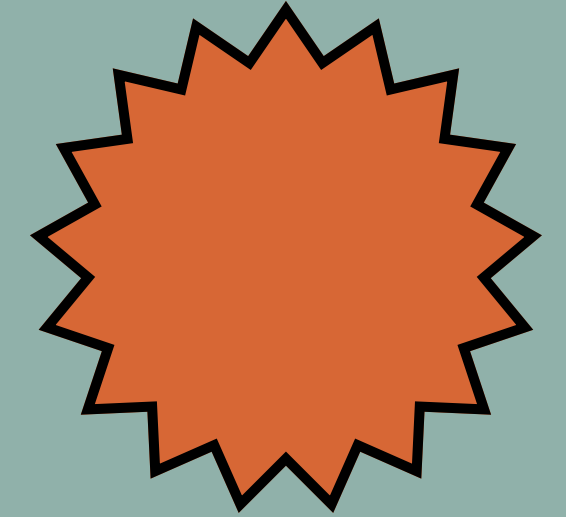
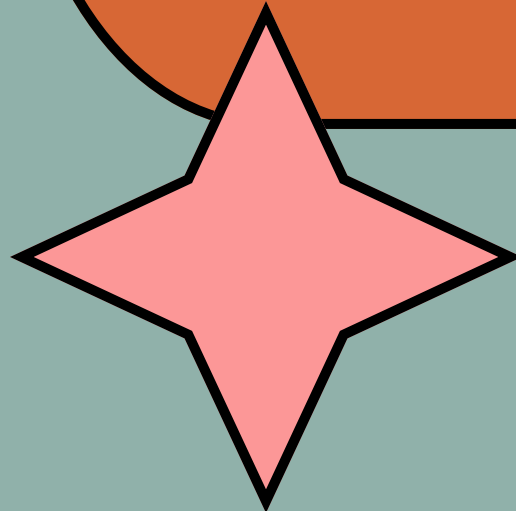


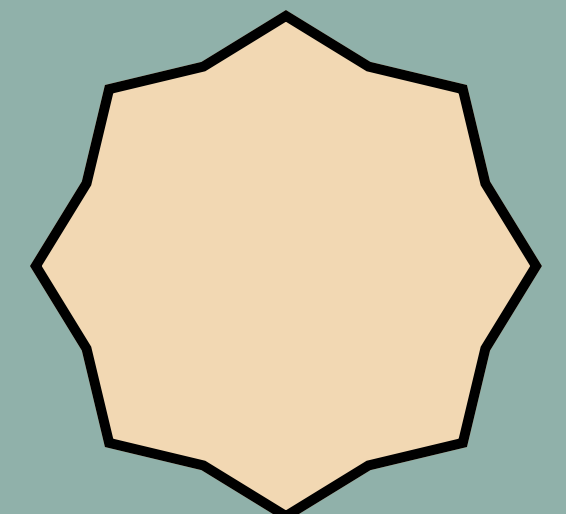
DESIGNING HUMANE TECHNOLOGY



A DIGITAL GUIDE



**PRESENTED BY:
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&
JOHN KEARNEY**



DESIGN FOR BODIES

1

Physical health

2

Mental health

3

Solutions

BODILY EFFECTS

THE GOOD

Technology use can improve our physical health by providing access to health information, facilitating remote consultations with doctors, and enabling remote monitoring of health conditions. It can also improve mental health by providing social support and access to mental health resources, such as mindfulness and teletherapy apps such as Lyra.

Excessive use of technology can lead to physical health issues such as sleep problems, neck and back pain, vision problems, and obesity due to the increase of sedentary behaviors. It can also lead to mental health problems such as addiction, stress, and depression.

THE BAD



PHYSICAL HEALTH

60–80% of all people lead sedentary lifestyles.

Technology use often involves long periods of being sedentary, which increases risks of diabetes, cardiovascular diseases, and obesity, according to the World Health Organization (1).

Eyestrain is an issue that can develop just from looking at screens for 2 or more hours every day. Related to this, exposure to light can lead to sleep disturbances such as insomnia: Artificial blue light delays our internal clock and circadian rhythm, suppressing the release of melatonin – a hormone that helps us fall asleep(1).

