

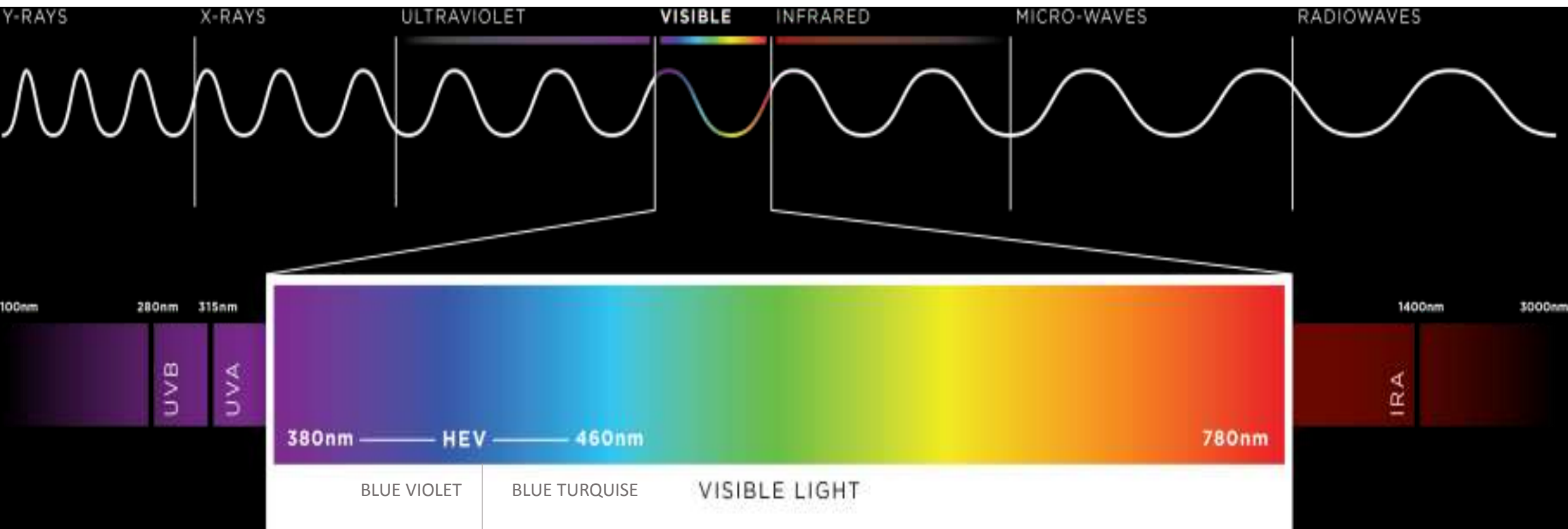
YOUR
SCREEN
IS BLINDING
YOU WITH
BLUE
LIGHT

BLU/MAX[™]
LENSES

Protection from
Harmful UV and Blue Light



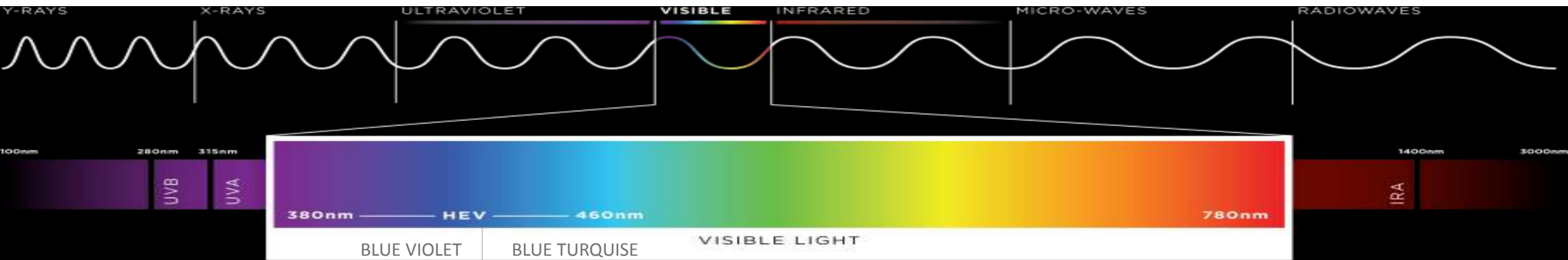
VISIBLE LIGHT IS MORE COMPLEX THAN WE THINK



UV RAYS & HEV BLUE LIGHT WITH LOW WAVELENGTH IS HARMFUL FOR OUR HEALTH

Sources: Arnault E. 2013, Gronfier C. 2013

LOWER WAVELENGTH RAYS HAVE MORE ENERGY



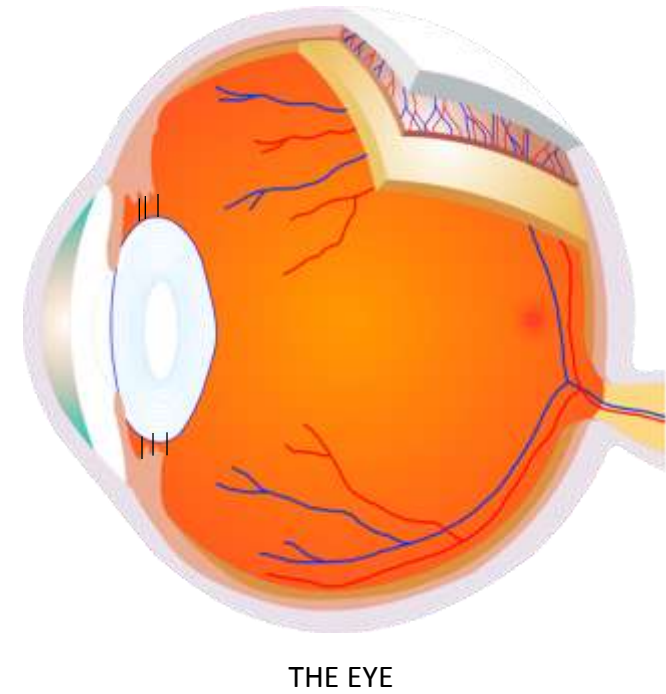
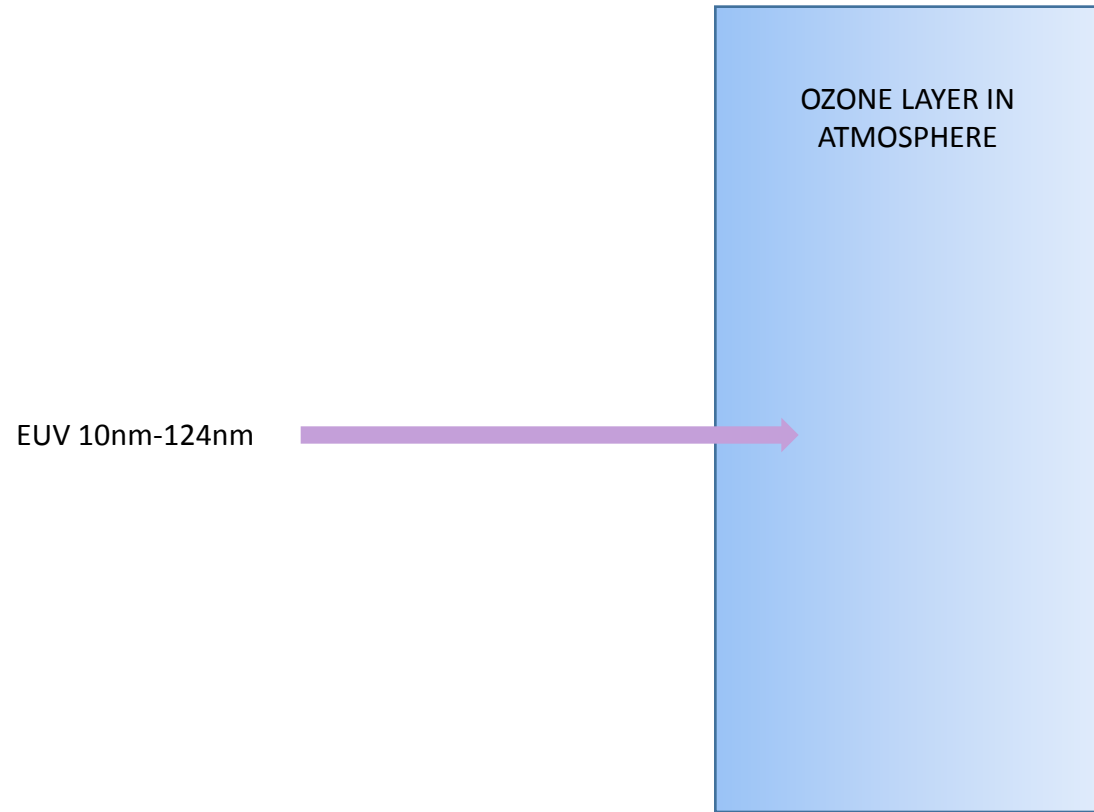
LIGHT IS A FORM OF ENERGY WHICH PROPAGATES IN PACKETS-OF-ENERGY CALLED PHOTONS

$$\text{Energy of a Photon} = (\text{Plank's Constant} \times \text{Speed of Light in Vacuum}) / \text{Wavelength of Light}$$

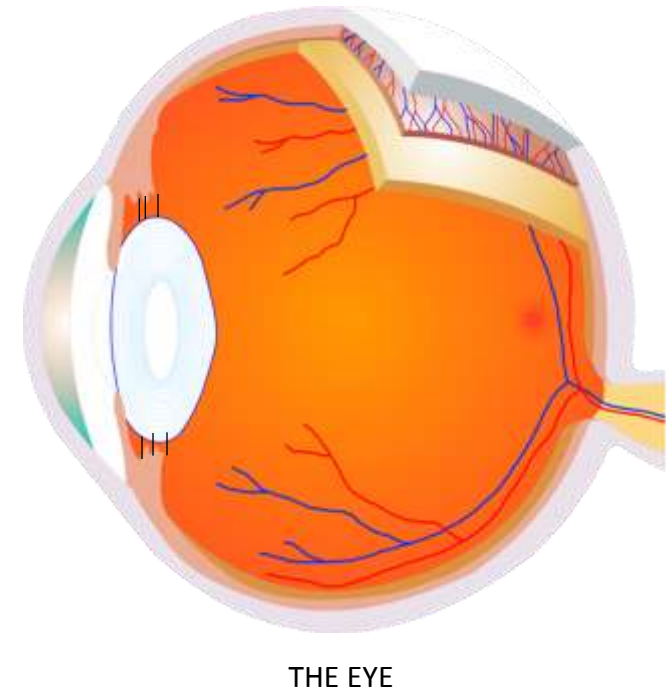
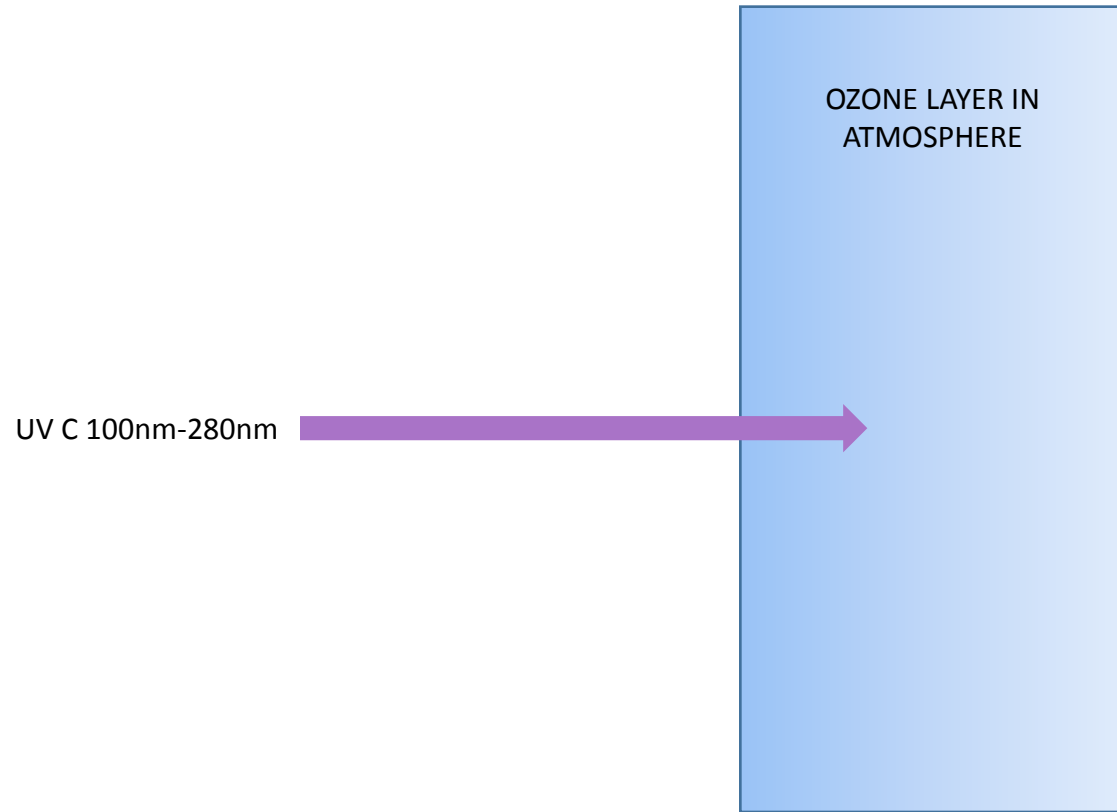
At 380nm (Blue-Violet light) energy/photon is 3.27eV whereas at 760nm (Red light) energy/photon is 1.63eV, which is half the amount of Blue-Violet at the 380nm end. The higher the energy of a wavelength, the deeper is it's chance of penetration, causing damage to tissues.

