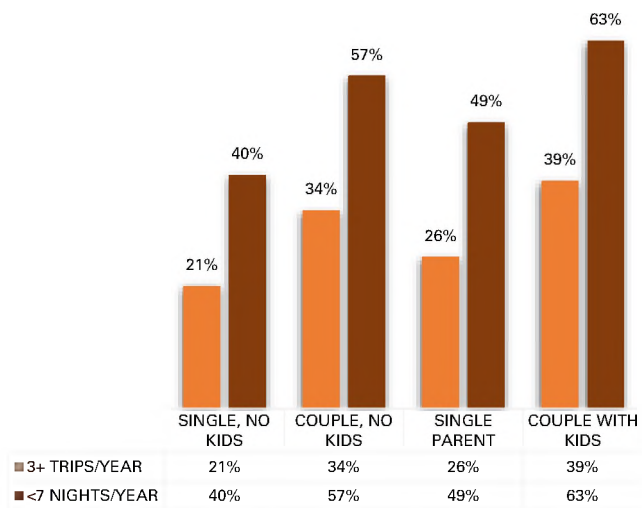


Figure 13. Details on camping/glamping trips in 2018

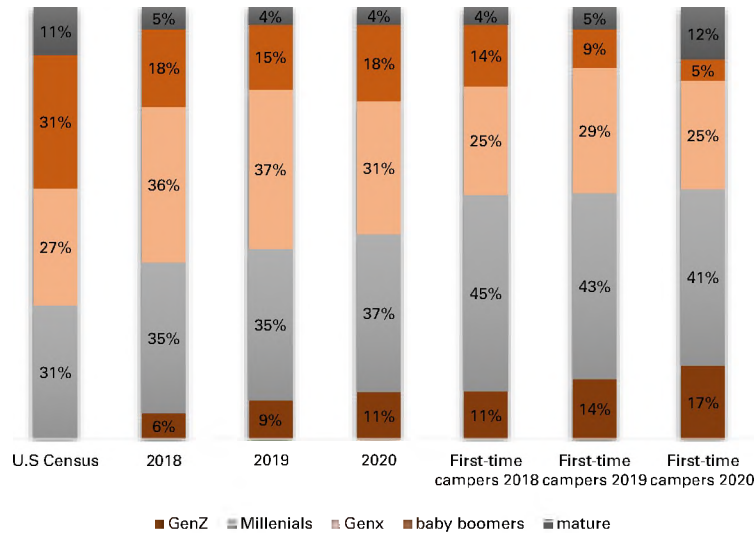


Figure 14. Comparison of Generation of campers/glampers

7. Skills

Athletes require to be able to do mild hiking between 4 to 8 miles in the area with cool/warm temperature and mild humidity.

8. Biomechanical Analysis

According to the Poiesz, N. (2018), the spine is not straight in neutral posture. There are two curvatures, which Lumbar is an inward curvature, so the loads on the back usually are being transferred from hips to shoulders mainly and can't be thoroughly transferred to the spine if the design is not appropriate. Also, repetitive high strain can cause injuries in the back and neck, so users should prevent postural stresses and strains by having adequate supports.

Overall, the bags should be in contact with the body at pressure points, such as hips, buttocks, back and shoulders. The pressure magnitude is being calculated according to the area of contact, so it is important how the force is being transferred from the bag to the body. Forces are being distributed by straps attaching usually to the rear section of the bags. Recently, the hip is chosen to be supportive because of its anatomy, that allows high degree of compression. There is a little tissue

and muscles that could get damaged from excessive amount of pressure. (Poiesz, 2018) The resting parts of the bags transfer the load from the bag and loading weight around the hips and shoulders to the upper body and spine, so the tension is distributing all over the upper body. (Poiesz, 2018) However, having different pivot point will decrease the momentum. Moreover, the combined weight of the user and bag changes the center of gravity and mass for the user and may have some effects on balance.

Lastly, few motion hypothesis during gait analysis and walking with weight loading, that can be effective on designing bags, are as follows. Firstly, shoulder and hip joints go up and down plus forwards and backwards which resemble an ellipsoid path, which can be considered in designing the bags. Secondly, swinging hands in a way to move your right hand forward and left leg forward causes twist in a body, which has effect on carry loads. Moreover, your back stretch while bending forward or moving uphill, which is a factor being considered in designing bags and backpacks. Lastly, going up and down the mountains or rock surface require bags to have a form of shock absorption. It is the intention of designing the floating backpack system, also known as suspended-load backpack which is designed to lower the impact forces on the back.

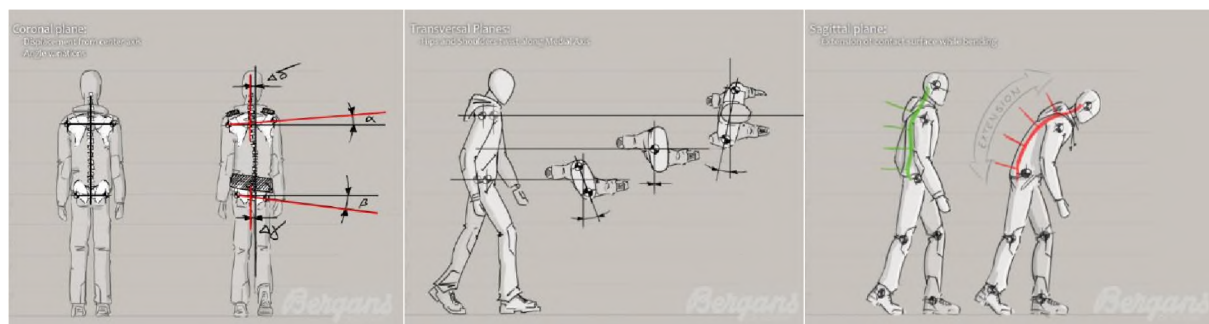


Figure 15. Motion analysis while carrying loads

9. Physiological and Psychological Effects

Hiking for a long duration of time is considered as an endurance performance, which includes maximal capacity, economy and sustained energy as few important factors to investigate. Additionally, weather forecast and equipment required to pack should be considered while investigating physiological and psychological factors on user's body.

As far as ways to wear the bag, five different ways were being tested and differences in temperature while carrying bag being measured by thermographic pictures to analyze the load effects on body. (Zagrodny, Ludwicki, & Wojnicz, 2021)

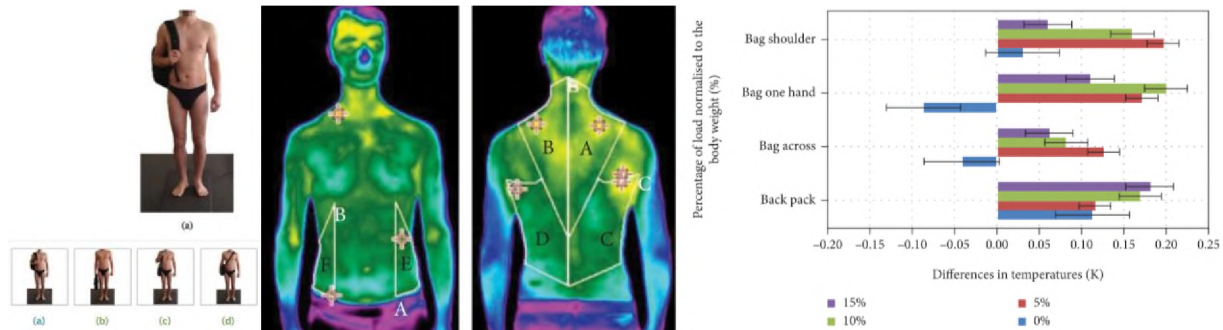


Figure 16. “Four investigated methods of carrying the load: (a) backpack on one shoulder, (b) bag in one hand, (c) bag on one shoulder, and (d) bag with strap across torso.” (Zagrodny et al. , 2021)

According to all the data, shoulder, upper back, neck, lower back and hip are the sections in order with the most discomfort reported by users carrying bags. Also, increasing the weight of loading not always causes increasing in level of discomfort or integrated muscle activity in specific sections.

As far as qualitative responses, the following figures indicate the summary of users’ responses to interview questions on bag conditions and their thermal and moisture comfort and discomfort during hiking.

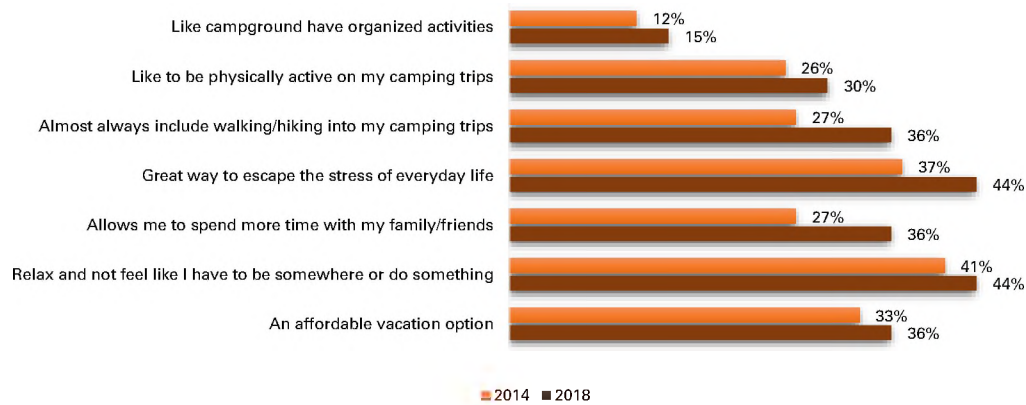
Question Topic	Response	Number of Responses
Backpacking Conditions		
Weather conditions in the field	daytime temperatures from 0°F to 50°F	4
	grow fall	3
	windy	2
Conditions where subjects do not hike at Second Nature	below 11°F	3
Hours spent filling on a cold day	filling time does not depend on temperature	1*
	1-4 hrs.	1
	1-12 hrs.	1
	varies depending on temperature extremes	1
Difficulty of hikes at Second Nature	hikes take place on rolling terrain	2
	hikes in winter take place on dirt roads	2
	four road hikes are easier	4
	Cross country* hikes are harder	3
Estimated pack weight	70-80 lbs.	1
	60-70 lbs.	1
	about 60 lbs.	1
	40-70 lbs.	1
Change of clothing before hiking	do not change clothing	2
Garments Typically Worn		
Layers worn on the upper body	prefers to wear layers	4
	synthetic wicking layer	3
	lightweight fleece insulation layer	3
	down or synthetic fiber fill vest	2
Cold sensations felt when not wearing layers	if layers are removed,	2
	only feels cold after hiking has stopped	2
Features of base layer shirt example	polyester or polyester/spandex blend	4
	single knit jersey	4
	long sleeve	3
	short sleeve	2
	crew neck	2
	underarm sweat	2
Cost of shirt example	\$30-\$40	2
	\$50-\$60	2
What subject does not like about shirt example when hiking	Discomfort under waist belt or shoulder straps	4
	Fabric/seam chafing under waist belt	2
	Seam/irritacy chafing	2
	Not long enough	2

* This table is a summary of responses that occurred more than once. Some responses that occurred once are included, because no two subjects had the same responses to that topic question

Question Topic	Response	Number of Responses
Preferences		
Material Preferences	prefers to wear synthetic materials	3
	prefers to wear wool	2
	prefers to wear lightweight baselayer	2
	prefers to wear soft materials against the skin	2
Reasons for Material Preferences	wool wicks moisture	1
	wool stays warm when wet	1
	wool doesn't smell bad	1
	synthetic materials dry faster than wool	1
	polyester smells bad	1
	polyester wicks moisture	1
	cotton is not used to wear for hiking	1
Baselayer Shirt Style Preferences	collar	3
	partial length zipper	3
	long sleeve cuffs	2
	sleeve cuffs with thumb holes	2
	long back hem	2
	pockets to keep batteries warm	3
	a hood	2
Baselayer Shirt Functional Preferences	durable	2
	prevention of seams from chafing/being scratchy	4
Ideal baselayer shirt cost	willing to pay up to \$50	2
	willing to pay \$50-\$100	2
Thermal and Moisture Comfort		
Warmth/dryness complaints about hiking clothing	Drafts at the waist due to short length	2
	Sleeves not long enough to cover wrist, hand	2
Body areas needing more thermal insulation	chest/core	4
	arms	2
	back	2
Body areas needing less thermal insulation	underarms	3
Body areas that get the most sweaty	back	4
	underarms	3

Figure 17. Summary of qualitative responses after backpacking and hiking

Pandemic affect glamping, not only on the size of glamping market and amount of glampers, but also on glampers' objectives. As it is shown in figure 54, relaxation, escaping stress of everyday life and improving emotional wellbeing are among the most increasing objectives from 2014 to 2018 by the start of pandemic and 2019 to 2020.



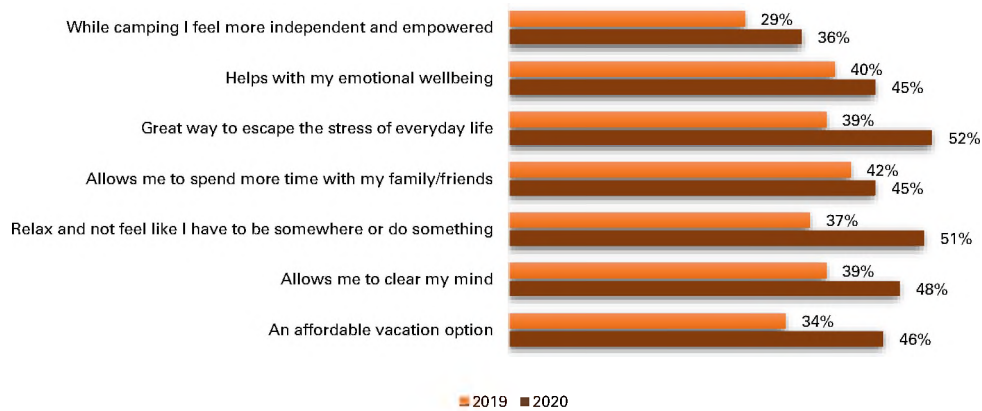


Figure 18. glampers' objectives changes compared between 2014 and 2018, 2019 and 2020

10. Product Classification & Sports Focus

Equipment: form innovation for bags to empower glampers to do hiking and photography

11. Product History

The first and oldest bag in the world is 700-year-old bag originated from Iraq, which crafted in 1300. (Winter, 2014) There was a belief that it was a saddlebag for a horseman or a wallet, but now the evidence shows that it was a lady's bag. (Winter, 2014)



Figure 19. Lady's bag from 1300 (Winter, 2014)

11.1 Camera bags

Old cameras usually were being carried in tight fit camera cases because they didn't have interchangeable lenses. These bags were being used to protect camera and ease of access was not applicable on that time because cameras need to be set up before taking photos.



Figure 20. a Voigtlander Prominent folding camera with its' tight fit case (BOLLYWOODMOVIE, 2017)

When the camera became smaller, ease of access became more important to users. (BOLLYWOODMOVIE, 2017) Thus, Leica style leather cases and half cases designed to give the users opportunity to do adjustment to the cases and take pictures with cameras in the cases. (BOLLYWOODMOVIE, 2017) Also, the cases equipped with a strap to carry the cameras. At this time, Dielemann, as the first independent company related to camera cases, produced a case for 35mm cameras. (BOLLYWOODMOVIE, 2017)



Figure 21. Dielemann camera bags (BOLLYWOODMOVIE, 2017)

Cameras improved during time and photographers had to carry more gears. It led to the larger and more sturdy camera cases and bags with a specific place for each item. (BOLLYWOODMOVIE, 2017)



Figure 22. Omnica leather bag (*BOLLYWOODMOVIE*, 2017)

The bags were heavy and cumbersome, which was not appropriate for professional press photographer because they have to move from one place to another constantly. (*BOLLYWOODMOVIE*, 2017) Thus, few war and documentary photographers started using hunt and fishing bags, which were lightweight, waterproof and robust messenger bags. (*BOLLYWOODMOVIE*, 2017) Then, Billingham and Domke started their own brands by realizing the fact that photographers need softshell but sturdy bags. (*BOLLYWOODMOVIE*, 2017)



Figure 23. Brady Fishing bag as a popular brand among photographers (*BOLLYWOODMOVIE*, 2017)

11.2 Backpacks

The first evidence of backpack dates back to 3300BC when a man named Otzi was traveling through Italy. (Backpack Joe, 2020) Later in 1991, a group of hikers accidentally found his remaining and belongings. (Backpack Joe, 2020) However, it was believed that the first special bags were invented in 1800 to carry hunting equipment and bait before 1991. (Timetoast timelines, 1800)

Furthermore, the term “backpack” was invented in 1910 to be used instead of moneybag or packsack, that were common in the past. (Overstock, 2018) A lightweight, durable and compact backpack was created by Dick Kelty 41 years later in 1951 for hiking. (Overstock, 2018) Afterwards, Dick and Nena try to sell and improve the bag, but only 29 of the backpacks were being sold to family and friends. (Overstock., 2018) In 1924, the first ever mass produced backpacks for camping was created with wooden external frame covered by canvas with buckles and straps as closure system. (PARRIS, 2018) Also, Greg Lowe made backpacks with internal frames which was sturdy enough to transfer loads to the hip belt and flexible enough to shape the wearer’s body in 1967. (Backpack Joe, 2020) His backpack included a sternum strap and side compression which make it the same as current daypacks. Some important steps in evolution of backpacks for camping and hiking are being described in the following table. (PARRIS, 2018)

No	When	Who & Where	What
1	3300BC	Otzi, traveling through Italy	First evidence of backpack
2	1800	-	Knapsack to carry hunting and bait
			Packs with shoulder straps without any structure For US army
3	1878	Henry Merial, United States	The bag being away from the wearer’s body by the sheet metal
4	1822	Camille Poirier, Duluth	Design a bag to give opportunity to carry a pack and portage a canoe simultaneously
5	1908	Ole F. Bergan, Norwegian	Make a new modern backpack by soft material over a wooden frame, perfect for long ski trips
			Known as “Modern Alpine Camping Backpacks”
6	1924	-	A backpack specifically for camping was created Wooden frame with canvas
7	1938	Gerry Cunningham	Manufactured a backpack with two zipper sections for rock climbing
8	1950	Ake Nordin (Founder of Fjällräven)	Add a wooden frame with leather straps to keep the load higher and closer to the body
9	1952	Dick and Nena Kelty	Modern frame backpack for hiking Lightweight, durable, and compact backpack Using parachute fabric, buckles and other leftover items from World War II It has padded shoulder straps and waistbelt without transferring loads to the hip
10	1967	Greg Lowe (founder of Lowepro), Colorado	Create the first pack with internal frame
11	1970	Dick and Nena Kelty	First Quick release stainless steel hip belt buckle

12	1979	Lowe Alpine	Packs with narrower shoulder pads designed for smaller people By 1981 a full line for female backpackers
13	1984	Deuter	Mesh back panel created allow airflow to cool the hiker's back and the backpack

Table 1. Bags History

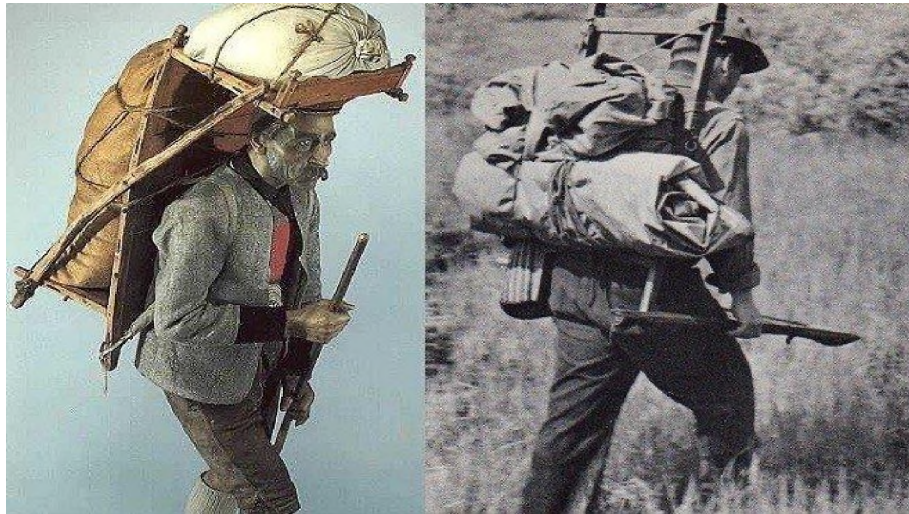


Figure 24. Kelty carrying his backpack for hunting. 1991 Source: [Carryology](#)

12. State-of-the-Art Competitors

Within the bag market, there are different types of bags with various ways of wearing. Types of wearing influence accessing and repacking the items during hike.

Two competitor products are being considered for this project according to the interviewees' preferences. Waterfly fanny pack, which includes water bottle holder, is being chosen for hiking, according to the interviewees' preference on carrying fanny pack plus sling bag for a short hike. Also, Mindshift crossbody camera bag is being chosen for photography to give users better and faster access to the camera.



Waterfly
Fanny Pack + Water Bottle Holder \$30

- Zipper closure
- Protect stored items
- Water resistant outside surface
- Protect items getting wet or moist in rainy days
- Anti-fall elastic strings
- Keep water bottle stable
- Two zipper main compartments with a small external pocket
- Keep items separately
- Phone not being scratched by keys
- Adjustable buckle belt
- Provide comfortability
- Mesh pad
- Design for breathability
- Reflective strips on the storage bag to make users seen in the dark



Mindshift
Crossbody \$114

- Mesh wide shoulder straps
- Provide comfortability
- Weatherproof zippers and materials
- Protect items
- Abrasion resistance
- Provide durability
- Easy rotation
- Provide easy and fast access to the items
- Mesh back panel
- Design for breathability
- Adjustable buckle belt
- Provide comfortability
- Side water bottle holder
- Two main zipper compartments
- Store and access items
- Two handles

13. State-of-the-Art Anatomy

The anatomy for each type of bag included handbag, crossbody bag, backpack, and luggage is unique. However, there are similarities between all the anatomies which usually include top handle such as flat webbing, rolled or cut-out handle to carry the bag, straps or chain to provide comfortability while carrying, dual-access zippers or front flap to protect the interior items; and front, back and bottom parts to help maintain the overall shape.

Usually sports bag anatomy includes shoulder harness, sternum straps and padded shoulder straps to make it comfortable and secure on the chest while carrying on the back, elastic compression straps to adjust the capacity, side mesh pockets to carry the water bottle and/or

accessible items, and hip padding which provide comfortability, secure and balance on the hip section.

Furthermore, anatomies of bags include different types of pockets to protect and organize all the items, such as cargo pockets with pocket flaps, loop and button pockets, Kiss locker pockets, shirred patch pocket, double straps saddle pockets, expandable gusset open pockets, protective laptop pocket, interior zipper/Velcro pocket. Also, snap closure, removable inside insert, outside protective corners, drawstring openings, fold over flap with top zipper and magnetic closure are the other parts in the bag anatomies.

The state-of-the-art anatomy of Waterfly fanny pack and Mindshift crossbody bag are being explained in the following figures.



Figure 25. Hiking Fanny Pack



Figure 26. Mindshift Crossbody Bag

14. Materials & Manufacturing

Sport bags are made of specific materials according to their functionality and the required features. Overall, the detailed materials and features being used in the face section, padded sections and inner sections of the bags are mentioned in Table 1 and Table 2.

Also, straps are made from woven synthetic nylon, polyester or polypropylene. Also, they can be made from hemp, cotton or linen which usually are less strong and durable than synthetic ones. They also can be made from exceptionally high-strength materials such as Dyneema and Kevlar. Additionally, buckles are usually injection molded polyoxymethylene to be strong and durable. Plastic zippers are made of polyethylene and polyacetal resins, which make it durable and resistant wear and tear. However, metal zippers are made of brass, aluminum, nickel according to the metal used for teeth making. Also, waterproof zippers have the coils hidden at the back of zipper and a rubber or PVC coating covers the front of the zip to make it totally waterproof when

it is closed. Additionally, vinyl treatment and vinyl coating can make zipper water resistant. Also, YKK water repellent zippers are waterproof that are strong while smooth. There is polyurethane coating to increase water repellency, but it reduces the flexibility of zippers. (Sail Rite, n.d.)

The following table includes some of the existing materials being used in the bags.

	Materials	Features & Details
1	Cotton canvas	woven inexpensive heavy weight rough Used in Casual Totes
2	Straw	oldest material for bag making can be woven into bag Used in Beach Bag
3	Patent leather	nonwoven shiny mirror like finish wide variety of colors Used in Medium Priced Bags
4	Faux leather	nonwoven commonly made of plastic not as durable as leather water resistant Used in Low to Medium Priced Bag
5	Suede	nonwoven underside of animal skin tends to absorb liquids and then stains
6	Cordura	basket/plain weave air treated rough nylon designed by “Duopoint” water repellency, durable, abrasion resistance Used in Backpack, Daypack, Functional Pack
7	Nylon Pack cloth	woven 420D smooth shinny Slick to the touch
8	Ripstop nylon	woven grid pattern lightweight Resistance to tearing Used in Backpack, Functional Bags
9	Ballistic nylon	woven thick durable synthetic very easy to clean Used in Backpack functional bags
10	Mesh fabric	woven 420D nylon or polyester lightweight thin strong Used in Functional Bag

Table 2. Face Materials and Features (Mia & Yip, 2016)

No.	Stabilizer/Interfacing	Features & Details
1	Woven/Nonwoven Interface	fusible or sew-in interfacing add stiffness Used in All Bags
2	EVA Foam Padding	ethylene-vinyl acetate/Expanded/foam rubber Closed-cell foam made from blended copolymers of ethylene and vinyl acetate shock absorption middle layer of straps durable and springy Used in Backpack Straps
3	PVC Coating	used instead of adding an extra layer of stabilizer make it waterproof & resistant to dirt, mildew, oil and UV rays increase stability and strength Used in Backpacks, Functional Bags, Casual Totes

Table 3. Stabilizer & Interfacing plus features (Mia & Yip, 2016)

As far as Mindshift crossbody bag, all the exterior fabric of the bag has a durable water-repellant coating, while all the underside has a polyurethane coating. The exterior fabrics are 420D high-density nylon, and heavy-duty nylon Tarpaulin. (Thinkthank, n.d.) The hardware and strap include YKK® weather resistant zippers, 350g air mesh, nylon webbing, 3-ply bonded nylon thread. The interior includes removeable closed-cell foam dividers, P210 liner, polyurethane backed velux liner, 2x polyurethane coated 210T seam-sealed taffeta rain cover, nylon binding tape, 3-ply bonded nylon thread. (Thinkthank, n.d.)

