

# Visually Impaired Experience In Retail

Globally, at least **2.2 billion** people have a near or distance vision impairment. In at least **1 billion** – or almost half – of these cases, vision impairment could have been prevented or has yet to be addressed.

Among this **1 billion people**, the main conditions causing distance vision impairment or blindness are cataract (94 million), refractive error (88.4 million), age-related macular degeneration (8 million), glaucoma (7.7 million), diabetic retinopathy (3.9 million).  
The main condition causing near vision impairment is presbyopia (826 million).

RNIB estimates more than **two million people in the UK are living with sight loss**, of which **340,000** people are registered blind or partially sighted.  
Every **six minutes** in the UK someone **loses their sight**.

<https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment>

<https://www.portsmouth.co.uk/business/ms-worker-claire-thrilled-to-see-her-suggestion-of-braille-gift-cards-come-to-life-4273894>

In **2023**, Statista's Consumers Insights Survey revealed that **consumers across all generations mostly shop at supermarkets** for their groceries. Some **78 percent of Gen Z** respondents stated that they **regularly bought food and drink products at supermarkets**. For more than half of UK consumers, **Tesco was the primary supermarket destination**. Tesco's popularity with UK consumers was not limited to in-store shopping.

Around **37 percent of UK consumers** said they **ordered groceries from Tesco's online store**. In addition to the **online stores** of traditional supermarket chains, UK consumers chose online grocery stores like **Ocado** or grocery delivery companies such as **Amazon Fresh and Beelivity for their grocery orders**.

**Do visually impaired people  
visit grocery stores?**



**Do visually impaired people  
visit grocery stores?**

**If yes, why can't we see them?**

**Mark** was registered severely sight impaired in December 2019, after **experiencing a retinal detachment in each eye.**

He says “I’ve been **learning to be more independent** and walk around with the cane, so the next step is going to the shop. But I **struggle to go shopping on my own** and need help from assistants. I’m **not sure if I’m picking up a pack of filleted chicken or chicken wings, I can’t tell the difference.**”

“**Sometimes I get disappointed because I would like to try different things.** There’s nothing more I’d like to do on a Friday afternoon after work, than go to a supermarket and think “oh what do I fancy today?”. But **since I’ve been blind, I feel like that freedom’s been taken away from me, and sometimes I feel like I’m a hindrance, especially if I have to keep on asking for help.**”

**Sam** was diagnosed with **Diabetic Retinopathy and Neuropathy six years ago**, and she now has a guide dog, but she **struggles to find accessible nutritional information**, which continues to put her health at risk and affects her sight.

What **accessible packaging would mean** to her. She say “A world of entirely accessible packaging would mean the **freedom to choose what I want to eat and when I want to eat it.** Being in control of my glucose levels **without having to rely on others to help me read basic information will give me back another part of my independence.**”

9 out of 10 blind or partially sighted people **find information on food packaging difficult or impossible to read**, according to research by the Royal National Institute of Blind People (RNIB).

One of the findings from a study indicated that **visually impaired** people have **experienced the challenges when walking inside unfamiliar spaces**, where a common tool like the while **cane cannot help them navigate independently.** Therefore, they need to be **accompanied by a sighted guide**, in order to **learn and familiarize themselves** with the space **before independent navigation with a white cane or other assistance.**

A study by the **National Council of the Blind Ireland (NCBI)** estimated the barriers in grocery stores as follows ((RNIB), n.d.).

- **79%** stated that the shop is not easy to navigate through the different zones
- **96%** had difficulties accessing the information on signs
- **95%** had difficulties accessing the information on labels
- **73%** face obstacles in the aisles
- **89%** mentioned that to improve their shopping experience they want their bill to be read to them.

**Carley** has **neurofibromatosis**, a genetic condition that cause tumours to grow along the nerves. **She could see as a child but then a tumour growing on her optic nerve caused irreparable damage to her vision** and she is completely blind.

She told “I’d **love to go shopping** but it’s just **impossible when you’re blind.** I personally **couldn’t go out on my own** because I’m unsteady on my feet, but for **other blind people who can it’s denying them independence.** And it’s a **safety hazard** because even when someone has bought your items when you use them at home you can’t tell what they are. You could be **mixing up dog food with human food** for example. **Braille on packaging makes it easier** when you have a shower, to know if you’ve picked up shower gel, shampoo or conditioner. I want manufacturers to take notice.”

Even though the buildings are well-structured, the visually impaired people **found it difficult to walk by themselves.** **60%** agreed shopping is **challenging due to obstacles**, e.g. people and trolleys, and problems in reading information, e.g. price and product name. Most shops **do not provide any accessibility information on the label of the products**, e.g. Braille or audio feedback, but some, like medicine, are embossed with Braille. This is useful, but **Braille cannot be put on every package due to its limitation and cost.** As a result, visually impaired people cannot find what they are looking for.