MENTAL HEALTH

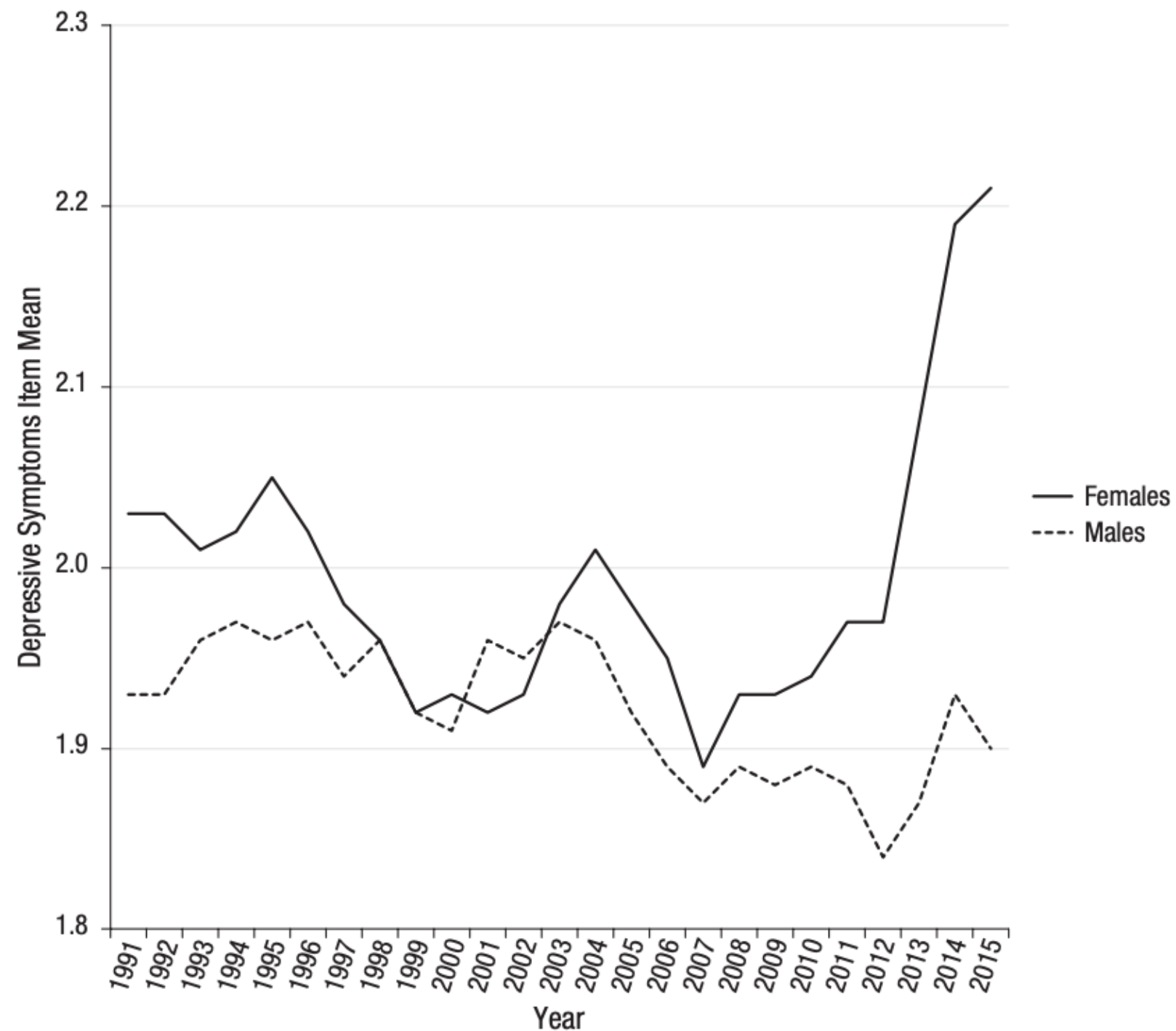


Fig. 1. Depressive symptoms (item mean), 8th, 10th, and 12th graders, by sex, MtF, 1991–2015.

There is a **growing link** between depression and social media usage, especially among adolescents and young adults.

A 2017 study of more than 500k high-schoolers found that from 2010–2015, the number of those with high depression symptoms increased by 33%. Additionally, the **suicide rate for girls increased by 65%** (2)

MENTAL HEALTH CONT.

