Ithra Digital Wellbeing

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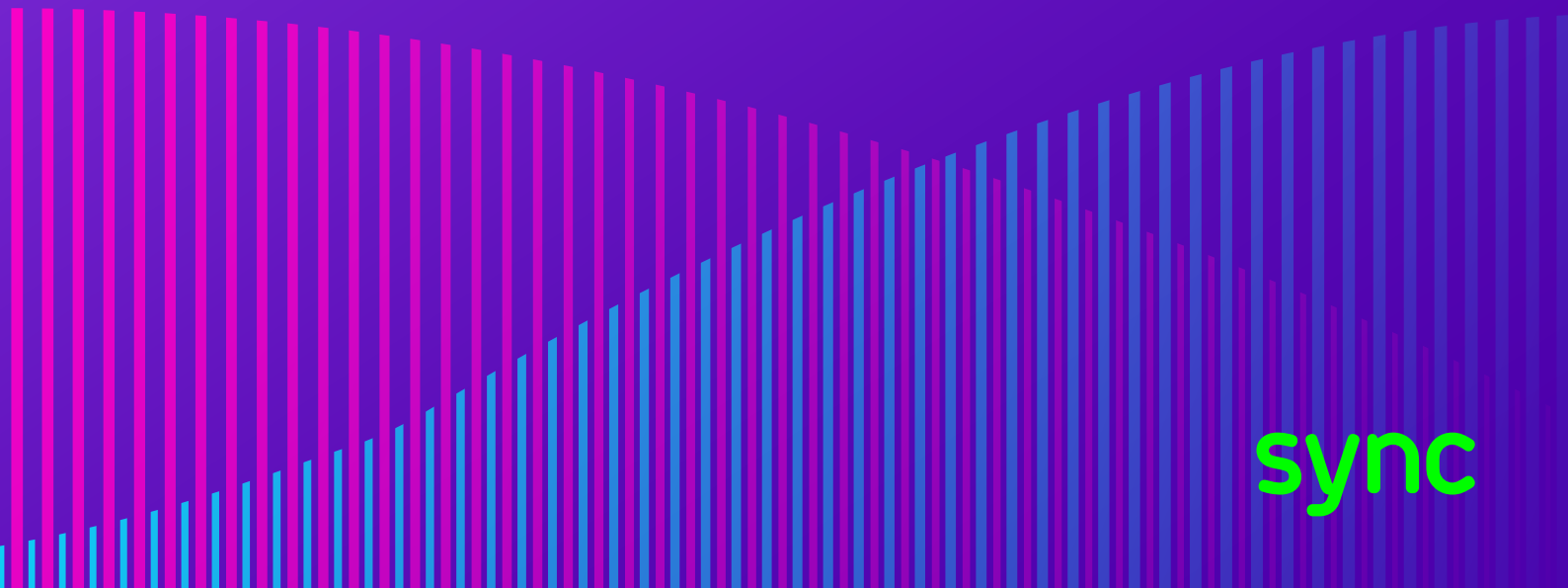
Global Digital Wellbeing Index 2024

Findings and Methodology Report



sync

Ithra welcomes you to a new adventure and new experiences that fuel your creativity, inspiration and your passion to learn.

This report analyzes the results of the Global Digital Wellbeing Index conducted for King Abdulaziz Center for World Culture (Ithra) to explore the impact of technology on the general public's life.

Published in 2024 by Ithra.
Data analysis by Horizon Group.

Accelerating potential, inspiring minds._

Wadha Nafjan
Head of Digital Wellbeing, King Abdulaziz Center for World Culture (Ithra)

Measuring digital wellbeing, enriching lives.

I am pleased to share the Global Digital Wellbeing Index (DWI) report, our systematic exploration of digital technology's impact on human wellbeing. This first-of-its-kind index represents a much-needed tool for framing discussions on the merits and demerits of our rapidly expanding digital ecosystems. Additionally, the DWI provides benchmarks against which governments can better gauge the population-level impacts of current and emerging technologies. We hope the DWI will inform and inspire policymakers to measure, safeguard, and further enhance the digital wellbeing of the populations they serve.

This pioneering work was initiated by the King Abdulaziz Center for World Culture, Ithra, through Sync, its flagship digital wellbeing program. Sync aims to empower individuals to promote their digital wellbeing through awareness campaigns, tools, experiences, and education programs. The initiative bridges research findings with practical solutions, envisioning a future in which people navigate the digital world with mindfulness and balance.

Rapid digital progress requires optimizing opportunities and balancing needs.

The time is right for such an index; technological breakthroughs and digital advancements are happening at a previously unimaginable pace, transforming almost every aspect of our lives. From artificial intelligence and machine learning to augmented reality, digitalization is reshaping how we do virtually everything: industry, education, healthcare and more.

Our current and emerging digital technologies provide remarkable opportunities for growth, progress, and human development. However, they also raise many ethical challenges, such as concerns about privacy, behavioral addictions, data ownership and equitable access. Currently, over 67% of the global population — about 5.4 billion people — use the internet,[01] and this number has risen by 45% since 2018.[02] As we navigate this era of intense technological growth and digital disruption, there is a critical need for responsible development, thoughtful regulation, and a collective focus on ensuring that these advancements contribute positively and equitably to the wellbeing and development of the global community.

01 International Telecommunication Union (ITU), Statistics. Individuals using the Internet. https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

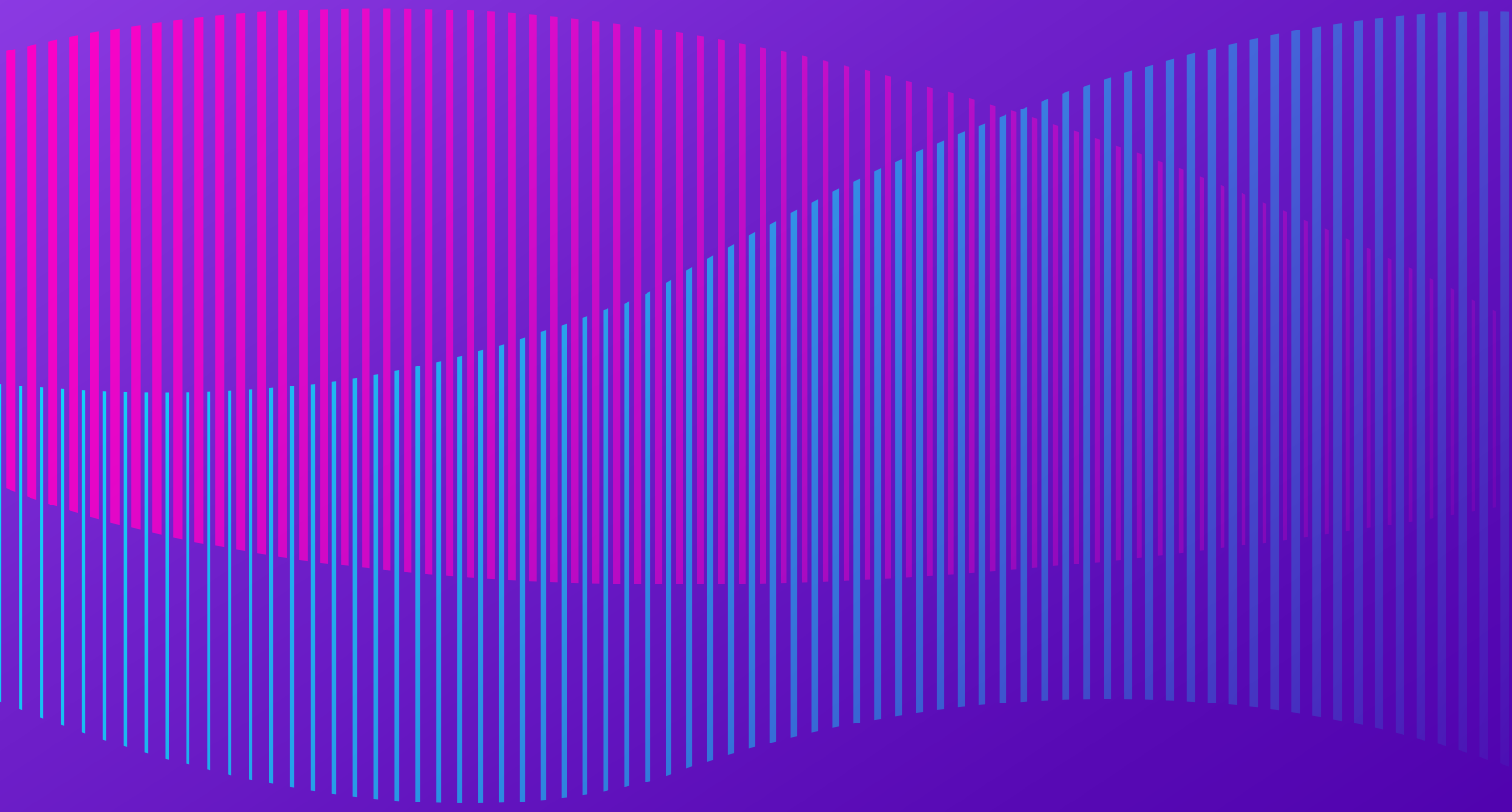
02 Ibid.

Unlocking digital wellbeing.

No country in the index has all the answers, nor faces all the challenges. We find areas of excellence and pain points broadly distributed across the 35-country sample. For example, the Arabian Gulf nations excel in areas of connectivity, while the Southeast Asian countries lead the way on digital education. The aim of the index is to facilitate the sharing of best-practice and drive broad progress across all nations. Optimizing digital technology's opportunities while simultaneously promoting wellbeing requires collaborative international effort. The Global Digital Wellbeing Index represents our latest contribution to this critical goal.

The Global Digital Wellbeing Index has a three-pronged purpose:

1. Stimulate international discussions on the value and effects of digital technology.
2. Influence policymakers to measure and enhance digital wellbeing.
3. Provide a benchmark for stakeholders to gauge the impact of emerging technologies



About this report

Digital technologies offer unprecedented opportunities to effect change across all types of human activities. However, they also pose risks to achieving a balanced, healthy life, and wellbeing. This report highlights the need for action on this front. Globally, a movement is emerging to establish safeguards against the downsides of technology use. Navigating the digital era demands continuous efforts to promote "digital wellbeing" on a personal and collective level. To this end, this report presents the findings of the Global Digital Wellbeing Index (DWI), a first-of-its-kind international study examining how countries are putting in place the building blocks for the balanced use of digital technologies — maximizing the opportunities offered by digital technology while enhancing individual and collective wellbeing.

Developed by Ithra Digital Wellbeing in collaboration with Horizon Group, the DWI aims to inform and foster the digital wellbeing agenda, framing the challenge in a way that will motivate action. We hope that it will become a recognized, practical tool for the countries included in the index to benchmark policies and practices against each other, guiding country-level and international stakeholders in their decisions and deliberations.

The DWI draws on data from renowned sources, a dedicated survey of digital technology users, a policy assessment of 35 countries, a literature review, and advice from subject matter experts. The index comprises two sub-indexes, each with six pillars: "Balancing needs", on the potential drawbacks of digital technology usage and the extent to which they are being addressed; and "Capturing opportunities", on the range of opportunities offered by digital technology across multiple applications.

The DWI provides a comprehensive framework for understanding digital wellbeing, informing policies, interventions, and individual practices. It aims to provide a benchmark for multiple stakeholders to assess how digital technology is influencing human activity and identify the preparedness of governments and societies for healthy engagement with technology. It seeks to stimulate international discussions on the multiple dimensions of digital wellbeing and influence global action.

This report introduces the study and its context, discusses the findings across all pillars of the DWI, provides snapshots of special topics, and offers conclusions with policy recommendations. The appendix presents the full indicator framework and methodological approaches.

About Sync & Ithra

Sync is a digital wellbeing program launched by the King Abdulaziz Center for World Culture (Ithra). Sync promotes digital wellbeing, globally, fueling a social movement that helps humanity navigate the digital world with mindfulness and balance. The program's work is underpinned by research exploring digital wellbeing from diverse perspectives. Alongside industry, clinical, and academic collaborators, Sync's research uncovers how technology impacts our lives for better and worse. This knowledge is translated into actions, such as interventions, campaigns and educational initiatives.

The King Abdulaziz Center for World Culture (Ithra)

The King Abdulaziz Center for World Culture, commonly known as "Ithra" — the Arabic word for "enrichment" — is a platform for art, creativity, and culture. It is dedicated to education and innovation. It is a cultural catalyst, a global gateway, and an economic engine.

It is Ithra's mission to foster the Saudi creative and cultural sector; and it does so by supporting the work of individuals in visual, cinematic, media and performing arts — as well as design, innovation, and entrepreneurship.

About Horizon Group

Horizon Group is a leading global insights agency that combines top-tier research and cutting-edge economic and social analysis to develop strategies that drive impact at scale. We work with leading companies, governments, and international organizations, which use our solutions to inform decisions and shape agendas.

Acknowledgements

This report is the result of a collaborative effort made possible by the dedication and contributions of numerous individuals and organizations. We extend our sincere gratitude to all those who played a pivotal role in bringing this research to fruition.

We express our thanks to the research teams, analysts, and contributors who worked tirelessly to gather, analyze, and present the data encapsulated in this report. Their diligence and commitment to excellence are evident throughout these pages. In particular, we extend our gratitude to Fahad Albeyahi, Mamun Rashid, Nada Aljuraib, Justin Thomas and Ziyad Alghamdi from the Ithra Digital Wellbeing Program, along with Margareta Drzeniek, Enrico Nano, Judit Kozenkow, Disha Sharma, Audra Martin Merrick, Shuvasish Sharma, Camilo Guerrero, and Andrew Wright at Horizon Group. Their diligent efforts, unwavering support, and valuable contributions have played a pivotal role in shaping the direction and focus of this research.

Our sincere appreciation goes to members of the Expert Panel:

Mohammed Alhajji
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Yuhyun Park
Founder, DQ Institute, Singapore

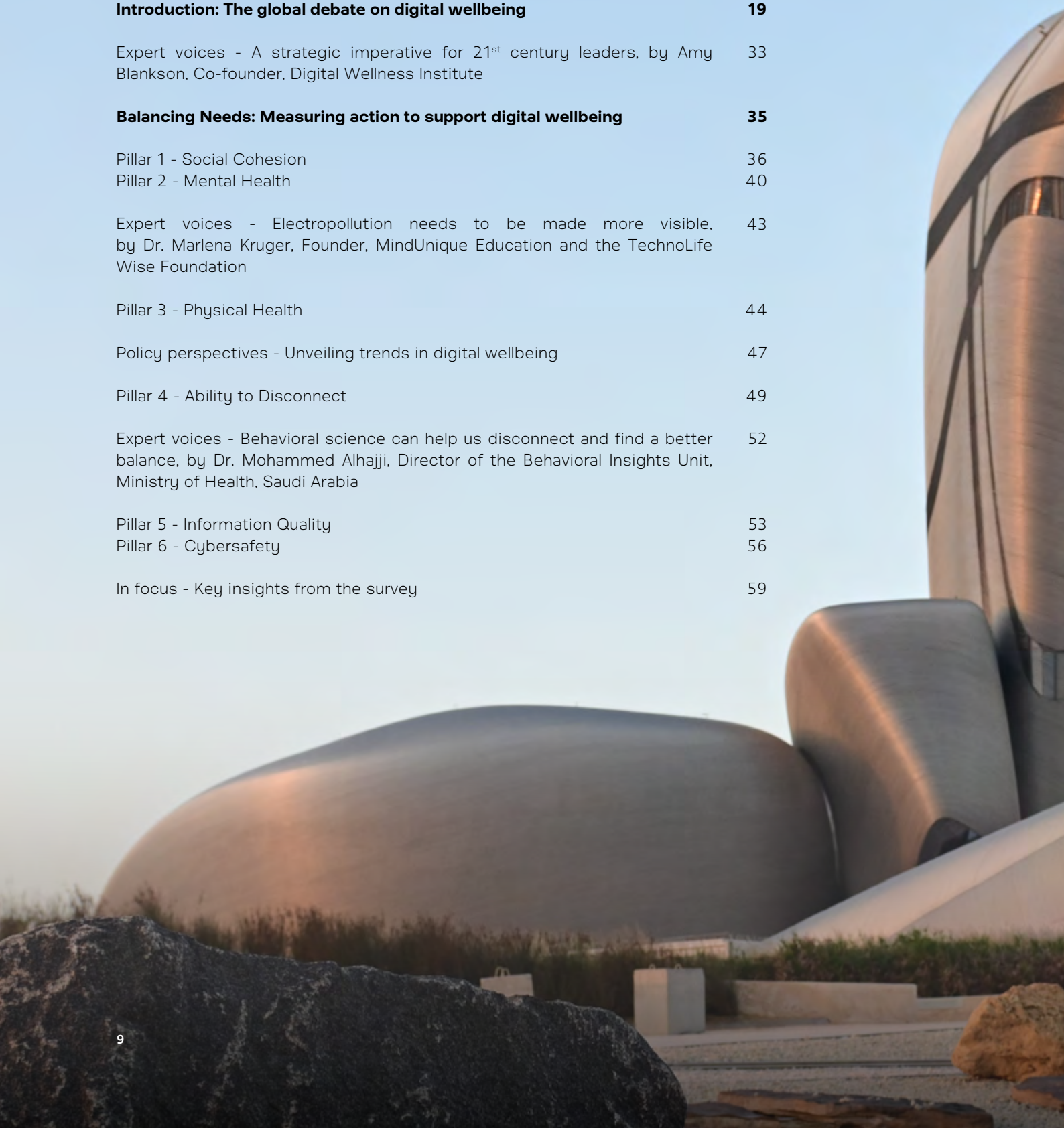
Andrew K. Przybylski
Professor of Human Behaviour and Technology, Oxford Internet Institute, University of Oxford; Honorary Professor, Centre for Psychosocial Health, The Education University of Hong Kong

Their expertise and valuable insights significantly enriched the content of this report. Their commitment to advancing the discourse on digital wellbeing has left an indelible mark on the quality and depth of our findings. We also express our gratitude to Paul Fletcher, Shadow Minister for Government Services and the Digital Economy in the Australian Parliament, and H E M. Riaz Hamidullah, Ambassador of Bangladesh to the Netherlands, for enhancing this report with their crucial insights into digital wellbeing.

Finally, our appreciation goes to PSB Insights in providing us with critical data from the Digital Wellbeing Survey, which offered first-hand insights across various countries and populations, and to Chesca Kirkland from Set Reset for the report's design.

This report is a tribute to the collective effort of a diverse and dedicated community. We acknowledge and appreciate each individual and entity involved, as your contributions have been integral to the success of this endeavor.

Contents



Executive Summary

Digital technologies have reshaped how we connect, work, and perceive the world. As our dependence on these tools grows, so too does the need to understand and optimize the balance between technology use and wellbeing. The Digital Wellbeing Index (DWI) explores the foundational elements of digital wellbeing, acknowledging the complex and multifaceted dimensions involved. The DWI aims to stimulate global discussions, influence policymakers, and provide a benchmark for stakeholders to navigate the evolving landscape of digital wellbeing. It covers 35 countries and combines data from well-established secondary sources (e.g. UN, World Bank), a dedicated survey, and policy assessments into a framework that consists of 12 pillars, organized into two complementary components or sub-indices (1) balancing needs and (2) capturing opportunities. The DWI provides overall country-level scores out of 100, as well as scores for both components and for each of the 12 pillars (also out of 100).

In terms of overall scores on the index, Canada, Australia, Singapore, Estonia, France, the United Kingdom, Germany, the United States, and Italy do especially well. China stands out with a strong performance among middle-income countries. While wealthier countries achieve the best scores on average, having a higher income does not always guarantee a better performance: for example, China, Argentina, Colombia, Malaysia, Mexico, and Bulgaria achieve scores equal to or above the global average (57 out of 100). Across the entire sample, the pillars with the highest scores are connectivity (78) and social cohesion (74). Those with the lowest scores, requiring the most attention, are work, productivity and income (39), physical health (48), and the ability to disconnect (48). As highlighted throughout this report, each country has its relative digital wellbeing strengths as well as areas for growth and enhancement.

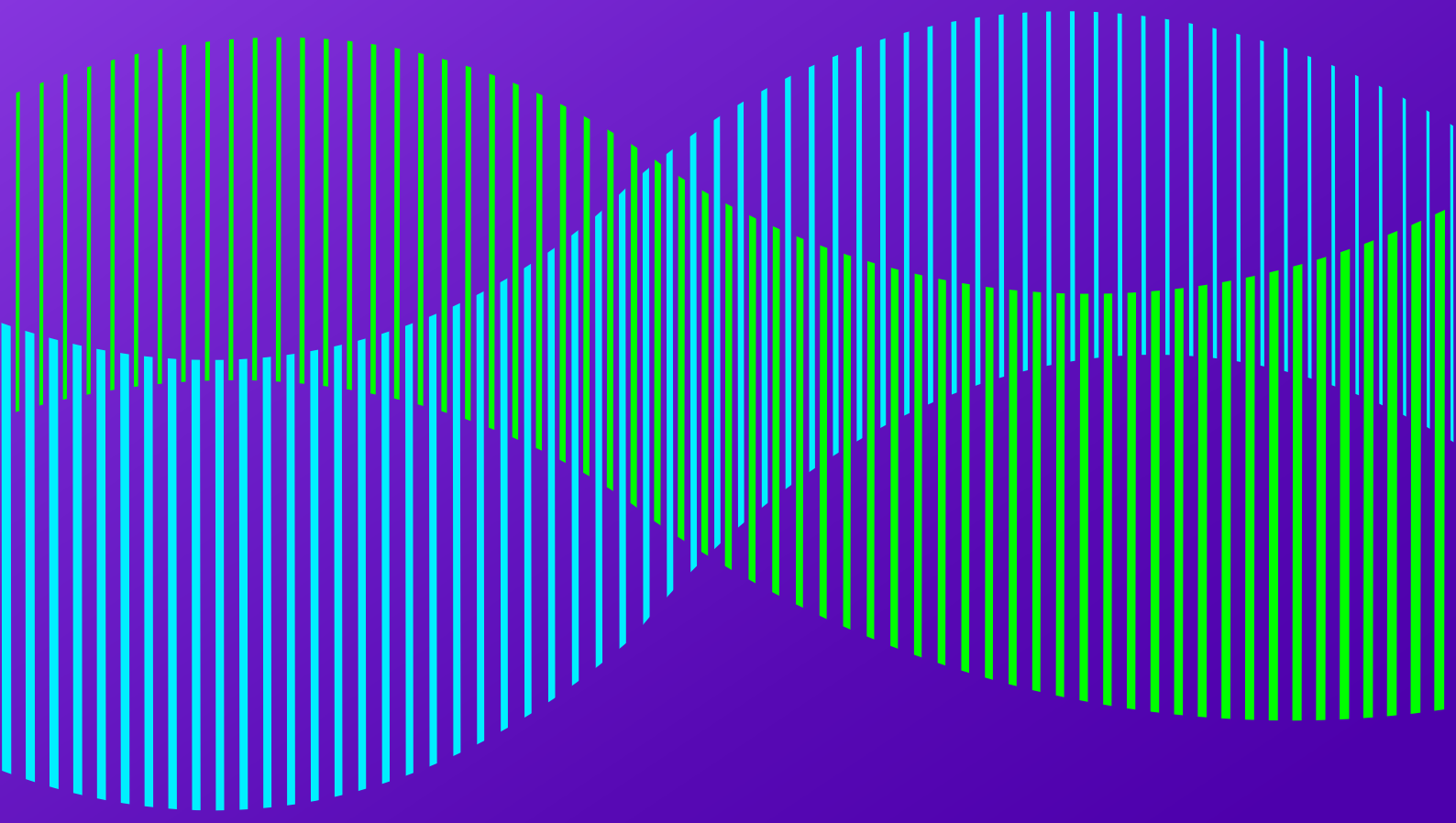


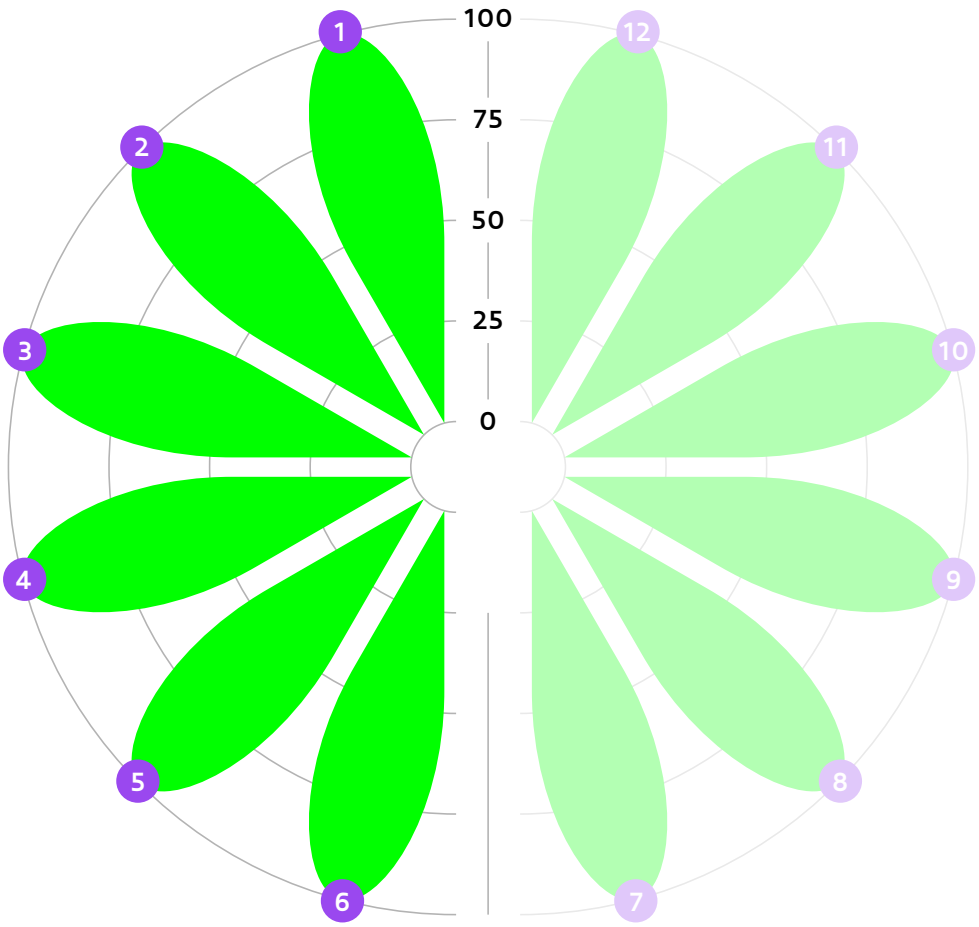
TABLE 1
Source: Global Digital Wellbeing Index 2024

Overall performance in the DWI

Rank	Country	Score (0-100)
1	Canada	69.8
2	Australia	69.0
3	Singapore	68.1
4	Estonia	67.1
5	France	66.8
6	United Kingdom	66.3
7	Germany	65.2
8	United States	61.0
=9	China	60.5
=9	Italy	60.5
11	Argentina	60.2
12	Sweden	60.0
=13	Chile	59.6
=13	Republic of Korea	59.6
15	Colombia	58.1
16	United Arab Emirates	57.9
17	Malaysia	57.8
=18	India	57.5
=18	Japan	57.5
20	Mexico	57.4
21	Bulgaria	57.2
22	Brazil	55.1
=23	Indonesia	54.5
=23	Kenya	54.5
25	Türkiye	54.4
26	Viet Nam	54.1
27	Saudi Arabia	53.8
28	South Africa	53.0
29	Ghana	50.6
30	Kuwait	50.0
31	Nigeria	48.4
32	Egypt	46.6
33	Pakistan	45.1
34	Bangladesh	44.1
35	Algeria	39.8

Balancing Needs

The "Balancing Needs" sub-index includes six pillars examining the risks posed by digital technology and to what extent these risks are being addressed. This component of the DWI captures the most direct action being taken around the world to support digital wellbeing.



1 Social Cohesion
2 Mental Health
3 Physical Health
4 Ability to Disconnect
5 Information Quality
6 Cybersafety
7 Connectivity
8 Social Connectedness
9 Education and Skills
10 Work, Productivity, and Income
11 Entertainment and Culture
12 Access to Services and Goods

For the Balancing Needs component, data collected for the DWI reveals:

Policies to support digital mental health can help vulnerable individuals — an area with the potential to be improved across the board.
Singapore leads in the mental health pillar, followed by the United Kingdom and the Republic of Korea. Generally, advanced economies have better scores, but China and Algeria stand out among middle-income nations. Only eight countries have complete frameworks for digital mental health — that is, the use of digital technology to directly support mental health care and service provision — with Singapore, the United Kingdom, and Canada showcasing successful integration into education. Bangladesh, India, and the United Arab Emirates report greater levels of distress associated with extended digital technology use, while the United States, Australia and Canada report the most significant psychological impacts such as feelings of loneliness and anxiety linked with remote working or studying. Less affluent countries report lower levels of such distress, potentially due to less common remote activities, which can be linked to connectivity gaps and lower flexibility of work arrangements.

Maintaining physical health is a challenge given growing exposure to digital technologies, stressing the need for more dedicated policies.
Canada, France, and Australia lead in the physical health pillar; overall, richer countries attain higher scores in this area. Eight countries have clear government recommendations on the healthy use of digital technologies. Only Canada, India, Estonia, and Ghana fully address physical health risks in school curricula. Viet Nam, Malaysia, Ghana, and Nigeria reported more physical health complaints associated with digital technologies including dry eyes, headaches, and back pain. Algeria, Ghana, and Bangladesh reported greater disruption to offline activities such as in-person engagement with family and friends, and missing work and school related activities.

"Right to disconnect"[03] policies show decisive action to promote digital wellbeing and represent one area with the potential to be developed around the world.
Affluent countries are generally stronger in this area, with Australia, Italy, and Germany leading in the ability to disconnect pillar. Argentina, Mexico, and Colombia, middle-income countries, demonstrate a strong performance too. Nine countries in the DWI — Australia, Argentina, Canada, Chile, Colombia, France, Germany, Italy, and Mexico — have established legislation on the right to disconnect. When it comes to remote work or study, challenges in maintaining healthy boundaries show no significant differences across income segments, but advanced economies show overall higher adoption rates of measures to promote digital wellbeing at work.

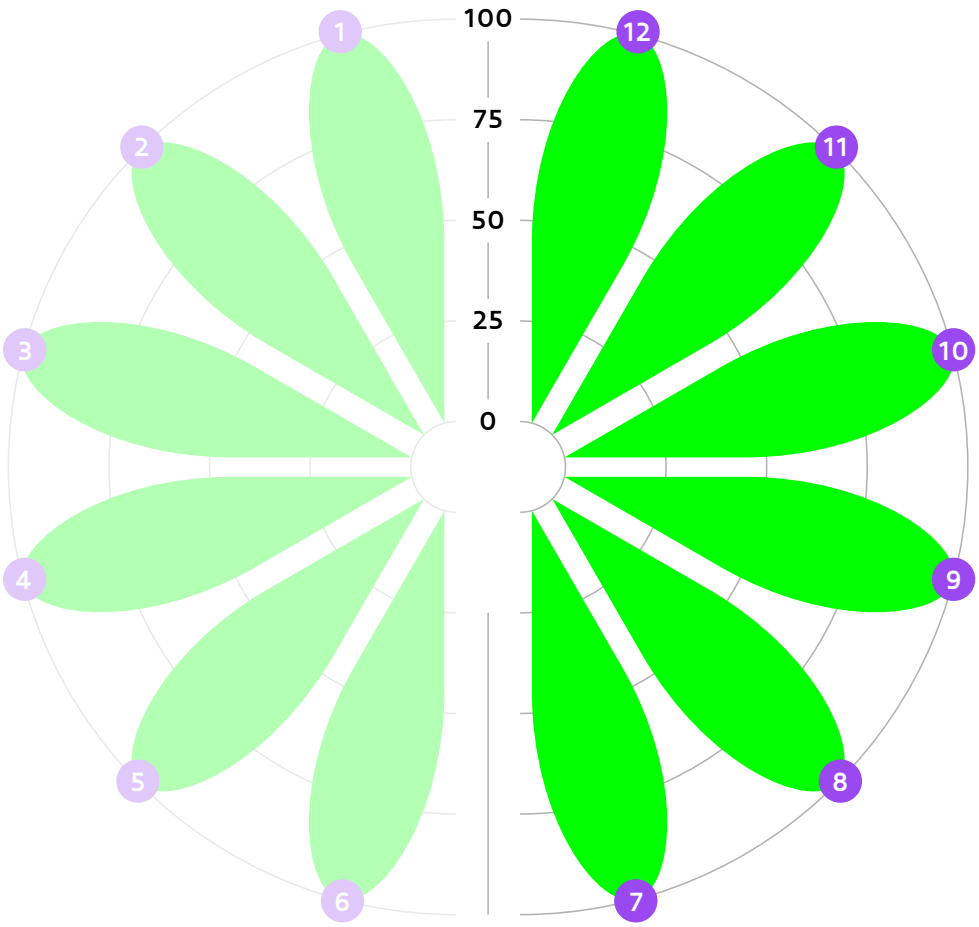
Misinformation and disinformation pose risks to wellbeing that require government action around the world.
Estonia leads in the information quality pillar, followed by Argentina, and Canada. Fourteen countries demonstrate clear governmental action against misinformation. Seventeen countries, across all income levels integrate disinformation awareness into education. Trust in online information is highest in Nigeria, followed by Bangladesh, Germany, and Estonia with generally similar levels across income segments. Viet Nam, Indonesia, and Malaysia are the most active in verifying information accuracy.

