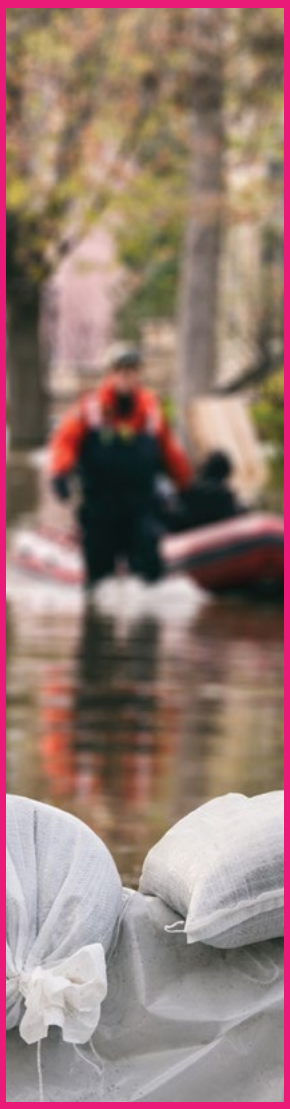

Foundation

World Risk Poll 2021: A Resilient World?

Understanding vulnerability in a changing climate

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Lloyd's Register Foundation is an independent global charity that helps to protect life and property at sea, on land and in the air. To do this, we support education, research and public engagement, and promote scientific excellence.

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ABOUT GALLUP

Gallup delivers analytics and advice to help leaders and organisations solve their most pressing problems. Combining more than 80 years of experience with its global reach, Gallup knows more about the attitudes and behaviours of employees, customers, students and citizens than any other organisation in the world. For more information about Gallup, please visit **www.gallup.com/contact**.

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Preface

Dr. Ruth Boumphrey
Chief Executive
Lloyd's Register Foundation

We live in an interconnected and turbulent world. Global trends and events, from climate change and extreme weather events to population growth, pandemics and conflicts produce shocks that are felt keenly and differently at local, national and regional levels, and through critical complex infrastructure and supply chains on which we increasingly depend.

These shocks all create their own risks to safety, and so, in this changing world, it is more critical than ever for communities and systems to be resilient to minimise the resulting harm.

Lloyd's Register Foundation has had a strong interest in resilience — the ability to cope with and recover from such shocks — since we published our Foresight Review of Resilience Engineering in 2015. A key focus of the review was on building the resilience of infrastructure sectors such as food, water, transportation, telecommunications and healthcare that are critical to preserving life and supporting a rapid return to normality.

Our World Risk Poll provides an opportunity to get a unique picture of how people around the world experience and perceive risk. For the 2021 Poll, we decided to ask questions to help increase understanding of how people around the world feel about the resilience of their households, their communities and their countries. By bringing together data on individual risks and data on resilience, we can gain insights to help us better manage risk, build resilience and support the safety of life and property.

Previous work has been done to assess and map the resilience of systems and nations, and the measures by which to do so are still being refined. What the World Risk Poll adds to the mix is a broader range of indicators than has previously been used, including 'soft' factors such as individual agency and community cohesion alongside personal perspectives on more traditional measures such as infrastructure capacity. These measures are used to build an assessment of resilience in the World Risk Poll Resilience Index.

The Resilience Index and the data it is built on will prove an invaluable resource for anyone involved in constructing and delivering interventions to improve resilience around the world, because it gives insights beyond the obvious. For example, while we can see that higher-income countries are typically (but not always) more resilient than lower-income countries overall, we can also identify aspects of resilience, such as community cohesion, where lower-income countries are often stronger.

The World Risk Poll data enable us to quantify resilience gaps between countries and regions, pinpoint particular vulnerabilities, identify the factors that make the most difference and highlight the existing resilience strengths that can be harnessed to make people safer. Crucially, this baseline will also enable us to measure future change and, we hope, the move towards a more resilient and safer world.

Executive summary

Resilience refers to people's ability to handle the difficulties they face in their lives. Though the concept is simple, people's capacity for resilience depends on a range of factors from individual circumstances to community support and broad societal conditions. Global hazards like climate change-induced severe weather events and the Covid-19 pandemic highlight the need for coordinated action to build resilience among the world's most vulnerable populations. However, global data on the factors underpinning resilience that could be used to build better systems around the world are limited.

To respond to this need, the 2021 Lloyd's Register Foundation World Risk Poll includes a wide range of indicators gauging the ability of people and communities to handle disasters arising from natural hazards and other forms of adversity — including their financial security, social support, access to vital infrastructure and other conditions that combine to form the foundation for resilience. The study includes results from 125,911 people in 121 countries and territories across all global regions.

Key findings

The World Risk Poll includes indicators that assess resilience at the individual, household, community and society levels.

Individual- and household-level indicators

- **Sense of agency:** Only about half of people worldwide (52%) said there is anything they could do to protect themselves or their families from a disaster, while 36% said there is nothing they could do, and 6% said 'it depends' on the type of disaster. Six percent said they 'don't know' (page 12).
- **Financial security:** Globally, 34% of people said they could cover basic needs for less than a month if they lost all their income, including 12% who said they could cover basic needs for less than a week. People in Southern Asia and Northern Africa were most vulnerable in the event of income loss (page 13).
- **Connectivity:** Internet access has become a lifeline for people in disaster situations. However, people in low-income countries and territories remain far less likely than those in high-income countries to say they have it — 27% versus 91%, respectively (page 14).
- **Disaster planning:** A majority of people in just 14 of the 121 countries and territories polled said they have a plan all their household members know about in case of a disaster. Regionally, people in Southeastern Asia were most likely to have prepared such plans (page 16).

Community- and society-level indicators

- **Social capital:** Overall, 23% of people worldwide believed their neighbours care about them 'a lot.' This indicator of community support was higher among residents of low-income countries (35%) than high-income countries (20%) (page 19).
- **Infrastructure:** Venezuela and Lebanon, two countries facing political crises and economic collapse, were among those where people were most likely to say they are dissatisfied with three key forms of local infrastructure: healthcare, education and roads/highways (page 23).
- **Discrimination:** Discrimination based on social and demographic characteristics reduces community and social cohesiveness and often diminishes access among disadvantaged groups to economic opportunity, improved social mobility, safety net benefits and other factors that increase people's resilience. Worldwide, 12% of people said they had been discriminated against because of their nationality or ethnic group, 12% because of their religion and 11% because of their sex. People in Zambia (52%), Bolivia (49%), Cameroon (49%), Uganda (49%), Brazil (48%) and the United States (46%) were most likely to have experienced one or more forms of discrimination (page 24).
- **Government support:** Nineteen percent of people said the government of their country cares about them 'a lot,' while 40% said their government cares 'somewhat' and 37% 'not at all.' A majority of people in two regions said their government did not care about them at all: Central/Western Africa (56%) and Latin America/Caribbean (55%) (page 27).

The Resilience Index

World Risk Poll resilience indicators have been compiled into the global Resilience Index. The index takes an exploratory approach towards creating an indicator of how well-equipped people are to handle adversity based on their personal circumstances and perceptions of support.

- As expected, regions with better-developed infrastructure and higher levels of economic opportunity such as Australia/New Zealand, Northern America and Northern/Western Europe were among the top-scoring regions, while Central/Western Africa had the lowest score (page 31). Southeastern Asia also had one the

world's top Resilience Index scores, with high levels of confidence in government and widespread feelings of disaster preparedness.

- The aim of this exploratory index is to discover the size of the difference in the resilience of different groups, countries and regions, to track those differences over time and to understand which factors most drive changes to resilience. For example, within the unsurprising observation that people in the poorest regions have the least resilience, statistical modeling highlights two specific groups with among the lowest resilience scores in the world (page 36):
  - women with low incomes in Afghanistan
  - women with low incomes in rural Central/Western Africa

Resilience and natural hazards

- Globally, 27% of people said they had experienced a disaster caused by some type of natural hazard in the past five years. Flooding or heavy rains were the most common cause, named by 10% worldwide, followed by hurricanes or cyclones (7%) and earthquakes (5%) (page 38).
- In two regions — the Middle East and Southeastern Asia — more than a third of people (36% in each region) experienced a disaster from a natural hazard of any type in the past five years. Earthquakes were the most commonly named cause in the Middle East, while floods, cyclones and earthquakes were all commonly named in Southeastern Asia (page 38).
- Fifty-four percent of people overall said they and their families are well prepared to deal with a disaster. However, this figure ranged from at least two-thirds in Southern Asia (71%), Northern America (69%), Australia/New Zealand (68%) and Southeastern Asia (66%) to less than one-third in Central/Western Africa (29%), Latin America/Caribbean (29%), Northern Africa (27%) and Southern Africa (27%) (page 41).
- When asked which source they trust most to provide information about possible disasters, 31% of people globally cited local news media, followed by their country's national weather service (16%) and the internet or social media (15%). People in lower-income countries were most likely to rely on local media (page 43).
- On average, countries and territories where people are more likely to have experienced disasters had lower resilience scores. People in the region with the worst resilience score — Central/Western Africa — were most likely to say they had experienced a disaster from flooding, at 17% (page 43).
- Though a high percentage of Southern Asians (71%) said they are well-prepared to deal with a disaster, the region's Resilience Index score was modest at 0.51, suggesting many in the region may be more confident in their ability to handle disasters than their circumstances warrant (page 41).
- People who had experienced disasters from natural hazards were more likely than those who had not to view climate change as a 'very' or 'somewhat serious threat' to their country — 74% versus 65%, respectively. Those who had experienced droughts or wildfires were most likely to say climate change is a very serious threat (page 45).

Insight to action

As policymakers, development aid agencies and technical experts work together to develop strategies for coping with large-scale disasters, the World Risk Poll offers a new set of global indicators that help identify the most vulnerable populations to better prioritise interventions. The data also offer insights into the level and types of interventions that may be most needed for building more resilient systems. For example, specific indicators may inform decisions about whether to focus on individual interventions, such as communicating what people can do to protect their homes from flooding, or societal interventions, such as a government subsidy that provides people with greater access to flood insurance. The study provides a far more globally inclusive 'ground-level' view of factors contributing to resilience than previously available.

Acknowledgements

Lloyd's Register Foundation is grateful to a wide range of organisations and individuals who have contributed to the World Risk Poll in a variety of ways. We have been inspired by the enthusiasm of our strategic impact partners who have invested time in developing the questionnaire and are now actively considering how to embed the data in their work with communities and empower people to take action. You can follow their journeys, and the change created, through the Poll website at at **wrp.lrfoundation.org.uk**.

The Technical Advisory Group for the World Risk Poll was convened in early 2019, and we are indebted to the time and effort voluntarily invested by the members in the analysis, planning and reviewing of the report.

And finally, our thanks are extended to the team at Gallup for their efforts in constructing and testing the Poll, and to the local staff in countries across the globe who undertook the field work. Data collection took place amid ongoing Covid-19-related disruptions and restrictions, and we are particularly grateful to individual colleagues at Gallup for continuing to deliver the project in the face of these significant challenges.

Introduction

At the individual level, resilience simply refers to people's ability to handle difficulties in their lives. Resilient people recover from adversity more quickly and completely, helping mitigate the toll of large-scale disasters such as those cause by severe weather events. Though the concept of resilience is relatively simple, people's capacity for it depends on a broad range of factors, from individual personality traits and support from friends and family to broader societal conditions like access to economic opportunity and social safety net programmes[1].

The numerous factors that influence resilience require diverse methods for improving it at different levels. For example, psychologists work to help bolster individuals' resilience by reframing how they view setbacks and providing coping strategies for dealing with traumatic events[2]. Community-level interventions may seek to improve access to civil society organisations that make it easier for people to connect with and help one another. At the societal level, policymakers implement social safety net programmes designed to protect people from crises that affect their livelihoods or health.

Building resilient systems

In recent years, researchers have sought to better understand the characteristics of resilient systems that help populations cope with and adapt to large-scale forms of adversity, such as natural hazards[3]. Such systems may be guided by individual-level measures, like financial status, or community- or society-level indicators, like access to high-quality healthcare. From a risk management perspective, resilient systems help individuals or groups manage 'shocks' — instances when risks become disruptive events that threaten people's safety.

In an increasingly interconnected world, global-level shocks require coordinated efforts to identify vulnerable populations and work with them to create effective interventions to build their resilience. In recent years, such threats have included:

- **Climate change.** Rising temperatures have increased the threat of weather-related hazards around the world[4], with consequences such as food and water shortages that are particularly devastating to low-income populations.
- **Pandemics.** Covid-19 is one of the most far-reaching shocks in modern history, demonstrating how globalisation and urbanisation have increased the likelihood that virus outbreaks can become pandemics[5]. Covid-19 has also highlighted differences in vulnerability to health shocks and economic disruption, as low-income and marginalised groups have been disproportionately affected[6].
- **Supply chain disruptions.** Global supply chains have increased the likelihood that a crisis in one part of the world can produce shocks and stressors in many other regions[7]. The 2015 Lloyd's Register Foundation report, *Foresight Review of Resilience Engineering*, notes that essential services such as food and water, energy and telecommunications 'are increasingly complex and interdependent, acting at a global scale, and making

1 *Safety nets.* (2019, March). The World Bank. Retrieved 8 August 2022 from https://www.worldbank.org/en/topic/safetynets#:~:text=Social%20safety%20nets%20have%20positive,positive%20effects%20in%20local%20economies

2 Burton, M. S., Cooper, A. A., Feeny, N. C., & Zoellner, L. A. (2015). The enhancement of natural resilience in trauma interventions. *Journal of Contemporary Psychotherapy, 45*(4), 193-204. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4689312/

3 Harrison, C. G., & Williams, P. R. (2016). A systems approach to natural disaster resilience. *Simulation Modelling Practice and Theory, 65*, 11-31. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7118455/

4 Intergovernmental Panel on Climate Change (2022). *Sixth assessment report: Impacts, adaptation and vulnerability.* https://www.ipcc.ch/report/ar6/wg2/

5 Whiting, K. (2020, March 4). *Coronavirus isn't an outlier, it's part of our interconnected viral age*. World Economic Forum. https://www.weforum.org/agenda/2020/03/coronavirus-global-epidemics-health-pandemic-covid-19/

6 *Everyone included: Social impact of COVID-19.* (n.d.). United Nations Department of Economic and Social Affairs. Retrieved 9 August 2022 from https://www.un.org/development/desa/dspd/everyone-included-covid-19.html

7 Alicke, K., Bayazit, C., Beckhoff, T., Foster, T., & Mysore, M. (2022, May 23). *Supply chains: To build resilience, manage proactively.* McKinsey & Company. https://www.mckinsey.com/business-functions/operations/our-insights/supply-chains-to-build-resilience-manage-proactively

them susceptible to catastrophic and cascading failure under stress[8].' Russia's invasion of Ukraine in 2022 offers a vivid example of such interdependence: Limiting agricultural exports from both countries to the Middle East, Asia and Africa has led to a global food shortage[9].

Measuring the resilience of systems

In the past decade, researchers and development practitioners have developed numerous frameworks for measuring resilience at the system level. A 2016 report from the United Kingdom's Department for International Development[10] (now the Foreign, Commonwealth and Development Office) summarised common indicators used in such measures, including household or community characteristics such as income and the availability of support from friends and family, and subjective perceptions like people's self-evaluation of their household's capacity to respond to risk. Another review of existing resilience studies conducted by Serfilippi and Ramnath in 2018 classified 76 indicators into three categories covering social, environmental and economic factors[11].

In his 2013 review of resilience measures, Béné wrote about the need for indicators that are not only generic enough to measure resilience to different types of shocks and stressors but also 'multi-scale' in that they assess resilience at different levels — including the household, community and society levels — to capture the full range of risk mitigation factors in their environment[12].

Building on the seminal literature on the topic, the World Risk Poll seeks to improve society's ability to measure resilience by quantifying people's perceptions of it. The 2021 study included a wide range of indicators applicable to several categories in existing resilience frameworks. However, the World Risk Poll provides a much more comprehensive measure of personal perceptions of resilience than previously existed. The subjective data gathered from representative samples in 121 countries and territories serve as a complement to existing resilience measures and can be used to inform interventions in different regions and at different scales around the world.