Blue-Violet light is the highest energy visible light that gets to the retina where damage can occur. HEV Blue light has been described as 50 to 80 times more efficient in manifesting photoreceptor death than green light.

INTERACTION OF UV RAYS WITH THE ATMOSPHERE & THE EYE

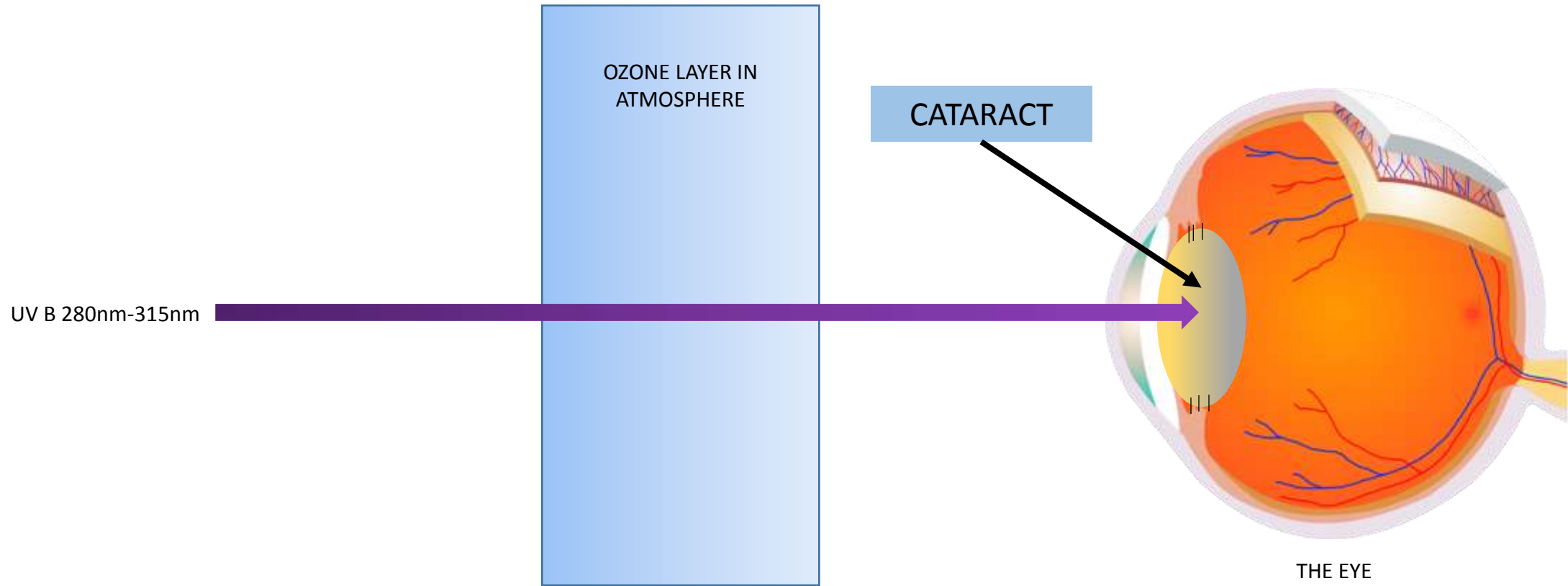


INTERACTION OF UV RAYS WITH THE ATMOSPHERE & THE EYE

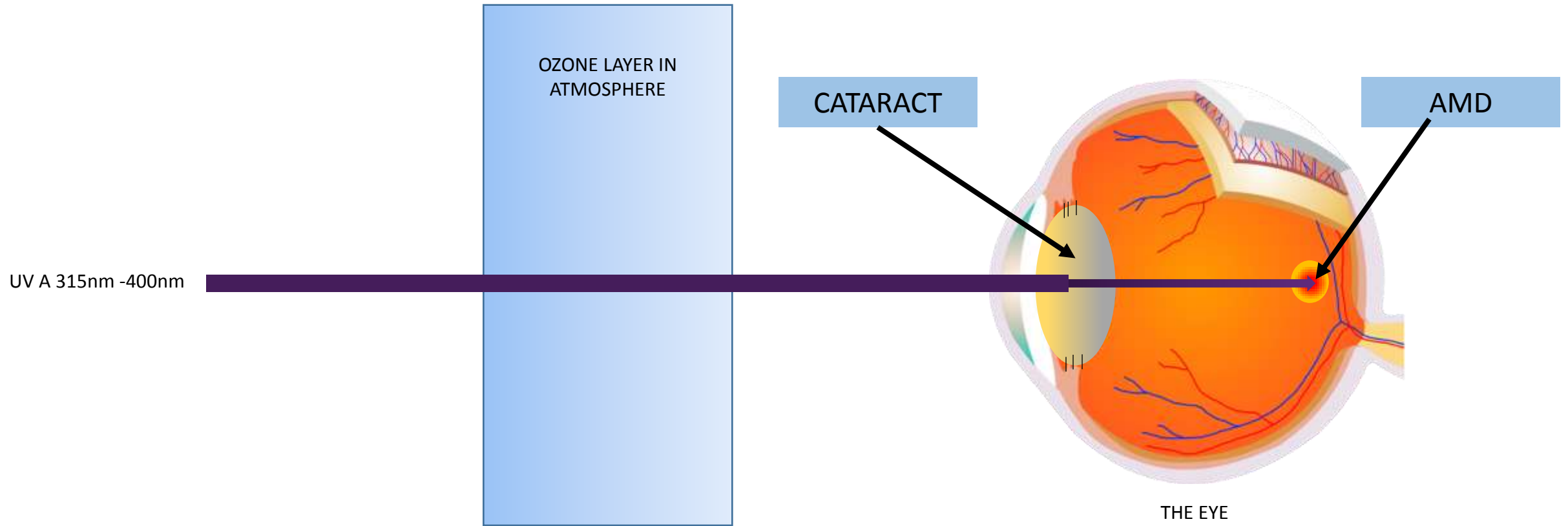


UV C has very high energy, but gets absorbed in the Ozone Layer of our atmosphere completely

INTERACTION OF UV RAYS WITH THE ATMOSPHERE & THE EYE



INTERACTION OF UV RAYS WITH THE ATMOSPHERE & THE EYE



Children have low Ocular Lens Pigment & hence are more prone to UV induced retinal damage by higher levels of transmitted UV (around 320nm) unlike aged people.

Importance of UV Protection

Its what you can't see that matters the most



The most sensitive part of your body is directly exposed to UV light is your eyes.

94 % don't know that UV exposure is bad for the eye.

5-10% of skin cancer occur in the eyelid

40% of adults say that they do not look for healthy/safety information when purchasing Lenses.

3 out of 5 adults are not likely to protect their eyes from UV on cloudy / rainy days.

Reflected UV Light is just as damaging as direct UV



Water reflects up to 100%

Snow reflects up to 85%

Dry sand & concrete reflect up to 25%

Grass reflects up to 3%

The level of UV entering the eye in the **early morning (8 am to 10 am)** and **late afternoon (2 pm to 4pm)** is nearly double that of mid-day hours (10 am to 2 pm) at most times of the year



UV Damage can cause a host of vision problems- from long term to short term

Long - term problems

Age related macular degeneration (AMD)

Cataract

Pterygium

Cancer of the eye and surrounding skin

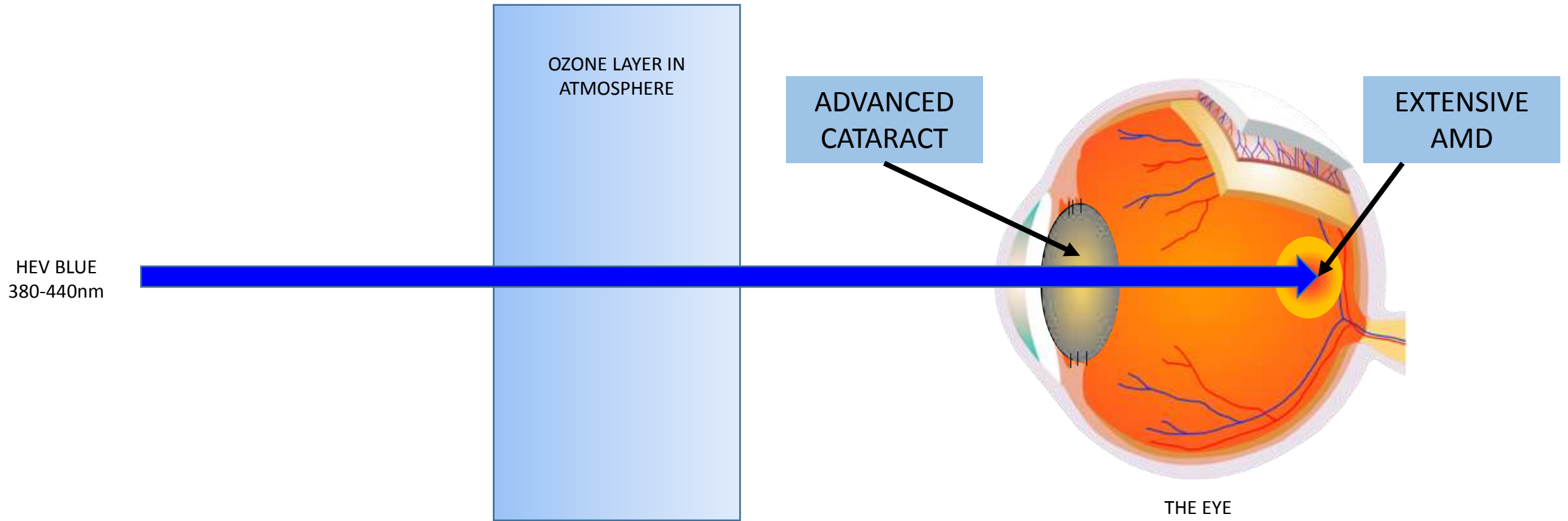
Short - term problems

Photokeratitis

Eyes that are bloodshot or swollen

Hypersensitivity to light

INTERACTION OF HEV BLUE LIGHT WITH THE ATMOSPHERE & THE EYE



HEV Blue light is a visible light & is not restricted by OLP much & is incident on the retina – causing larger damage both in young & aged. Since HEV Blue contain very high energy, it can penetrate deep into the RPE