# Problems

# Two Approaches



# Two Approaches

## Navigation





# Navigation

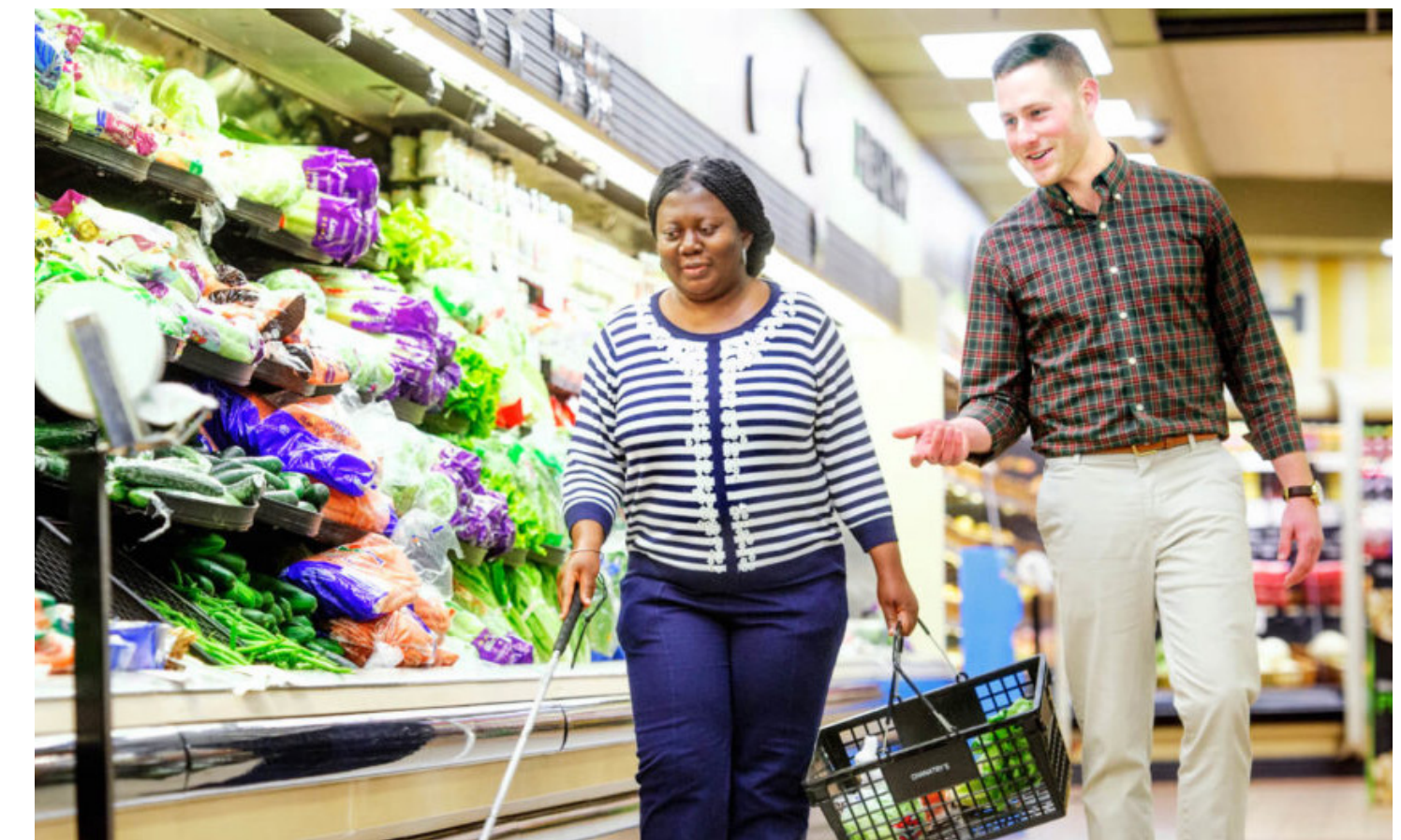
## Background

When designing the retail environment, the **primary focus is on the interaction between the seller and the buyer**. Sellers must consider what to display and where to display it. One of the crucial elements of in-store design is the **floor layout and how people behave within that layout**. The layout of different sections significantly influences customer flow, and **each section can be designed to attract customers and increase sales**. Unfortunately, most grocery stores do not consider the needs of people with vision impairment. **Visually impaired individuals often rely on others or the store's customer service to find items and shop efficiently.**

In the retail world, people typically navigate shopping environments easily due to their sight. However, it's important to consider the challenges faced by those who cannot navigate these environments. **Retail spaces often lack the necessary accommodations to provide a seamless shopping experience for visually impaired customers.** Understanding these challenges requires insight into how visual impairments affect navigation, product selection, and overall shopping experience. The retail experience for visually impaired individuals is not just a matter of physical accessibility but also includes the availability of information and the ease of interaction with staff and technology.



“Enhancing accessibility features in retail environments can significantly improve the shopping experience for visually impaired individuals.”





# Examples

Starbucks implements tech for blind and low-vision customers to aid in-store navigation and more



Starbucks profiled user **Susan Mazrui**, a blind customer who walked into a Seattle Starbucks and, **using Aira**, was able to **ask a remote agent to describe the layout of the store** so she could navigate to the order line and point-of-sale, read the menu to her and describe options in the pastry and Ready-to-Eat and Drink cases and on the counters.

San Diego-based **Aira's service** is one of the most widely **used by blind and low vision people**. Starbucks first tested its use in seven U.S. cities early this year and Starbucks credits Aira with helping customers navigate the protocols and physical changes implemented in stores during COVID-19.

<https://www.geekwire.com/2021/starbucks-implements-tech-blind-low-vision-customers-aid-store-navigation/>

Japan's Tactile Paving Blocks



Tactile paving blocks, also **known as Tenji blocks**, serve as yellow guide paths widespread across Japan, **including stairs, elevators, and railway platforms**, helping visually impaired individuals in **navigating urban surroundings safely**. Tenji blocks **originated in 1965** from the inventive mind of **Seiichi Miyake**, who wanted to help a visually impaired friend.

The technology gained **popularity globally**, with the United Kingdom, Australia, and the United States embracing tactile **paving in transportation systems and urban environments during the 1990s**.

[https://japanupclose.web-japan.org/other/o20240126\\_1.html](https://japanupclose.web-japan.org/other/o20240126_1.html)

BlindSquare

It is the world's most widely used accessible GPS-app developed for the blind, deafblind and partially sighted. Paired with third-party navigation apps, BlindSquare's self-voicing app delivers detailed points of interest and intersections for safe, reliable travel both outside and inside.

<https://www.blindsquare.com/about/>

Soundscape

Microsoft Soundscape was a project from Microsoft Research that explored the use of innovative **audio-based technology** to enable people to build a richer awareness of their surroundings, thus **becoming more confident and empowered to get around**.