Challenges in data safety are more evident in middle-income countries, while cyberbullying needs more policy action around the world.
The top performers in the cybersafety pillar are the United States, France, and Singapore. The United States, Saudi Arabia, and the United Kingdom lead in cybersecurity commitment. More secure internet servers are found in wealthier nations. Australia, China, and Canada lead in user strategies to protect personal data. The United States leads in cyberbullying and cybersafety policies, followed by Canada and France. Across most countries, policies focused on parents are well established. These include resources and digital safety toolkits for parents to deal with cyberbullying. However, policies focused on children and youth, such as e-safety guidelines and provisions for cyber wellness in education curriculum, are less common.

03 Refers to the "Right to disconnect" is defined as the right not to engage in work-related electronic communications during non-work hours.

Capturing Opportunities

The "Capturing Opportunities" sub-index/component examines six pillars comprising enablers of digital adoption and opportunity across a range of contexts. This component captures the pre-requisites for adopting digital technologies and the extent to which opportunities are maximized.



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For the Capturing Opportunities component, data collected for the DWI reveals:

Digital interaction does not always lead to meeting people offline, and some of the least affluent countries are the most dynamic in online activism.

The strongest social connectedness is evidenced in the United Arab Emirates, Chile, Bulgaria, Colombia, and Malaysia. Social media engagement averages 68% across all countries, with advanced economies leading. Meeting new people using digital devices is less common in high-income nations (35%) compared with upper-middle-income (55%) and lower-middle-income countries (59%). China and India lead in online engagement, while Nigeria and Kenya are leaders in online activism. Generally, emerging economies score higher in active online engagement and activism.

Middle-income countries embrace online education and training, but still have a journey ahead in integrating digital skills (e.g. using digital safety tools, ability to verify misinformation) in curricula.

Estonia leads the education and skills pillar, followed by Indonesia, the Republic of Korea, Singapore, and Kenya. While this reflects a mix of income levels, richer countries generally score higher. Internet access in schools is led by advanced economies, and less affluent nations face challenges in integrating digital skills. Most countries recognize micro-credentials, indicating a widespread trend among both employees and employers to be more open to new types of qualifications. Middle-income countries show strong engagement with digital tools in education, and digital device use for accessing information is also high across this group.

Advanced economies lead in work flexibility, while digital technologies and regulation allow middle-income countries to participate more fully in the knowledge economy.

Estonia, Singapore, Australia, and the United Arab Emirates lead in the work, productivity, and income pillar, with upper-middle-income countries outperforming high-income ones on average. Less affluent countries — including India, Viet Nam, and Bangladesh — have ample room for growth. Remote work frameworks are more advanced in richer nations, while digital nomad visas[04] are prominent in middle-income countries such as Argentina, Colombia, and Brazil. Estonia and Singapore have some of the strongest tech sectors. Ghana and Kenya, meanwhile, have growing tech sectors, demonstrating how the digital economy can empower emerging economies.

Digital technologies are democratizing access to art and entertainment.

Argentina leads in the entertainment and culture pillar, followed by Estonia, the Republic of Korea, India, and Sweden. The DWI notes widespread government support for digital tourism and culture, particularly in wealthier countries. Estonia stands out in experiencing art digitally, while China leads in using technology for creating and sharing art. Middle-income countries generally report greater use of digital devices for consuming artistic and cultural content online compared to their high-income counterparts.

04 "A digital nomad visa is a type of visa that allows you to work remotely for a country registered outside of the country you have chosen to currently live in. Typically, to work in another country, you must have a work permit, and be registered as a taxpayer. This requires you to uproot your entire life back home. Digital nomad visas, on the other hand, have the benefit of becoming a temporary resident of another country, while you work (and pay taxes) in your home country. In the majority of cases, digital nomads are not required to pay taxes in their host country." Source Schengen Visa Info https://www.schengenvisainfo.com/digital-nomad-visa/

There is widespread availability of key digital services for the population, but participatory policymaking remains nascent in some countries.

Seventeen out of the 35 countries have a telecom or ICT regulator for managing digital applications such as e-health and e-education. Meanwhile, Estonia leads in access to services and goods, followed by China and Singapore, with advanced economies dominating the top half of the list. China excels in overall digital health engagement, with lower-middle-income countries surpassing their higher-income counterparts. Digital payments have a 71% engagement rate globally. China leads in online shopping (80%), while Sweden and the United Kingdom do well in managing finances online, additionally, Estonia, Sweden, China, and Colombia show strong engagement with transportation technologies (e.g. car sharing or public transport apps).

Universal internet access is a goal around the world, but some disparities highlight the need for further government support.

The United Kingdom, followed by Canada and France, leads in social cohesion, which focuses on universal access policies, digital literacy for all, and digital inclusion). Almost all countries have universal access and service policies, while 16 countries, mostly high-income, feature comprehensive regulatory frameworks for information and communications technology accessibility. Digital literacy initiatives outside formal education show progress across countries, with notable examples in middle-income countries. The International Telecommunication Union gender parity score indicates that more women than men use the internet in some affluent countries, while Germany, the United Kingdom, and Estonia lead in socio-economic inclusion.

Some countries still require infrastructure investment to reach universal connectivity.

The United Arab Emirates, Saudi Arabia, and Kuwait excel in connectivity, with Malaysia and Bulgaria challenging the notion that only the wealthiest economies provide comprehensive connectivity. Despite widespread 4G coverage, some emerging economies face challenges in network infrastructure. Internet penetration rates vary significantly, with high-income countries at 93%, upper-middle-income countries at 79%, and lower-middle-income countries at 53%. Affordability issues reflect economic disparities, with people in richer nations spending less than 0.1% of their income on connectivity, compared with 2.3% and 5.4% in upper-middle and lower-middle-income countries.

Introduction

The global debate on digital wellbeing

In an era characterized by unprecedented technological progress, our daily lives have become increasingly intertwined with digital technologies. From the ubiquitous presence of smartphones to the expanding influence of social media platforms, the digital landscape has reshaped how we connect, work, and perceive the world. Although this offers unparalleled convenience and productivity, it also prompts growing concern for the impact of digital experiences on our lives.

The concept of "digital wellbeing" has emerged as a crucial area of study, seeking to understand and optimize the balance between technology use and individual and collective health, happiness, and fulfilment. As our reliance on digital tools continues to grow, the need to understand the multifaceted dimensions of digital wellbeing becomes ever more pressing. Digital wellbeing not only matters for personal development, but also carries profound implications for the health of a society. Digital wellbeing implies more than just managing screen time or harmful content, as it also encompasses economic, social, and cultural aspects that foster resilience and critical skills in communities.

Defining "digital wellbeing"

We can look to academia and industry for emerging definitions of digital wellbeing. Professor Mariek Vanden Abeele at Tilburg University defines it as an "experiential state of optimal balance between connectivity and disconnectivity that is contingent upon a constellation of person-, device-, and context-specific factors".[05] A report from the National University of Singapore describes digital wellbeing as involving multiple layers: a healthy relationship with technology for a balanced and civic usage; an understanding of the positive and negative impacts of digital technologies; and awareness of approaches to achieve digital wellbeing.[06] Academics Marco Gui, Marco Fasoli, and Roberto Carradore propose the definition as: "a state where subjective wellbeing is maintained in an environment characterized by digital communication overabundance".[07]

Google has developed a portal dedicated to digital wellbeing, which refers to the goal of achieving a personal balance with technology, allowing it to enhance and not distract from life.[08] UNESCO has engaged with the concept from the perspective of education, referring to the objective of attaining a balance between learning outcomes and health outcomes — mental, social, emotional, and physical.[09]

The Berkeley Well-Being Institute defines digital wellbeing as "having the ability to handle online stress, engage in healthy digital behaviors, and use our technologies in ways that help us thrive".[10] According to digitalwellbeing.org, digital wellbeing is "a state of personal wellbeing experienced through the healthy use of digital technology".[11]

> Despite their different emphases, all these definitions converge around the notion of achieving and maintaining a balance among the opportunities and risks, benefits, and harms associated with digital technology. This guiding principle of balancing needs and capturing opportunities underpins the analytical framework of the Global Digital Wellbeing Index.

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How digital technologies impact mental and physical health

The impact of popular digital technologies on mental and physical health has been the subject of ongoing examination. A rise in depression rates among US teens was reported between 2011 and 2018, an increase which coincided with this cohort's widespread adoption of social media.[12] Although far from conclusive, some studies report associations between more frequent social media use and higher rates of psychopathology (e.g. depression and anxiety).[13] The links between social media use and mental health problems certainly merit further research.

The rise of remote work, enabled by digital technologies, presents benefits and risks. It may help reduce stress but also increases the prevalence of "presenteeism", which refers to working while sick.[14] It can boost productivity and satisfaction, but it can also lead to feelings of isolation and blur the boundaries between work and other aspects of life.[15] The widespread use of mobile devices and computers often contributes to poor posture, putting excessive pressure on the neck and spine. Although not unequivocal, there is some evidence linking texting on mobile phones with neck or upper back pain.[16]

In the context of education, the prolonged use of technology during online classes has been linked to blurry vision, exertion, fatigue, body pain, weight gain, and lack of sleep.[17] Greater exposure to online learning has also been associated with reduced physical activity.[18]

Conversely, digital technologies can also be used as tools to support wellbeing. The COVID-19 pandemic drove a huge increase in demand for digital/online mental health services (such as social platforms or video conferencing applications), with some studies reporting positive outcomes, suggesting such digital tools and platforms can be used to help promote recovery from mild to moderate mental health problems such as depression and anxiety.[19]

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US Surgeon General issues advisory on social media and youth mental health

In May 2023, US Surgeon General Dr. Vivek Murthy issued an advisory on the potential harm of social media on the mental health of children and adolescents, citing concerns over quality of sleep, exposure to harmful content, and negative impacts on wellbeing. Urging immediate action from policymakers, technology companies and families, the advisory recommends strengthened safety standards, increased transparency, and household measures such as establishing tech-free zones. The advisory emphasizes the need for collective efforts to address the national youth mental health crisis exacerbated by social media.

Source: https://www.hhs.gov/about/news/2023/05/23/surgeon-general-issues-new-advisory-about-effects-social-media-use-has-youth-mental-health.html

Countries taking action on the right to disconnect

Affordable digital devices and uninterrupted connectivity have enabled an "always on" culture, creating virtual workplaces where employees are always reachable. Such a work culture is potentially detrimental to employee health — for example, by blurring the boundaries between professional and personal life, leading to stress and burnout.[20] To address such issues, "right to disconnect" legislation/policy acknowledges a worker's entitlement to disengage from work-related electronic communications, such as emails or messages, during non-work hours. Amid the huge uptake of remote work driven by the COVID-19 pandemic, the need for new labor standards to ensure workers' wellbeing is more evident than ever.[21]

France was a pioneer in legally recognizing the right to disconnect, with a national conversation on the topic dating back to 2013 leading to legislation in 2016. Other European Union countries, including Italy, Spain, Belgium, Ireland, and Portugal, have followed suit with their own legislation.[22] In 2021, the European Parliament passed a resolution calling for a directive that enables digital workers to disconnect outside of working hours, establishing minimum requirements for remote work, and clarifying working conditions.[23]

This movement has expanded beyond Europe. In 2021, the province of Ontario in Canada required that companies with 25 or more employees implement a written policy on disconnecting from work for all staff members.[24] The state of Queensland in Australia has also implemented a provision to promote a culture in which teachers are encouraged to disconnect digitally when not at work.[25] Kenya has become the first African country to consider a similar move: its senate is debating the 2022 Employment (Amendment) Bill, which aims to prevent employers from intruding on the work-life balance of employees by prohibiting calls, text messages, emails, or assignments beyond working hours, or over weekends and public holidays.[26]

Industry is also part of the conversation, with company-level initiatives complementing the formal and legal recognition of this right. In Germany, action has been driven by negotiations among company stakeholders, with multinationals Volkswagen, Daimler, and Siemens putting in place agreements to ensure the right to disconnect.[27] Similar initiatives have been undertaken by Orange, a French telecommunications group, Belgian chemical company Solvay, and Italian bank UniCredit.[28]

20 Abrams, Z. (2019, October 1). The future of remote work. Monitor on Psychology, 50(9). https://www.apa.org/monitor/2019/10/cover-remote-work

21 World Economic Forum. (2023). "Right to disconnect: The countries passing laws to stop employees working out of hours". Retrieved from https://www.weforum.org/agenda/2023/02/belgium-right-to-disconnect-from-work/

22 Capital. (2022). "Right to Disconnect Legislation in Europe". Retrieved from https://capital-ges.com/right-to-disconnect-legislation-in-europe/

23 Eurofound. (2021). "Right to disconnect". Retrieved from https://www.eurofound.europa.eu/en/european-industrial-relations-dictionary/right-disconnect

24 Ontario. (2022, updated 2023). "Written policy on disconnecting from work". Retrieved from https://www.ontario.ca/document/your-guide-employment-standards-act-0/written-policy-disconnecting-from-work

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26 Quartz. (2023). "A bill now seeks to give Kenyans the 'right to disconnect' after work". Retrieved from https://qz.com/the-right-to-disconnect-after-work-is-coming-to-kenya-1850032205

27 BBC. (2021). "Can the 'right to disconnect' exist in a remote-work world?". Retrieved from https://www.bbc.com/worklife/article/20210517-can-the-right-to-disconnect-exist-in-a-remote-work-world

28 Eurofound.(2021) "Right to disconnect". Retrieved from https://www.eurofound.europa.eu/en/european-industrial-relations-dictionary/right-disconnect

Protecting the young from the risks of online gaming

Another area receiving attention is the problematic use of video games. Gaming disorder was formally recognized by the World Health Organization (WHO) in 2019. The WHO classifies the problem as a behavioral addiction, although this classification of the problem remains widely contested. Debates aside, problematic gaming or gaming disorder is where game play becomes compulsive, significantly interfering with social and occupational functioning in daily life.[29]

Several Asian countries have developed policies targeting problematic gaming. In 2019, China announced measures to address problematic gaming among minors, introducing a curfew that prohibits gamers under 18 from playing online between 22:00 and 08:00 hours. The regulations also limit daily gaming time to 90 minutes on weekdays and three hours on weekends and holidays.[30] Similarly, in 2021, the Indian Ministry of Education released an advisory to parents and teachers regarding safe online gaming, highlighting the risks of "addiction". It recommends restrictions on in-game purchases, avoiding credit or debit card registrations for subscriptions, and encouraging responsible gaming practices. The ministry underscores the importance of education to address the mental and physical stress associated with online gaming, which was particularly evident during the extended closure of schools due to the COVID-19 pandemic.[31]

> As digital technologies continue to evolve — we are still in the early stages of exploring and evaluating their impact on our health — it is already evident that some problems require a policy response. Globally, a movement is rising to create safeguards against problematic technology use. Navigating the digital era requires ongoing efforts to foster digital wellbeing, both at an individual and societal level.

29 Mandriota, M. (2022). "All About Gaming Disorder." Retrieved from https://psychcentral.com/addictions/gaming-disorder#is-gaming-addiction-real

30 BBC. (2019). "Video game addiction: China imposes gaming curfew for minors". Retrieved from https://www.bbc.com/news/world-asia-50315960

31 Mint. (2021). "Is your child addicted to online gaming? Govt issues advisory to parents, teachers. Details here". Retrieved from https://www.livemint.com/news/india/is-your-child-addicted-to-online-gaming-govt-issues-advisory-to-parents-teachers-details-here-11639189056749.html

The Global Digital Wellbeing Index offers a path to action

The Global Digital Wellbeing Index (DWI) explores the building blocks or components of digital wellbeing. The aim is to construct a comprehensive framework that enables the nuanced dynamics of digital wellbeing to be better understood. It simultaneously offers insights to shape and inform policies, legislation interventions, and individual behavior. The DWI looks at how digital technology influences behavior and quality of life around the world and whether governments and individuals are equipped to get the best out of technology. A first-of-its-kind benchmarking study, it seeks to:

- Spark and fuel international discussions on the value of digital technology and the need to manage its potentially adverse effects.
- Provide policymakers and other stakeholders with a tool to measure digital wellbeing in the communities they serve.
- Provide a benchmark and guide for stakeholders when designing evidence-based policies and initiatives related to the effects of emerging digital technologies.

Developed by Sync, Ithra's Digital Wellbeing program, in collaboration with Horizon Group, the DWI draws from evidence across multiple sources gathered through country-level research, literature reviews, and an international panel of experts. The index examines 35 countries, selected to encompass a wide range of cultures, economic development, geographies, and varying levels of tech infrastructure. The index comprises two sub-indexes:

Balancing needs
Six pillars focused on the risks posed by digital technologies and to what extent they are addressed.

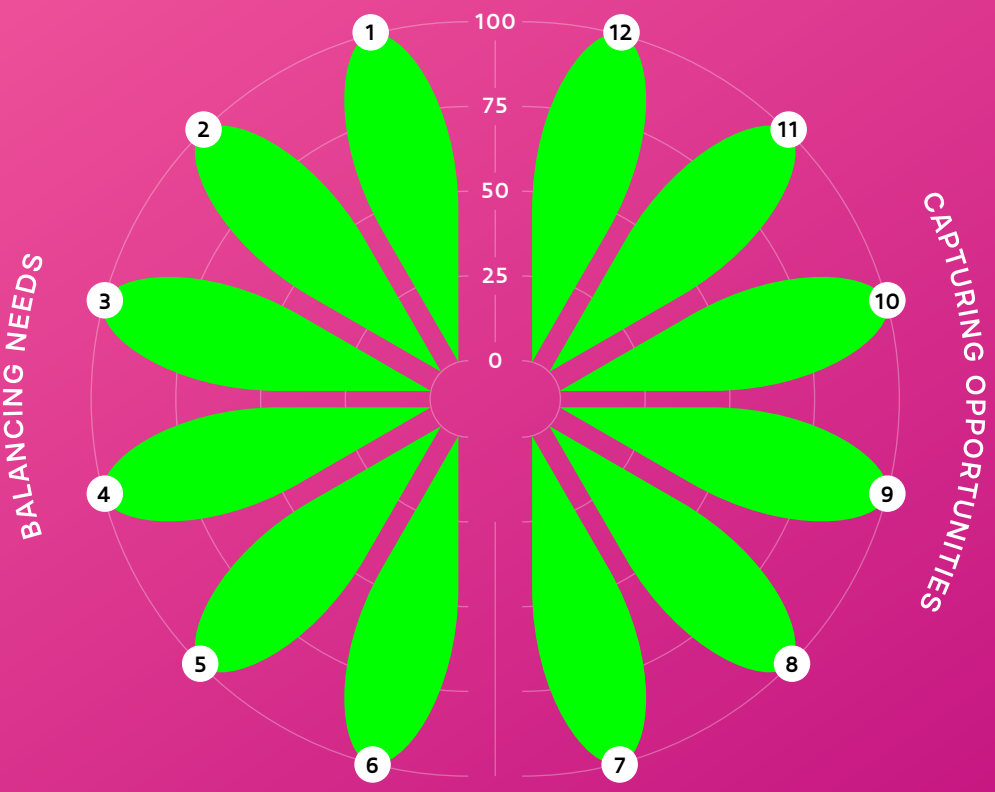
Capturing opportunities
Six pillars focused on enablers of digital adoption and associated benefits and advantages across a wide range of contexts.

The 12 pillars are evaluated through a combination of indicators from international datasets, policy audits, and survey responses. The survey in question gathered the views of 1,000 respondents per country among the general internet-using public, totaling 35,000 interviews globally. As shown in the figure and table below, these metrics quantify the risks and opportunities presented by technology from the perspective of governments, institutions, and individuals (see Appendix for full methodology).

FIGURE 1

Source: Global Digital Wellbeing Index 2024

Framework of the Global Digital Wellbeing Index



1 Social Cohesion

Ensuring equal access to digital technology opportunities, involving citizens of different ages and socio-economic backgrounds.

2 Mental Health

The ability to use technology in a way that does not undermine, and ideally promotes, mental health for example the use of digital technology to support the provision of mental health services.

3 Physical Health

Refers to mechanisms and habits The ability to use technology in a way that does not undermine and in the ideal case promotes physical health.

4 Ability to Disconnect

The mechanisms and habits that support the healthy use of technology and help set boundaries between using technology and other areas of life.

5 Information Quality

Access to varied online content and the ability to apply critical thinking when navigating it, and the ability to identify false news, non-expert advice, and influence.

6 Cybersafety

Efforts to ensure a cyber environment safe from threats such as child pornography, dangerous content, cyberbullying, personal data crimes, and cyber-attacks; as well as the ability to identify and take measures against these threats.

7 Connectivity

General access to technology through internet availability, penetration, and affordability — the base pillar that enables other opportunities.

8 Social Connectedness

Opportunities to stay connected with family and friends, as well as wider social and professional networks. It also includes the opportunity to form online communities that cross physical boundaries.

9 Education and Skills

Increased access to education and new forms of learning and sharing knowledge.

10 Work, Productivity, and Income

Technology-enabled new ways of working (e.g. remote work and digital nomadism, working with global teams, using digital online tools to foster creativity, increase work efficiency, and reduce menial tasks), new types of jobs and ways of income generation, and reduced barriers for micro-entrepreneurship.

11 Entertainment and Culture

Technology-amplified exposure to different cultures and more varied information, and new forms of entertainment and content.

12 Access to Services and Goods

Technology-enabled goods and services that cover basic needs and increase life convenience, such as digital financial transactions, online shopping, electronic public services, and travel planning.

Overall results of the DWI: Canada leads the way

Table 2 presents the aggregated scores for pillars, sub-indexes, and the DWI as a whole. This allows for a high-level snapshot of the state of digital wellbeing in each country, along with their strengths and areas for improvement.

- Canada, Australia, Singapore, Estonia, France, the United Kingdom, Germany, the United States, and Italy show the best performance in the DWI. They are followed by China, the only middle-income country in the top ten positions.

- On average, high-income countries achieve a score of 62 (out of 100), upper-middle-income countries 57, and lower-middle-income countries 49. However, a higher income does not always translate into better performance on the index and its individual pillars. Alongside China, other middle-income countries, Argentina, Colombia, Malaysia, Mexico, and Bulgaria, also achieve scores equal to or above the global DWI average (57). India is the only lower-middle-income country matching the group average, and it performs better than some high-income nations.

- Less affluent countries occupy the bottom five positions. This suggests that some areas of action for digital wellbeing are still at an early stage, perhaps as a result of competing priorities such as physical infrastructure taking precedence over its digital equivalent.

- Across the whole sample, out of a possible score of 100, connectivity obtained the highest score (78), closely followed by social cohesion (74). Based on DWI scores, the areas most in need of attention across the board are work productivity and income (39), physical health (48), and the ability to disconnect (48).

The following chapters address the performance in each of the 12 pillars of the DWI in closer detail.

TABLE 2
Source: Global Digital Wellbeing Index 2024

Overall results of the Global Digital Wellbeing Index
Scores 0-100

Rank	Country	DWI Score	Social cohesion	Mental health	Physical health	Ability to disconnect	Information quality	Cybersafety	Connectivity	Social connectedness	Education and skills	Work, productivity and income	Entertainment and culture	Access to services and goods
1	Canada	69.8	97.3	66.8	76.5	77.5	79.7	69.7	82.4	61.3	68.0	45.1	58.4	55.2
2	Australia	69.0	89.6	57.7	67.3	85.0	78.8	70.8	83.6	59.7	67.1	54.2	54.7	59.3
3	Singapore	68.1	88.7	72.1	57.9	29.3	79.3	71.5	98.6	65.0	72.1	54.9	59.0	69.2
4	Estonia	67.1	73.3	61.9	55.9	49.7	82.6	58.8	83.5	62.5	74.7	62.7	63.9	76.2
5	France	66.8	96.7	61.1	69.5	77.8	64.1	72.1	79.2	59.3	61.7	43.9	60.4	55.4
6	UK	66.3	98.4	69.5	58.9	53.9	77.2	65.7	94.5	58.7	65.0	39.3	56.3	58.5
7	Germany	65.2	89.5	62.8	48.1	79.0	68.0	69.7	81.8	60.9	62.8	40.8	59.4	59.7
8	US	61.0	88.6	53.7	48.8	52.3	53.2	74.5	83.1	51.5	68.2	37.1	57.7	63.6
=9	China	60.5	94.5	58.2	41.7	82.8	51.6	52.4	78.9	52.4	65.6	33.4	60.6	53.7
=9	Italy	60.5	76.8	61.3	66.1	37.5	58.1	50.9	76.4	65.8	67.9	39.0	52.7	73.0
11	Argentina	60.2	69.7	53.1	36.6	69.8	80.2	45.4	77.6	59.8	66.2	47.2	65.7	50.9
12	Sweden	60.0	80.9	51.2	55.5	43.3	55.1	50.4	83.4	53.9	70.4	49.0	63.4	63.8
=13	Chile	59.6	80.1	58.9	41.1	67.9	55.5	39.0	82.8	69.2	67.7	40.4	56.8	56.2
=13	Rep. of Korea	59.6	89.1	68.3	38.3	54.6	30.3	47.6	84.4	64.7	73.0	33.5	63.9	67.1
15	Colombia	58.1	64.5	52.3	36.7	63.1	55.5	43.4	76.8	67.7	68.4	50.6	61.2	56.9
16	UAE	57.9	72.8	49.9	44.2	26.1	43.3	59.4	99.7	73.3	62.8	51.2	50.8	61.4
17	Malaysia	57.8	95.3	44.8	44.3	32.1	56.7	52.4	87.4	67.7	52.3	49.1	50.9	60.4
=18	India	57.5	68.1	52.8	64.0	50.1	54.9	56.6	65.0	65.6	65.6	27.7	63.9	55.6
=18	Japan	57.5	86.3	60.6	39.6	57.6	53.7	55.9	77.3	58.1	61.7	35.1	52.1	51.6
20	Mexico	57.4	61.4	57.5	42.1	68.0	80.1	45.9	73.6	57.5	61.4	35.5	61.6	44.4
21	Bulgaria	57.2	74.3	47.5	37.2	40.3	55.5	56.5	84.4	68.4	67.5	46.4	59.3	48.9
22	Brazil	55.1	86.3	46.6	36.3	35.3	55.4	54.8	74.2	57.2	62.4	45.0	54.4	53.7
=23	Indonesia	54.5	64.8	50.7	41.5	31.3	58.4	44.7	72.1	65.4	73.3	39.3	58.0	54.6
=23	Kenya	54.5	57.2	54.5	45.2	48.2	57.0	50.0	65.6	55.6	70.8	37.7	56.5	55.8
25	Türkiye	54.4	71.9	45.2	40.1	53.9	56.3	51.1	80.3	60.1	61.7	32.1	51.6	49.1
26	Viet Nam	54.1	59.0	56.3	50.8	38.9	46.1	48.3	80.3	63.6	67.6	23.4	61.2	54.0
27	Saudi Arabia	53.8	70.6	48.1	48.6	29.9	29.4	49.9	93.0	60.2	62.1	39.8	49.7	64.2
28	South Africa	53.0	66.8	51.2	54.7	36.2	31.3	50.5	71.0	63.6	64.1	50.8	48.9	47.2
29	Ghana	50.6	72.2	51.2	58.3	30.6	57.3	43.1	61.8	63.6	50.9	34.2	44.6	39.8
30	Kuwait	50.0	70.4	54.5	30.4	20.8	54.2	42.4	88.6	63.5	60.5	25.2	36.2	53.0
31	Nigeria	48.4	47.8	58.0	41.1	29.4	59.1	46.4	52.3	58.1	66.6	27.9	48.8	45.3
32	Egypt	46.6	60.7	52.3	40.2	33.6	40.9	45.8	73.4	53.4	46.2	31.9	45.0	36.4
33	Pakistan	45.1	50.9	44.4	38.7	38.0	52.2	50.0	48.1	52.6	62.7	27.8	46.3	29.4
34	Bangladesh	44.1	49.4	48.5	38.2	27.2	57.0	40.8	62.8	54.9	50.5	21.3	32.1	46.9
35	Algeria	39.8	31.6	60.0	36.3	29.6	26.5	32.2	69.0	51.5	62.3	27.9	24.3	26.8

Balancing needs and capturing opportunities go hand in hand

Scores in "Balancing needs" and "Capturing opportunities" are strongly correlated, with a coefficient of +0.57.[32] It makes sense that the countries creating the most opportunities from digital technology are also the most exposed to risks, which in turn drives greater development of controls and safeguards. As with all correlational data, other interpretations are also possible.

Figure 2 shows how far countries are from a perfect correlation (where scores in the two sub-indexes would be equal, visualized as a diagonal line). Countries below the diagonal — for example, Australia, Canada, France, Germany, and the United Kingdom — have a better performance in "Balancing needs" than in "Capturing opportunities". These countries are leading in recognizing risks to their societies and implementing safeguards for digital wellbeing, but still have room for growth in terms of rolling out digital applications that can benefit their societies and economies.

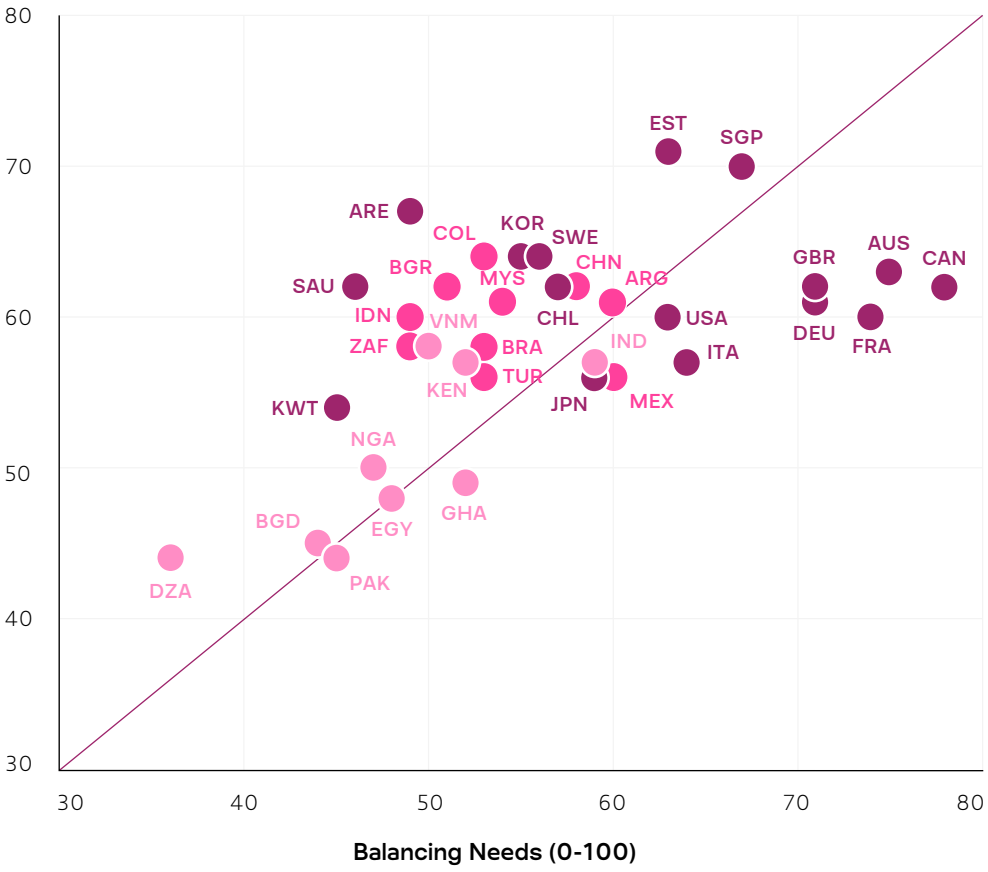
Conversely, countries such as the United Arab Emirates, Saudi Arabia, and, to a lesser extent, Bulgaria, Colombia, and Indonesia have higher scores in "Capturing opportunities" than in "Balancing needs". These countries are relatively strong in engaging with digital technologies but have some room for growth in recognizing potential risks and implementing safeguards for improved digital wellbeing.