HARMFUL EFFECTS OF HIGH ENERGY BLUE LIGHT

AGE RELATED MACULAR DEGENERATION (AMD)

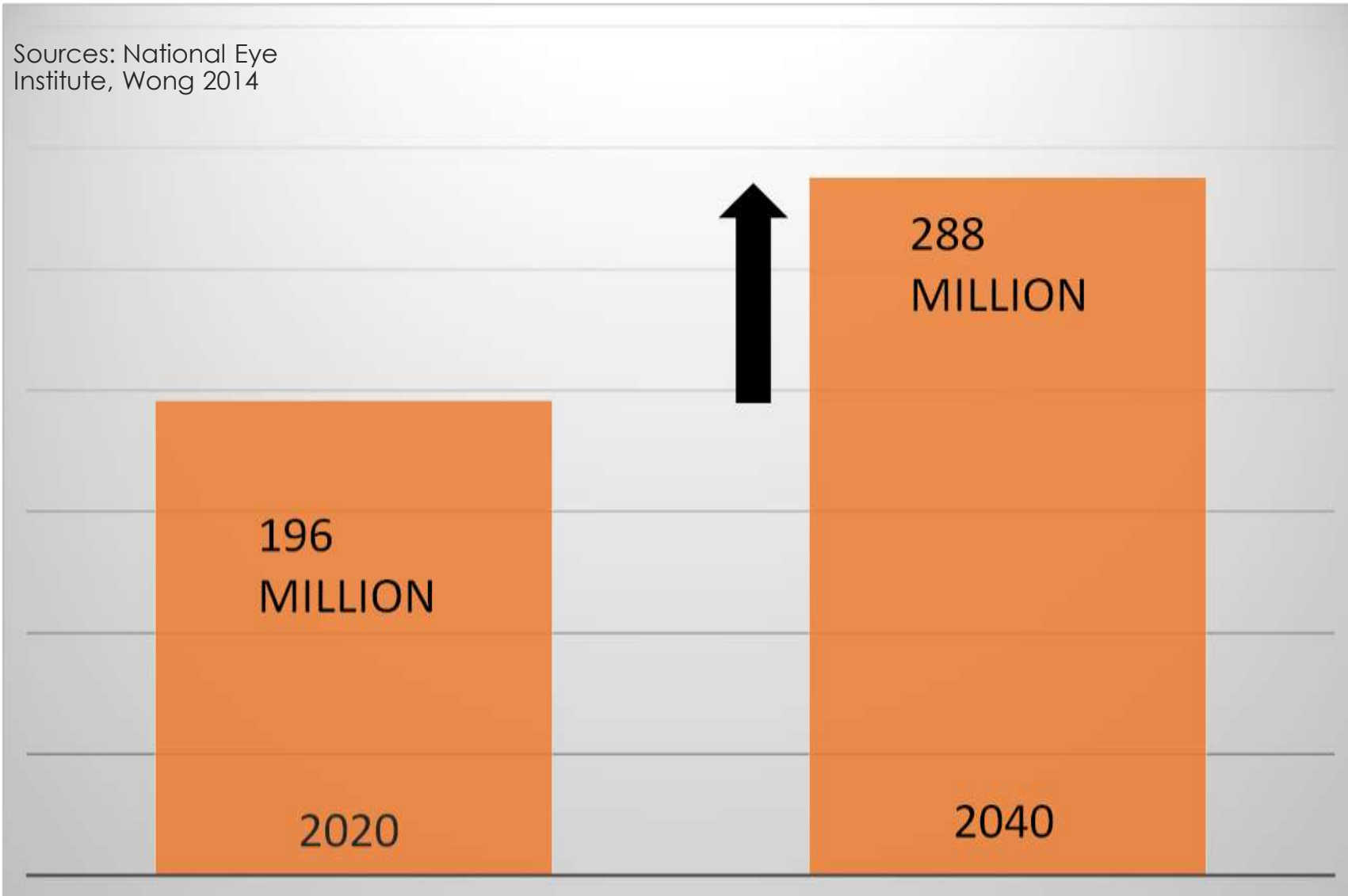


According to a study by The [Schepens Eye Institute](#), a low density of macular pigment may represent a risk factor for AMD by permitting greater blue light damage.

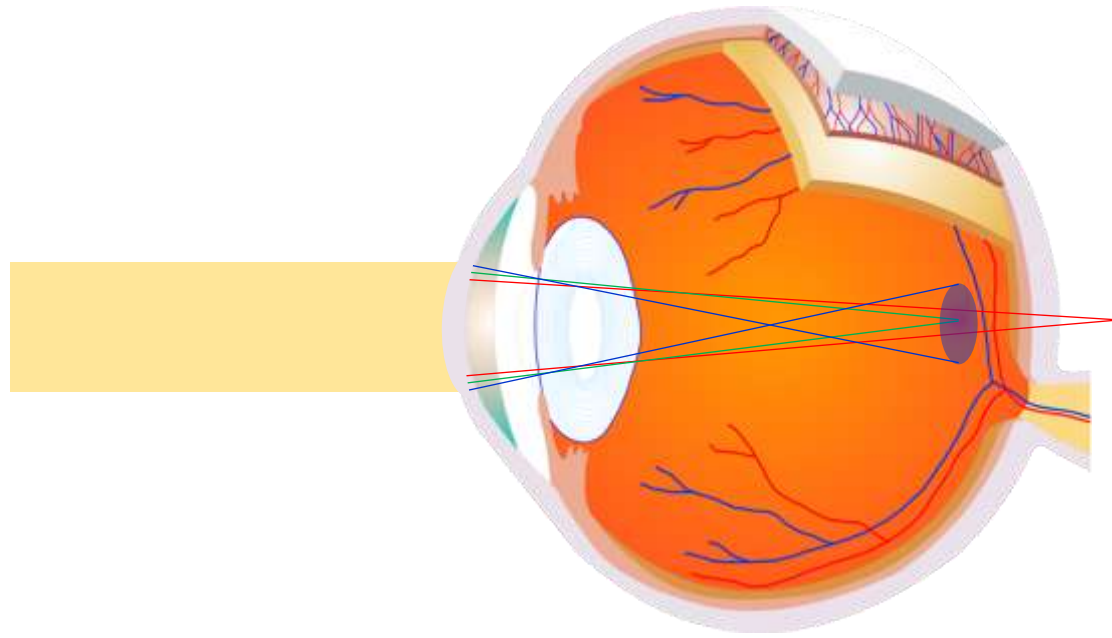
Age Related Macular Degeneration is a chronic, progressive disease of the central portion of the light sensitive layer of our eye (retina), that distorts and destroys the central vision required for reading, driving, cooking, recognition of faces and other common tasks.

WORLDWIDE PROJECTED INSTANCES OF AMD

Sources: National Eye
Institute, Wong 2014

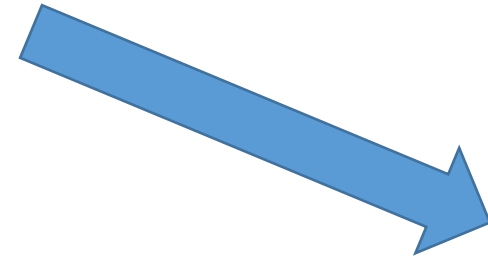
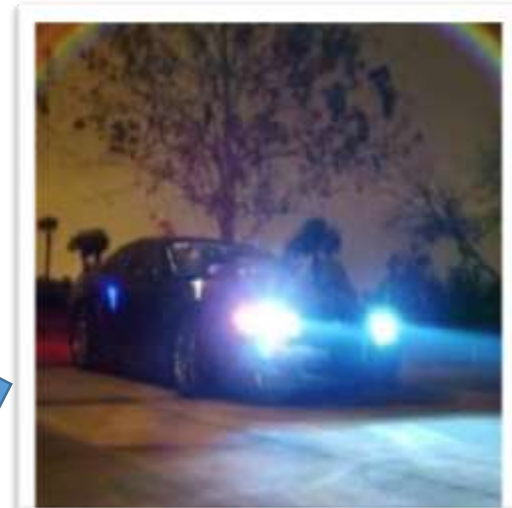


IMMEDIATE EFFECTS OF HEV BLUE LIGHT

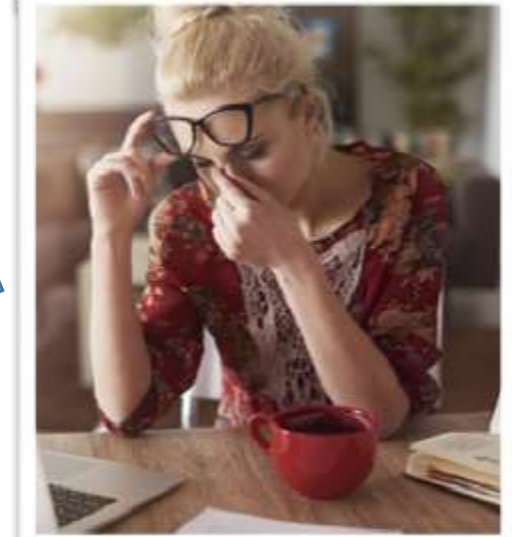


THE EYE

Blue Light Glare



Visual Fatigue



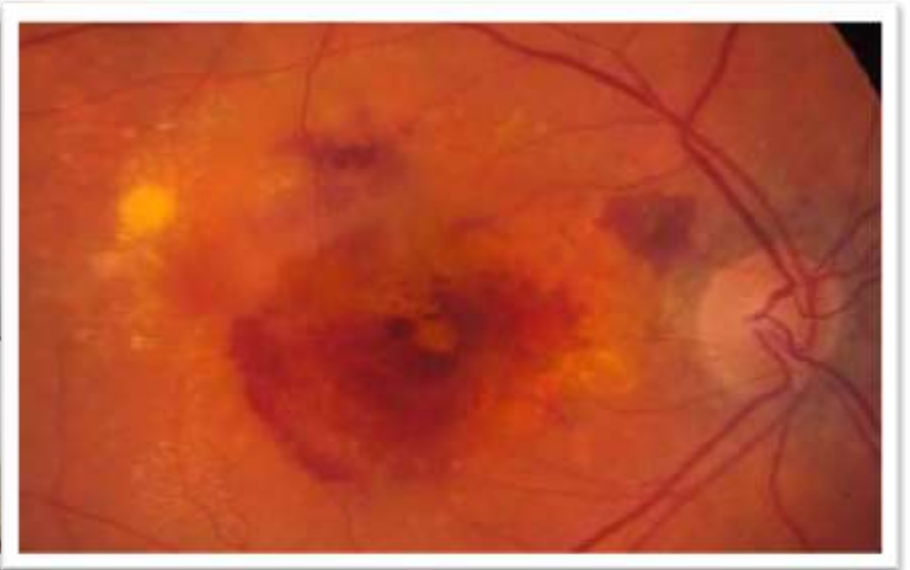
EFFECT OF HARMFUL HEV BLUE RAYS ON THE EYE



BLUE GLARE
(380-420nm)