The Waterfly fanny pack includes Nylon pack cloth 420D, EVA foam padding, mesh fabric, YKK zippers.

The manufacturing process is being usually divided into the primary planning and manufacturing, the final fabrication and assembly, and lastly the inline and final quality control before packaging and shipping to the market. (Outdoors, 2014) The detailed steps in the primary fabrication include purchasing materials and accessories, material cutting, preparing fabric by adding stabilizer and foam padding. (Outdoors, 2014) The second steps incorporate industrialization process, laser cutting, die cutting, knife cutting, embroidery for the logo and branding, preparing molded parts, apply edge paint, buffing and sewing majorly for the leather materials, adding outer pockets, components, and embellishment, sewing outer body and then inner components and lining. (Mia & Yip, 2016) (Outdoors, 2014) The last steps are final

assembly & additional trimming, inline and final quality control of the products to assure the products being ready for shipping to the market. (Outdoors, 2014)

15. SWOT Analysis

		Strength	Weakness	Opportunity	Threat
Waterfly Fanny Pack + Water Bottle Holder 	closure	Plastic zippers	Not having waterproof zippers	Easily access and repack items safely	Not being waterproof make is less popular in the market
		Compression cords, anti-fall elastic string for keeping water bottle stable	Hard to access and repack the water bottle	Keep water bottle in place in any situation and movement	Easy access and repack is a key in the market
	straps	Webbing with no padding	Straps are not comfortable and not keeping the bag in place always	Lightweight	Not being padded at specific sections by considering carrying on waist or shoulder make it less comfortable than others
	outer pockets	One outer pocket with no zippers	Being wet while raining which has effect on other pockets	Make it accessible for small items	Not secure
	inner pockets and compartment	Interior pockets to organize items	-	Organization and comfortability in accessing items	-
	back panel	Mesh back panel which makes it breathable	Long time to dry because of the foam	Having back panel as small fanny pack make it popular by focusing on thermoregulation	Being bulky and cumbersome
Mindshift	closure	Waterproof zipper closure with accent colors for the main outside compartments	Having different zippers with the same accent colors is confusing	Keep items safe and secure	Not accessible for all users

Crossbody bag 		Bungee cord closure mechanism for water bottle holder	not easily accessible while on the shoulder	Keep the items secure	Make the bag less aesthetically pleasant which is a threat for the market
	straps	Large spacer mesh straps	Straps are larger than regular ones in other bags	Straps are breathable	Not having comfortable straps for hiking is a threat in the market
			Not easily adjustable	also padded reasonably around the belt to make it more comfortable for all shapes and sizes	
		Waist removable straps	Not very comfortable and load transferable	Making it removable	Having a comfortable waist strap, even with a small storage is a key to the market
	hardware	Plastic buckles	Not durable	lightweight	Durability is a key for the camera bag in the market
	outer pockets	Front pocket which is accessible for smaller items	Not easily accessible and user friendly for all hand sizes because the bag is sturdy	Adding outer pockets to carry smaller essential/necessary stuff and being accessible asap	Being easily accessible for the outer pockets is a key in the market
	inner pockets and compartment	It has inner different storages and dividers	Small storage that is not practical for larger items	Having adjustable dividers	Sturdy dividers take space
	outer face	Waterproof cordura	Not easy maintenance	Changing the materials while considering soft touch	maintenance is a key specially for long time usage
	back panel	Thin but sturdy back panel	Not padded enough to be comfortable and not breathable as far as not having channels	Using super mesh	For longer duration usage in nature, padded paneling with channels is a key factor
	handle	Two large handles	Not padded which make them harder to use	Appropriate for different hand sizes	Extra handles add unnecessary weight and confusion

16. Patent and Avant Garde Unique Forms

“Pivotable pack frame apparatus” shows a pack frame apparatus with two frame portions. The first and the second frame provides rigidity, while the first frame secured to the shoulder straps and the second one secured adjacent to the waist strap of the backpack. Two portions join by a joint which allow relative pivotal movement and a resilient relative pivotal movement. (US Patent No. US20150189974A1, 2015)

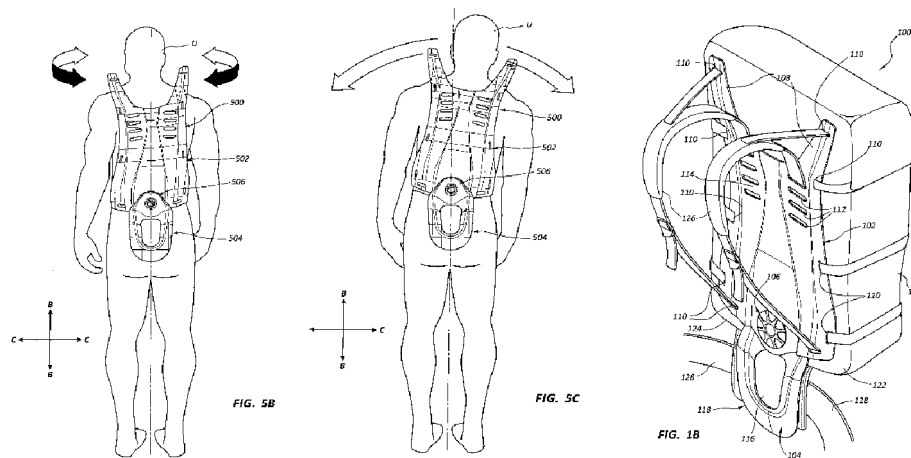


Figure 27. Pivotable pack frame apparatus, US20150189974A1

“Reversible Satchel & Method of Wearing Same” shows a personal belonging shoulder bag which rest on opposite hip. This bag includes a thin profile pliable that conforms to body and make it easy to be worn under a coat. There is a reinforced mesh straps and adjustable straps with few snap fasteners to adjust the straps according to the form and size. (US Patent No. US20140311635A1, 2014)

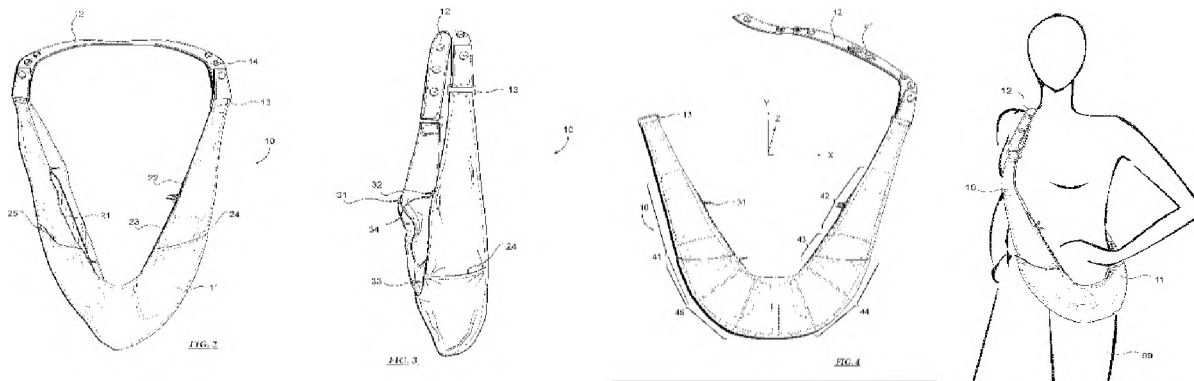


Figure 28. Reversible Satchel & Method of Wearing Same, US20140311635A1

“Roll-top closure pack” is a pack with front side, back side and top side openings for comfortability and accessibility. There is an expandable side gusset to adjust the form when it is fully packed. The top closure is in a rolling form to provide a secure closure while it is rain resistant. (US Patent No. US20090020579A1, 2009)

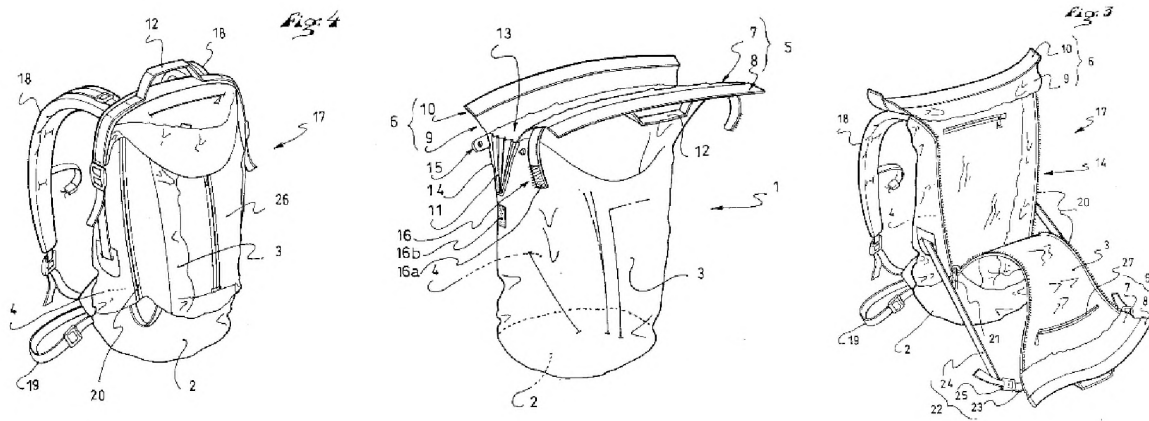


Figure 29. ROLL TOP CLOSURE PACK, US20090020579A1

Within Avant Garde design for functional athletic bags, few brands are more active compared to the others, such as Cote&Ceti which covers all types of bags. However, its backpacks are futuristic by bringing the complexity of forms, space and functionality; and between all the models, the Nile Obsidian rucksack and Isar EcoYarn are categorized as the Avant Garde ones. Both silhouettes are inspired by the architectural structures. (Cote&ciel Nile Obsidian, n.d.) (Cote&Ciel Isar EcoYarn, n.d.) Moreover, the Nile with the price of \$335 includes an integrated rip stop nylon hood with a large capacity to carry items. (Cote&ciel Nile Obsidian, n.d.) On the other hand, the asymmetrical Isar EcoYarn backpack with the price of \$320 includes expandable compartment, a vertical front pocket for carrying a rain cover. (Cote&Ciel Isar EcoYarn, n.d.) The architectural form flow combines with ergonomic design create fascinating silhouette that is both aesthetic and functional. (Cote&Ciel Isar EcoYarn, n.d.) Furthermore, it is noteworthy to discuss the model Apex Access from the brand Bellroy. Although this model is not categorized as an Avant Garde bag, the form and functionality are unique. (Bellroy, n.d.) Besides, getting access to all the interior sections require a zipper to go around, and its expandable lay-flat form provides access thoroughly to the interior compartment, which is shown in figure 15. (Bellroy, n.d.) The price for this bag is \$449.

Also, the Buffalo Jackson Waxed Canvas Rolltop Backpack is an old-school style water resistance backpack with roll-top closure system and buckles and straps, while it has a compression side straps to store items on the side. (buffalojackson, n.d.) The price for this bag is \$349.95.

Moreover, the “Dancing Shoulder Bags,” or in other words “Arm Bags,” are designed by Amalia Mattor. (Amalia Mattaor, n.d.) The price for these bags is around \$600. (ebay, 2021) Being a central and interesting part of the outfit by clinging to your shoulder and arm was her intention for designing this type of purse. (CoF, 2013) She believes that the bag attached to your arm free up your hand. (CoF, 2013)



Figure 30. Brand Cote&Ceti model the Isar EcoYarn (left) and Nile Obsidian rucksack (right)



Figure 31. Bellroy Apex Access (left) Buffalo Jackson Waxed Canvas Rolltop Backpack (right)



Figure 32. Arm Dancing Bags, designed by Amalia Battaori in 2011

Also, as far as Avant Garde unique forms, “Gloves bag” was designed initially by Jean Paul Gaultier around 2010 and followed by different designers such as Daniel Storto, with various types of design. The bag designed by Jean Paul Gaultier was chosen for “50 Signature Bags from Time Magazines” in 2010 (Jean Paul Gaultier Gloves, n.d.)

Furthermore, Jacquemus with the model Obsessed/Painter’s Palette handbag is another brand within an Avant Garde bags. This handbag is unique, modern, fashionable and minimal which had been nominated for the 2015 LVMH award and shown in figure 31.

Additionally, iconic spherical handbag has been designed by Nita Suripilo with supple sheep leather. This bag includes double tube handles, duo zip closure, an embossed logo in front, sued lining, protective feet and gold tone hardware. (Pilo, n.d.)

Lastly, Interaction of light and form plus paper sculpture were the inspirations for designing the “Geometry Flower Bag” with eight perfect circles which lined with black pebbled-textured vegan leather. (Etsy Mini Flower Bag, n.d.)



Figure 33. **Glove Bags**, designed by Jean Paul Gaultier and Daniel Storto Around 2011



Figure 34. Jacquemus Obsessed/Painter's Palette handbag, Iconic SPHERIC Handbag, Designed by Nita Suripilo &. Flower Bags, Designed by ELLIA WANG

17. Trends

17.1 Color Trends

The future colors for this project are being chosen according to the forecast of the future in WGSN. It is explained that there will be a shift in acceptance and management of multiple emotional states by 2023.

As another face color, White will be used for the main fabric and will anchor the aesthetics.

Another main color for this project will be Eco Black, which is shown in Figure 16. Carbon Black, according to the "Allied Market Research", will remain as a dominant pigment source with the growth of \$23bn in the global market value by 2026. (Choudhary & Prasad, 2020)



Figure 35. Eco Black

As another face color, the earthy tone Sundial will be used for the main fabric. This organic ochre yellow is part of "The New Romantics" cohort coming from future of 2023 in WGSN, and

it is a representative of colors engaged with sustainability and nature. (Clark, Global Color Forecast S/S23, 2021) “The New Romantics” cohort is related to the future after pandemic, when people migrate from big cities to rural by choice or by force, and try to reconnect with the nature. (Bell, 2021) Also, this color can be sourced from food waste, plants and minerals. (Clark, Global Color Forecast S/S23, 2021)

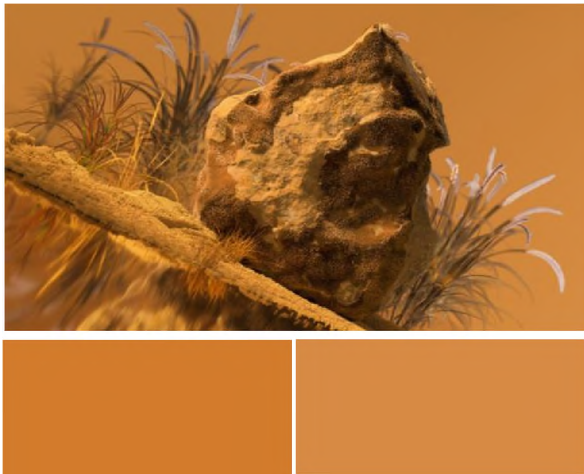


Figure 36. Sundial - Ochre yellow, 16-1148 TCX, for 2023 and smoked paprika 2021 to 2023

Overall, all the face, lining and accent colors for this project inspiring by nature or coming from nature, as it is shown in the following figure.

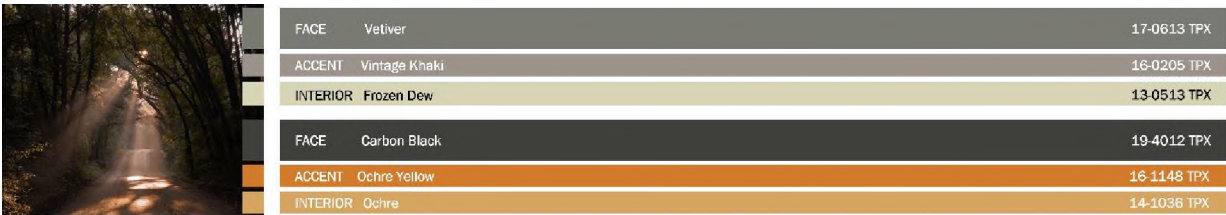


Figure 37. Color palette

17.2 Graphic Trends

This trend is built to resonate endurance, speed and relaxation. The earthy mood of liquid form and sandy sedimentation combines with the “curvature forms” represent particles’ movements

and calmness feeling in the nature. (Palmer, 2020) (Sardouk, 2016) (Varga, 2017) Also, “Plant-based Texture” inspired by nature is resonating freshness in the design. (Palmer, 2020)

The other trend being used in this project will be “Polygonal Fold,” which is representative of geometric shapes formed and folded to create a new three-dimensional sculptural shape. (Sardouk, 2016)

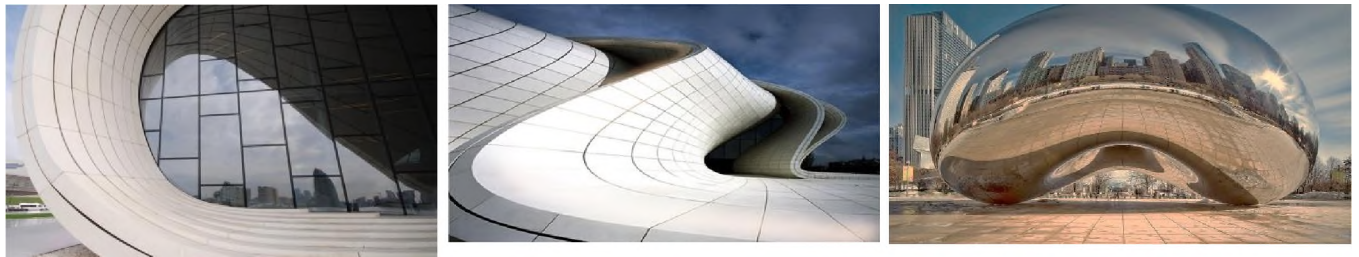


Figure 38. Accessible curvature form



Figure 39. Sandy Sediments, Woodland Wonder and liquid form



Figure 40. Plant-based Texture

17.3 Logo Trends

The modern world combined with Bauhause-style structural graphics compromise linear repeatable theme from two dimensional lines to three dimensional interlocking blocks. (Sardouk, 2016) This trend will be used and printed for the branding theme on the designed bags. The other trend inspired by architectural and roman monuments called “Monumental Futurism,” includes geometric bold printed design. (Sardouk, 2016) Also, the geometric Persian patterns will be used to create logo. These patterns include basic geometric forms and shaped by repeating, combining, and interlocking these forms.

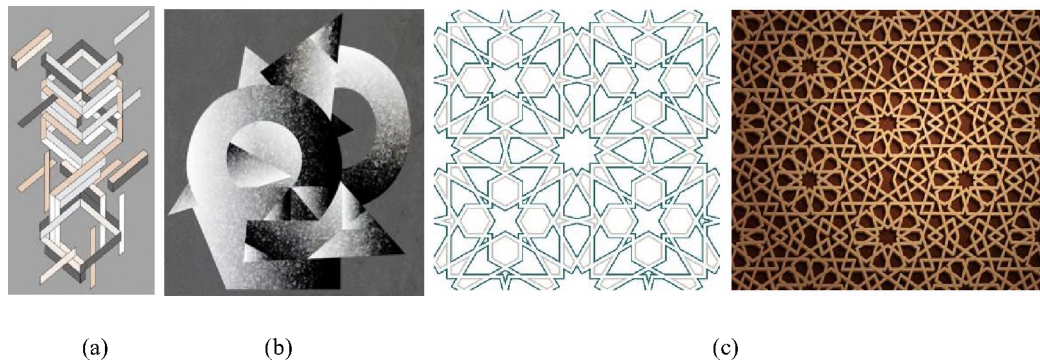


Figure 41. (a). Bauhaus Geos (b) Geometric 3-D bold (c). Persian Geometric Patterns

Phase II

Winter Term 2022

Survey, Benchmark Testing, Ideation and Proof of Concept

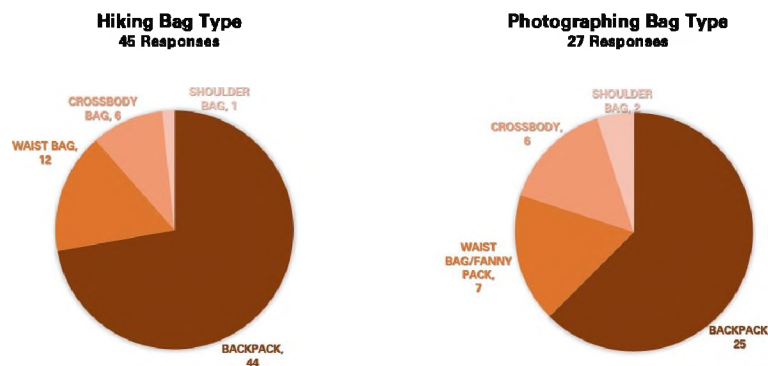
18. Research Methods

The method were survey and questionnaires by asking Interviewees questions according to their bag's usage, essentials packed, what activates they prefer, seasons they prefer to go, how many hours per day, etc.

Initial survey included the questions on type of the activities that glampers do during glamping and if they require bags or not. The final survey includes questions on hiking duration and types of the bags being used by the glampers.

FINAL SURVEY

50 RESPONSES
43% 30-40-YEAR-OLD



INTERVIEWS USER INSIGHTS

9 INTERVIEWEES
20-55-YEAR-OLD



19. Benchmark Product Testing

19.1 Goals

The performance testing included packing and accessing items with questionnaire and movement analysis, and water resistance testing of hard-good/soft-good parts, to analyze and compare the average timing of access/repack items and improve the response time by 10% and comfortability for the final products.

19.2 Methods

19.2.1 Participants

Participants were nature and photographer enthusiasts including 2 female and 1 male, who do regular hiking with mean age 30+/-5 years-old.

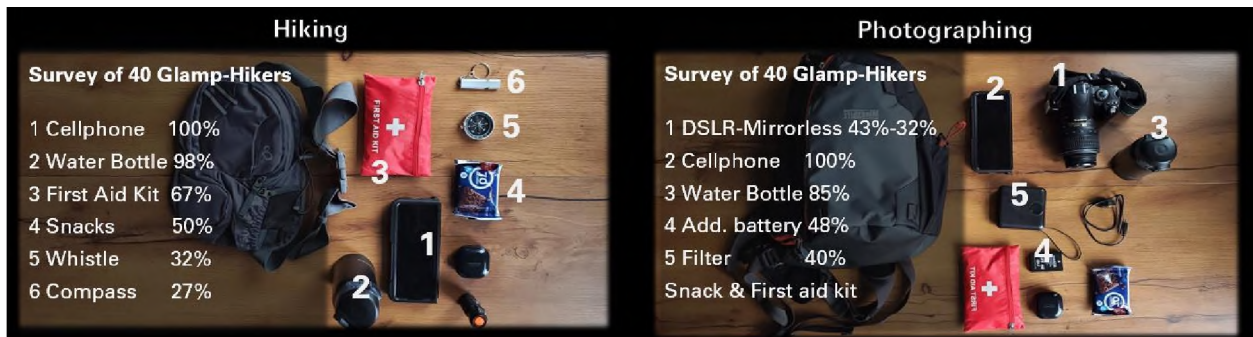
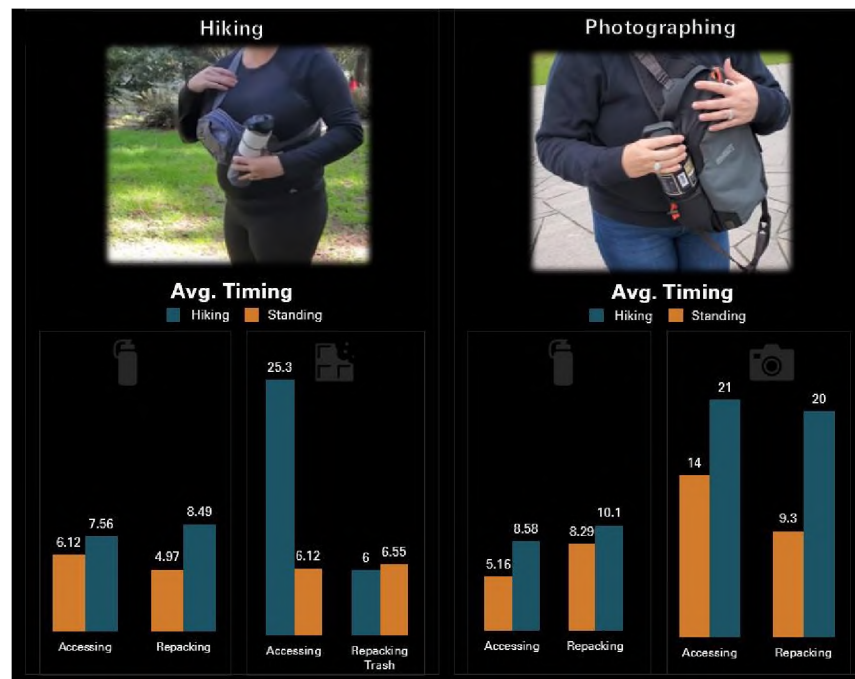


Figure 42. Common items to carry

19.2.2 In-Field Testing

The session was being held in-field with the volunteers with different types of roads including uphill downhill and level ground in Rose International Garden and Washington Park at Portland with a normal weather of between 70–80F walking for 2 to 3 miles testing with all required items in the bags.

The process was being recorded and the average time to pack, access and repack specific items while hiking and standing still was being calculated by the stopwatch and saved for analysis. All these tests were being repeated with the same athletes and the same scenarios on final prototypes. All data were being analyzed by comparison between the benchmark products with the prototypes.