8 Lloyd's Register Foundation. (2015). *Foresight review of resilience engineering.* https://www.lrfoundation.org.uk/en/publications/resilience-engineering/

9 Strubenhoff, H. (2022, June 14). *The war in Ukraine triggered a global food shortage.* The Brookings Institution. https://www.brookings.edu/blog/future-development/2022/06/14/the-war-in-ukraine-triggered-a-global-food-shortage/

10 Sturgess, P. (2016). *Measuring resilience.* United Kingdom Department for International Development. https://assets.publishing.service.gov.uk/media/57a08956e5274a27b200002f/EoD_Topic_Guide_Measuring_Resilience_May_2016.pdf

11 Serfilippi, E., & Ramnath, G. (2018). Resilience measurement and conceptual frameworks: A review of the literature. *Annals of Public and Cooperative Economics, 89*(4), 645-664. https://doi.org/10.1111/apce.12202

12 Béné, C. (2013). Towards a quantifiable measure of resilience. *IDS Working Papers, 434*, 1-27; *World Bank country and lending groups | Data.* (n.d.) The World Bank. Retrieved 12 August 2022 from https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

Chapter 1

Individual- and household-level resilience indicators

Items on the 2021 World Risk Poll that address populations' capacity for resilience can be placed into four categories, measuring factors at the individual, household, community or society levels. This chapter presents results for indicators at the individual and household levels, while Chapter 2 turns to community- and society-level measures. Discussions of each indicator focus on two key questions:

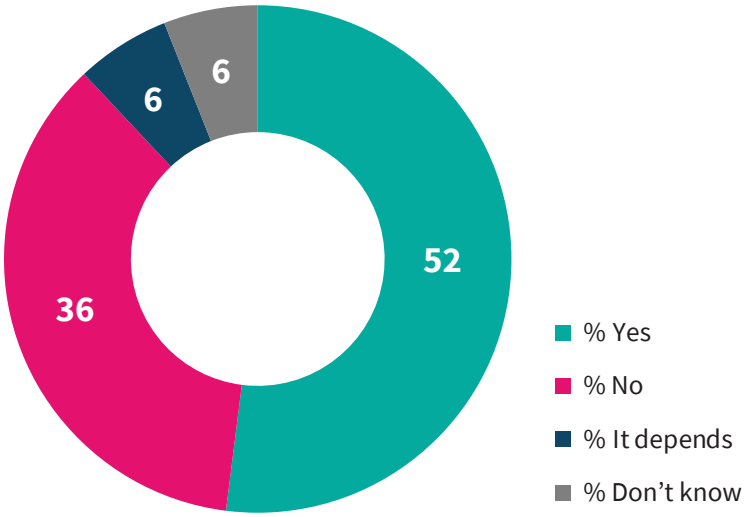
- *How do resilience indicators vary across global regions, countries or country income groups?*
- *How do the various indicators relate to social and economic conditions in different regions?*

Sense of agency

The first indicator addresses the fundamental question of whether people feel empowered to take action in the case of a disaster. Across all countries and territories included in the 2021 World Risk Poll, only a slight majority of people (52%) said there is anything they could do to protect themselves if a disaster were to occur near them. More than a third (36%) said there is nothing they could do, while the remainder said 'it depends' on the type of disaster (6%) or that they 'don't know' (6%).

Chart 1.1

Perceived ability to protect oneself or family in the event of a disaster, global results



Survey question: If a disaster were to occur near you in the future, do you think there is anything you could do to protect yourself or your family from its impact?

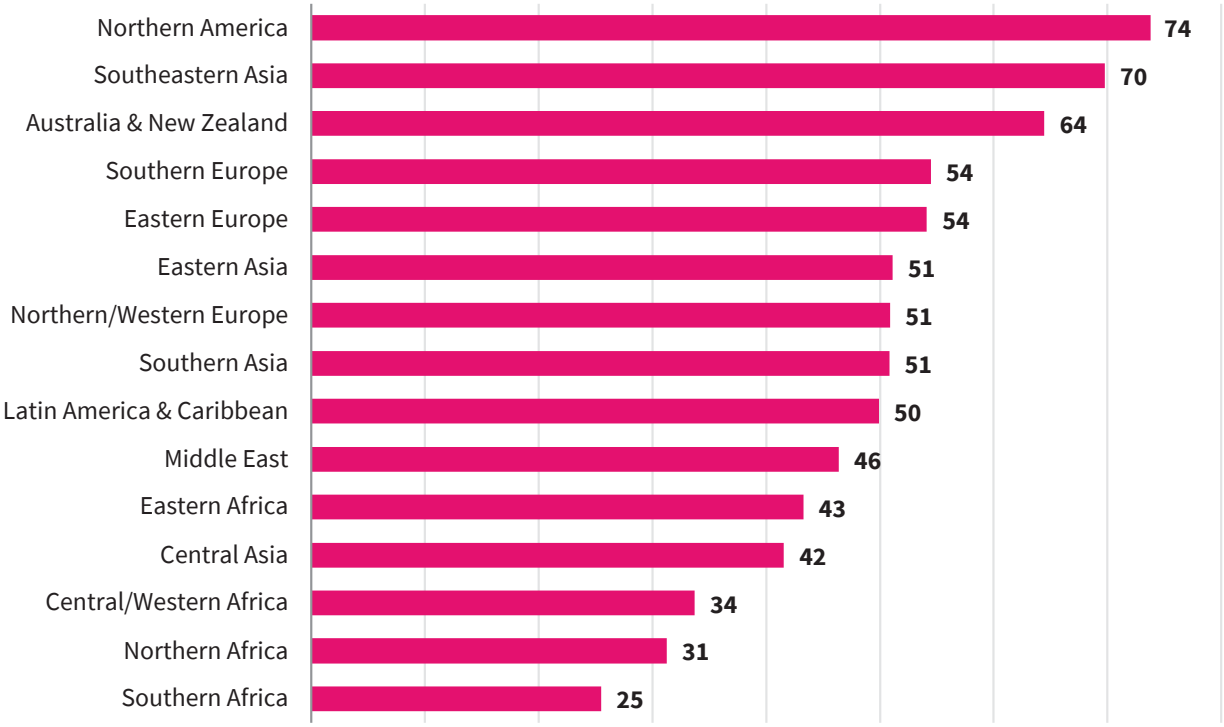
People in more economically developed countries and territories that have higher average education levels and stronger infrastructure were more likely than those in less developed countries to say they could protect themselves and their families in case of a disaster. However, even among high-income countries[13], just 61% responded this way, compared to 51% in middle-income countries and 40% in low-income countries.

People in the Middle East, Central Asia and the four African regions were the least likely to feel they could act in the event of a disaster; less than half in each region responded this way, and only a quarter (25%) in Southern Africa. Notably, 70% of people in Southeastern Asia — which consists largely of lower-middle-income countries — said they could act to protect themselves, possibly reflecting the recent focus on disaster preparedness in the region. People in this region were also among the most likely to say they have a disaster plan that everyone in their household knows about (see page 15).

13 Ibid.

Chart 1.2

Percentage who believe they could protect themselves or their family in the event of a disaster, by region



Survey question: If a disaster were to occur near you in the future, do you think there is anything you could do to protect yourself or your family from its impact? Percentage 'yes'

Financial security

Financial security is a central aspect of resilience, as numerous types of shocks and stressors can cause people to lose their jobs or deprive them of their livelihoods. The first year of the Covid-19 pandemic forced countless businesses to close, causing unemployment to rise sharply in many countries[14]. And in a 2019 report, the International Labour Organization estimated that climate change could lead to the loss of 80 million full-time jobs by 2030, with agricultural workers the most severely affected[15].

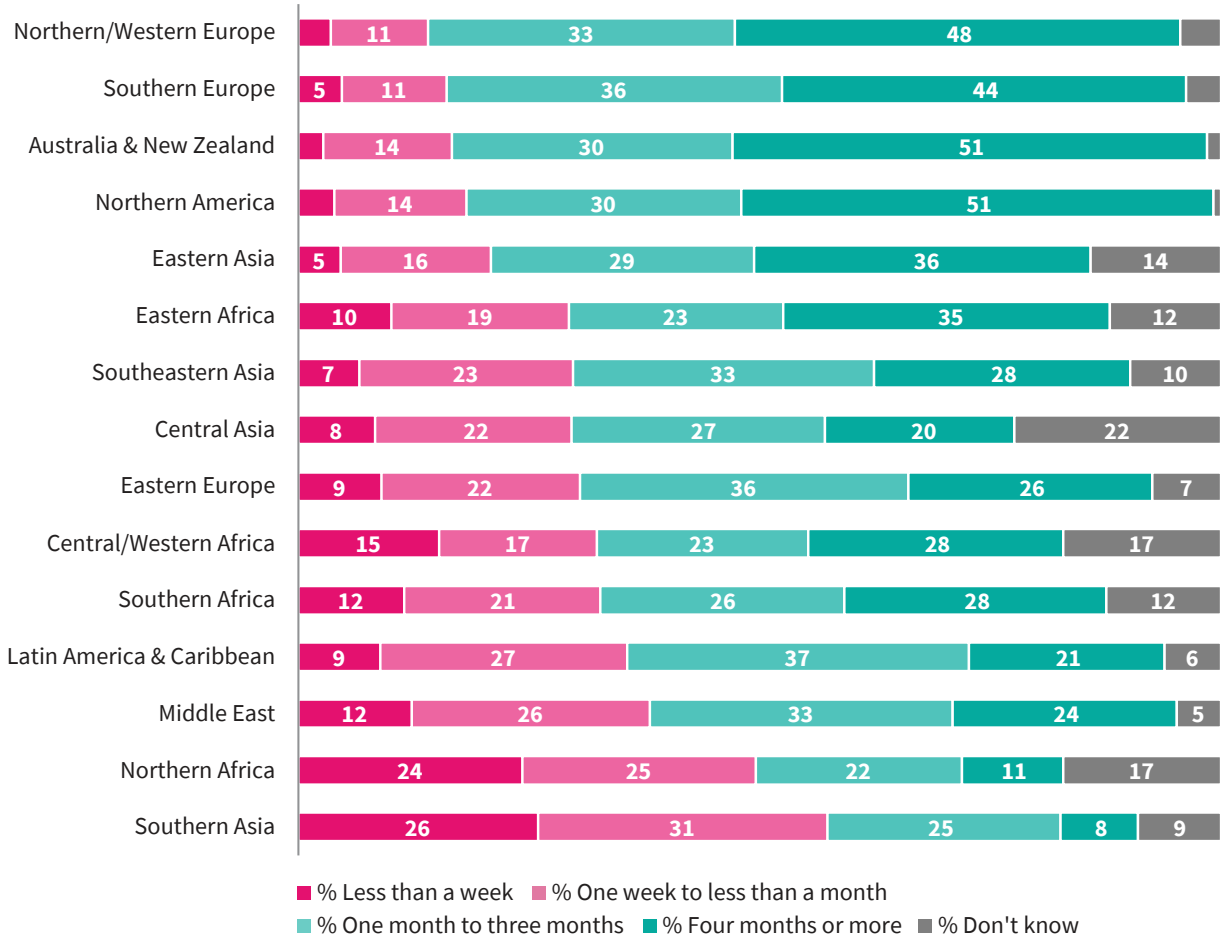
To gauge people's level of vulnerability to an event that causes the loss of their income, the World Risk Poll asked how long they could cover basic needs if they suddenly lost all income and had to survive on their savings and things that could be sold. Worldwide, about a third of people (34%) said they could cover basic needs for less than a month, including about one in eight (12%) who said they could do so for less than a week. These figures were highest in two regions: Southern Asia, where 57% of people said they would be able to cover basic needs for less than a month and Northern Africa, where this figure was 49% (Chart 1.3).

14 *The impact of COVID-19 on employment and jobs.* (n.d.). Organisation for Economic Co-operation Development. https://www.oecd.org/employment/covid-19.htm

15 *Working on a warmer planet: The impact of heat stress on labour productivity and decent work.* (2019). International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_711919.pdf

Chart 1.3

Ability to cover basic needs if income was lost, by region



Survey question: Again, suppose you lost all of your household income and had to survive only on your savings or things you could sell. Would you be able to cover all of your basic needs, like food, housing, and transportation for _____?
Due to rounding, percentages may sum to 100% ±1%. Values under 5% not displayed.

Mobile phone and internet access

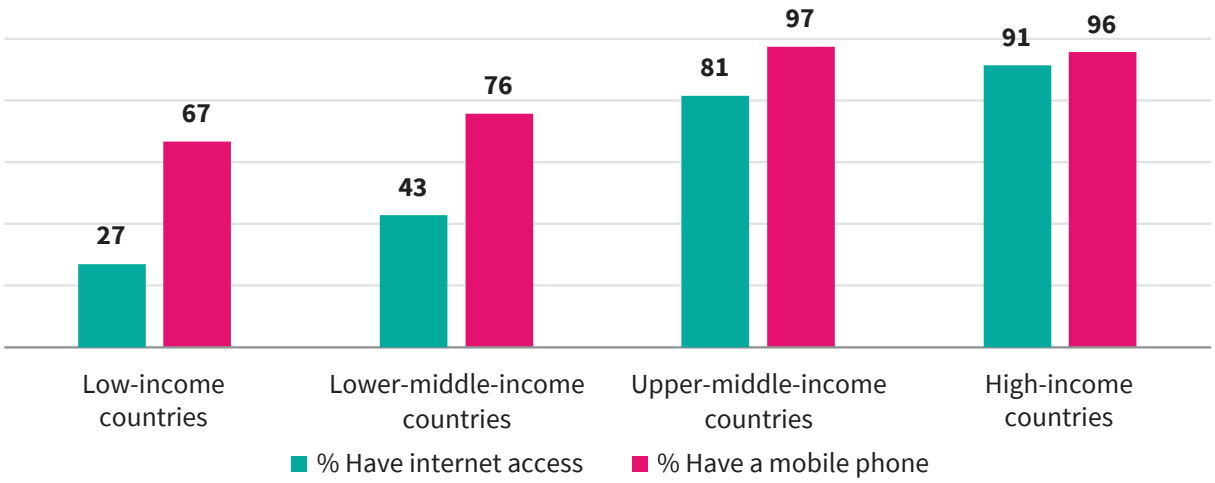
Not surprisingly, people's confidence in their ability to protect themselves and their families during a disaster was related to their satisfaction with local infrastructures, such as healthcare services. Internet access has become another critical element of infrastructure for disaster preparedness; mobile internet has proven to be a lifeline to people in low-income environments dealing with humanitarian emergencies[16].

However, while at least two-thirds of people in all country income groups said they had a mobile phone, access to the internet was less consistent. While having access was the norm in high-income (91%) and upper-middle-income (81%) countries, just 43% of people in lower-middle-income countries and 27% in low-income countries said they have internet access (Chart 1.4).

16 Granryd, M. (2017, August 22). *Five ways mobile technology can help in humanitarian emergencies.* World Economic Forum. https://www.weforum.org/agenda/2017/08/mobile-technology-humanitarian-crisis; Matthews, N. (2018, December 11). *We can't rid Asia of natural disasters. But we can prepare for them.* World Economic Forum. https://www.weforum.org/agenda/2018/12/we-can-t-rid-asia-of-natural-disasters-but-we-can-prepare-for-them/

Chart 1.4

Percentage who have mobile phones or internet access, by World Bank country income group

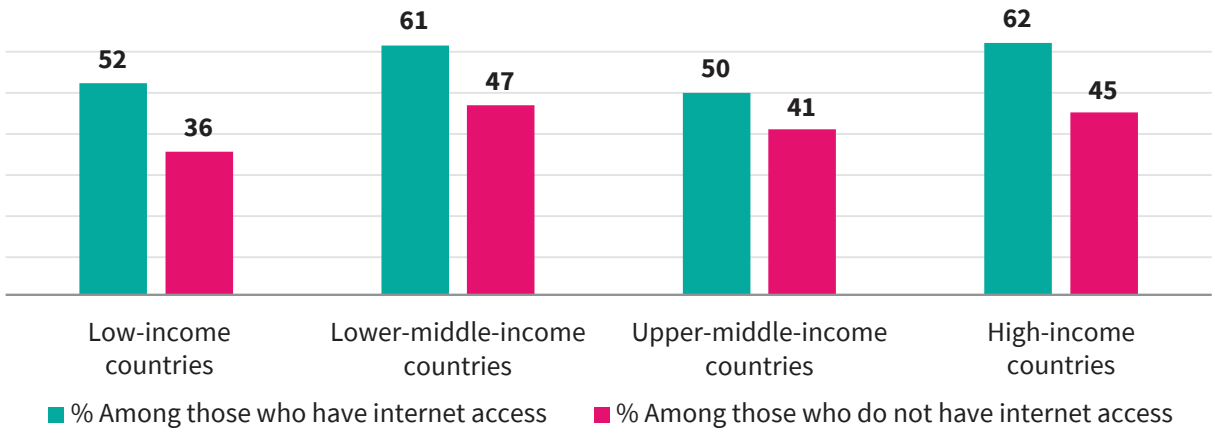


Survey question: Do you have a mobile phone that you use to make and receive personal calls? Do you have access to the internet in any way, whether on a mobile phone, a computer, or some other device?

The importance of internet access is reflected in its relationship with people's perception that they could act in the event of a disaster. People who said they have internet access were more likely than those who do not to feel they could protect themselves and their families. These gaps were present in countries and territories at all income levels (Chart 1.5), highlighting the importance of extending access in lower-income countries where it is most limited.

Chart 1.5

Percentage who believe they could protect themselves or their family in the event of a disaster, by internet access and World Bank country income group



Survey question: If a disaster were to occur near you in the future, do you think there is anything you could do to protect yourself or your family from its impact? Percentage 'yes'

Disaster planning

Research indicates that preparation and planning in the event of a disaster, be it related to extreme weather events or other hazards, are an important part of resilience and potentially being able to cope with a disaster, if and when it materialises. Having a plan in place that all people in a household know about can provide a useful framework to follow at times of chaos and uncertainty that often accompany disasters[17]. Enhancing disaster preparedness is one of the four priorities for action in the UN's Sendai Framework for Disaster Risk Reduction, adopted in 2015[18].

