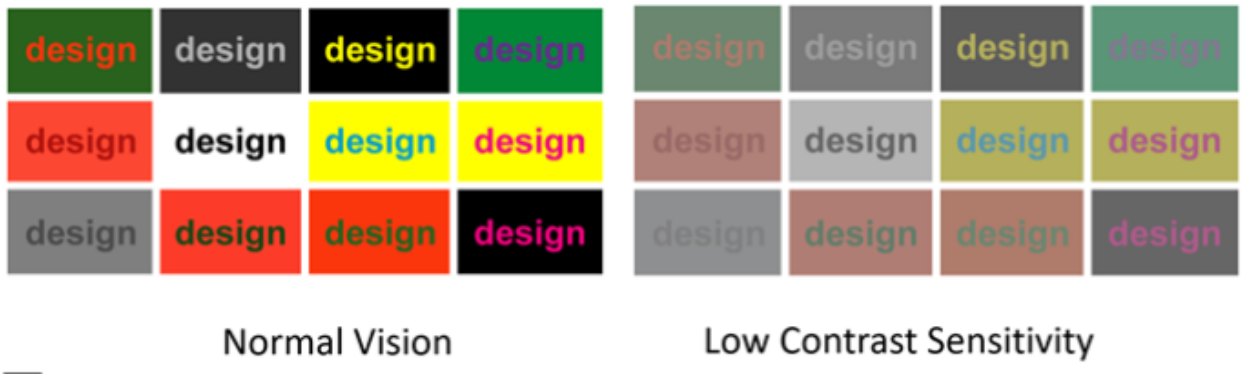
Effects Of Ageing On Vision

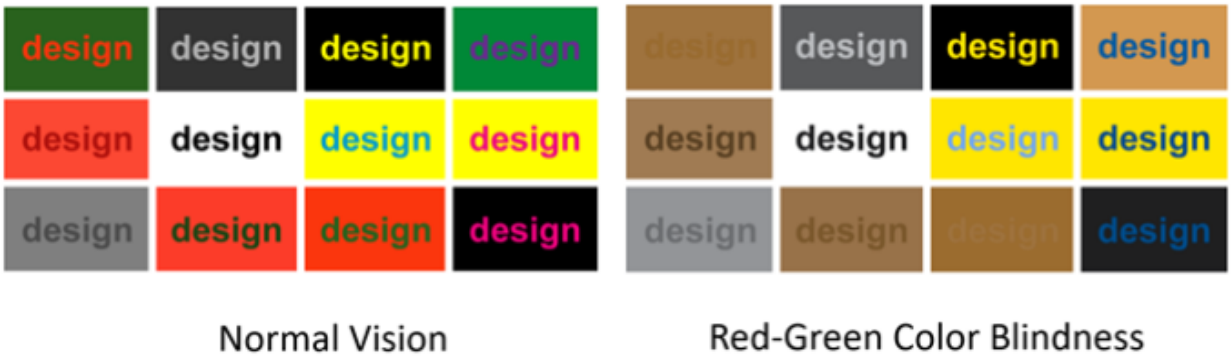
As the eyes age the lens hardens and the pupil shrinks resulting in a loss of visual activity. This also means that older eyes find it much harder to make out low contrast patterns. Meaning colour combinations with minimal contrast may look pleasing to younger eyes, but become incredibly difficult to see as the age of the user increases.



Taken from a study by the University Of Cambridge into inclusive design

Taken from CoSchedule: The know it all guide to colour psychology in marketing

Colour confusion also increases with age, mostly shades of reds and green. This does not mean the user confuses one colour for another, it means they become less able to distinguish between the colours.



From the same study as before

As the eyes age the lens also thickens and starts yellowing. This makes it harder to distinguish between green and blue due to the yellow component in green making it more yellow and the addition of yellow to blue making it look more green.

The Implications Of Colour

Colours naturally have different connotations which can vary per shade & who views them. Keeping these connotations in mind is key to creating the perfect atmosphere in the interface.