19.3 Winter Term Presentation

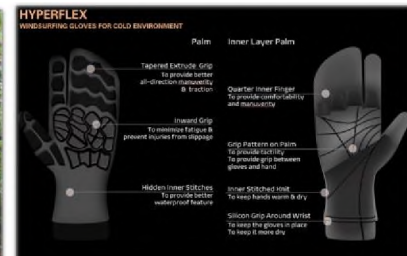
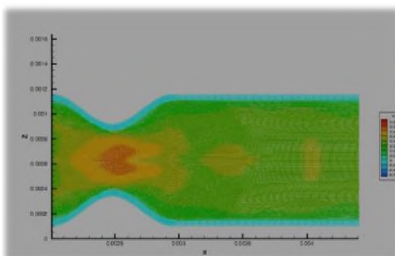


**GAZAL
MALEKITABRIZ**

Background Mechanical Engineering from Shiraz University, Iran. **Thesis** Fluid Structure interaction **Industry** Two years as an engineer

Why-Purpose Improve Aesthetic and efficiency through performance testing & implementing technology

Postgraduation Outdoor, Equipment Designer, Bag Designer, UX researcher



WHAT IS GLAMPING?

An outdoor experience for travelers to have access to services and amenities that aren't available with traditional camping



Common Items Carried by Glampers



GAZAL MALEKITABRIZ | SPD 688 | PAXESS

PROJECT IMPORTANCE

Global Glamping Market Size



14% Per year



\$5.4B by 2028

Glamping Market Size, Share & Trends Analysis Report, 2021

Age Range



61% Millennials

North American Glamping Report 2019

Glamping Activities Require Bags



86% of glamp hikers



71% of glamp photographers

Data Survey 30 Glampers

Bags Industry Report IBISWorld



Basic shapes & Functionality
Mature & Saturated



More than 1100 Companies
No Glamping brand

Industry Report | IBISWorld

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BENCHMARK PRODUCTS

Waterfly



Mindshift



Reasons to choose



Fanny Pack + Water Bottle Holder \$30

- ❖ Anti-fall elastic strings
Keep water bottle stable
- ❖ Mesh pad
Design for breathability



Crossbody Bag \$114

- ❖ Mesh wide shoulder straps
Provide comfortability
- ❖ Weatherproof zippers and materials
Protect items

❖ Interviewees' preferences on fanny packs and water bottle holder

❖ Interviewees' preferences on better access/repack items

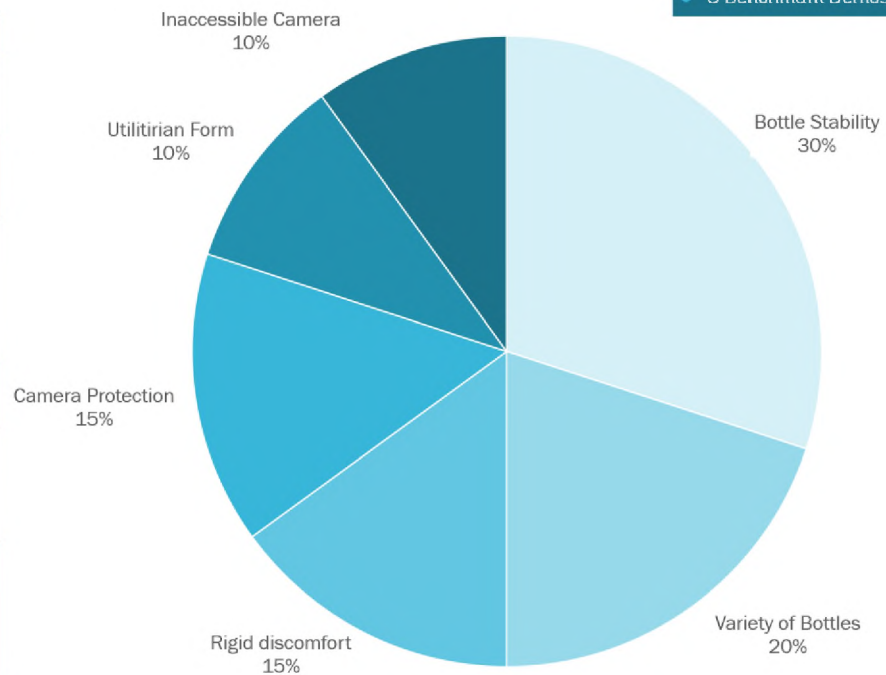


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ISSUES WITH CURRENT PRODUCTS

- 50 Glampers Surveyed
- 10 Personal Interviews
- 3 Benchmark Demos

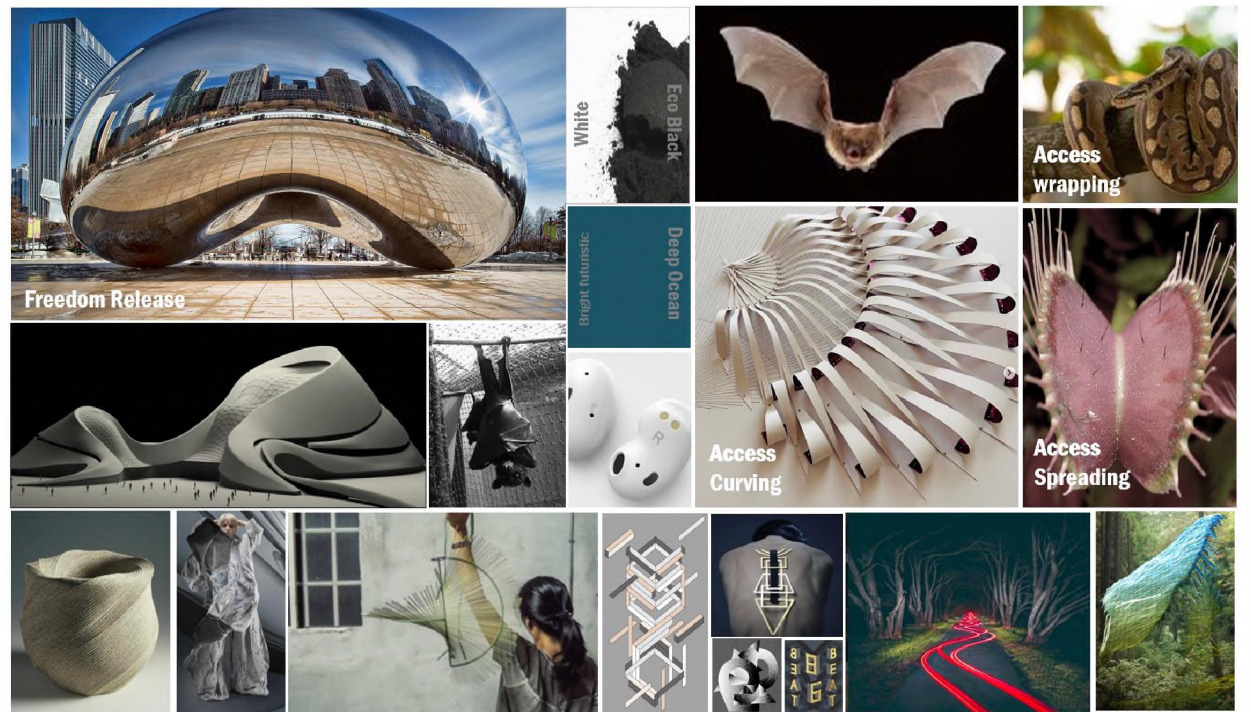
Issue	Pains
Bottle Stability	Wobbles While Moving
Variety of Bottles	Larger is Tight Smaller Moves
Rigid Discomfort	Box-Like Shapes No Body Ergonomic
Camera Protection	Impacts Confidence
Utilitarian Form	Visible Functions Dull Colors
Inaccessible Camera	Hard to Reach Miss Shots Hard Closures



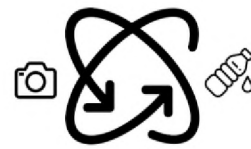
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HOW CAN WE DESIGN
BAG SOLUTIONS
INFLUENCED BY **BIOMIMICRY**
TO EMPOWER 30-TO-45-YEAR-OLD
GLAMPING ENTHUSIASTS
TO **EFFICIENTLY PACK AND ACCESS ITEMS**
WHILE **HIKING AND PHOTOGRAPHING.**

GAZAL MALEKITARRIZ | SPD 686 | PAXES5



TECHNOLOGY OVERVIEW



	<i>paxLASTIC</i>	<i>paxBALANCE</i>	<i>paxWRAP</i>
Inspire	Opening Venus fly trap	Swaying bat	Constricting ball python snake
Tech	Elastic X-cross attached to board storing kinetic energy	Self-adjusting limited movement mounting internal point	Shock-absorbing channel wrapping
Perform (+10%) Access + Repack	Gives spring push assistance during removal of camera or water bottle	Mostly maintains preferred positioning reducing jarring	Absorbs horizontal fluid related shocks while holding position

GAZAL MALEKITABRIZ | SPD 688 | PAXESS

IDEATION

paxLASTIC



GAZAL MALEKITABRIZ | SPD 688 | PAXESS

IDEATION

paxBALANCE



IDEATION

paxWRAP



IDEATION

Form



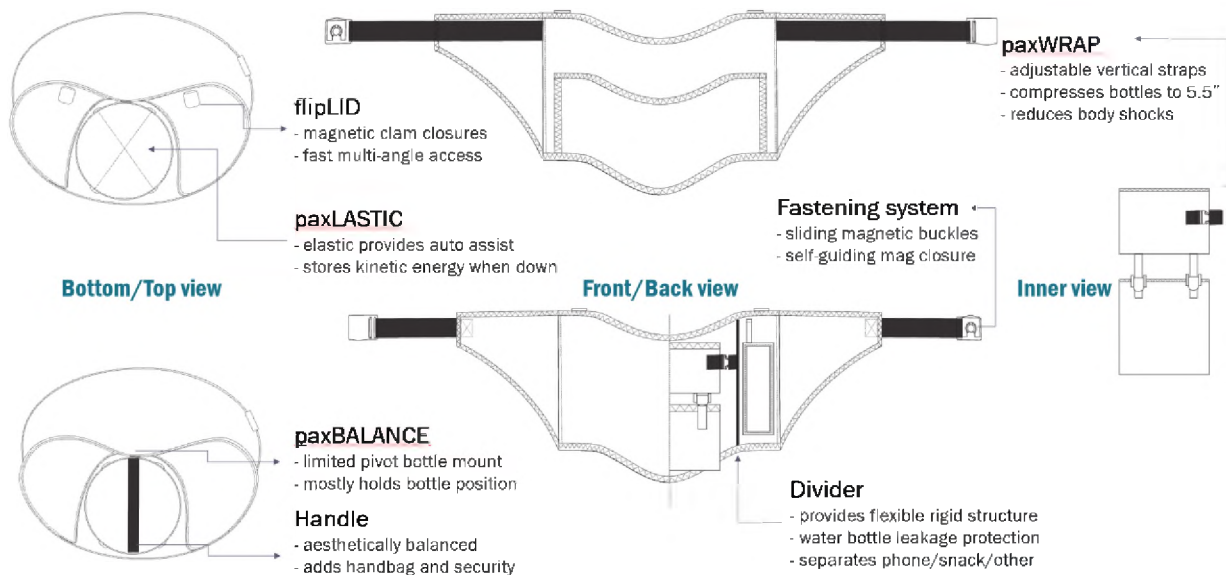
GAZAL MALEKITABRIZ | SPD 688 | PAXESS

TECH PACK

HIKE

Two side pockets, waist straps, one-size-all bottle holder
- Provides left-handed/right-handed usability with utility functions hidden

Dimension
7.5"x11"x4"



GAZAL MALEKITABRIZ | SPD 688 | PAXESS

TECH PACK



PIX 360 Velcro inner with moveable mesh pockets / camera cage

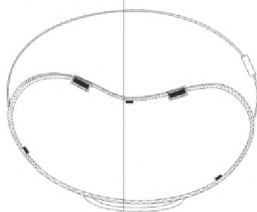
- Symmetrical body-fitting for left-handed/right-handed usability with utility functions hidden

Dimension

7.5"x11.4"x5"

Padded Handle

- allows hand-bag usage
- comfortable anchor point



Bottom View



paxWRAP

- straps adjust to fit sizes
- grippy pads stop sliding
- for water bottle or lens
- left OR right-handed

Fastening system

- sliding magnetic buckles
- self-guiding mag closure

Magnetic holder

- attach excess straps

flipLID

- magnetic clam closures
- fast multi-angle access
- top-down view when open

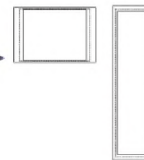
Split front/back lateral pockets

- additional storage for maps, scarf, other
- provide channel to thread waist straps
- optional point to join to Paxess HIKE

Attachable/detachable Velcro pockets

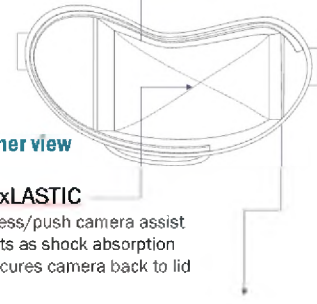
- customizable to the user needs
- mesh knit provides breathability
- store memory cards, keys, other

Front/Back view



5-sided Cushioning

- protects body/gear



Inner view

paxLASTIC

- press/push camera assist
- acts as shock absorption
- secures camera back to lid

Optional Dual Inner Dividers

- adjustability, organization, accessibility
- pack phone and other items separately
- some additional protection to gear

GAZAL MALEKITABRIZ | SPD 688 | PAXESS

MATERIALS & MANUFACTURING

STITCHES & THREAD



Straight Stitches
6 stitches/inch



Zigzag Stitches
6 stitches/inch



Serge Stitches



3-ply bonded nylon thread

FACE



400 x 300 D. Diamond Ripstop
Nylon/Polyester
Tight Weave
DWR finish & Urethane coating
Lightweight



400 D. Packcloth
Nylon
Woven Polyurethane coated
Flexible & Extremely
abrasion resistant

LINING



Soft shell
100% polyester face
100% polyester micro light black
fleece lining
Woven Soft DWR

STIFFENER



Tear Away Machine Embroidery
Stabilizer
Medium Weight 1.8 oz
100% polyester non woven acid
and lead free



Pellon 70 Peltex
Ultra-Firm Sew non-woven stabilizer
100% Polyester

INNER POCKETS



Medium Polyester Mesh
Semi-stiff knit handed polyester
1/8" round holes



400 D. Packcloth
Nylon
Woven Polyurethane coated
Flexible & Extremely
abrasion resistant

HARDWARE



Magnetic Sliding Buckles
Plastic Buckles

Hook & Loop



Sew on Hook and Loop
50% Polyester & 50% Nylon

STRAP



Webbing
100% Nylon
Consistent durable weave



350g air mesh
100% Polyester
Breathable & Comfortable Woven

BINDING



Tape
1/2" 100% Heavy Duty Polyester woven

GAZAL MALEKITABRIZ | SPD 688 | PAXESS

PERFORMANCE TESTING

Technology

paxLASTIC



Method of Testing

- Qualitative and Quantitative
- Testing and Timing both bags with two glampers compare the timing results of added/removed paxLASTIC
- Compare the timing results of PAXESS with benchmark products



	Performance	Benchmark	With paxLASTIC	Without paxLASTIC
	Access	3	3	3
	repack	3	3	2
	Access	12	10	11
	Repack	13	8	8
	Access	3	3	-
	repack	5	3	-

HIKE Results

PIX Results

PAXESS

Access/Repack

Benchmark vs. PAXESS

0.1% to 10% faster

w/o paxLASTIC

17% faster

Benchmark vs. PAXESS

0.1 to 33% faster

Feedback

- Loves the colors and hidden functionality in design
- Non-rigid and form fitting design gives more comfort
- Water bottle wobbles less giving one handed access



GAZAL MALEKITARRIZ | SPD 688 | PAXESS

PERFORMANCE TESTING

Technology

paxBALANCE



Method of Testing

- Qualitative & Quantitative
- Testing HIKEPaxess with a glamper compared to the benchmark product in a sling mode



	Performance	Benchmark	PAXESS
	Access	6	4
	repack	5	3

HIKE Results

Access/Repack

Benchmark vs. PAXESS

33% to 40% faster



GAZAL MALEKITARRIZ | SPD 688 | PAXESS

47

PERFORMANCE TESTING

Technology

paxWRAP



Method of Testing

- Qualitative and Quantitative
- Testing and Timing both bags with two glampers
- Compare the timing results of PAXESS with benchmark products



	Performance	Benchmark	PAXESS
	Access	6	4
	repack	5	3
	Access	3	3
	repack	5	3

HIKE Results

Benchmark

PAXESS

PIX Results

Benchmark

PAXESS

Repack

Benchmark vs. PAXESS
YETI 26oz & HYDROFLASK
32oz

10%
faster





Benchmark vs. PAXESS

40%
faster





GAZAL MALEKITABRIZ | SPD 688 | PAXESS

PERFORMANCE TESTING

Technology

paxWRAP



Method of Testing

- Testing different sizes of water bottles fitting/accessing/repacking

Tested water bottles include

- Hydroflask 20/32oz
- YETI 26oz



HIKE Results

PIX Result

Benchmark

PAXESS

Benchmark

PAXESS

Access/Repack









GAZAL MALEKITABRIZ | SPD 688 | PAXESS

NEXT STEPS

Takeaways	Next
Users liked stability and moving and ease of access to items	Minimalist patterning—main shell constructed from single piece of fabric to minimize seams and stress points
Users would like better strap padding and a little more structure	Thermoforming/vaccumforming fabrics To form in any shape seamless & to improve pattern
Form fitting and aesthetics are very important to the glampers	Testing measuring metal tapes mechanism to cover around water bottle by pressing water bottle inside, as a mechanism
Like the one-handed accessibility of PAXESS	Give high-end sewed bags to the contact to send to glampers for testing

GAZAL MALEKITABRIZ | SPD 688 | PAXESS



Phase III
Spring 2022
Prototyping & 3D modeling

19.4 Spring Term Presentation



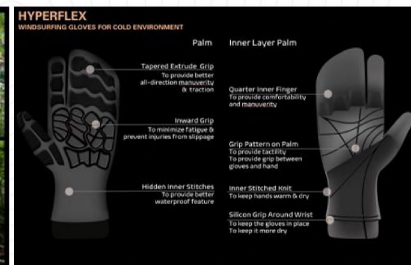
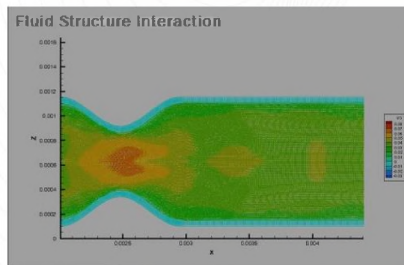
CONTENT

- Introduction
- Research
- Problems
- Goals
- Moodboard
- Ideation & Prototyping
- Benchmark Performance testing
- Final Performance testing
- Final Design-Performance, Fit
- Features & Benefits + Techpacks
- Materials
- Colorways
- Expert Validation & Suggestion-Recorded-Mehrdad Javidi
- Athlete Validation
- Packaging

GAZAL MALEKITABRIZ | PAXESS

GAZAL MALEKITABRIZ

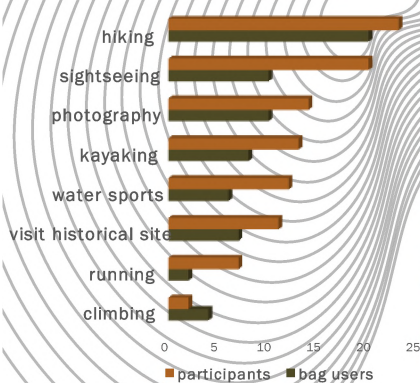
- **Background** Mechanical Engineering from Shiraz University, Iran.
Thesis Fluid Structure interaction **Industry** Two years as an engineer
- **Why-Purpose** Improve Aesthetic and efficiency through performance testing & implementing technology
- **Postgraduation** I'm devoting my time to explore soft good and hard good products, and construction



GAZAL MALEKITABRIZ | PAXESS

CONSUMER RESEARCH

30 Campers & Glampers Surveyed on act using bags & packs

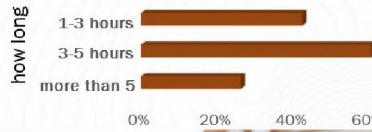


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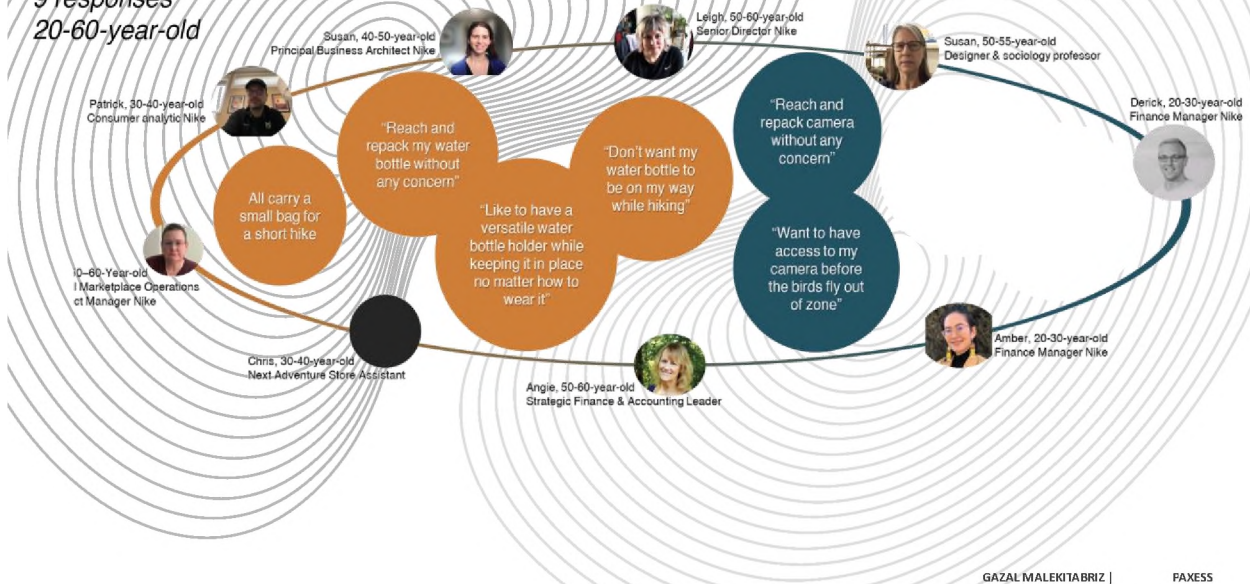
USER GROUP

50 Campers & Glampers Surveyed,
9 Personal Interviews & 3 Benchmark Demos
Age 41.2% 30-40-year-old



CONSUMER RESEARCH

9 responses
20-60-year-old

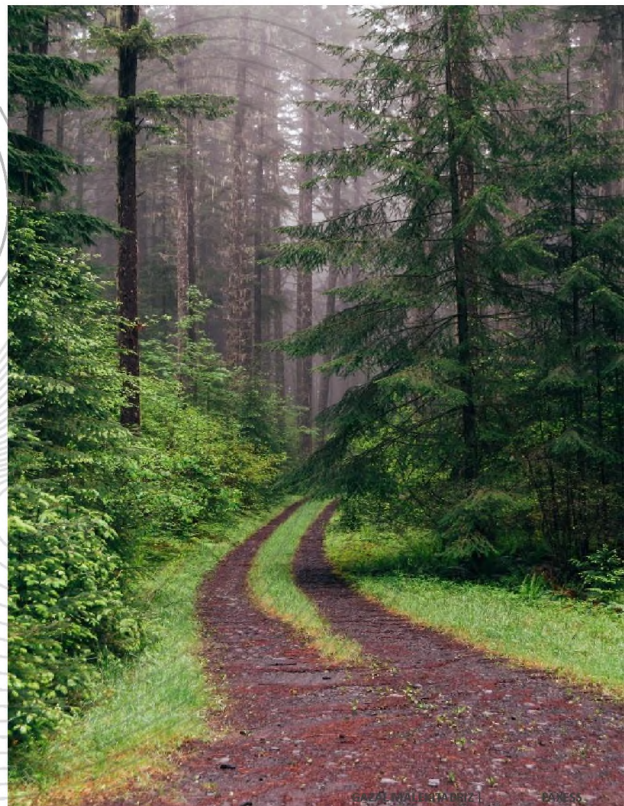
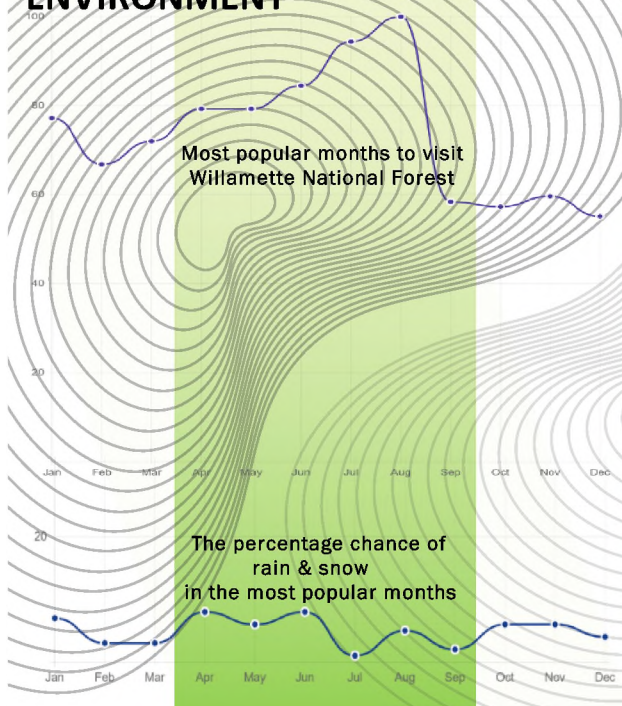


PROBLEM STATEMENT

How can we design bag solutions to empower 30-45-year-old nature & photographer enthusiasts to efficiently pack and access items while hiking and photographing.