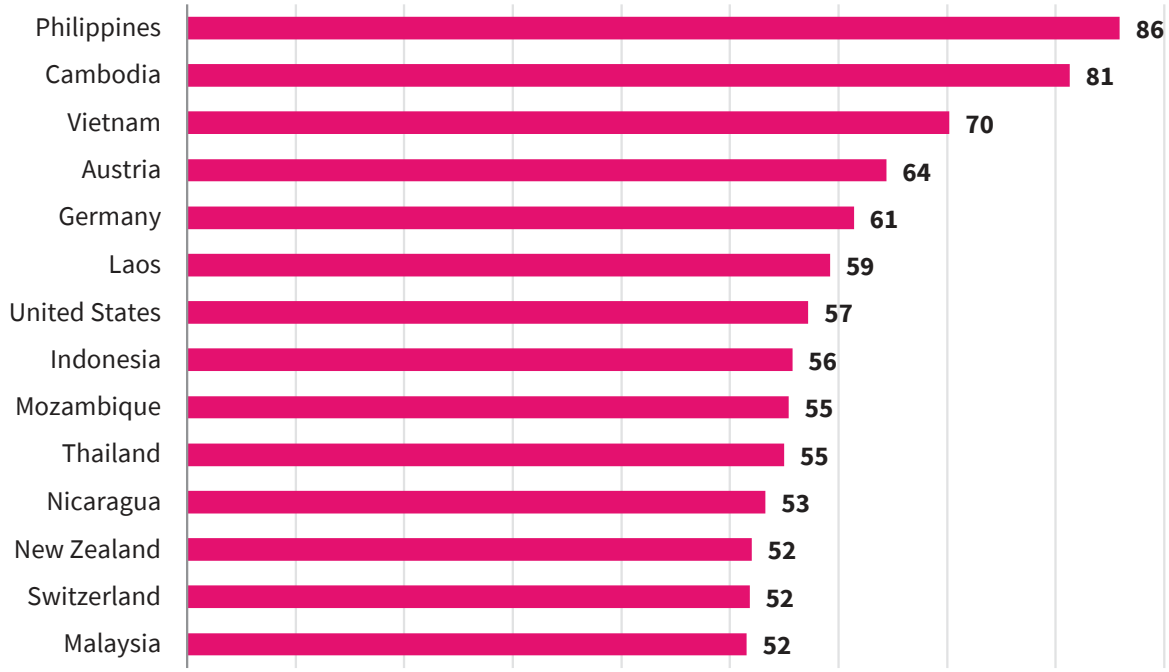
A majority of people in just 14 of the 121 countries and territories polled said they have a plan that all their household members know about in case of a disaster. Among these, seven — including the only three where at least 70% said they have a plan — were in Southeastern Asia (Chart 1.6).

17 Raikes, J., Smith, T., Jacobson, C., & Baldwin, C. (2019). Pre-disaster planning and preparedness for floods and droughts: A systematic review. *International Journal of Disaster Risk Reduction*, Vol. 38. https://doi.org/10.1016/j.ijdrr.2019.101207.

18 United Nations Office for Disaster Risk Reduction. (2015). *Sendai Framework for Disaster Risk Reduction 2015-2030*. https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

Chart 1.6

Countries where more than 50% of people have a disaster plan that all their household members know about



Survey question: If a disaster were to occur near you in the future, do you have a plan for what to do that all members of your household know about? Percentage 'yes'

Southeastern Asia is among the global regions most prone to natural hazards[19]. Most countries are situated on archipelagos or peninsulas and have large coastal populations that are vulnerable to flooding from monsoon rains and tropical cyclones[20]. The region also sits in the Pacific Ring of Fire, an area of high tectonic activity characterised by active volcanoes and frequent earthquakes[21]. The UN Economic and Social Commission for Asia and the Pacific estimates that Southeastern Asia suffers $86.5 billion in financial losses from natural hazards annually[22].

That vulnerability has led to coordinated efforts in the region to develop proactive risk management systems. Large-scale initiatives by the Asian Development Bank[23], the Association of Southeast Asian Nations[24] and the World Bank[25] provide technical assistance and funding and promote coordination among the region's governments to reduce disaster risks and strengthen resilience among vulnerable populations.
The regional focus on responding to natural hazards is likely a factor in Southeastern Asians' likelihood of having a disaster plan for their household, as well as the high percentage who said their national and local governments are prepared to deal with a disaster (see page 43).

19 Matthews, N. (2018, December 11). *We can't rid Asia of natural disasters. But we can prepare for them.* World Economic Forum. https://www.weforum.org/agenda/2018/12/we-can-t-rid-asia-of-natural-disasters-but-we-can-prepare-for-them/

20 Torti, J. (2012). Floods in southeast Asia: A health priority. *Journal of Global Health, 2*(2). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3529313/

21 *Ring of fire.* (n.d.). National Geographic Society. https://education.nationalgeographic.org/resource/ring-fire

22 Sullivan, M. (2022, June 9). *Bolstering regional approaches to disaster management for the future in Southeast Asia.* Center for Strategic & International Studies. https://www.csis.org/blogs/new-perspectives-asia/bolstering-regional-approaches-disaster-management-future-southeast-asia

23 *Six ways Southeast Asia strengthened disaster risk management.* (2021, May 4). Asian Development Bank. https://www.adb.org/news/features/six-ways-southeast-asia-strengthened-disaster-risk-management

24 *Southeast Asian countries enhance capacity to anticipate climate related hazards.* (2022, May 26). ReliefWeb. https://reliefweb.int/report/cambodia/southeast-asian-countries-enhance-capacity-anticipate-climate-related-hazards

25 *Building resilience in Southeast Asia.* (2019, July). The World Bank. https://thedocs.worldbank.org/en/doc/808321571360961550-0090022019/original/BuildingResilienceinSoutheastAsiadrmhubtokyo.pdf

Chapter 2

Community- and society-level indicators

In addition to resilience indicators focused on personal and household circumstances, the 2021 World Risk Poll asked people for perceptions of their broader environment that influence their ability to handle adversity. Resilience indicators at the community and society levels gauge factors that make people more or less likely to help one another in times of crisis — such as social trust and discrimination — as well as their access to public supports, such as robust infrastructure and responsible governance.

Social capital

While the definition of social capital varies, the concept frequently focuses on networks of relationships that allow members of a community or society to rely on one another for support, as well as the social trust and reciprocity such networks help sustain[26]. Some researchers have asserted that social capital is extremely important for community resilience, going so far as to say it is the 'core engine of recovery' after disasters[27].

The 2021 World Risk Poll included two measures of social capital. The first asked people how much they think their neighbours care about them and their wellbeing, a basic indicator of community cohesion. The second asked whether people have helped a stranger or someone they didn't know in the past month.

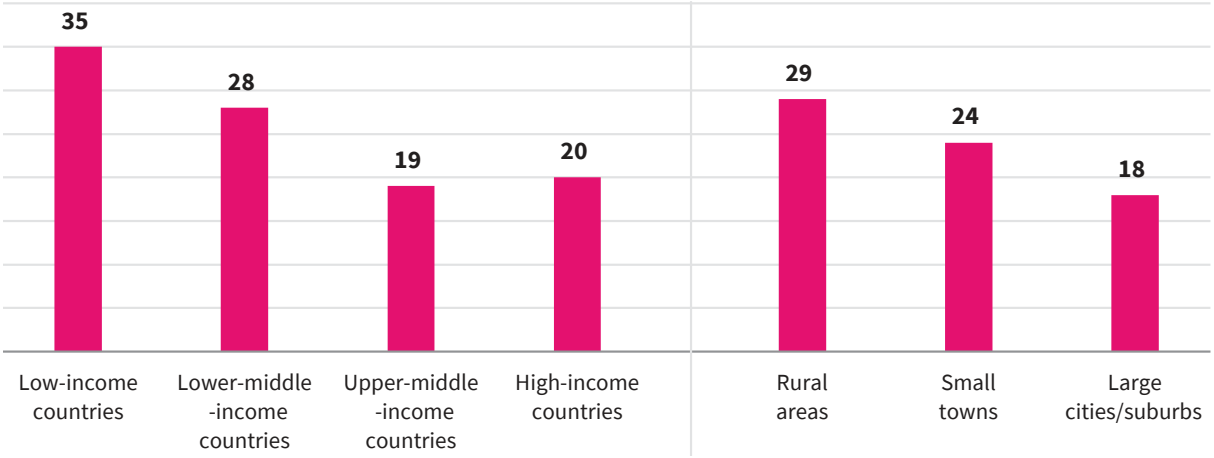
Overall, 23% of people worldwide said their neighbours care about them 'a lot,' while 43% said their neighbours care 'somewhat' and 32% 'not at all.' However, the results suggest people in communities that are underserved in terms of vital infrastructure are more likely to rely on one another for support. People in lower-income countries and territories and those living in rural areas were particularly likely to say their neighbours care a lot about them and their wellbeing. Notably, those who said their neighbours care a lot may be most likely to engage in reciprocal 'helping' relationships that they can count on in a crisis.

26 Claridge, T. (2004). *Social capital and natural resource management: An important role for social capital?* [Unpublished Thesis]. University of Queensland, Brisbane, Australia. https://www.socialcapitalresearch.com/literature/definition/

27 Aldrich, D. P. (2012). *Building resilience: Social capital in post-disaster recovery.* The University of Chicago Press.

Chart 2.1

Percentage who believe their neighbours care about them 'a lot,' by World Bank country income group and urbanisation



Survey question: How much do you think most of your neighbours care about you and your wellbeing? Percentage 'a lot'

Community support may also be particularly important in low-income populations, given that they are more likely to face disasters from natural hazards. Forty-two percent of people in low-income countries said they had experienced such a disaster in the past five years, versus about a quarter of those in upper-middle-income (25%) or high-income (23%) countries or territories (see page 37 for further discussion of disaster incidence).

The second indicator of the social capital inherent in a community was people's likelihood of saying they have helped a stranger or someone they didn't know in the past month. This generalised form of cooperation does not involve direct reciprocity — i.e., the expectation that one's kindness will be repaid. As such, it is more indicative of a general culture norm of social responsibility —i.e., the belief that people are obliged to help others in their society who need it, particularly vulnerable populations or people experiencing adversity[28].

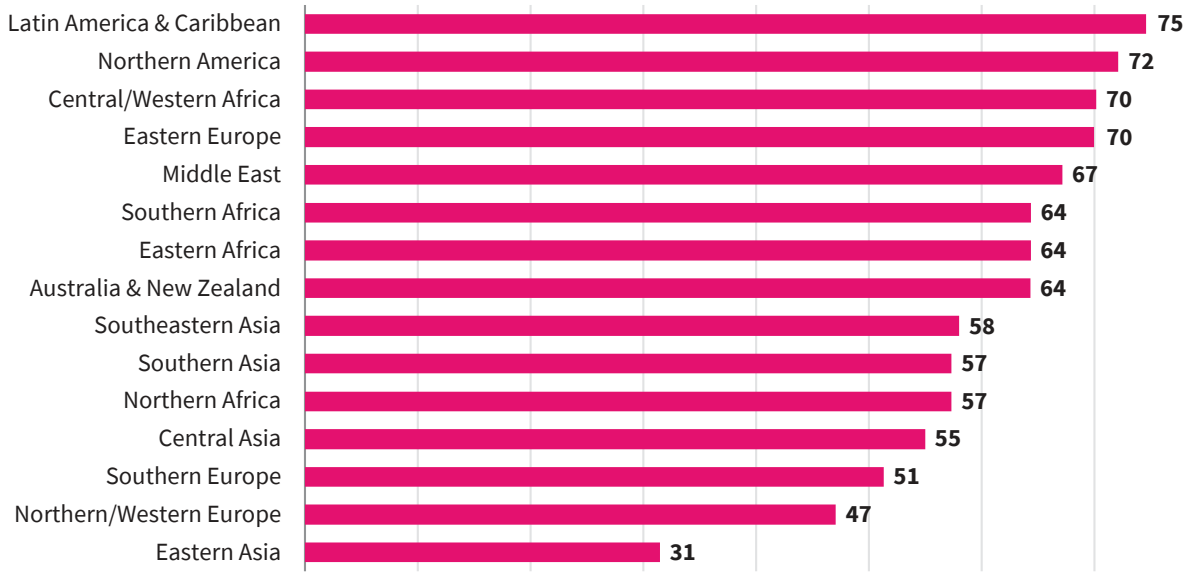
This indicator was related less to country income level than people's likelihood of saying their neighbours care but did vary substantially by global region. Around three-quarters of people in the Latin America/Caribbean region (75%) and Northern America (72%) said they had helped a stranger in the past month, versus less than half in Northern/Western Europe (47%) and Eastern Asia (31%)[29].

28 *Helping behavior.* (2016, January 12). Iresearchnet. http://psychology.iresearchnet.com/social-psychology/prosocial-behavior/helping-behavior/

29 Gallup was unable to ask this question in China, which would otherwise have largely accounted for the population-weighted results from Eastern Asia. The remaining countries and territories in the region include Hong Kong S.A.R. of China, Japan, Taiwan, South Korea and Mongolia.

Chart 2.2

Percentage who said they had helped a stranger in the past month, by region

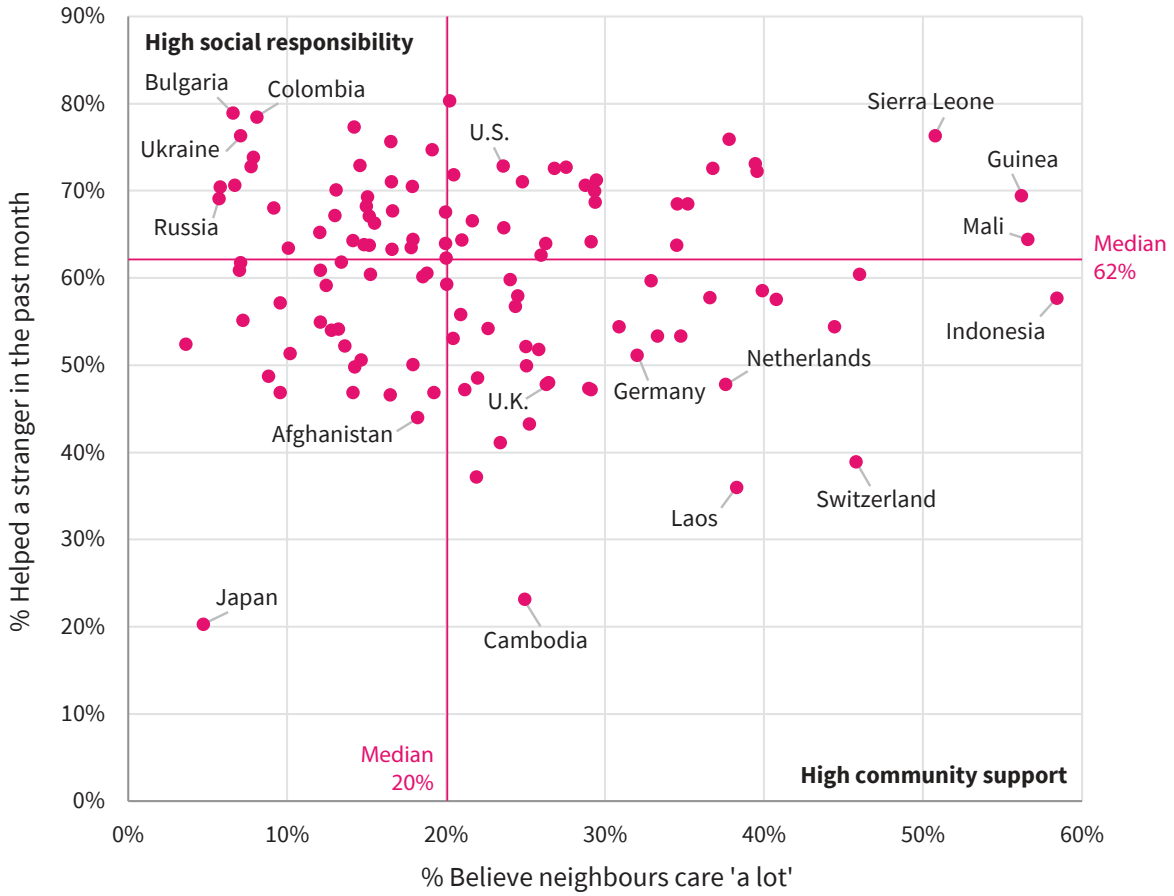


Survey question: In the past month, have you helped a stranger or someone you didn't know who needed help? Percentage 'yes'

Notably, results for these two social capital indicators were largely unrelated, suggesting they represent very different sources of potential support in the face of adversity. As Chart 2.3 demonstrates, in countries where people were more likely to say their neighbours care a lot, they were not consistently more likely to say they had helped a stranger, and vice-versa. These results suggest social or cultural factors in some countries may lead people to rely more on reciprocal ties in their local social networks during a crisis. In others, local ties may be weaker but also less important thanks to a stronger propensity to help anyone who needs it — including strangers.

Chart 2.3

Percentage within each country or territory who said they had helped a stranger vs. the percentage who believe their neighbours care about them 'a lot'



Several notable patterns emerged from these country-level social capital results, including:

- Countries where both measures were relatively high tend to be low-income countries where people are particularly likely to depend on assistance from others. Guinea, Mali and Sierra Leone are among the countries with the lowest per-capita GDP in the world[30].
- Japan stands out as being among the lowest on both indicators, with 20% of people saying they had helped a stranger in the past month and just 5% saying their neighbours care about them a lot. Japan has struggled with the effects of loneliness, including a rapid rise in suicides since the onset of Covid-19[31]. In 2021, the country appointed its first cabinet minister devoted to policies addressing high levels of social isolation[32].
- In many Eastern European and Latin American countries, people were relatively high in their likelihood of having helped a stranger but low in their likelihood of saying their neighbours care about them. In Eastern Europe, which includes Russia, the results may in part reflect the cultural legacy of socialist or communist governments in the region. Such regimes emphasised responsibility to others in society, but many in the region also lowered social trust with human rights violations and endemic corruption[33].