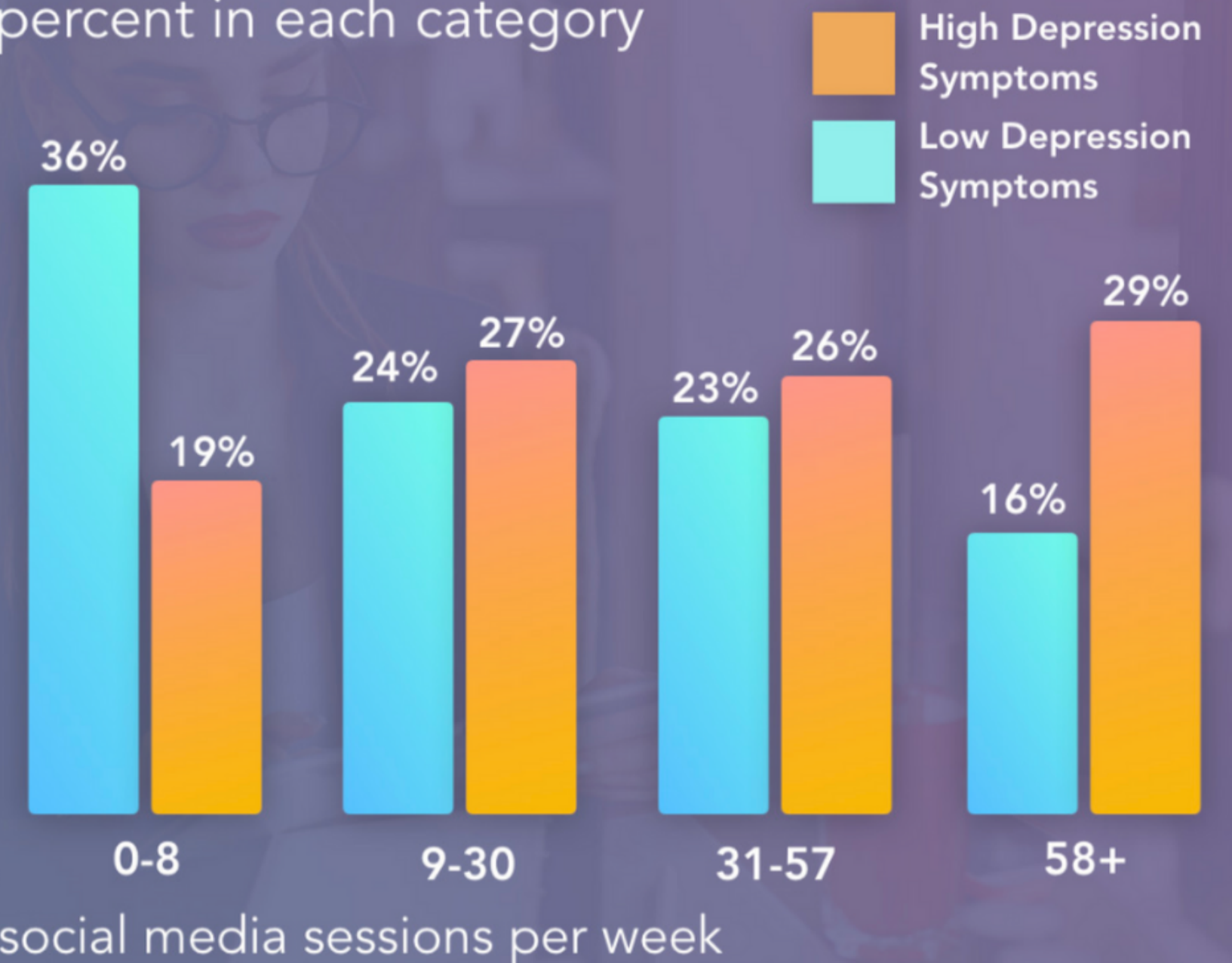
SOCIAL MEDIA'S ROLE

"Individuals with more depression symptoms used social media more often. 29% of those who engaged in at least 58 social media sessions had high depression symptoms, compared to 19% of those who engaged in 8 or fewer social media sessions per week. Similarly, only 16% of those who engaged in 58 or more social media sessions per week had low depression symptoms, compared to 36% of those who engaged in 8 or fewer sessions per week" (3).

Social Media and Depression

Depressed individuals used social media more often.