OUTDOOR HIKING ENVIRONMENT

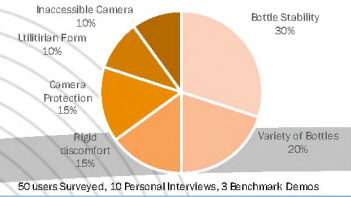
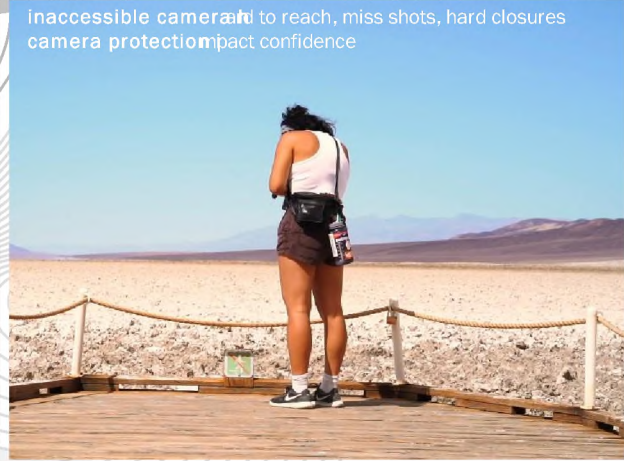


PROBLEMS TO SOLVE

bottle/camera stability
wobbles while moving



inaccessible camera
hard to reach, miss shots, hard closures
camera protection
impact confidence



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PROBLEMS TO SOLVE

Utilitarian form

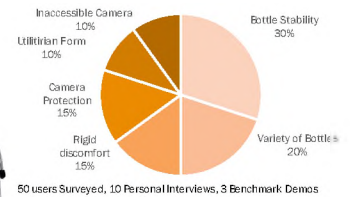
Visible functions, dull colors

Variety of bottles

Larger is tight, smaller moves

Rigid discomfort

Box like shapes, no body ergonomic



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GOALS

Performance

Ease of access/repack
Provide easily accessible storage by considering elbow/wrist movement, while protecting valuable and/or heavy items

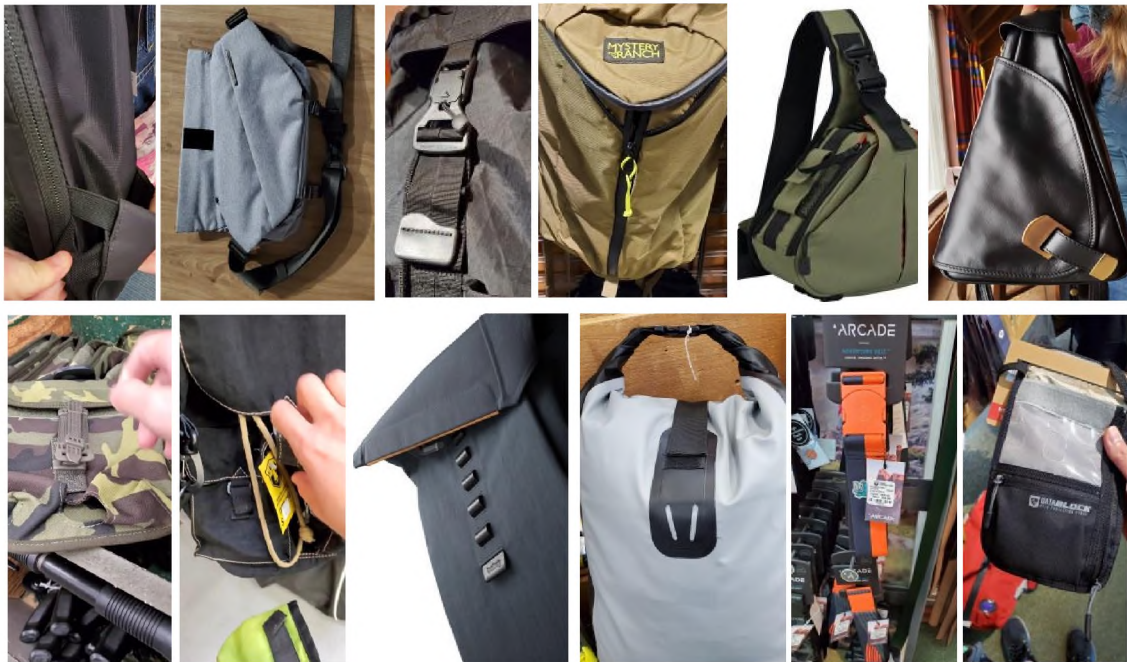
Form

Versatility
Provide universal carry by considering weight distribution and storage placement, while creating a safe space for common items

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FAXESS

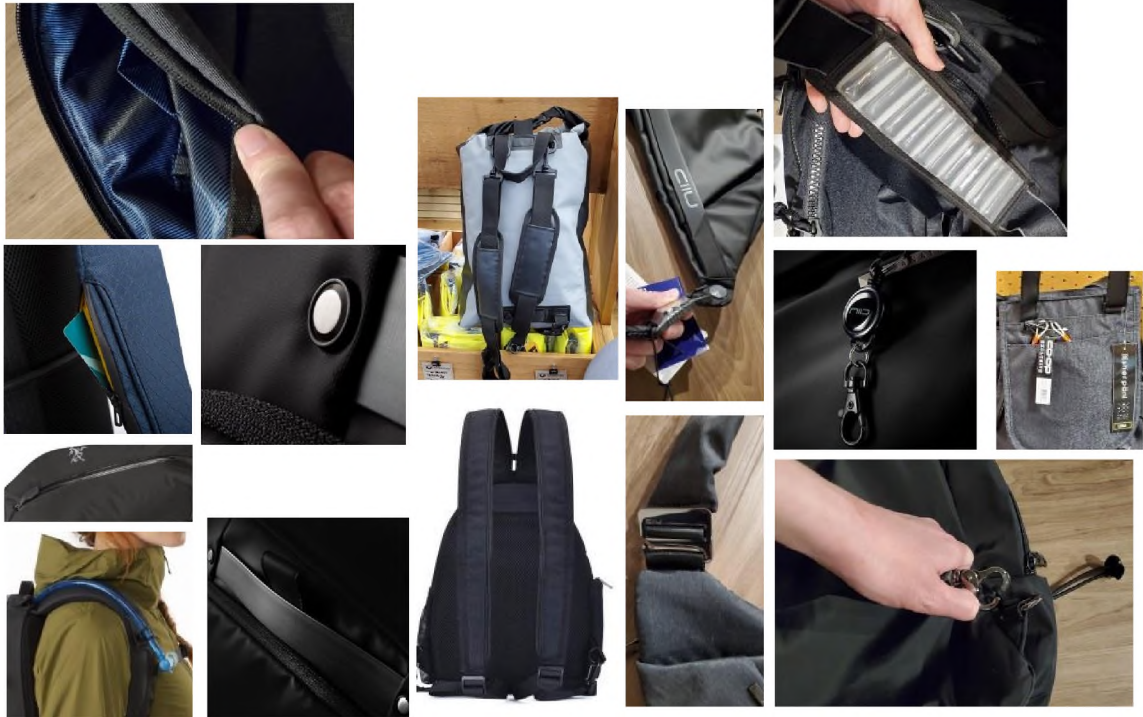
MARKET



GAZAL MALEKITABRIZ |

FAXESS

MARKET

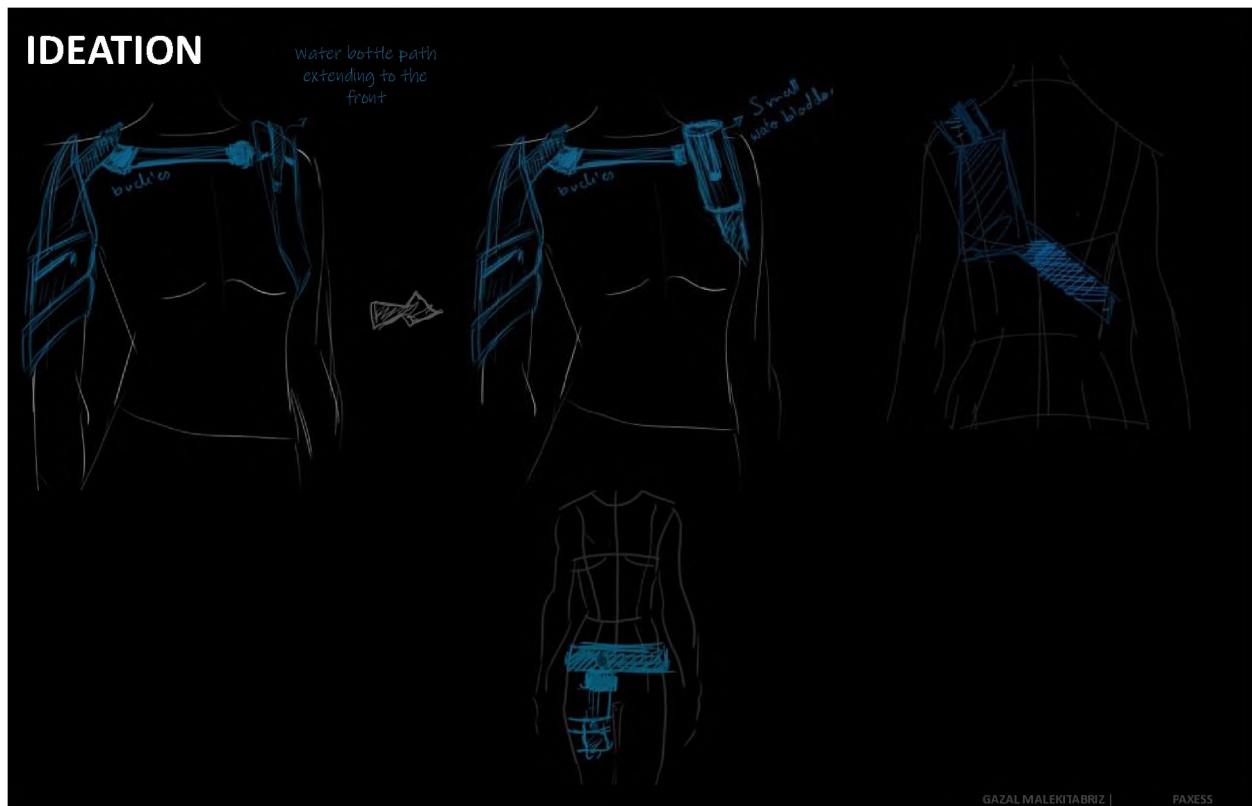
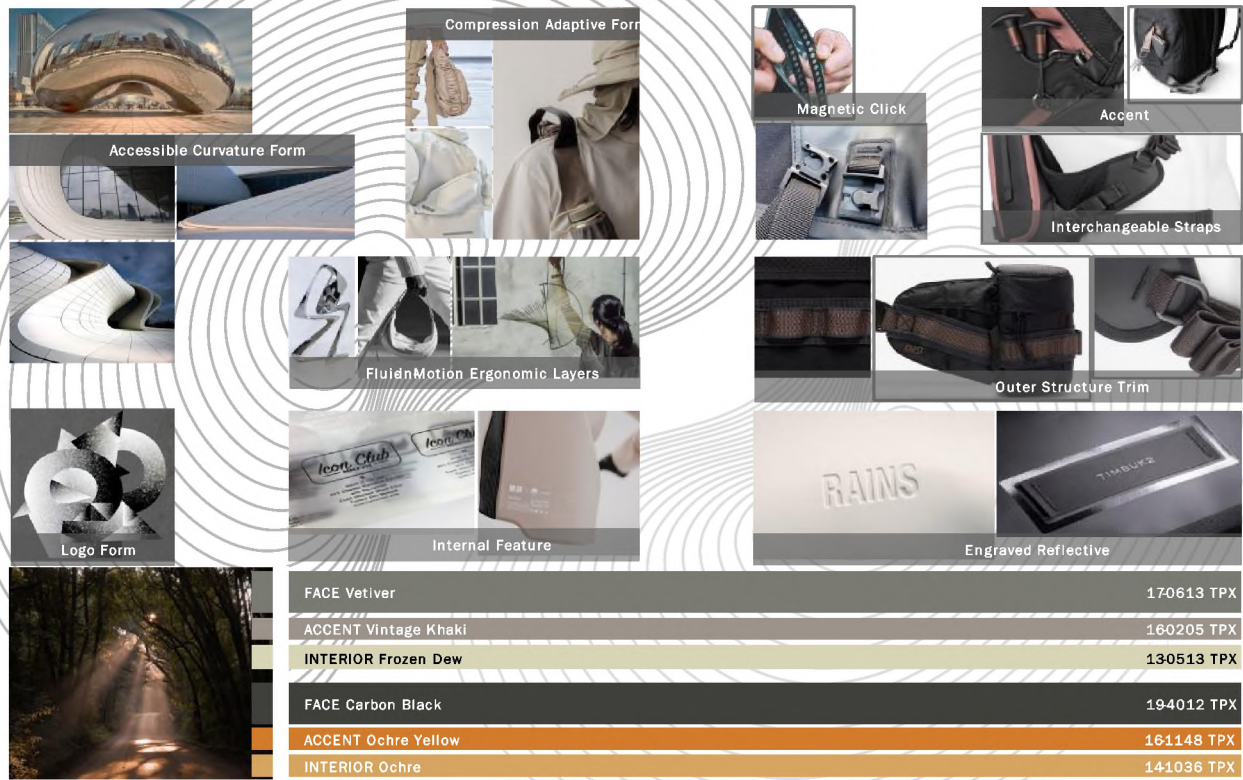


GAZAL MALEKITABRIZ | FAXESS

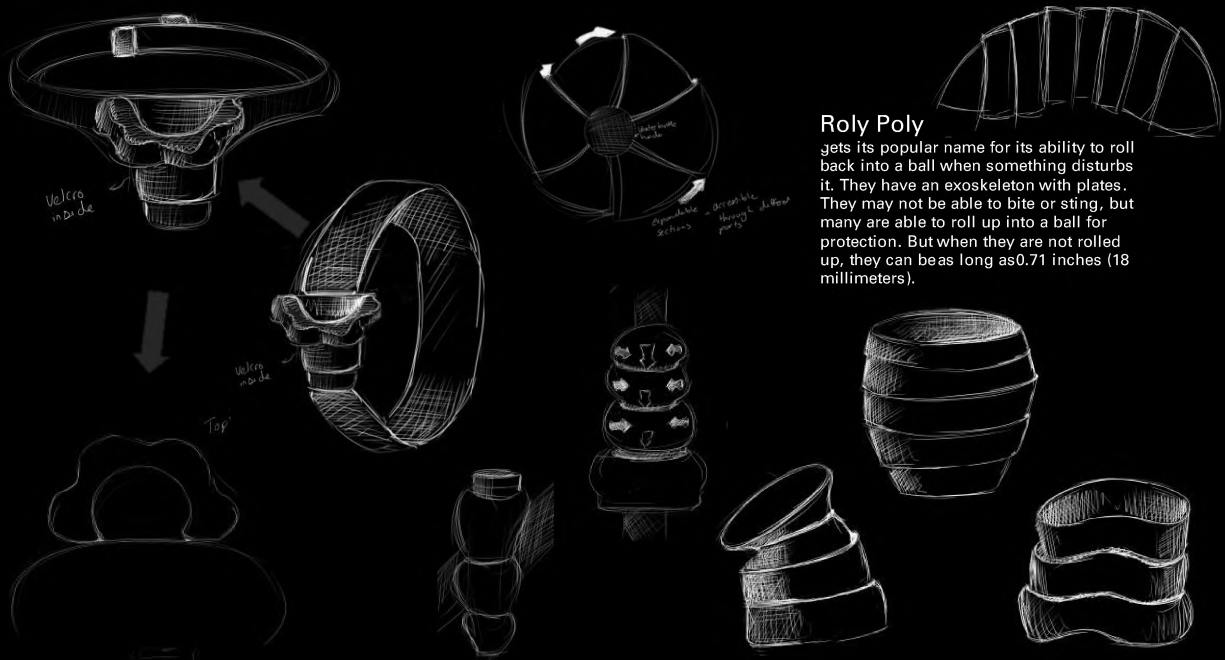
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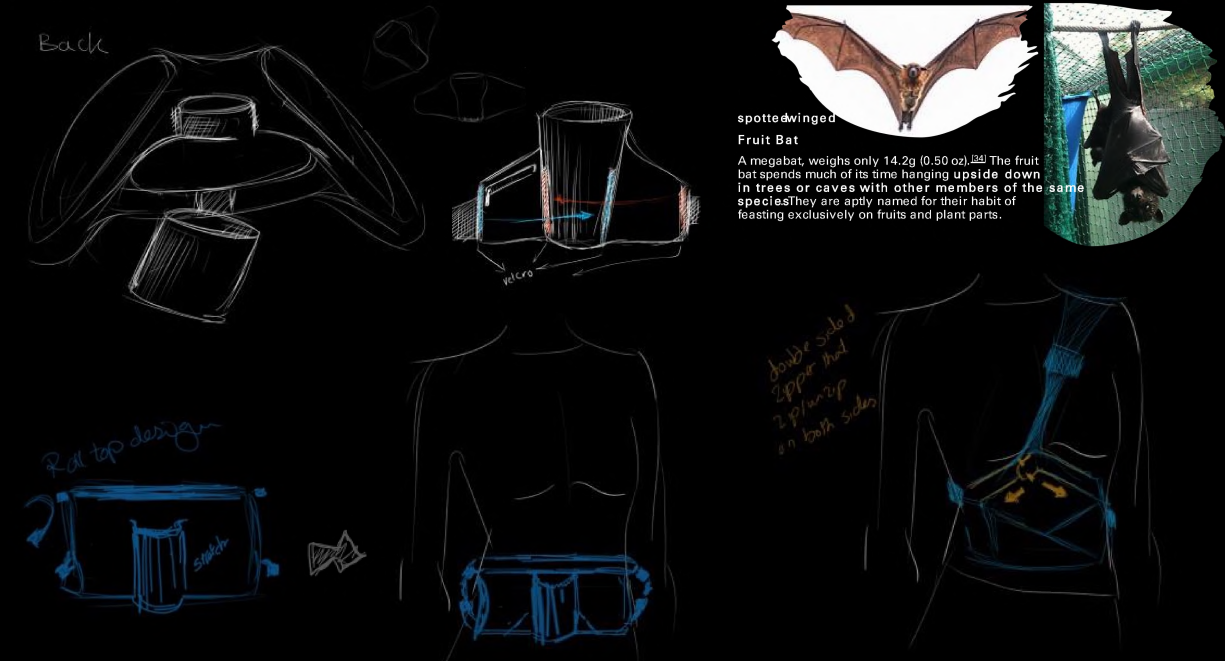


