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Blue Light Dreaming

Our addiction to our phones is affecting our sleep. What else could it be affecting?



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Light, the most essential element of our visual perception, defines the routine of our day-to-day lives. Humans are diurnal, we are most awake during the day. However, the pervasiveness of our mobile phones has begun to have an evident effect on our diurnal nature, causing us to have disrupted and inadequate sleep.

But what is it about our phones that is affecting our sleep? Digital screens emit a form of light known as 'blue light'- this has a potent effect on our brains. Specifically, blue light is so powerful due to its energy and wavelength. In Fig. 1, light on the left end of the spectrum has a shorter wavelength and thus more energy, which stimulates our eyes with more intensity. Our phone screens are made up of mostly blue light, which has a highly stimulating effect on our brains that can be both positive and negative.

Blue light is a crucial part of our lives, as it maintains our circadian rhythm, which is our body's natural sleep cycle. Blue light suppresses the production of melatonin, which is what makes us feel sleepy, thus

stimulating the brain and keeping us alert. Blue light also improves our mood, memory, and cognitive function, granting us the energy to function everyday. (Wahl, S., Engelhardt, M., Schaupp, P., Lappe, C., & Ivanov, I. V., 2019). The absence of blue light acts as a trigger for our brains to relax, and begins to prepare us for rest. However, with the increased exposure to blue light we receive through our phone screens, our sleep cycles become disturbed.

While blue light is essential to our waking hours, it begins to have a detrimental effect on our eyes and brain once it interrupts our circadian rhythm. This negative effect has become more

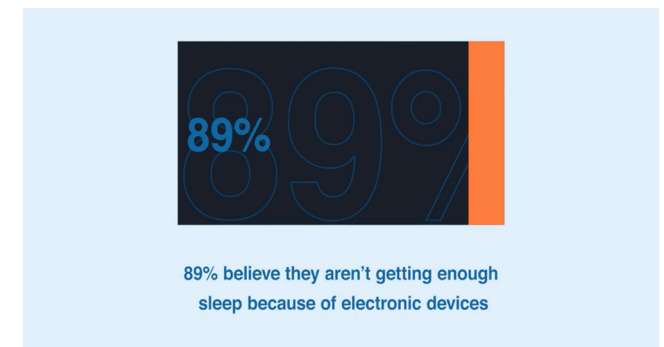
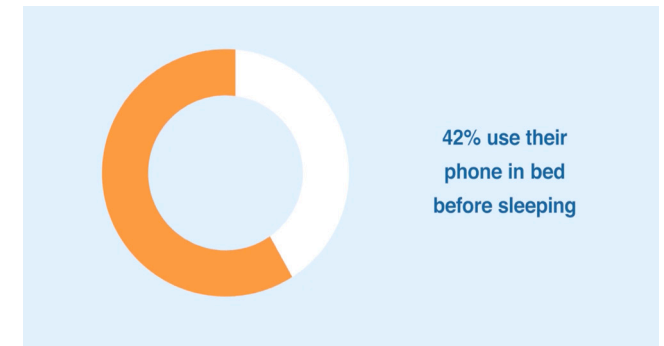
widespread as our culture becomes more dependent on mobile phones for stimulation and entertainment. Continued disruption of our circadian rhythm has multiple health impacts, such as metabolic disorders, mental health conditions, heart disease, obesity, and diabetes. A Harvard study showed that the disruption of natural sleep cycles increased blood sugar levels, inducing a prediabetic state, and decreased leptin, a hormone that gives us a 'full' feeling after a meal. This study showed a clear link between blue light overexposure and the development of health issues. So while blue light overexposure has been proven to be a bane for our health, what has Apple been doing to prevent this?

Apple, in their recent developments of the iPhone, have introduced a new feature called 'Night Shift', which Apple claims aids in reducing our exposure to blue light before bed. In Fig. 2, data has shown that we use our phones the most at night, when blue light has the most damaging effect on our melatonin production. This feature has been available on the



iPhone since 2016, and changes the screen display from primarily blue light to primarily warm light, which has less of a stimulating effect on our brains. However, a recent study has shown that this does not affect the quality of sleep, with young adult iPhone users who have Night Shift turned on and turned off experiencing similar levels of fatigue, whereas those who did not use their phone before bed had the best quality sleep. So how can we, in our current digital society, protect ourselves from the risk of blue light overexposure when Apple fails us? The best way to preserve your circadian rhythm is to limit your phone usage before bed- experts recommend no digital screens at least 2-3 hours before bed. Another alternative is to wear blue light blocking glasses. It is essential to maintain our exposure to blue light for the sake of our long-term health, and we should hold mobile phone providers such as Apple accountable for the negative effects of their products.