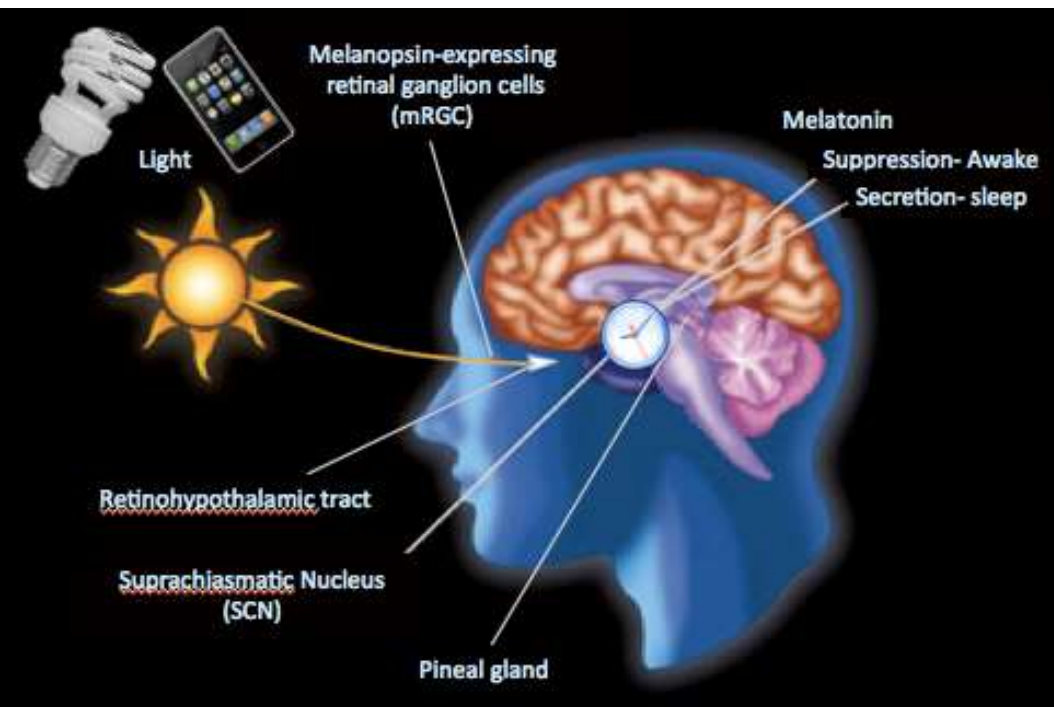


VISUAL FATIGUE
(380-420nm)



MACULAR CELLULAR DAMAGE
(380-440nm)

EFFECT OF HARMFUL HEV BLUE RAYS ON GENERAL HEALTH



Our circadian rhythm or “sleep-wake cycle” is controlled directly by blue light.

-
- Irritability
 - Cognitive impairment
 - Memory lapses or loss
 - Impaired moral judgement
 - Severe yawning
 - Hallucinations
 - Symptoms similar to ADHD
 - Impaired immune system
 - Risk of diabetes Type 2
 - Increased heart rate variability
 - Risk of heart disease
 - Decreased reaction time and accuracy
 - Tremors
 - Aches
- Other:*
- Growth suppression
 - Risk of obesity
 - Decreased temperature

Disrupting our circadian rhythm can lead to broader health impacts.

Over 100 million worldwide report sleep deprivation.

HARMFUL EFFECTS OF HIGH ENERGY BLUE LIGHT

- Disrupts the Circadian Rhythm
- Higher risk of certain types of cancer
- Higher risk of Diabetes, Heart Disease & Obesity
- Aggravates Depression
- May induce Myopia
- May induce/aggravate Age Related Macular degeneration & even irreversible vision loss
- Digital Eye Strain Syndrome, Blurry Vision, Aesthanopic & Orthopaedic symptoms
- Suppresses Melatonin – the sleep inducing hormone, thus reducing the ability to sleep

YOUR
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LATEST FINDINGS & A SEARCH ON BLUE LIGHT & MELATONIN (U.S. National Library of Medicine)




- Room light not only suppresses melatonin production, but it could also impact sleep, thermoregulation, blood pressure and glucose homeostasis
- Blue light is considered a “Carcinogenic Pollution” (in a study done on mice correlates with higher cancer rates)



- A lack of melatonin is linked to higher rates of breast, ovarian, and prostate cancers, while blocking those blue rays with HEV BLUE FILTERING LENSES is linked to lower cancer rates
- Exposure to blue light in people appears to have an impact on mood, thus resulting in higher rates of DEPRESSION.
- Too much light exposure can cause RETINAL TOXICITY
- Blue light exposure plays a role in the higher incidence of CATARACT and MACULAR DEGENERATION.

FACTORS DETERMINING ULTRA VIOLET & HEV BLUE LIGHT EXPOSURE

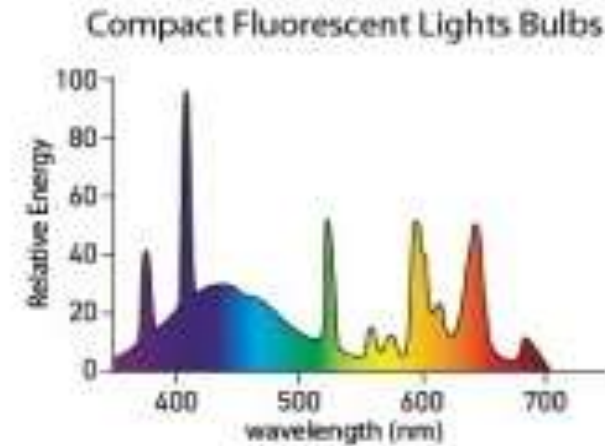
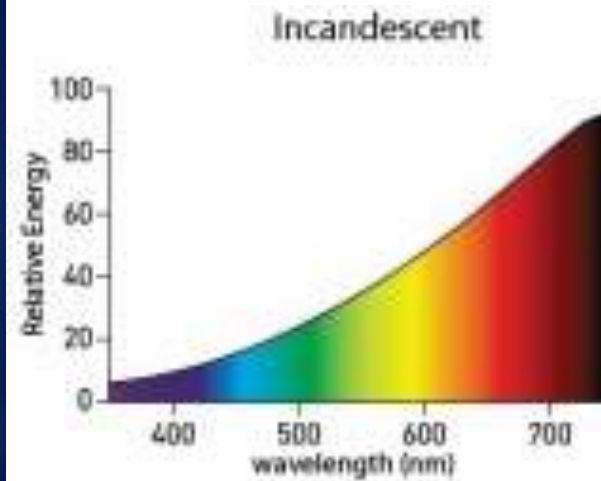
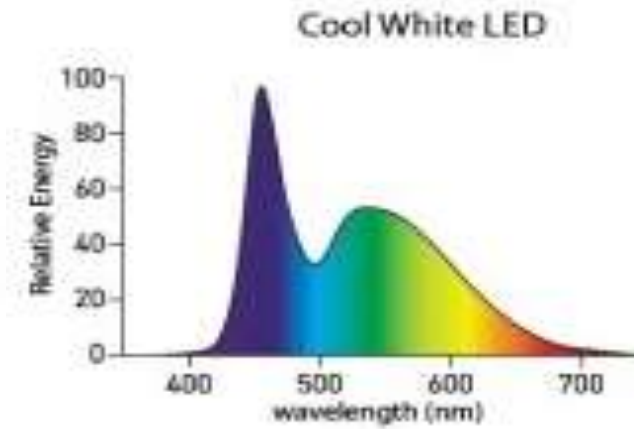
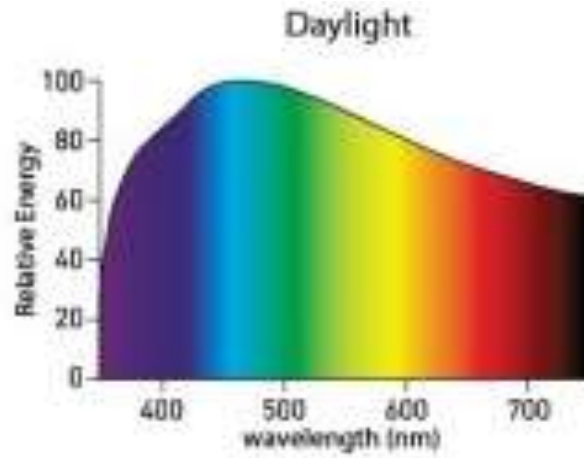
- Geographic location:** UV levels are greater in tropical areas near the earth's equator. The farther you are from the equator, the smaller your risk.
- Altitude:** UV levels are greater at higher altitudes.
- Time of day:** UV and HEV levels are greater when the sun shines almost directly, typically from 10 a.m. to 2 p.m. during summer & between 8 a.m. to 10 a.m. & 2 p.m. to 4 p.m. in winters.
- Setting:** UV and HEV levels are greater in wide open spaces, especially when highly reflective surfaces are present, like snow and sand.
- Medications:** Certain medications, such as tetracycline, sulfa drugs, birth control pills, diuretics and tranquilizers, can increase your body's sensitivity to UV and HEV radiation.

THE EYE			
Angle of sun above horizon	<35°	35-45°	>45°
Eye exposure	Partially exposed	Fully illuminated	Fully shadowed
Sources of UV	Diffuse UV from surface reflections and scattered light	Direct UV, reflected and scattered light	Indirect UV from surface reflections and scattered light
Summer	<ul style="list-style-type: none"> ● Early morning, late afternoon in all latitudes 	<ul style="list-style-type: none"> ● Mid morning, afternoon in low-mid latitudes ● Midday in extreme latitudes 	<ul style="list-style-type: none"> ● Midday in low-mid latitudes ● Will not occur in extreme latitudes