32 Correlation co-efficient values range from -1 to +1 depending on if there is a positive or negative association between variables. Values further from 0 imply a stronger correlation.

FIGURE 2
Source: Global Digital Wellbeing Index 2024

Digital frontrunners face more risks, driving action on digital wellbeing

- High income
- Upper middle income
- Lower middle income



Country codes

Algeria	DZA	France	FRA	Nigeria	NGA
Argentina	ARG	Germany	DEU	Pakistan	PAK
Australia	AUS	Ghana	GHA	Saudi Arabia	SAU
Bangladesh	BGD	India	IND	Singapore	SGP
Brazil	BRA	Indonesia	IDN	South Africa	ZAF
Bulgaria	BGR	Italy	ITA	Sweden	SWE
Canada	CAN	Japan	JAP	Türkiye	TUR
Chile	CHL	Kenya	KEN	United Arab Emirates	ARE
China	CHN	Republic of Korea	KOR	United Kingdom	GBR
Colombia	COL	Kuwait	KWT	United States	USA
Egypt	EGY	Malaysia	MYS	Viet Nam	VNM
Estonia	EST	Mexico	MEX		

Countries that are inclusive when it comes to digital technologies do well on the overall DWI

Table 3 demonstrates which pillars are strongly correlated, with a coefficient above +0.50. For example, cybersafety is positively associated with social cohesion, with one possible interpretation being that more digitally inclusive countries are increasingly likely to implement security mechanisms for digital experiences. On the other hand, higher cybersafety can also encourage more people to use digital devices. Performing well in the ability to disconnect pillar is also positively associated with social cohesion, with one possible interpretation being that countries that are digitally more inclusive also have the attitudes and mechanisms to limit excessive exposure to digital devices.

Another interesting association exists between social cohesion and connectivity, showing that the most digitally inclusive societies tend to have better connectivity — or, inversely, that higher connectivity can support social cohesion. Social cohesion appears to be a strong predictor of overall performance in the "Balancing needs" sub-index (with a correlation coefficient of +0.80) and in the DWI as a whole (+0.82). It is also possible to infer that higher levels of connectivity are associated with higher access to goods and services and stronger adoption of technologies for work, productivity, and income.

Exploring connections: Selected correlations among DWI pillars

TABLE 3

Source: Global Digital Wellbeing Index 2024

Sub-index	DWI pillar	Positively associated with*
Balancing needs	Social cohesion	Connectivity (+0.62) Entertainment and culture (+0.53) Access to services and goods (+0.61) Ability to disconnect (+0.50) Cybersafety (+0.71)
Capturing opportunities	Connectivity	Work, productivity, and income (+0.51) Access to services and goods (+0.65) Social cohesion (+0.62)

*Considering only correlation coefficients (in brackets) above +0.50.

Digital wellbeing is linked to human development and happiness

Overall performance in the DWI has been tested for correlation with other well-known composite indexes. For example, the Human Development Index (HDI) measures a country's achievements in health, education, and standards of living. By combining life expectancy, education levels, and income per person, the HDI prompts questions about why countries with similar incomes can have different development outcomes and stimulates discussions on government priorities.[33] HDI (2021) outcomes correlate strongly (+0.72) with the DWI, meaning that countries with more comprehensive development tend to perform better in the DWI.

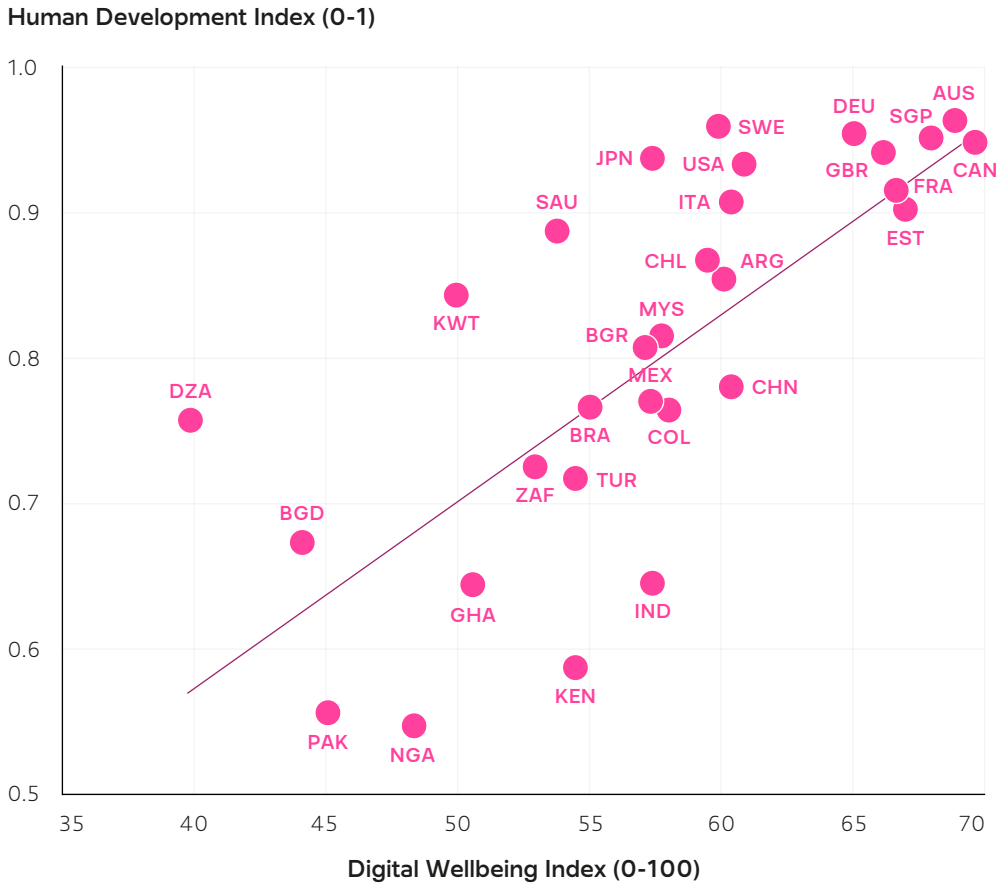
There is also a strong association between the DWI and the World Happiness Index (2023), with a +0.75 coefficient. The annual happiness rankings rely on life evaluations gathered through the Gallup World Poll. Respondents answer using a scale from 0 to 10, where 10 represents the best possible life and 0 the worst. The rankings are derived from nationally representative samples collected over a three-year period.[34] This means that countries with higher happiness levels tend to have a more balanced use of digital technologies, and the other way around: countries with more balanced use of digital technologies tend to have higher levels of happiness (subjective wellbeing).

33 UNDP. "Human Development Index (HDI)". Retrieved from https://hdr.undp.org/data-center/human-development-index#/indicies/HDI

34 World Happiness Report. "About". Retrieved from https://worldhappiness.report/about/

FIGURE 3
Source: Global Digital Wellbeing Index 2024, UNDP 2021

Global Digital Wellbeing Index vs Human Development Index



Country codes

Algeria	DZA	France	FRA	Nigeria	NGA
Argentina	ARG	Germany	DEU	Pakistan	PAK
Australia	AUS	Ghana	GHA	Saudi Arabia	SAU
Bangladesh	BGD	India	IND	Singapore	SGP
Brazil	BRA	Indonesia	IDN	South Africa	ZAF
Bulgaria	BGR	Italy	ITA	Sweden	SWE
Canada	CAN	Japan	JAP	Türkiye	TUR
Chile	CHL	Kenya	KEN	United Arab Emirates	ARE
China	CHN	Republic of Korea	KOR	United Kingdom	GBR
Colombia	COL	Kuwait	KWT	United States	USA
Egypt	EGY	Malaysia	MYS	Viet Nam	VNM
Estonia	EST	Mexico	MEX		

Navigating the digital landscape

A strategic imperative for 21st century leaders

Amy Blankson
Co-founder, Digital Wellness Institute

In an era where smartphones seamlessly integrate into our daily routines, from the moment we wake up to the minutes before we sleep, and where meetings often share space with digital distractions, the pervasive nature of technology prompts us to question the path we're charting for society. Are we unwittingly unleashing a Pandora's box that could reshape the very fabric of our existence?

The pandemic catalyzed a 30% surge in screen time, leading many to believe this trend would revert to pre-pandemic levels. Yet, the reality is sinking in: the world of work and learning has undergone a seismic shift. As we spend more time plugged into our devices, the lines between flexible work and being "always on" blur, fostering a culture of perpetual connectivity that fuels burnout, contributing to the mental health crisis and the unprecedented phenomenon of the Great Resignation.

In this context, the wisdom imparted by the economist Richard Layard — "if you treasure it, you have to measure it" — resonates strongly. While we acknowledge the impact of technology on our cognition and interpersonal dynamics, meaningfully measuring these effects remains elusive. This report aims to bridge that gap, shedding light on the subtle yet profound ways technology is shaping our lives.

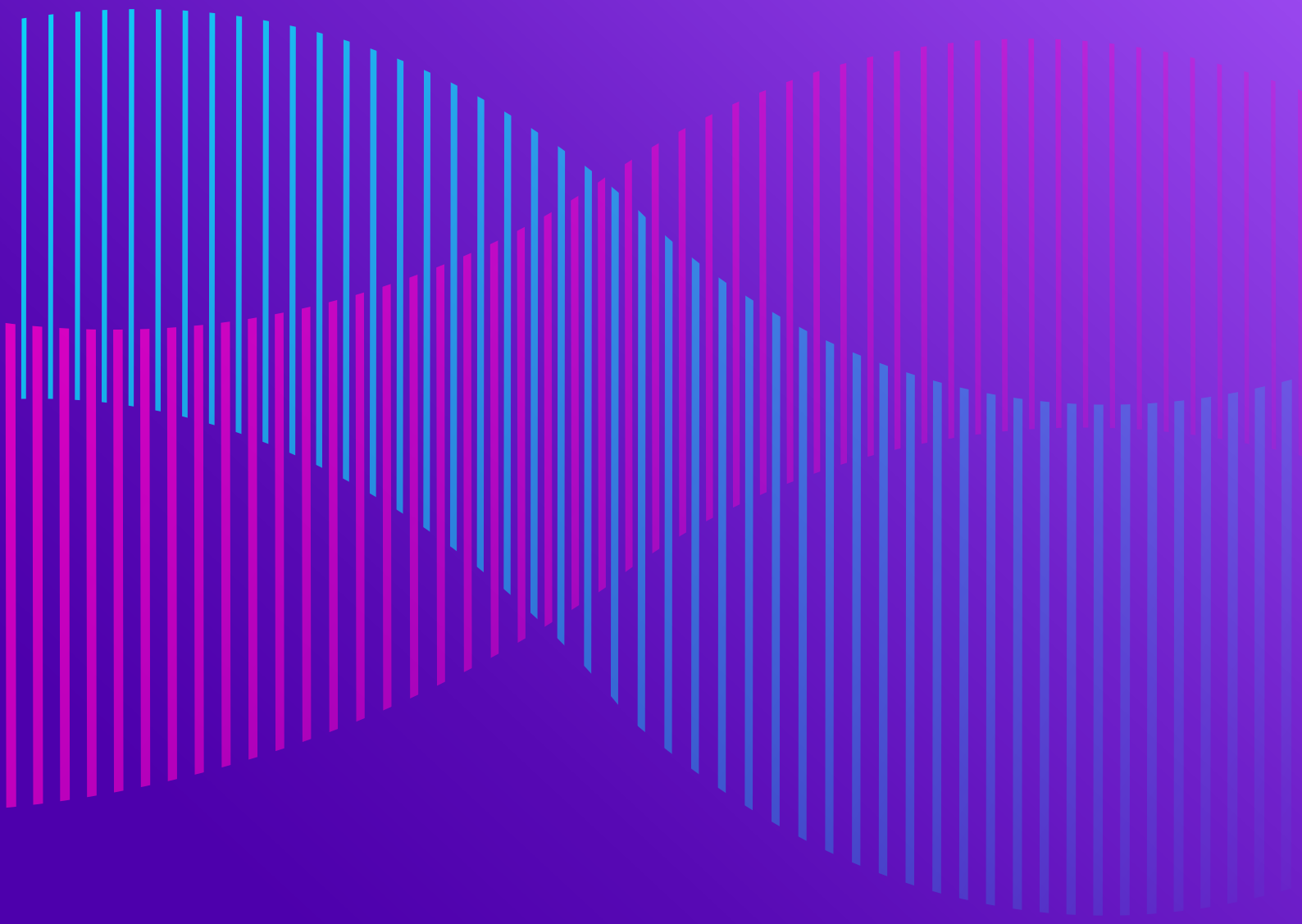
At the Digital Wellness Institute, we advocate for organizations to embrace digital wellbeing, championing policies, training programs, resources, and leadership support as the cornerstones of a digitally balanced workplace. Clarity in communication channels, an accountability structure empowering employees to voice concerns about after-hours emails, and a strategic approach to tech integration are integral components of this paradigm shift.

Much like the transformative impacts of 19th-century factories, digital devices are reshaping our workplaces. But unlike the issues of that era — dangerous conditions, long hours, and child labor — today's challenges require a nuanced response. Policies such as the "right to disconnect" are emerging, signaling a growing understanding of the need for legislative and regulatory frameworks to safeguard human rights in the digital age.

The choices leaders make today will shape the future of happiness. To usher in a tomorrow different from our current reality, leaders must proactively champion policies, practices, and resources that foster digital balance. The data presented in this report serve not only as a wake-up call but as a source of inspiration for leaders ready to navigate the evolving digital landscape and guide their teams toward a more balanced and fulfilling future.

Balancing Needs

Measuring action to support digital wellbeing



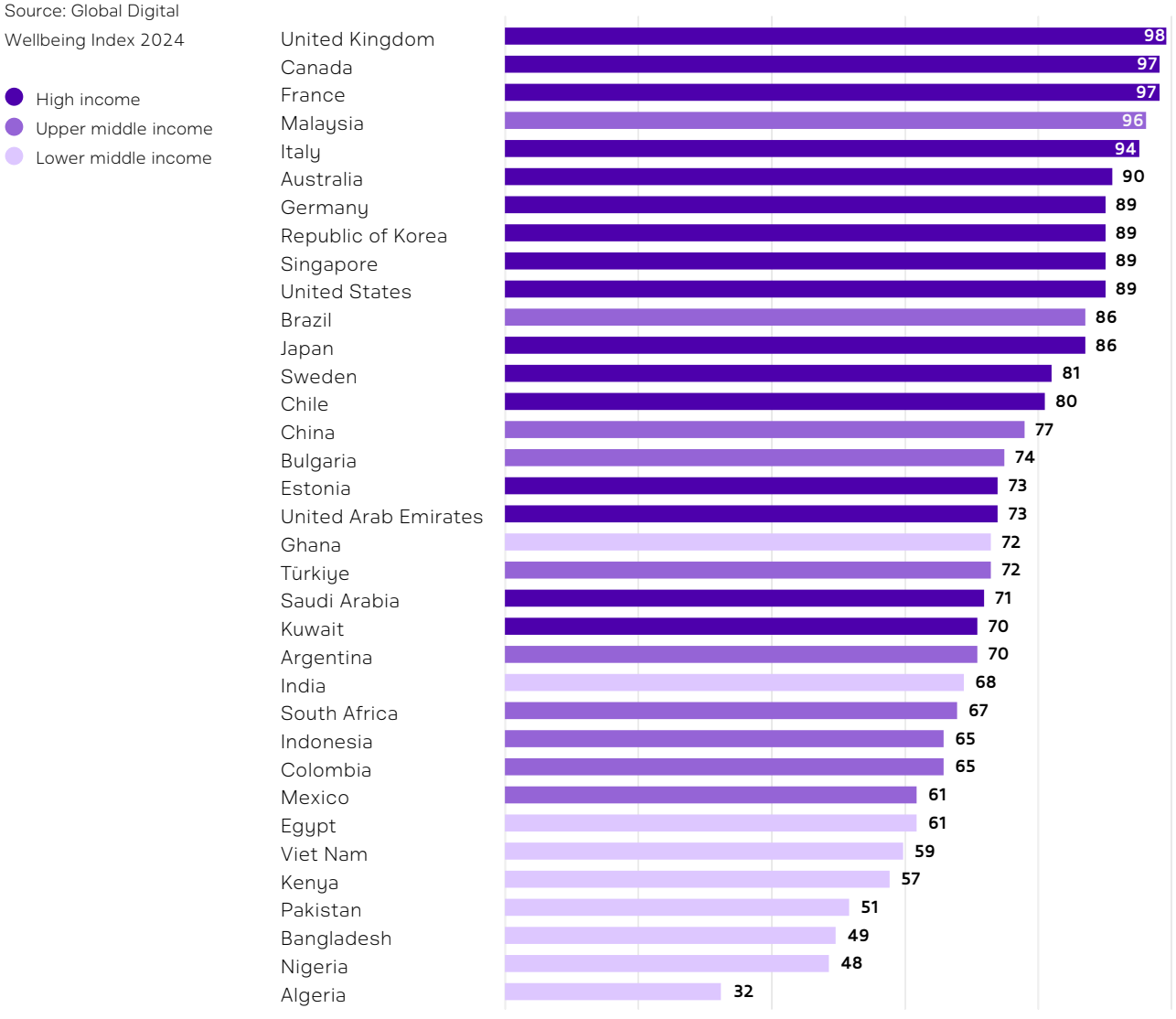
Pillar 1: Social Cohesion

Social cohesion is a vital component in balancing the risks of digital technologies because it underpins the strength and resilience of our interconnected communities and ensures that everyone can benefit. In an increasingly digital world, where information and communication flow across borders and boundaries at an unprecedented pace, digital social cohesion ensures that none of a society's constituent groups are being left our or left behind. Social cohesion promotes a sense of belonging, trust, and shared values, fostering collaboration and cooperation in addressing the challenges posed by digital technologies. It mitigates the risk of fragmentation, polarization, and discord, factors that can disrupt the harmony and stability of our societies, hindering our collective ability to harness the potential benefits of these technologies for the greater good. This pillar of the DWI is measured by looking at three factors: universal access policies, digital literacy, and digital inclusion. These in turn include metrics based on policy research and international databases.

The leader in this pillar is the United Kingdom, followed by Canada, France, Malaysia, and Italy. Affluent countries generally perform best, however, Malaysia, Brazil, China, and Bulgaria stand out among upper-middle-income countries. Lower-middle-income countries such as Pakistan, Bangladesh, Nigeria, and Algeria currently face greater challenges in this domain.

FIGURE 4
Source: Global Digital Wellbeing Index 2024

Social cohesion pillar results, by country and income level



Key findings

- All but four countries have adopted universal access and service policies. Sixteen countries, mostly high income, feature comprehensive regulatory frameworks for information and communications technology (ICT) accessibility. Nine have partial frameworks and ten lack specific frameworks, of which over half are lower-middle-income nations.
- DWI investigated digital literacy initiatives outside formal education, with all countries but one showing some progress. Among middle-income countries, Colombia offers an interesting example (see the following box on digital skills promotion among girls in Colombia).
- DWI measures digital inclusion using the International Telecommunication Union (ITU) gender parity score, showing that more women than men use the internet in some advanced economies. Germany, the United Kingdom, Estonia, Chile, and Australia lead in terms of socio-economic inclusion. Internet coverage is dominated by high-income countries, with the United Arab Emirates and Saudi Arabia the only countries in the index achieving 100%.

Disparities in internet access persist, splitting societies into the connected and unconnected

Based on ITU data, the DWI examines whether countries have adopted a universal access and service policy or rural telecoms development policy. All but four countries (Chile, Colombia, Mexico, and Argentina) have implemented such a mechanism.

DWI research also examined if each government had established a regulatory framework to ensure ICT accessibility for persons with disabilities. A full framework was observed in 16 countries, which were mostly high income. These countries have laws, standards, and guidelines in place to make digital content and services accessible.

India is the only lower-middle-income country in this group. The country's Rights of Persons with Disabilities Act covers provisions related to ICT accessibility. It sets requirements for making digital content and services accessible to persons with disabilities. India has adopted the Web Content Accessibility Guidelines 2.0 Level AA. The National Institute of Speech and Hearing ensures accessibility for persons with communication disabilities, including hearing and speech impairments.[35]

Nine countries have partial frameworks. They have taken some steps to address ICT accessibility for persons with disabilities, but their regulatory frameworks are not comprehensive. They often have laws and standards in place, but there might be gaps in coverage or implementation. Ten countries lack such frameworks, of which more than half are lower-middle-income countries. While they may have laws or acts protecting the rights of persons with disabilities, there is no specific mention of ICT accessibility in their legal framework.

35 The Gazette of India. (2016). "The Rights of Persons with Disabilities Act, 2016". Retrieved from https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2019/11/India_Rights-of-Persons-with-Disabilities-Act-2016.pdf; W3C. (2005, updated 2023). "WCAG 2 Overview". Retrieved from https://www.w3.org/WAI/standards-guidelines/wcag/

Government-led programs can foster greater inclusion

The DWI examined if countries have implemented initiatives to promote digital literacy outside of formal education. Almost all have done so: Algeria was the only country for which we were unable to find evidence of action.

The gender parity score from the ITU measures the share of women who use the internet divided by the share of men who use the internet.[36] The highest scores in the DWI countries are achieved by Estonia, the United States, the United Arab Emirates, Saudi Arabia, Kuwait and the United Kingdom, all scoring above 1. On average, scores from high-income countries do not differ much from those of upper-middle-income countries. However, lower-middle-income countries underperform significantly. Among this group the best score is by Egypt and the lowest by Pakistan.

Promoting digital skills among girls in Colombia

Chicas STEAM 2022 is a collaborative initiative between the Ministry of Information and Communication Technologies and the Maloka Corporation, aimed at promoting the scientific interests of girls and young women aged 12 to 15 through a non-formal education process. The program, conducted virtually over 12 weeks, emphasizes the development of scientific skills and attitudes through meetings, self-guided learning on an educational platform, mentorship sessions with female scientists, engineers, and entrepreneurs, and the provision of a kit containing coding devices.

The program, which originated in 2020 and expanded in 2021, has reached 6,207 girls across all 32 departments of the country. The 2022 edition, with 2,320 scholarships awarded in at least 24 departments, includes a pilot initiative involving 535 girls from public schools in Bogotá. The program has been found to positively impact participants' self-confidence and academic performance, and evaluation results indicate a high level of enthusiasm and readiness for further engagement in science-related activities. The program's nationwide reach has allowed it to successfully engage with diverse communities, including those in underserved areas and ethnic communities

Source: https://www.hhs.gov/about/news/2023/05/23/surgeon-general-issues-new-advisory-about-effects-social-media-use-has-youth-mental-health.html

36 If the score is less than one, men use the internet more than women. Values between 0.98 and 1.02 are considered close enough to 1 to indicate gender parity.

Digital socio-economic inclusion is measured using World Bank data on the proportion of digital payments made or received by the lowest-income 40% of the population compared with the highest-income 60%. Digital payments include digital wallets, credit cards, debit cards, mobile phones, or the internet to pay bills or buy something online. Performance in this indicator is largely led by wealthier nations, with Germany, the United Kingdom, Estonia, Chile, and Australia at the top and higher-income countries performing significantly better on average. Mexico, Nigeria, and Viet Nam face the most challenges in this area.

Lastly, ITU data are used to measure the percentage of households with internet access. Again, richer countries dominate with the exception of Malaysia (4th). The United Arab Emirates and Saudi Arabia are the only two countries attaining 100%. The average for high-income countries is 93%, versus 79% for upper-middle-income, and 53% for lower-middle-income countries.

Pillar 2: Mental Health

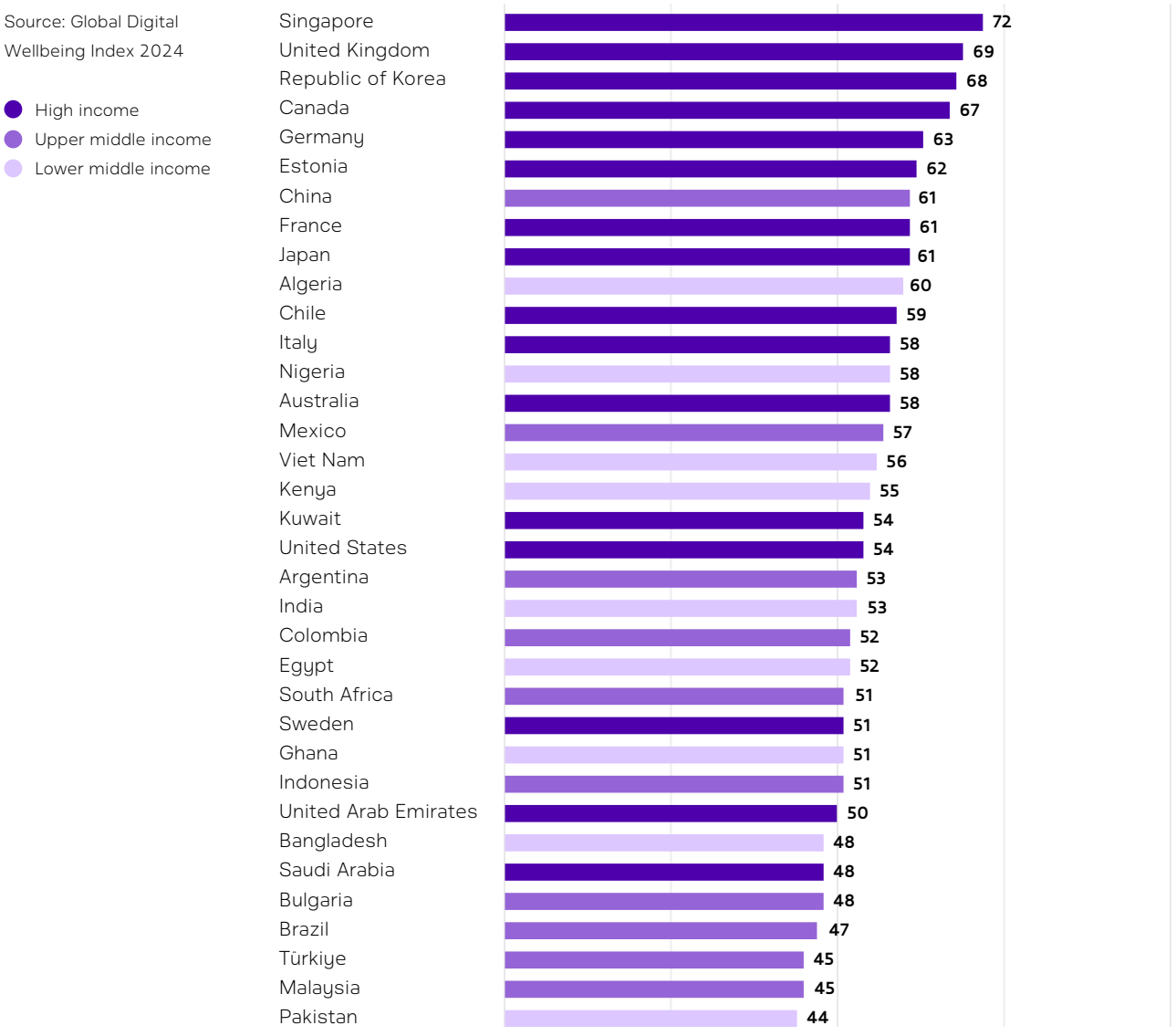
The pervasive use of digital technology, including e-services and smartphones, social media, and online gaming platforms, has brought about profound changes in our daily lives. While these technologies are beneficial, they also pose substantial risks, such as behavioral addiction (problematic use), cyberbullying, information overload and privacy concerns. These risks can take a toll on individuals' mental health, leading to or exacerbating common mental health problems such as mood and anxiety disorders. Understanding the interplay between digital technology and mental health can help societies better reap the benefits of digital technology while tempering its downsides. The mental health pillar in the DWI comprises three factors: policies to support mental health, maintaining mental health, and addictive behaviors (also conceived of as compulsive or problematic use). Conversely, digital technology can also be used to enhance and support mental health and psychological wellbeing. The mental health pillar also considers "digital mental health", the extent to which mental health care and service provision is supported and enhanced by digital technologies.

The best performance in the mental health pillar is by Singapore, followed by the United Kingdom, the Republic of Korea, Canada, and Germany. In general, wealthier nations perform better. Among middle-income countries, China (7th) and Algeria (10th) attain the best scores on this pillar.

Overall performance in the mental health pillar, by country and income level

FIGURE 5

Source: Global Digital Wellbeing Index 2024



Key findings

- Only eight countries, mostly high income, have complete frameworks to support digital mental health. Five countries show evidence of partial frameworks, while 22 lack them. Algeria and China stand out among lower and upper-middle-income countries with policies that support digital mental health.
- The United Kingdom, Singapore, and Canada have successfully integrated digital mental health into school curricula. Eight countries, including Nigeria and India, show partial development. Singapore, meanwhile, emerges as an exemplar, a source of best practices.
- Higher-income countries performed better than middle-income countries in terms of mental health impacts from extended or problematic digital technologies use. India, Bangladesh, Pakistan, and Algeria reported the highest levels of distress associated with excessive or problematic online activity.
- Conversely, advanced economies such as the United States, Australia and Canada reported more psychological distress associated with remote working or studying. Less affluent countries report less negative impact, perhaps reflecting reduced opportunities for remote activities, which can be due to gaps in connectivity infrastructure, lower disposable incomes, and less flexibility of work arrangements.

Vulnerable individuals need better policies to support digital mental health

The DWI examined the integration of digital wellbeing aspects in national digital or ICT strategies, considering the recognition of behavioral addiction/problematic use and the inclusion of mental health in curricula. Recognition of problematic or pathological use appears to be an area for improvement for numerous countries. Only eight, which are mostly high income, display a complete framework, while five show a partial framework. In the other 22 countries, no relevant framework was observed.

Algeria offers an interesting example: in 2016 it opened the government-funded internet addiction rehab clinic, Bachir Mentouri, the first facility of its kind in Africa.[37] China recognized internet addiction as a medical condition in 2008 and has established various facilities. It has also recently defined rules restricting gaming hours for minors (under 18).[38]

The integration of digital wellbeing in school and college curricula shows ample room for improvement across the board to address the adverse impact of digital technology on mental health. Only three countries have a full framework to address this: the United Kingdom, Singapore, and Canada. Eight countries exhibit partial development, of which half are high income in addition to Nigeria and India. Such mechanisms were not observed in the other 24 countries.

Countries can learn best practices from Singapore, a leader in this domain. The Ministry of Education has introduced a cyber wellness curriculum to promote a healthy balance between online and offline activities and to educate students on responsible online behavior. This curriculum, part of "character and citizenship education", emphasizes the wellbeing of students in the digital world. It aims to provide students with the knowledge and skills to use ICT for positive purposes, maintain a positive online presence, and ensure they are safe and responsible users of ICT.[39]

37 Al Jazeera. (2016). "First internet addiction rehab clinic opens in Algeria". Retrieved from https://www.aljazeera.com/news/2016/10/11/first-internet-addiction-rehab-clinic-opens-in-algeria

38 The Guardian. (2028). "China recognises internet addiction as new disease". Retrieved from https://www.theguardian.com/news/blog/2008/nov/11/china-internet; Business Insider. (2021). "China's anti-addiction regulations for video games are making it difficult for game developers to operate — here's why". Retrieved from https://www.businessinsider.in/tech/news/chinas-anti-addiction-regulations-for-video-games-are-making-it-difficult-for-game-developers-to-operate-heres-why/articleshow/87781088.cms

39 Ministry of Education Singapore. (2022). "Practising Cyber Wellness". Retrieved from https://www.moe.gov.sg/education-in-sg/our-programmes/cyber-wellness

Awareness is growing about the mental health impacts of remote work and study

The DWI measured attitudes and behaviors concerning digital technologies and mental health through three indicators: impact of remote work and study, impact of technology, and impact of spending excessive time online. Overall, Kuwait, Argentina, Chile, Viet Nam, and Egypt show the strongest performance as these countries did not display a high level of adverse impact from technology. While there is no significant variation in overall performance among income groups, there are different patterns across countries in the specific type of negative impacts of digital technology.