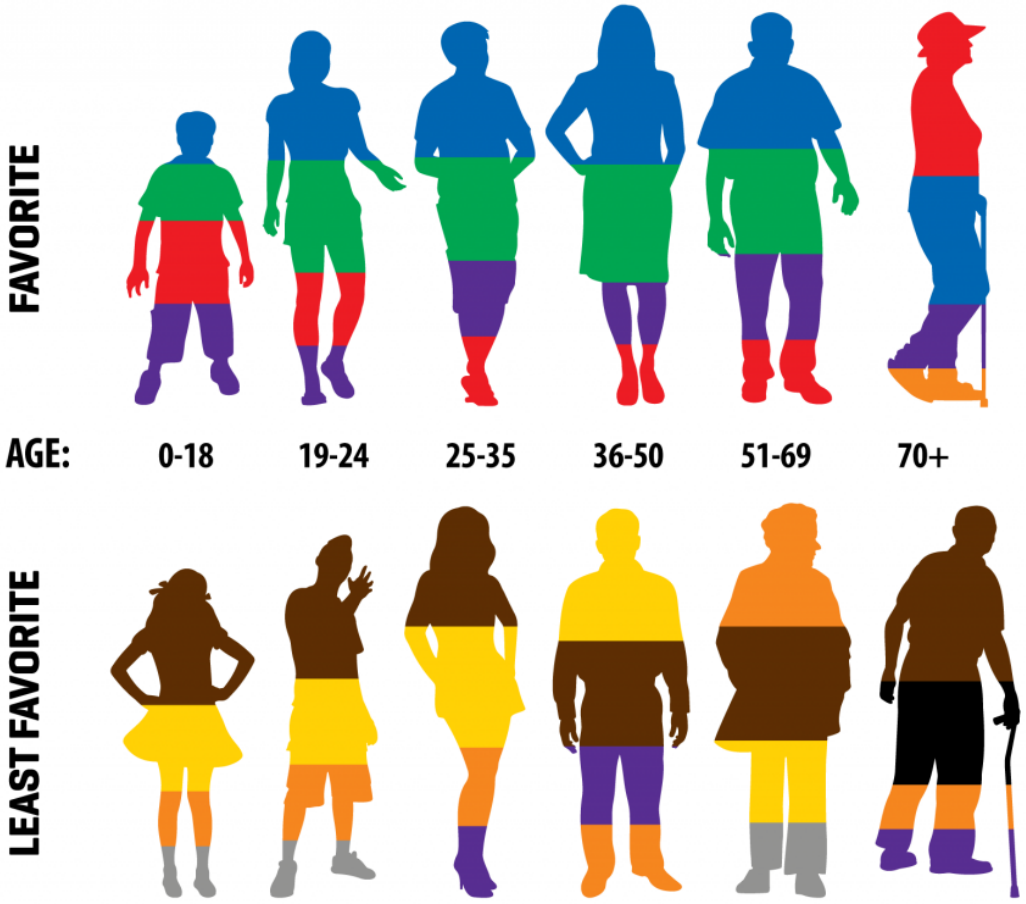
Red - Excitement, impulse, powerful, anger, danger
Yellow - Warm, happy, energetic, unstable, cowardice
Green - Fresh, clean, healthy, stable, envy, jealousy
Blue - Calm, patience, trusting, secure, cold, sad
Purple - Excitement, complex, romantic, luxury, moodiness
Pink - Youth, simplicity, compassion, weak, delicate, immature
Brown - Comfort, stability, reliable, rustic, enduring, unclean

A person's perception of colour changes based on how inclined they are to a certain colour. For example a person may be more attracted to certain colours due to their fondness of them. This works both ways, as a person may have a general dislike of something that employs a colour they don't like. So it's important to use colours that are generally favoured by everyone.

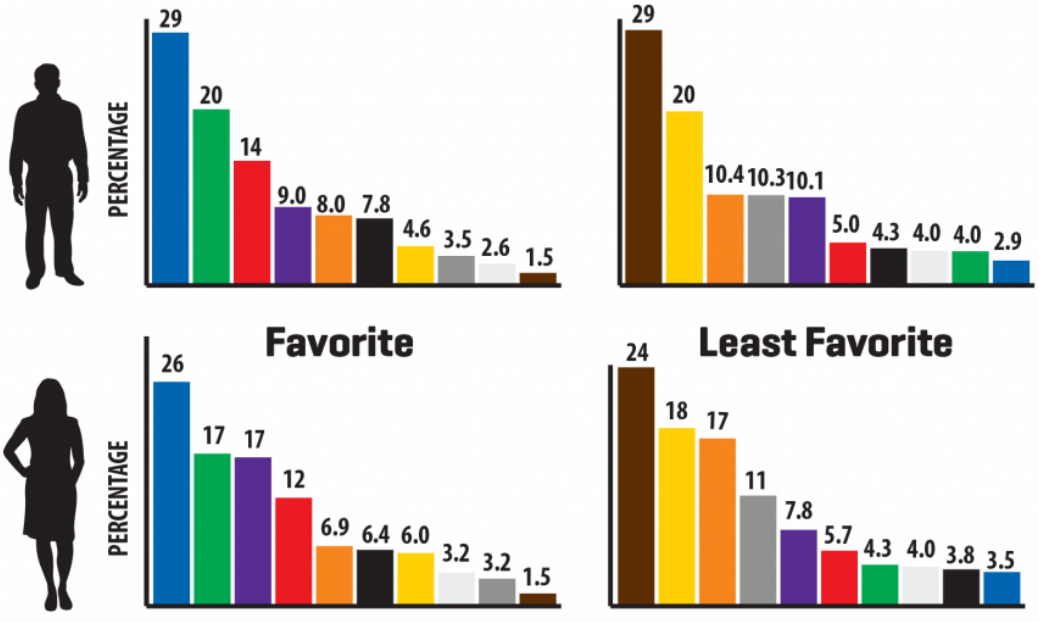
www.eldertech.org/color-in-designing-technology-for-seniors

Based off a Scott Design Inc. colour preference survey we can gather commonly favoured colours between each age group, Below are the results

PREFERENCES BY AGE - TOP 4 COLORS



COLOR PREFERENCES BY GENDER



www.hotdesign.com/marketing/whats-your-favorite-color

As we can see there are clear trends between each age group.
All age groups highly favour blue with red and purple following close behind.
Green seems to be a favourite of younger people but tends to drop off with the older category.
We can also see a distinct dislike of yellow, brown, orange with a mix of purple and grey.