30 *GDP per capita (current US$)*. (n.d.) The World Bank. Retrieved 12 August 2022 from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD

31 Fujii, R., Konno, Y., Tateishi, S., Hino, A., Tsuji, M., Ikegami, K., Nagata, M., Yoshimura, R., Matsuda, S., & Fujino, Y. (2021). Association between time spent with family and loneliness among Japanese workers during the C-19 pandemic: A cross-sectional study. *Frontiers in Psychiatry, 12*, 786400. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8692760/

32 Mitsunori, I. (2021, December 27). *A society with no one to turn to.* Nippon. https://www.nippon.com/en/in-depth/d00763/

33 Rapolienė, G., & Aartsen, M. (2021). Lonely societies: Low trust societies? Further explanations for national variations in loneliness among older Europeans. *European Journal of Ageing.* https://psycnet.apa.org/record/2021-87118-001

Local infrastructure

Measures of resilience often include assessments of people's access to infrastructure that improves their capacity to manage natural hazards and other shocks and stressors. A key focus of the 2015 Lloyd's Register Foundation report, *Foresight Review of Resilience Engineering*, for example, was on 'building the resilience of critical infrastructure sectors' to ensure the proper functioning of essential services like food and water, transportation, telecommunications and healthcare[34]. Subsequently, the Resilience Rising consortium was formed to mobilise essential communities of practice to advance groundbreaking research and scalable solutions for multiple facets of resilience, including infrastructure[35].

The 2021 World Risk Poll included questions on satisfaction with three critical components of local infrastructure: education, healthcare and transportation. Table 2.1 lists the countries where people were most likely to say they are dissatisfied with each of these — i.e., those where people felt their community lacks vital systems that empower residents to be more resilient.

Table 2.1

Countries or territories where people were most likely to be dissatisfied with education, healthcare and roads/highways in their area

% Dissatisfied with availability of quality healthcare		% Dissatisfied with education system or schools		% Dissatisfied with roads and highways	
Venezuela	87	Venezuela	78	Venezuela	79
Lebanon	77	Mali	74	Mongolia	76
Gabon	76	Lebanon	68	Sierra Leone	75
Afghanistan	74	Afghanistan	65	Gabon	75
Zambia	69	Gabon	65	Togo	75
Togo	69	Zimbabwe	65	Guinea	74
Morocco	69	Uganda	63	Zambia	74
Mongolia	68	Iraq	62	Lebanon	74
Russia	67	Mongolia	62	Mali	73
Mali	67	Guinea	60	Zimbabwe	70

Survey question: In the city or area where you live, are you satisfied or dissatisfied with [the quality of healthcare/the educational system or the schools]?

- Venezuela tops all three lists, reflecting the country's socio-economic collapse and a humanitarian crisis[36] that has led over six million people to leave the country since 2015[37]. Lack of critical infrastructure has contributed to widespread food insecurity, lack of potable water for many households and sharp increases in child mortality and maternal deaths. Such conditions have made Venezuelans particularly vulnerable to climate change-related weather hazards such as droughts[38] and flooding[39].
- Dissatisfaction with these services was also among the highest in the world in Lebanon, another country facing one of the most severe economic crises in recent history, leading to the collapse of basic public services[40]. Other countries where people were most likely to be dissatisfied with these aspects of essential infrastructure include Gabon, Mali, Afghanistan and Mongolia.

34 Lloyd's Register Foundation. (2015). *Foresight review of resilience engineering.* https://www.lrfoundation.org.uk/en/publications/resilience-engineering/

35 Resilience Rising. (n.d.). Retrieved 10 August 2022 from https://resiliencerisingglobal.org/

36 Human Rights Watch. (2021). *Venezuela: Events of 2021.* https://www.hrw.org/world-report/2022/country-chapters/venezuela

37 The UN Refugee Agency. (n.d.). *Venezuela situation.* Retrieved 9 August 2022 from https://www.unhcr.org/en-us/venezuela-emergency.html

38 Chemnick, J. (2019, February 18). Where climate change fits into Venezuela's ongoing crisis. *Scientific American.* https://www.scientificamerican.com/article/where-climate-change-fits-into-venezuela-rsquo-s-ongoing-crisis/

39 *Flooding, massive mudflow affect thousands in Venezuela's Aragua state.* (2020, September 17). World Vision International. https://www.wvi.org/newsroom/venezuela-crisis/flooding-massive-mudflows-affect-thousands-venezuelas-aragua-state

40 *Lebanon's crisis: Great denial in the deliberate depression.* (2022, January 25). The World Bank. https://www.worldbank.org/en/news/press-release/2022/01/24/lebanon-s-crisis-great-denial-in-the-deliberate-depression

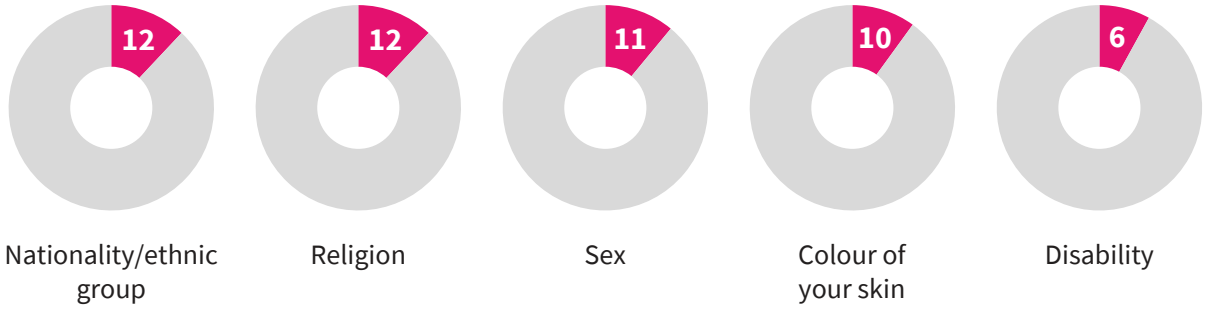
Discrimination

At the society level, resilience varied by subgroup according to the most notable types of social division within a population, such as differences in race/ethnicity, religious group or sex. In countries and territories with high income inequality, people living in low-income communities often have far fewer resources to draw on than those in more affluent areas. Discrimination based on social and demographic characteristics reduces community and social cohesiveness, and often contributes to and perpetuates inequality[41], reducing access among disadvantaged groups to economic opportunity, improved social mobility, safety net benefits and other factors that make people more resilient to adversity.

The 2021 World Risk Poll asked people whether they had ever been discriminated against based on their nationality, religion, skin colour, sex or disability status. Overall, 21% of people worldwide said they had experienced discrimination because of one or more of these characteristics. Discrimination based on nationality/ethnicity, religion, sex and skin colour were similarly common, each experienced by between 10% and 12% of the global population, while 6% had experienced discrimination based on some form of disability.

Chart 2.4

Percentage who had experienced discrimination based on social and demographic characteristics, global results



Survey question: Have you, personally, ever experienced any discrimination because of any of the following? Percentage 'yes'

41 Office of the United Nations High Commissioner for Human Rights. (2014). *New global development goals must fight inequality and discrimination*. https://www.ohchr.org/en/stories/2014/02/new-global-development-goals-must-fight-inequality-and-discrimination;
United Nations Department of Economic and Social Affairs. (2018). *Prejudice and discrimination: Barriers to social inclusion* [Social Development Brief #4]. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2018/02/RWSS-Policy-Brief-Option-4_6Feb.pdf;
Nearly 2.4 billion women globally don't have same economic rights as men. (2022, March). The World Bank. https://www.worldbank.org/en/news/press-release/2022/03/01/nearly-2-4-billion-women-globally-don-t-have-same-economic-rights-as-men

In some countries, multiple forms of discrimination were common.

Table 2.2 lists the five countries where people were most likely to say they had experienced each form of discrimination. Several countries — including Zambia, Bolivia, Cameroon, Brazil and the United States — appear on more than one list, suggesting multiple social groups may face barriers to resources and opportunities that promote resilience.

Table 2.2

Countries or territories with the highest percentage of people who had experienced discrimination based on social and demographic characteristics

% Nationality/ ethnic group		% Religion		% Sex		% Colour of your skin		% Disability	
Afghanistan	34	Zambia	32	Zambia	31	Zambia	28	Bangladesh	18
Zambia	32	Brazil	27	Bolivia	25	United States	24	Mozambique	16
Cameroon	29	Uganda	26	Afghanistan	23	Bolivia	23	Cameroon	13
Bolivia	28	Cameroon	26	United States	23	Brazil	23	Congo Brazzaville	12
Kenya	28	Bolivia	25	Australia	21	Mozambique	21	Guinea	12

Survey question: Have you, personally, ever experienced any discrimination because of any of the following? Percentage 'yes'

Chart 2.5 illustrates the percentage in each country who had experienced discrimination due to one or more of the five characteristics surveyed. Several countries with the world's highest percentages — including Zambia, Cameroon, Uganda, Congo Brazzaville, Zimbabwe and Mozambique — are in sub-Saharan Africa.

The European colonisation of Africa meant that modern African countries were superimposed across pre-existing ethnic and cultural groups[42], often leading to ethnic tensions within countries as groups compete for resources and political power[43]. Ethnic discrimination may have been particularly salient to Zambians in 2021, as the normally peaceful country was going through a divisive political campaign marked by instances of ethnic violence[44].

42 Dent, F. M. (1997). *Ethnicity: An American predicament*. The Brookings Institution. https://www.brookings.edu/articles/ethnicity-an-african-predicament/

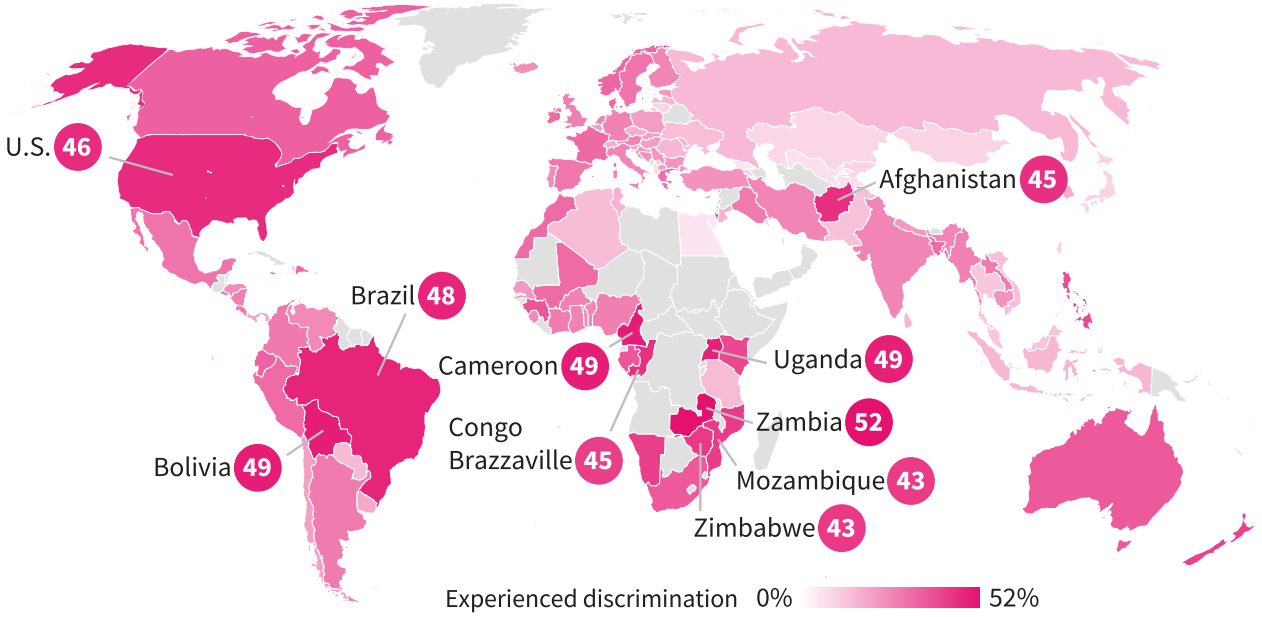
43 Green, E. (2021). The politics of ethnic identity in sub-Saharan Africa. *Comparative Political Studies, 54*(7), 1197-1226. https://journals.sagepub.com/doi/10.1177/0010414020970223

44 Mutsaka, F. (2021, August 9). Zambian president warns of growing tensions ahead of polls. *AP News*. https://apnews.com/article/africa-zambia-ffcf20ac1f6af3e0013b8f9648dc7617

The United States was the only high-income country among the 10 countries and territories where people were most likely to say they had experienced at least one of the five forms of discrimination surveyed. Almost a quarter (24%) of Americans said they had been discriminated against because of their skin colour, with similar proportions reporting discrimination based on their race/ethnicity (24%) and sex (23%).

Chart 2.5

Percentage who had experienced discrimination based on one or more of five characteristics: skin colour, nationality/race/ethnicity, sex, religion, disability status



Survey question: Have you, personally, ever experienced any discrimination because of any of the following? Percentage 'yes'

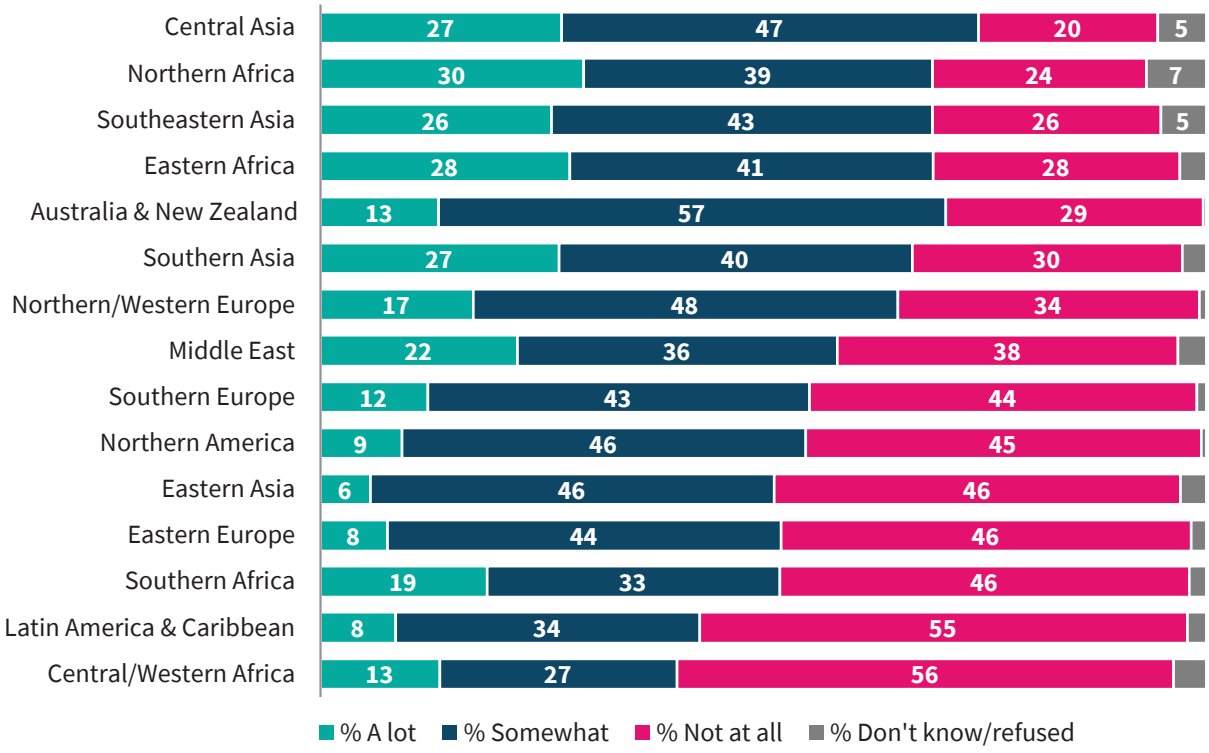
Perceptions of government support

One item in the 2021 World Risk Poll serves as a proxy for the perception that national governments are supportive of those facing adversity. Just as they were asked how much they thought their neighbours care about them, people were asked, 'How much do you think the government of [Country] cares about you and your wellbeing?'

Across the 121 countries surveyed, 19% of people said the government of their country cares 'a lot' about their wellbeing, while 40% said their government cares 'somewhat,' and 37% 'not at all.' These results varied widely around the world. In two regions — Central/Western Africa and Latin America/Caribbean — majorities said their government does not care about them at all. Conversely, less than a quarter of people responded this way in Central Asia and Northern Africa.

Chart 2.6

Percentage who believe their government cares about their wellbeing, by region



Survey question: How much do you think the government of [Country] cares about you and your wellbeing?
Due to rounding, percentages may sum to 100% ±1%. Values under 5% not displayed.

Table 2.3 lists the 12 countries where people were most likely to say their government does not care about them at all. Half are in Latin America, including two of the region's largest populations: Venezuela and Colombia.

Table 2.3

Countries or territories where people were most likely to say their national government does not care about them 'at all'

Country or territory	% National government does not care 'at all'	Country or territory	% National government does not care 'at all'
Romania	**80**	Venezuela	**68**
Iraq	**79**	Senegal	**67**
Honduras	**77**	Albania	**66**
Paraguay	**76**	Panama	**64**
Bosnia and Herzegovina	**74**	Nigeria	**64**
Lebanon	**69**	Colombia	**64**

Survey question: How much do you think the government of [Country] cares about you and your wellbeing? Percentage 'not at all'

Notably, none of the countries where at least half of people said their government does not care about them at all were in Northern/Western Europe; however, more than 50% responded this way in six of the 10 Eastern European countries in the study, as well as five of the 12 Southern European countries. In two Balkan countries in Southern Europe — Albania and Bosnia-Herzegovina — at least two-thirds felt their government does not care about them at all.