The survey explored the perceived psychological implications of extended digital technology use, including mood swings, guilt, reduced confidence, depression, anxiety, fatigue, stress, and loneliness. The strongest impacts were reported in Bangladesh, India, the United Arab Emirates and Malaysia. When people were asked how technology impacts their mental health overall, the most negative sentiment was observed in Estonia and Japan and the most positive in China, Nigeria, and Egypt.

Considering the adverse mental health impacts of remote work and study, the DWI survey asked participants to select the emotional states they experienced weekly while working or studying remotely. Options included loneliness, difficulty concentrating, stress, motivation challenges, physical exhaustion, sleep problems and irritability. Respondents in high-income countries such as the United States, Canada, Australia, China, and France reported the most detrimental impacts, which may reflect the fact that remote work is more prevalent in larger, more advanced economies.

The intensity of digital activity is a concern, especially in middle-income countries

When examining addictive/problematic behaviors, the DWI survey considered binge watching, gaming, and social media use. Wealthier countries largely display the lowest rates of problematic use, with Sweden, Germany, Italy, the United Kingdom, and France reporting the lowest prevalence. The Republic of Korea's biggest struggle is with binge watching, for Germany, France, and the United Kingdom it is social media, and Japan's is gaming. Overall, the reported adverse impacts from excessive online activity were strongest in Pakistan and India.

Regarding the impact of the use of digital devices on healthy behaviors (sleeping and eating regularly), richer countries again topped the table with the United Kingdom, Japan, Estonia, Canada, and the United States leading. Egypt, Algeria, Pakistan, and Bangladesh reported the highest frequency of respondents skipping sleep or a meal due to the use of technology.

Lastly, the DWI considered the average amount of time spent by users aged 16 to 64 years each day on a device, based on the Global Digital Report 2023 by We are Social and Meltwater. The highest amount of time, with more than 500 minutes, was observed in South Africa, Brazil, Argentina, Colombia, and Chile, with the lowest in the Republic of Korea (321 minutes), Germany (312 minutes), and Japan (225 minutes).

Electropollution needs to be made more visible

Dr. Marlena Kruger
CEO and Founder, MindUnique Education and the TechnoLife Wise Foundation

While advising on the development of the DWI, I was also contributing to The International Declaration on the Human Rights of Children in the Digital Age. I'm pleased to see the index address two of the three concerns highlighted in the Children's Declaration: the risks of screen addiction and commercial exploitation of data. But the third concern is not highlighted in the index, so I want to raise it here.

That concern is involuntary exposure to non-ionizing radiation, or NIR, often also known as electropollution. Exposure to electropollution comes from a range of sources — from cell phones and tablets to Wi-Fi routers to cell phone masts — and a growing body of scientific evidence gives cause for concern that it may be linked to a host of human health conditions, from brain fog to cancer. Children, with their growing bodies, may be especially vulnerable.

Such concerns are often summarily dismissed, including by international and many national health authorities. As a qualified radiographer and a digital wellbeing coach, I can foresee that in the future we may look back on today's relaxed attitudes to electropollution with the same kind of horror as today we look back on earlier dismissal of concern about smog in our cities, or fumes from leaded petrol. Health authorities once said these were nothing to worry about, too.

It's easy to understand why we are reluctant to face up to the possibility that our devices may be doing us physical harm: those devices are everywhere. If we decide there is a need to protect ourselves, it would involve fundamentally questioning assumptions and rethinking systems that have rapidly become integral to modern life. But the longer we delay facing the issue, the more challenging the task will become.

First, we need to create more awareness and quantify the risks to inform discussion. We could start by systematically gathering the kind of data that might potentially be included in future editions of the DWI. For instance, affordable handheld devices exist to measure NIR. It would be interesting to see cross-country comparisons of measurements taken in representative locations, from city streets to schools and homes.

Other data could be easier to map from existing sources, such as the concentration of cell phone masts per square kilometer, or differences between nations in policy approach — some have more stringent regulations than others. This report represents a valuable step in recognizing the need to balance the positive and negative effects of digital technologies, but we must also take electropollution seriously among the negatives.

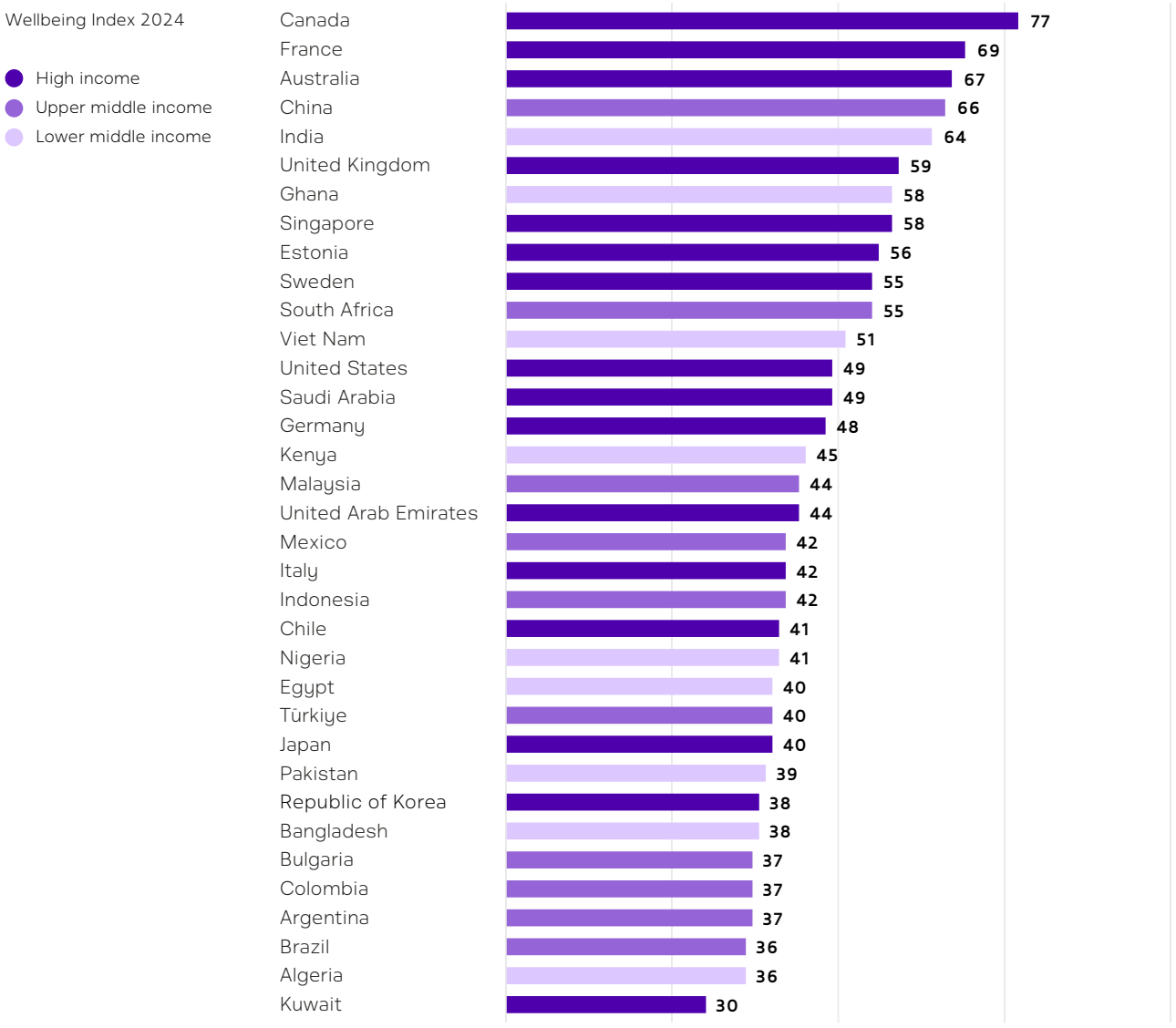
Pillar 3: Physical Health

The typically sedentary nature of prolonged screen time, whether for work or recreation can lead to a range of health issues such as obesity, musculoskeletal problems, and cardiovascular conditions.[40] Poor physical health can impair the ability to concentrate, manage stress, and engage with technology responsibly. Frequent use of digital devices has also been linked to sleep disturbances and reduced physical activity, both of which are essential for maintaining overall wellbeing. A holistic understanding of the risks associated with digital technologies must consider their impacts on physical health, as this plays a role in shaping our ability to harness the benefits and mitigate the downsides of digital technology. Three factors are assessed within the physical health pillar: policies to support physical activity, maintaining physical health, and physical inactivity.

Canada, France, and Australia lead in this pillar. Overall, high-income countries attain higher scores, but are closely followed by middle-income countries, in particular with China, India, Ghana, South Africa, and Viet Nam in the upper part of the distribution.

FIGURE 6
Source: Global Digital Wellbeing Index 2024

Overall performance in the physical health pillar, by country and income level



40 Costigan, S. A., Barnett, L., Plotnikoff, R. C., & Lubans, D. R. (2013). The health indicators associated with screen-based sedentary behavior among adolescent girls: a systematic review. Journal of Adolescent Health, 52(4), 382-392.

Key findings

- The DWI analyzed government recommendations on the healthy use of digital technologies, with eight countries, mostly high-income ones, showing clear action. Only Canada, India, Estonia, and Ghana fully addressed physical health risks in school curricula.
- Affluent nations such as Italy, the United Kingdom, Sweden, France, and the United States reported the lowest levels of adverse physical impacts from digital technologies and disruptions to offline activities. Physical inactivity is generally more prevalent in Latin American and Gulf countries such Kuwait, Saudi Arabia, the United Arab Emirates, Brazil, Colombia, and Argentina.

Policies to support physical activity are still in the early stages

The DWI examined whether governments have published recommendations on the healthy use of digital technologies, considering, for example, screen time, audio levels for safe hearing, and the use of blue light filters. Fifteen countries display some progress here, with eight countries — Australia, Canada, China, France, Saudi Arabia, Singapore, South Africa, and the United Kingdom — featuring comprehensive guidelines.

In 2018, South Africa introduced a 24-hour movement guideline for children aged zero to five years, offering recommendations concerning physical activity, sedentary habits, screen time, and sleep.[41] Saudi Arabia's Ministry of Health addresses this topic on its website, with recommendations on safe screen time for children up to 18 years based on guidelines from the American Academy of Pediatrics.[42]

The DWI examined if curricula include learning about the potential physical health risks associated with digital tech use. This appears to be an area for improvement across the board, as only four countries report full achievement: Canada, India, Estonia, and Ghana. Ghana could be a source of best practices for other lower-middle-income settings: its computing curriculum addresses the physical health hazards associated with technology use such as wrist pain and sitting posture, including guidelines for proper posture, wrist support, and regular breaks.[43]

Increasing technology use makes maintaining physical health a challenge

This aspect is assessed through three survey-based indicators — the physical health impacts of technology, the impact of spending vast amount of time online, as well as the impact of technology on healthy habits. Italy, Sweden, the United Kingdom, France, and China attain the highest scores, displaying healthy technology usage habits. On average, scores are higher in higher-income segments.

41 Laureus. "South African 24-Hour Movement Guidelines for Birth To Five Years". Retrieved from https://www.laureus.co.za/wp-content/uploads/2018/11/EYMG-2-pager-ONLINE.pdf; The Conversation. (2019). "Here's how much kids need to move, play and sleep in their early years". Retrieved from https://theconversation.com/heres-how-much-kids-need-to-move-play-and-sleep-in-their-early-years-107024

42 Ministry of Health Kingdom of Saudi Arabia. "Child Health". Retrieved from https://www.moh.gov.sa/en/HealthAwareness/EducationalContent/BabyHealth/Pages/004.aspx

43 Ministry of Education Ghana. (2019). "COMPUTING CURRICULUM FOR PRIMARY SCHOOLS (BASIC 4 - 6)". Retrieved from https://nacca.gov.gh/wp-content/uploads/2019/04/COMPUTING-B4-B6.pdf; Ministry of Education Ghana. "ICT in Education Reform". Retrieved from https://moe.gov.gh/index.php/ict-in-education-reform-2/

The survey asked about digital technology's impacts on physical health. The highest and more positive scores were attained by China, Nigeria, Kuwait, and Singapore, where respondents believed digital technology improved their physical health. Then the survey asked about physical symptoms such as dry eyes, blurred vision, headache, neck or back pain, wrist pain, decreased sleep quality, and tiredness. The highest scores for these issues were recorded in Italy, France, the United Kingdom, Germany, and the United States. The least impact on offline activities — spending time with family or friends, or at work or school — were recorded in wealthier countries, with Italy, the United Kingdom, Sweden, France, and the United States at the top. These nations reported relatively minimal interference in their offline activities due to their use of digital technology.

Lastly, physical inactivity among adults was examined based on data from the World Health Organization. The highest prevalence of physical inactivity is observed in Kuwait, Saudi Arabia, Brazil, Colombia, and Argentina. In general, high-income countries have the highest rates of inactivity, followed by upper-middle-income and lower-middle-income countries.

Policy perspectives

Unveiling trends in digital wellbeing

Analysis of digital policies across income categories reveals variations in the adoption of key initiatives. Figure 7, shown below, presents the frequency with which full policy frameworks were evaluated in the DWI, excluding partial frameworks. While high-income countries generally lead, there are areas where middle-income countries are highly active, such as in inclusive education.

The existence of local social engagement platforms is significantly higher in the high-income group, at 75%, compared with 50% in upper-middle-income countries and 22% in lower-middle-income nations. Recognition of online micro-credentials is robust across all income categories.

In terms of remote work policies, there is a stark contrast: 63% of high-income and 70% of upper-middle-income countries recognize it by law, while none of the lower-middle-income countries do. The concept of a digital nomad visa is more prevalent in upper-middle-income countries (50%), with no cases among the lower-middle-income nations examined.

Policies for promoting culture exhibit disparities, with high-income countries leading, at 75%, followed by 60% in upper-middle-income countries, and 33% in lower-middle-income nations. ICT accessibility for people with disabilities is highest in high-income countries, at 63%. Digital learning initiatives for all are widely available across all income categories, but lower-middle-income countries show the highest frequency, at 89%.

Results are mixed when it comes to recognizing online addiction/problematic technology use and integrating digital mental health into curricula. High-income countries lead in recognizing online addiction, at 38%, while digital mental health in curricula is minimal across all income categories and absent in all middle-income countries.

The right to disconnect is acknowledged in some high-income countries (38%) and upper-middle-income countries (30%) but is absent in lower-middle-income nations. Fake news awareness initiatives are more prevalent in upper-middle-income countries (60%), while learning about disinformation in curricula is most common in high-income countries (81%).

Education for parents on children's digital safety is remarkably high in lower-middle-income countries (78%), with similar rates in this grouping for education for parents on control tools and cyberbullying (67% and 56%).

When all countries are considered, it is evident that some policy areas are more established than others. Recognition of micro-credentials is evidenced in 83% of countries, and a similar percentage have digital learning activities for all. Conversely, the policy areas with the lowest frequency in the index are the inclusion of digital mental health and digital physical health in curricula. Cyberbullying in curricula is also rarely evidenced (in only 17% of countries), as well as recognizing online addiction/problematic technology use (23%).

FIGURE 7

Source: Global Digital Wellbeing Index 2024

Frequency of full policy frameworks in DWI income groups (%)

Pillar 4: Ability to Disconnect

In our fast-paced, increasingly digital world, where smartphones, social media, and online platforms are deeply embedded in our routines, the act of disconnecting is vital for preserving and promoting our mental health. Intentional use and intentional disconnecting empower individuals to take charge of their relationship with technology as well as protect their privacy. There is a growing recognition of the benefits of unplugging, leading to governments working on relevant legislation for example the right to disconnect. Users are also increasingly mindful of striking a healthy balance between their online and offline activities. When assessing the ability to disconnect, the DWI considers three factors: policy/legislation on the right to disconnect, perceptions of the ability to disconnect in the context of work and study, and the adoption of individual measures to ensure digital wellbeing.

Performance in this pillar is strongest in Australia, Italy, Germany, France, and Canada. On average, advanced economies attain the best scores, followed by upper-middle-income countries and the lower-middle-income group. However, the average performance hides some disparities among income levels. For example, Singapore, the United Arab Emirates, and Kuwait attain low scores while Argentina, Mexico, and Colombia rank among the top.

Overall performance in the ability to disconnect pillar, by country and income level

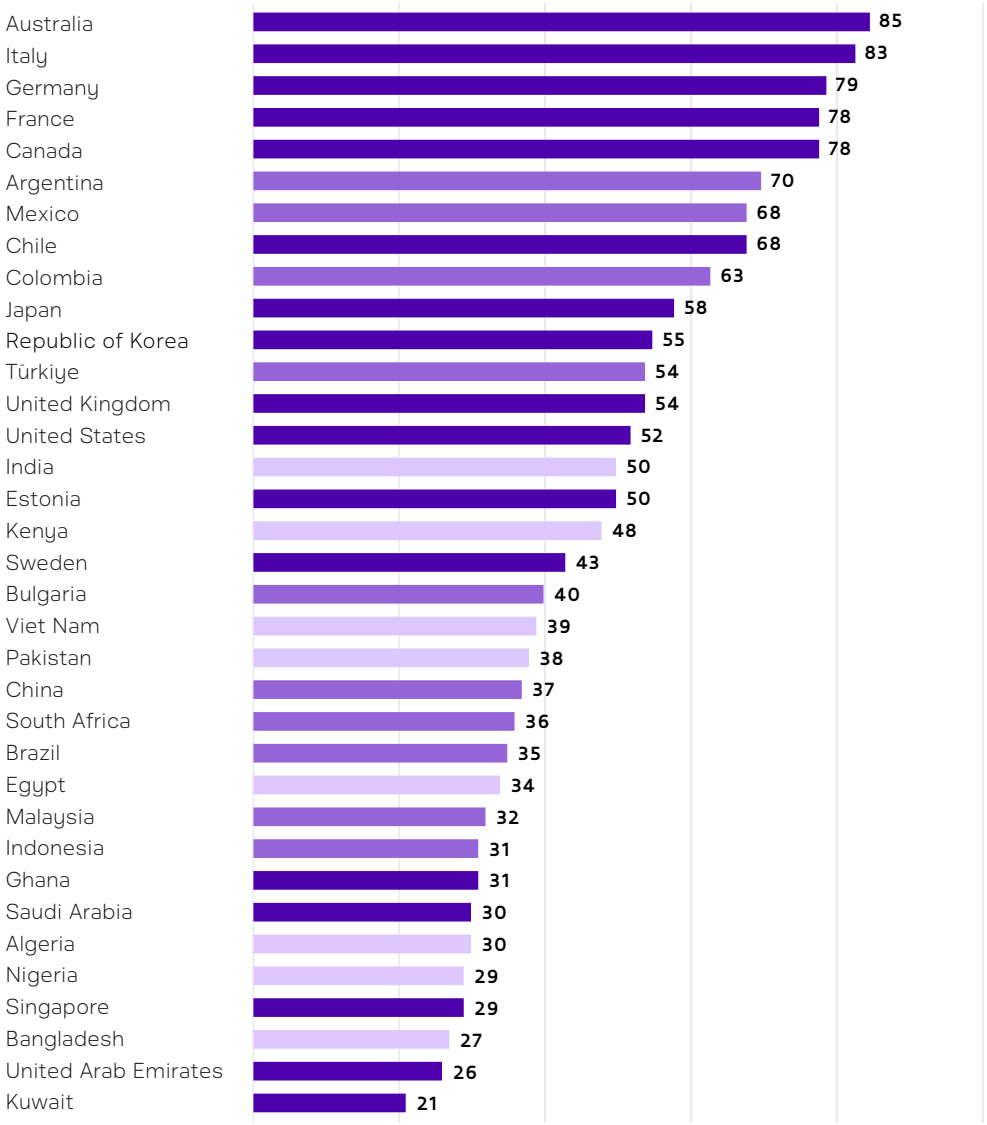


FIGURE 8

Source: Global Digital Wellbeing Index 2024

Key findings

- Nine countries in the DWI have established legislation on the right to disconnect: Australia, Argentina, Canada, Chile, Colombia, France, Germany, Italy, and Mexico.
- The survey assessed perceptions around maintaining healthy boundaries among remote workers and students. No significant difference in challenges was observed across income segments. While some lower-middle-income countries attain the highest positions, certain high-income countries report the most challenges.
- The survey examined the measures individuals adopt to preserve digital wellbeing during remote work or study (using standing desks, taking regular breaks, etc.). The United Kingdom, Australia, the United States, Italy, and France showed the highest adoption of such measures, with higher-income countries leading overall.

Policies on the right to disconnect show potential around the world

The DWI examined whether countries have developed legislation recognizing the right to disconnect: 15 out of the 35 countries report some progress, with nine showcasing comprehensive legislation. Six of these are high-income countries (including Germany, Italy, Australia, and France), and three are upper-middle-income nations (Colombia, Argentina, and Mexico).

Chile has legislation stipulating that employees who have the flexibility to determine their work hours (including telecommuters not bound by specific time constraints) are granted the right to disconnect. Employers are prohibited from reaching out or requiring work for a minimum of 12 consecutive hours within a 24-hour timeframe.[44] Italy's Law no. 81 of 2017 acknowledges the right to disconnect for employees who have an individual agreement with their employer allowing them to work both on the company's premises and in other locations using technological tools.[45] Countries that have only partially developed a framework include Kenya[46] and the Republic of Korea,[47] which have proposed relevant bills.

Users in all kinds of countries struggle to maintain healthy digital boundaries

The DWI survey asked participants to assess the ease or difficulty of maintaining boundaries between remote work or study and personal life. This can encompass aspects such as having a dedicated workspace, following regular work and rest schedules, refraining from multitasking, and disconnecting from work-related tasks at the end of the day. Overall, the most positive response was observed in China, the United States, Egypt, India, and Germany, representing a mix of income levels. Indeed, when considering averages, there does not seem to be a considerable difference across income segments. While some lower-middle-income countries attain the highest positions, Italy, Japan, and the Republic of Korea are among those reporting the most challenges in this regard.

44 Lano. (2022). "The right to disconnect: Where are remote employees allowed to go offline?". Retrieved from https://www.lano.io/blog/the-right-to-disconnect-where-are-remote-employees-allowed-to-go-offline; Boundless. "Employee rights in Chile". Retrieved from https://boundlesshq.com/guides/chile/employee-rights

45 Wardyński & Partners. (2021). "THE RIGHT TO DISCONNECT: Real relief for employees or just additional obligations for employers?" Retrieved from https://codozasady.pl/upload/2021/06/the-right-to-disconnect.pdf

46 World Economic Forum. (2023). "Right to disconnect: The countries passing laws to stop employees working out of hours". Retrieved from https://www.weforum.org/agenda/2023/02/belgium-right-to-disconnect-from-work/; Quartz. (2023). "A bill now seeks to give Kenyans the 'right to disconnect' after work". Retrieved from https://qz.com/the-right-to-disconnect-after-work-is-coming-to-kenya-1850032220

47 Fedee. (2022). "South Korea: National Assembly debates right to disconnect Bill". Retrieved from https://www.fedee.com/member-news/south-korea-national-assembly-debates-right-to-disconnect-bill; The Korea Times. (2021). "Workers seek 'right to disconnect'". Retrieved from https://www.koreatimes.co.kr/www/nation/2023/06/113_321292.html

The DWI survey asked about measures individuals employ to ensure their wellbeing while working or studying remotely. Respondents could select multiple options such as taking tech-free breaks, doing eye exercises, using physical wellbeing equipment such as ergonomic chairs or standing desks, focusing on in-person social interactions, participating in physical activities, or monitoring health with technology. The United Kingdom, Australia, the United States, Italy, and France showed the highest degree of adoption of these practices.

Behavioral science can help us disconnect and find a better balance

Dr. Mohammed Alhajji
Director of the Behavioral Insights Unit, Ministry of Health, Saudi Arabia

The Global Digital Wellbeing Index report clearly shows that people around the world struggle to disconnect. This is due largely to the incentives faced by the big tech companies: social media has turned into a gigantic slot machine in its ability to lure users in and get them addicted. Hyperconnection to the digital world has rising opportunity costs — on our social, mental, physical, cognitive, and spiritual health — and lies at the root of many other problems. Something has to be done. Behavioral science might have the answer.

Research suggests that successful behavioral change interventions depend on three factors: opportunity, motivation, and capability. That means agents of change — governments, corporates, or non-government organizations — must start by creating social and physical opportunities for people to be offline without severe consequences. This will be challenging, given our increasing dependence on digital technologies, but it can be done.

Next, they must provide more motivation to disconnect by offering behaviorally informed offline alternatives that are as rewarding and fulfilling to humans' fundamental needs, such as status and belonging. While the private sector leads the way in using psychological insights to inform product design and implementation, governments are catching up. For instance, our experience in the Saudi Arabian Ministry of Health's Behavioral Insights Unit has shown tremendous promise in improving public uptake of programs and services.

The digital world can be one of humanity's best inventions — but only if living in that world takes less of a toll. A growing number of families and communities are realizing the need to achieve a better balance by reducing their online presence and finding other ways to enrich their lives. The onus is on governments to nurture and scale up this movement.

Pillar 5: Information Quality

In today's attention economy, individuals are bombarded with digital content, including online news, social media posts, and a host of other information resources. The accuracy, credibility, and reliability of this information can significantly impact psychological and social wellbeing. Misinformation, disinformation, and low-quality content can lead to confusion, anxiety, and polarized beliefs, exacerbating the risks related to digital wellbeing. Evaluating and understanding the quality of information is crucial to address the potential adverse effects on individuals' wellbeing and ensure that they can navigate the online world with greater resilience and discernment.

This DWI pillar considers two factors — institutional support and combating disinformation — using metrics based on policy research and the DWI survey.

Performance in this pillar is led by Estonia, followed by Argentina, Canada, and Singapore, with mostly high-income countries in the top ten. On average, the performance of the high-income group is similar to the upper-middle-income segment, but the lower-middle-income countries show the most room for improvement.

Overall performance in the information quality pillar, by country and income level

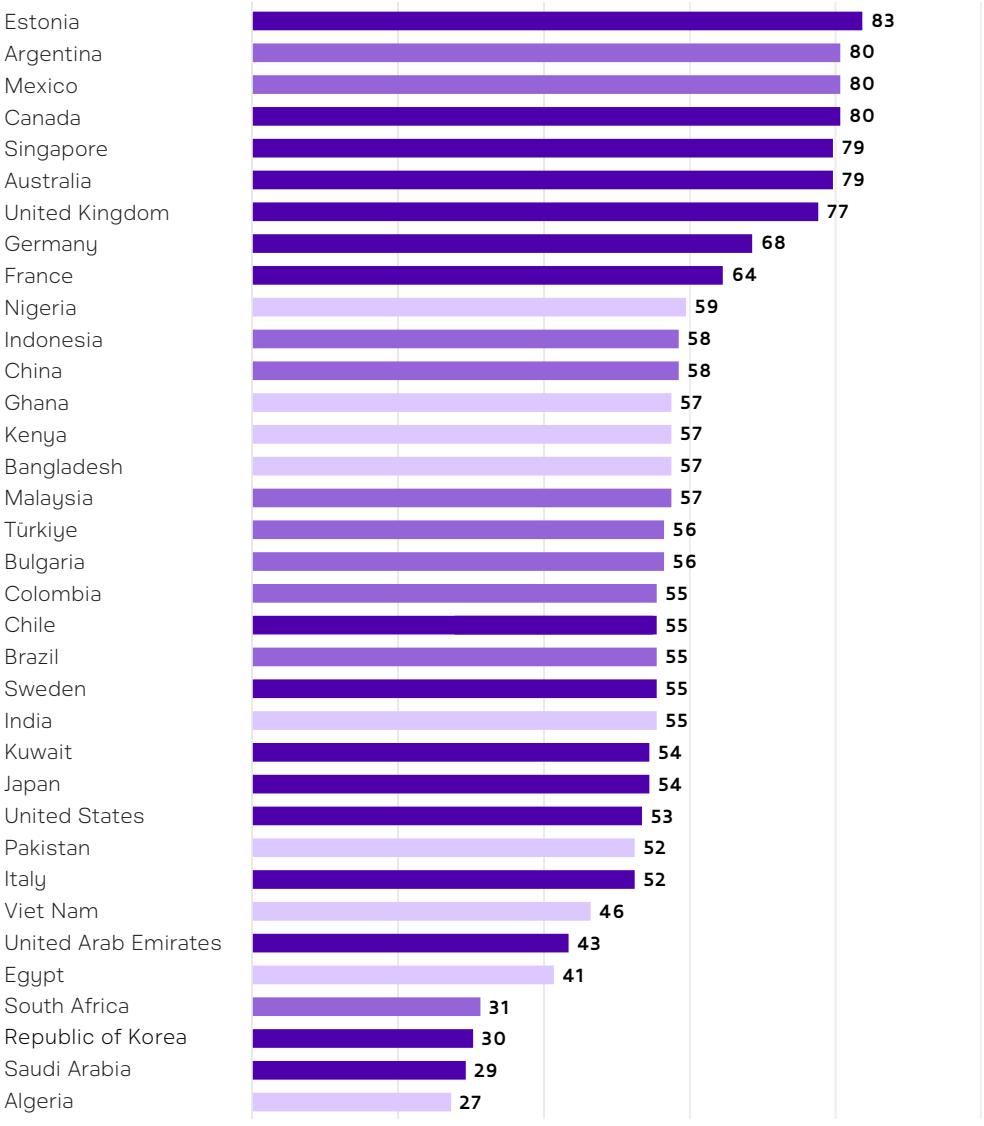


FIGURE 9

Source: Global Digital Wellbeing Index 2024

Key findings

- Fourteen countries, including Australia, Canada, Brazil, Malaysia, Bangladesh, and India, show clear government action against misinformation. Seventeen are integrating disinformation awareness in curricula — most are high-income countries, but Mexico, Colombia, and Kenya number among this group.
- Trust in online information is highest in Nigeria, followed by Bangladesh, Germany, Estonia, and the Republic of Korea. Trust levels are generally similar across income levels. Viet Nam, Indonesia, Malaysia, India, and China are the most active in verifying information accuracy.

Misinformation and disinformation require decisive government action

The DWI examined whether governments have initiated action on misinformation, distorted information, or content generated by artificial intelligence. While 23 countries exhibit some activity in this regard, only 14 have tackled these problems with robust systematicity. This group includes countries from all income levels, such as Australia, Canada, Brazil, Malaysia, Bangladesh, and India.

One example combating misinformation comes from a joint initiative by the Government of Nigeria, UNESCO, and others. This initiative highlights empowering individuals with media and information literacy skills as the most enduring approach to mitigate the impacts of misinformation and disinformation in society.[48] Another example of work in this area come from Indonesia, where the Ministry of Communication conducted weekly sessions addressing "fake news" to inform the public about disinformation. The Indonesian government has also organized events focused on developing strategies to combat information hoaxes.[49]

48 UNESCO. (2022). "UNESCO, Nigerian Government and stakeholders call for promotion of Media and Information Literacy to mitigate disinformation and misinformation". Retrieved from https://www.unesco.org/en/articles/unesco-nigerian-government-and-stakeholders-call-promotion-media-and-information-literacy-mitigate

49 APHR. (2020). "The fights against 'fake news' in Indonesia". Retrieved from https://aseanmp.org/2020/11/09/the-fights-against-fake-news-in-indonesia/; KOMINFO: https://www.kominfo.go.id/search?search=fake+news&_token=LG0wlnplrejKjZolrDQEZiFltz1kzJiLqZz1DPyDe

Brazil's "fake news" bill

Referred to as the "fake news law", bill 2630 aims to establish the Brazilian Law of Freedom, Responsibility and Transparency on the Internet, focusing on regulations for transparency in social networks and private messaging services. It emphasizes the responsibility of service providers in combating misinformation and enhancing internet transparency, particularly in sponsored content. The law also addresses the role of the public sector and introduces sanctions for non-compliance with the specified regulations.