SOURCES OF ULTRA VIOLET & HEV BLUE LIGHT

Rayleigh Scattering makes the Sky look Blue

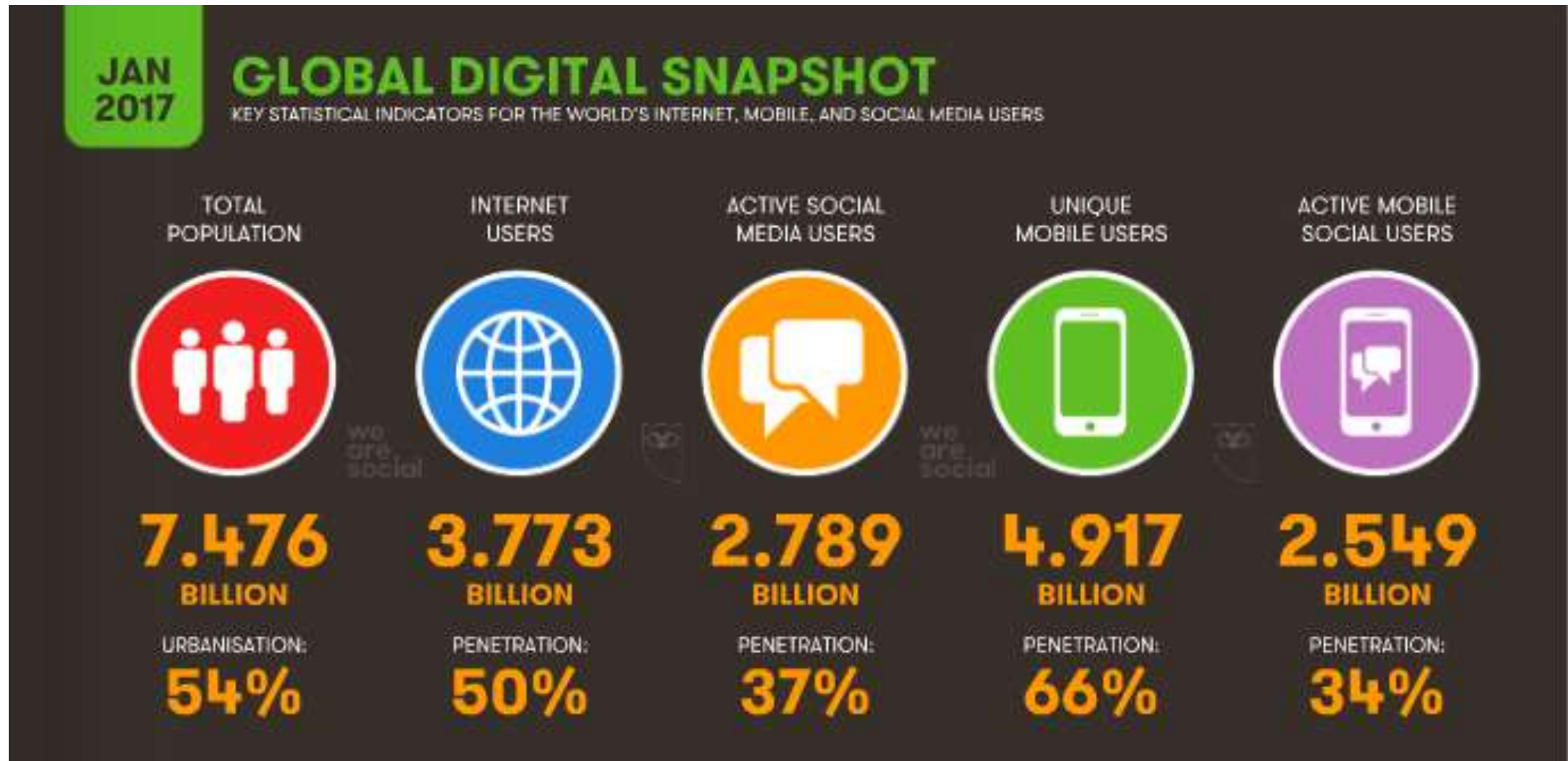
We are still exposed to 60% of Ultraviolet rays on cloudy days and 20-30% on rainy days



SOURCES OF BLUE LIGHT

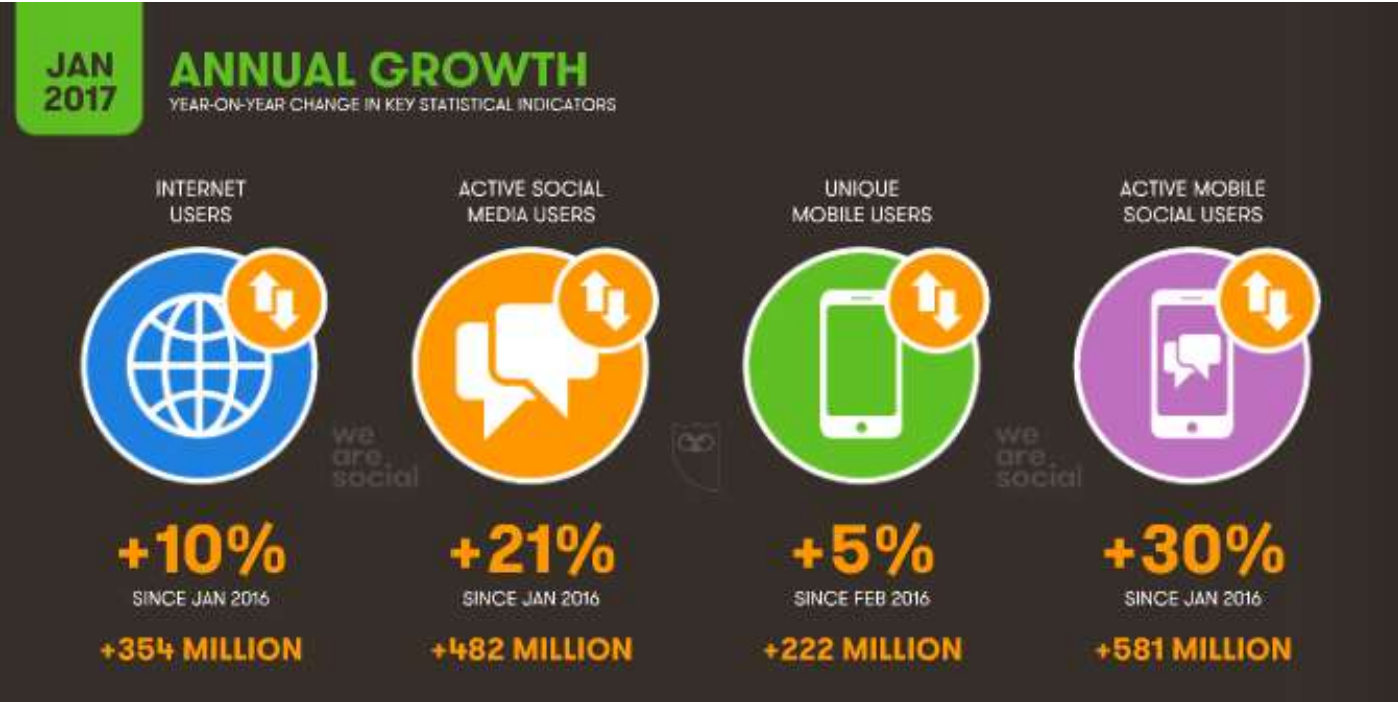
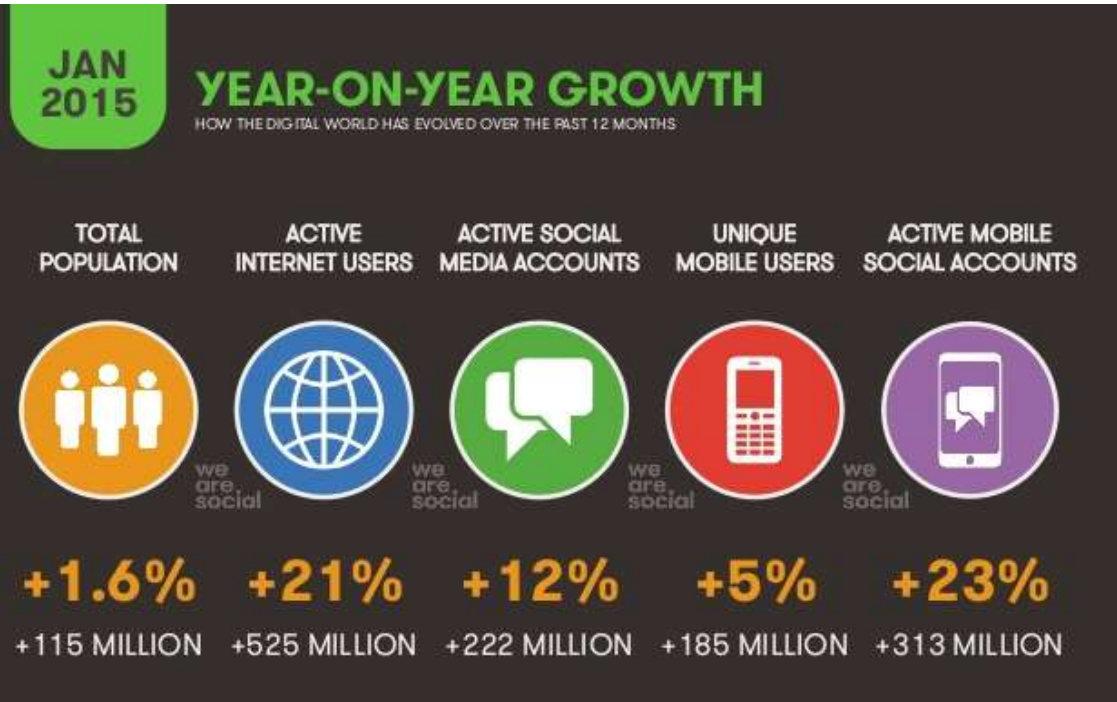


THE DIGITAL DILLEMA – A GROWING GLOBAL RISK



SOURCE : Global digital statistics - Slideshare

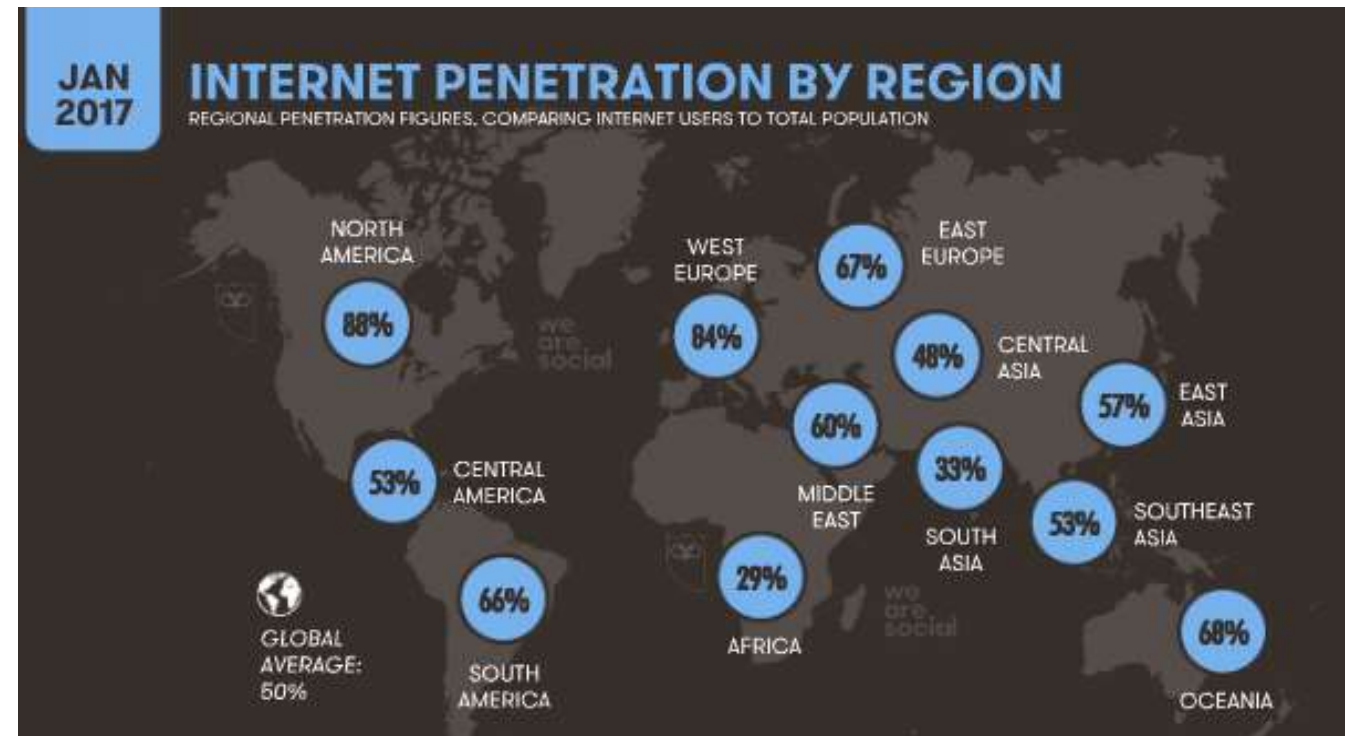
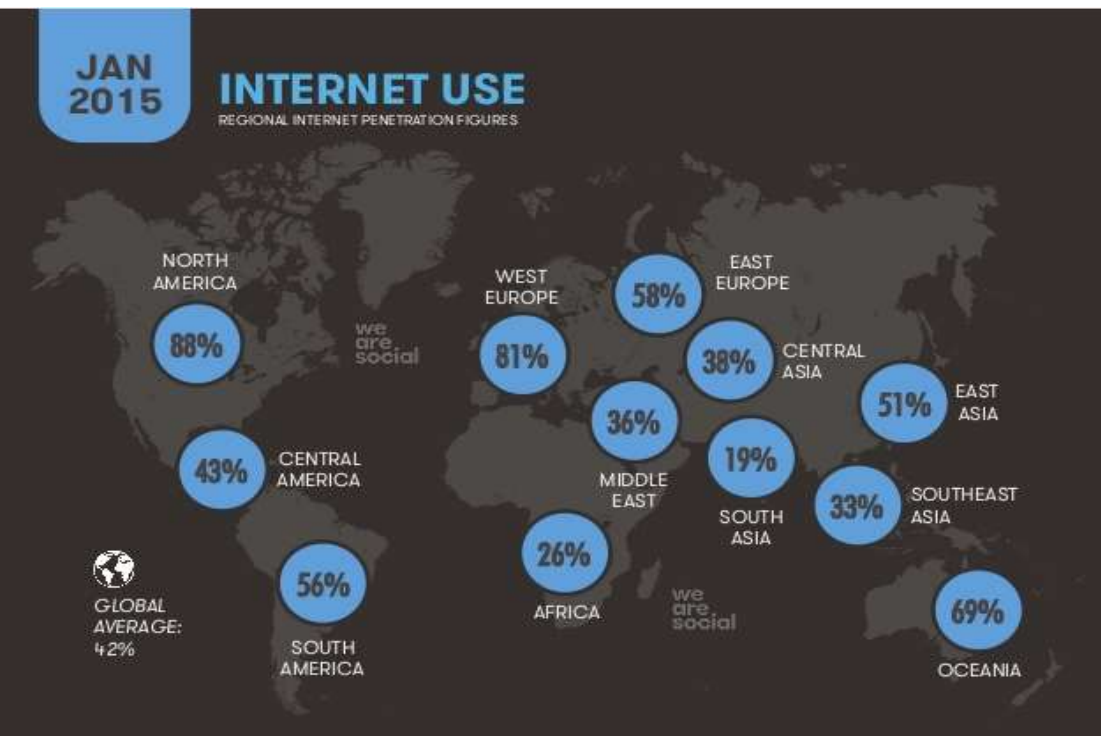
THE DIGITAL DILLEMA – A GROWING GLOBAL RISK