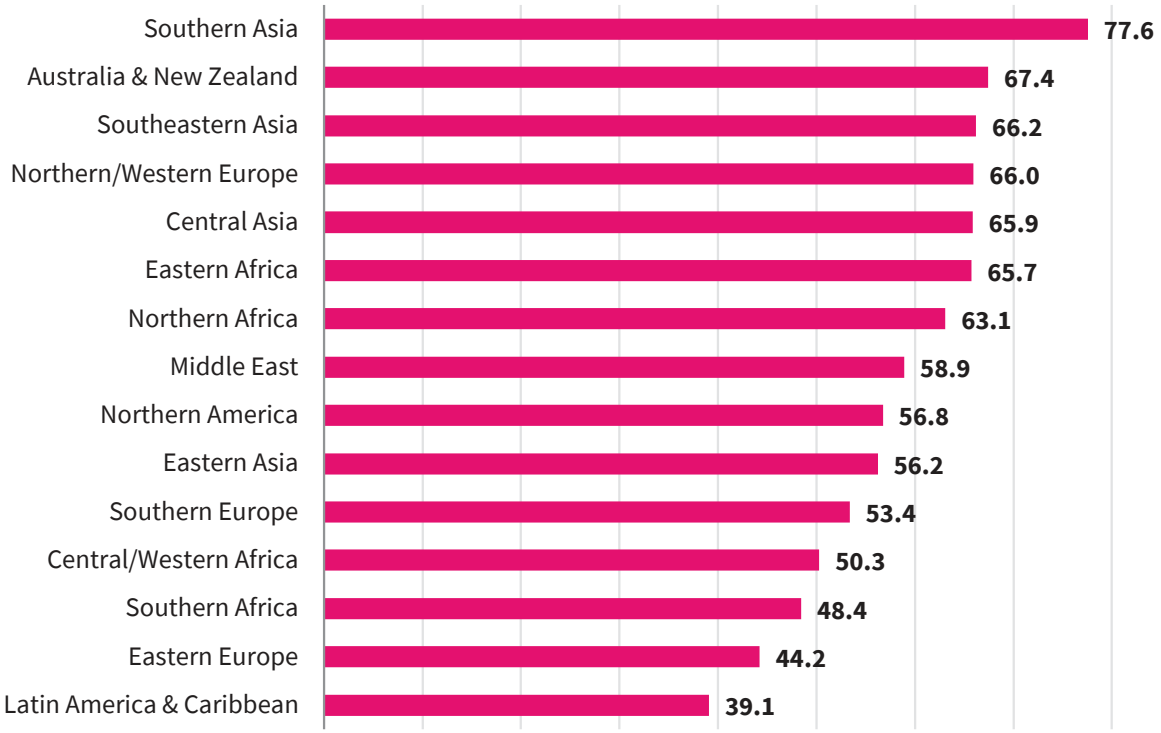
Confidence in national institutions

People's perception that their government cares about them is strongly related to their confidence in national institutions, including their country's government, military and judiciary, as well as the honesty of their elections. These questions are the basis for the Gallup World Poll's National Institutions Index. Chart 2.7 shows the average score on this index by region.

Southern Asia had the highest score, driven largely by results from India, where despite the country's challenges, Prime Minister Narendra Modi's government remains popular[45], and most people were confident in the country's institutions. By contrast, that confidence was lowest in Eastern Europe and Latin America/Caribbean.

Chart 2.7

Gallup World Poll National Institutions Index, 2021 regional scores

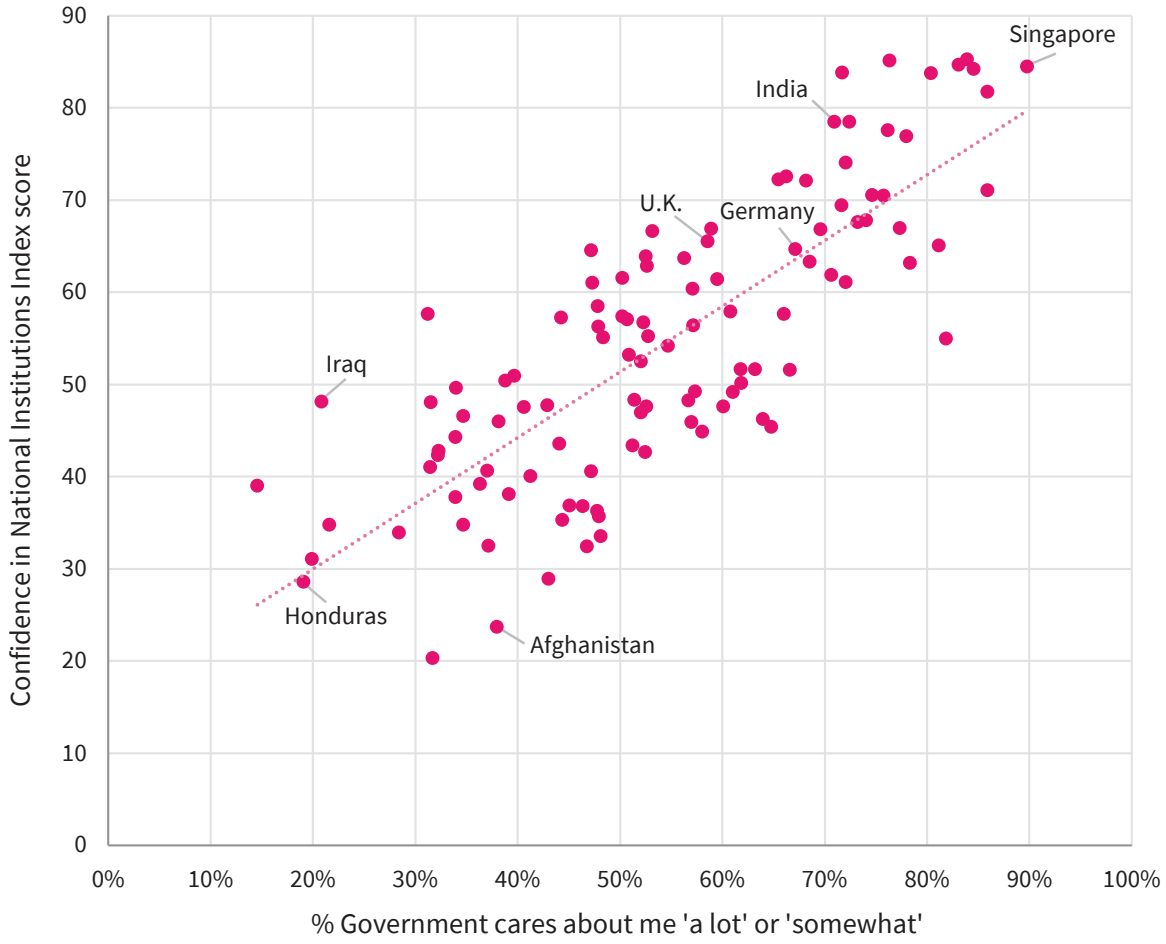


As Chart 2.8 shows, more people said their government cares about them 'a lot' or 'somewhat' in countries that score highly on the National Institutions Index. Together, the two indicators gauge the extent to which people feel they are governed by responsible leaders who are interested in promoting the wellbeing of their constituents.

45 Pradhan, B. (2022, May 29). Modi government's popularity at highest since start of pandemic. *Bloomberg*. https://www.bloomberg.com/news/articles/2022-05-30/modi-government-s-popularity-at-highest-since-start-of-pandemic

Chart 2.8

Relationship between perceptions that their government cares and confidence in national institutions, by country or territory



Survey question: How much do you think the government of [Country] cares about you and your wellbeing?

Chapter 3

Towards a global Resilience Index

To gauge the combined influence of the various aspects of resilience addressed in the 2021 World Risk Poll, the measures were compiled into a single score for each respondent. This exercise represents an exploratory approach towards developing a global Resilience Index — a summary indicator of how well-equipped people are to adapt to adversity based on their personal circumstances and perceptions of support. The aim of this exploratory index is to discover the size of the difference in the resilience of different groups, countries and regions, to track those differences over time and to understand which factors most drive changes to resilience.

The aggregated resilience scores allow for comparisons of how well populations and subgroups may handle future shocks and stressors such as extreme weather events to better identify and support those most vulnerable. See Appendix 3 for methodological details about how the index was developed and constructed.

Resilience scores by region

As would be expected, people in regions with better-developed infrastructure and higher levels of economic security had higher resilience scores; Australia/New Zealand, Northern America and Northern/Western Europe were three of the four top-scoring regions. Southeastern Asia was the fourth, with high levels of confidence in government and widespread feelings of disaster preparedness.

Low scores on several community- and society-level indicators also differentiated some of the index's lower-scoring regions. Perceived support from community members and the government was relatively low in Southern Africa, Eastern Europe, Central/Western Africa and the Latin America/Caribbean region. As discussed in the 2021 World Risk Poll report, *A Changed World? Perceptions and Experiences of Risk in the Covid Age*[46], people in Latin America/Caribbean and Southern Africa were more concerned about crime and violence than any other region, contributing to low levels of social trust. Countries in Central/Western Africa — particularly Nigeria[47] — also struggle with violence and instability, widespread poverty and weak infrastructure.

46 Lloyd's Register Foundation & Gallup, Inc. (2022). World Risk Poll 2021: *A changed world? Perceptions and experiences of risk in the Covid age.* https://wrp.lrfoundation.org.uk/LRF_2022_report_risk-in-the-covid-age_online_version.pdf

47 Tanko, A. (2021, July 19). Nigeria's security crisis – five different threats. *BBC News*. https://www.bbc.com/news/world-africa-57860993

Chart 3.1

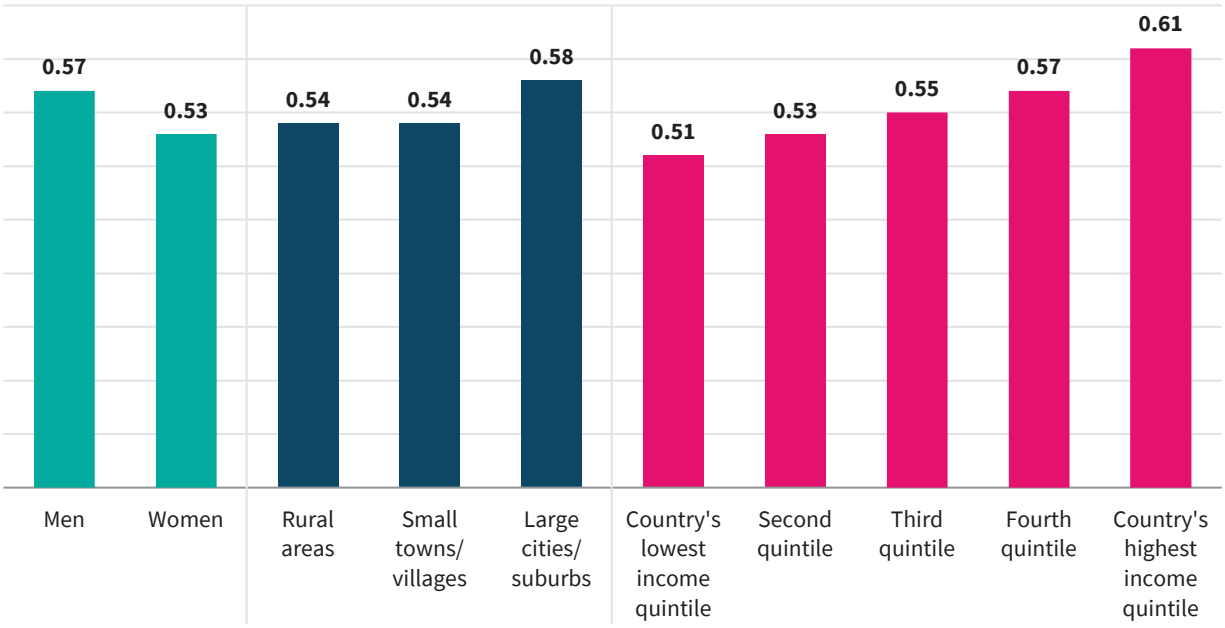
Resilience Index scores, by region

Resilience scores by sex, income and urbanisation

At the global level, resilience scores varied modestly by sex and urbanisation, with men scoring slightly higher than women and urban residents slightly higher than those in rural areas or small towns. As might be expected, scores rose steadily according to people's relative income level, from 0.51 among those in their country's bottom income quintile to 0.61 among those in the top quintile.

Chart 3.2

Resilience Index scores, by demographic group



In some countries, however, differences by demographic categories were significantly wider.

- In Afghanistan, where women lacked access to economic and educational opportunities even before the Taliban takeover in August 2021 (see page 36), their score of 0.27 was the lowest among female populations in any country and well below Afghan men's score of 0.40. Other countries where men had significantly higher resilience (greater than a 0.07-point difference) included Croatia, Slovenia, Mexico, Argentina and Pakistan.
- Among countries with substantial urban/rural gaps in resilience, two of the largest populations in Africa topped the list: South Africa (0.53 in large cities vs. 0.42 in rural areas) and Nigeria (0.49 vs. 0.39). Urban/rural differences of 0.08 points or more were also seen in Algeria, Ghana and Sierra Leone.

  Though many African countries have seen strong economic growth over the past 20 years, infrastructure development in rural areas has often not kept pace with fast-growing cities like Lagos and Johannesburg[48], contributing to high levels of inequality[49]. In Nigeria, for example, the 2021 World Risk Poll found that 62% of people in rural areas had primary education or less, compared to 37% of those in large cities or suburbs. In South Africa, 39% of rural residents had primary education or less, versus 20% of city-dwellers.
- Particularly among countries with high income inequality, resilience scores often differed substantially between people in their country's top and bottom income quintiles. Countries with the largest income-related gaps in resilience included the United States, which has the highest income inequality[50] of any high-income country, and several countries from the world's two most unequal regions: Latin America/Caribbean and Southern Africa.

48 *Top 25 largest and fastest growing cities in Africa.* (n.d.). Istanbul Africa Trading Company. Retrieved 11 August 2022 from https://www.istanbulafrica.com/top-25-largest-and-fastest-growing-cities-in-africa/

49 *Poverty in a rising Africa.* (2016). The World Bank. https://www.worldbank.org/en/region/afr/publication/poverty-rising-africa-poverty-report

50 *Gini index—United States | Data.* (n.d.). The World Bank. Retrieved 10 August 2022 from https://data.worldbank.org/indicator/SI.POV.GINI?locations=US

Table 3.3

Countries or territories with the largest gaps in Resilience Index scores, by income level

Country	Index score, bottom income quintile	Index score, top income quintile	Difference
Afghanistan	0.25	0.41	**0.16**
Egypt	0.43	0.58	**0.15**
United States	0.58	0.72	**0.14**
Bolivia	0.42	0.56	**0.14**
Mexico	0.47	0.60	**0.13**
Zambia	0.39	0.52	**0.13**
Lebanon	0.35	0.48	**0.13**
Estonia	0.57	0.70	**0.13**
India	0.47	0.60	**0.13**
Ecuador	0.45	0.57	**0.12**

In other countries, relative income levels were largely unrelated to Resilience Index scores, implying people with higher and lower incomes were similarly likely to feel they have the resources to manage shocks and stressors well. Index scores were high across income groups in several European countries, including Austria, Cyprus, France and the United Kingdom. Conversely, in some countries and territories with low resilience, being in higher income groups offered little advantage; scores were low across groups in a number of African countries, including Nigeria, Burkina Faso and Togo.

Resilience scores were lower among people who felt 'less safe' than five years ago.

The 2021 World Risk Poll report, *A Changed World? Perceptions and Experiences of Risk in the Covid Age,* revealed that 34% of people worldwide felt 'less safe' in 2021 than they did five years prior[51]. People who felt less safe also scored lower on the Resilience Index (0.50) than those who felt 'about as safe' (0.58) or 'more safe' (0.59). These differences are accounted for primarily by questions at the community and society levels:

- In the context of Covid-19, people who were dissatisfied with local infrastructures like healthcare and roads or lacked confidence in institutions like the national government were more likely to say they felt less safe than they did five years ago[52]. Worldwide, those who said their government does not care about them 'at all' were almost twice as likely as those who said their government cares 'a lot' to feel less safe — 44% versus 23%, respectively.
- Those who had experienced discrimination were also significantly more likely to say they felt less safe than they did five years ago. For example, 45% of people who had experienced discrimination due to their race or nationality felt less safe, versus 33% of those who had not; results were similar for discrimination due to skin colour.

51 Lloyd's Register Foundation & Gallup, Inc. (2022). *World Risk Poll 2021: A changed world? Perceptions and experiences of risk in the Covid age.* https://wrp.lrfoundation.org.uk/LRF_2022_report_risk-in-the-covid-age_online_version.pdf

52 Ibid.

Women with low incomes in Afghanistan and Central/Western Africa were among the groups with the lowest resilience scores globally.

Statistical models known as classification trees were used to partition Resilience Index scores among several indicators simultaneously — including region, country income level, sex, within-country income quintile and urban vs. rural residence — to determine which subgroups had the lowest scores.

The analysis first divided global regions into those with lower overall index scores (all four African regions, plus the Latin America/Caribbean region and Southern Asia) versus higher scores. It then iteratively tested for the greatest differences among the remaining categories, drilling down to find those groups defined by specific sets of characteristics that had the lowest resilience scores. The technique identified two groups with the world's lowest resilience scores:

- Women in Afghanistan's lower income quintiles
  Population size: 7,634,000; Overall index score: 0.25

  After decades of war and instability in Afghanistan, the Taliban seized power again in August 2021, triggering an economic collapse as donor governments cut off aid to the new regime. Such conditions left many Afghans helpless in the face of one of the country's worst droughts in decades, leading to a severe food insecurity crisis in late 2021[53].