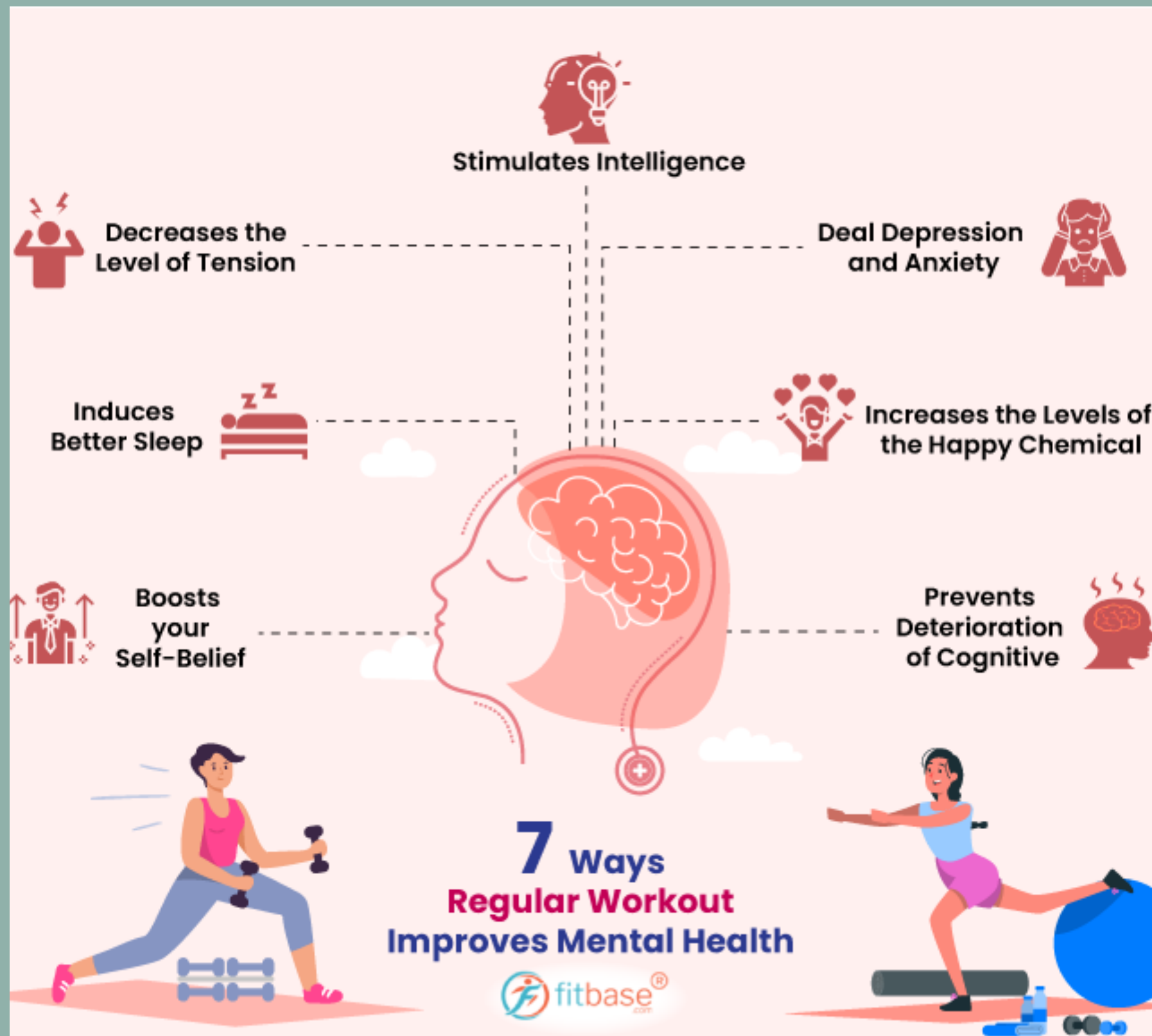
percent in each category



Clearvue Health

Lin et al

SOLUTIONS



Limit screen time - apps are available as well as the screen time options in phone settings. Limit screen usage at night so sleep patterns are not disrupted

Find balance between social media and face-to-face communication: having both can be beneficial in our tech-focused world, but lacking in person connections can be detrimental to mental health (4).

Engage in some physical activity every day to avoid a sedentary lifestyle

DESIGN FOR CULTURE

(family, community, social health)

Tech and social media use can make us feel connected when used healthily: connecting with long-distance friends/family, feeling a sense of belonging in communities.

However, it can also hinder communication and connections with others, as well as mislead us.



Misinformation and popularity bias

Children's vulnerability and social life



What is misinformation?

What is misinformation? Internet Matters states, "Fake news stories use technology and social media to look like proper news sites. Organisations and political groups may target you with ads that look like the news – Fake social media posts and accounts help make misinformation viral.

Sometimes this is then reported as fact by real journalists. When it becomes the news, the line between fact and fiction becomes blurred – Fake news presents strong, often prejudiced opinions, as fact. It can also direct these opinions to those most likely to agree to reinforce them. This so-called "echo-chamber" effect is made worse by algorithms, clever bits of software, which encourage you to read material similar to what you are already sharing. Hackers often hack or manipulate these algorithm"

Misinformation

In the recent years misinformation has become a huge issue around the world and especially in the United States. What problems can misinformation cause in our culture? A quote from the Center for Information Technology & Society lays it out as so, "*Stories that are untrue and that intentionally mislead readers have caused growing mistrust among American people. In some cases, this mistrust results in incivility, protest over imaginary events, or violence. This unravels the fabric of American life, turning neighbor against neighbor.*"

As you can see Fake news/misinformation is used like a tool for destruction and power by those who seek the means to do so and have the simple understanding of how to do so.

Total Facebook Engagements for Top 20 Election Stories



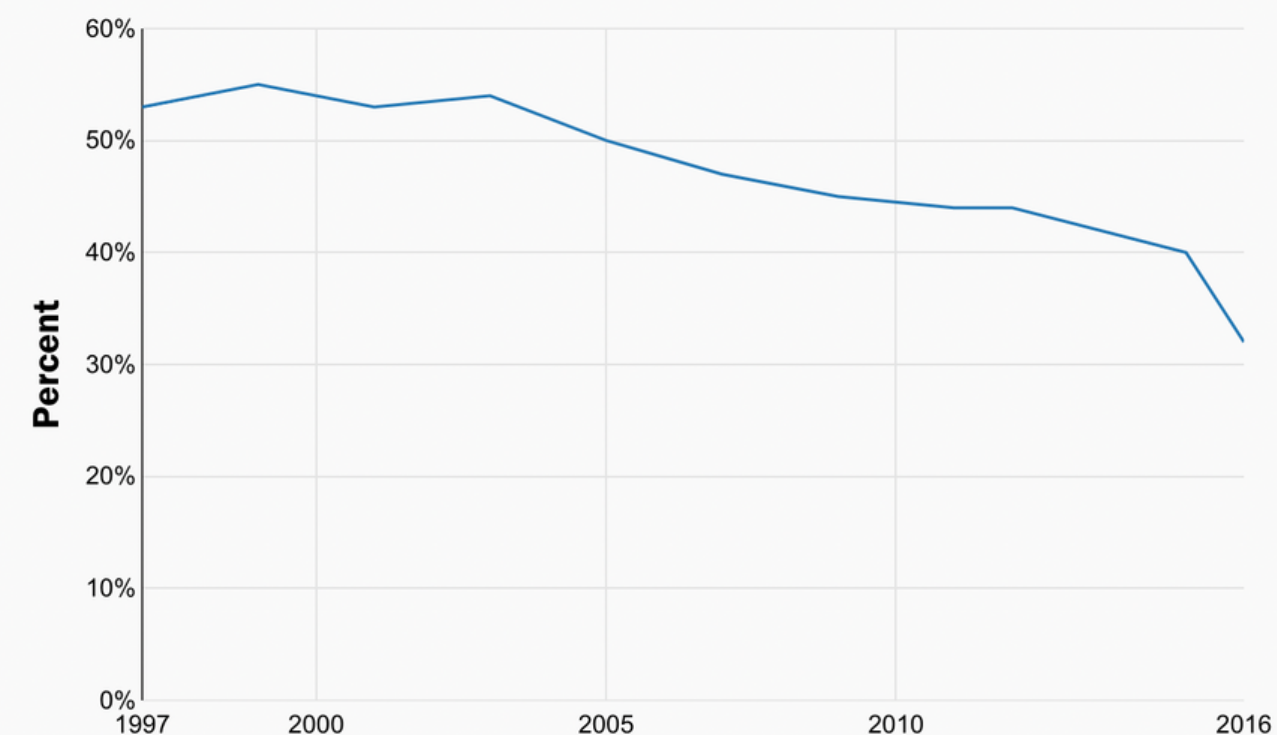
Above is a chart that shows the engagements on Facebook (which is a breeding ground for misinformation) getting more and more use as the tensions in American politics rise.