IDEATION



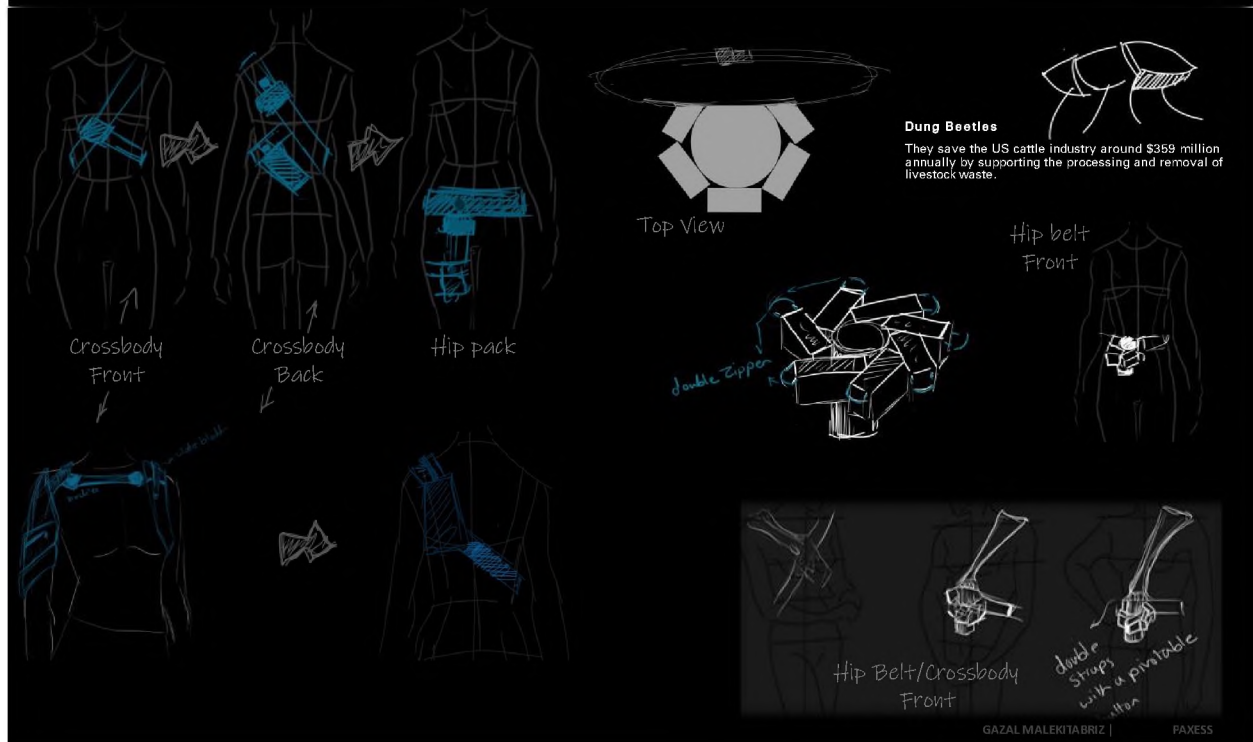
GAZAL MALEKTAIRIZ | PAXESS

IDEATION

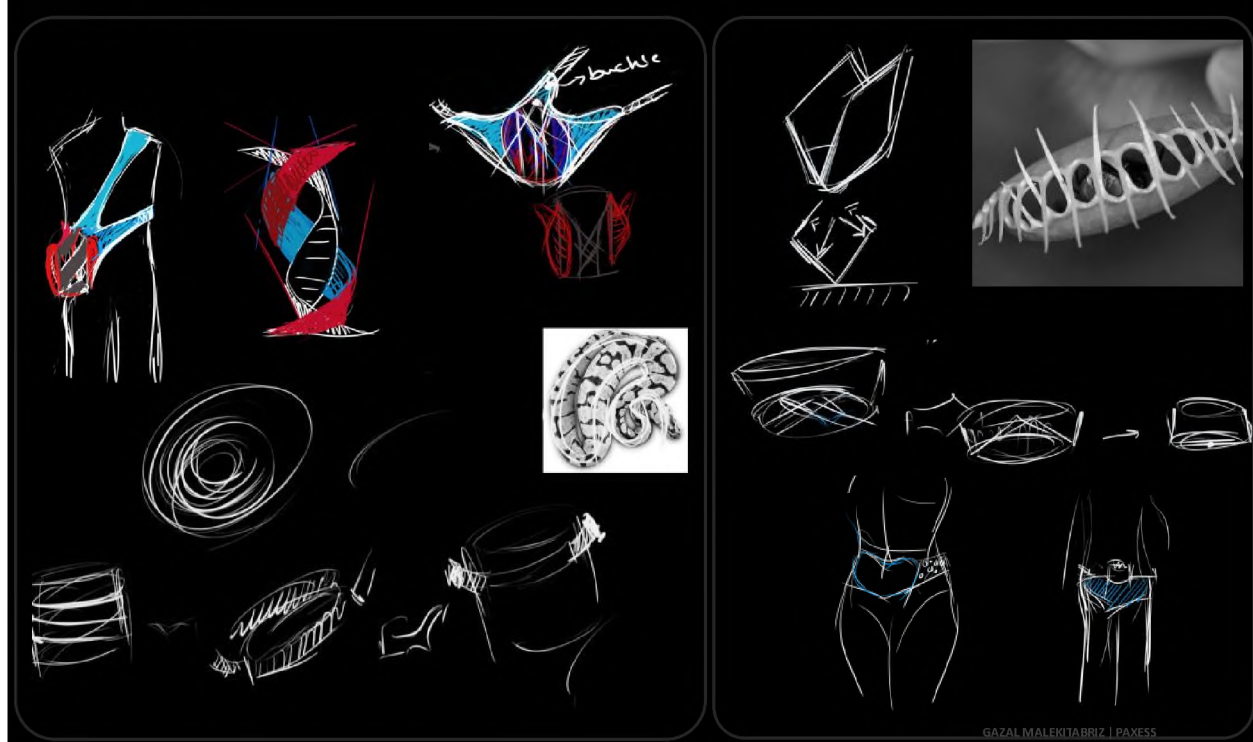


GAZAL MALEKTAIRIZ | PAXESS

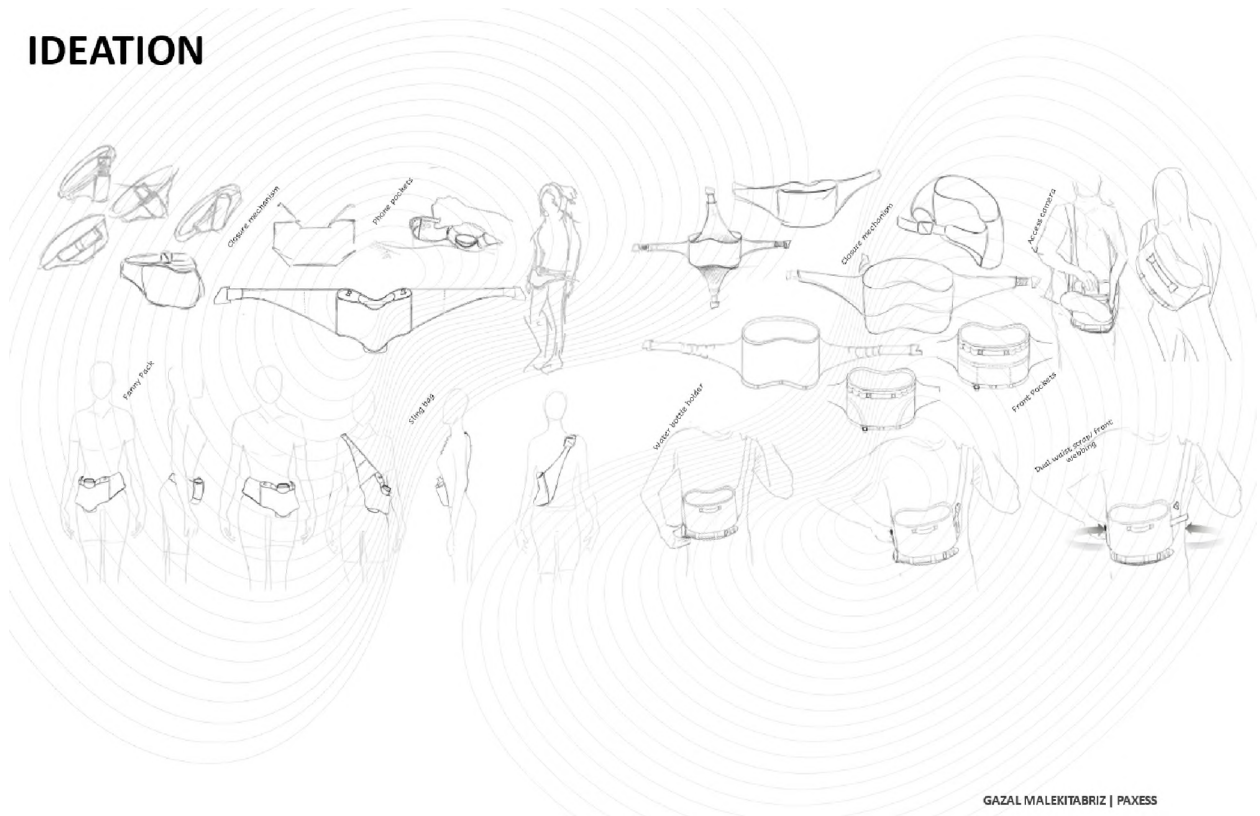
IDEATION



IDEATION

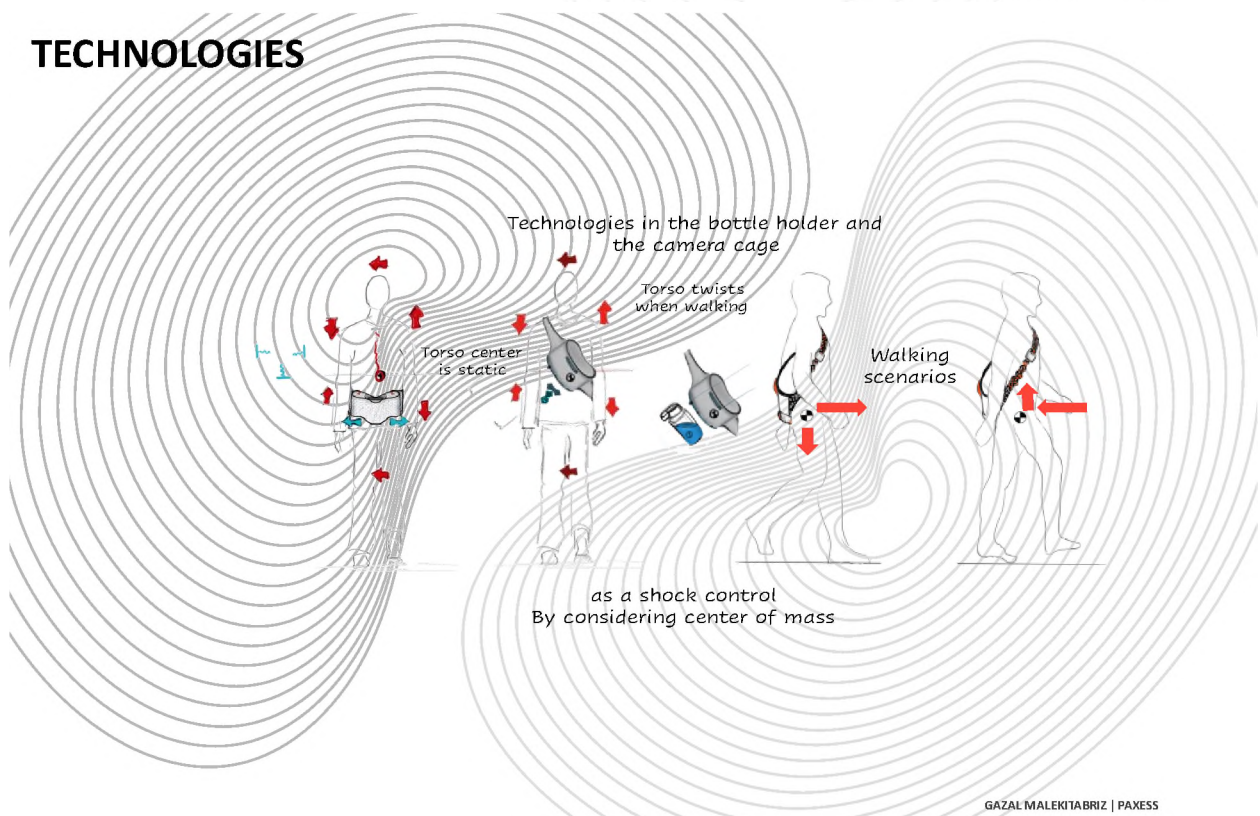


IDEATION



GAZAL MALEKITABRIZ | PAXESS

TECHNOLOGIES



GAZAL MALEKITABRIZ | PAXESS

TECHNOLOGIES



Mechanisms
channel wrapping bottle holder
compressible Straps

Benefits
comfort
impact absorbing



Mechanisms
spring push assist while
repacking

Benefits
impact absorption
while hiking



Mechanisms
self adjusting movement mounting
internal

Benefits
stability & balance
vertical position & reduce jarring

GAZAL MALEKITABRIZ |

PAXESS

Process MIND MAP

Items to pack

Hiking

Cellphone
Water Bottle
First Aid Kit
Snacks
Key & Cards



Camera

DSLR-Mirrorless
Cellphone
Water Bottle
Add. battery
Snacks



Dimension

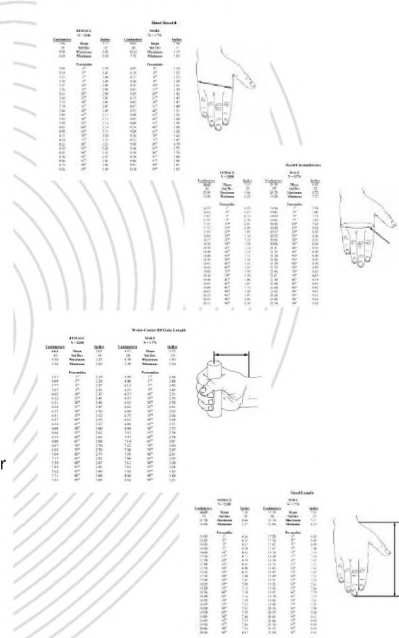
Water bottles
12oz
Hydroflask
24oz
32 oz

Camera

Not being larger than benchmark products
Hiking bag

Camera bag

Hand circumference and avg finger dimension for smaller
pockets in the hiking bag



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PAXESS

PROCESS-PAXESSPIX



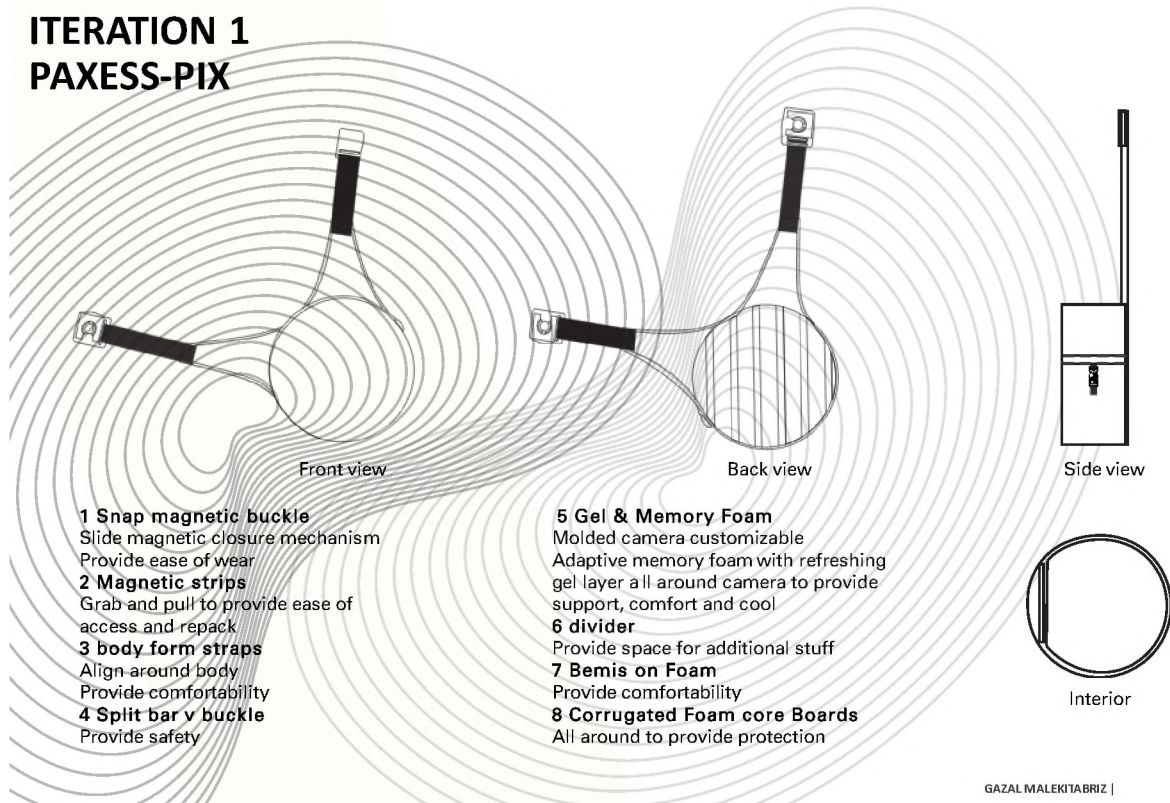
GAZAL MALEKITABRIZ | FAXESS

PROCESS-PAXESSPIX

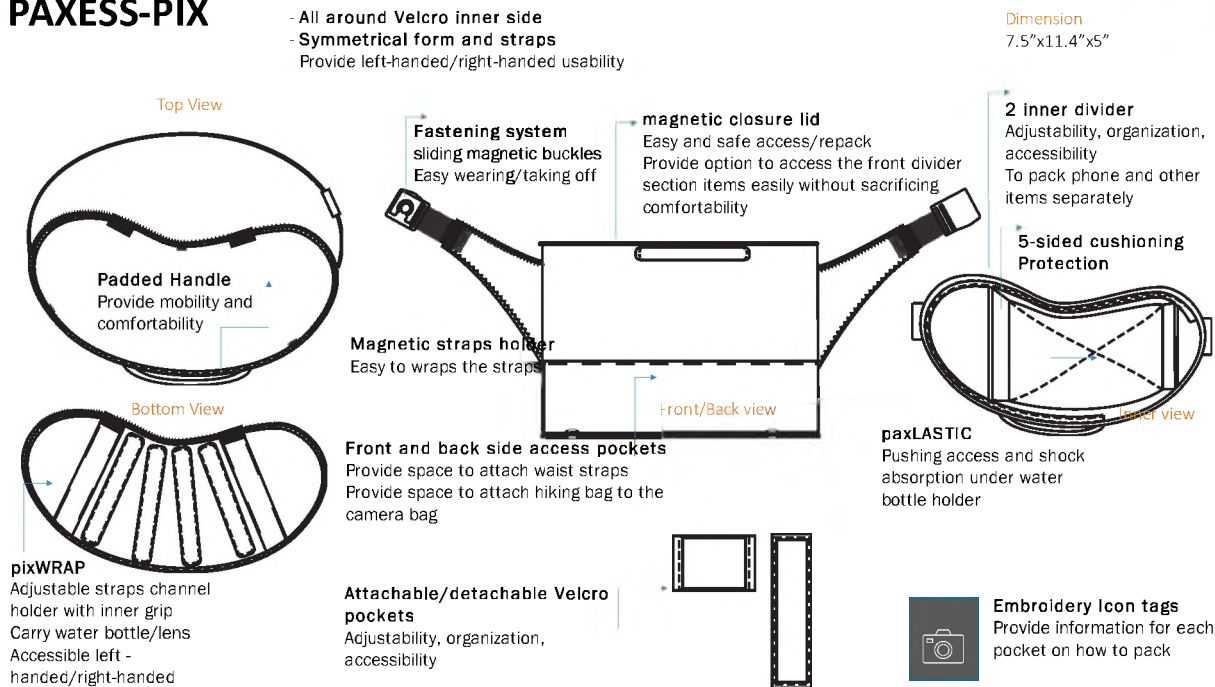


GAZAL MALEKITABRIZ | FAXESS

ITERATION 1 PAXESS-PIX



ITERATION 2 PAXESS-PIX



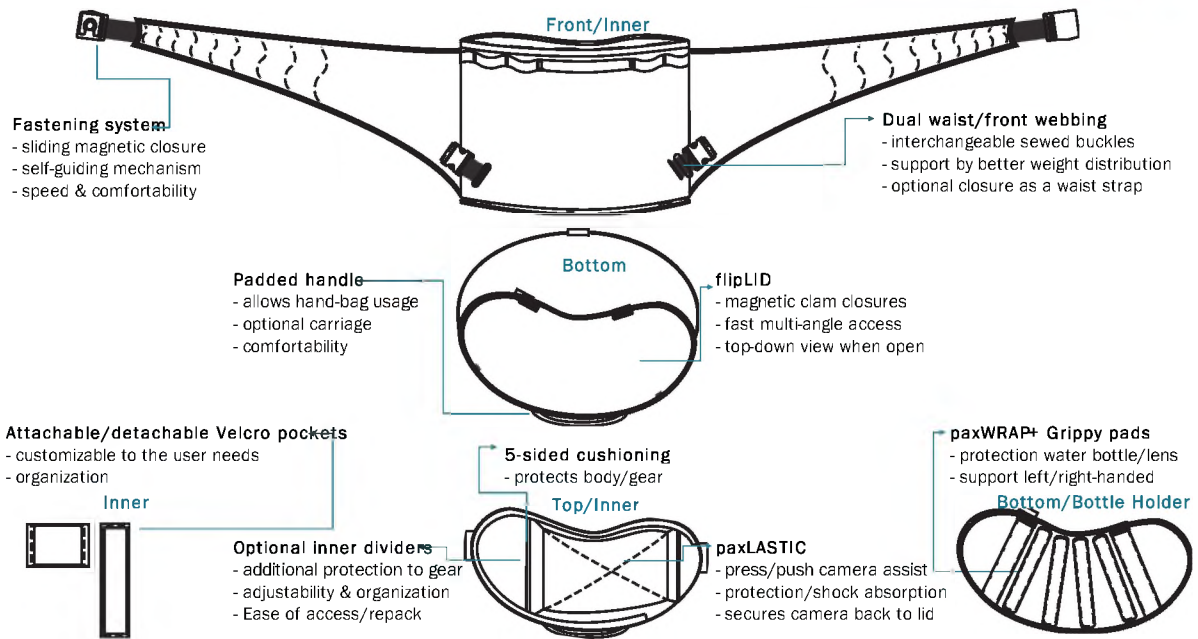
ITERATION 3 PAXESS-PIX



360 Inner Velcro with moveable pockets/camera cage

- Symmetrical body-fitting for left-handed/right-handed usability with utility functions hidden

Dimension (without straps)
7.5"x11.5"x5"



GAZAL MALEKITABRIZ |

PAXESS

PROCESS-PAXESSHIKE



GAZAL MALEKITABRIZ | PAXESS

PROCESS-PAXESSHIKE



GAZAL MALEKITABRIZ |

PAXESS

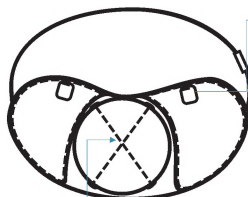
ITERATION 1 PAXESS-HIKE



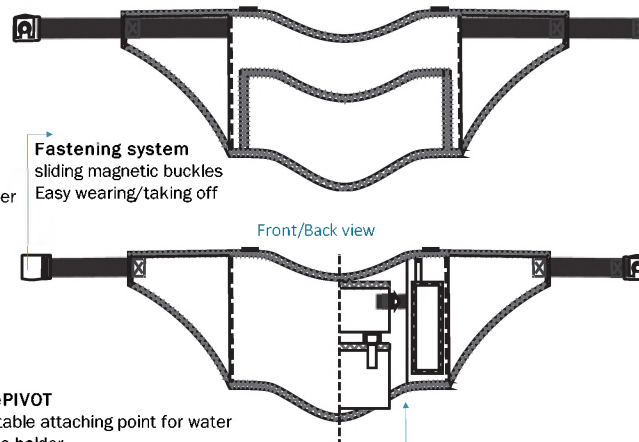
Two side pockets and symmetrical straps
Provide left-handed/right-handed usability

Dimension
7.5"x11"x4"

FLPiid
magnetic closure lid for side pockets
Easy access/repack
Easy movement as far as the wrist movement



paxLASTIC
mechanism under water bottle holder
Bottom/Top view



Fastening system
sliding magnetic buckles
Easy wearing/taking off

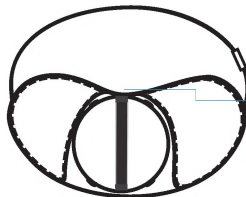
Front/Back view

Divider
Adjustability, organization,
accessibility
To pack phone and other items
separately

hike
Adjustable straps with
quick release buckles
Provide compression
around different diameter
water bottles up to 5.5"
and security

Inner view

hikeHEIGHT
Provide ease of adjustability
Provide flexibility and cover
different height water bottles



hikePIVOT
Pivotable attaching point for water
bottle holder
Provide adjustability

Handle
Provide ...



Embroidery Icon tags
Provide information for each
pocket on how to pack

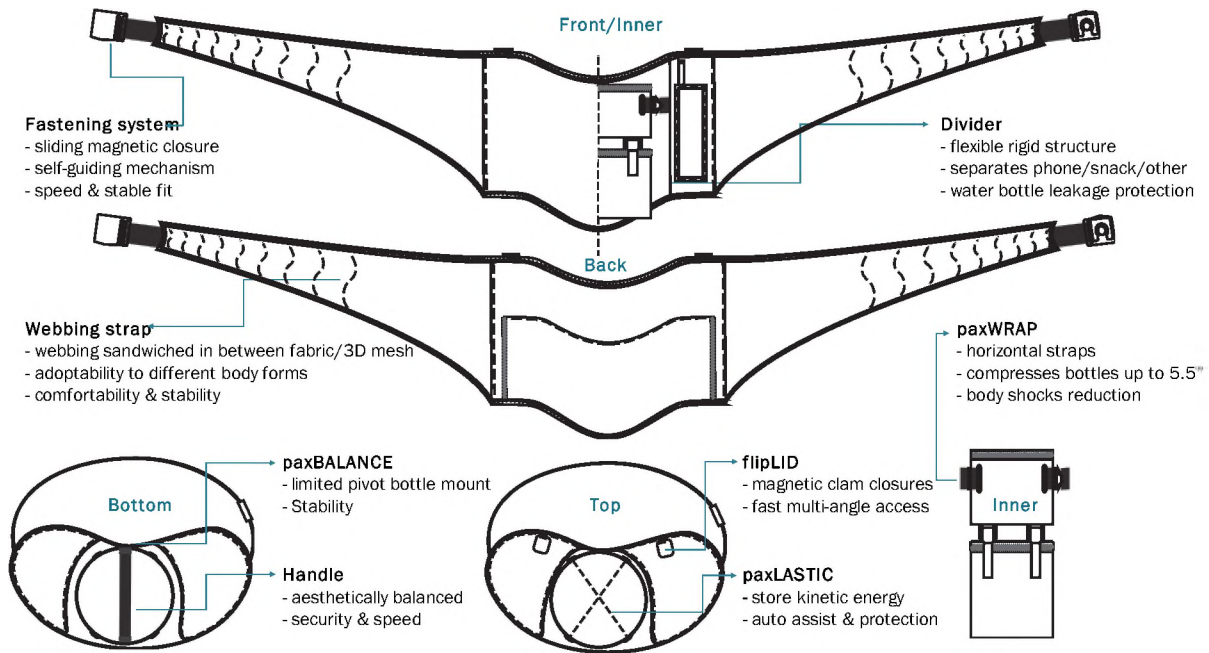
GAZAL MALEKITABRIZ |

PAXESS

ITERATION 2 PAXESS-HIKE

Two side pockets, ~~size~~ all bottle holder
- Provides left-handed/right-handed usability with utility functions hidden

Dimension (without straps)
7.5"x11"x4"



BENCHMARK RESEARCH

Photography common items to carry



Crossbody Bag

- ❖ Mesh wide shoulder straps
Provide comfortability
- ❖ Weatherproof zippers and materials Protect items
- ❖ Abrasion resistance
Provide durability

Hiking common items to carry



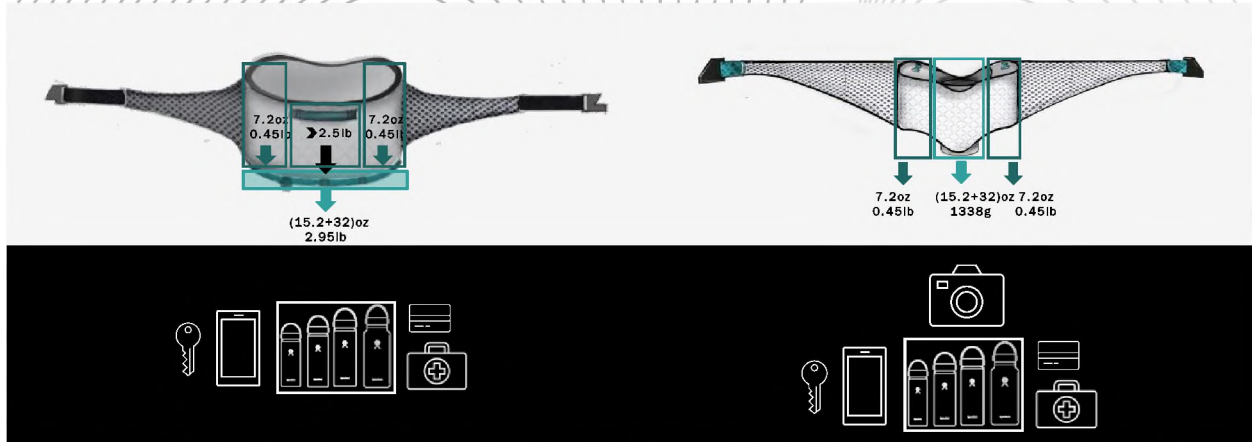
Fanny Pack + Water Bottle Holder

- ❖ Anti-fall elastic strings
Keep water bottle stable
- ❖ Two compartments
Phone not being scratched
- ❖ Mesh pad

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PAXESS

WEIGHT DISTRIBUTION



GAZAL MALEKITABRIZ | PAXESS

FINAL PERFORMANCE TESTING

Access/Repack

Hiking bag

Camera bag

Average timing to access/repack common items being carried by hikers & enthusiast photographers during outdoor hiking

Posture/Marks

Posture comparison
Before carrying the pack and after 45 min. hike

Marks on body after 45 min. hike

GAZAL MALEKITABRIZ | PAXESS



Performance Testing															
Nature Hiking								Nature Hiking Photography							
Accessing/Repacking								Accessing/Repacking							
Wearing	Item	Steps	Access	repack				Item	Steps	Access	repack				
Fanny Pack	Water Bottle	Benchmark	3.10"	8.88"				Water Bottle	Benchmark	4.90"	6.33"				
		Proto	2.20	2.81"					Proto	2.197"	7.80"				
	Phone	Benchmark	5.66"	10.10"				Camera	Benchmark	8.20"	15.23"				
		Proto	5.90"	5.70"					Proto	4.30"	5.70"				

FINAL PERFORMANCE TESTING



Hiking bag



Camera bag



33% to 40%
faster than
benchmark



17% faster by
paxLASTIC

Access/Repack



Posture/Marks

Posture
comparison



At least 50%
improvement



No mark on
body

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PAXESS



PERFORMANCE

Accessing & repacking items while hiking & photography



GAZAL MALEKITABRIZ | PAXESS

FIT

Common items to carry while hiking and photographing



GAZAL MALEKITABRIZ |

PAXESS

MATERIALS

STITCHES & THREAD  Straight Stitches 6 stitches/inch  Zigzag Stitches 6 stitches/inch  Serge Stitches  3-ply bonded nylon thread	LINING  Soft shell & Laminated Nylon 100% polyester face 100% polyester micro light black fleece lining Woven Soft DWR	HARDWARE  Magnetic Sliding Buckles Sliding Buckles
FACE  400 x 300 D. Diamond Ripstop Nylon/Polyester Tight Weave DWR finish & Urethane coating Lightweight  400 DPackcloth Nylon Woven Polyurethane coated Flexible & Extremely abrasion resistant	STIFFENER  Tear Away Machine Embroidery Stabilizer Medium Weight 1.8 oz 100% polyester non woven acid and lead free  Pellon70 Peltex Ultra-Firm Sew non-woven stabilizer 100% Polyester	Hook & Loop  Sew on Hook and Loop 50% Polyester & 50% Nylon
	INNER POCKETS  Medium Polyester Mesh Semi-stiff knit handed polyester 1/8" round holes  Laminated Nylon	STRAP  Webbing 100% Nylon Consistent durable weave  350g air mesh 100% Polyester Breathable & Comfortable Woven
		BINDING  Tape 1/2" 100% Heavy Duty Polyester woven