After you install Soundscape, **connect a stereo headset or earbuds**. Follow the introduction and when prompted, allow the app to access your location. Then, explore a familiar route to get used to how Soundscape delivers spatial information.

You can use Soundscape in a number of different ways, whether on a well-known route, out about with a friend or using it to discover new places.

<https://www.microsoft.com/en-us/research/product/soundscape/overview/>



# Two Approaches

## Navigation



## Packaging





# Packaging

## Background

In the retail environment, packaging plays an important role in making products visible to customers and influencing their purchasing decisions. However, **many brands prioritise visual appeal without considering the accessibility needs of all consumers, particularly those who are visually impaired.** This oversight poses significant challenges for individuals with visual impairments, hindering their ability to make informed purchasing decisions. Whether through advertisements, in-shop promotions, or product labels, packaging serves as a gateway to essential information such as ingredients, allergens, and nutritional values. **For visually impaired individuals, accessing this information is not only difficult but also crucial for their safety and comfort.**

Despite advancements in technology and design, many retail packages still lack features that accommodate the needs of the visually impaired community. As a result, **the inability or struggle to read information on packaging remains a pressing concern, impacting the independence and dignity of visually impaired consumers in their shopping experiences.** Therefore, enhancing retail packaging with accessible features can significantly improve the shopping experience for visually impaired individuals, fostering greater independence and inclusivity. **By addressing these accessibility challenges, brands can demonstrate a commitment to social responsibility and inclusivity while also expanding their customer base.**



“Enhancing retail packaging with accessible features can significantly improve the shopping experience for visually impaired individuals, fostering greater independence and inclusivity.”





# Examples

For the launch of its Miracles range, UK haircare brand Pantene partnered with the Royal National Institute for the Blind (RNIB), NaviLens and visually impaired beauty influencer Lucy Edwards to create more inclusive packaging and advertising.



**Very few visually impaired people use braille** and **90% of blind and partially sighted people say that information on medication or food packaging is quite difficult or impossible to read.** Pantene’s partnership with NaviLens makes shopping much easier for these consumers.

The brightly coloured **QR-type code** can be read **12x further away than a regular QR code** and can be read unfocused, making it **easily scannable even if the consumer cannot see it.** Once scanned, the tag can guide consumers to the product in-store, giving them precise distance and orientation information. **The code also allows consumers to access brand and product information in large format text or audio formats through the NaviLens app.**

Kellogg’s launched Rice Krispies packaging ‘Love Notes’ in the US featuring braille heart-shaped stickers and audio messages.

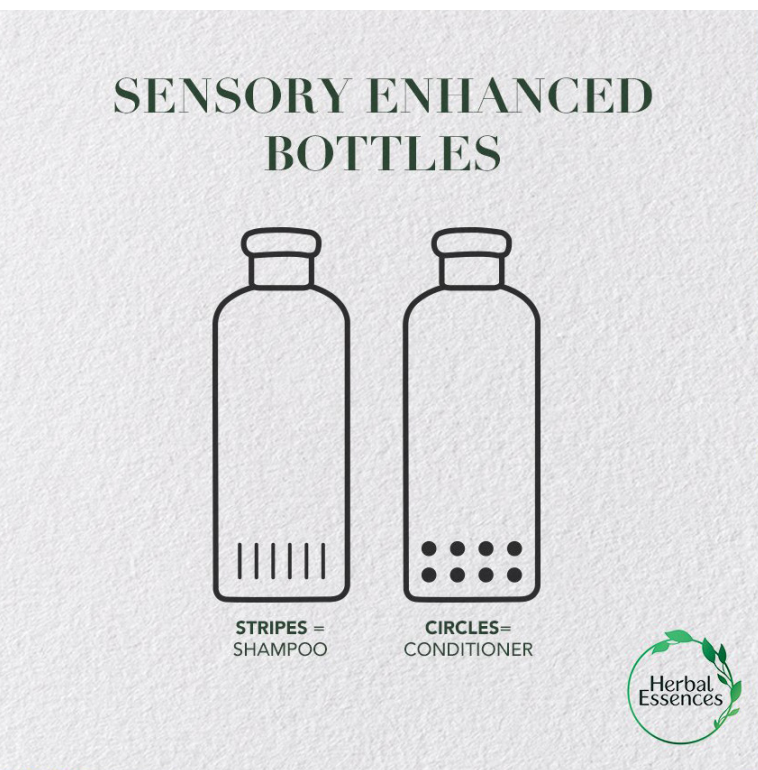


On its launch, the **VP of sales at Kellogg’s, Jessica Waller**, said **“Inclusion is in our DNA”** and that “Kellogg’s, as a whole, has a larger connection to this cause with the founder of the company having lost his sight for the last decade of his life.

The packaging was created so that **children with visual impairments** wouldn’t miss out on receiving messages of love in their lunchboxes. At the centre of the marketing campaign was an **11-year-old girl named Eme Butler-Mitchel and her mother Tabby**, who featured in a **story-telling video on Rice Krispies’ Youtube channel.**

In the video, the **two explain the importance of the letters to them and how much it meant to Eme to be included.** The accessible packaging’s marketing campaign was a great success, **reaching over 3 million views** on its campaign video for the product and **winning a shorty award for best branded content** in May’18. Despite the campaign’s success, however, Kellogg’s did not renew this product after supplies were depleted in 2018.