Chart was created by Craig Silverman and presented on Vox

What can be done about misinformation?

Fighting misinformation is without a doubt a hard task. A way to fight back is for reputable to gain trust of the general public. The Brookings Institution states, "*factors such as source credibility, repetition, and social pressure affect information flows and the extent to which misinformation is taken seriously. When viewers see trusted sources repeat certain points, they are more likely to be influenced by that material. - The news industry should continue to focus on high-quality journalism that builds trust and attracts greater audiences. An encouraging development is that many news organizations have experienced major gains in readership and viewership over the last couple of years, and this helps to put major news outlets on a better financial footing.*"

Figure 4: Public trust in traditional news media, 1997-2016



The graph above shows the levels of trust by the public in traditional news media as declined dramatically in the past few years, this is yet another reason for misinformation to be more trendy then ever as well as yet another reason to try to bring that trust back.

Graph is by the Brookings Institution as well

EFFECTS ON CHILDREN AND FAMILIES

"A 2015 survey by Common Sense Media found that 67 percent of teens ages 13 to 18 have their own smartphone and spend an average of 6.5 to 9 hours per day using it and other electronic media" (6).

Parents have a responsibility to teach healthy tech use to their children to avoid strained interpersonal connections, which starts with parents having healthy use (6).

EFFECTS ON SOCIAL LIFE

UCLA Children's Digital Media Center found: "college students felt most "bonded" to their friends by talking face-to-face, and most distant from them when they text messaged. And, yet, of course, these students still most often communicated by text" (7)

Text interactions can take away nonverbal communication such as body language and tone, this important part of communication we use in-person in our social life and relationships (1).

SOLUTIONS



Increasing face-to-face communication for children

UCLA Children's Digital Media Center found "6th graders' ability to read emotions from nonverbal cues improved significantly in just five days when they went to a camp that focused on face-to-face interactions" (7).

Parents have responsibility to teach moderation to themselves and their children

DESIGN FOR EARTH

(ECONOMY, ECOLOGY, RESILIENCE,
REGENERATION)

Electronic devices

Smartphones and smart devices can have a big negative impact on the environment through their manufacturing, extraction, use of toxic chemicals, and contribution to e-waste.



In what ways do smartphones/smart devices in general effect the environment?

1.

E-Waste

2.

Manufacturing

3.

Extraction

ELECTRONIC WASTE

(E-WASTE)

What is E-waste?

Electronic waste, or "e-waste," is the term for discarded electronic components and gadgets including cellphones, computers, and many other smart devices. E-waste is a rising issue because more people are using electronic devices and since many do not properly dispose of their obsolete or malfunctioning electronics. These elements often contain toxic chemicals that can seep into the soil and pollute the surrounding land, as well as heavy metals like mercury and lead. contain potentially dangerous materials that, if not disposed of appropriately/correctly, could endanger both human health and the environment.

Do smartphones add to the issue of e-waste?

Smartphones is a product that virtually all of us own, but whether we know it or not, these devices add to the e-waste crisis and the difficulties that it brings.

"Experts expect roughly 5.3 billion mobile / smartphones will drop out of use this year. Stacked flat atop one another at an average depth of 9 mm that many disused phones would rise roughly 50,000 km – 120 times higher than the International Space Station; one-eighth of the way to the moon. "