GAZAL MALEKITABRIZ | SPD 688 |

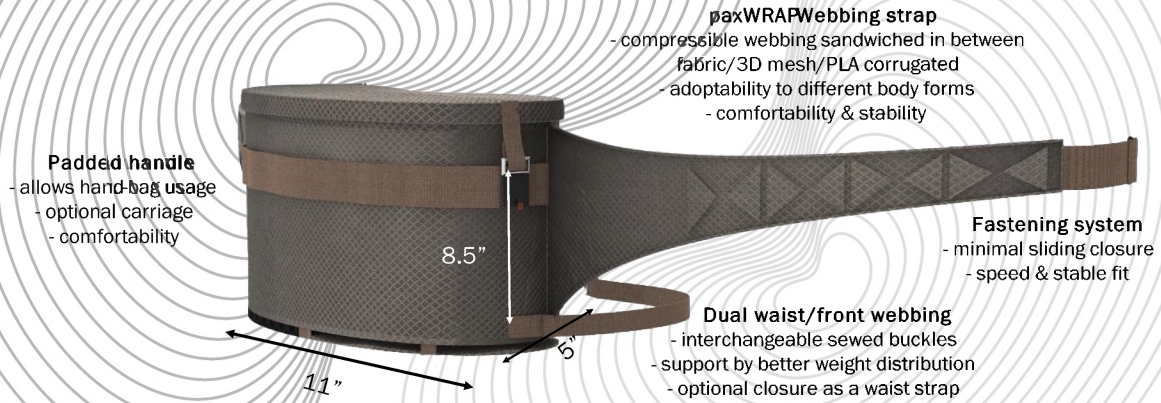
PAXESS

FEATURES & BENEFITS

PAXESSPIX

360 inner Velcro compatible with moveable pockets/camera cage

-Symmetrical body-fitting for universal fit with utility functions hidden

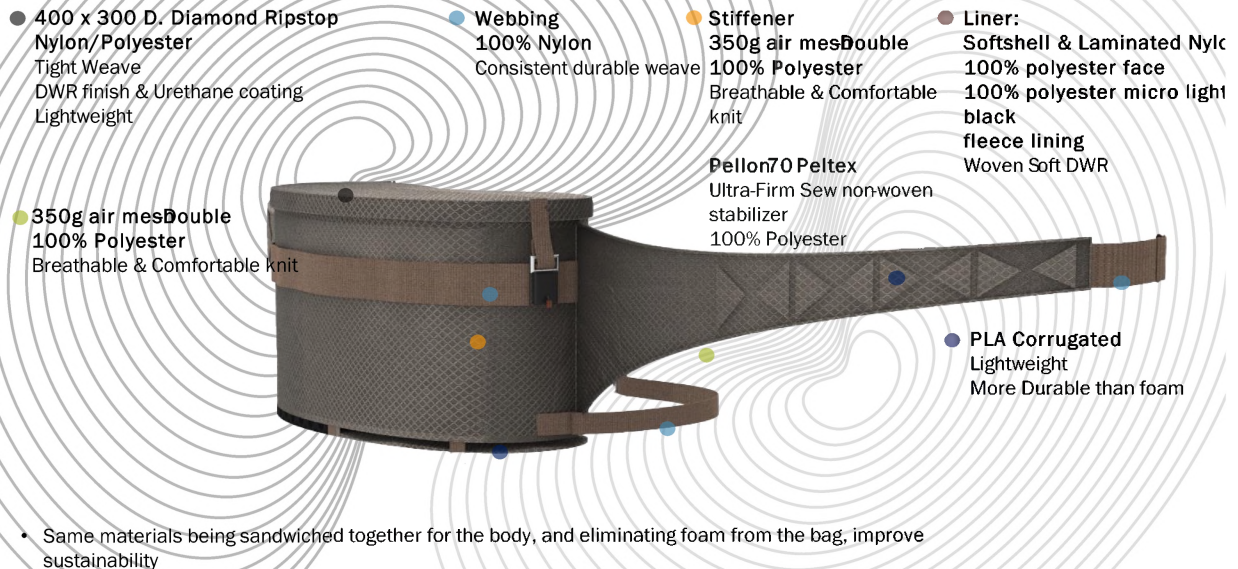


GAZAL MALEKITABRIZ |

PAXESS

FEATURES & BENEFITS

PAXESSPIX



GAZAL MALEKITABRIZ |

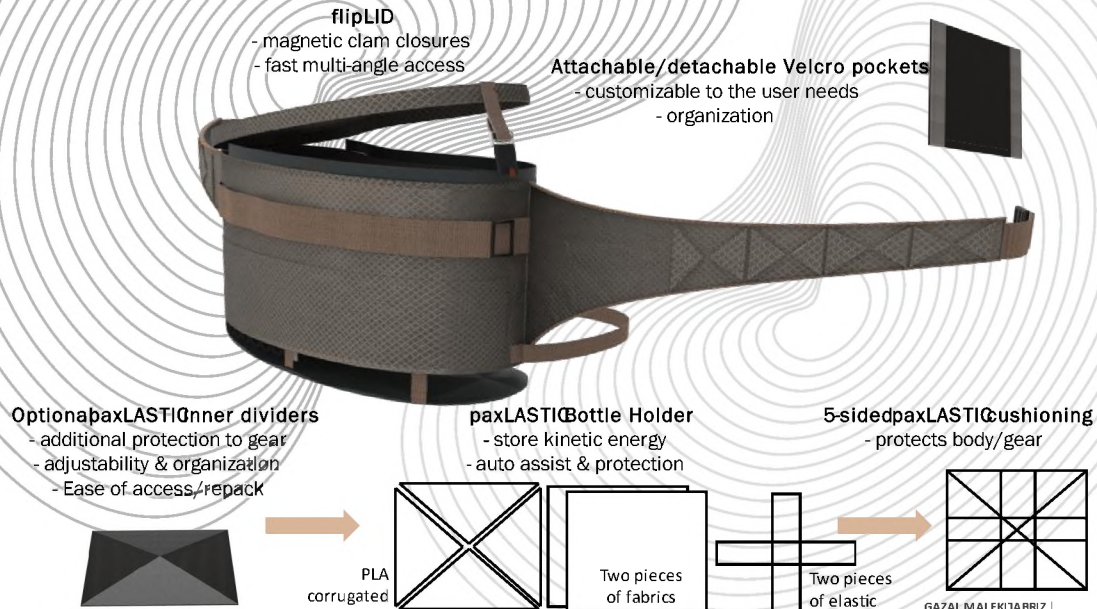
PAXESS

Features & Benefits

PAXESSPIX

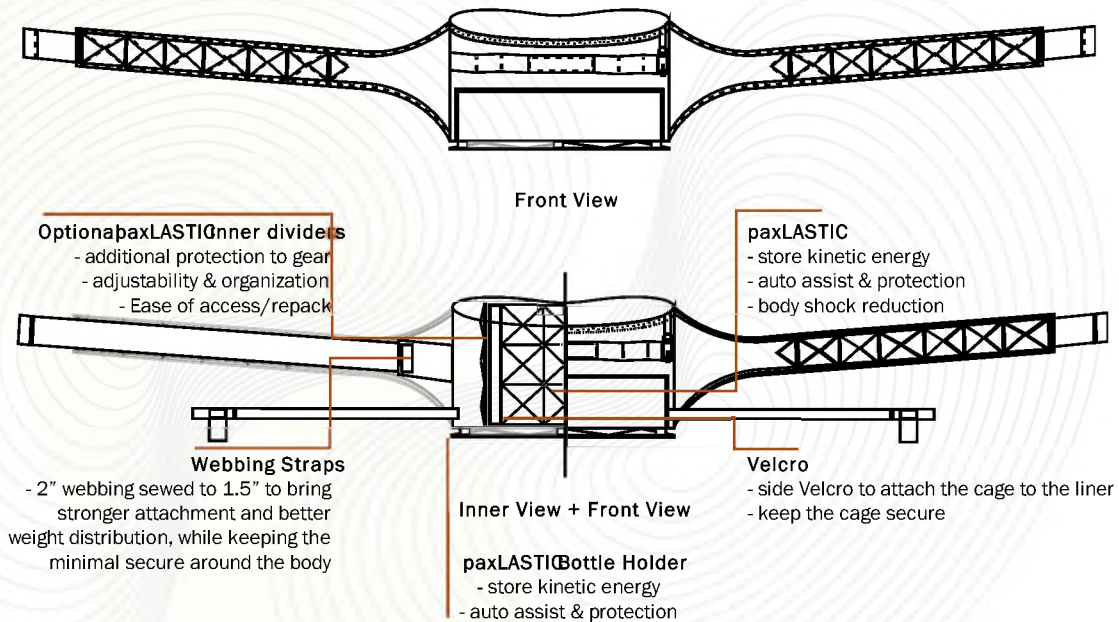
360 inner Velcro-compatible with moveable pockets/camera cage

-Symmetrical body-fitting for universal fit with utility functions hidden



FEATURES & BENEFITS

PAXESSPIX

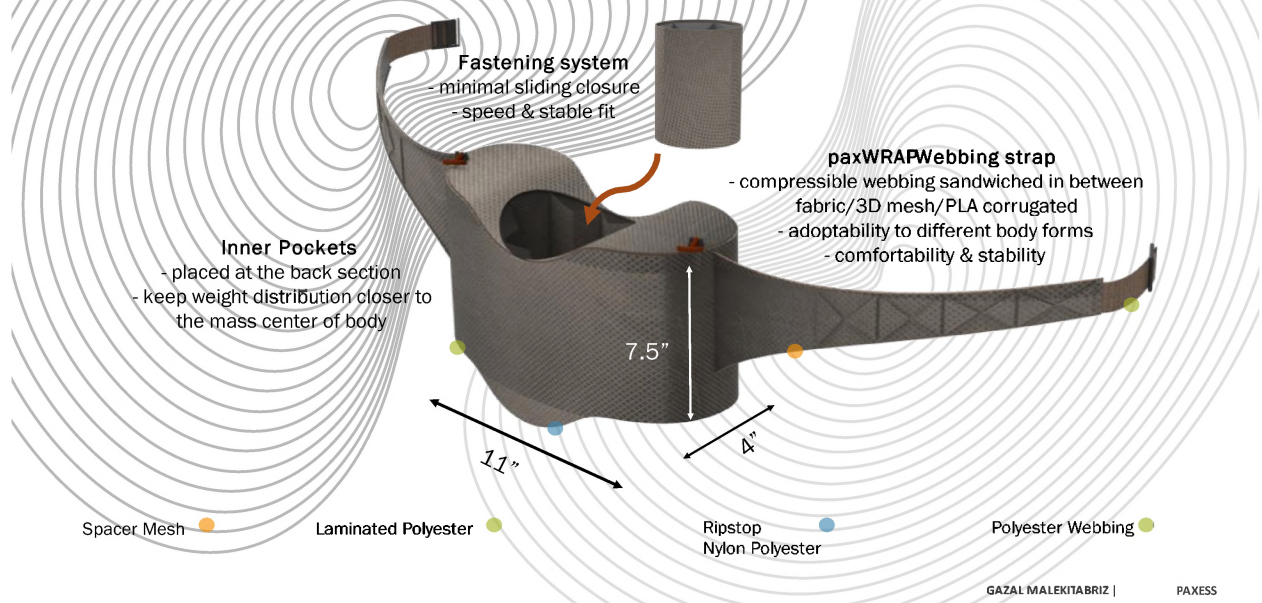


FEATURES & BENEFITS

PAXESSHIKE

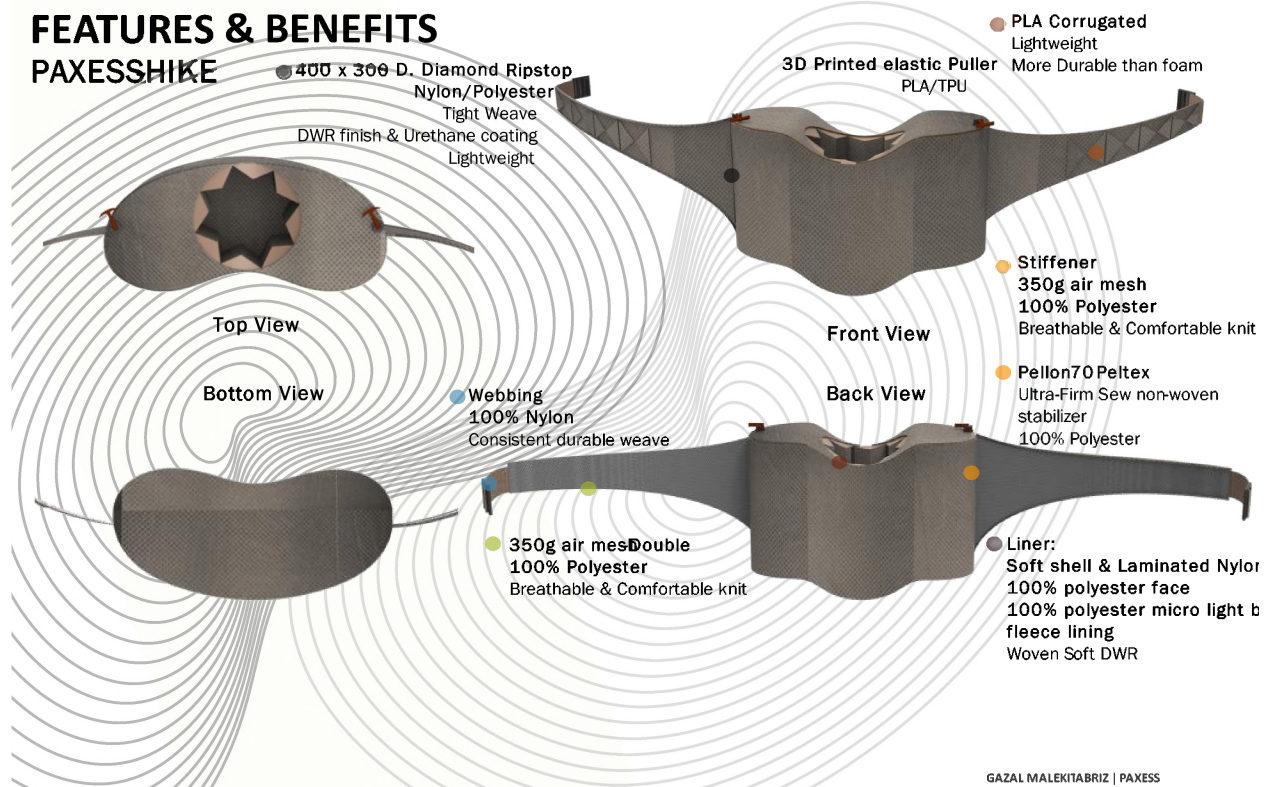
Two side pockets, one size-all bottle holder

- Provides left-handed/right-handed usability with utility functions hidden



FEATURES & BENEFITS

PAXESSHIKE



FEATURES & BENEFITS

PAXESSHIKE



paxLASTIC

- store kinetic energy
- auto assist & protection
- body shock reduction



paxLASTIC

- Attached to each other



paxLASTIC

- Attached to the inner section
- Hold gears while reducing body shock

GAZAL MALEKITABRIZ |

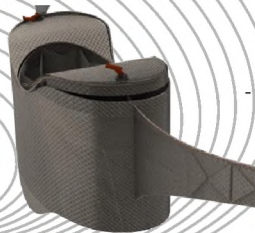
PAXESS

FEATURES & BENEFITS

PAXESSHIKE

fliptid

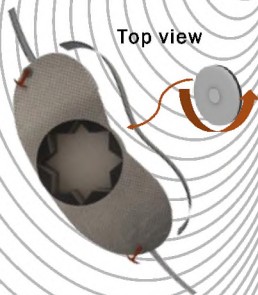
- Magnetic closure with a puller sandwiched between fabrics



Closure

- Magnetic side pocket closure mechanism
- Provide ease of access

Top view



paxBALANCE

- sandwiched between bottle holder & back section
- limited pivot bottle mount
- Stability

Front Inner view



divider

- flexible rigid structure
- separates phone/snack/other
- water bottle leakage protection

Front Inner view



paxBALANCE

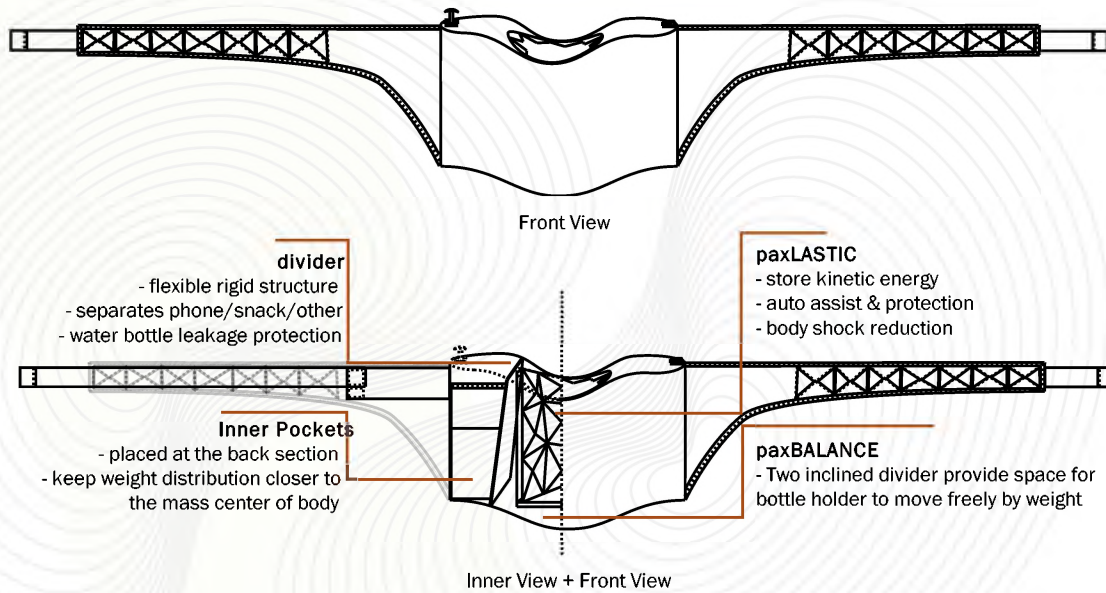
- two inclined divider provide space for bottle holder to move freely by weight

GAZAL MALEKITABRIZ |

PAXESS

FEATURES & BENEFITS

PAXESSHIKE



GAZAL MALEKITABRIZ |

PAXESS

COLORWAYS

PAXESSPIX

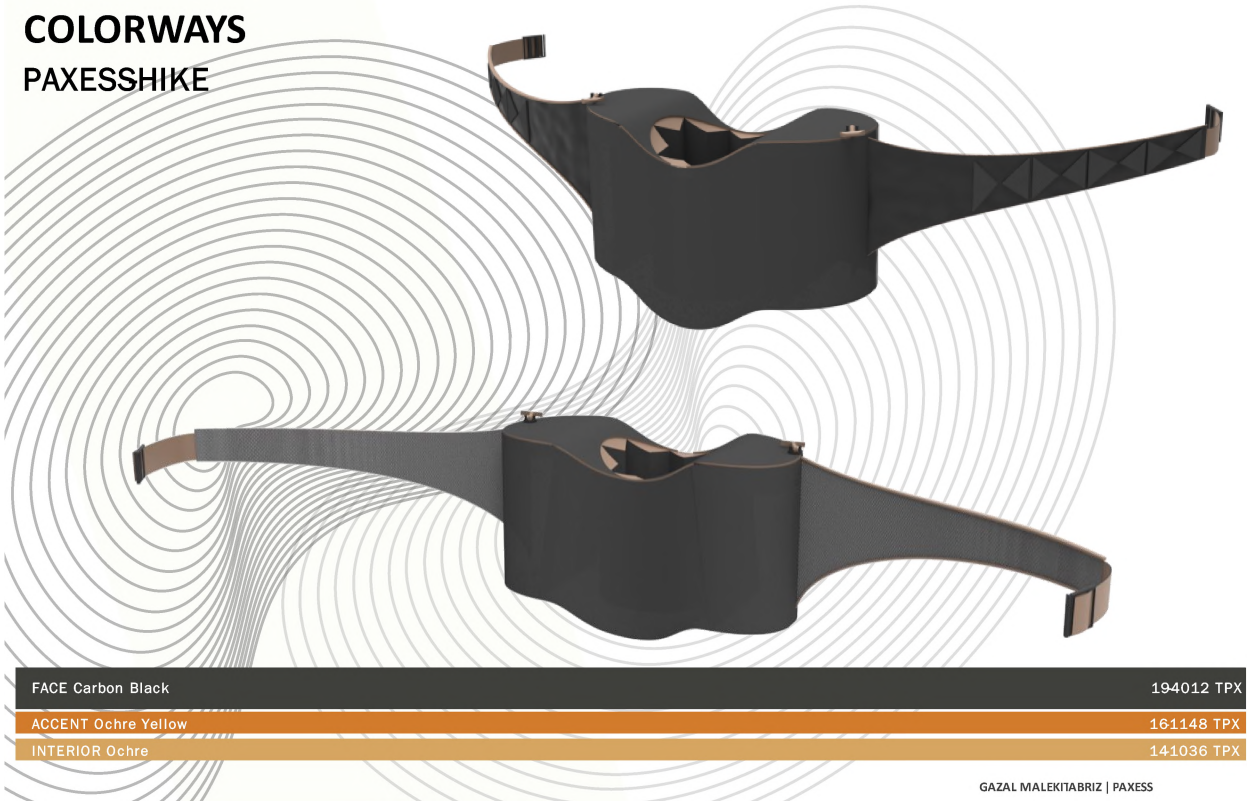


FACE Carbon Black	194012 TPX
ACCENT Ochre Yellow	161148 TPX
INTERIOR Ochre	141036 TPX

GAZAL MALEKITABRIZ | PAXESS

COLORWAYS

PAXESSHIKE

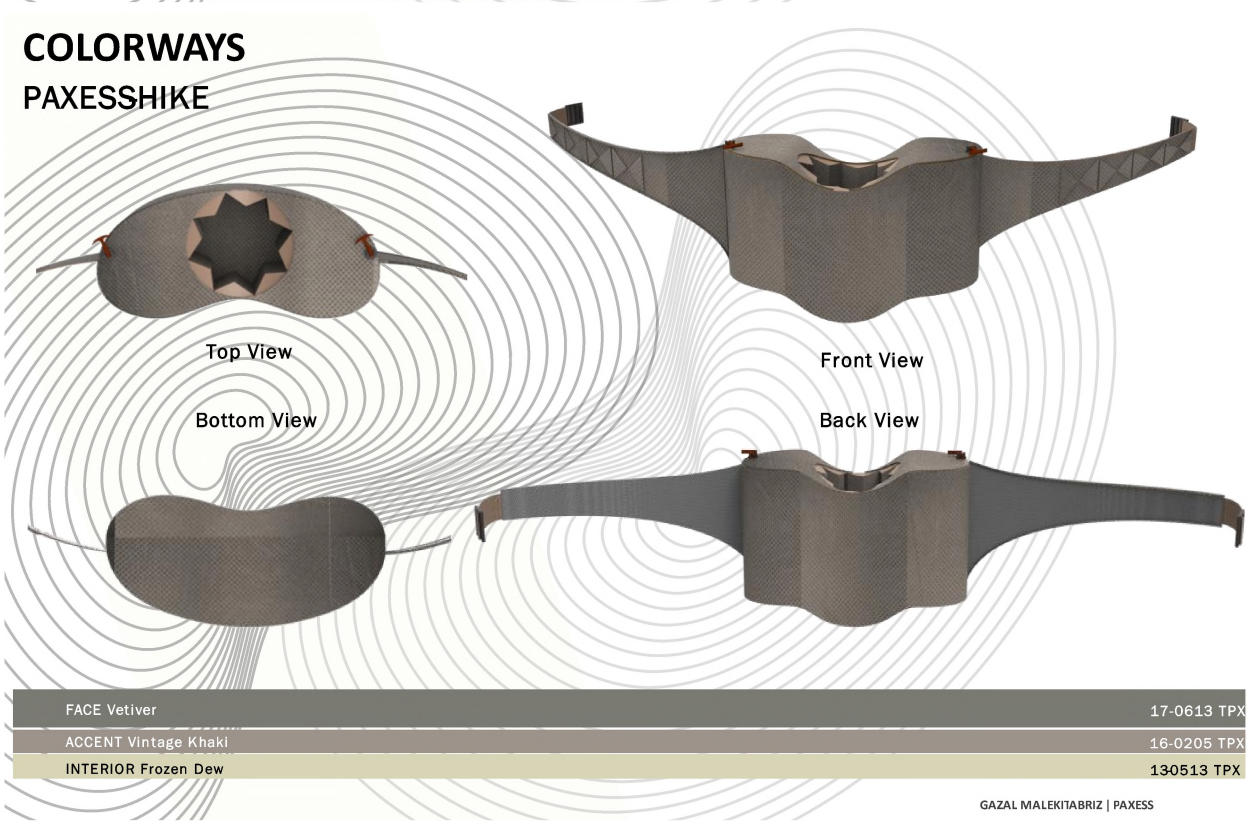


FACE Carbon Black	194012 TPX
ACCENT Ochre Yellow	161148 TPX
INTERIOR Ochre	141036 TPX

GAZAL MALEKITABRIZ | PAXESS

COLORWAYS

PAXESSHIKE



FACE Vetiver	17-0613 TPX
ACCENT Vintage Khaki	16-0205 TPX
INTERIOR Frozen Dew	130513 TPX

GAZAL MALEKITABRIZ | PAXESS

VALIDATION



GAZAL MALEKITABRIZ |

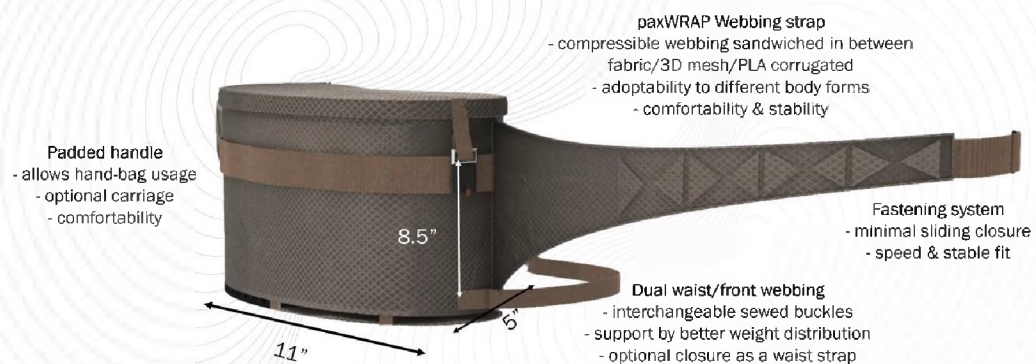
PAXESS

EXPERT VALIDATION-RECORDED-MEHRDAD JAVIDI

FEATURES & BENEFITS

PAXESS-PIX

- 360 inner Velcro-compatible with moveable pockets/camera cage
- Symmetrical body-fitting for universal fit with utility functions hidden



GAZAL MALEKITABRIZ | PAXESS



ATHLETE QUOTES PAXESSHIKE

**Lauren H.
Athlete**

- "The straps are very comfortable giving me confidence and desire to hike more, especially since the water bottle isn't swaying with movement."