Herbal Essences, meanwhile, has opted for a system of embossed markings for the packaging of its organic range



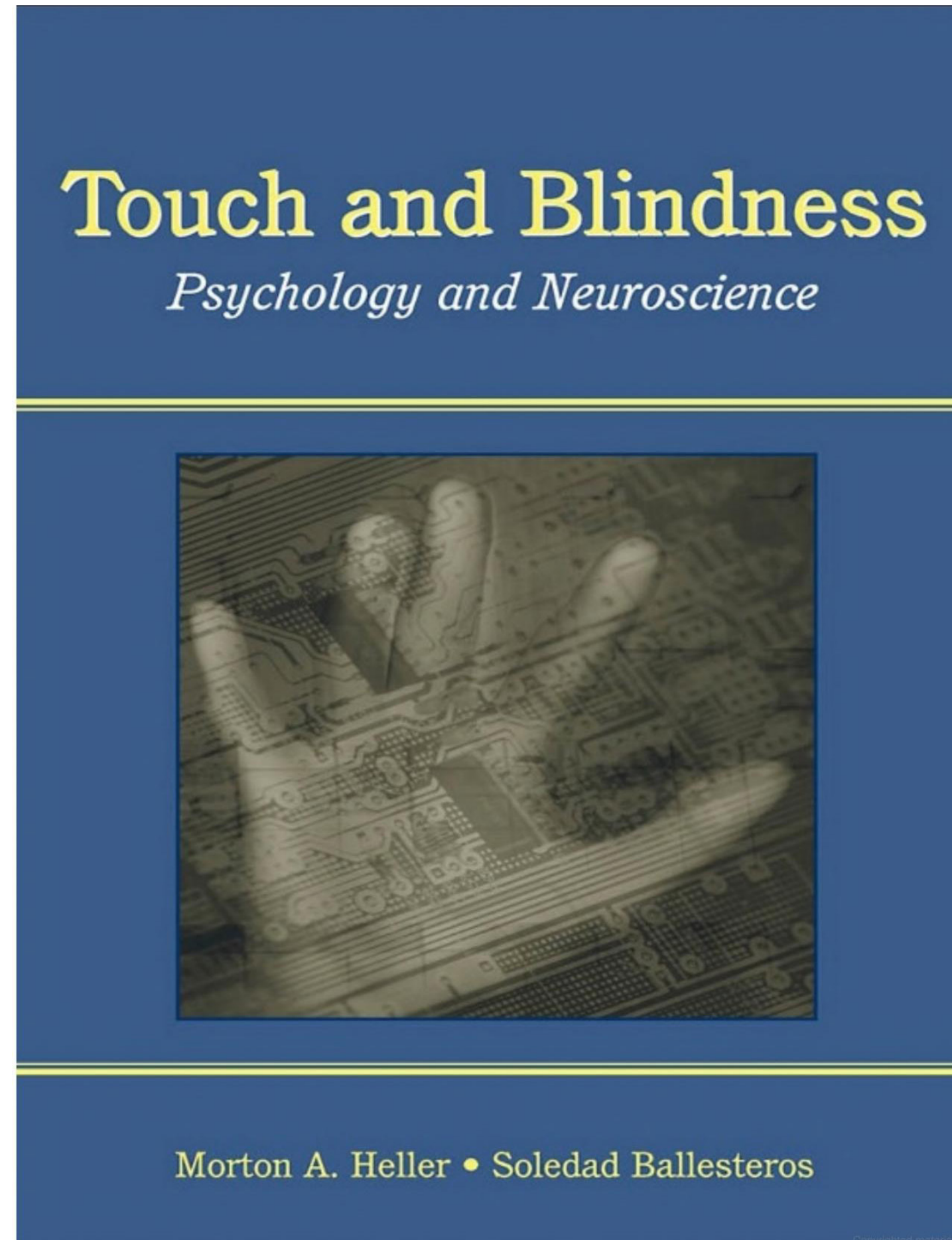
It features **one row of lines for the shampoo** and **two rows of dots for the conditioner**, both on the bottom of the bottles. Since the markings by touch alone, it is a universal design, which also **includes people who have not had the opportunity to learn braille.**