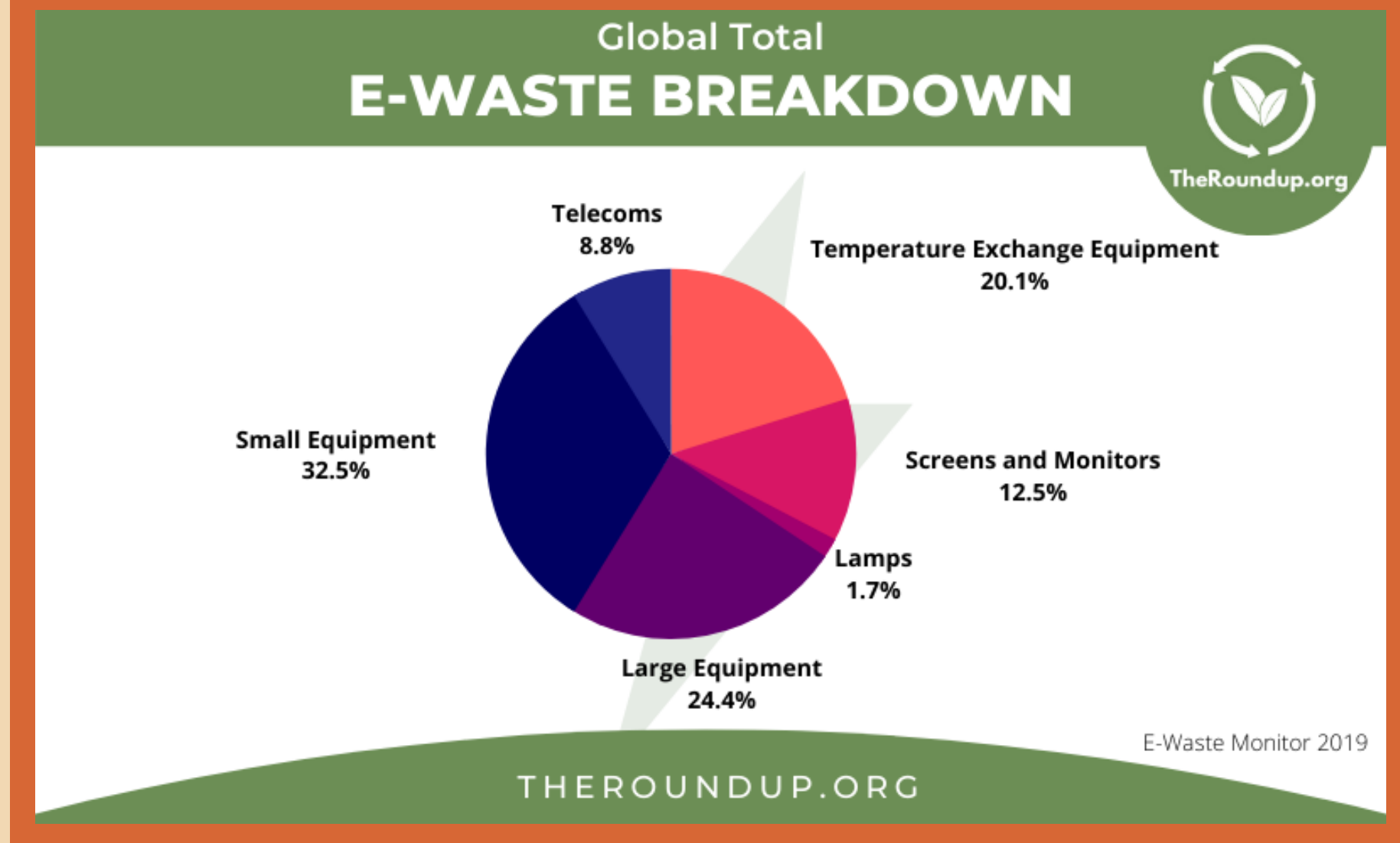
According to WEEE Forum which is a not-for-profit association and the world's largest multi-national centre of competence (10).



...but wait theres more!

According to Purdue Global, "We all use electronic devices, so we all play a role in the life cycle of e-waste. As consumers, we are often forced to purchase new equipment, even when the old devices are not dead, due to software upgrades, technology shifts, and trends."

(11)



"6.7 Mt of Screens and Monitors – including televisions, monitors, laptops, notebooks, and tablets – 4.7 Mt of Small IT & Telecoms Equipment – including cell phones, phone cases, wireless routers, GPS and pocket calculators"