**Delaney
Athlete**

"I love the water bottle as such is stored in a secure, but accessible place without messy bungee cords."

"The bean shape contouring and structure of the bag feels good against the back and more so hips."



ATHLETE QUOTES PAXESSPIX

**Sam
Photographer/Journalist**

"straps are very comfortable, but I prefer to wear it as a fanny pack because the form is very comfortable around the hip."

**Brandy
Athlete/Photographer/Videographer**

"The straps provide comfortability during nature hiking, while it could require accessibility to the camera few times in an hour."

"It is great that we don't need to deal with waist strap whenever we want to access the camera."



Packaging

Double closure dry bag as a package

Provide opportunity to be used as a drybag and rain cover for the bags' collection

Openings on both sides give a space for the straps to be out of the bags while its being used as a rain cover

Face Materials

200 D. Heat Sealable Coated Oxford

Abrasion resistance

Waterproof

Light weight and flexible

Special coating (Urethane coated)

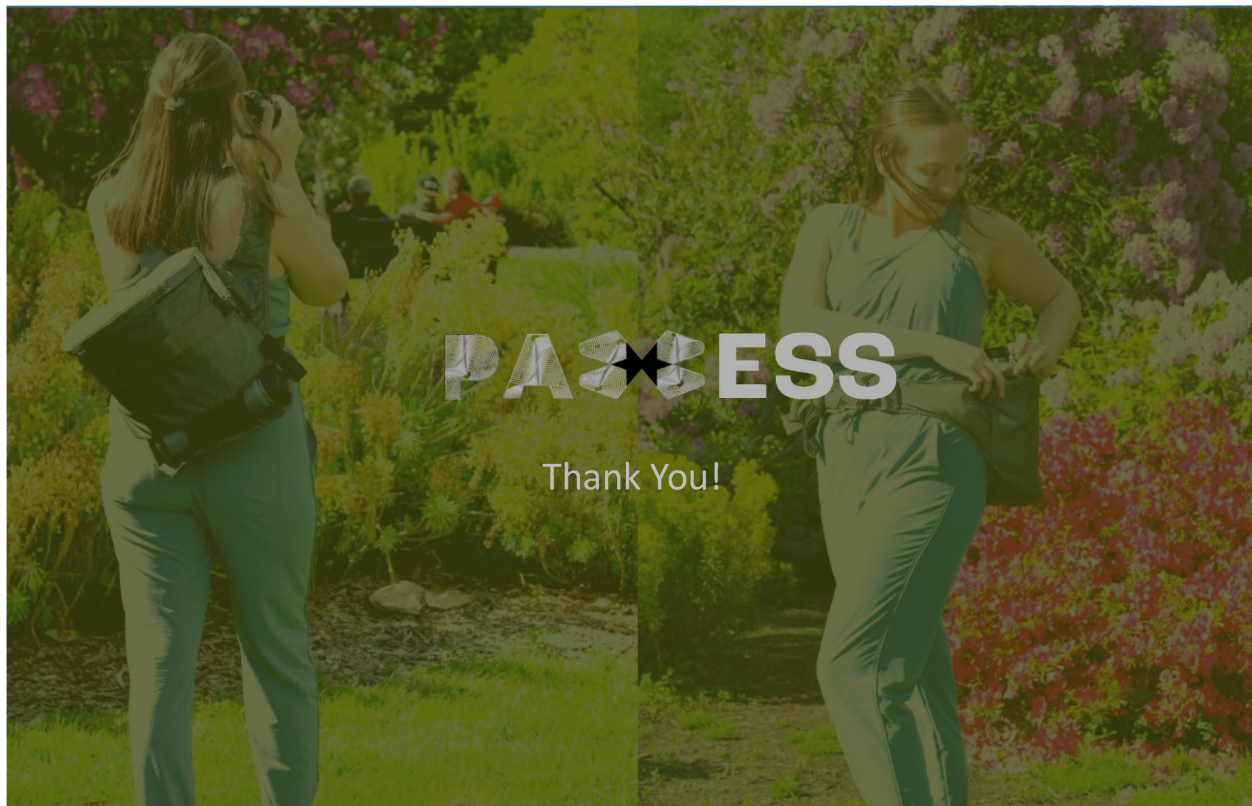
that makes it possible to be heatsealed, coated side to coated side

Provide a waterproof seal



GAZAL MALEKITABRIZ |

PAXESS



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Appendix

A.1 Research Goals

Research goals for this project includes defining pain points and challenges in the current products in the market for glamping and activities during glamping, understanding activities require to carry essential items, gain insight on their priorities to choose a bag and essential items to pack, and getting familiar with their objectives to go glamping.

Overall, the research goals for this project are developing ergonomics, accessing and repacking items for comfortability and giving an opportunity to hike longer duration.

A.2 Interview Questions

How to Start

I am a Sports Product Design Graduate Student, and my capstone project is focused on the form innovation for athletic bag design, for glamping. I believe that your experience in glamping will help me learn more about the subject. The interview may last about 45 minutes. I am going to use this information for my thesis project only. I would like to ask for your permission to record the interview. If there is something that is confidential that you do not want to be recorded or shared, please let me know. As you know, there is not wrong or right in this interview in answering questions. Do you have any questions before we get started?

Warm-Up

Do you consider yourself a glamper?

- What does glamping mean to you?
- Tell me about the 1st time you went glamping:
 - How long ago was it?
 - Where did you go?
- How often do you go glamping per year?

Problem Identification

- Where do you typically go glamping?

- Is there a specific place you like to go glamping the most? Favorite location? Favorite weather and climate conditions?
- How do you typically get to your glamping destination?
- How long do you usually go glamping?
- Where do you like to stay when glamping: yurts, vans, wooden house, air stream trailer (do you research to make sure you know all types)?
- What items do you pack to go glamping OR what are your favorite go-to items to bring when you go glamping?
- What brands of products do you currently use for glamping?
- What brands of products would you like to have or aspire to have for glamping?
- Do you pack seasonally for glamping? If so, what does that mean to you?
- What activities do you typically do when glamping?
- Of those activities, which ones do you use bags for?
- What kind of bags do you use for glamping? Brand, style.
- What bag materials do you prefer for these items?
- Do you use different bags for different activities?
- What about bags for storing items when glamping? What kind of bags do you use for storing items on route to glamping?
- What bag materials do you prefer for these items?
- What colors do you prefer for your glamping products?
- If you could design a new bag for glamping, how would it function or what would it do?

Thanks for your time!

A.3 Survey Questionnaire

How to Start

I am a Sports Product Design Graduate Student, and my capstone project is focused on the form innovation for athletic bag design, for glamping. I believe that your experience in glamping will help me learn more about the subject. I am going to use this information for my thesis project only. Thanks for your time!

Do you consider yourself a glamper?

- Yes
- No

If yes, please answer the following questions:

“End the survey if they say no”

What is your age?

- Younger than 20
- 20-30
- 30-40
- 40-50
- 50-60
- 60-70
- Older than 70

How long have you been glamping?

of years ago

How often do you go glamping per year?

- 1-2x a year
- 3x+ a year

How do you typically get to your glamping destination?

- Flight + car
- By car only
- Other, explain

How long do you usually go glamping?

- 1 to 2 nights
- 3 to 4 nights

- 5 to 7 nights
- More than a week

Where do you like to stay when glamping? (Multi choice, select all that apply)

- Cabin
- Covered wagon
- Canvas or safari tent
- On-site use of an RV
- Tiny house
- Yurt or teepee
- Tree house
- Other, explain

Besides your clothes, what items do you pack to go glamping OR what are your favorite go-to items to bring when you go glamping? (Multi choice, select all that apply)

- Cooking items
- Survival kits
- Food
- Toiletry items
- Games and sport Items
- Other, explain

Do you pack seasonally for glamping? If so, what does that mean to you?

What are your favorite brands when it comes to glamping products?

What brands of products would you like to have or aspire to have for glamping?

What activities do you typically do when glamping? (Multi choice, select all that apply)

- Hiking
- Sightseeing
- Visit historical sites
- Climbing

- Running/trail running
- Biking
- Horseback riding
- Motor biking
- Team sports (soccer, tennis, football, etc.)
- Hunting/fishing
- Kayaking/canoeing
- Water sports (swimming, paddle boarding, etc.)
- Motor boating
- Rafting
- Other, explain

Of those activities, which ones do you use bags for? (Multi Choice, select all that apply)

- Hiking
- Sightseeing
- Visit historical sites
- Climbing
- Running/trail running
- Biking
- Horseback riding
- Motor biking
- Team sports (soccer, tennis, football, etc.)
- Hunting/fishing
- Kayaking/canoeing
- Water sports (swimming, paddle boarding, etc.)
- Motor boating
- Rafting
- Other, explain

A.2 Interviews

10 individuals

One example:

Background:

Age 50-60

Retired professor of sociology UNC-W

Do glamping in her own van, she has 3 different vans for the past 20 years.

Questions:

Do you consider yourself a glamper? Yes and no

- What does glamping mean to you? Having access to fancy luxury amenities
- Tell me about the 1st time you went glamping:
 - How long ago was it? More than 15 years ago
 - Where did you go? All around US
- How often do you go glamping per year? 1 long duration, more than a month and 3 to 4 times for shorter duration

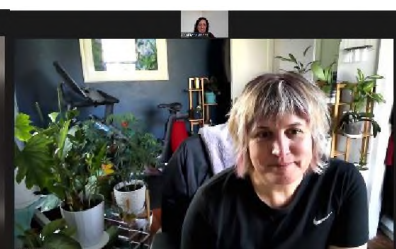
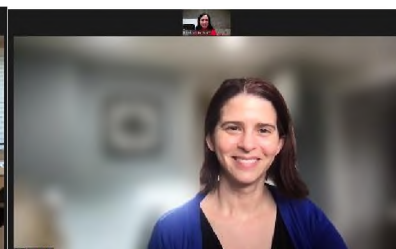
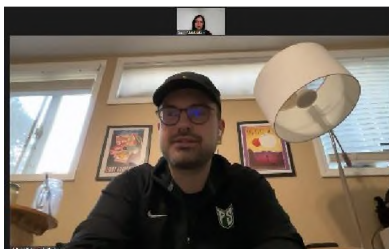
Problem Identification

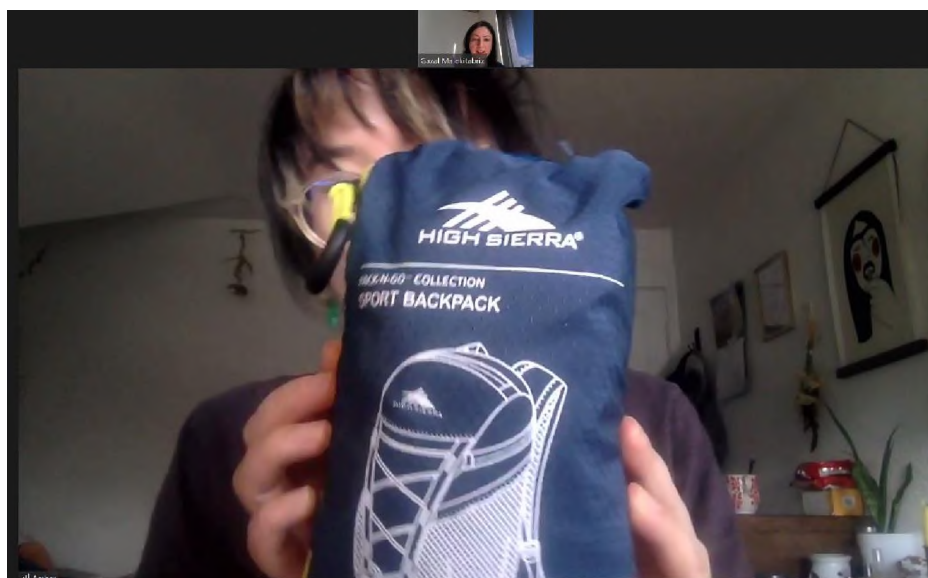
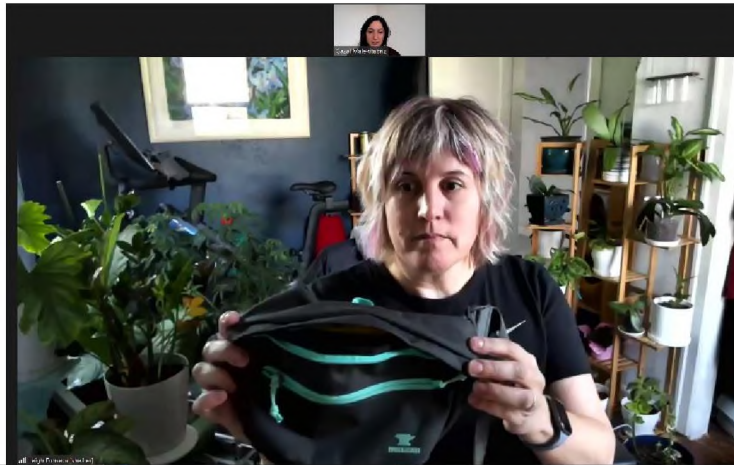
- Where do you typically go glamping? Always stay in state parks
- Is there a specific place you like to go glamping the most? Favorite location? Favorite weather and climate conditions? Yes, state parks, because of location, amenities, scenery
- How do you typically get to your glamping destination? By my own van
- How long do you usually go glamping? Once a year each summer for more than a month, 3 to 4 times weekends
- Where do you like to stay when glamping: yurts, vans, wooden house, air stream trailer (do you research to make sure you know all types)? -
- What items do you pack to go glamping OR what are your favorite go-to items to bring when you go glamping? My own cloth, jacket, water-bottle, toiletry items in a bag, umbrella (pictures included)

- What brands of products do you currently use for glamping? Not specific brand, sometimes sew my own bags
- What brands of products would you like to have or aspire to have for glamping? Just being waterproof and not having the nylon materials exist in the market, prefer cotton canvas
- Do you pack seasonally for glamping? If so, what does that mean to you? No, the items are the same usually
- What activities do you typically do when glamping? Biking (if I can take my bike) Short hiking (an hour or maybe two hours) swimming
- Of those activities, which ones do you use bags for? Hiking with a small shoulder bag
- What kind of bags do you use for glamping? Brand, style. Not specific brand, shoulder bag and handbag, and one small bag for toiletry
- What bag materials do you prefer for these items? Cotton canvas for regular bags
- Do you use different bags for different activities? yes
- What about bags for storing items when glamping? What kind of bags do you use for storing items on route to glamping? There is a red plastic bin for storing items and cool bin for storing foods in the car
- What bag materials do you prefer for these items? Plastic lightweight materials to be accessible fast and easy and be sturdy
- What colors do you prefer for your glamping products? -
- If you could design a new bag for glamping, how would it function or what would it do?
Being comfortable while hiking, no backpack because they are not comfortable and accessible, not having outside holder for waterbottle, one small compartment for phone/keys
I do not like compartments in any of the bags (including toiletry bag). Compartments make it difficult to adjust weight and fit things I want.

Thanks for your time!

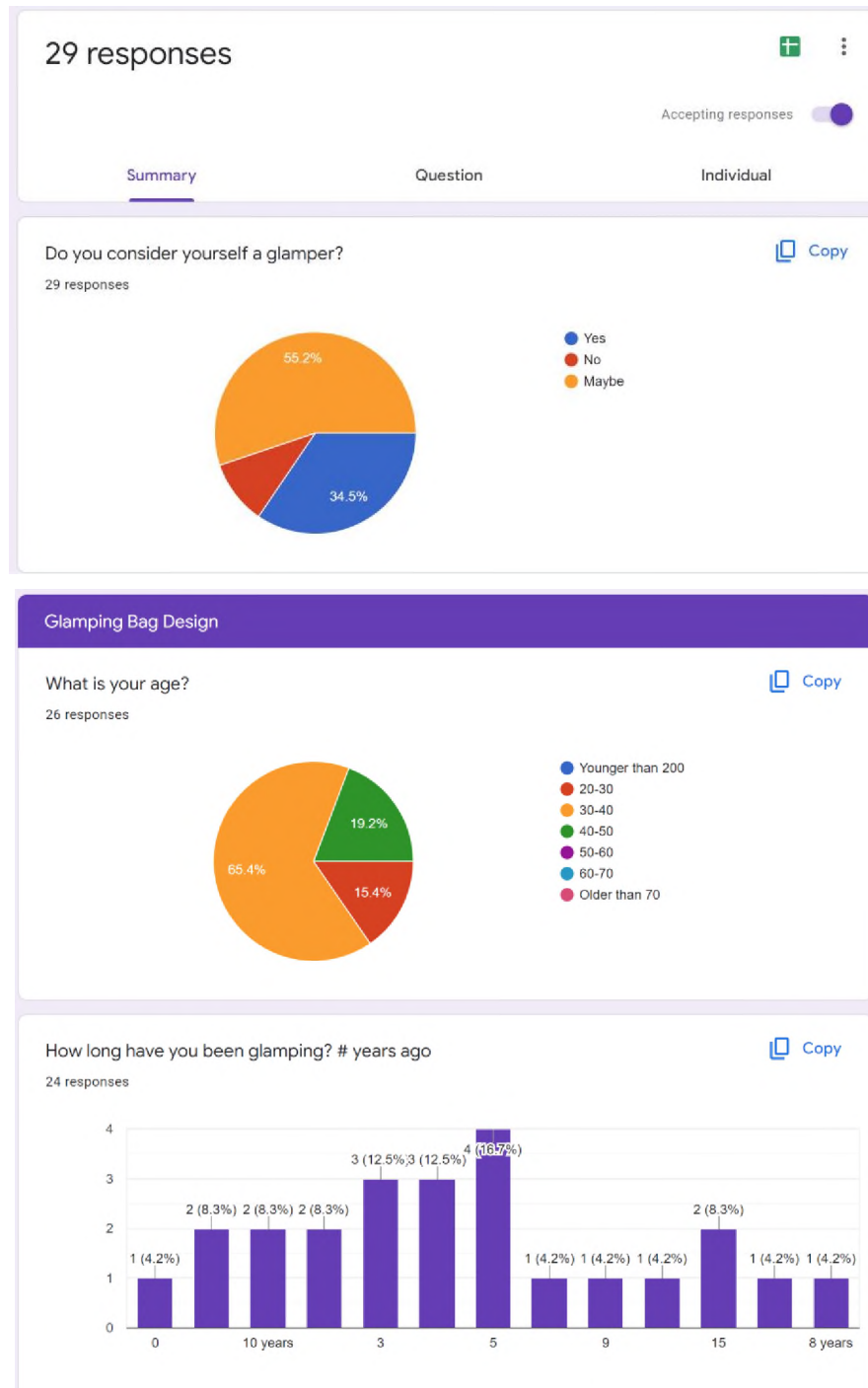
Pictures





A.4 Initial Survey

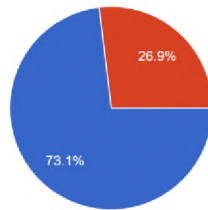
25 Glampers



How often do you go glamping per year?

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26 responses

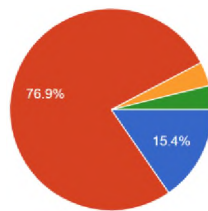


1-2 per a year
3 and more a year

How do you typically get to your glamping destination?

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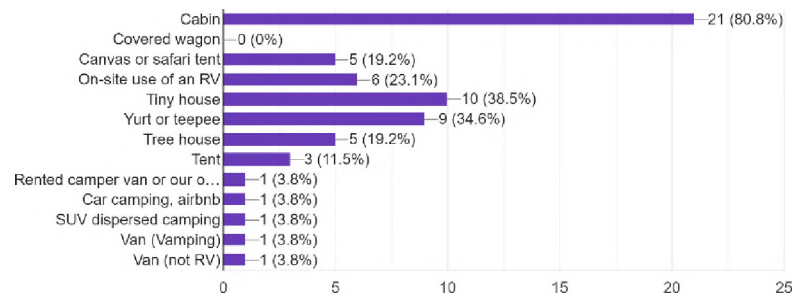
26 responses



flight + car
by car only
I like to Glamp in my Sprinter Van - self-contained
By car and by boat - its common that I load my boat with my glamping items and go extremely remote and primitive w/ my luxuries.

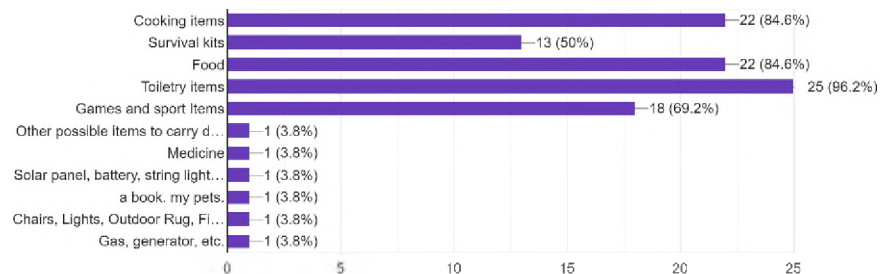
Where do you like to stay when glamping? (Multi choice, select all that apply)

26 responses



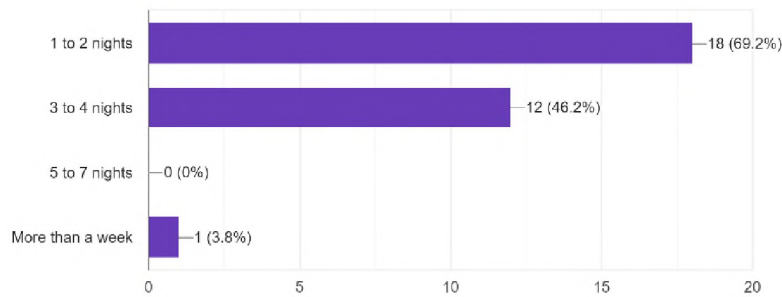
Besides your clothes, what items do you pack to go glamping OR what are your favorite go-to items to bring when you go glamping? (Multi choice, select all that apply)

26 responses



How long do you usually go glamping?

26 responses



Do you pack seasonally for glamping? If so, what does that mean to you?

19 responses

No

Yes, but it's very seasonal for us- mostly only in summer with good weather. That means bringing water toys as we're likely camping near water.

Absolutely: is it the rainy season, hot season, cold season, etc. This affects my clothing and shoe choices (and destination choices)

Clothing, food, medicines

Yes, I bring appropriate weather.

somewhat. I always take layers of clothing and fleece blanket

Yep. Swimwear, bug protection, sun protection in warm months, fleece layers, extra blankets, hand warmers for cold

I bring clothes that fit the season

I research the weather prior and pack appropriately.

yes

Yes - we spend a LOT of time in the van during the winter and this requires a complete overhaul of gear in the van from summer. Summer = surf. Winter = Snowboard.

Rain gear, swimming/hiking gear

No, I have a set list of items already planned that I attain for each outing.

Yes,

clothes: I pack multiple hoodies when going in the winter, vs one in Summer for nights.

food: soups in Winter and burgers in Summer

Yes, if it's colder weather I will bring more layers and items that will keep me comfortable in my tent or wherever I'm staying. I will also bring seasonally appropriate hiking and activity supplies like snowshoes for the winter or bathing suit and towel in the summer.

What are your favorite brands when it comes to glamping products?

19 responses

Nemo, Sea to Summit, Patagonia

Yeti

Nike ACG, Mountain Hardware, Salomon

No preference

Columbia Waterproof Duffle

REI, Coleman, Glaciers Edge

BioLite, Enlightened Equipment, Polar, Kelty, Stanley, Lots of stuff from Garage Grown Gear

Big agnes, patagonia, msr

REI, Columbia, Coleman

shimoda, lowe pro, mountainsmith, rei

Pretty partial to REI - I buy a lot of their products but have also done a lot of DTC purchases over the last two years from companies like SnoPeak, Etc.

REI, Hydro Flask

REI, Columbia, Ruffwear for my pups

North Face, Woods

Johnson Johnson, Nike, rei

I am not brand loyal in this area.

Eddie Bauer, Columbia

The North Face, Cateraxi

What brands of products would you like to have or aspire to have for glamping?

16 responses

Snow Peak

Snow Peak, Arcteryx, Thule tepui or other car-top tent

North face

No preference

Coleman, Solo, Otterbox, Columbia/Northface

Goal Zero, Dometic, Luno Life, Sea to Summit

Anything backpacking related that is small and convenient.

shimoda

SnoPeak

CNOC Outdoors, Cotopaxi

Mec

More recyclable

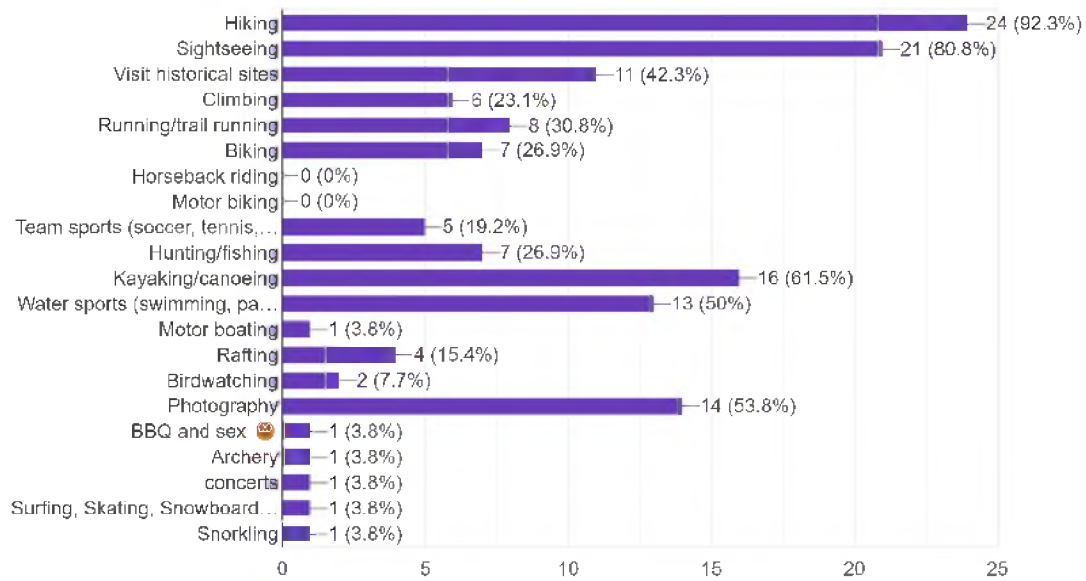
Large-size duffel bags for various items similarly to hockey equipment bags. (i use an ogio today)

Nexus (hehe) ... but really "the perfect" shoe for camping (admitted sneakerhead that would like an easy to clean shoe that provides protection/support and is breathable, so you don't get the nasty foot cam smell.