# Touch and Blindness

Psychology and Neuroscience



## Key points from this book:

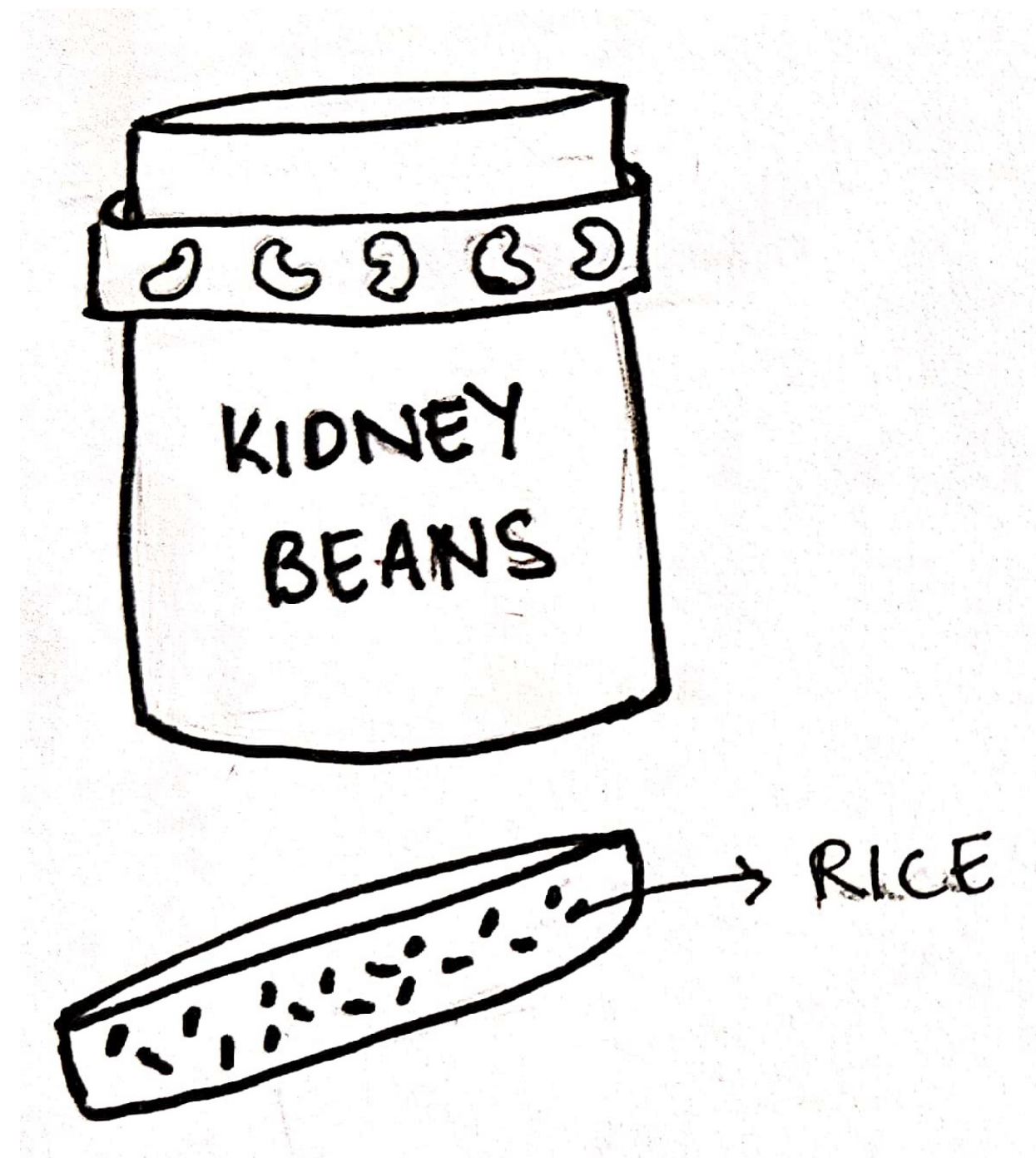
- Individuals who are blind often develop superior haptic (touch) skills. Notably, those with very low vision or who became blind later in life may even outperform sighted individuals when pattern familiarity is controlled.
- Without the visual guidance that sighted people rely on, blind individuals face challenges in haptic exploration. It's been found that seeing hand movements assists with tasks like pattern perception and texture judgments.
- Sighted individuals perceive their environment through multiple senses, including vision, touch, hearing, and smell.
- Vision helps orient objects for more effective haptic exploration. The senses of vision and touch often work together to enable us to move and examine objects more effectively.
- Not all visible textures can be felt. Some textures are created by colour changes rather than actual surface alterations, making them intangible.