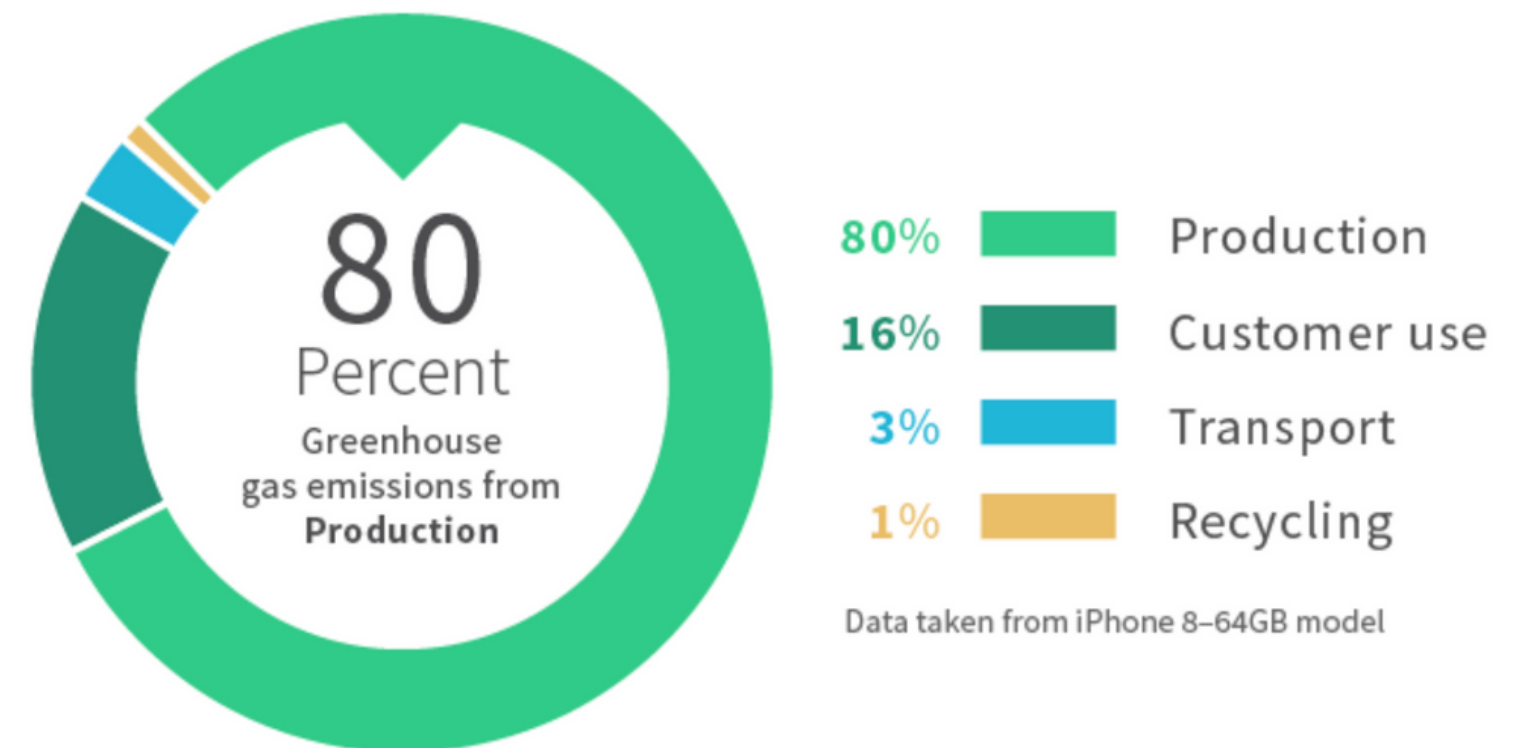
As you can see a large portion of the e-waste is from smart devices

The Roundup is a website dedicated to sustainable living and eco friendly products and believe living a greener lifestyle (12)

MANUFACTURING/EXTRACTING

Another way that our devices effect the environment is the methods used in manufacturing them. According to Deloitte Insights, "Deloitte Global predicts that smartphones—the world's most popular consumer electronics device, expected to have an installed base of 4.5 billion in 2022—will generate 146 million tons of CO2 or equivalent emissions (CO2e) in 2022.2 -- Ninety-five percent of this comes from manufacturing processes" (13)

Greenhouse Gas Emissions of a Smartphone



This chart shows the percentage of the emissions throughout a smartphones lifespan, and the vast majority of the emissions come from production/manufacturing

This graph is from The World Economic Forum which is the International Organization for Public-Private Cooperation. (14)

A part of the manufacturing process that harms the planet is the extraction methods for the materials that are used in the devices. According to an article by The Conversation destruction of environment is a big issue when it comes to extraction. "Gold and tin are common in smartphones. But mining of these metals is responsible for ecological devastation from the Peruvian Amazon to the tropical islands of Indonesia. Gold in smartphones is used primarily to make connectors and wires but gold mining is a major cause of deforestation in the Amazon." (15)

What about the extraction of the materials?