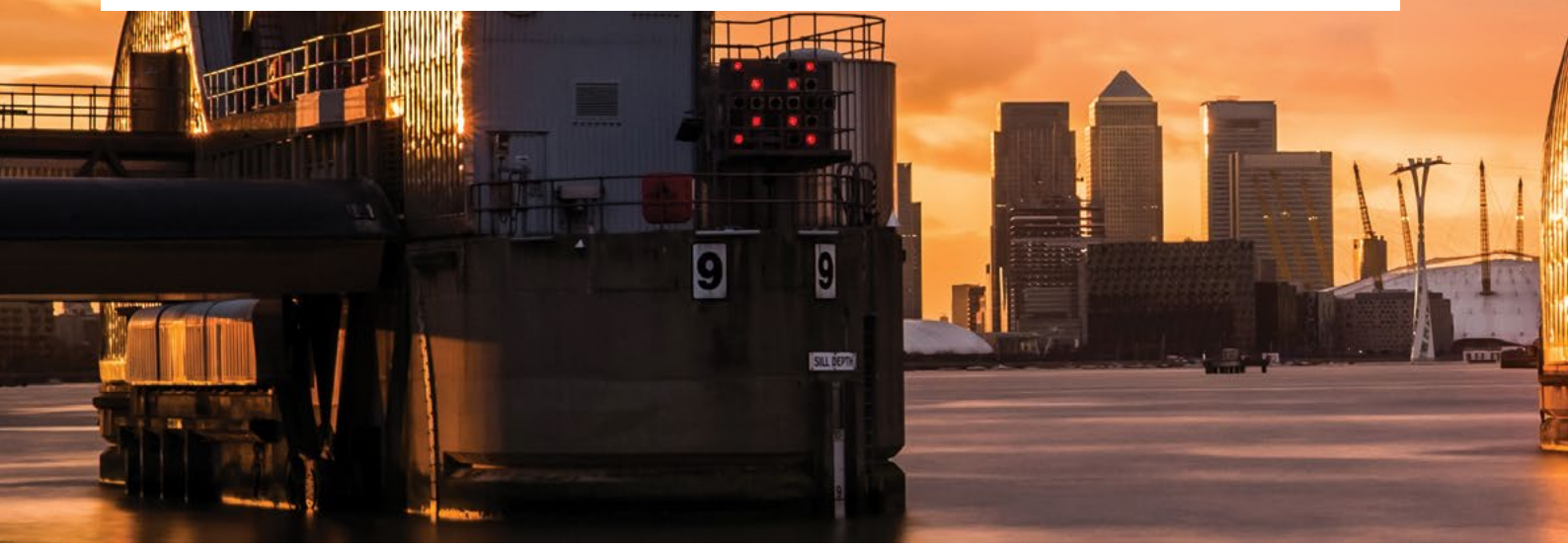
  Data collection for the 2021 World Risk Poll took place during and in the immediate aftermath of the Taliban takeover; at that time, the survey found that 89% of women had no more than primary education versus 60% of men. Since regaining control of the country, the Taliban has made new decrees that further restricted girls' access to secondary education, as well as women's access to employment[54].
- Women living rurally in lower-income quintiles of countries in Central/Western Africa
  Population size: 27,882,000; Overall index score: 0.37

  As noted above, several countries with the largest urban/rural gaps in resilience scores — including Nigeria, Ghana and Sierra Leone — are in the Central/Western Africa region. Women in the region's rural areas are particularly vulnerable, in part because they have lower average education levels than men; 77% of rural women in Central/Western African countries have primary education or less, versus 57% of rural men.

  As discussed on page 39, people in Central/Western Africa were more likely than those in any other region to say they had experienced flood-related disasters in the past five years, indicating this group is not only among the world's least resilient but also particularly vulnerable to the effects of climate change.

53 Goldbaum, C. (2021, December 4). Facing economic collapse, Afghanistan is gripped by starvation. *The New York Times.* https://www.nytimes.com/2021/12/04/world/asia/afghanistan-starvation-crisis.html

54 How the Taliban are 'eliminating women' in Afghanistan. (2022, May 9). *Deutsche Welle.* https://www.dw.com/en/how-the-taliban-are-eliminating-women-in-afghanistan/a-61736998



Chapter 4

Resilience and natural hazards

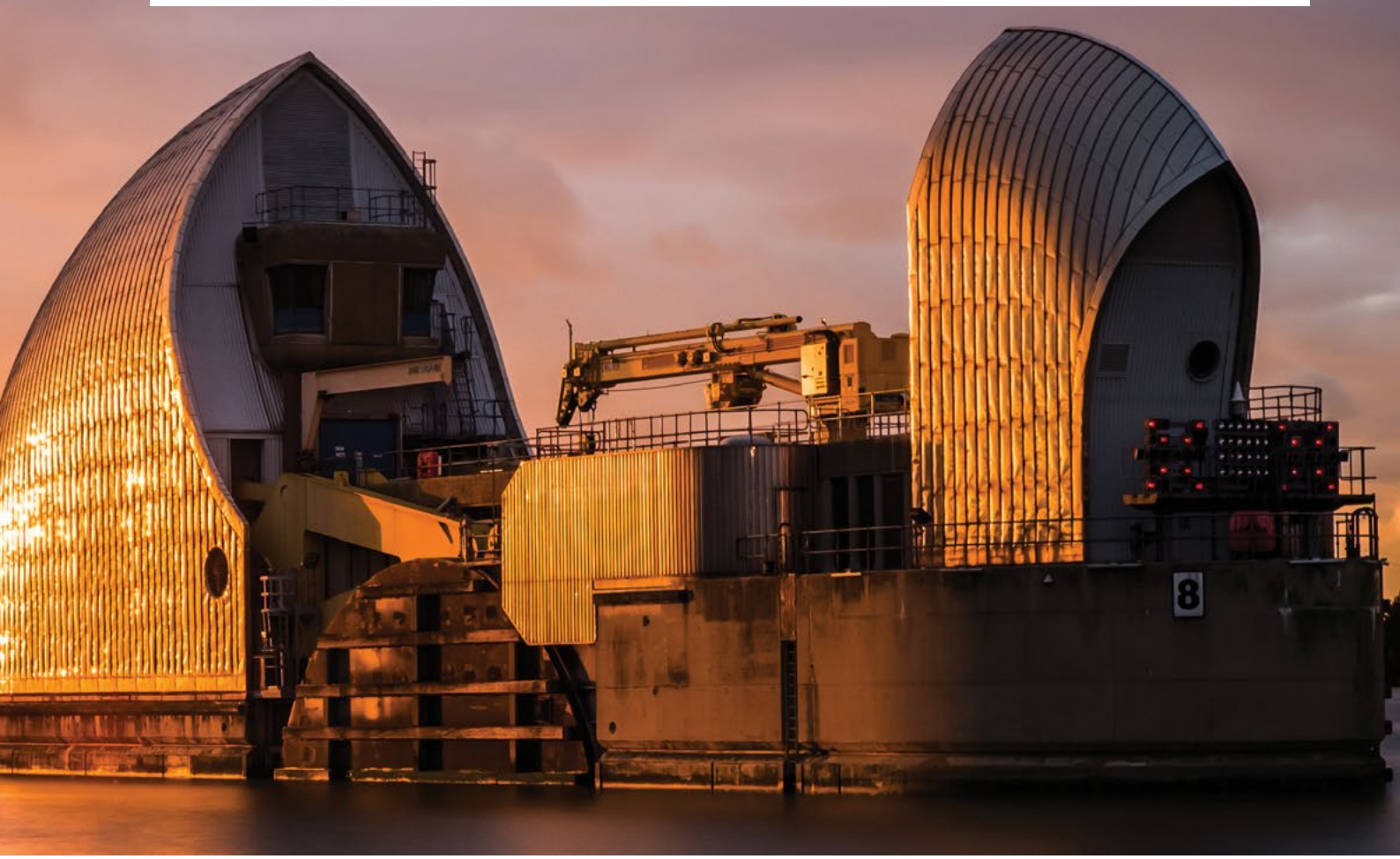
Among the most critical reasons for strengthening international efforts to understand, measure and support resilience among vulnerable groups is the rising incidence of extreme weather events due to climate change. This section presents 2021 World Risk Poll data on people's experiences with disasters related to natural hazards such as floods, droughts or cyclones and discusses where those disasters coincide with low resilience scores, suggesting places where people may be less prepared to cope with them.

Where have disasters arising from natural hazards occurred in the past five years?

In addition to compiling subjective measures of the capacity for resilience in the Resilience Index, the 2021 World Risk Poll included questions on people's recent experiences with disasters arising from natural hazards. The results highlight areas where resilience is most needed, including those where it may currently be lacking.

In each country and territory, people were first asked whether they had personally experienced a disaster in the past five years. Those who said 'yes' were then asked to name the type of disaster. Chart 4.1 presents regional results for the most commonly named disaster causes, several of which — including floods, cyclones, droughts and wildfires — are expected to become more common or intense due to climate change[55].

55 Acevedo, S., & Novta, N. (2017, November 16). *Climate change will bring more frequent natural disasters & weigh on economic growth*. International Monetary Fund. https://blogs.imf.org/2017/11/16/climate-change-will-bring-more-frequent-natural-disasters-weigh-on-economic-growth/

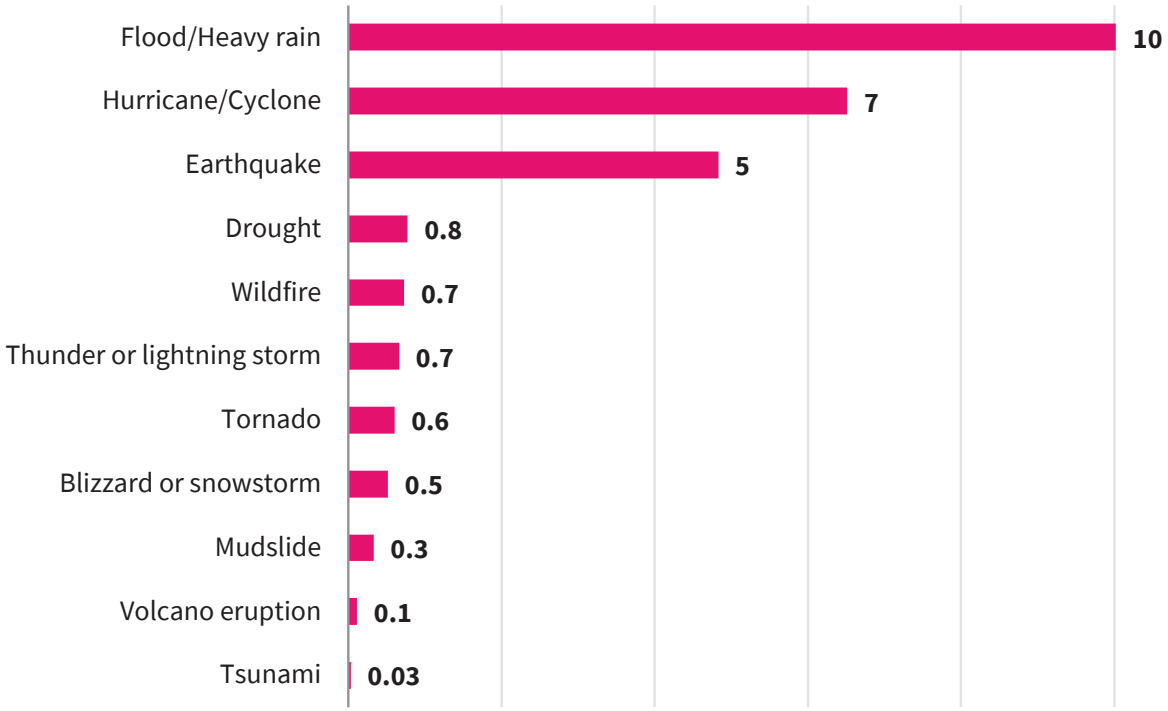


Globally, 27% of people said they had experienced some type of disaster in the past five years. Flooding or heavy rains was the most common cause, named by 10% worldwide, followed by hurricanes or cyclones (7%) and earthquakes (5%). No other single type of disaster was named by more than 1%; the next most common were droughts (0.8%), wildfires (0.7%) and thunder or lightning storms (0.7%).

Chart 4.1

Causes of disasters people last experienced, global results

Percentage who experienced each type of disaster



Survey question: Thinking about the last disaster you experienced, what type of event was it?

Experience with disaster arising from natural hazards was most common in the Middle East and Southeastern Asia.

- The Middle East and Southeastern Asia were the only two regions where more than a third of people (36% in each) said they had experienced a disaster from any type of natural hazard in the past five years.
- In the Middle East, disaster from earthquakes was most commonly named, reported by 19% in the region. However, this figure is accounted for almost entirely by high percentages in two of the region's largest populations: Iran (36%) and Turkey (23%). Both countries sit on active fault lines and are subject to frequent tectonic activity[56]. The deadliest earthquake of 2017 occurred in western Iran, killing more than 500 people[57]. In 2020, an earthquake in the Aegean Sea killed 116 people in the Turkish city of Izmir[58].

56 Ahmadian, J., Murata, M., Nadimi, A., Ozawa, H., & Kozai, T. (2014, February). Active tectonics of Iran deduced from earthquakes, active faulting and GPS evidences. *Bulletin of Center for Collaboration in Community Naruto University of Education, 28,* 11-22. https://www.researchgate.net/publication/301230362_Active_tectonics_of_Iran_deduced_from_earthquakes_active_faulting_and_GPS_evidences; Gökkaya, K. (2016). Geographic analysis of earthquake damage in Turkey between 1900 and 2012. *Geomatics, Natural Hazards and Risk, 7*(6), 1948-1961. https://www.researchgate.net/figure/The-tectonic-map-of-Turkey-showing-the-plates-and-their-direction-of-movement-responsible_fig1_301625930

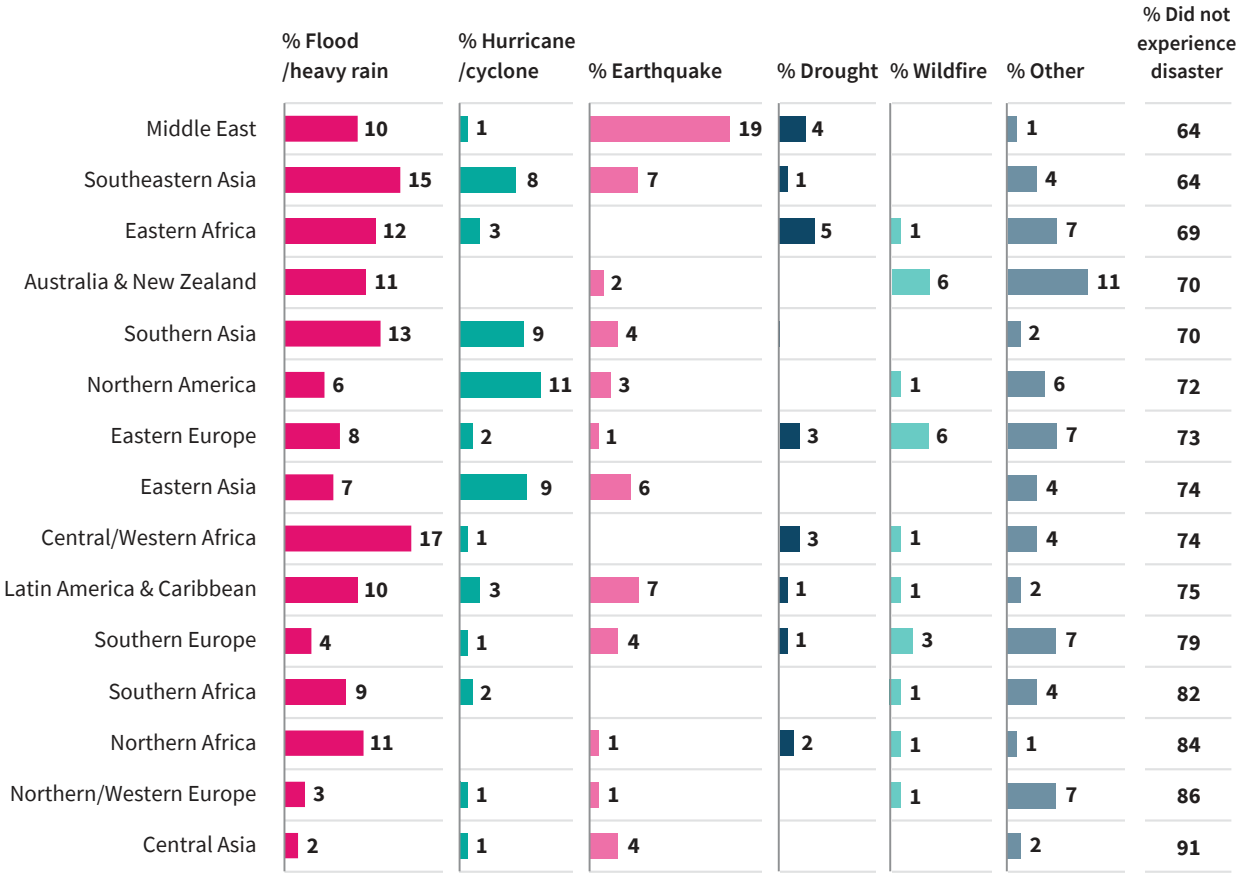
57 Dehghan, S. K. (2017, November 14). Officials raise Iran-Iraq earthquake death toll to at least 530. *The Guardian.* https://www.theguardian.com/world/2017/nov/14/officials-raise-iran-iraq-earthquake-death-toll-to-at-least-530

58 Wilks, A. (2020, November 4). Death toll from Turkey earthquake rises to 116 as rescuers finish searches. *PBS News Hour.* https://www.pbs.org/newshour/world/death-toll-from-turkey-earthquake-rises-to-116-as-rescuers-finish-searches

- As noted on page 17, Southeastern Asians are susceptible to several types of natural hazards due to the region's geography and location in the geologically unstable Pacific Ring of Fire. Fifteen percent of people in the region said they had experienced disaster from floods or heavy rains in the past five years, while 8% had experienced disaster from cyclones and 7% from earthquakes.