THE GLOBAL DIGITAL USERS STATISTICS WILL BE ALMOST DOUBLE BY 2020

SOURCE : Global digital statistics - Slideshare

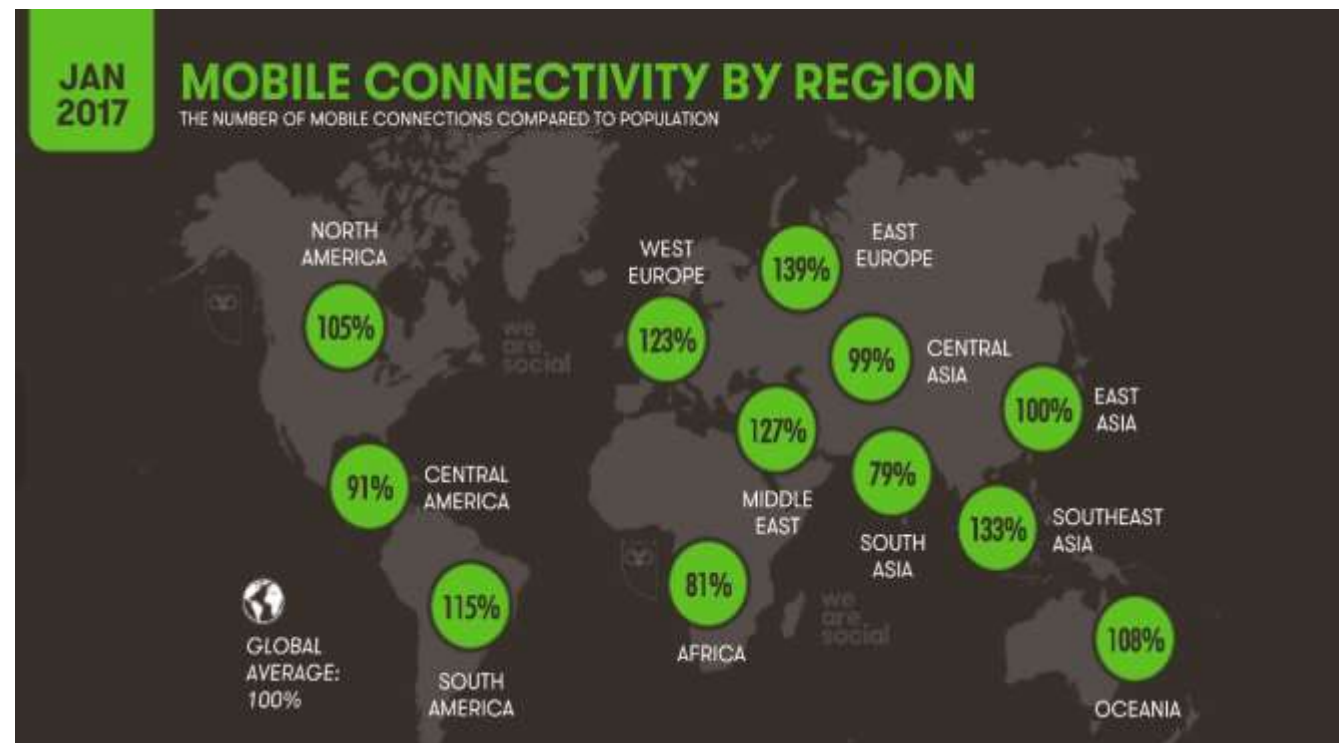
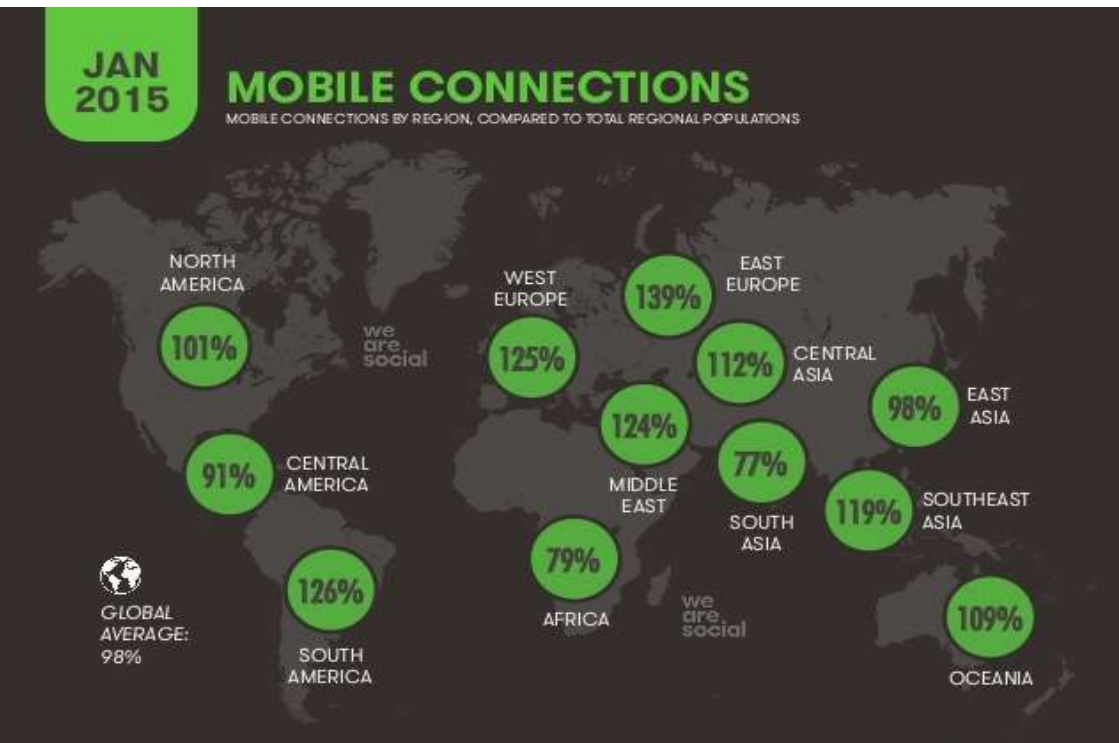
THE DIGITAL DILLEMA – A GROWING GLOBAL RISK



THE GLOBAL INTERNET USERS STATISTICS WILL RISE BY A STAGGERING 40% BY 2020

SOURCE : Global digital statistics - Slideshare

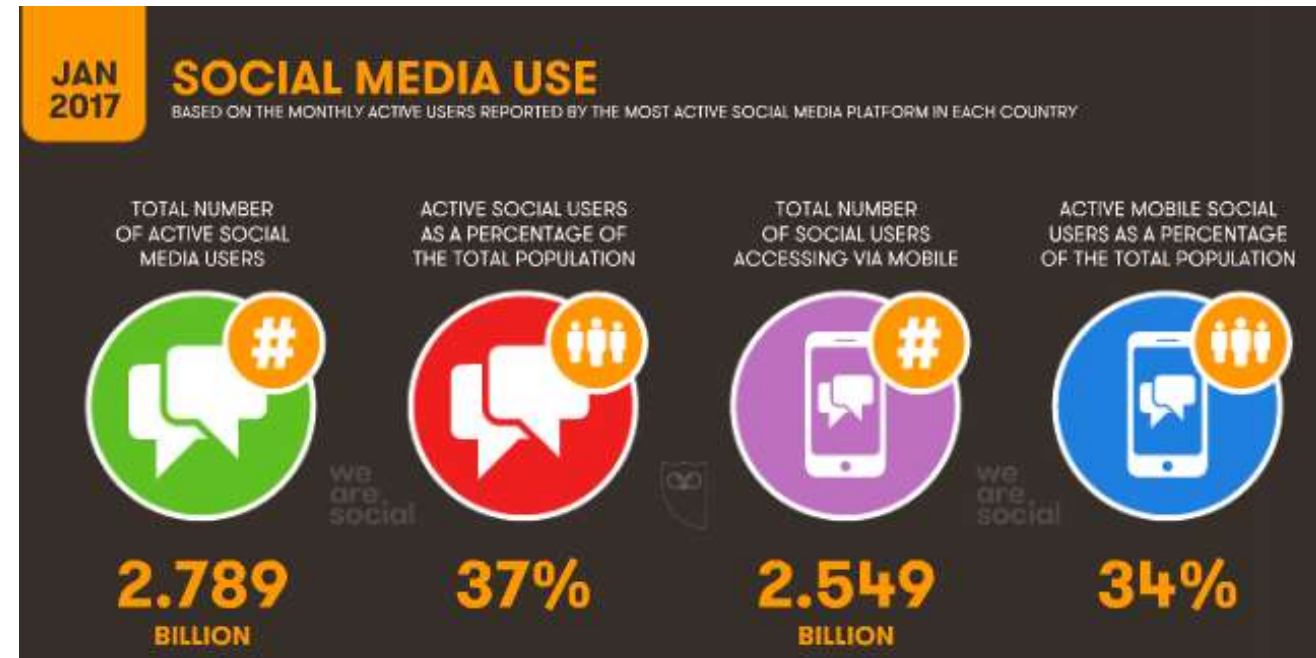
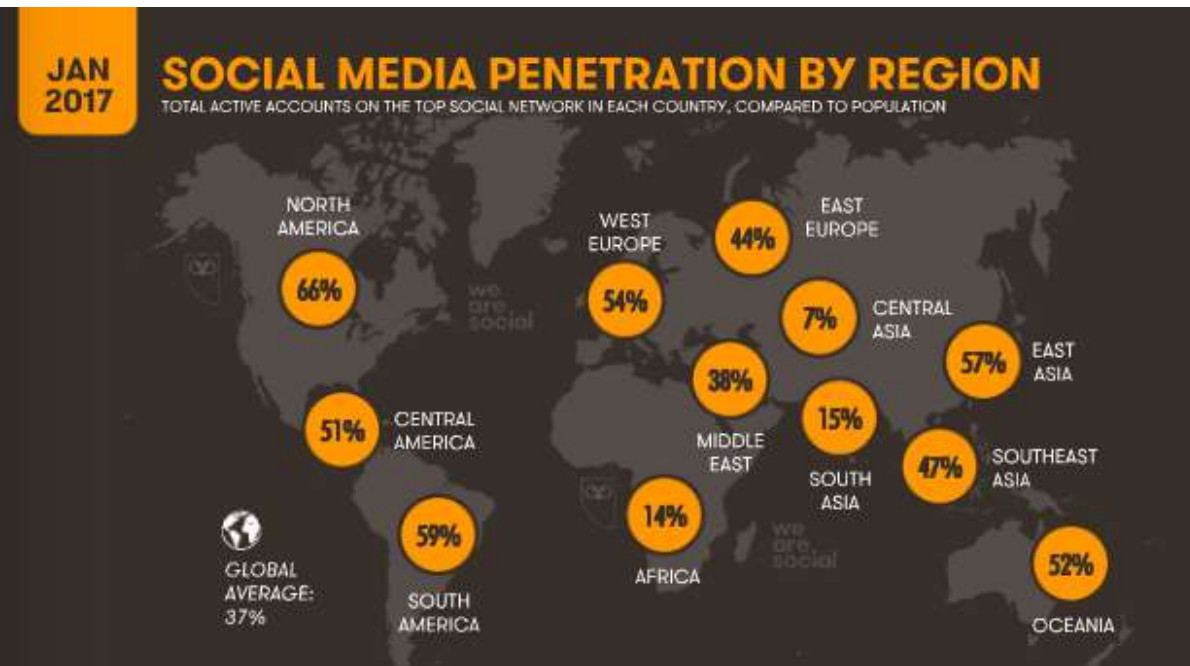
THE DIGITAL DILLEMA – A GROWING GLOBAL RISK