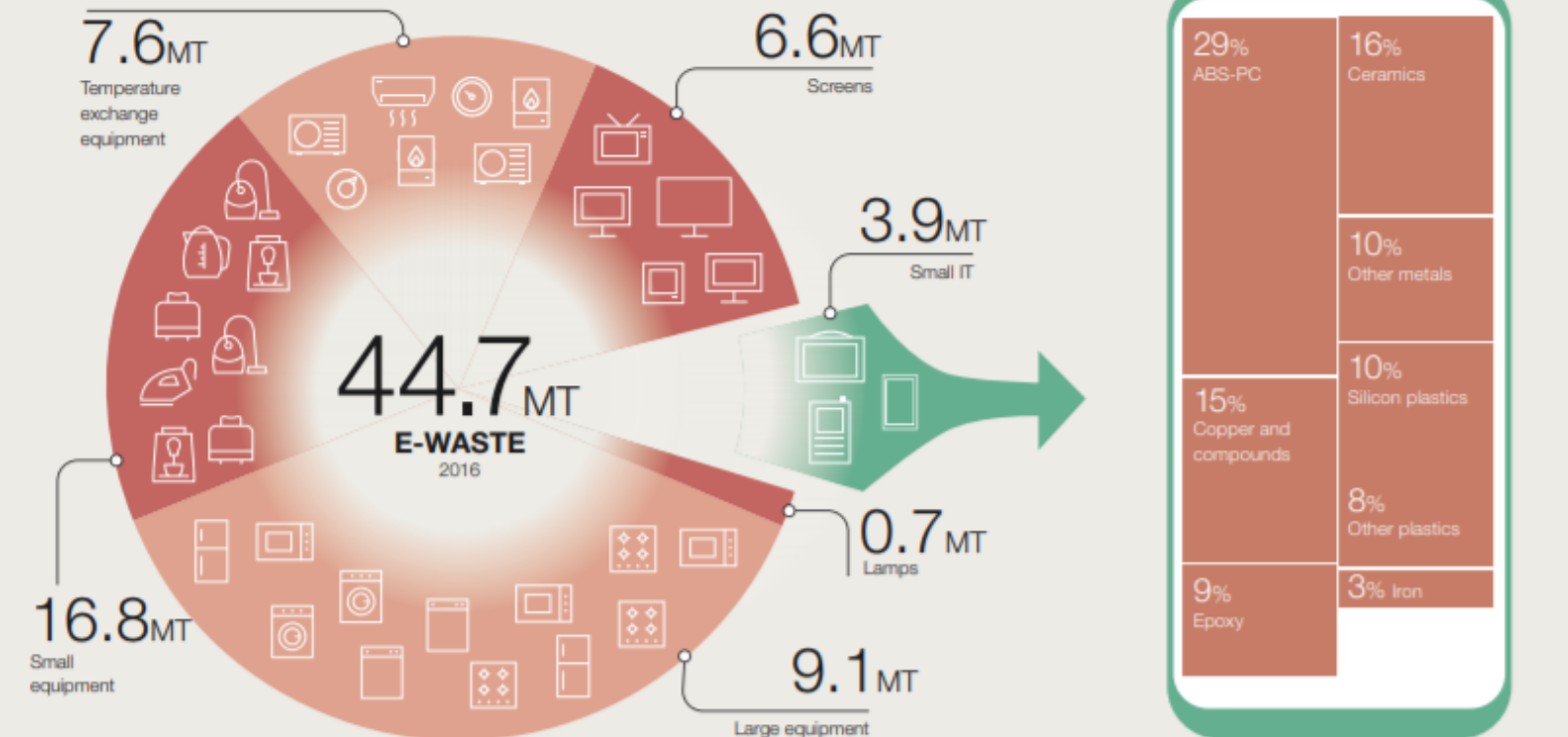


How could we tackle these problems?

There are many ways that these problems can be handled, or at least handled more properly. For helping with the huge e-waste problem recycling more parts would help greatly. The World Economic Forum states that, "Extending the life of electronic products and re-using electrical components brings an even larger economic benefit, as working devices are certainly worth more than the materials they contain. A circular electronics system - one in which resources are not extracted, used and wasted, but re-used in countless ways - creates decent, sustainable jobs and retains more value in the industry."

(16)

WHAT IS E-WASTE?



As you can see not properly recycling materials from the devices often leads to many issues for the environment. Allowing for better recycling methods will improve these negative outcomes and provide even more positives. Leaning more into the recycling methods will also limit the problems faced by the extraction

The World Economic Forum is the International Organization for Public-Private Cooperation (16)

CREDITS/RESOURCES/INFORMATION USED THROUGHOUT:

(1) <https://www.businessinsider.com/technology-negative-bad-effects-society-2019-8#and-technology-is-leading-us-to-sedentary-lifestyles-5>

(2) <https://childmind.org/article/is-social-media-use-causing-depression/>

(3) <https://www.clearvuehealth.com/b/social-media-depression/>

(4) <https://psychminds.com/communication-online-vs-face-to-face-interactions/>

(5) <https://www.fitbase.com/blog/7-ways-in-which-regular-workout-improves-mental-health/>

(6) <https://www.zocalopublicsquare.org/2016/03/25/smartphones-make-us-sick-no-matter-how-many-health-apps-we-download/ideas/up-for-discussion/>

(7) <https://www.zocalopublicsquare.org/2016/03/29/technology-doesnt-ruin-health-people/events/the-takeaway/>

(10) https://weee-forum.org/ws_news/of-16-billion-mobile-phones-possession-worldwide-5-3-billion-will-become-waste-in-2022/

(11) <https://www.purdueglobal.edu/blog/information-technology/ewaste-hidden-dangers/>

(12) <https://theroundup.org/global-e-waste-statistics/>

(13) <https://www2.deloitte.com/us/en/insights/industry/technology/technology-media-and-telecom-predictions/2022/environmental-impact-smartphones.html>

(14) <https://www.weforum.org/agenda/2019/01/how-a-circular-approach-can-turn-e-waste-into-a-golden-opportunity/>

(15) <https://theconversation.com/three-ways-making-a-smartphone-can-harm-the-environment-102148>

(16) <https://www.weforum.org/agenda/2020/01/save-the-planet-one-mobile-device-at-a-time/>

CREDITS/RESOURCES/INFORMATION USED THROUGHOUT:

<https://www.trvst.world/environment/negative-impact-of-technology-on-the-environment/>

<https://www.genevaenvironmentnetwork.org/resources/updates/the-growing-environmental-risks-of-e-waste/>

<https://www.prb.org/resources/the-human-and-environmental-effects-of-e-waste/>

<https://www.fastcompany.com/90165365/smartphones-are-wrecking-the-planet-faster-than-anyone-expected>

<https://theconversation.com/three-ways-making-a-smartphone-can-harm-the-environment-102148>

<https://reboxed.co/blogs/outsidethebox/the-carbon-footprint-of-your-phone-and-how-you-can-reduce-it>

<https://www.brookings.edu/research/how-to-combat-fake-news-and-disinformation/>