From this we can whittle down the ideal colours to blue, green and red which is further backed up from the results when divided by gender instead of age.
With blue being the unanimous winner.

Colours In Conjunction With Memory

The University Of Columbia did a study into the effect certain colours have on concentration, attention span, retention and learning.
They found that red and blue had the best effects for enhancing cognitive skills and improving brain function.
Specifically that red greatly improved detail-oriented tasks and memory retention, likening it to a teacher's red pen.
The metaphor of a red pen instinctively makes the user be more vigilant and pay better attention to mistakes that they have made so that they can avoid them next time.

www.color-meanings.com/how-does-color-affect-memory

Our Colour Scheme

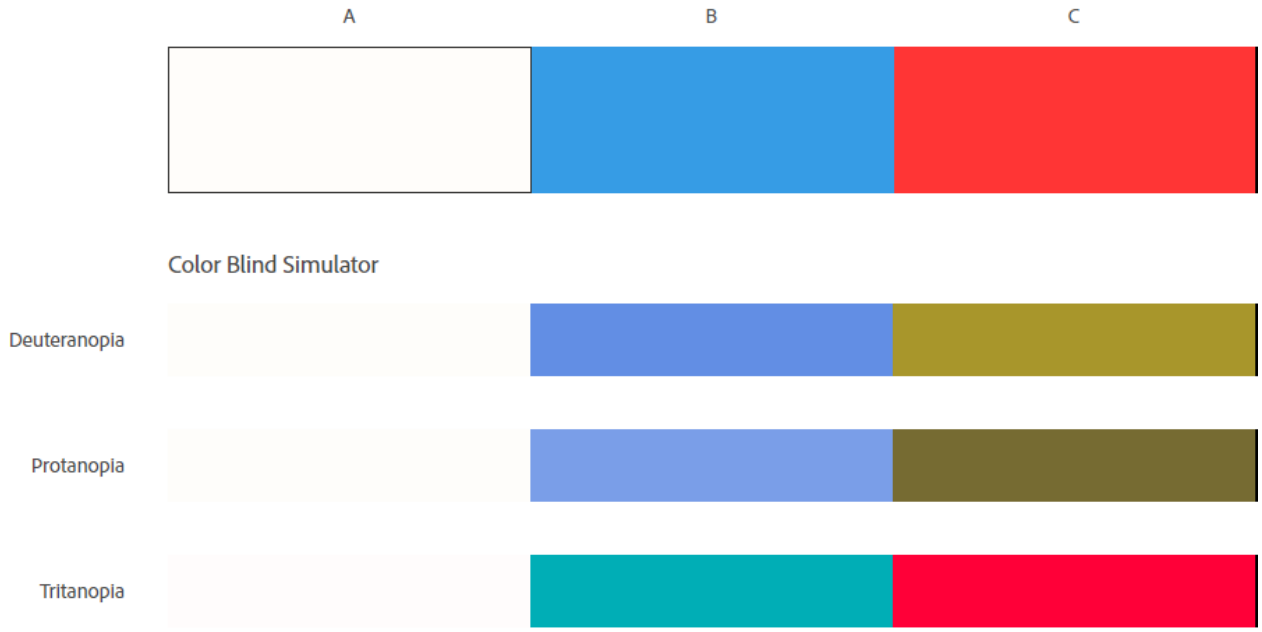
When choosing our colour scheme we took all of this information into account, in order to best facilitate our clients needs.
Our aim is to help those with memory problems which tend to be the older population and since they generally have less of an inclination to green we will avoid this colour.

Looking at the general top colours for those who are older, we have red, blue, purple and orange.
Due to the increased concentration of red-green colourblindness as the population age we will avoid purple and orange which can start to appear similar to browns when in conjunction with blues and reds.

This leaves us with blue and red.
We will use blue as the main colour for our website due to its calming, trusting connotations.
This will help the user feel more comfortable and relaxed while using the app which increases their retention and cognitive ability.
We will then use red's signalling properties for any errors, so that the user can learn from them.
Such as places where they incorrectly input some data like a name or a password.

The contrast of these two colours further aids the ability to easily distinguish different objects which mean different things, such as interactable buttons in blue and read only warnings in red.

This will increase the rate at which the user learns the app and increase their proficiency in it day to day.



These colours are not set in stone and may differ throughout the design process but generally it will mainly consist of an off-white (A, #FFFDFA), a light-medium blue (B, #369CE5), a vibrant red (C, #FF3535).
Also the aim is to employ the 60:30:10 rule using these colours in a ratio of A:B:C