Chart 4.2

Types of disasters people last experienced, by region



Survey question: Thinking about the last disaster you experienced, what type of event was it?
Due to rounding, percentages may sum to 100% ±1%. Values under 1% not displayed. 'Don't know/refused' data not shown.

Central/Western Africa was the only region where people were more likely than those in Southeastern Asia to say they had experienced disaster from flooding or heavy rains in the past five years. Regionwide, 17% of people said they had experienced flooding-related disasters, but this figure rose to at least 20% in several countries — including Burkina Faso (27%), Benin (21%), Sierra Leone (21%) and Togo (20%).

Central/Western Africa also had the lowest regional resilience score in the world (page 32). The UN Office for the Coordination of Human Affairs reports that flooding affected 1.4 million people across Central and Western Africa in 2021, displacing about 378,000 in 12 countries. Flooding in the region pushes many families who are already vulnerable due to food insecurity, violence and instability into crisis[59].

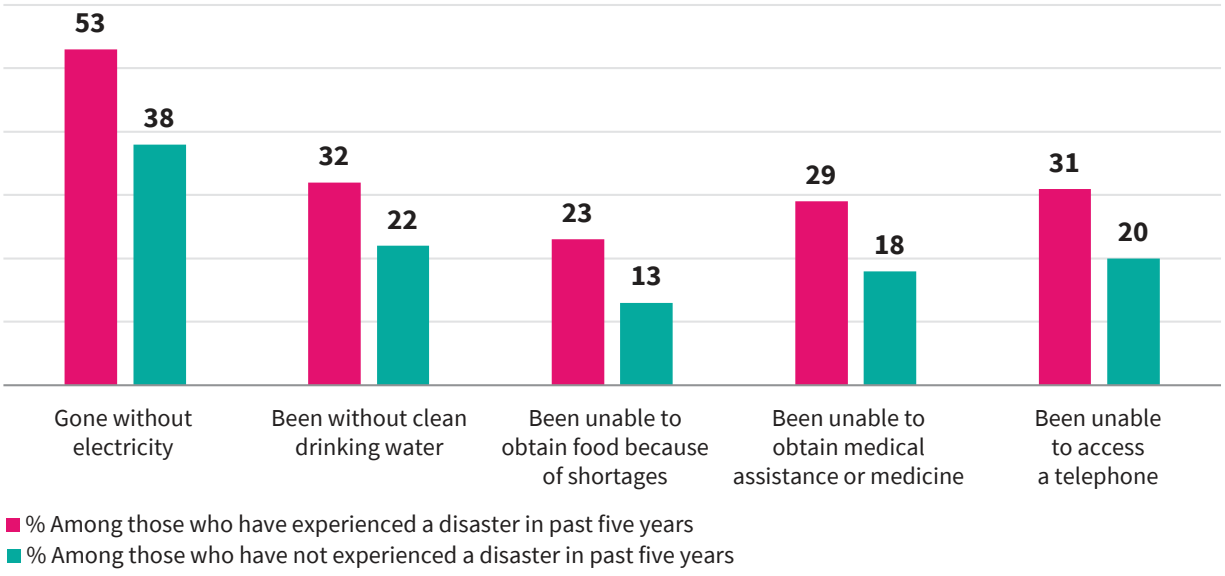
59 *West and Central Africa: Flooding situation overview (January – December 2021) – as of 10 March 2022*. (2022, March 18). ReliefWeb. https://reliefweb.int/report/democratic-republic-congo/west-and-central-africa-flooding-situation-overview-january

Disasters were linked to loss of essential services, especially in lower-income countries.

Experience with disasters was associated with a greater likelihood that people have had to go without basic needs for more than a day. It should be noted that these questions asked about different time frames — people were asked whether they had experienced a disaster in the past five years, but whether they have had to go without basic needs in the past 12 months. Nonetheless, at the global level, there were gaps of at least 10 percentage points for each of the essential goods and services surveyed between those who had and had not experienced a disaster.

Chart 4.3

Percentage who have had to go without basic needs for more than a day, global results

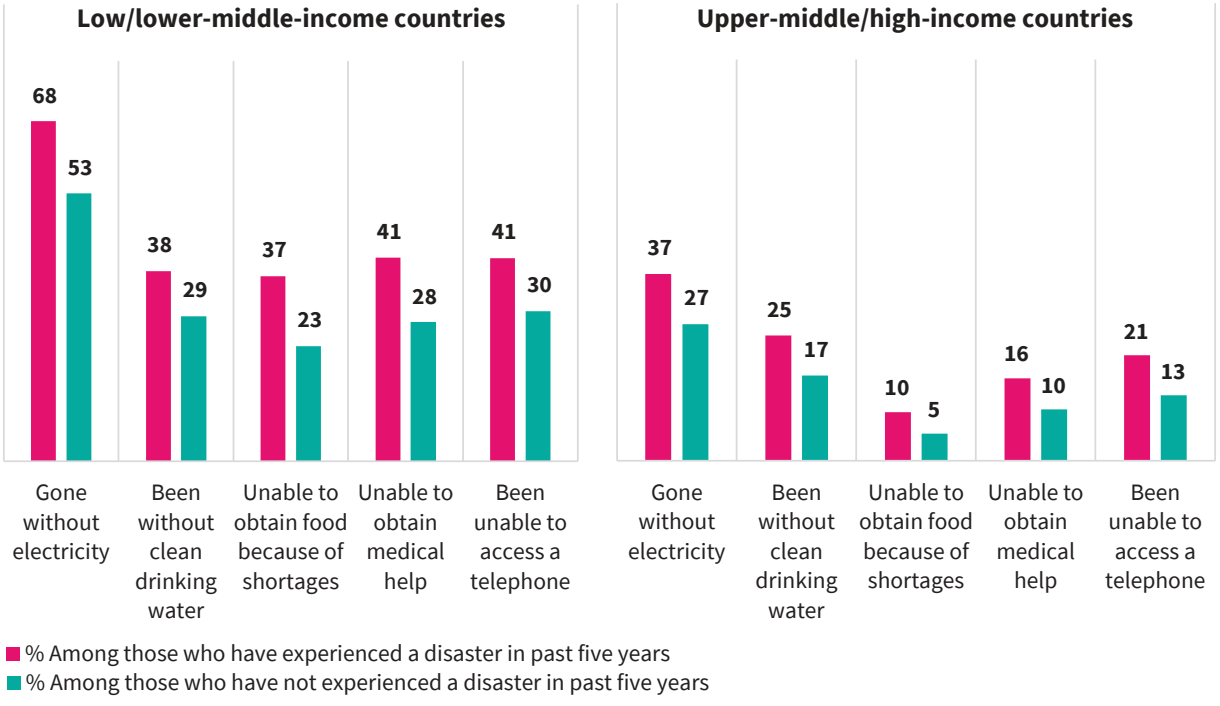


Survey question: Have any of the following happened to you for more than a day in the past 12 months, or not? Percentage 'yes'

In higher-income countries and territories with more reliable infrastructure, natural hazards may be less likely to affect people's access to basic needs. Among those who had experienced disasters, the percentage who said they had gone without essential goods or services was much lower overall in higher-income countries, and most of the differences between those who had and had not experienced disasters were smaller.

Chart 4.4

Percentage who have had to go without basic needs for more than a day, by country income level and experience of disaster



Survey question: Have any of the following happened to you for more than a day in the past 12 months, or not? Percentage 'yes'

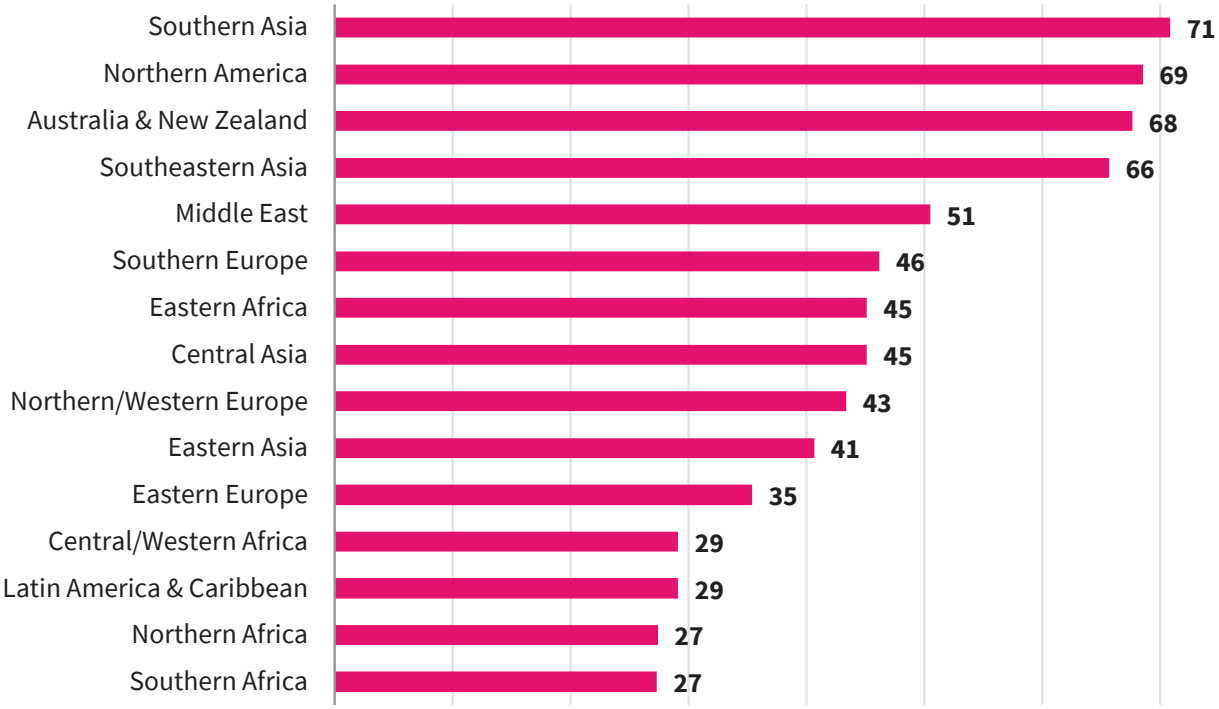
Disaster preparedness and information sources

At the global level, 54% of people said they and their families are well prepared to deal with a disaster. However, this figure ranged widely around the world. In four regions — Southern Asia (71%), Northern America (69%), Australia/New Zealand (68%) and Southeastern Asia (66%) — at least two-thirds of people said they are well prepared. In four others — Central/Western Africa (29%), Latin America/Caribbean (29%), Northern Africa (27%) and Southern Africa (27%) — less than one-third responded this way.

Notably, though a high percentage of Southern Asians (71%) said they are well-prepared to deal with a disaster, the region's Resilience Index score was comparatively modest at 0.51, suggesting many in the region may be more confident in their ability to handle disasters than their circumstances warrant.

Chart 4.5

Percentage who believe their family is well-prepared to deal with a disaster, by region



Survey question: Do you think [you and your family] are well-prepared to deal with a disaster in [country], or not? Percentage 'yes'

People's confidence that they are prepared to deal with disasters was also related to whether they felt their governments and healthcare systems are prepared to do so. The high percentages in Southern and Southeastern Asia who felt personally prepared to deal with a disaster were reflected in the relatively high percentages who said their national government, local government and hospitals are well prepared.

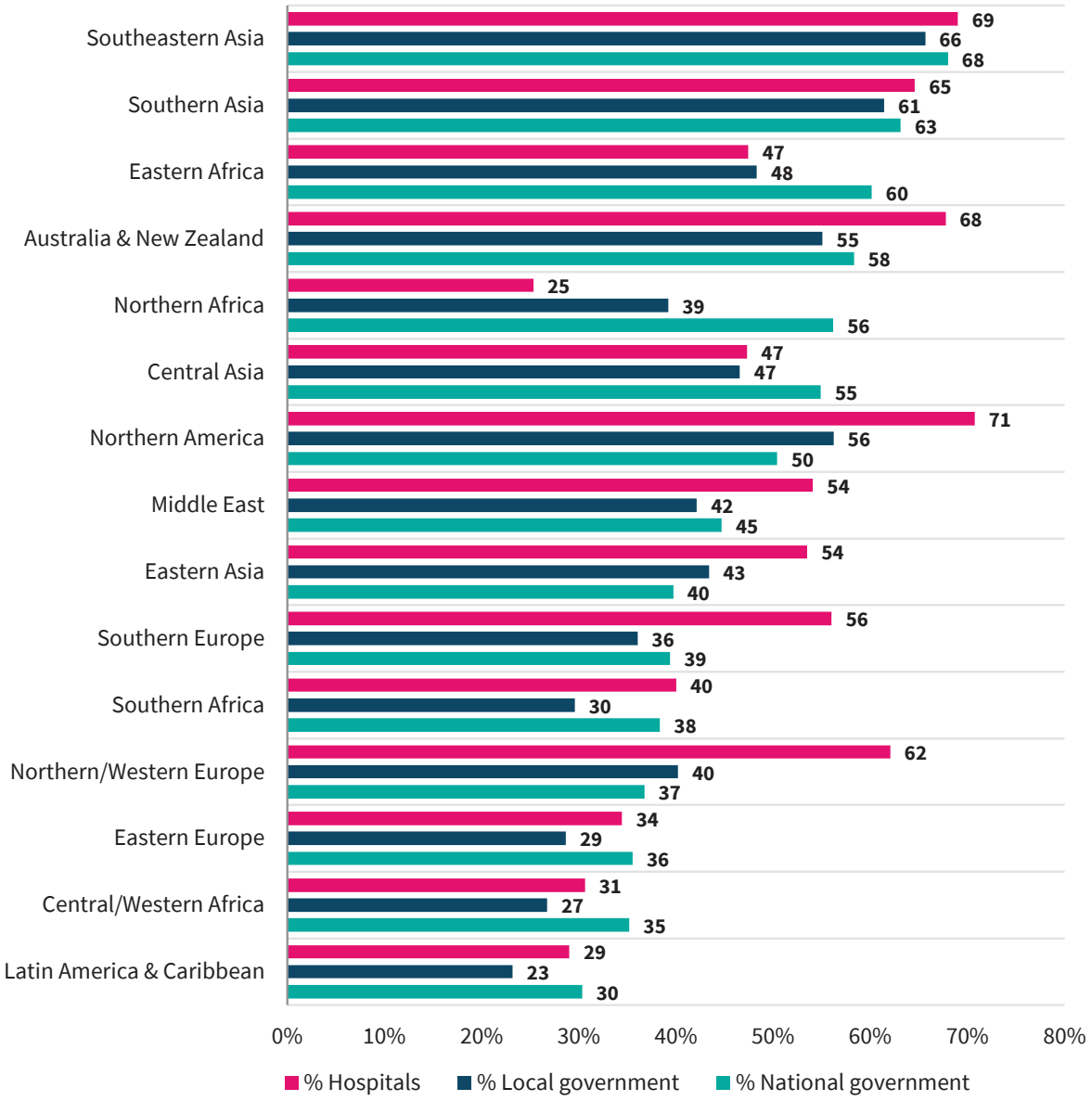
In many cases, these results were likely affected by people's perception of how well their governments and healthcare systems had managed the Covid-19 crisis. Public opinion surveys on Covid-19 in 2021 showed that many people in the United States[60] and Europe[61] were not satisfied with how their governments handled the pandemic. Such discontent may help explain why people in Northern America, Northern/Western Europe and Southern Europe were far more likely to say hospitals in their country are prepared to deal with a disaster than to say the same about their national or local governments.

60 Tyson, A., & Funk, C. (2022, February 9). *Increasing public criticism, confusion over COVID-19 response in U.S.* Pew Research Center. https://www.pewresearch.org/science/2022/02/09/increasing-public-criticism-confusion-over-covid-19-response-in-u-s/

61 *Public opinion monitoring at a glance.* (2021, June). European Parliament. https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2020/covid19/en-public-opinion-in-the-time-of-covid19-202106.pdf

Chart 4.6

Percentage who believe the government and hospitals are well-prepared to deal with a disaster, by region



Survey question: Do you think each of the following are well-prepared to deal with a disaster in [country], or not? Percentage 'yes'

Local news media was the most trusted source of disaster information, especially in lower-income countries.

Finally, the 2021 World Risk Poll asked people about the sources they trust most to provide information in the event of a disaster. The most common response was local news sources, cited by 31% globally, followed by the country's national weather service at 16% and the internet or social media at 15%.

People in lower-income countries and territories were most likely to rely on local media and less likely than those in higher-income countries to put their trust in emergency services, such as the police or fire department, or in a national disaster management agency. Notably, 14% of people in low-income countries said they would trust local religious leaders most, second only to local news media.