70% of the world will be connected to the mobile by 2020 and also half of the world will be using mobile internet as per new GSMA FIGURES.

SOURCE : Global digital statistics – Slideshare and GSMA.com

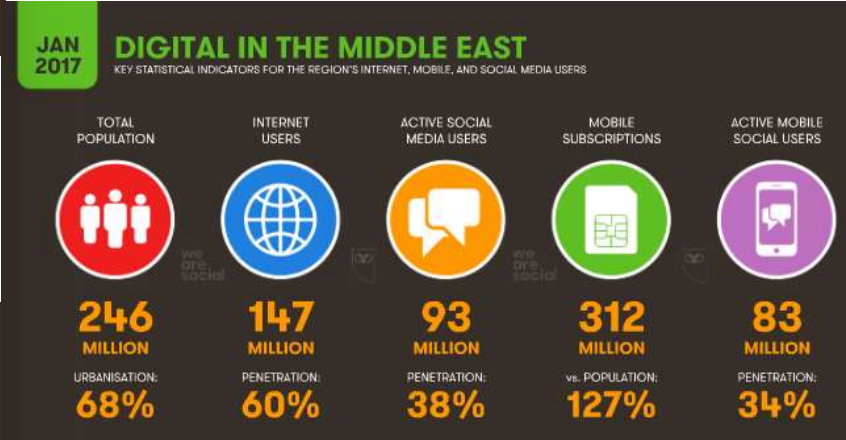
THE DIGITAL DILLEMA – A GROWING GLOBAL RISK



SOURCE : Global digital statistics - Slideshare

THE DIGITAL DILLEMA – A GROWING GLOBAL RISK

Population Weighted Digital Device User Data



SOURCE : Global digital statistics - Slideshare

THE DIGITAL DILLEMA – A GROWING GLOBAL RISK

Region Specific Year On Year Growth In Digital Device Use



SOURCE : Global digital statistics - Slideshare

DID YOU KNOW??

Source: The Vision Council



**1 in 4
SPEND 3+ HOURS**



**2 in 5
SPEND 9+ HOURS**

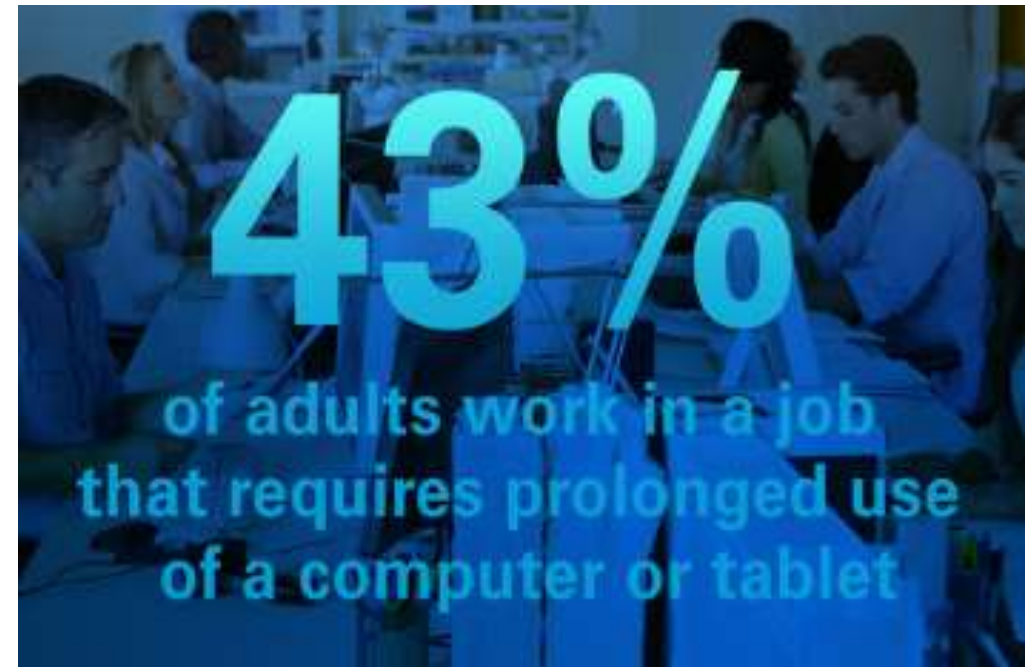
GLOBAL EYE STRAIN STATISTICS



Nearly **70%** of adults who report regular usage of media devices experienced some symptoms of digital eyestrain, but many did nothing to lessen their discomfort mainly due to lack of knowledge.

EYES OVEREXPOSED

The digital device dilemma



SOURCE : Global Digital device dilemma

GLOBAL EYE STRAIN STATISTICS



KIDS USE DIGITAL DEVICES MORE THAN PARENTS THINK!

83% OF KIDS SAY:



"I Use My Device More Than 3 Hours Per Day!"

40% OF PARENTS SAY:



"My Child Uses His/Her Device More Than 3 Hours Per Day!"

TOO MUCH SCREEN TIME CAN LEAD TO DIGITAL EYE STRAIN



80%

OF KIDS REPORT BURNING, ITCHY, OR TIRED EYES AFTER LONG PERIODS OF DEVICE USE.



SOURCE : Global Digital device dilemma

WHAT IS THE SOLUTION?

BLU/MAX[™]
LENSES

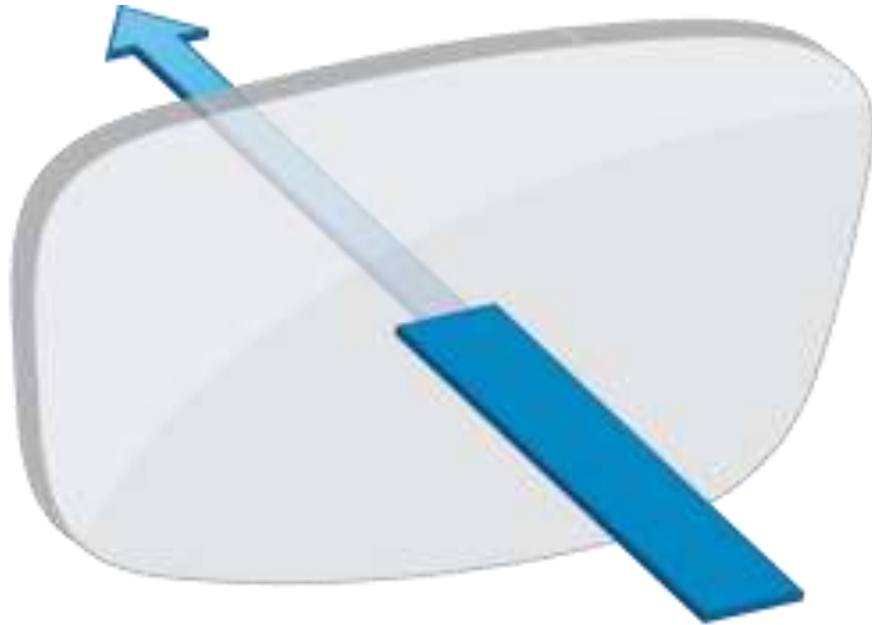


The effective protection against Harmful UV rays & High Energy Blue Light

BLU/MAX[™]
LENSES

 **VISION**[™]
By Lab

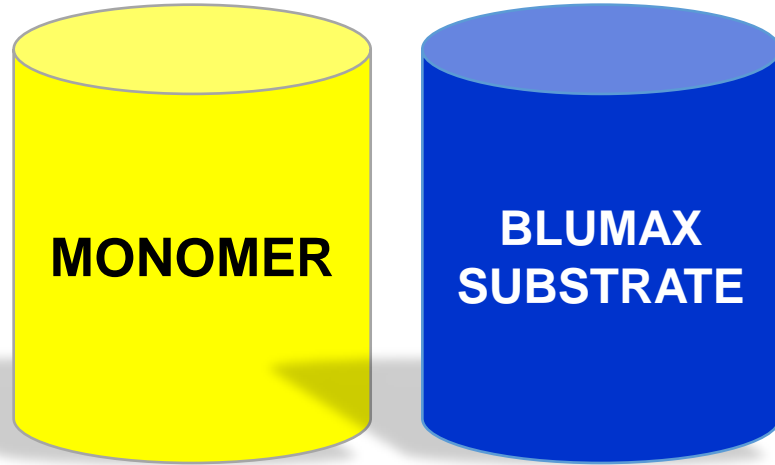
WHAT IS BLUMAX ??