Sleep, which is so essential for our lives, has begun to be disrupted as our culture shifts, with our increased dependency on digital devices, specifically mobile phones, to orchestrate our day-to-day routine. With increasing research and results educating us as individuals on the negative health effects of overexposure to blue light on our circadian rhythm, mobile phone providers should be working to combat these issues, protecting their consumers, and allowing our society to continue to evolve without fear of detrimental long-term health issues.



References:

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The Electromagnetic Spectrum

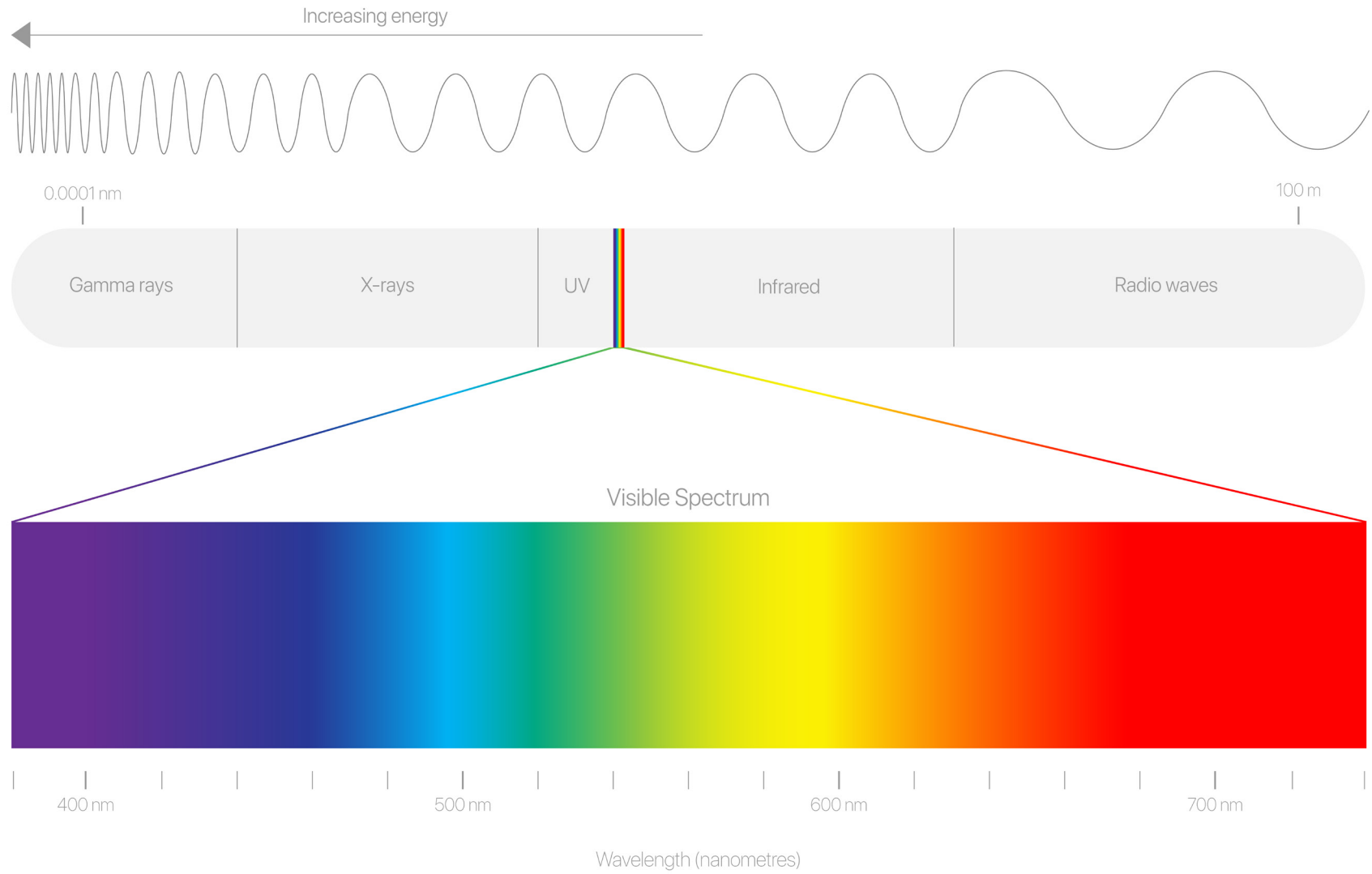


Figure 1

Light emitting phone usage throughout 24 hour work day

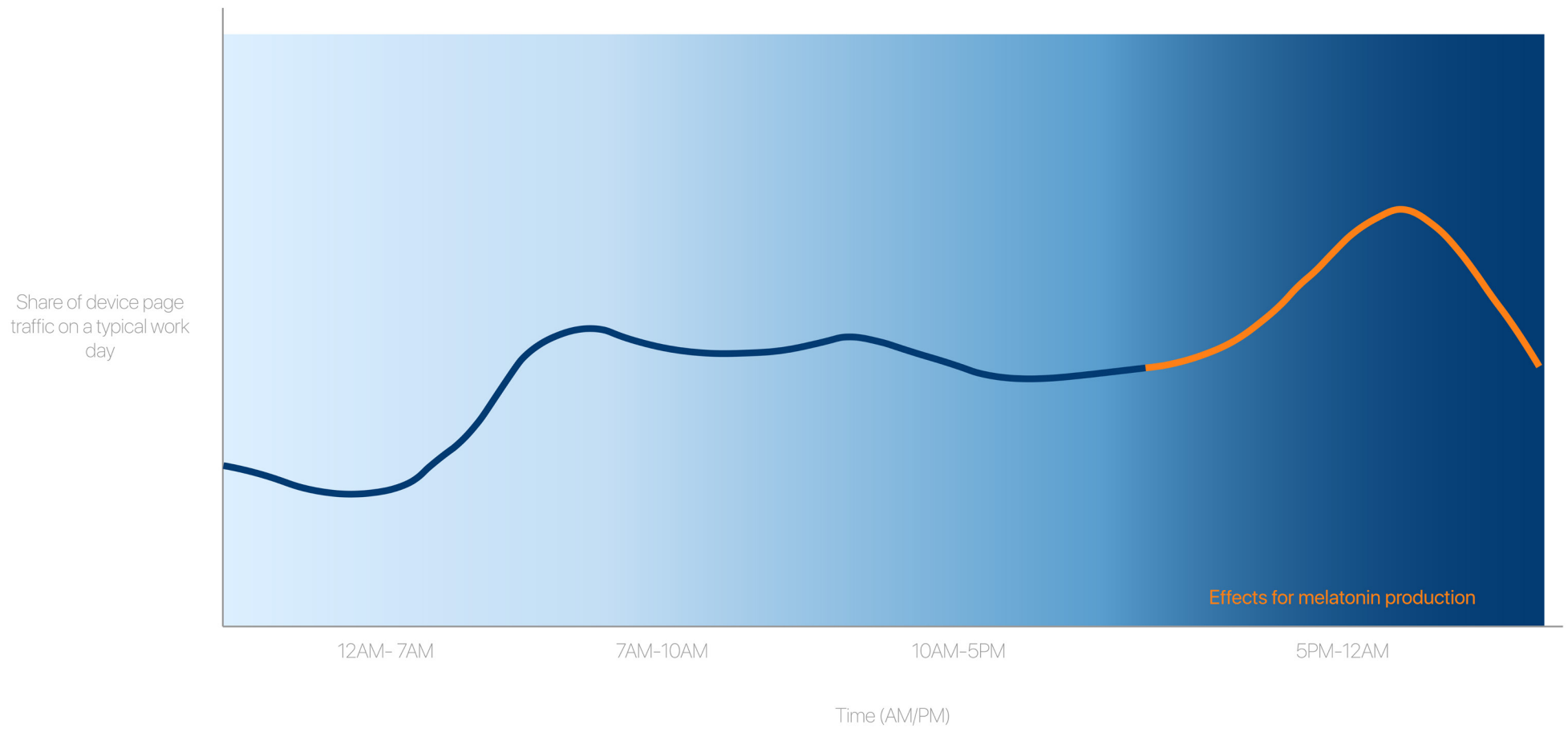


Figure 2