- Studying blind individuals helps us understand the roles of visual imagery and experience in developing spatial awareness, pattern perception, and memory.
- Visual information is processed faster than tactile information, allowing sighted individuals to acquire more knowledge in the same time frame. This faster educational pace for sighted individuals means that blind individuals may have different educational backgrounds, with less experience interpreting graphics like maps and pictures.
- Blind children, aged 3 to 16, consistently outperformed sighted peers in spatial subtests assessing figure-ground organisation, dimensional structure, and memory tasks (Ballesteros et al., 2004). They excelled in tasks like dot scanning and symmetry detection using raised-line shapes and surfaces. Early specialized education likely contributed to their superior performance.



# Idea Generation

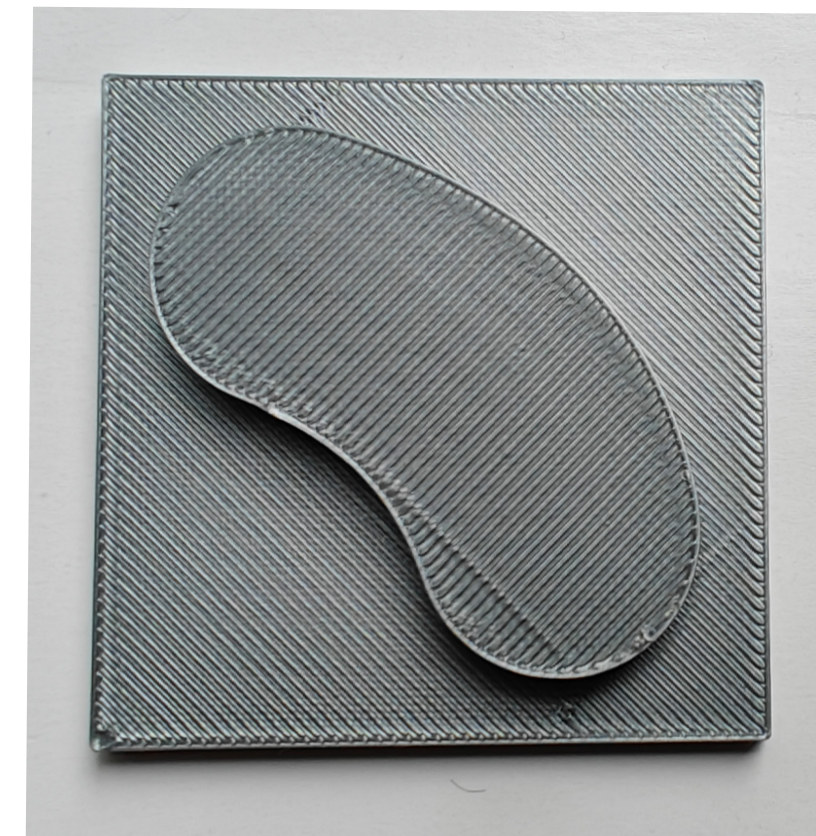
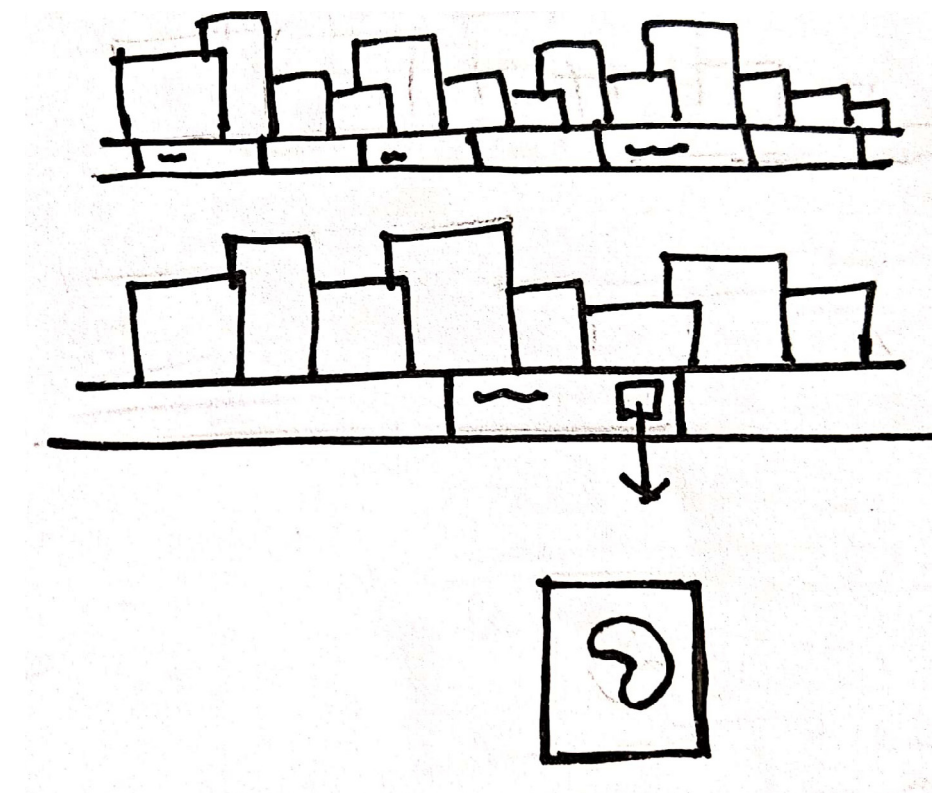
## Tactile Rings for Product Recognition