Blue light absorption with neutral color-balanced substrate

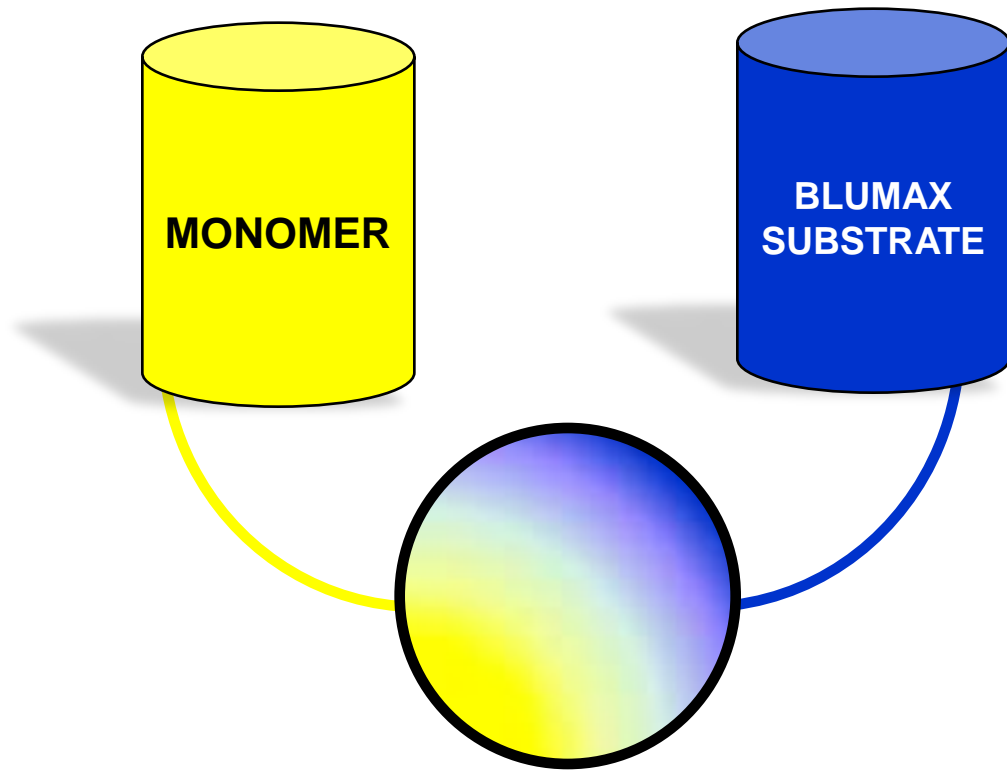
BLUMAX
LENSES is a revolutionary material which by virtue of its material property absorbs harmful UV rays & high energy Blue Light. It is a neutral color-balanced substrate, blended in the lens material while the lens is casted. It doesn't alter the inherent properties of the lens material, but ensures enhanced protection to the eyes by absorbing UV & high energy Blue light entering the lens. Additionally, it helps to enhance contrast & thus ensures clearer vision.

THE PROCESS OF MAKING BLUMAX LENSES



The MONOMER & The BLUMAX
Substrate is chosen

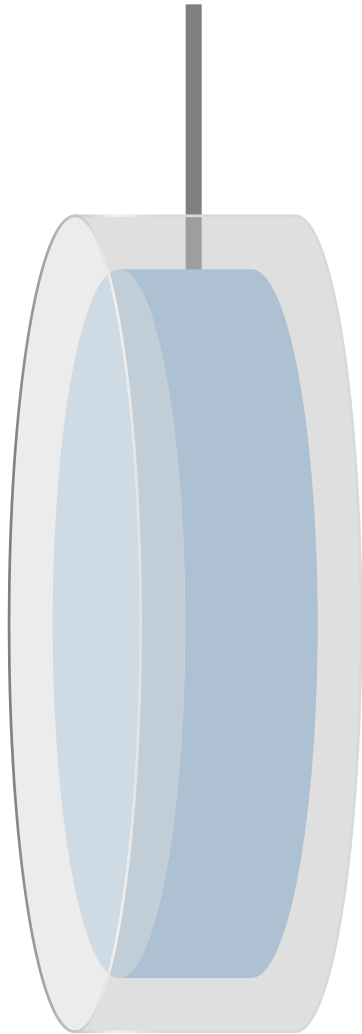
THE PROCESS OF MAKING BLUMAX LENSES



MIXING

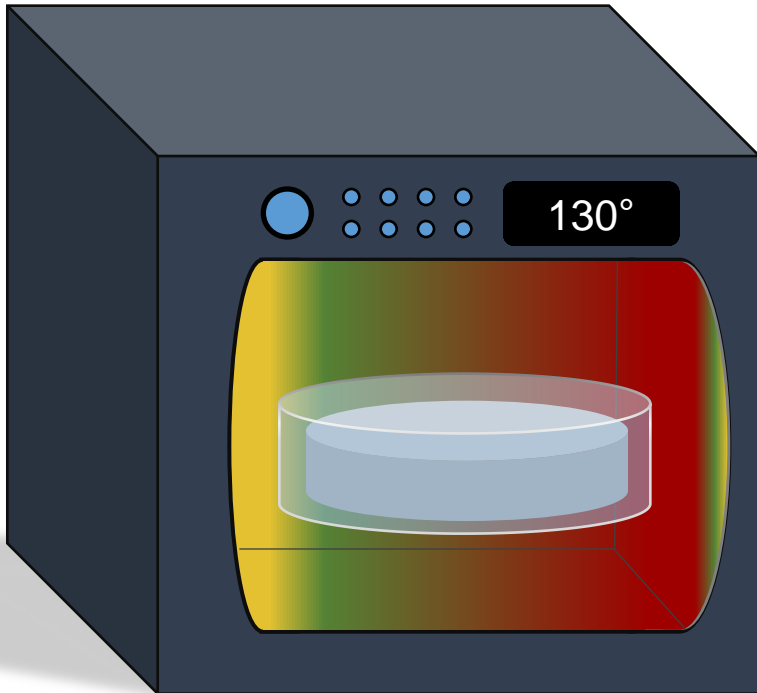
A specially designed machine mixes the components at a precise ratio and temperature.

THE PROCESS OF MAKING BLUMAX LENSES



MOLD FILLING

The homogeneous mixture is then injected into a glass mold.



HEAT CURING

The molds are thermally cured in an oven for specific duration using a specified heat cycle.

THE PROCESS OF MAKING BLUMAX LENSES



DE-MOLDING

The lenses are removed from the molds and pass through an inspection process.

WHAT BLUMAX LENS ACTUALLY DO



BLUMAX[™] LENSES CUTS DOWN UV RAYS COMPLETELY & A MAJOR PORTION OF THE HARMFUL HEV BLUE LIGHT THUS PROTECTING OUR EYES & THE BODY FROM POTENTIAL DANGER.

Blumax Availability

- Standard
- Ultra

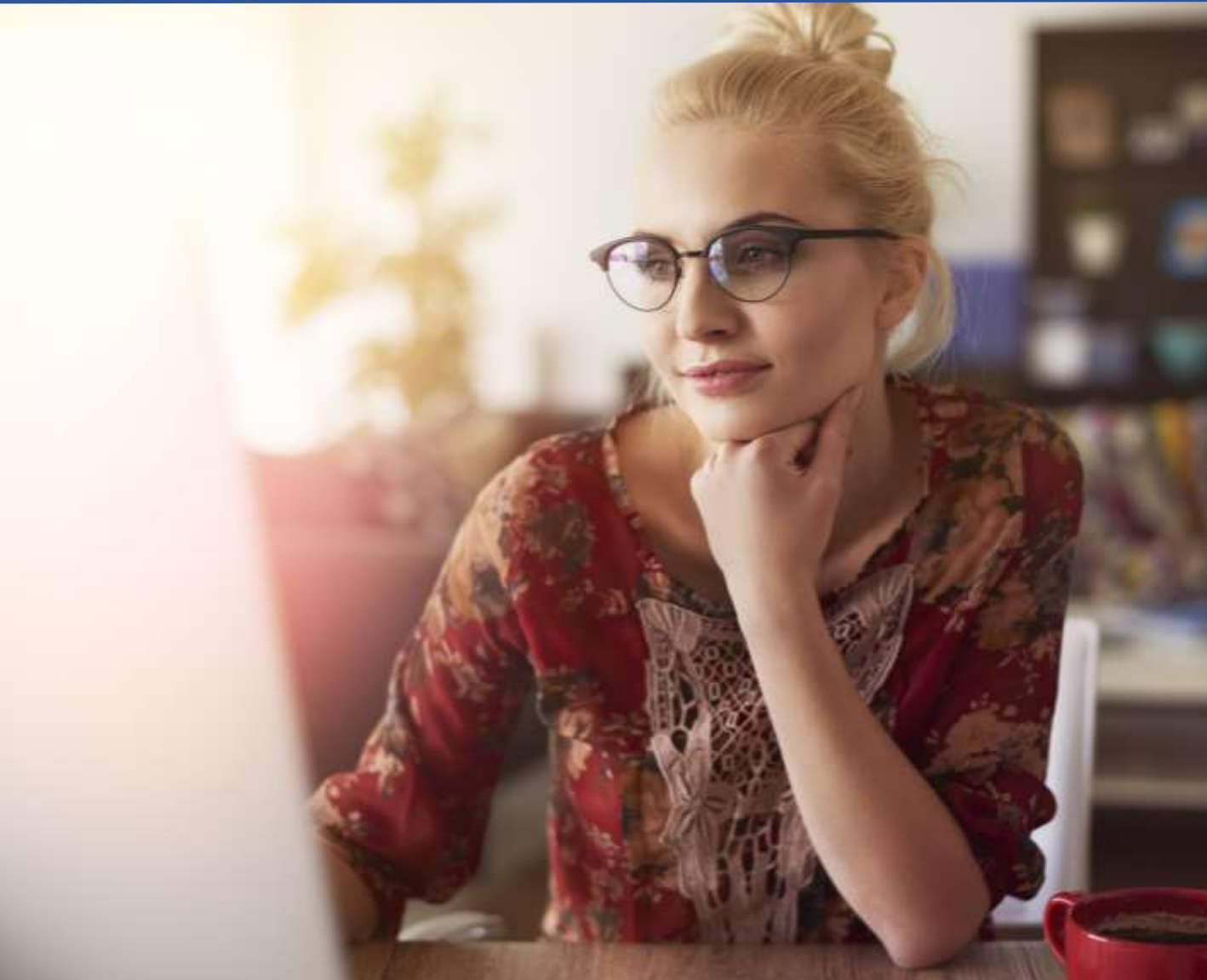
Standard



BLUMAX STANDARD LENSES CUTS DOWN UV RAYS & A PORTION OF THE HARMFUL HEV BLUE LIGHT THUS OFFERING HIGHER LEVELS OF PROTECTION TO OUR EYES FROM POTENTIAL DANGER.*

BLUMAX STANDARD LENSES MAINTAIN A FINE BALANCE BETWEEN PERFORMANCE & AESTHETICS. THE LENSES OFFER HIGHER DEGREE OF PROTECTION WITHOUT A MAJOR COMPROMISE ON THE LENS TRANSPARANCY. *

* Compared with standard UV 400 Protection lenses



BLUMAX ULTRA CUTS DOWN UV RAYS & A MAJOR PORTION OF THE HARMFUL HEV BLUE LIGHT THUS OFFERING HIGHER LEVELS OF PROTECTION TO OUR EYES FROM POTENTIAL DANGER.*

BLUMAX ULTRA LENSES ARE DEDICATED FOR PROVIDING EXTRA PROTECTION. FOR PEOPLE WHOSE LIFESTYLE EXPOSES THEM TO HARMFUL UV RAYS & HEV BLUE LIGHT A LOT MORE AND FOR PEOPLE WHO VALUE HIGHER DEGREE OF PROTECTION OVER THE TRANSPARANCY OF THEIR LENSES, BLUMAX ULTRA, IS THE ULTIMATE LENS OF CHOICE.

* Compared with standard UV 400 Protection lenses & BLUMAX Standard Lenses


BLUMAX STANDARD VS BLUMAX ULTRA

FEATURES	BLUMAX STANDARD	BLUMAX ULTRA
HEV BLUE PROTECTION	****	*****
UV PROTECTION	*****	*****
TRANSPARENCY	****	***

NOVA WORKS BEST WITH BLUMAX



AVAILABLE IN 1.50, 1.56, 1.59, 1.60, 1.67, 1.74 INDEX

In stock range, Blumax is available as 

BLUMAX LENSES combined with all Superior Nova designs powered with

DIGI CONTOUR Technology



PERFECTION CUSTOMISED FOR YOUR SATISFACTION

Thank You