Rivian

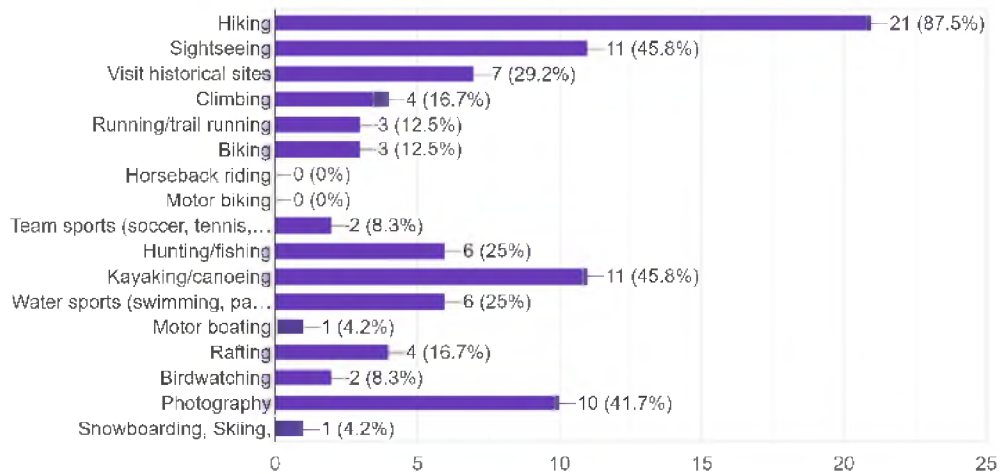
What activities do you typically do when glamping? (Multi choice, select all that apply)

26 responses

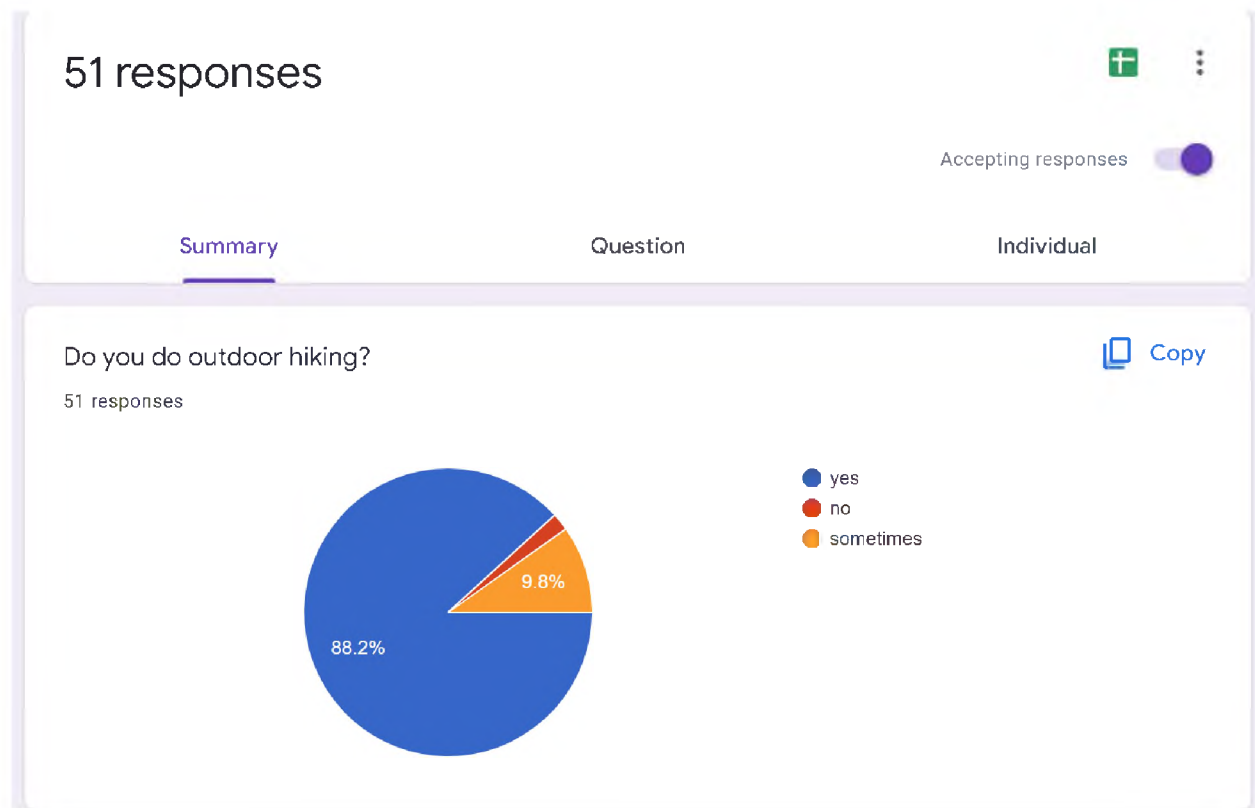


Of those activities, which ones do you use bags for? (Multi Choice, select all that apply)

24 responses

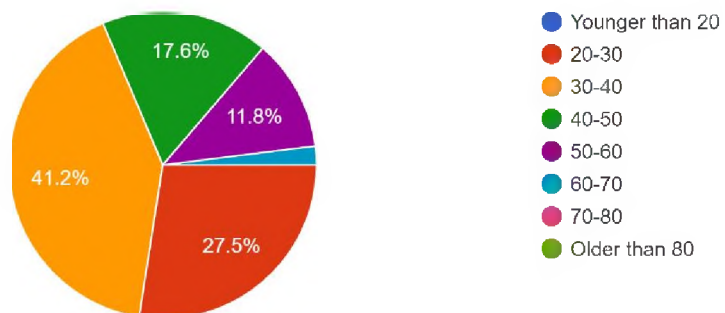


A.5 Final Survey



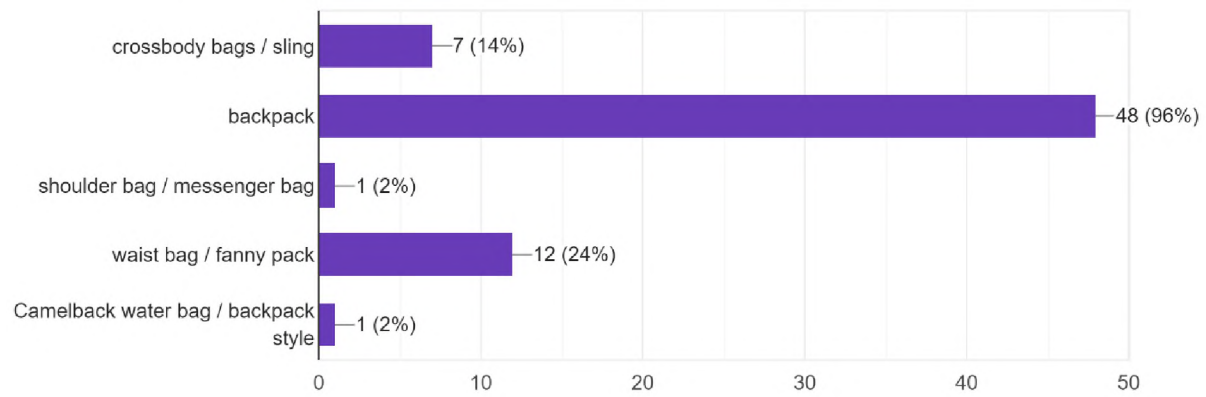
What is your age?

51 responses



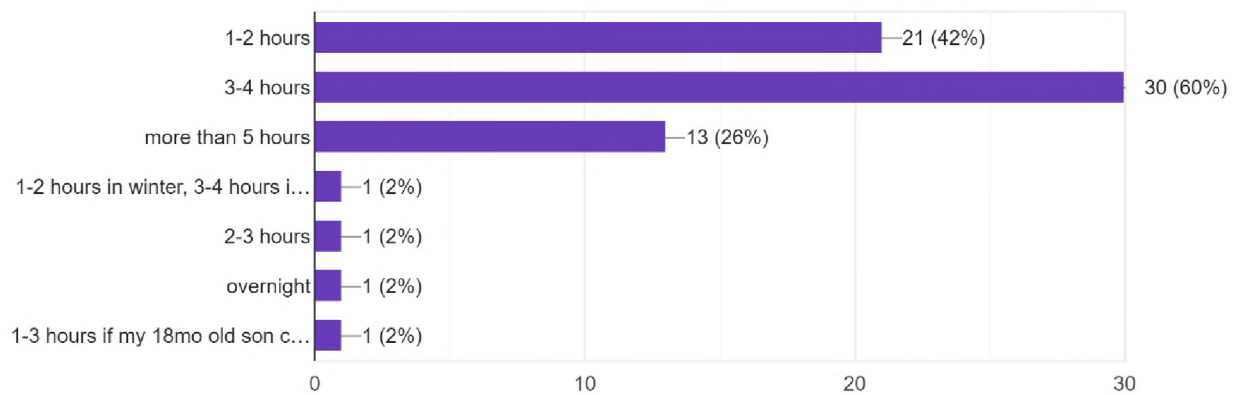
What kinds of bags do you usually use for hiking? (Select all that apply)

50 responses



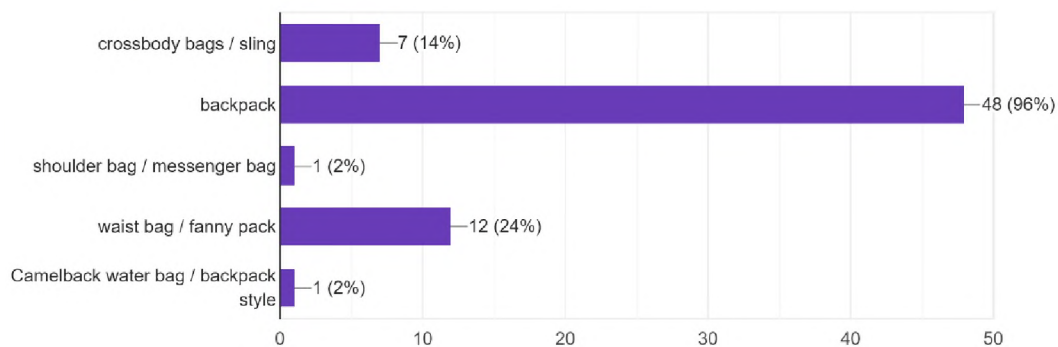
How long do you usually do hiking?

50 responses



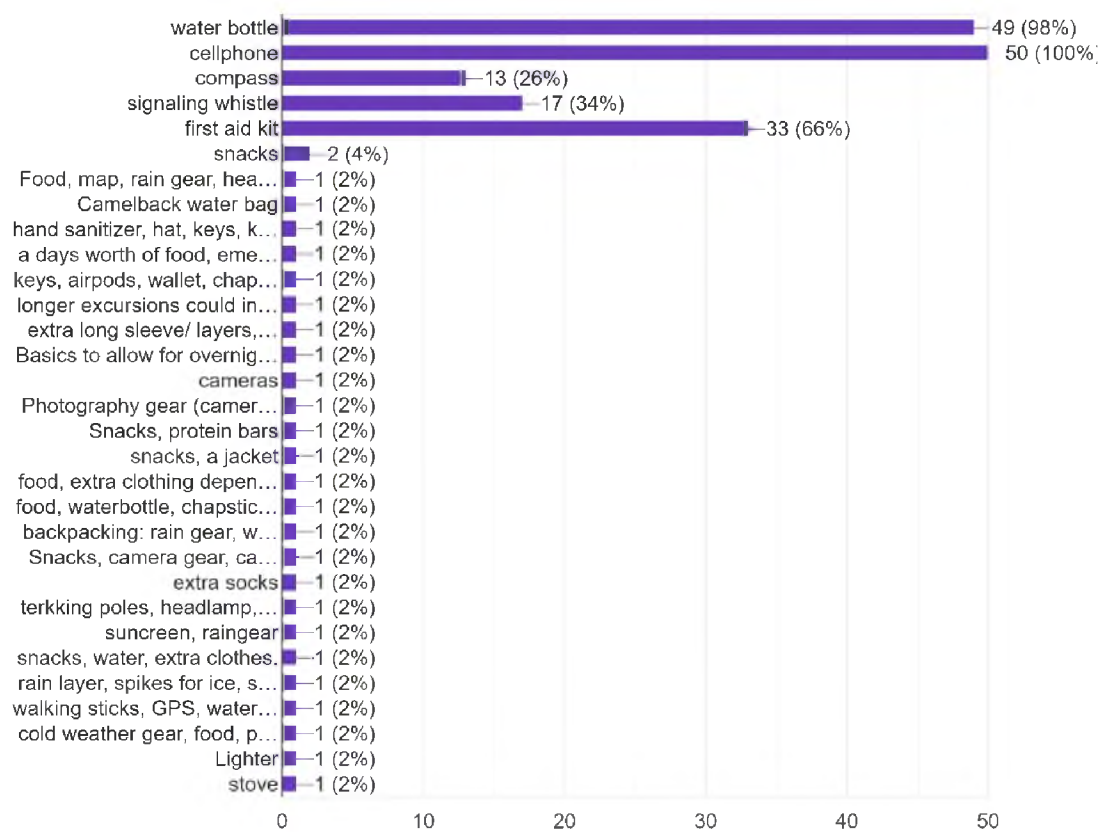
What kinds of bags do you usually use for hiking? (Select all that apply)

50 responses



What are some typical items you like to bring when going outdoor hiking? (Select all that apply)

50 responses



What are your favorite brands when it comes to use bags for outdoor hiking?

47 responses

Osprey

Deuter, REI, Osprey

osprey, hyalite, nathan

Osprey, REI

Nike, Camelback

Nike, LowePro

peak designs, arcteryx

Merrell, Cotopaxi

Patagonia, Columbia, Mountain Hardwear, REI

I don't shop by brand, rather by style, but my current fav is from Mountainsmith

REI has some solid entry-level packs for day trips or weekenders. Osprey is the gold standard for longer trips

Patagonia, Ultimate Direction, Ultraspire

I have a Nike fanny pack/waist bag which I believed was designed for running? So it's pretty light weight and slim. Slim enough to fit my phone, keys & chapstick.

Arc'Teryx, Osprey, Mountain Hardware

Mountain Hardwear, Osprey

mountain smith, peak design, north face, boundary supply, WNDR,

Northface, Lowepro

Nike, Chrome

Osprey!

no specific

North Face, REI

Nike

Hyperlite Mountain Gear, Osprey, Patagonia

deuter, osprey

Osprey, North Face

Not brand loyal for backpack, but just got a Colombia bag with a water bladder and straw that I love

Osprey, F-Stop

REI Brand or Gregory

REI, Marmot

I usually use Nike but any medium size backpack is comfortable for me.

Salomon (vest bag), Aer, Orbit Gear, Chrome, DSPTCH, condor, 5.11, Patagonia, Timbuk2

Mission Workshop

Osprey, Patagonia, Camelback, Deuter

North Face, Osprey, Columbia,

Brand New

Osprey, Camelbak,

patagonia / rei

Osprey, Fjällräven

Kelty and NorthFace

patagonia

none specifically but I've enjoyed Nike's

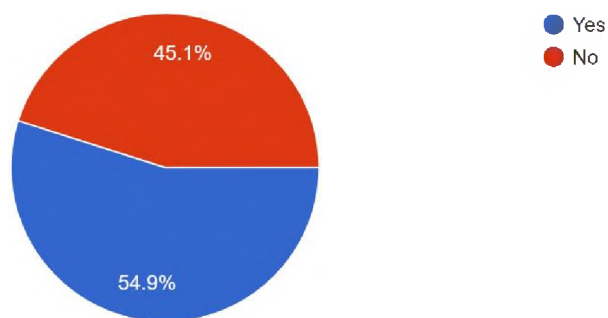
I'm not brand aware here

I've always had great luck with Osprey. Another huge plus is their and REI's customer service if something has happened to a bag (which has only happened once in roughly 8 or 9 bags we've owned).

Marmot, Osprey

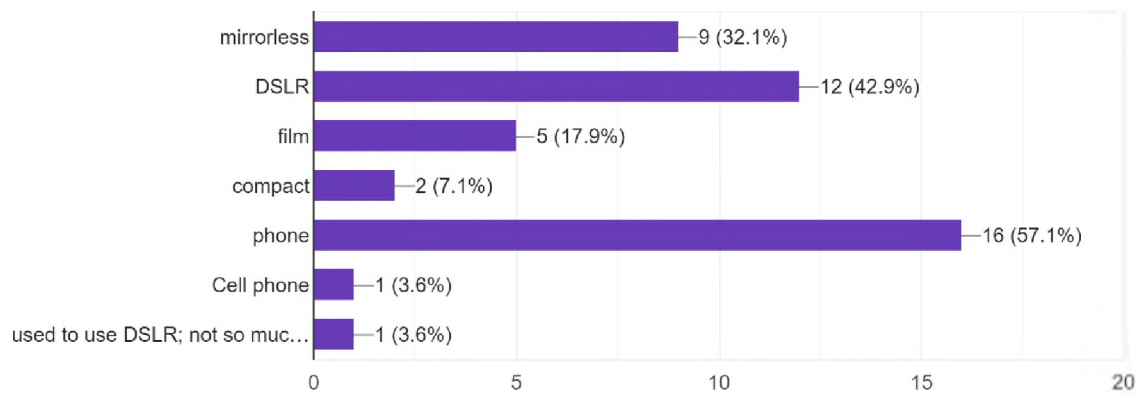
Do you do outdoor hiking photography?

51 responses



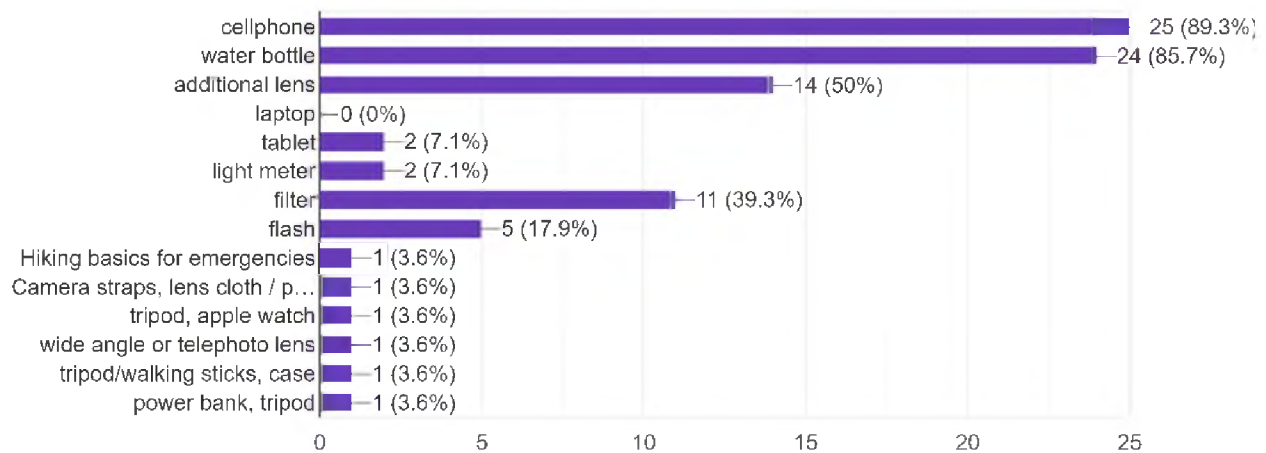
What type of camera are you using?

28 responses



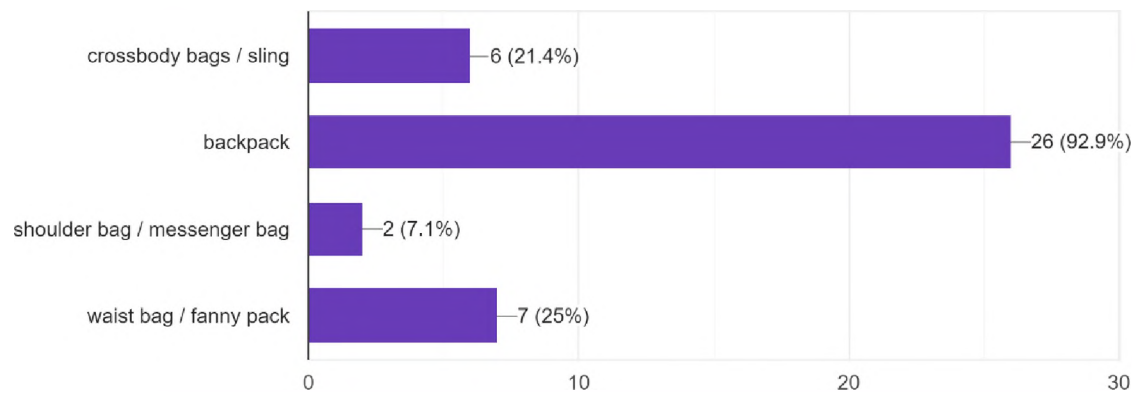
What are some typical items you like to bring when going hiking photography? (Select all that apply)

28 responses



What kinds of bags do you usually use for hiking photography? (Select all that apply)

28 responses



What are your favorite brands when it comes to use bags for hiking photography?

24 responses

None in particular

Lowerpro

LowePro

peak designs

same bag

DaKine, Patagonia

Manfrotto, Lowepro

Mountain Hardwear

mountain smith, North Face, WANDR, boundary supply, peak design

What are your favorite brands when it comes to use bags for hiking photography?

24 responses

lowepro, pacsafe

timbuk2

open

Nike

Hyperlite Mountain Gear, Mountainsmith, Patagonia

I use a camera clip, so it works with any backpack

Osprey, FStop

Same one I use for any type of hiking

I use the bag it came with, it was a canon sling bag.

DSPTCH, Vanguard

Mission Workshop

Osprey, Patagonia, Deuter

Brand New

Osprey, Fjällräven

NA/ just functional

A.6 Strength and alignment of the thesis

Golden Statement

I have a desire to explore and learn the technical workings of a product and improve the designs for different applications to solve real world user problems. It helps me to improve continuously by considering current technology including implementing technical knowledge in a free-form design process to make products aesthetic and enjoyable, while using testing and validation for the proof of design. Also, I believe pushing limits and improving performance for athletes is the primary goal of designing a product related to actions.

Thesis projects helps me

- Improving design aesthetic, by designing different forms of bags which aligns with Ideation!
- Learning techniques of implementing free form and methods to design new solutions which aligns with Input and Ideation!
- Improving my design knowledge on aesthetic and free form solutions which aligns with Input!
- Learn how to manufacture better and perfect which aligns with Deliberative!

My strength as far as strengthFinder are Input, Empathy, Ideation, deliberative, and adaptability.

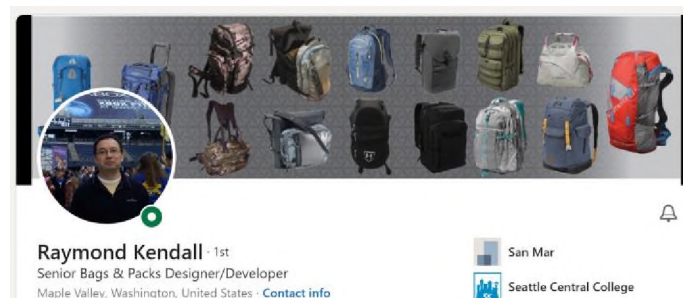
- **“Input”** helps me do the research and gather information on different ways to design a solution while improving or creating new methods
- **“Empathy”** helps me to realize the users’ challenges better while the bags are in use
- **“Ideation”** assists me to do better well-informed ideation process in the next step of designing the bag by the gathered information
- **“Deliberative”** help me in considering risk of different methods and various solutions and designs
- **“Adaptability”** helpful in understanding of the current situation in my design and responding to the demand and changing of the moment, by considering how the world is changing day by day currently, as far as technology, desire, expectation and etc.

This thesis gives me an opportunity to search for the jobs/do the jobs better on

- Sports equipment design roles because of designing bags as equipment
- Research and development sections because of improving and implementing methods of design as a primary path.

A.6

A.6 Mentors



Raymond Kendall · 11:27 AM

Hi Gazal,
Meetings may have to take place over Zoom, or Teams, because where we both are located from each other.

Can you give me what your goals are / deliverables for the project? Maybe you can send your presentation? I want to make sure Our time is effective and helps you with your project.

What is your timeline? Do you have dates to meet to present things?

I think that if can provide some more details, then we can figure out a schedule for meetings and touch bases.

Best regards,
Ray



Baron Brandt · 2nd
Senior Designer at Nike
Portland, Oregon, United States · [Contact info](#)

 Nike
 The Ohio State University



Baron Brandt · 8:54 AM
Thanks for reaching out and sorry for the delay in reply. I'm not always checking my linkedin mail. I would be more than happy to connect on your project. We can do a zoom call if you like. Let me know when would be a good time for you and I'll check my schedule to see what works. Happy Friday!
Baron