These rubber tactile rings designed to attach to various products. These rings enable visually impaired shoppers to feel and recognise items by touch when displayed in stores. Staff can easily apply these rings to products, enhancing accessibility and independence for visually impaired customers as they explore and identify items through tactile feedback.



## Tactile Labels

The concept involves introducing tactile clip-on labels that attach to product section signs in retail stores. For instance, a tactile label shaped like a kidney bean could be clipped onto shelves containing kidney beans. This innovation aims to assist visually impaired shoppers by providing tactile cues that help them identify specific product sections independently within the store environment.

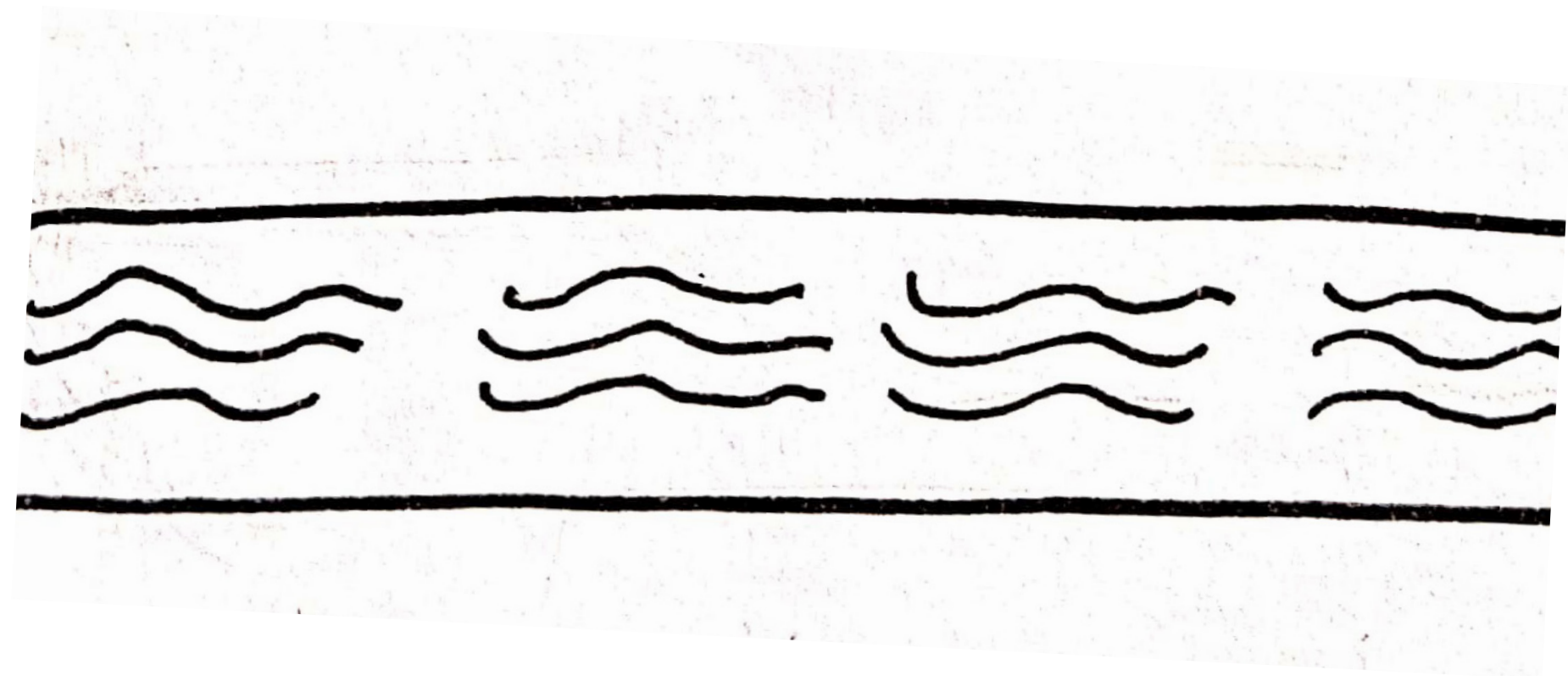




# Idea Generation

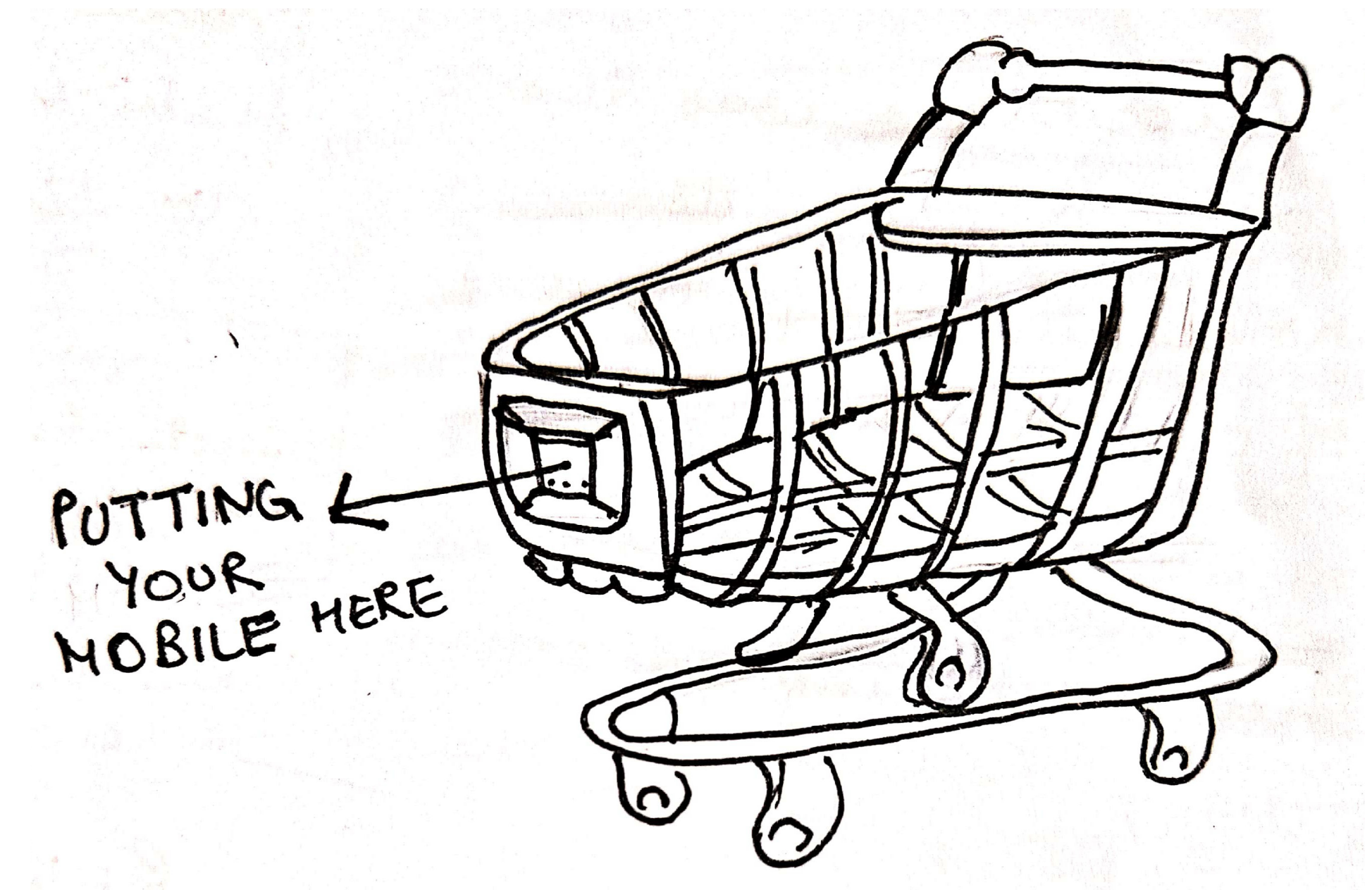
## Tactile Floor Paths

Install tactile floor paths that lead visually impaired shoppers through the store to major sections and frequently sought items. Textured flooring with distinct patterns and colors detectable by touch and low vision, possibly enhanced with subtle lighting or sound cues.



## Smart Navigation Shopping Cart

To enhance navigation for visually impaired shoppers, I propose redesigning the shopping cart. This innovative cart will sync with a mobile app on your smartphone, providing real-time directional guidance throughout the store. This integration ensures seamless navigation, making shopping more accessible and enjoyable.



# Project (Aims, Objectives and Impact)

## Aim

The primary aim of this project is to **enhance the retail shopping experience** for visually impaired individuals by focusing on two key areas: navigation within the retail environment and accessibility of product packaging.

## Objective

### Improve Navigation:

1. Conduct interviews with visually impaired individuals to gain insights into their experiences and challenges with current navigation solutions in retail environments.
2. Develop or recommend enhanced navigation solutions that can be easily implemented in retail environments, ensuring they are cost-effective, user-friendly, and scalable.
3. Test the proposed navigation solutions with visually impaired individuals to gather feedback and make necessary adjustments.
4. Create a set of guidelines for retail stores to implement the recommended navigation solutions effectively.

### Enhance Packaging Accessibility:

1. Conduct interviews with visually impaired individuals to understand their needs and preferences regarding packaging accessibility.
2. Research and propose modifications to packaging designs that can make them more accessible, such as incorporating braille, tactile markers, and larger, high-contrast text.
3. To develop the prototype.
3. Evaluate the prototypes with visually impaired individuals to assess usability and effectiveness, and refine the designs based on feedback.