Source: https://www25.senado.leg.br/web/atividade/materias/-/materia/141944

The DWI examined if curricula include learning about recognizing disinformation. While 21 countries are making progress in this regard, only 17 show clear measures. Most of these are high-income countries, but the group also includes Mexico, Colombia, and Kenya. In Estonia, for example, the national curriculum for basic schools (grades 1-9) states that students must understand the need for critical assessment of information found on the internet; they must assess the objectivity of information sources and find, if necessary, sources offering alternative viewpoints concerning the same topic. The national curriculum for upper secondary schools (grades 10-12) defines digital competence as the ability to use digital means for finding and preserving information and to evaluate the relevance and trustworthiness of the information.[50]

Mistrust in digital sources is a problem everywhere

The DWI survey asked respondents to rate their trust in online information on a scale from one (complete trust) to five (complete distrust). The highest trust in online information is observed in Nigeria, followed by Bangladesh, Germany, Estonia, and the Republic of Korea. On average, there is almost no difference across income levels. The countries showing the lowest levels of trust are Pakistan, France, Italy, Egypt, and India. Lastly, the survey asked about the steps respondents take when they question the accuracy of online information. They could choose from various options, such as checking multiple sources, reviewing social media comments, using fact-checking websites, and assessing authors' reputations. The strongest response was found in Viet Nam, Indonesia, Malaysia, India, and China. On average, the strongest scores are from the upper-middle-income group, followed by lower-middle-income countries.

50 Republic of Estonia, Ministry of Education and Research. "National curricula". Retrieved from https://www.hm.ee/en/national-curricula; "General Provisions of national curriculum for upper secondary schools". Retrieved from https://www.hm.ee/en/media/1983/download

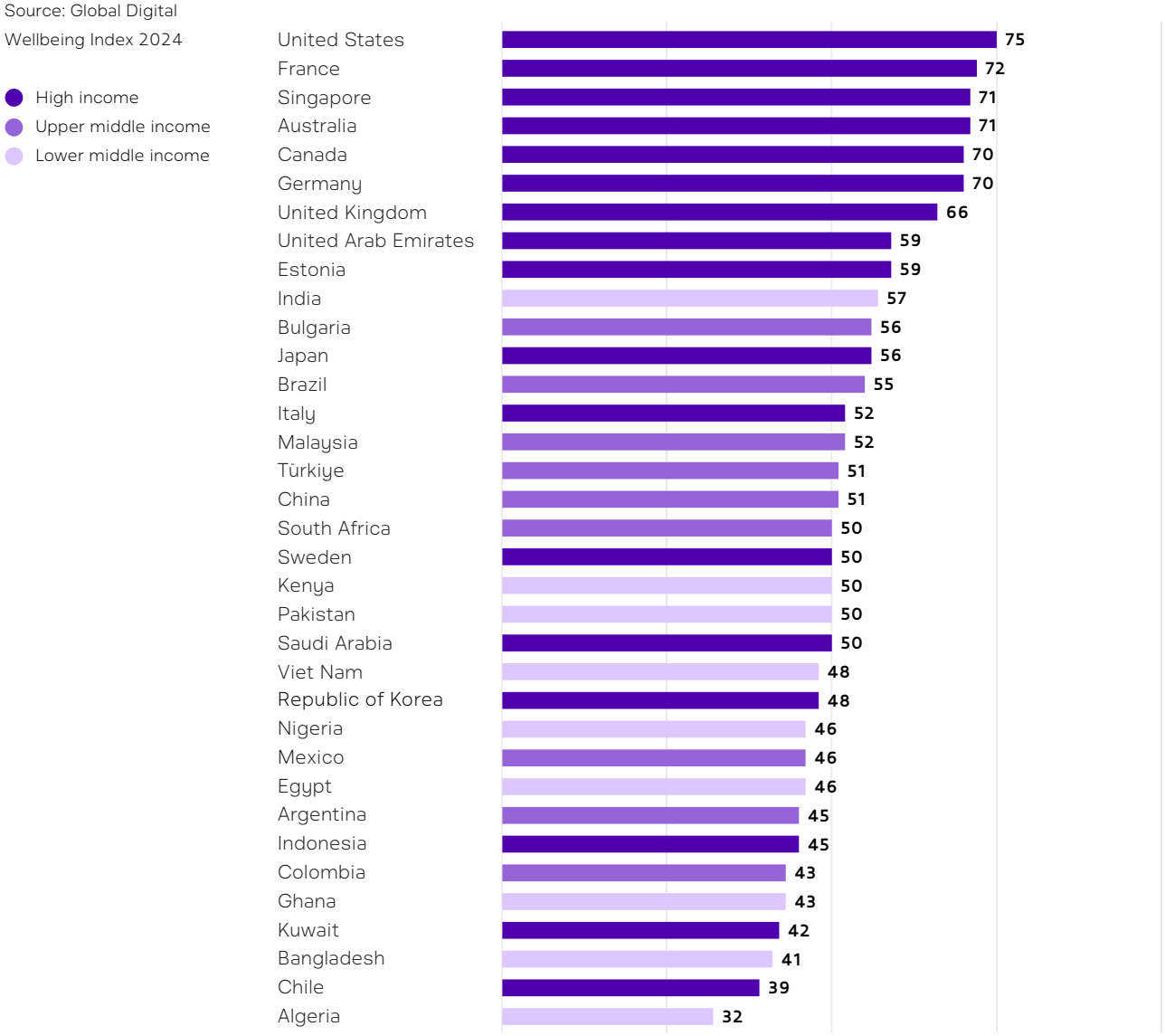
Pillar 6: Cybersafety

In our increasingly interconnected world where both individuals and organizations depend heavily on digital platforms, safeguarding personal and sensitive information is a top priority. The threats linked to digital technologies, including data breaches, cyberattacks, online harassment, and identity theft, can significantly impact individuals' psychological and financial wellbeing. Formulating robust strategies and safeguards to shield individuals and organizations from potential digital harms contributes to creating a safer and more secure online environment for everyone. This DWI pillar is based on four factors: data safety policies, protecting personal data, cyberbullying and cybersafety policies, and cyberbullying interventions.

The top performers in this pillar are the United States, France, Singapore, and Australia, with high-income countries occupying all but one of the top ten spots. India, a lower-middle-income country, stands out in 10th position.

FIGURE 10
Source: Global Digital Wellbeing Index 2024

Overall performance in the cybersafety pillar, by country and income level



Key findings

- The United States, Saudi Arabia, the United Kingdom, Estonia, Singapore, and the Republic of Korea lead in cybersecurity commitment based on legal, technical, and organizational measures. Malaysia and India stand out among middle-income countries. Upper-middle-income countries lead in cybersafety governance frameworks, and more secure internet servers are found in advanced economies.
- Australia, Estonia, and Japan exhibit the least exposure to cyber threats. VPN adoption is highest in the United Arab Emirates, Singapore, and Saudi Arabia. Australia, China, and Canada lead in user strategies to protect personal data, with wealthier countries generally performing better.
- The United States leads in cyberbullying and cybersafety policies, followed by Canada, France, and Singapore. India and Brazil rank highest in their respective income groups. Policies for parents (e.g. toolkits to deal with cyberbullying) are more established, while policies for children and youth (e.g. such cyber wellness in education curricula) are less common, especially in middle-income countries.
- Cyberbullying prevalence is 19% in high-income countries, 23% in upper-middle-income countries, and 31% in lower-middle-income countries. India leads in user response to cyberbullying, while the most substantial emotional repercussions (e.g. feelings of social isolation, anxiety, loneliness, and sadness) are reported in India, Singapore, and the Republic of Korea.

Middle-income countries face more challenges in data safety

To assess cyber-threat exposure, the DWI relies on the Cybersecurity Exposure Index by PasswordManagers.co.[51] High-income countries occupy the safest 12 positions, with Australia, Estonia, and Japan at the top. On average, scores significantly increase with income level. The DWI survey also examined what strategies have been adopted to protect personal data. The leaders are Australia, China, Canada, India, and Germany. Affluent countries attain the strongest performance, but not by a large margin. These metrics together show that middle-income countries are highly exposed.

Based on data from the ITU, the United States, Saudi Arabia, the United Kingdom, Estonia, Singapore, and the Republic of Korea exhibit the strongest commitment to cybersecurity. High-income countries tend to outperform the lower-income groups, with some exceptions: Malaysia is placed 8th and India 12th. Cybersafety governance frameworks are also assessed using ITU data, considering the existence of a data protection authority, an internet regulatory authority, and a consumer protection authority. These three mechanisms are in place in 11 countries, from across income groups — including, for example, France, Australia, India, Nigeria, Bulgaria, and South Africa. On average, upper-middle-income countries achieve the best performance, followed by lower-middle-income countries and high-income ones.

The VPN adoption rate is measured with data from Atlas VPN. In countries with internet restrictions that ban social media platforms, websites, and applications, users turn to VPNs to avoid these restrictions and other censorship tools. Others use VPNs to access geo-blocked streaming services, or to ensure their privacy and security online.[52] The highest adoption rates are found in the United Arab Emirates, Singapore, and Saudi Arabia, followed by Kenya and Kuwait. On average, high-income countries have higher adoption rates, followed by upper-middle-income countries and lower-middle-income ones.

51 The score comprises six dimensions: exposure to cybersecurity crimes such as malware encounter rate, ransomware encounter rate, cryptocurrency mining encounter rate, drive-by download page encounter rate, cloud provider related incoming attacks, and level of commitment to cybersecurity.

52 Atlas VPN. "Global VPN Adoption Index". Retrieved from https://atlasvpn.com/vpn-adoption-index

The DWI also considered secure internet servers per million inhabitants. The highest density is observed in the United States, Singapore, Germany, and Estonia. Bulgaria is the only upper-middle-income country among the top ten. On average, the density of secure servers drastically increases along with income segment.

Cyberbullying needs policy responses around the world

The DWI survey also explored policies for parents, children and youth, and offenders. Overall, the United States shows the most complete policy framework, followed by Canada, France, Singapore, and the United Arab Emirates. The best-positioned lower-middle-income country is India (9th) and the best-positioned upper-middle-income country is Brazil (12th). On average, high-income countries outperform other income segments. Across the board, policies for parents are the most common —the DWI considered education for parents on children's digital safety, control tools, and cyberbullying. Policies for children and youth, such as e-safety guidelines and provisions for cyber wellness in education curriculum, are less well established. The lack of policy development in this field is particularly visible in middle-income countries. The inclusion of cyberbullying in the curriculum deserves special attention, given that 17 countries have not acted.

The DWI survey asked people about their experiences with cyberbullying. The highest prevalence was reported in Viet Nam (41%), followed by Nigeria, Pakistan, Kenya, and Egypt. On average, 19% of respondents in high-income countries reported experiencing cyberbullying, 23% in upper-middle-income countries, and 31% in lower-middle-income countries. The survey also enquired about reactions to cyberbullying — for example blocking or reporting offenders or increasing personal data safety. The strongest response was observed in India, followed by Viet Nam, Mexico, and Colombia. The highest scores on average were from upper-middle-income countries, followed by high-income countries, and lower-middle-income ones. Lastly, the survey asked about negative impacts from cyberbullying, such as feelings of isolation, sadness, or anxiety. In general, participants from the Republic of Korea, India, Singapore, Kenya, and Kuwait exhibited the most significant response.

In focus

Key insights from the survey

Analysis of digital wellbeing indicators from the survey reveals distinctive strengths within each income group. The strongest reactions among respondents in high-income countries are related to staying connected, impact on behavior, information access, and digital entertainment. Compared with the other income groups, wealthier countries show a strong response in areas such as the ability to ensure work- or study-life balance, personal data protection skills, and taking measures for digital wellness. As might be anticipated, they also report the highest positive engagement with travel and finance-related digital applications.

In upper-middle-income countries, there is a strong engagement with digital technology for staying connected, education access, digital entertainment, and information access. Compared with the other income groups, there is strong engagement on responding to online bullying, transportation apps, experiencing art, finding offline events and activities, verifying online information, and creating and sharing art.

Participants in lower-middle-income countries had the strongest response regarding education access, staying connected, digital entertainment, trust in online information, and the impacts of mental health on remote work or study. Compared with the other income groups, this cohort recorded strong engagement in areas such as using digital technologies to meet new people, look for a job, and for health and fitness activities. This group is also the most engaged in online social activism, use of e-health services, and online learning.

Engagement with different digital activities across income groups (score 0-100, where 100 is stronger)

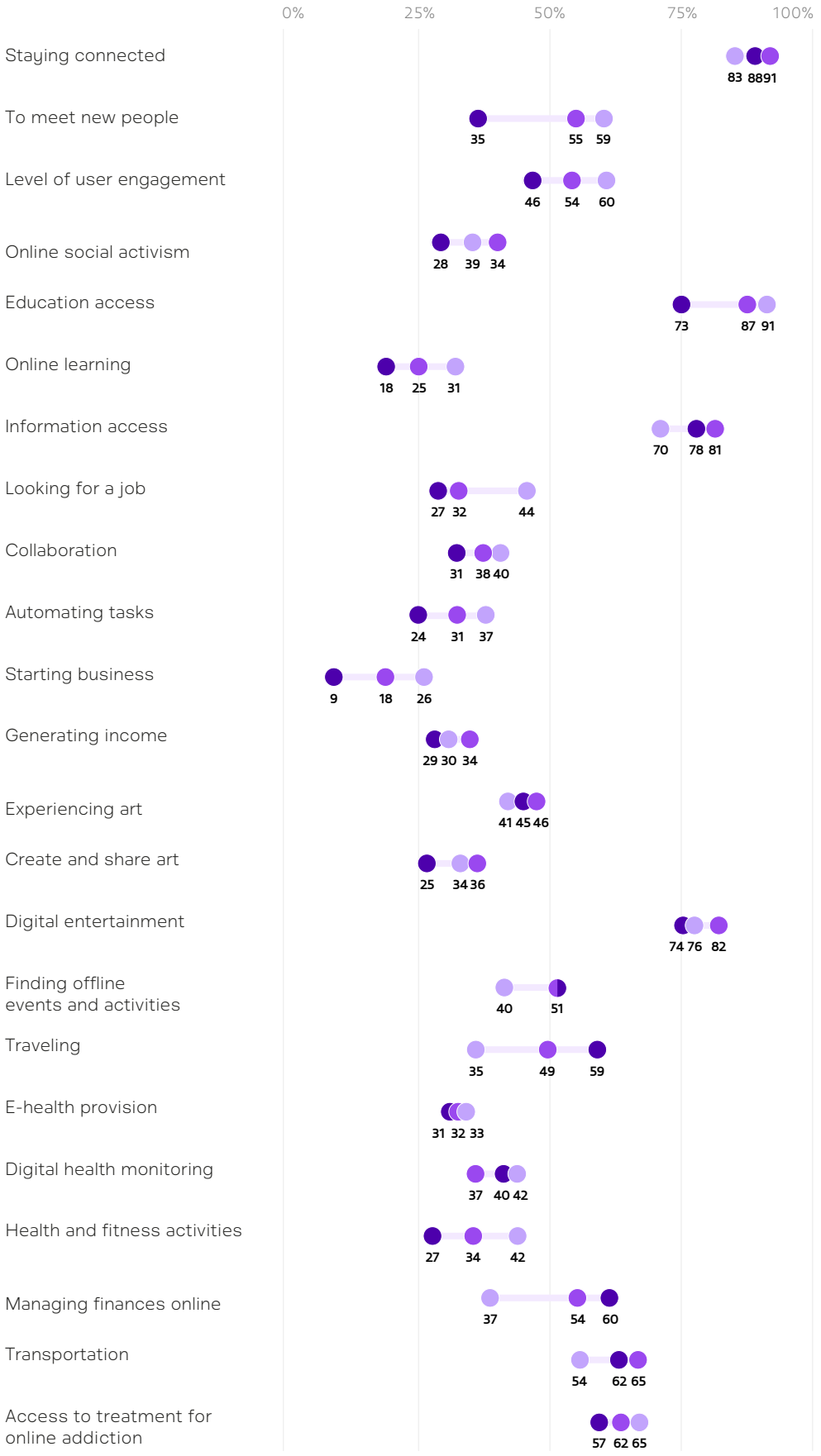
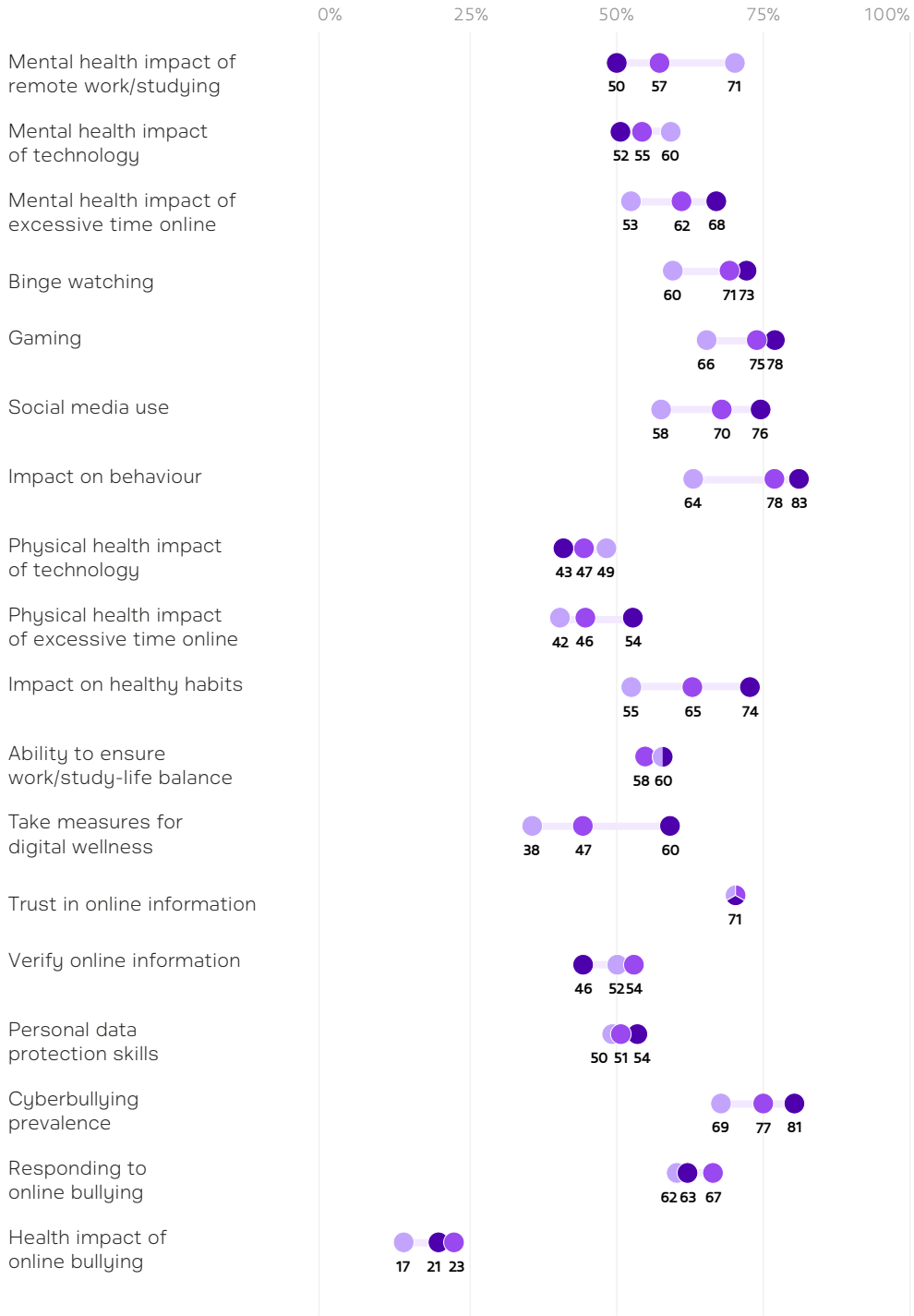


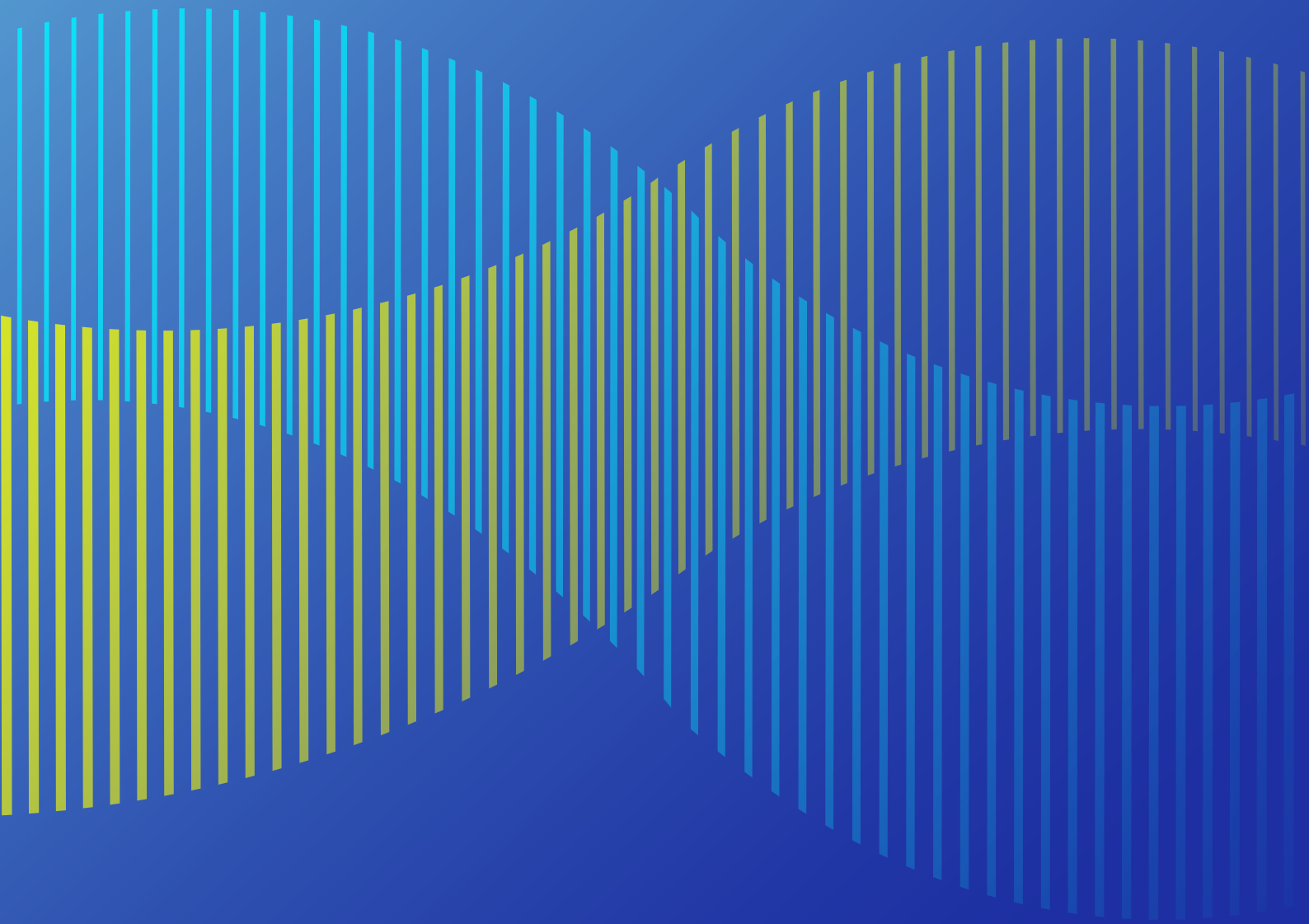
FIGURE 11
Source: Global Digital Wellbeing Index 2024

- High income
- Upper middle income
- Lower middle income


0%
25%
50%
75%
100%
Mental health impact of remote work/studying
50 57 71
Mental health impact of technology
52 55 60
Mental health impact of excessive time online
53 62 68
Binge watching
60 71 73
Gaming
66 75 78
Social media use
58 70 76
Impact on behaviour
64 78 83
Physical health impact of technology
43 47 49
Physical health impact of excessive time online
42 46 54
Impact on healthy habits
55 65 74
Ability to ensure work/study-life balance
58 60
Take measures for digital wellness
38 47 60
Trust in online information
71
Verify online information
46 52 54
Personal data protection skills
50 51 54
Cyberbullying prevalence
69 77 81
Responding to online bullying
62 63 67
Health impact of online bullying
17 21 23

Capturing Opportunities

The enablers of digital adoption and its potential



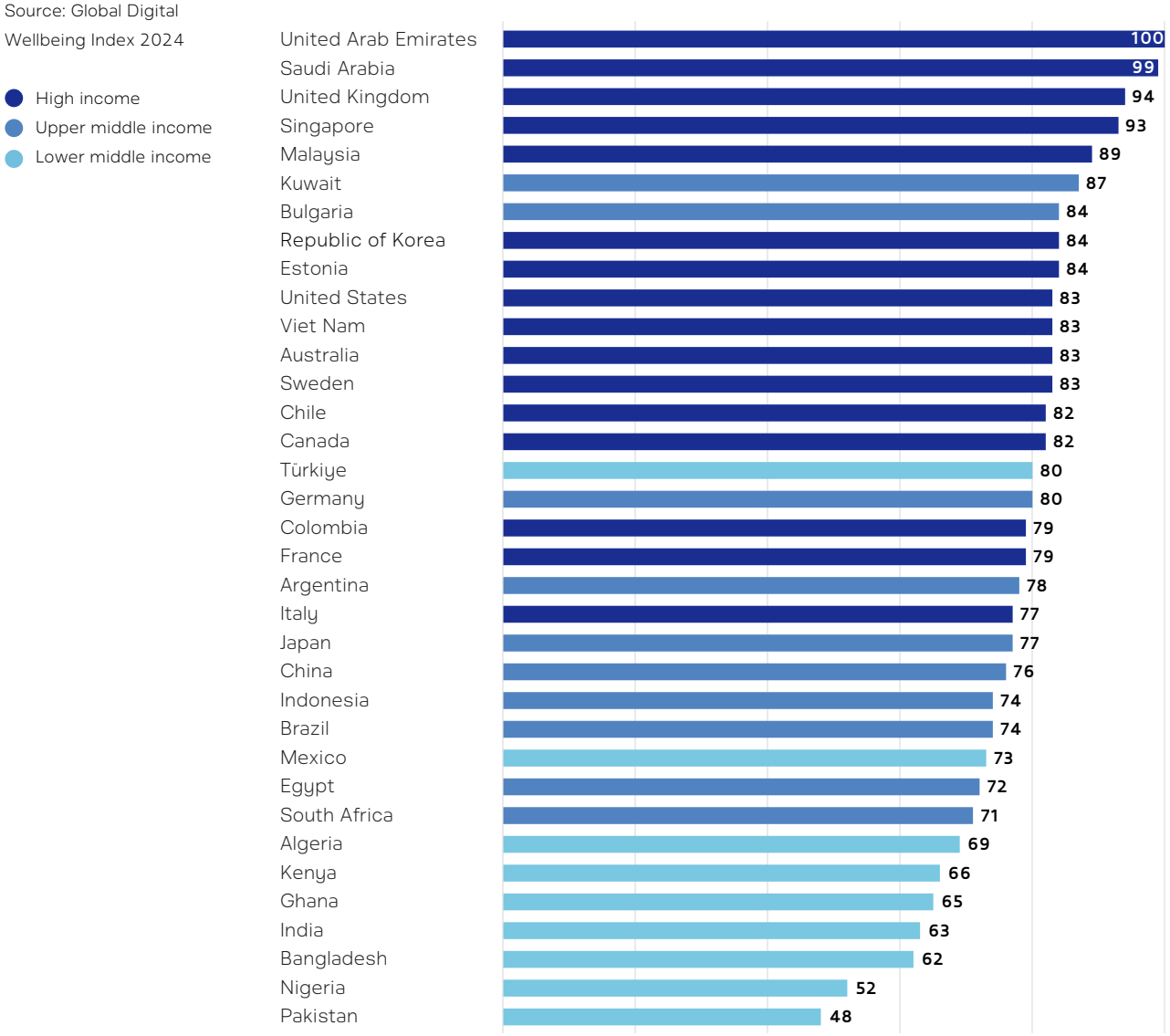
Pillar 7: Connectivity

Connectivity, encompassing access to the internet and reliable infrastructure, is a fundamental enabler of the opportunities arising from digital technologies. It determines the extent to which individuals and communities can tap into the potential benefits of the digital world. Widespread access to high-speed internet is instrumental for participating in online education, remote work, e-commerce, and access to information and services. It is also a catalyst for economic growth, innovation, and empowering economically deprived populations. The connectivity score in the DWI is determined by evaluating three factors: internet access, internet penetration, and internet affordability.

Middle Eastern countries stand out in the connectivity pillar, with the United Arab Emirates, Saudi Arabia, and Kuwait placing first, fourth, and fifth, respectively. Malaysia (6th) and Bulgaria (7th) demonstrate that not only the richest economies can provide comprehensive connectivity.

FIGURE 12
Source: Global Digital Wellbeing Index 2024

Overall performance in the connectivity pillar, by country and income level



Key findings

- Most countries examined have over 99% 4G coverage, with an average of 95%. However, Ghana (68%) and Nigeria (62%), which are lower-middle income countries, show the greatest room for improvement.
- Internet penetration rates show significant variations, with high-income countries averaging 93%, upper-middle-income 79%, and lower-middle-income countries 53%. Lower-income settings still face challenges in affordability and rural disparities.
- People in high-income countries spend less than 0.1% of their annual income on connectivity, while upper-middle-income and lower-middle-income countries spend around 2.3% and 5.4% respectively, reflecting economic disparities and market challenges.

Some regions still need to catch up on internet access

Data from the ITU reveals that five countries have attained 100% 4G coverage: Italy, Kuwait, Saudi Arabia, Singapore, and Sweden. This means that their entire population lives within range of a 4G mobile-cellular signal, irrespective of whether they are mobile phone users. In 14 more countries, coverage is practically universal, with rates above 99%. Most of the countries leading in this indicator are high income, except China, Bulgaria, Colombia, and Viet Nam. Countries examined in the DWI average a high level of 4G coverage, at 95%, showing that mobile connectivity has made impressive strides around the world. However, gaps remain in some geographies. Sub-Saharan countries Ghana and Nigeria respectively reach 68% and 62% of their populations with 4G. Algeria and Pakistan, lower-middle-income countries, have rates of 80% and 75%, respectively.

World Bank support for improving connectivity in Africa

The Digital Economy for Africa (DE4A) initiative, launched by the World Bank in 2019, addresses the challenges of limited broadband access. Starting with Country Diagnostics, DE4A has contributed to increased broadband access, improved affordability, and regulatory enhancements. The World Bank has invested US$9bn in 70 digitalization projects across 37 African countries since 2019, including expanding network infrastructure and bridging digital connectivity divides. DE4A collaborates with governments, the private sector, and regional partners.

From 2019 to 2022, broadband access in Africa has increased from 26% to 36%, with improved affordability and service quality. Average download speed rose from 2.68Mbps to 8.18Mbps, while the average cost of 1GB decreased from 10.5% to 5% of monthly gross national income per capita by 2021. The initiative also facilitated regulatory reforms for fair competition and investment, addressing the digital divide while ensuring digital safeguards and adhering to Green, Resilient and Inclusive Development principles.

Source: https://www.worldbank.org/en/results/2023/06/26/from-connectivity-to-services-digital-transformation-in-africa

The DWI also measures bandwidth — defined as the level at which data are transmitted from the internet — using international bandwidth per internet user in bits per second (bit/s). This is a comparable measure of internet quality, measuring the capacity for data transfer. Based on data from the ITU, the leaders in this regard are Singapore, Kenya, and the United Arab Emirates.