## Impact

### 1. Enhanced Independence and Confidence:

Visually impaired shoppers will experience greater independence and confidence while navigating retail environments and handling product packaging, reducing reliance on assistance from others.

### 2. Increased Inclusivity:

Retail environments will become more inclusive and welcoming to visually impaired individuals, promoting a sense of equality and enhancing customer satisfaction.

### 3. Improved Shopping Efficiency:

Efficient navigation aids and accessible packaging will streamline the shopping process for visually impaired individuals, saving time and reducing frustration.

### 4. Retail Industry Standards:

The project will contribute to setting new standards and best practices in the retail industry for accommodating visually impaired customers, potentially influencing policy and regulatory changes.

### 5. Enhanced Awareness and Advocacy:

Raising awareness about the challenges faced by visually impaired shoppers and the proposed solutions can drive broader advocacy efforts, encouraging more businesses to adopt inclusive practices.

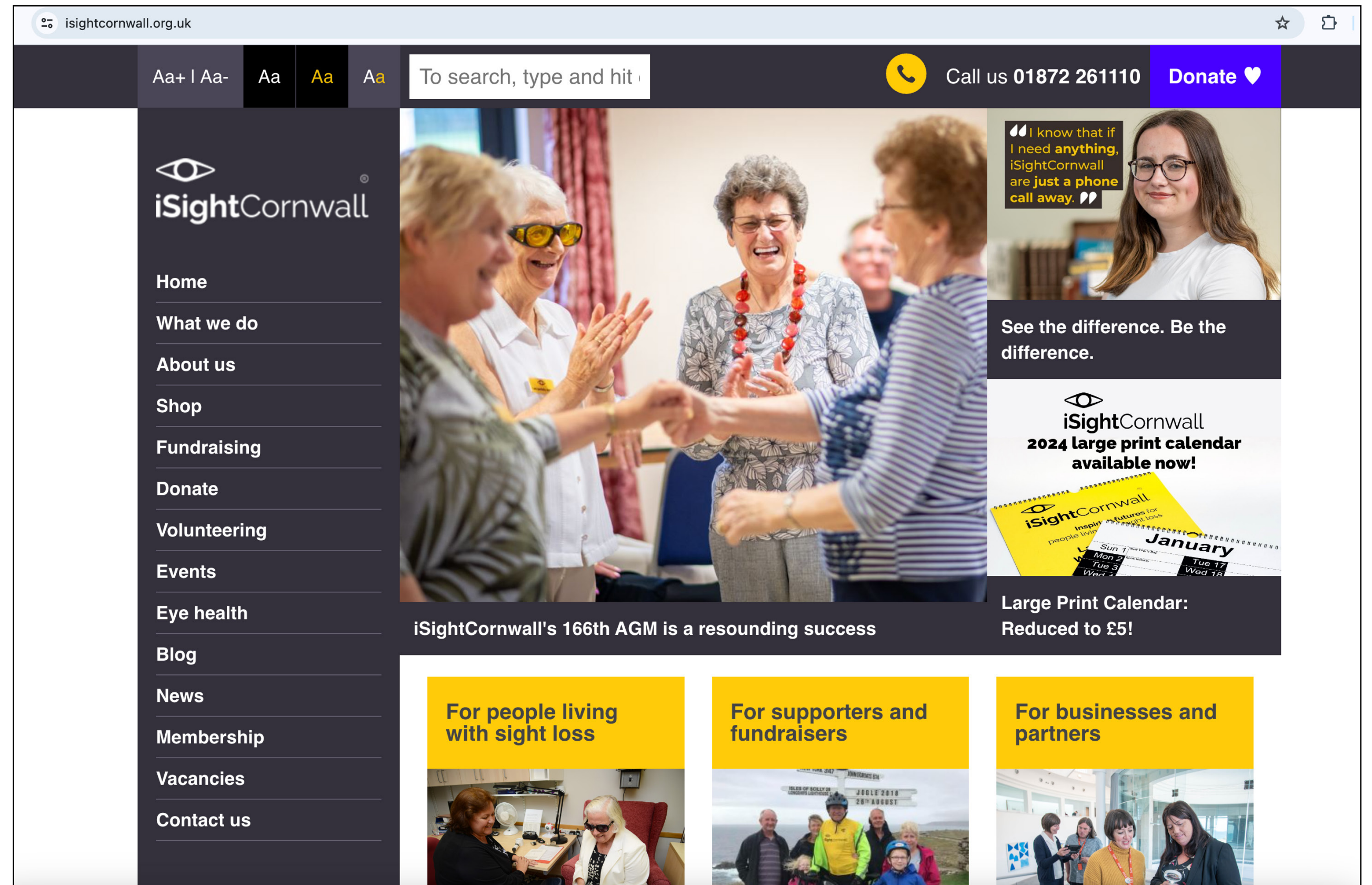


# Undertaken a Primary Research On Visually Impaired

# iSight cornwall

They are the first centre of resource for all in Cornwall and the Isles of Scilly who are affected by sight loss, whatever their age, circumstance or condition. They care about helping anyone living with a visual impairment and have done ever since they was foundation in 1856 when the charity supported Cornish miners.

They support and encouragement to lead active, independent, and involved lives, at home, in the workplace, in their education, and by no means least, in their social lives. They help everyone living with sight loss, whether recent or longstanding, sudden or gradual, for the person directly concerned and for family members, friends and colleagues who are affected by these changes too. They also help people deal with the environmental, societal and financial repercussions that often ensue. To understand the complexities and life-changing nature of sight loss and the range of essential equipment available, not forgetting that sometimes even the smallest things can make a world of difference.



# Fieldwork Period



**THANK YOU**