Internet affordability and usage both rise with national income level

Infrastructure alone does not tell the full story. Penetration is determined using ITU data, which track the percentage of the population using the internet. Users are defined as individuals who have accessed the internet from any location in the last three months via devices such as computers, mobile phones, personal digital assistants, gaming consoles, or digital TVs. Countries examined in the DWI attain 79% penetration on average, with significant variations across income levels. Penetration averages 93% for high-income countries, 79% for upper-middle-income countries, and 53% for lower-middle-income countries. India, Bangladesh, and Kenya achieve penetration below 50%, even though their 4G network coverage would allow them to reach a higher rate — showing that factors other than infrastructure, such as affordability or rural disparities, can determine internet usage.

Affordability is measured using ITU data on the cost of a fixed broadband internet plan with a 5GB data limit and the cost of a data-only mobile broadband plan with a 2GB data limit, in relation to gross national income (GNI) per capita. Based on these metrics, affordability is lowest in lower-middle-income countries Ghana, Pakistan, Kenya, and Nigeria. In China, a strong performer, the cost of internet plans represents 0.5% of GNI per capita, but it can reach about 20% in Nigeria (in the case of broadband) and around 3% in Kenya (for mobile). Overall, connectivity costs less than 0.1% of GNI per capita for high-income countries, 2.3% for upper-middle income countries, and 5.4% for lower-middle income countries. This may reflect the fact that people have lower incomes, but inefficiencies in infrastructure and technology and less competitive markets may also contribute.

Technology can be transformational but we need to take risks

H E M. Riaz Hamidullah
Ambassador of Bangladesh to the Netherlands

"ICT for development" was a construct I first came across 25 years ago as the global community was deliberating on the Millennium Development Goals (MDGs) at the United Nations. Most paid little attention to — and were certainly unable to measure — the ways digital technology could have a sweeping impact on development or apply in complex socio-cultural circumstances across the wider developing world.

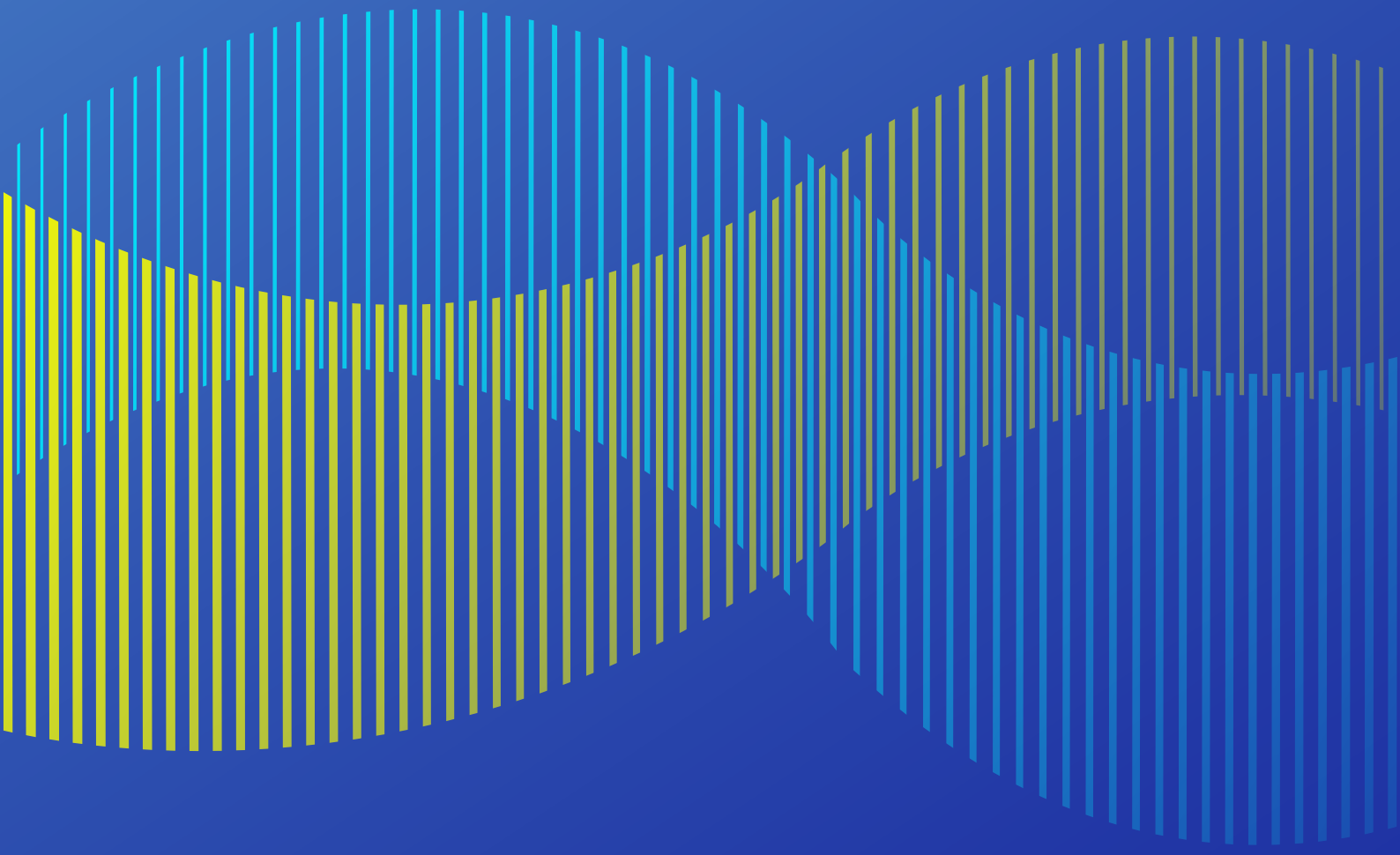
By 2012-13, as the MDGs were coming to an end, in the course of my involvement in the Sustainable Development Goals (SDGs) negotiations, I saw how technologies were gaining currency for sustainable development across the global south. Low-income countries could see how internet-enabled technologies were already bringing in transformative solutions to many of the endemic challenges within their societies, and how many niche technologies could also level off social challenges in non-confrontational ways. Newer norms, practices and forms quietly made inroads in people's engagements.

Now, as the world has come more than halfway through the life of the SDGs, when I look around at the world's collective attempts to harness ICT for development, I feel we are not nearly bold enough to engage as decisively as we could. In our conversation on digital technologies, the focus is mostly around the young and urban populace. Little do we note that over a quarter of the global population, 2.2 billion people, are smallholder farmers, for instance. Too often, our digital narratives pass them by.

We need to do more to simplify technological applications and make those relevant to the daily lives and livelihoods of rural populations who are living in vulnerable conditions and struggling with the impacts of climate change. From improving access to climate-resilient seed, to making global supply chains more robust, to accessing health advice, digital technology can transform their wellbeing with little investment. Many tend to assume that these people are too poor to be ready to benefit from digital technology. Enough evidence on the ground proves otherwise. In Bangladesh, millions of poor people have mobile connections and continue to adapt to newer solutions. People are ready to try work or entrepreneurship in the "new economy" irrespective of their prevalent social or economic conditions.

The world over, policymaking is typically focused more on outputs than outcomes. Yes, numbers are important, but we need to have the appetite to take risks in pursuit of outcomes where economists may not necessarily be able to quantify a return on investment. How can policies ensure, for example, that digital technologies help to build trust, stability and harmony across fractured communities? How can we shape technological development to make our societies more egalitarian rather than widen existing divides?

I believe the gap is not in the availability of technology, but in our intent to be brave in pursing change that is not just transitional but transformational — through, for instance, the thousands of satellites in space. It should be our collective challenge to translate digital technologies into shared prosperity through shared responsibility. This report should advance the policy debate in impactful ways.



Pillar 8: Social Connectedness

Digital technologies have revolutionized the way individuals and communities connect, interact, and collaborate. As platforms for social networking, communication, and knowledge sharing, they foster a more interconnected society. This has significant implications for cultural exchange, understanding and social inclusion. During crises, such as the COVID-19 pandemic, digital technologies enable remote work and communication. They empower individuals and communities to mobilize for social and political change. In assessing this pillar, the DWI considers social platforms, technology-facilitated connectedness opportunities such as using digital devices to engage with family and friends or meeting new people online, and active online engagement.

The leaders in this pillar are the United Arab Emirates and Chile, followed by Bulgaria, Colombia, and Malaysia, which are upper-middle-income countries. The five lowest positions are taken by Egypt, Pakistan, Algeria, Italy, and the United States. Indeed, there appears to be little correlation between income level and performance in this pillar.

Overall performance in the social connectedness pillar, by country and income level

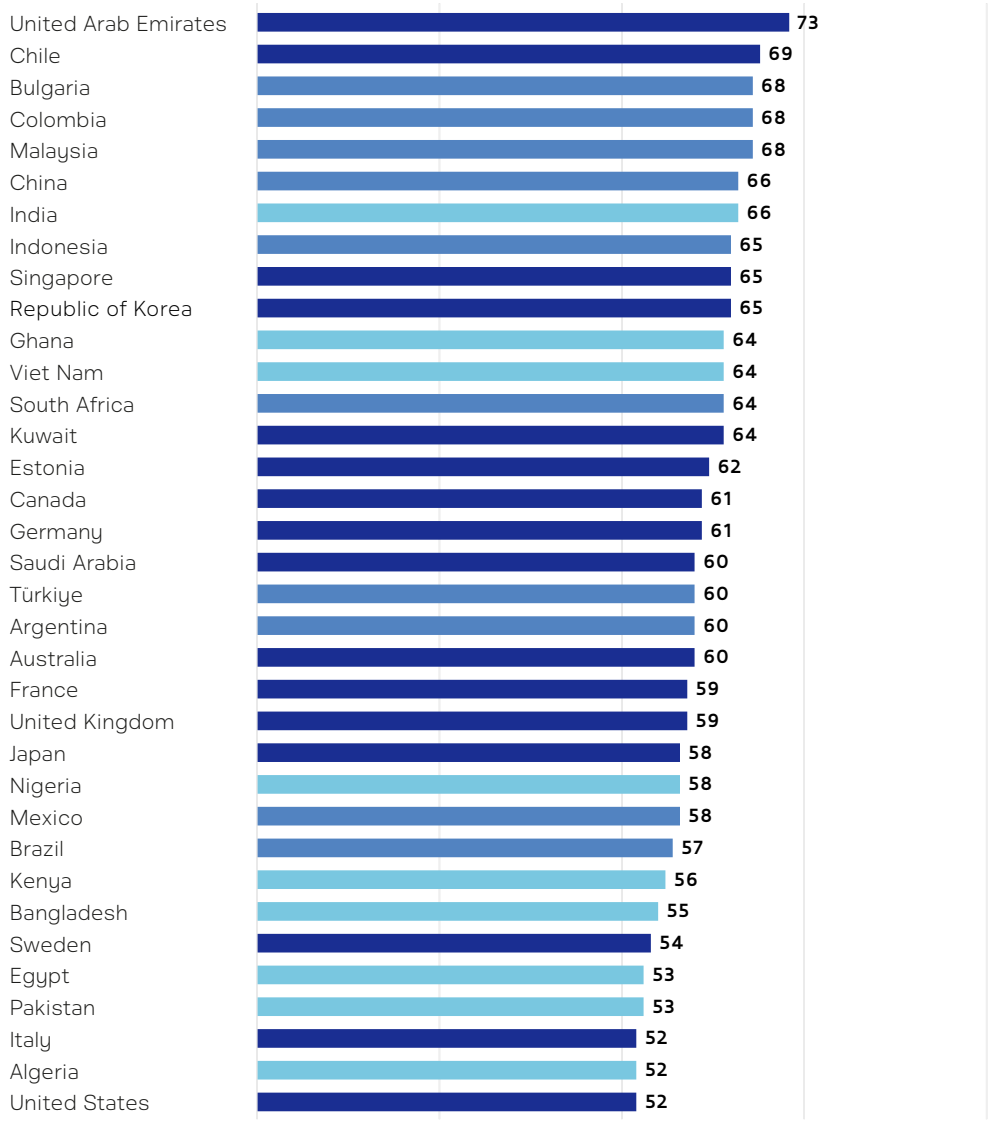


FIGURE 13

Source: Global Digital Wellbeing Index 2024

Key findings

- Global social media engagement averages 68%, with high-income countries leading and the lowest engagement found among lower-middle-income countries. The presence of local platforms for social activities varies, with some countries relying more on international platforms, but no country scored zero.
- Engagement with digital devices for staying in touch is high across the board. Meeting new people in person as a result of initial digital connections is less common in high-income nations (35%, compared with 55% in upper middle-income nations and 59% in lower-middle-income countries).
- Active online engagement, including positive interactions and content creation, was highest in China and India. In terms of online activism, Nigeria and Kenya reported the highest engagement. Generally, lower-income nations had higher average scores in active online engagement and online activism.

Digital social engagement is boosted by popular social media apps and local platforms

Using the "Digital 2023" report, the DWI examined active social media users as a percentage of the total population based on active users of the most popular social media app.[53] On average, across the DWI countries, 68% of individuals engage with social media. Engagement is highest among advanced economies, led by the United Arab Emirates, the Republic of Korea, Canada, Germany, and Singapore (ranging from 85% to 100%). It is lowest among lower-middle-income nations, featuring Egypt, India, Ghana, Kenya, and Nigeria (ranging from 14% to 41%).

The DWI survey asked people whether they used digital devices to stay connected with family, friends, and colleagues in the past year. Estonia, Canada, and France reported engagement rates above 90%. Upper-middle-income countries, including Indonesia and Argentina, also exhibit strong engagement, surpassing most high-income countries. Some lower-middle-income nations, such as Viet Nam and Nigeria, show slightly lower but still significant scores, reflecting their adaptability in leveraging available digital resources. However, lower-middle-income countries also occupy some of the bottom positions. On average, this type of engagement is high across the sample, with a rate of 88%.

Lower engagement was observed across the board when considering the activity of meeting new people, with a sample average of 47%. The 12 lowest rates were found in high-income countries, while the strongest rates are observed in Nigeria, Ghana, Kenya, and India. The average stands at 35% for high-income countries, 55% for upper-middle-income countries, and 59% for the lower-middle-income group.

53 Based on data published in the advertising resources of a number of the world's top social media platforms to inform our figures for overall social media use.

Social engagement is also favored by the existence of local platforms for volunteering, public lessons, events, or meeting up with people. Based on research conducted exclusively for the DWI, these are evidenced across all countries to some extent. Nineteen countries, including Australia, Canada, Chile, and Estonia, feature well-established local and international social engagement platforms. They also have comprehensive tourism websites that provide information on social events and festivals, contributing to a vibrant digital ecosystem that supports digital wellbeing. Sixteen countries, such as Algeria, Argentina, and Bangladesh, primarily rely on international platforms for social engagement. While some local resources are available, these are nascent, with room for further development in terms of local platform availability.

The "Civic Hour": A national platform for volunteering in France

The Civic Hour aims to promote local solidarity by integrating it into national policies and mobilizing residents at the local level. The initiative encourages elected officials at national and local levels to participate and call for solidarity mobilization in their areas. Residents are invited to dedicate an hour per month in their neighborhoods or municipalities, making it an accessible and flexible commitment. This complements traditional volunteering by offering a simple entry point for a broader audience. The range of solidarity actions includes interpersonal gestures and collective efforts, emphasizing the importance of every hour devoted to solidarity. An online portal offers centralized information, including instructions on how to sign up, news and achievements, and links to social media accounts.

Source: https://lheurecivique.fr/

Active online engagement and activism stronger in less affluent countries

The DWI survey asked individuals about their level of active engagement in social media, defined as making positive comments, interacting with peers, and posting or liking content regularly — as opposed to only watching or reading content. The highest scores were attained by China, India, Viet Nam, Egypt, and Nigeria, all upper- or lower-middle-income countries. Ten advanced economies obtained the lowest scores, including the Republic of Korea, Australia, the United Kingdom, Canada, and France. Kuwait and Saudi Arabia stand out with the highest engagement among the high-income group.

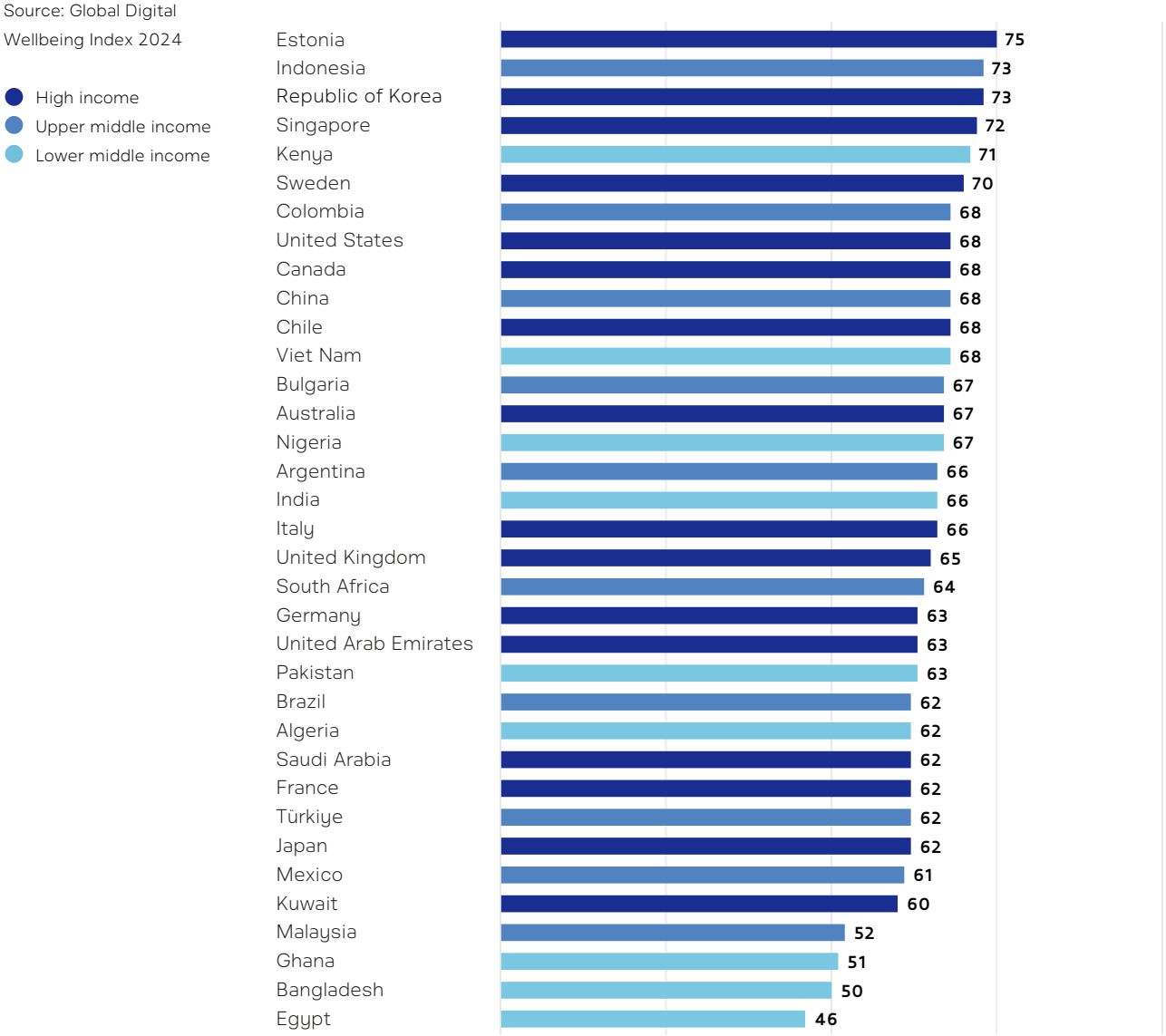
Lastly, the survey measured the level of engagement in online activism, asking individuals about their involvement in organized community action or important global issues. The highest engagement is observed in Nigeria, Kenya, China, and Ghana. High-income countries are clustered in the lowest positions, including France, the United Kingdom, and Italy. Overall, average scores in this indicator tend to be higher among lower-income nations.

Pillar 9. Education and Skills

In the information age, the ability to harness the full potential of emerging technologies and adapt to innovation and digital disruption depends largely on the knowledge and skills possessed by individuals. Education and skills development are pivotal in ensuring that the workforce remain relevant and competitive. A technologically skilled and digitally literate populace is better equipped to capture the opportunities presented by digital technologies, whether in the fields of entrepreneurship, employment, or social empowerment. Addressing issues of accessibility and inclusivity in education and skills development is paramount to bridge digital divides and ensure that the benefits of digital technologies are shared equitably. This pillar of the DWI comprises two main factors: digital provisions in education such as internet connectivity in schools, and technology-facilitated education opportunities such as remote learning.

FIGURE 14
Source: Global Digital Wellbeing Index 2024

Overall performance in the education and skills pillar, by country and income level



This pillar is led by countries from different income levels: Estonia attains first position, followed by Indonesia, the Republic of Korea, Singapore, and Kenya. High-income countries attain higher scores on average, but the difference with upper- and lower-middle-income countries is small. Countries from different income groups are found in the lower positions, including Japan and Kuwait (29th and 31st), Mexico and Malaysia (30th and 32nd), and Bangladesh and Egypt (34th and 35th).

Key findings

- Singapore and Estonia lead in digital advancement and technology facilitated learning in schools. Lower-income nations face challenges in the inclusion of digital and technology skills in the education system. Most countries have recognized micro-credentials, reflecting a trend toward openness to new kinds of qualifications and innovation.
- Middle-income countries embrace digital tools in education, showing strong engagement with online courses and formal degrees. Use of digital devices to find information in education and work is high across income segments.

Less affluent countries have more to do to integrate digital skills in education

Access to the internet in schools is measured through data from the Executive Opinion Survey of the World Economic Forum. Advanced economies dominate, with Singapore, Estonia, Sweden, the United States, and the Republic of Korea leading. Malaysia and Indonesia stand out among upper-middle-income countries (10th and 12th), while Kenya is the lower-middle-income country in the highest position (15th). Türkiye, Nigeria, Brazil, Bangladesh, and Egypt attain the lowest performances. On average, higher-income nations perform significantly better.

The same database is used to measure the inclusion of digital and technology skills in the education system. Again, high-income countries perform significantly better, with only a small difference between upper-middle-income and lower-middle-income countries. Singapore, the United Arab Emirates, the United States, Saudi Arabia, and the Republic of Korea attain the highest scores. Brazil, Türkiye, and Mexico face the most challenges in this area.

Lastly, the DWI examined policy frameworks allowing for the recognition of micro-credentials in education. Most countries feature nationally recognized universities and institutions offering online short courses and massive online open courses, indicating strong recognition of micro-credentials. This is a sign of widespread progress on flexibilization[54] and the adoption of technology across education systems.

Middle-income countries are strongly embracing online courses

The DWI survey asked about the importance given to digital technology in accessing educational resources. The strongest response was observed in middle-income countries, with Ghana, Nigeria, Kenya, South Africa, and Indonesia at the top. Affluent nations occupy most of the bottom half of the list, with France, Australia, and the United Kingdom at the bottom. The United Arab Emirates is the high-income country in the highest position (13th). On average, lower-income nations attain the best scores in this indicator.

54 "Flexibilization refers to the changing work practices by which firms no longer use internal labor markets or implicitly promise employees lifetime job security, but rather seek flexible employment relations that allow them to increase or diminish their workforce, and reassign and redeploy employees with ease". Source: Stone, Katherine VW. "Flexibilization, Globalization, and Privatization: Three Challenges to Labor Rights in Our Time." Osgoode Hall Law Journal 44.1 (2006): 77-104. DOI: https://digitalcommons.osgoode.yorku.ca/ohlj/vol44/iss1/4

The survey also measured engagement with online courses or formal degrees in the past year. The highest engagement is observed in Nigeria, Saudi Arabia, Colombia, Kenya, and the United Arab Emirates, with a 40% response rate. High-income countries averaged 18%, not far from upper-middle-income countries (25%). Lower-middle-income countries had the highest engagement on average (31%). This may show the adaptability of poorer nations to circumvent limitations with traditional education, such as infrastructure. Engagement rates are lowest in France, the United Kingdom, and Japan, which all feature well established education infrastructure.

Finally, the survey examined the proportion of individuals who used digital devices to find information in the context of education and work. Overall engagement is high across all countries, with an average rate of 76%. The leaders in this indicator are Estonia, Sweden, Indonesia, Bulgaria, and Italy. High-income countries average 78%, upper-middle-income countries 81%, and lower-middle-income countries 70%.

In focus

Decoding Canada's index leadership

Canada performs above average across all pillars of the DWI, with its best performances in connectivity, social connectedness, and education and skills. Canada also performs well on several of the "balancing needs" pillars, such as ability to disconnect, physical health, social cohesion, information quality, and cybersafety, which combine to give it an edge over other countries. At the indicator level, the country has leading scores in areas such as digital physical and mental health, cyberbullying in curricula, policies to support physical activity, digital wellbeing aspects in ICT strategy, recognition of online addiction, recommendations on healthy tech use, and the right to disconnect. Canada's strong performance is supported by a comprehensive body of policies with an inclusive nature, covering education, labor, accessibility, and safety, among other areas.

A key policy focus is digital education and skill development, exemplified by the Digital Literacy Exchange Program, which aligns with the Universal Access principle of Canada's Digital Charter.[55] The Connecting Families Initiative, Indigenous Connectivity Fund, ISED Universal Broadband Fund, and Rural and Northern Education Fund underscore Canada's commitment to bridging the digital divide by providing affordable internet access and enhancing technology infrastructure, particularly in rural and remote areas.[56]

In the realm of labor protections, Canada's commitment to improving work-life balance is evident in governmental initiatives emphasizing the co-development of provisions with employers and labor groups to grant federally regulated workers the right to disconnect.[57] Accessibility and inclusion are key priorities, as evidenced by the Accessible Canada Act (Bill C-81), which aims to improve accessibility for persons with disabilities, including in ICT. Regulations ensuring closed captioning and described videos for those with hearing or visual impairments, along with the adoption of Web Content Accessibility Guidelines 2.0 Level AA, reflect a commitment to making digital content accessible to all users.[58]

The importance of maintaining a robust digital presence in the cultural sector is highlighted by investments in digital technology-driven transitions by the Canadian Heritage Cultural Investment Fund and the Canada Council for the Arts.[59]

Canada recognizes the challenges of digital technologies and provides recommendations around excessive use, especially for children.[60] The country's approach to cyberbullying prevention and education is comprehensive, encompassing legal prohibitions, educational initiatives, and reporting mechanisms.[61] [62] Action toward cyberbullying prevention is also visible at the provincial level: Ontario, for example, provides resources for parents and children, reflecting a holistic strategy for digital safety.

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55 Government of Canada. "Digital Literacy Exchange Program". Retrieved from https://ised-isde.canada.ca/site/digital-literacy-exchange-program/en

56 Government of Canada. "Connecting Families Initiative". Retrieved from https://ised-isde.canada.ca/site/connecting-families/en;Government of Canada. "Connectivity and partnerships". Retrieved from https://sac-isc.gc.ca/eng/1343229993175/1533643807551; https://ised-isde.canada.ca/site/high-speed-internet-canada/en; DDSB. "Rural and Northern Education Fund". Retrieved from https://www.ddsb.ca/en/about-ddsb/rural-and-northern-education-fund.aspx#

57 Government of Canada. (2022). "Final Report of the Right to Disconnect Advisory Committee". Retrieved from https://www.canada.ca/en/employment-social-development/corporate/portfolio/labour/programs/labour-standards/reports/right-to-disconnect-advisory-committee.html

58 Government of Canada. "Summary of the Accessible Canada Act". Retrieved from https://www.canada.ca/en/employment-social-development/programs/accessible-canada/act-summary.html; Canada Radio-television and Telecommunications Commission: https://crtc.gc.ca/eng/home-accueil.htm; W3C. (2005, updated 2023). "WCAG 2 Overview". Retrieved from https://www.w3.org/WAI/standards-guidelines/wcag/

59 Government of Canada. "Canada Cultural Investment Fund". Retrieved from https://www.canada.ca/en/canadian-heritage/services/funding/cultural-investment-fund.html; Canada Council for the Arts. "Digital". Retrieved from https://canadacouncil.ca/commitments/digital

60 Government of Canada. "Mind: Screen Time". Retrieved from https://www.canada.ca/en/public-health/services/publications/healthy-living/screen-time-nobodys-perfect.html

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Pillar 10: Work, Productivity, and Income

Digital technologies have the capacity to reshape how work is conducted, significantly enhance productivity, and impact income generation. Understanding these changes is essential for policymakers, businesses as well as individual entrepreneurs, employees, and jobseekers as they navigate the digital landscape. Digital technologies can create new job or income-making opportunities, which can come in many guises such as e-commerce, the gig economy, and remote work. They also have the potential to boost productivity, streamline processes, and open new markets, all of which are critical for economic development. However, there has been much debate already over the potential disruptions that could be wrought by further automation and generative artificial intelligence altering the employment landscape. This pillar is examined through a combination of survey indicators, policy research, and international databases focusing on three key factors: policy support for remote work, digital workforce, and technology-enabled work.

Performance in this pillar is led by Estonia, Singapore, Australia, and the United Arab Emirates. On average, upper-middle-income countries have better performance than

Overall performance in the work, productivity, and income pillar, by country and income level

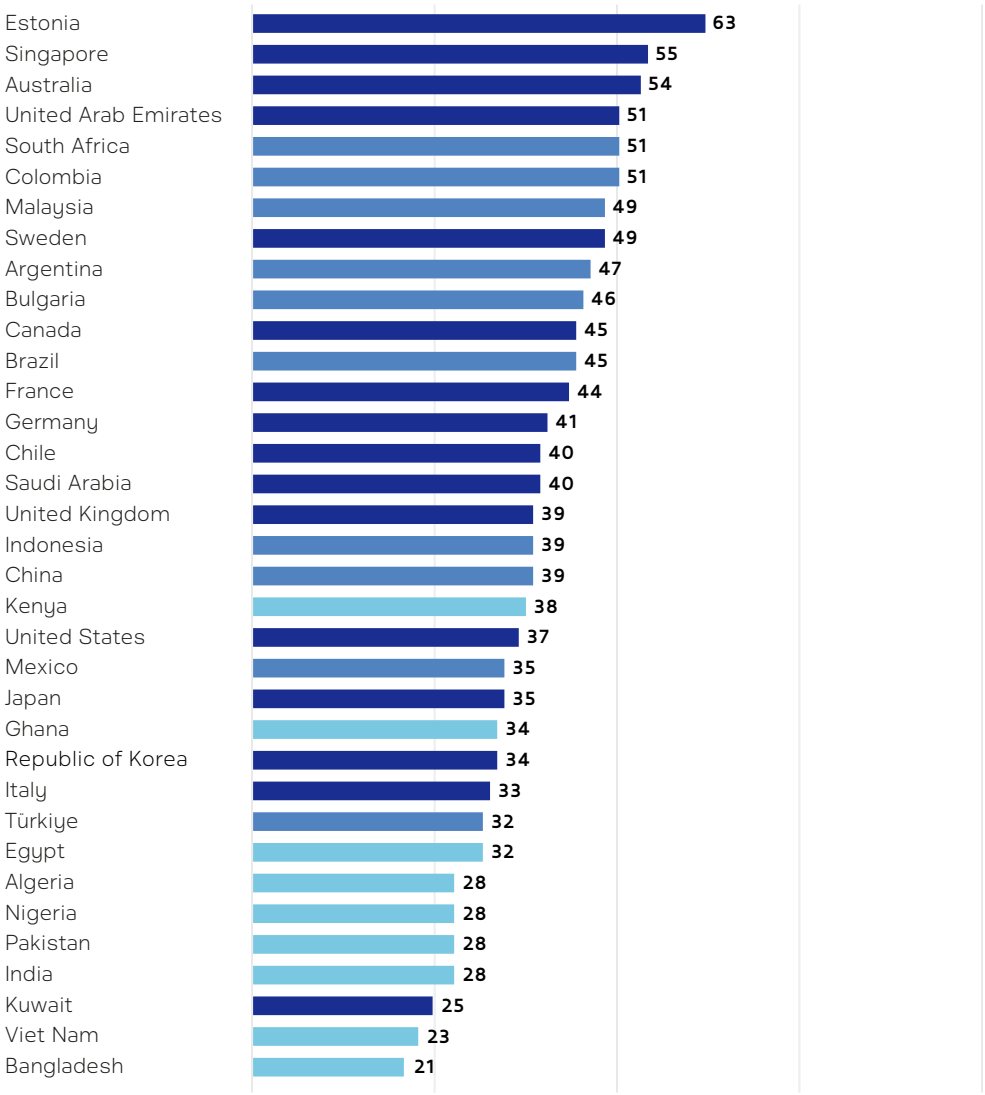


FIGURE 15

Source: Global Digital Wellbeing Index 2024

the high-income group, driven by countries such as South Africa, Colombia, and Malaysia. Less affluent countries attain the lowest scores on average. High-income countries excel in ensuring flexibility in working arrangements and having a strong ICT workforce. However, on an average, upper-middle-income countries outperform other countries in elements such as policy support, remote work recognition by law, and provisions for digital nomad visas.

Key findings

- Most countries with advanced frameworks to support remote workers are high income. These nations also lead in flexible work arrangements. Comprehensive digital nomad visa frameworks are mostly found in upper-middle-income countries such as Argentina, Colombia, and Brazil.
- Estonia and Singapore lead in the percentage of ICT graduates, followed by Saudi Arabia, Indonesia, and Malaysia. In the active tech sector, Estonia and Singapore have the most GitHub contributors per million. Ghana and Kenya perform well among lower-middle-income countries, highlighting the digital economy's ability to empower nations from all income groups.
- The most popular work-related uses of digital tools are for collaboration, job searching, and income generation. Lower-middle-income countries report the highest engagement with these tools, with Nigeria, Kenya, and Ghana leading. Australia, the United Kingdom, and Japan demonstrate low engagement.

Advanced economies lead in protecting remote workers

The DWI examined the existence of legal protection for remote workers, for example through provisions requiring employers to provide appropriate equipment and training, ensuring that remote workers have access to necessary benefits and protections, and setting clear expectations for work hours and communication. In 14 countries, mostly middle-income, little to no legal frameworks for remote workers were observed. Four countries offer partial legal protection for remote workers. Most countries with advanced frameworks are high income. For example, Australia's "Secure Jobs, Better Pay" Act outlines the right to flexible work arrangements, which includes the right to work from home.[63] In Germany, employers are mandated to provide remote workers with proper office equipment and supplies.[64]

Based on data from the World Economic Forum's Executive Opinion Survey, the DWI examined the extent to which companies offer flexible working arrangements such as remote, hybrid, and part-time work. Affluent nations occupy most of the top positions in this indicator, led by the United States, Estonia, Singapore, and the United Kingdom. China is the most advanced upper-middle-income country in this regard. Ghana, Algeria, and Bangladesh face the most challenges.

As an indicator of regulatory innovation, the DWI verified the existence of digital nomad visas. Fourteen countries have developed or announced such schemes, but the most complete frameworks are found mostly in upper-middle-income countries such as Argentina, Colombia, and Brazil. Digital nomad visas are a strategic policy for these countries to attract talents and build a digital ecosystem. Estonia and the United Arab Emirates also show comprehensive regulation.

63 Australian Government, "National Employment Standards". Retrieved from https://www.fairwork.gov.au/employment-conditions/national-employment-standards#who-is-covered

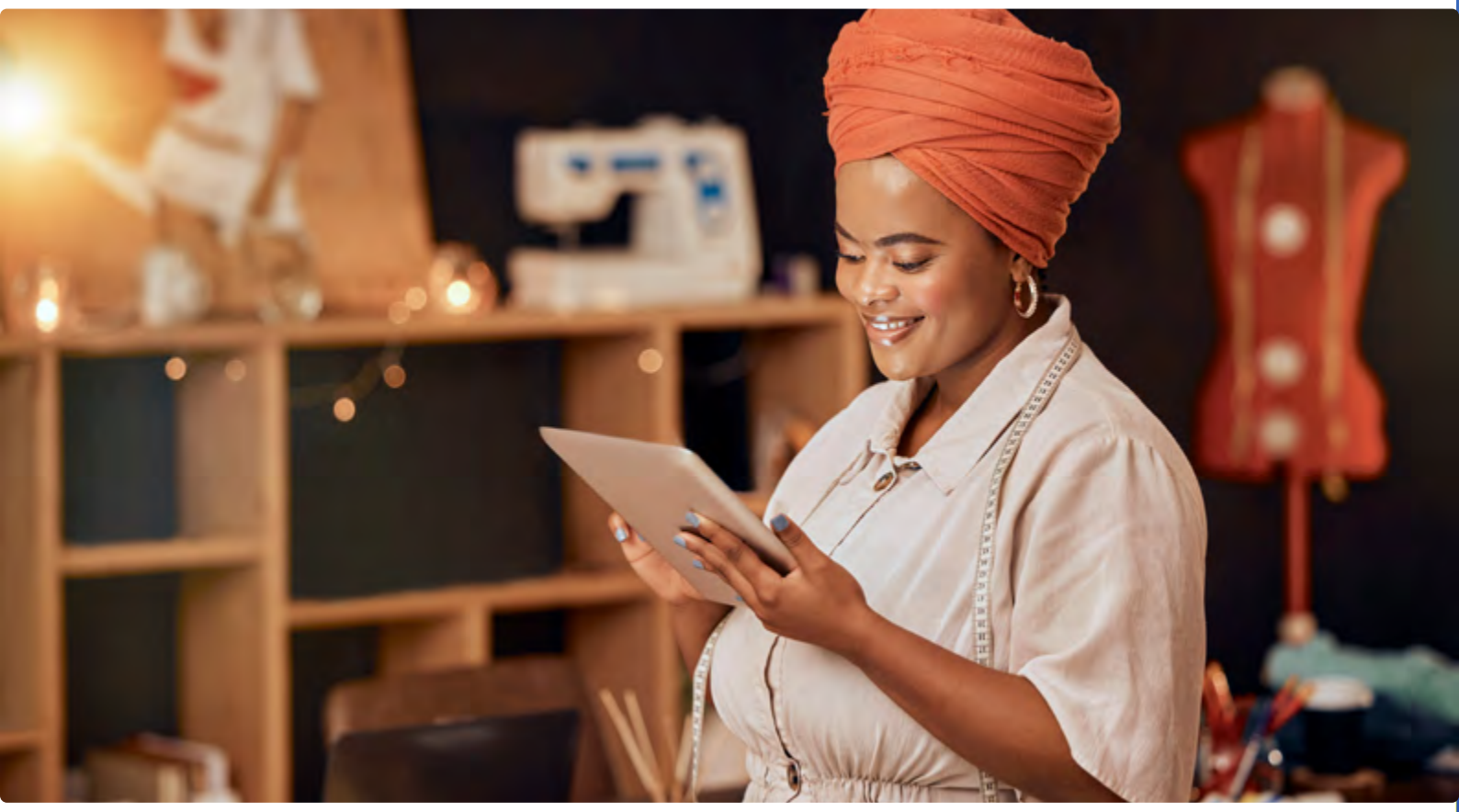
64 CMS, "Remote Working Legislation, Laws & Regulations In Germany". Retrieved from https://cms.law/en/int/expert-guides/cms-expert-guide-to-remote-working/germany

Digital technologies allow middle-income countries to participate in the knowledge economy

Using UNESCO data, the DWI observed the percentage of graduates from tertiary education graduating from ICT programs. Estonia and Singapore stand out with more than 10%, followed by Saudi Arabia, Indonesia, and Malaysia. High-income countries have an average of 5.9%, upper-middle-income countries 4.5%, and lower-middle-income countries 3.6%.

To quantify the active tech sector community, the DWI calculated the GitHub active contributors per million population. Here, again, Estonia and Singapore are leaders, followed by Bulgaria and Sweden. The performance of lower-middle-income Ghana and Kenya stands out among their grouping, placed seventh or eighth, respectively. On average, richer nations tend to have higher scores, but the differences are small. This demonstrates the digital economy's ability to bypass traditional infrastructure limitations, enabling lower-income nations to engage in knowledge-intensive activities.

The last factor of this pillar, technology-enabled work, is assessed through survey indicators asking individuals to what extent they used digital devices in the past year for work-related activities. The strongest usage is observed in collaboration tasks (35% across the sample), followed by looking for a job (33%), and income generation (30%). The lowest is seen in starting a business (16%). Across all activities, lower-middle-income countries report the highest engagement (35%), followed by upper-middle-income countries at 31%, and high-income countries at 24%. Nigeria, Kenya, and Ghana report the highest engagement on average, while Australia, the United Kingdom, and Japan record the lowest. Saudi Arabia and the United Arab Emirates have the highest engagement in the high-income group.



Australia shows that citizens demand digital government services

Paul Fletcher
Shadow Minister for Government Services and the Digital Economy in the Australian Parliament

Citizens' access to government services via digital channels is a critical part of the DWI. Over the last 20 years, businesses — from banks to insurance companies to airlines — have increasingly provided their customers with convenient, efficient digital service offerings. It is unsurprising that citizens now expect to be able to engage with the government through similar digital channels while having the choice of traditional avenues.

As a minister in the former Australian government, we understood the need to make services customer-centric for the 21st century. This was part of a Digital Economy Strategy that also included advancing small businesses, the workforce, and infrastructure. Rather than have bureaucrats tell us what they thought government services should look like, we engaged the community and designed services to meet their needs and digital expectations.

The result was Services Australia, an evolving one-stop shop for services from Medicare to welfare payments. People no longer needed to drive around town just to complete a few simple transactions. We also took steps to introduce a nationwide digital identity system. Our strategy was to attract citizens to make a choice to use digital identity because of the benefits they would gain — not to compel citizens to use it.

Australians responded enthusiastically to these digital reforms. In the last full year, there were 1.1 billion digital transactions with Services Australia — 20 times as many as telephone interactions, and over 100 times as many as face-to-face interactions. The evidence is clear: citizens prefer to engage with the government digitally. Any measure of digital wellbeing should account for how well governments respond to this preference.

Pillar 11: Entertainment and Culture

Digital technologies have revolutionized how we consume, create, and share entertainment and cultural content. The widespread availability of streaming platforms, digital art, virtual reality experiences and social media has democratized access to a rich tapestry of entertaining content, spanning arts, culture, and recreation. This democratization fosters inclusivity, allowing diverse voices and art forms to reach global audiences. Digital technologies provide artists, creators, and performers with new tools and platforms to showcase their talents, collaborate, and monetize their work. The entertainment and culture sectors contribute significantly to the economy, generating jobs and driving innovation, making them essential components of the digital age. This pillar is measured with a combination of survey indicators and policy research looking at the opportunities brought about by digital technologies in two dimensions: arts and culture; and leisure and entertainment.

Performance in this pillar is led by Argentina, followed by the Republic of Korea, Estonia, India, and Sweden. On average, upper-middle-income countries perform just as well as the high-income cohort, but lower-income nations attain the lowest scores.

Overall performance in the entertainment and culture pillar, by country and income level

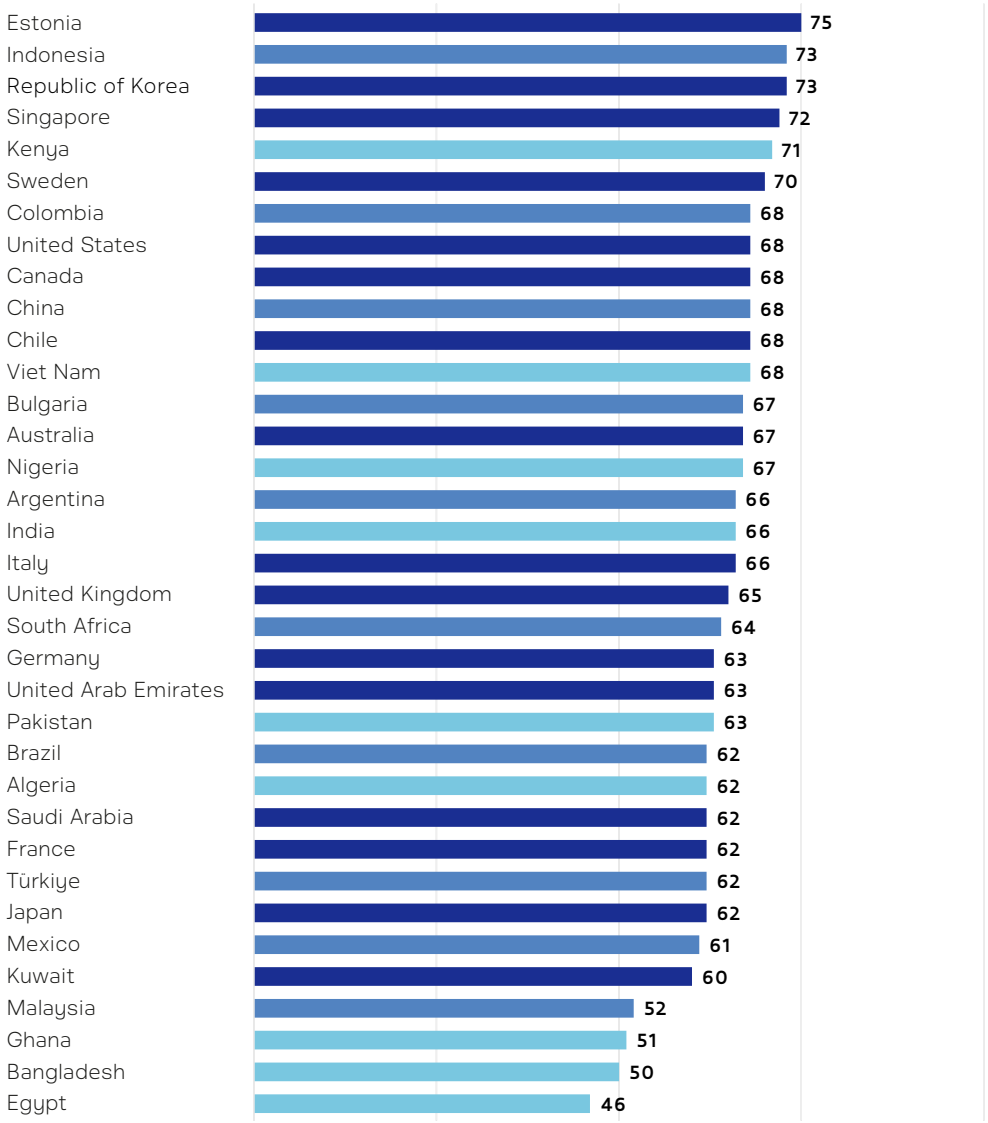


FIGURE 16

Source: Global Digital Wellbeing Index 2024

Key findings

- DWI analyzed government support for digital tourism and culture, noting that most countries provide some engagement. Countries such as Italy and France actively support digital initiatives, allocate funds, and digitize collections.
- Estonia leads in experiencing art through digital technologies, while China tops engagement in creating and sharing art. Middle-income countries report higher average engagement than high-income ones.
- DWI surveyed digital engagement for leisure and entertainment purposes, noting the highest levels of usage was for digital content streaming platforms (77%), followed by travel planning digital activities (50%) and using digital platforms to find events (48%). Overall engagement in high-income and upper-middle-income countries averages around 60%, versus 50% in lower-middle-income countries.

European countries offer lessons on digitizing art

The DWI examined the level of government support for tourism and culture in the digital space, such as through websites, social media, funding, and innovative tools. Most provide some sort of support, and the most active countries are high-income. These countries actively support digital initiatives in the arts and culture sectors, participate in international artistic collaborations, allocate substantial funds to support digital transitions in the arts, and digitize cultural collections, enhancing accessibility and engagement in the digital realm.

For example, the Italian National Tourism Board (Agenzia Nazionale del Turismo) has an official website promoting tourism and culture (Italia.it) and is active on social media, while the National Museum of Italy has digitized its collections in partnership with Google Arts & Culture. France.fr is the equivalent platform in France, managed by Atout France, the French national tourism development agency. France's Ministry of Culture is allocating €1bn to a strategy for innovation in the culture and creative industries. Countries with a partial achievement in this metric include Chile and Egypt, which maintain official digital platforms for tourism and culture promotion, but their engagement with this topic is not as strong as other countries where the official website also features scheduled touristic events and activities throughout the year.

Germany's "Digital Culture" program supports digitalization

The Digital Culture program in Germany seeks to empower cultural organizations to independently leverage digitalization while fostering critical examination and the creative development of digital culture in a community-oriented manner. The initiative addresses the limited adoption of digital concepts in the cultural sector, offering three components: the Digital Fund, Coding da Vinci cultural hackathon, and the Academy for Theatre and Digitality.

The Digital Fund supports partnerships of cultural institutions already implementing digital strategies, offering funding for projects in digital curating, artistic production, presentation, and communication. The program promotes collaboration with digital experts, aiming to bridge the digital competence gap. A diverse number of schemes fall under it. The cultural hackathon Coding da Vinci encourages cultural institutions to make their data accessible through digital technologies. The Academy for Theatre and Digitality provides fellowships for theatre professionals engaged in digital artistic research.

The Federal Cultural Foundation has allocated €18m for the Digital Cultural program from 2018 to 2024.This is an initiative of the German Federal Cultural Foundation, an entity funded by the Federal Government Commissioner for Culture and the Media.

Source: https://www.kulturstiftung-des-bundes.de/en/programmes_projects/film_and_new_media/detail/digital_culture.html

Digital technologies are democratizing access to art and entertainment

The DWI survey measured the public's engagement with experiencing, creating, and sharing art. Across the sample, there is higher engagement in experiencing art compared with creating and sharing it (44% vs 31%). The highest engagement with experiencing art is observed in Estonia, followed by Argentina and Colombia. There are only small differences in average engagement across income levels, showing the widespread and democratic nature of digital devices. In terms of creating and sharing art, the highest engagement is seen in China, followed by Viet Nam and India.

The DWI survey measured engagement with leisure and entertainment across three types of activities: digital content streaming platforms (such as Netflix), event portals, and travel websites. Overall, the highest engagement was observed for digital content streaming platforms (77%), followed by travel websites (50%) and event portals (48%). On average, engagement with leisure and entertainment is similar in high-income and upper-middle-income countries (around 60%) while lower-middle-income countries report a substantially lower engagement (50%). Lower disposable incomes may have a strong influence on possibilities for offline activities, especially traveling.

Pillar 12: Access to Services and Goods

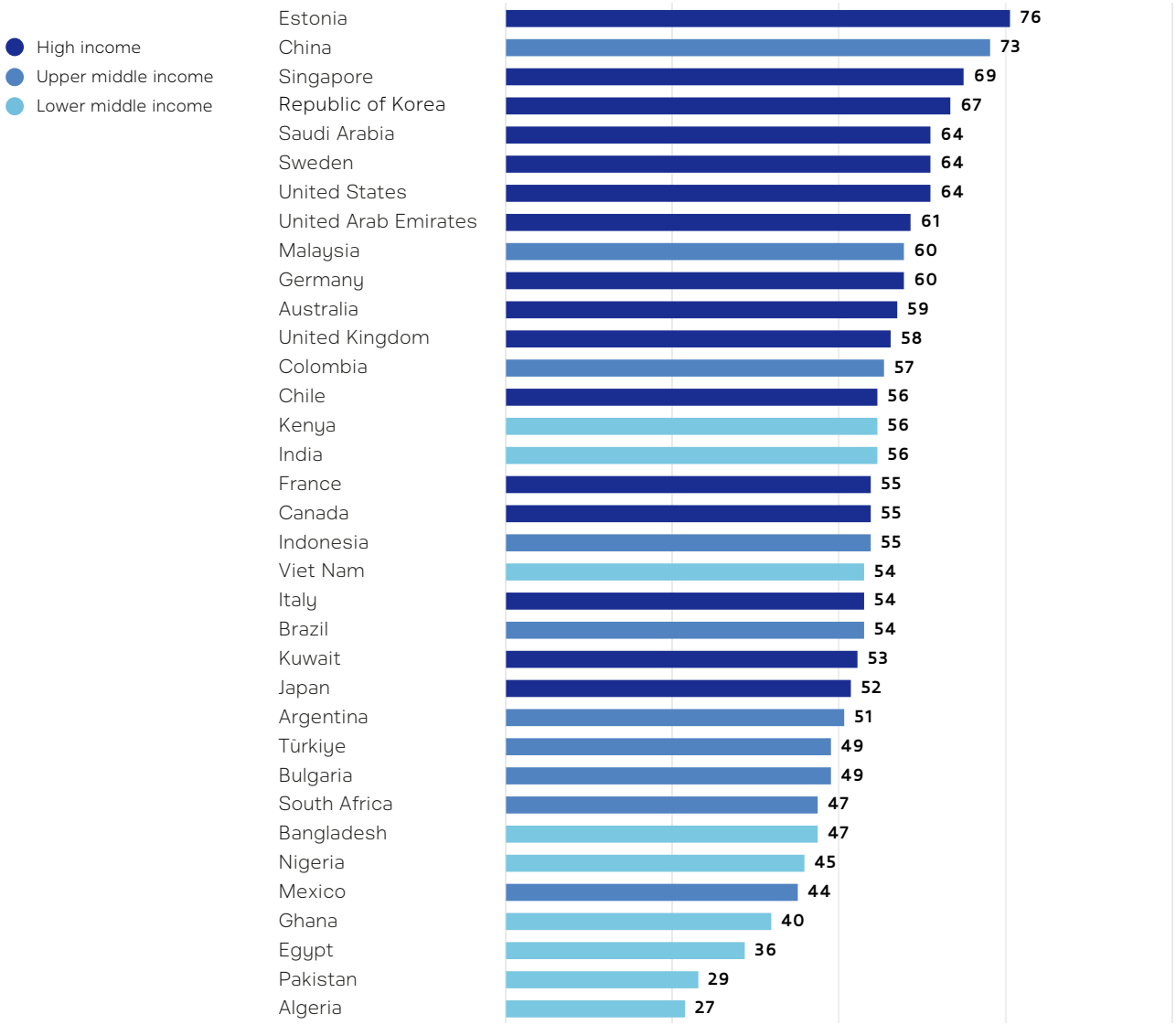
Digitalization has transformed the way we shop, seek services, and fulfill our daily needs. It has greatly expanded the reach of businesses, making it easier for consumers to access a wide array of products and services, often from the comfort of their homes. E-commerce platforms, mobile apps, and online marketplaces have created a more convenient and efficient shopping experience. Additionally, digital technologies have enabled new service models — such as telemedicine, mHealth (mobile health), and online education — making essential services more accessible to more people. This is especially critical for individuals with mobility challenges, those living in remote areas, or during crises like the COVID-19 pandemic when physical access may be limited. The DWI measures performance in this pillar by combining survey and secondary data sources to examine engagement across four areas: e-government, health, finance and commerce, and transportation.

Estonia once again leads in this pillar, followed by China, Singapore, the Republic of Korea, and Saudi Arabia. The top half of the list features mostly high-income countries. Less affluent countries tend to have lower scores.

FIGURE 17

Source: Global Digital Wellbeing Index 2024

Overall performance in the access to services and goods pillar, by country and income level



Key findings

- Seventeen of the 35 index countries have a telecommunications or ICT regulator for digital applications. The Online Services Index sees Estonia leading with a perfect score, while the E-participation Index highlights Japan's lead in empowering citizens in decision-making, with lower-middle-income countries generally underperforming.
- China leads in overall digital health engagement, with lower-middle-income countries surpassing both their upper-middle-income and high-income counterparts.
- Digital payments have an engagement rate of 71% across all countries. Online shopping is led by China (80%). Sweden and the United Kingdom lead in managing finances online, while Estonia, Sweden, China, and Colombia have strong engagement rates for transport tools.

More participatory policymaking is needed on online essential services

Based on ITU data, the DWI examined the existence of a telecommunications or ICT regulator with responsibilities related to overseeing digital applications available to the public. Such a mechanism is observed in 17 of the 35 countries: eight of which are high income, four upper-middle income, and five lower-middle-income.

The DWI also drew from the Online Services Index, a sub-index under the E-Government Development Index (EGDI) by the United Nations. Estonia leads, followed by the Republic of Korea, Singapore, Australia, and the United States. Advanced economies occupy most of the top half of the list, but some upper-middle-income countries stand out, such as Brazil, China, Türkiye, and Mexico. Lower-middle-income countries generally demonstrated poorer performance.

The E-participation Index, a sub-index in the EGDI, examines the level of citizens' empowerment to co-design policy and co-produce service components and delivery modalities. Japan leads in this metric, followed by Australia, Estonia, Singapore, and the United Kingdom. Lower-middle-income countries significantly underperform on average, signaling ample space for growth with regard to digital innovation in participatory policymaking.

The DWI measured engagement with health services across three dimensions: e-health (e.g. consulting a health professional), health and fitness monitoring (e.g. wearable physical activity trackers), and online health and fitness. Overall, health and fitness monitoring tools have the highest engagement (40%). Considering these three dimensions together, China shows the highest engagement, followed by India, Viet Nam, Saudi Arabia, and Egypt. Lower-middle-income countries report the highest engagement on average (39%), followed by upper-middle-income countries (34%), and high-income countries (33%). Perhaps counterintuitively, some high-income countries report the lowest levels of engagement, including Germany, the Republic of Korea, Italy, and Japan.

Finance, commerce, and transport tools are emerging to support local needs

Digital payments show a higher engagement rate in the survey (71%) than managing finances online (53%) and shopping (38%). The uptake of digital payments was further examined using the World Bank's Global Findex 2021 study, which provided data on the share of population over the age of 15 years that has sent or received a digital payment. The highest engagements were in Estonia, Sweden, the United Kingdom, Australia, and Germany. There are substantial differences across country-level income groups, with engagement increasing with higher-income segments. The best performance among upper-middle-income countries is China (13th), while Kenya, a pioneer of mobile payment tools, shows the most engagement among lower-middle-income countries (17th).

Global Findex 2021 data were also used to measure e-commerce engagement, considering the share of population over the age of 15 years that used a mobile phone or the internet to buy something online in the past year. China shows the highest engagement (80%), followed by Sweden, the Republic of Korea, Australia, and the United States. In general, higher engagement rates are associated with higher income levels.

A metric in the DWI survey measured engagement with digital devices to manage finances online in the past year. Sweden reached the top position, followed by the United Kingdom, France, Canada, and Australia. While the difference between the high-income group and upper-middle-income group is modest (60% and 54% average prevalence among respondents, respectively), engagement is substantially lower in the lower-middle-income group (37%). Viet Nam occupies the highest position among lower-middle-income countries (15th).

Lastly, the DWI measured engagement with digital technologies to organize transportation, for example with public transport or car sharing. The highest scores are observed in Estonia, Sweden, China, and Colombia. On average, high-income countries report a 62% engagement rate, upper-middle-income countries 65%, and lower-middle-income countries 54%. Among the lower-middle-income group, India and Kenya stand out (11th and 12th respectively).

In focus

China, a leader in access to goods and services

Placed 10th overall in the DWI, China has the strongest performance among middle-income countries. It achieves the most remarkable performance in the access to services and goods pillar, but also scores above average in the pillars on social connectedness, education and skills, social cohesion, mental health, physical health, and information quality. At the indicator level, the country scores highly in areas such as e-government, online services, e-health provision, health monitoring, finance and commerce, digital payments, and shopping. Although some areas of digital wellbeing show room for improvement, China offers lessons on how to capture and benefit from the opportunities arising from digital technologies.

Several factors contribute to China's success as a digital market. The first is its size: about 76%[65] of its 1.4 billion population[66] uses the internet. This amounts to a huge digitally literate population using applications such as e-commerce, social media, and messaging. In tandem with this, the government is working to expand digital skills: in 2021, the Ministry of Human Resources and Social Security released a plan to increase digital skills education and training to help more people reap the promise of digital development.[67] Connectivity is also helped by developed infrastructure and a competitive market. The country has a virtually universal 4G network reach and internet packages are affordable, at 0.5% of GNI per capita.[68]

China's regulatory landscape has influenced the development of domestic digital platforms. Its social media platforms, such as WeChat, are innovative in combining payments and messaging services. Local platforms go beyond just connecting people online — they also provide services such as gaming, shopping, and financial transactions, fostering large and engaged online communities.[69]

China's retail industry has learned to take advantage of this high degree of connectivity. Online sales have averaged annual growth of 25% for the past seven years, reaching US$1.9trn in 2020 and constituting 25-50% of total retail. Leaders in China's digital retail landscape include Douyin (TikTok), Pinduoduo, and influencer Li Jiaqi, thriving within ecosystems created by Alibaba, JD.com, Tencent and other emerging players. Their success has been attributed to strategies such as creating single entry points, embedding digital evaluation in the customer journey, considering sales as continuous experiences, rethinking logistical fundamentals, and prioritizing customer engagement with a focus on loyalty programs, influencer relationships, and fan marketing.

65 ITU. "China". Retrieved from https://datahub.itu.int/data/?e=CHN

66 World Bank. "Population, total". Retrieved from https://data.worldbank.org/indicator/SP.POP.TOTL

67 OPEN GOV. (2021). "China to Improve Citizens' Digital Skills". Retrieved from https://opengovasia.com/china-to-improve-citizens-digital-skills/

68 Data compiled by the DWI.

69 World Economic Forum. (2015). "Why China leads the world in digital media". Retrieved from https://www.weforum.org/agenda/2015/09/why-china-leads-the-world-in-digital-media/

Unveiling diverse internet experiences worldwide

By Dr. Andrew K. Przybylski
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Much of our understanding about the potential benefits and risks of internet-enabled technologies is derived from the experiences of individuals residing in a select few high-income countries. Attempts to measure digital wellbeing have so far fallen short of meeting the needs of scholars and policymakers who seek insights into how the internet shapes our cultures and daily lives in a more diverse range of settings.

Addressing these limitations has been the driving force behind my involvement in the development of the DWI. What makes the DWI particularly noteworthy is its holistic assessment of digital wellbeing across a spectrum of countries encompassing high, middle, and low-income categories. Consequently, this report strikes an intriguing balance between two narratives.

Firstly, it showcases exemplary practices, formulas, and successes that can serve as models for others. For instance, Canada's remarkable performance across various dimensions of digital wellbeing stands out as a valuable case study. Secondly, the report sheds light on online activism and education beyond Western countries. Individuals in Nigeria, Kenya, and Ghana exhibit the highest levels of online activism, while online courses for formal education are most prevalent in Colombia, Kenya, Nigeria, and Saudi Arabia. These results are particularly intriguing, as academic research into the social and educational domains in these regions has been scarce.

Overall, the DWI should serve as a clarion call for action. It highlights, for example, the need to recognize the right to disconnect from work-related online activities, promote opportunities for improved physical health, and develop the capabilities required to sustain and enhance income through internet-enabled work. These goals and challenges are instrumental in making the internet work better for people worldwide.

Conclusions and Policy Recommendations

The DWI reveals a nuanced digital landscape where progress and opportunity derived from digital technologies coexist with risks and challenges. The study emphasizes the importance of targeted policies to achieve optimal digital wellbeing by addressing these evolving challenges and harnessing the transformative potential of digital technologies for the benefit of all.

The study identifies digital mental health as an area with substantial potential for development globally. As the use of digital technologies increases, maintaining physical health also emerges as a challenge, necessitating more dedicated policies. The right to disconnect is a policy area with considerable potential for development worldwide. Mitigating the risks of misinformation and disinformation requires decisive government action on a global scale. Middle-income countries in particular face challenges with data safety, while cyberbullying emerges as an area urgently in need of comprehensive policy action to ensure a safe and secure digital environment for all.

Considering the enablers of opportunities, the DWI finds that some countries require significant investment to bridge the digital divide. Despite its potential for fostering connections, digital technology does not always lead to meaningful in-person interactions. Advanced economies lead the way in embracing work flexibility, while middle-income countries are harnessing digital technologies to participate in the knowledge economy. The democratization of access to art and entertainment through digital technologies is a positive trend observed globally.

Key services such as e-health and online education are also widely adopted, especially benefiting countries with infrastructure limitations. Middle-income nations demonstrate enthusiasm for online education, but the integration of digital skills into curricula remains an ongoing journey. The dynamism of lower-middle-income countries in online activism stands out but participatory policymaking remains embryonic in some countries.

The following policy and legislative areas stand out as deserving more attention:

Connectivity and universal access

- Especially in less affluent countries, increase investment in digital infrastructure to ensure universal connectivity.
- Support market openness and competition to improve internet affordability.
- Continue to invest in policies promoting universal access and digital literacy.
- Prioritize efforts to bridge digital gaps and promote the inclusion of excluded communities.

Digital economic empowerment

- Invest in the tech sector to empower emerging economies, recognizing its potential to uplift nations in the digital economy.

Digital health engagement

- Maximize the opportunities offered by digital health solutions, especially in middle-income settings with infrastructure limitations and geographic disparities.

Digital inclusion in education

- Develop comprehensive strategies to integrate digital skills into curricula.
- Promote equitable access to digital education tools and resources.

Safe digital environments and cyberbullying

- Prioritize data safety measures and implement comprehensive policies to combat cyberbullying, particularly in middle-income countries.
- Emphasize protection strategies and age-specific regulations for children and youth to create a secure digital space.

Mental and physical health

- Prioritize research (experimental and longitudinal) into the adverse biopsychosocial impacts of widely used digital technologies such as social media and video games. Ideally, this should include collaboration between industry (e.g. the platforms) and academia.
- Consider the development of health and public health services treating/targeting problematic technology use (e.g. gaming disorder).
- Prioritize the development of comprehensive digital mental health frameworks, promoting awareness, support, and integration into education systems.
- Implement policies addressing the physical health impacts of digital technologies, with dedicated measures in curricula.

Ability to disconnect

- Consider legislation that ensures online platforms (gaming and social media) take prescribed measures to mitigate the risks of behavioral addiction/problematic use (e.g. see US SMART Act).
- Consider legislation that requires online social media platforms to provide users with the ability to opt-out of algorithm-driven content curation (e.g. see US FBTA Act).

Work policies in a digital world

- Foster flexible work policies inspired by advanced economies.
- Consider legislation on the right to disconnect, emphasizing healthy boundaries during remote work or study.

Misinformation mitigation

- Implement measures to combat misinformation and disinformation by integrating awareness programs into education systems.
- Foster a trustworthy information environment through collaborative efforts with industry to promote accurate and reliable information.

Participatory policymaking

- Foster collaboration and knowledge-sharing between high-income and middle-income countries to develop digital tools that allow for participatory policymaking.

Appendix

Methodology

The methodology appendix outlines the sources of data, survey questions and policy areas considered in the DWI. It then explains the process by which these inputs were translated into scores for DWI indicators, pillars, and the overall index.

DWI data

This section presents the different types of data used to compute the DWI and their related sources, unit, and description. The DWI includes a total of 94 indicators and three types of data:

Hard data indicators (see Table 1)

29 indicators from recognized secondary sources such as the World Bank, ITU, WHO, etc. were used for the index. Only established data sources with recent releases with sufficient coverage of the DWI countries were retained.

Survey indicators (Table 2)

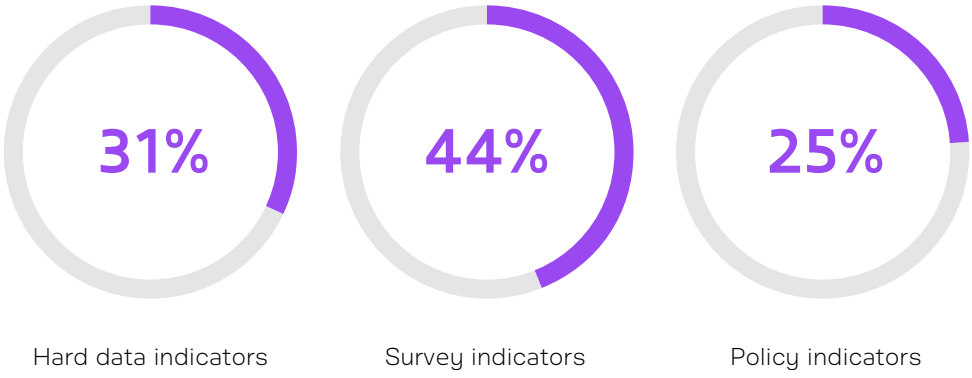
41 survey indicators were obtained from 26 survey questions. These are proprietary primary data to measure digital wellbeing aspects without established indicators, designed with the help of survey experts and the review of the advisory board. The survey questions are part of a wider questionnaire, the Digital Wellbeing Survey, which gathered the views of 1,000 respondents among the general internet-using public in each of the 35 DWI countries, totaling 35,000 interviews globally.[70]

Policy indicators (Table 3)

23 policy indicators were assessed through desk research with the help of specific questions for each indicator. The resulting unique and proprietary data were designed to evaluate the existence or drafting of policies in each country. The following pages present a detailed description of indicators comprised in the DWI, by type.

FIGURE A1
Source: Global Digital Wellbeing Index 2024

Composition of the DWI by indicator type



70 Further details about the Digital Wellbeing Survey can be found at https://sync.ithra.com/research.

Hard data indicators

TABLE A1 Source: Global Digital Wellbeing Index 2024

Indicator (unit)	Description	Source
Population covered by 4G network (%)	Percentage of inhabitants living within range of a 4G mobile-cellular signal, irrespective of whether or not they are mobile phone subscribers or users.	International Telecommunication Union (ITU)
International bandwidth (bandwidth per Internet user, bit/s)	Bandwidth refers to the level at which data is transmitted from the internet. This indicator measures the international bandwidth per internet user in bits per second (bit/s).	International Telecommunication Union (ITU)
Internet penetration (%)	Individuals using the internet (% of population). Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.	International Telecommunication Union (ITU)
Fixed-broadband cost (% of GNI pc)	Fixed-broadband basket cost (5GB), measured in Gross National Income per Capita.	International Telecommunication Union (ITU)
Data-only mobile-broadband cost (% of GNI pc)	Data-only mobile-broadband basket cost (2GB), measured in Gross National Income per Capita.	International Telecommunication Union (ITU)
Use of virtual social networks (%)	Active social media users as a percentage of total population, where data is based on active users of the most popular social media app in each country. Social media accounts do not equate to unique individuals.	Datareportal - Global Digital Report 2023
Internet access in schools (Score 1-7, where 7 is best)	Internet access in schools, 1–7 (best)	World Economic Forum - Global Social Mobility Report
Digital and ICT skills in education system (Score 1-7, where 7 is best)	Average answer to the WEF EOS survey question: In your country, how well does the current education system meet the skills needs of a competitive economy? Digital and technology skills [1 = Not at all; 7 = To a great extent]	World Economic Forum Executive Opinion Survey
Flexibility of working arrangements (Score 1-7, where 7 is best)	Average answer to the WEF EOS survey question: In your country, to what extent do companies offer flexible working arrangements such as remote, hybrid and part-time work? [1 = Not at all; 7 = To a great extent]	World Economic Forum Executive Opinion Survey
ICT workforce (%)	United Nations Educational, Scientific and Cultural Organization (UNESCO) - 2022	Percentage of graduates from tertiary education graduating from ICT programs, both sexes (%)
Active tech sector community (natural logarithm)	GitHub/Horizon Group - 2023	GitHub active contributors per million population
E-applications commitment (1/0)	ITU - 2020	Does the telecom/ICT regulator (or the entity in charge of its regulation) have responsibilities related to e-applications and/or m-applications? E-applications include e-education, e-health, e-agriculture, and digital financial services.
Online Services Index (score 0-1, where 1 is best)	United Nations E-Government Report - 2022	The Online Services Index (OSI) is a sub-index under the E-Government Development Index by the UN. OSI is the normalized and weighted score of five subindices: institutional framework (10%), service provision (45%), content provision (5%), technology (5%), and e-participation (35%). The final OSI value is somewhere between 0 and 1.

Indicator (unit)	Description	Source
E-participation (score 0-1, where 1 is best)	United Nations E-Government Report - 2022	The E-participation Index is also a sub-index in the UN E-Government Report. It benchmarks three elements: e-decision-making, which refers to "empowering citizens to co-design policy and co-produce service components and delivery modalities"; e-information, which refers to providing information to people and citizens; and e-consultation, which refers to "engaging citizens with public policies and services"
Digital payments (%)	World Bank Global Findex - 2021	The share of the population over the age of 15 years that has sent or received a digital payment.
Shopping (%)	World Bank Global Findex - 2021	The share of the population over the age of 15 years that has used a mobile phone or the internet to buy something online.
Universal Access/Service Policy (1/0)	ITU - 2022	Whether there are any operators under obligation to provide UAS: has your country adopted a universal access/service policy or rural telecoms development policy (as a policy of its own or as part of a wider policy)?
Digital gender inclusion (score 0-1, where value between 0.98-1.02 shows gender parity)	ITU - 2022	The gender parity score measures the share of women who use the internet divided by the share of men who use the internet. If the score is less than 1, then men use the internet more than women and vice versa. Gender parity is seen at a value between 0.98 and 1.02.
Digital socio-economic inclusion (ratio)	World Bank - 2021	This indicator calculates the proportion of digital payments made or received by the lowest-income 40% of the population divided by the digital payments made or received by the highest-income 60% of the population. Digital payments are defined as using digital wallets, credit cards, debit cards, mobile phones, or the internet to pay bills or buy something online.
Share of the population covered by internet (%)	ITU - 2021	Percentage of households with internet access at home
Time spent on social media (hours and minutes)	We are Social and Meltwater – Global Digital Report - 2023	Average amount of time spent by users aged 16 to 64 years each day on a device (converted to minutes)
Physical inactivity (%)	World Health Organization (WHO) - 2022	Prevalence of physical inactivity (adults aged 18+)
Cybersecurity commitment (score 0-100, where 100 is best)	Fixed-broadband basket cost (5GB), measured in Gross National Income per Capita.	Cybersecurity commitment made by a country based on a composite score of the assessment of legal measures, technical measures, organizational measures, capacity development, and cooperative measures.

Hard data indicators (continued)

TABLE A1 Source: Global Digital Wellbeing Index 2024

Indicator (unit)	Description	Source
VPN adoption rate (%)	Atlas VPN - Global VPN Adoption Rate - 2022	This measures VPN usage across the world, which varies widely. In countries that ban social media platforms, websites, and applications, users turn to VPNs to avoid these restrictions. Others use VPNs to access geo-blocked streaming services. In addition, many people connect to a VPN to ensure their privacy and security online.
Governance framework - data protection authority (1/0)	ITU - 2022	Does a separate data protection/privacy authority exist in your country? Including data for overlapping mandates, jurisdiction over data protection issues related to electronic communications and transactions, separate cross-sector national authority with mandate in privacy, data protection and related issues, name of authority, and mechanisms of collaboration with the ICT regulator.
Governance framework - internet-related issues (1/0)	ITU - 2022	Does a separate regulatory authority exist for issues related to the internet in your country? Including data for name of authority, internet issues related to internet domain names or governance, jurisdiction over internet-related issues, mechanisms of collaboration with the ICT regulator, and overlapping mandates on internet-related issues.
Governance framework - consumer protection authority (1/0)	ITU - 2022	Does a separate consumer protection authority exist in your country? Including data for separate cross-sector national authority for consumer protection, name of authority, jurisdiction over consumer protection issues in the ICT sector, mechanisms of collaboration with the ICT regulator, and overlapping mandates.
Secure internet servers (count per million people)	Netcraft through World Bank - 2020	Secure internet servers per million population.
Cyberthreat exposure (score 0-1, where 0 is best)	PasswordManagers.co -Cybersecurity Exposure Index - 2020	Includes final score for six data points: exposure to cybersecurity crimes such as malware encounter rate, ransomware encounter rate, cryptocurrency mining encounter rate, drive-by download page encounter rate, cloud provider-related incoming attacks, and level of commitment to cybersecurity. Scores are calculated at a scale of 0 to 1, where the higher the score, the higher the exposure.

Survey indicators

TABLE A2 Source: Global Digital Wellbeing Index 2024

Index pillars/ sub-pillars	Survey question
Social connectedness Active online engagement: Level of user engagement	Thinking about the past year, how would you describe your level of engagement in social media? Please rate on a scale of 1 to 4, where 1 represents using social media actively and 4 represents using social media passively. Passive engagement: only reading comments, watching videos, and looking at images without further interaction. Active engagement: in addition to the above, making positive comments, interacting with peers, and posting or liking content regularly. 1. I only use social media actively 2. I use social media more actively than passively 3. I use social media more passively than actively 4. I only use social media passively 5. I do not use social media
Entertainment and culture Arts and culture: Experiencing art (option 4) Creating and sharing art (option 5) **Entertainment and culture** Leisure and entertainment: Digital entertainment (option 2) Finding offline events and activities (Option 3) Traveling (option 1)	Thinking about the past year, which activities have you done on a digital device? Please select all that apply. 1. Planned a holiday or vacation 2. Accessed entertainment (streaming services, sports streaming and videos, gaming, music, books) 3. Looked for offline events and activities 4. Engaged with artistic and/or cultural content (e.g. art, music, literature, fashion, heritage artifacts) 5. Created and/or shared your artistic and/or cultural content (e.g. art, music, literature, fashion, heritage artifacts) 6. None of the above
Social connectedness Technology-facilitated connectedness opportunities: Staying connected with friends, family, and colleagues (option 1) To meet new people online or in person (option 2) **Social connectedness** Active online engagement: Online social activism (option 3)	Thinking about the past year, which activities did you do using a digital device? Please select all that apply. 1. Stayed connected with family, friends, and colleagues 2. Met new people 3. Engaged in or organized action on an important issue 4. Developed personal conversations or relationships with virtual assistants (e.g. computer-generated bots like ChatGPT, Alexa, or Siri) 5. None of the above
Education and skills Technology-facilitated education opportunities: Education access	How important is your digital device in helping you to access educational resources? 1. Very important 2. Somewhat important 3. Not very important 4. Not at all important 5. Don't know
Education and skills Technology-facilitated education opportunities: Online learning (option 1) Information access (option 2) **Work, productivity and income** Technology-enabled work: Looking for a job (option 3) Collaboration (5) Automating tasks (option 4) Starting business (option 6) Generating income (option 7) **Access to services and goods** Finance and commerce: Managing finances online (option 8)	Thinking about the past year, which activities have you done on a digital device? Please select all that apply. 1. Took an educational course that gives a formal degree or certificate 2. Found information or news 3. Applied for a job 4. Automated some of your work or education tasks (e.g. writing standardized text for emails or word processors, retrieving and updating data using spreadsheets, using generative artificial intelligence) 5. Collaborated with peers on a work or educational task 6. Started an online business 7. Sold products or services online 8. Managed my finances online 9. None of the above

Survey indicators (continued)

TABLE A2 Source: Global Digital Wellbeing Index 2024

Index pillars/ sub-pillars	Survey question
Access to services and goods Health: E-health provision (option 5) Digital health monitoring (option 4) Health and fitness activities (option 3) **Access to services and goods** Transportation (option 1)	Thinking about the past year, which activities have you done on a digital device? Please select all that apply. 1. Organized transportation of any kind (e.g. looking up public transport times, booking tickets, ordering a taxi or car sharing service) 2. Paid for goods or services online 3. Participated in online health and fitness activities 4. Monitored my health and fitness metrics 5. Consulted a health professional 6. None of the above
Ability to disconnect Ability to ensure work/study-life balance	When working or studying remotely, how easy or difficult do you find it to maintain boundaries between your work and personal life or rest? Boundaries when working remotely could involve having a designated workspace, adhering to consistent work and rest hours, avoiding multitasking, and unplugging from work-related tasks at the end of the day. 1. Always easy 2. Mostly easy 3. Sometimes easy 4. Mostly difficult 5. Always difficult 6. Don't know
Ability to disconnect Take measures for digital wellness	When working or studying remotely, which measures do you consistently take to ensure your wellness? Please select all that apply. 1.Taking regular breaks when you don't use technology 2. Doing exercises for your eyes 3. Using equipment that maintains/improves your physique (e.g. ergonomic chair, standing desk, wrist-support mousepad or keyboard) 4. Making sure you meet people in-person 5. Making sure you engage in a physical activity 6. Using technology to track and monitor your wellbeing (e.g. screentime) 7. Other measures 8. None of the above
Mental health Maintaining mental health: Mental health impact of remote work/ studying	Thinking about a typical week of working or studying remotely, which emotional states do you commonly experience? Please select all that apply. 1. Loneliness 2. Difficulty concentrating 3. Stress or anxiety 4. Lack of motivation to perform tasks 5. Irritability 6. Guilt or a sense of failure 7. None of the above
Mental health Maintaining mental health: Mental health impact of spending excessive time online	Thinking about when you spend longer than usual using digital technology (such as a smartphone or computer), do you subsequently experience any of the following more than normal? 1. Mood swings 2. Feeling guilty 3. Lack of confidence 4. Low mood/sadness 5. Feeling anxious 6. Fatigue 7. Stressed 8. Loneliness 9. None of the above

Index pillars/ sub-pillars	Survey question
Mental health Policies to support mental health: Access to treatment for online addiction	Based on your knowledge, if you or your family member ever needed to get treatment for addiction to online content, how confident are you that you will be able to access professional help? 1. Very confident 2. Somewhat confident 3. Not very confident 4. Not at all confident 5. Don't know
Mental health Maintaining mental health: Mental health impact of technology	Which of the following is closer to your opinion. My use of digital technology... 1. Improves my mental health 2. Worsens my mental health 3. Has no effect on my mental health
Information quality Combating misinformation: Trust in online information	To what extent do you trust information you see online? Please rate on a scale of 1 to 5 where 1 represents completely trusting what you see and 5 represents completely distrusting what you see. 1. I completely trust what I see online 2. I generally trust what I see online 3. I somewhat trust what I see online 4. I generally don't trust what I see online 5. I completely distrust what I see online 6. Don't know
Information quality Combating misinformation: Verify online information	When you doubt the validity of the information you see online, what do you do to generally check if it's true or not? Please select all that apply. 1. I check information on multiple sources 2. I check social media comments 3. I check factchecking websites 4. I use independent review websites before ordering something online (e.g. Trustpilot) 5. I check the author's reputation (e.g. by investigating their affiliations, heavy promotion of particular viewpoint) 6. Other measures 7. I don't do further checks 8. Don't know
Cybersafety Protecting personal data: Personal data protection skills	Which strategies do you use to protect yourself against cyber-crime? Please select all that apply. Cyber-crime is a criminal activity conducted online, such as phishing financial fraud or identity theft Personal data examples: name and surname, living address, phone number, pictures of oneself 1. I don't open emails/messages from unknown sources 2. I make sure none of my personal details are publicly visible (by adjusted privacy settings on digital devices, using social media accounts or apps in private mode) 3. I never use public Wi-Fi to access sensitive information such as online banking 4. I use password manager software 5. I have security software/firewall installed to protect my data 6. Other cyber-safety measures 7. I don't take any active cyber-safety measures
Cybersafety Combating cyberbullying: Cyberbullying prevalence	Have you ever personally experienced online bullying, harassment or threatening behavior? 1. Yes 2. No 3. Don't know 4. Prefer not to say

Survey indicators (continued)

TABLE A2 Source: Global Digital Wellbeing Index 2024

Index pillars/ sub-pillars	Survey question
Cybersafety Combating cyberbullying: Health impact of online bullying	Which of the following resulted from the bullying, harassment or threatening behavior you experienced online? Please select all that apply. 1. Felt alone, sad, and/or hopeless 2. Felt isolated socially 3. Withdrew from school, work, or other commitments 4. Seriously impacted my mood and/or anxiety levels 5. Other 6. None of the above
Cybersafety Combating cyberbullying: Responding to online bullying	Which of the following have you done in response to the bullying, harassment, or threatening behavior you experienced online? Please select all that apply. 1. Blocked the person or person(s) on the platform 2. Reported the person or person(s) to the platform's support or help center 3. Reported the person or person(s) to school administrators (if in school) or place of employment (if in the workplace) 4. Reported the person or person(s) to civil authorities 5. Made the account private 6. Removed personal information from the account 7. Deleted your personal account on the platform (e.g. deleted Facebook/Instagram) 8. Told a trusted family member or friend about the bullying 9. Other 10 None of the above
Mental health Addictive behaviors: Binge watching	Which of the following best describes how frequently each of the following occur? 1. Always 2. Often 3. Sometimes 4. Rarely 5. Never 6. Don't know I watch TV shows more often than I should I sometimes mislead my family/friends about how much time I've been spending watching TV My family express their disapproval of my spending what they claim is too much time watching TV shows/streaming content

Index pillars/ sub-pillars	Survey question
Mental health Addictive behaviors: Gaming	In the past 12 months, when gaming have you … 1. Yes 2. No 3. Don't know …thought gaming has become the dominant activity in your daily life? …felt more irritability, anxiety or even sadness when you try to either reduce or stop your gaming activity? …felt the need to spend an increasing amount of time engaged in gaming in order to achieve satisfaction or pleasure? …failed when trying to control or cease your gaming activity? …lost interest in previous hobbies and other entertainment activities as a result of your engagement with the game? …continued your gaming activity despite knowing it was causing problems between you and other people? …deceived any of your family members, therapists, or anyone else because of the amount of your gaming? …played in order to temporarily escape or relieve a negative mood (e.g. helplessness, guilt, anxiety)? …jeopardized or lost an important relationship, job, or an educational or career opportunity because of your gaming?
Mental health Addictive behaviors: Social media use	During the past year, when using social media have you … 1. Very often 2. Often 3. Sometimes 4. Rarely 5. Never 6. Don't know …found that you are only able to think of the next time you will be able to use social media? …felt dissatisfied because you wanted to spend more time on social media? …felt bad when you could not use social media? …tried to spend less time on social media, but failed? …neglected other activities (e.g. hobbies, sport) because you wanted to use social media? …had arguments with others because of your social media use? …lied to your parents or friends about the amount of time you spend on social media? …used social media to escape from negative feelings? …had serious conflict with family members because of your social media use?

Survey indicators (continued)

TABLE A2 Source: Global Digital Wellbeing Index 2024

Index pillars/ sub-pillars	Survey question
Mental health Addictive behaviors: Impact on behavior (average of 3*,4*) **Physical health** Maintaining physical health: Impact on healthy habits (average of 1*, 2*)	How often does your use of technology (such as a computer or smartphone, for either work or leisure) ... 1. Daily 2. At least once a week 3. At least once a month 4. At least once a year 5. Never ...cause you to skip sleep? ...cause you to miss a meal? ...result in you missing time with your family/friends? ... result in you missing work or school?
Physical health Maintaining physical health: Physical health impact of spending excessive time online	Thinking about when you spend longer than usual using digital technology, do you experience any of the following? 1. Dry eyes or blurred vision 2. Headache 3. Neck or back pain 4. Wrist pain 5. Decreased sleep quality 6. Tiredness 7. None of the above
Physical health Maintaining physical health: Physical health impact of technology	Which of the following is closer to your opinion. My use of digital technology... 1. Improves my physical health 2. Worsens my physical health 3. Has no effect on my physical health

Policy indicators

TABLE A3 Source: Desk research conducted for the DWI across official sources. Scored 0-2, where 0=No, 1=Partially, 2=Yes

Index pillars/ sub-pillars	Survey question
Existence of local social engagement platforms	Do local social engagement platforms exist? Could be for e.g. volunteering, public lessons, events or meeting up with people (e.g. meetup.com)
Recognition of online micro-credentials	Does the country have a recognition framework for micro-credentials?
Remote work recognized by law	Does the government protect remote workers by law? (e.g. by requiring employers to provide appropriate equipment and training, ensuring that remote workers have access to necessary benefits and protections, and setting clear expectations for work hours and communication)
Digital nomad visa	Does the country have a digital nomad visa?
Culture promoted by the government	To what extent does the government provide incentives to promote tourism and culture in digital space [website, social media, contests/funds to digitize arts and culture, innovative digital solutions e.g. AR/VR, metaverse]
ICT accessibility for people with disabilities	Has the government established a regulatory framework to ensure ICT accessibility for persons with disabilities?
Digital learning initiatives for all	Does the country have initiatives to promote digital literacy — i.e. using a computer, typing — that are outside formal education?
Inclusive remote learning initiatives	Are there policies in place to ensure equal access to remote/digital learning for children living in remote locations or from lower socio-economic backgrounds?
Recognition of online addiction	Does the government recognize online addiction and have provisions to offer support to people suffering from it, for example special counseling sessions to address online addiction and other such resources?
Digital mental health in education curricula	Does the education curriculum include learning about the potential mental health risks associated with digital tech use and how to prevent them?
Recommendation on healthy tech use	Has the government released recommendations on the healthy use of digital technologies (e.g. screen time, audio levels for safe hearing, use of blue light filters)?
Digital physical health in education curricula	Does ICT curriculum include learning about the potential physical health risks associated with digital tech use and how to prevent them?
Right to disconnect	Does the law recognise the right to disconnect?
Fake news awareness initiatives	Has the government initiated campaigns to raise awareness about recognizing and staying alert for misinformation, distorted information AI-generated information and fabricated images on digital platforms?
Disinformation in curricula	Does the curriculum include learning about recognizing disinformation?
Education for parents on children's digital safety	Is there publicly available information (training, informational website, e-learning platform, awareness campaigns) for parents on children's digital safety?
Education for parents on control tools	Is there publicly available information (training, informational website, e-learning platform) for parents on how to use parental control tools on digital devices?

Policy indicators (continued)

TABLE A3 Source: Desk research conducted for the DWI across official sources. Scored 0-2, where 0=No, 1=Partially, 2=Yes

Index pillars/ sub-pillars	Survey question
Education for parents on cyberbullying	Does the education involve teaching about how to address and prevent cyberbullying?
Cyberbullying in curricula	Does the education involve teaching about how to address and prevent cyberbullying?
Digital safety in curricula	Does the curriculum involve teaching digital safety?
Age recommendation	Do recommendations regarding safe age for using social media and gaming exist?
Cyberbullying prohibited by law	Does the country enforce laws against cyberbullying?
Existence of reporting mechanisms for online abuse	Do reporting mechanisms exist where parents and children can report incidents of online abuse and seek help?

Technical notes on index calculation

All the aforementioned data undergo four steps of data transformation before they are converted into DWI scores. The summary below offers an overview of these steps, which are described in more detail in the following pages.

Data transformation steps summary

01

First, the minimum and maximum values for each indicator are calculated. For those indicators with inherent natural or theoretical boundaries, these boundaries are established as the minimum and maximum for their respective series. In cases where an indicator lacks such natural boundaries, winsorization is implemented by setting the series' minimum and maximum at the 5th and 95th percentiles, effectively addressing outliers within the data series.

02

After the outliers have been addressed, the indicators are normalized using min-max normalization, enabling the standardization of the data range for each indicator to fall between 0 and 100. Normalized scores are then assigned to each country proportionally based on their performance for each indicator.

03

The DWI relies on a wide range of data sources, leading to the presence of missing data for some indicators or countries. To address this, a data-driven approach for imputing missing data, specifically the k-Nearest Neighbor method, is employed. For each indicator with missing values, an average of the values of the nearest neighbors is computed, identified using the top correlated indicators within the same pillar. This ensures the generation of a complete and robust dataset for analyses.

04

The process is concluded by assigning equal weight to each indicator in the DWI. This results in every indicator being accorded the same importance when determining the overall index score. The pillar-level scores are computed by averaging the individual indicator scores, and similarly, the combination of pillar scores is employed to derive each country's overall DWI score.

1. Calculating the minimum and maximum values for each indicator

1.1 Treatment of indicators with natural/theoretical boundaries

1.1.1 Defining natural/theoretical boundaries

Indicators with natural or theoretical boundaries, such as survey questions, policy indicators (0-2) or quantitative indicators expressed as percentages (0-100), follow an intuitive normalization process.

1.1.2. Minimum and maximum as boundaries

For such indicators, the natural or theoretical boundaries are considered as the minimum and maximum values of their respective data series. This approach ensures that these indicators are normalized within their predefined limits.

1.2 Winsorization for indicators without natural/theoretical boundaries

1.2.1. Identifying indicators without natural/theoretical boundaries

Indicators lacking natural or theoretical boundaries require a different approach to normalization.

1.2.2 Winsorization

For these indicators, winsorization is used. This process involves utilizing the full dataset, including non-DWI countries, from the year 2017[71] until the most recent value, to identify the 5th and 95th percentiles of the data distribution.[72] These values are then set as, respectively, the minimum and maximum values for normalization.

1.2.3 Managing outliers

Winsorization is implemented to mitigate the impact of outliers on both tails of the distribution. Any data points falling below the 5th percentile are assigned 0 (the minimum normalized value), while those exceeding the 95th percentile are assigned 100 (the maximum normalized value). This approach ensures that extreme values do not unduly influence normalization.

2. Normalization

2.1 Choice of normalization method

The data normalization method chosen in an index depends on the conceptual framework and the characteristics of the data employed. Given the presence of categorical data (for example, policy indicators) within the quantitative data in the DWI, the preferred normalization method is min-max scaling.

71 This will allow the DWI to potentially include additional countries in the future without changing the reference set. It also allows for a wider data series without going too far back in time.

72 Winsorization commonly uses the 5th and 95th percentiles to balance addressing outliers and preserve data distribution. This approach is robust, practical, and follows a widely accepted convention in statistical analysis, providing standardized comparability across studies.

2.2. Linear scale normalization with min-max scaling

Explanation of the method:
Linear scale normalization using min-max scaling transforms a dataset's values to a specified range by linearly transforming each data point based on the minimum and maximum values in the dataset. This approach makes sure that the normalized scores of all indicators are comparable across each other, as they fit within an established range (0-100 for the DWI).

Formula used in our calculation:

$$\text{Normalized Value} = \frac{\text{Raw Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}} * 100$$

3. Imputing missing data

The DWI relies on a wide range of data sources, and it is natural to have data missing for a few countries for some indicators. Missing data can pose a significant challenge to the construction of a robust and unbiased index and needs to be handled carefully. It is essential to address missing data systematically to ensure the validity and reliability of the results. To this end, missing data are imputed using the k-nearest neighbors imputation method, a common practice in data analysis, which is well-suited to the context of the DWI. This imputation method aims at identifying, for each country with missing data, the countries that are more closely correlated from a statistical standpoint from which to compute an average for the missing data point. We improve this standard methodology by applying some statistical refinements, which are described in the next subsection. This enhanced k-nearest neighbors method with data-driven adjustments efficiently handles missing data while maintaining statistical relevance and data completeness for the DWI.

3.1 DWI approach to missing data

For imputing missing data, the DWI adopts the k-nearest neighbors approach, enhanced with some data-driven improvements. Given a missing value in country "C" for an indicator "X", the step-by-step process is described below:

3.1.1 Identifying relevant indicators

The three indicators that are most strongly correlated with indicator "X" are identified within the same pillar. These indicators must include data for the country "C" (otherwise the next most strongly correlated indicators are taken into consideration).

3.1.2. Finding the nearest neighboring countries

Next, the average Euclidean distance between country "C" and all other countries is calculated for each of the indicators selected in step 1. This is done to identify the three countries that are statistically nearest to country "C" for the selected indicators. It is worth keeping in mind that these neighboring countries will vary for each indicator.

3.1.3. Replacing missing values

An average of the value of the three nearest neighboring countries for indicator "X" is calculated, and this value is imputed to country "C"

4. Weightings and construction of averages

4.1 Weightings

When aggregating different indicators into each pillar and different pillars into the index score, a choice has to be made in terms of their relative weight. In the DWI, each indicator and pillar are assigned an equal weighting factor of 1, meaning that they all contribute equally to the overall score of the index. This weighting approach offers distinct advantages over arbitrary weights. First and foremost, it promotes transparency in the index calculation, as stakeholders can easily understand that every indicator carries the same level of importance. This transparency makes it easier for policymakers, businesses, and researchers to interpret and utilize the DWI finding. Additionally, equal weighting ensures that no single pillar disproportionately influences the final index score, thereby reducing the potential for bias induced by specific indicators. This approach is widely used in similar indices, allowing for greater conceptual clarity.

4.2 Construction of averages

After the weighting process, to derive the pillar-level scores, the scores of the individual indicators are simply averaged within each pillar. Subsequently, the pillar scores are aggregated to establish each country's DWI score, thus producing an overarching measure that comprehensively reflects a nation's digital wellbeing performance.

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Sync is a digital wellbeing initiative by King Abdulaziz Center for World Culture (Ithra) with a vision to create a world where we are all in control of our digital lives.

The program is guided by extensive research — in collaboration with global entities — to understand the implications of technology and how it's affecting our lives, and translate the knowledge we gain into awareness campaigns, tools, experiences, educational content and programs aiming to raise global awareness around the topic.

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