Table 4.1

Most-trusted sources of information in the event of a disaster, by World Bank country income level

	% All countries	% Low-income countries	% Lower-middle-income countries	% Upper-middle-income countries	% High-income countries
Local news, through newspapers, TV or radio	31	41	37	21	28
National weather service	16	10	16	14	18
Internet/social media	15	8	14	20	12
Emergency services (e.g., fire dept., police, medical services)	13	5	8	16	21
The national disaster management agency	10	9	6	16	12
Local religious leaders	4	14	6	1	1
A famous or influential person you like	2	4	2	1	1

0-5 6-10 11-15 16-20 21-25 26-30 31-35 36-40 41-45

Survey question: Considering the sources of information you would access, which one would you trust MOST to provide information about a possible disaster in the city or area where you live?

Experience with disasters was more common in countries with low resilience scores.

Plotting country-level Resilience Index scores against the percentage of people in each country who said they had experienced a disaster in the past five years provides insight into where interventions to shore up resilience among hazard-prone populations may be most needed.

The two countries where people were most likely to say they had experienced a disaster in the past five years — the Philippines and Iceland — also had relatively high resilience scores. Therefore, for example, though Iceland experienced intense seismic activity in 2021[62], including 14 earthquakes of magnitude 5.0 or above[63] and the longest volcanic eruption in 50 years just 25 miles from Reykjavik[64], few Icelanders were vulnerable to harm from the events.

Situated along a major tectonic plate and at the center of a typhoon belt, the Philippines is regarded as one of the world's most hazard-prone countries[65]. Like most countries in Southeastern Asia, the Philippines had a high

62 Peltier, E. (2021, March 4). In Iceland, 18,000 earthquakes over days signal possible eruption on the horizon. *The New York Times.* https://www.nytimes.com/2021/03/04/world/europe/earthquakes-eruption-iceland.html

63 *Past earthquakes in Iceland: 2021 – list, stats and map.* (2022). Volcano Discovery. Retrieved 11 August 2022 from https://www.volcanodiscovery.com/earthquakes/iceland/archive/2021.html

64 Agence France-Presse. (2021, December 20). Iceland's volcanic eruption outside Reykjavik officially over. *The Guardian.* https://www.theguardian.com/world/2021/dec/20/iceland-volcanic-eruption-outside-reykjavik-officially-over#:~:text=Authorities%20in%20Iceland%20have%20officially,to%20witness%20its%20lava%20flows

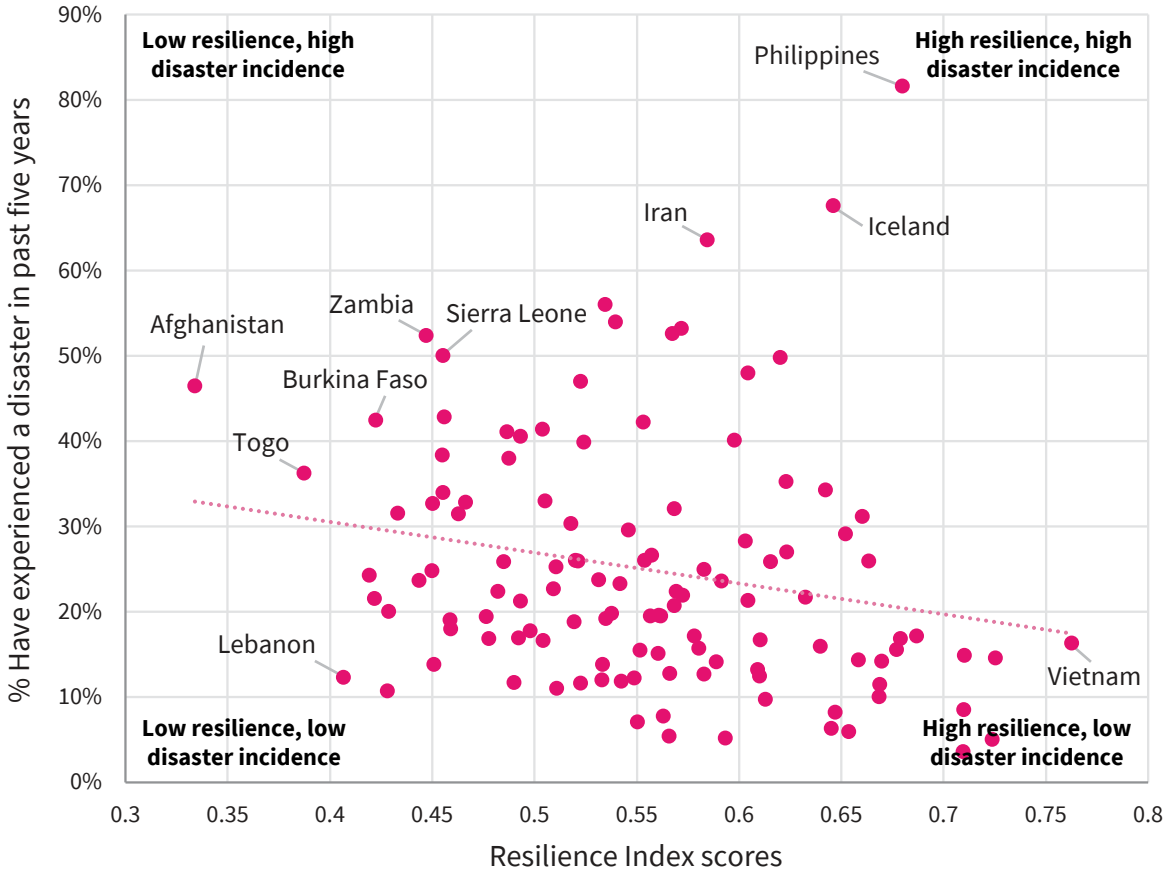
65 Miller, J. (2021, November 11). *In the Philippines, a shared 'disaster imagination' supports resilience*. ESRI. https://www.esri.com/about/newsroom/blog/philippines-shared-disaster-imagination-supports-resilience/#:~:text=Situated%20as%20one%20of%20the,center%20of%20a%20typhoon%20belt

resilience score based in part on widespread disaster planning among households, a strong sense of agency to act in the event of a disaster and strong confidence in institutions.

More generally, however, the chart shows a modest negative correlation between resilience scores and disaster incidence — countries where more people said they had experienced some type of disaster in the past five years were, on average, somewhat lower in resilience.

Chart 4.7

Relationship between Resilience Index scores and the percentage in each country or territory who experienced disasters in the past five years



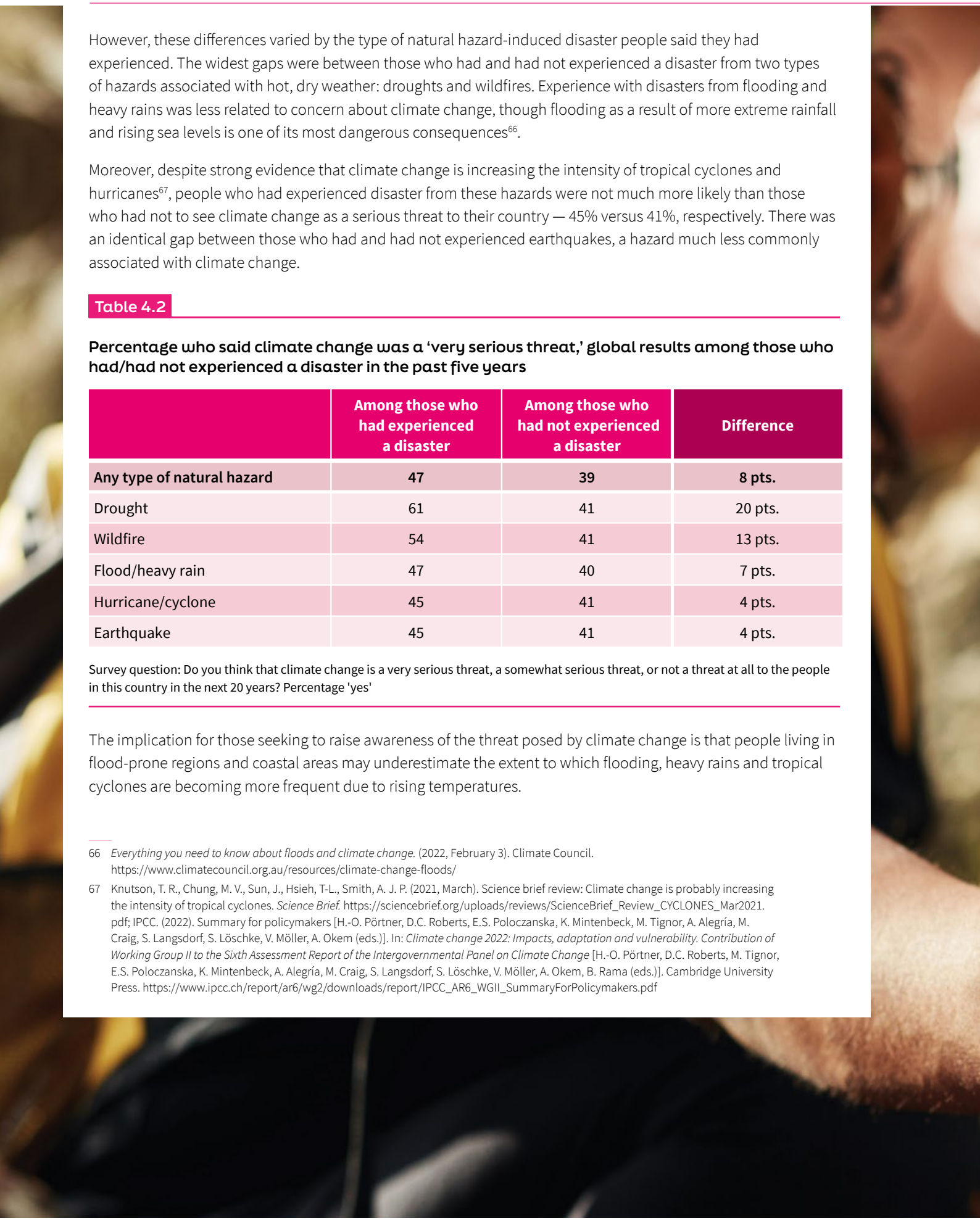
Survey question: In the past 5 years, have you personally experienced a disaster, such as floods or violent storms? Please do not think of coronavirus for this question. Percentage 'yes'

Climate change and experience of disaster

Experience with disasters related to flooding or cyclones was less related to views of climate change than disasters involving hot, dry weather.

As discussed in the 2021 World Risk Poll report, *A Changed World? Perceptions and Experiences of Risk in the Covid Age,* people's concern about harm from extreme weather events was related to their perception of climate change as a threat. Not surprisingly, the same was true of people's experience with disasters from natural hazards; however, the relationship varied significantly by the type of disaster people had experienced.

Worldwide, 74% of those who had experienced a disaster from any type of natural hazard in the past five years said climate change is a 'very serious' or 'somewhat serious threat' to their country, versus 65% of those who had not experienced a disaster. There was a similar gap in the percentage who saw climate change as a 'very serious threat' to their country: 47% vs. 39%, respectively.



However, these differences varied by the type of natural hazard-induced disaster people said they had experienced. The widest gaps were between those who had and had not experienced a disaster from two types of hazards associated with hot, dry weather: droughts and wildfires. Experience with disasters from flooding and heavy rains was less related to concern about climate change, though flooding as a result of more extreme rainfall and rising sea levels is one of its most dangerous consequences[66].

Moreover, despite strong evidence that climate change is increasing the intensity of tropical cyclones and hurricanes[67], people who had experienced disaster from these hazards were not much more likely than those who had not to see climate change as a serious threat to their country — 45% versus 41%, respectively. There was an identical gap between those who had and had not experienced earthquakes, a hazard much less commonly associated with climate change.

Table 4.2

Percentage who said climate change was a 'very serious threat,' global results among those who had/had not experienced a disaster in the past five years

	Among those who had experienced a disaster	Among those who had not experienced a disaster	Difference
Any type of natural hazard	**47**	**39**	**8 pts.**
Drought	61	41	20 pts.
Wildfire	54	41	13 pts.
Flood/heavy rain	47	40	7 pts.
Hurricane/cyclone	45	41	4 pts.
Earthquake	45	41	4 pts.

Survey question: Do you think that climate change is a very serious threat, a somewhat serious threat, or not a threat at all to the people in this country in the next 20 years? Percentage 'yes'

The implication for those seeking to raise awareness of the threat posed by climate change is that people living in flood-prone regions and coastal areas may underestimate the extent to which flooding, heavy rains and tropical cyclones are becoming more frequent due to rising temperatures.

66 *Everything you need to know about floods and climate change.* (2022, February 3). Climate Council. https://www.climatecouncil.org.au/resources/climate-change-floods/

67 Knutson, T. R., Chung, M. V., Sun, J., Hsieh, T-L., Smith, A. J. P. (2021, March). Science brief review: Climate change is probably increasing the intensity of tropical cyclones. *Science Brief.* https://sciencebrief.org/uploads/reviews/ScienceBrief_Review_CYCLONES_Mar2021.pdf; IPCC. (2022). Summary for policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf

Conclusion

Coordinated efforts to identify regions and population groups around the world with low resilience are critical to managing global threats, including natural hazards. In the absence of interventions to boost resilience among vulnerable groups, global disruption caused by shocks and stressors like severe weather events or virus outbreaks will continue to disproportionately harm low-income or marginalised groups, contributing to economic inequality and a heightened risk of social instability[68].

The 2021 World Risk Poll provides a vital new measure of resilience from the perspectives of the global population. The results highlight factors undermining resilience for people in different social, economic and geographic environments — but also strengths that can be leveraged in interventions designed to improve risk mitigation and disaster response. Indicators across the Resilience Index's four dimensions offer insights into potential starting points. For example, though most people in Central/Western Africa lack access to strong social safety nets and well-developed emergency responses, social capital indicators such as community support were high in the region, suggesting interventions may gain an advantage by working through local social networks.

Such findings demonstrate a particular strength of the 2021 World Risk Poll resilience indicators. While they offer data on factors central to other resilience frameworks, such as people's financial security and access to critical infrastructure, they also include measures of less tangible considerations that may be equally important in withstanding adversity, such as social trust, confidence in institutions and people's likelihood to have a household plan for disaster response. With a diverse set of measures showing the perspective of target populations and social groups, policymakers and development organisations can develop better-informed strategies and interventions for closing 'resilience gaps' and making the future safer for everyone.

68 Fuentes-Nieva, R., & Galasso, N. (2014, January). Working for the few [178 Oxfam Briefing Paper]. Oxfam International. https://oi-files-d8-prod.s3.eu-west-2.amazonaws.com/s3fs-public/file_attachments/bp-working-for-few-political-capture-economic-inequality-200114-en_3.pdf

Appendix 1: Lloyd's Register Foundation World Risk Poll questionnaire

1. **Suppose your household suddenly lost all income and had to survive only on savings and things that could be sold. How long would your household be able to cover all the basic needs, such as food, housing, and transportation? Would you say less than a month or a month or more?**

	CIRCLE ONE RESPONSE:
Less than a month	1
A month or more	2
(DK)	98
(Refused)	99

(If code 1, Continue; If code 2, Skip to Q3; Otherwise, Skip to Read before Q4)

2. **Again, suppose you lost all of your household income and had to survive only on your savings or things you could sell. Would you be able to cover all of your basic needs, like food, housing, and transportation for less than a week, between one and two weeks, or between two and four weeks?**

	CIRCLE ONE RESPONSE:
Less than a week	1
Between one and two weeks	2
Between two and four weeks	3
(DK)	98
(Refused)	99

(All in Q3, Skip to Read before Q4)

3. **Again, suppose you lost all of your household income and had to survive only on your savings or things you could sell. Would you be able to cover all of your basic needs, like food, housing, and transportation for around a month, two months, three months, or four months or more?**

	CIRCLE ONE RESPONSE:
Around a month	1
Two months	2
Three months	3
Four months or more	4
(DK)	98
(Refused)	99

(READ:) Now, on a different topic …

4. **How much do you think the government of [COUNTRY] cares about you and your wellbeing? A lot, somewhat or not at all?**

A lot	Somewhat	Not at all	(DK)	(Refused)
1	2	3	98	99

5. **How much do you think most of your neighbours care about you and your wellbeing? A lot, somewhat or not at all?**

A lot	Somewhat	Not at all	(DK)	(Refused)
1	2	3	98	99

(READ:) Now I will ask you some questions about disasters, such as floods or violent storms. Please do not think of coronavirus for this question.

6. **Suppose you needed information about a possible disaster in the city or area where you live, such as floods or violent storms. Would you look to any of the following for information, or not?**

		Yes	No	(Does not apply)	(DK)	(Refused)
6A	The national weather service [Insert local country agency]	1	2	97	98	99
6B	The national disaster management agency, such as [Insert local agencies]	1	2	97	98	99
6C	Local news through newspapers, television or radio	1	2	97	98	99
6D	Local religious leaders	1	2	97	98	99
6E	A famous or influential person you like	1	2	97	98	99
6F	Emergency services, such as the fire department, the police and medical services	1	2	97	98	99
6G	Internet/Social media	1	2	97	98	99

(If code 1 ["Yes"] to TWO or more items in Q6, Continue; Otherwise, Skip to Q8)

7. **Considering the sources of information you would access, which one would you trust MOST to provide information about a possible disaster in the city or area where you live?**
(INTERVIEWER: Do NOT read response options)
(Open-ended and code using pre-codes below)

	CIRCLE ONE RESPONSE:
The national weather service	1
The national disaster management agency	2
Local news through newspapers, television or radio	3
Local religious leaders	4
A famous or influential person you like	5
Emergency services, such as the fire department, the police and medical services	6
Internet/Social media	7
Would trust none of them	8
Some other source	9
Don't know	98
Refused	99

8. **Do you think each of the following are well prepared to deal with a disaster in [COUNTRY], or not?**
(Read Items)
(Programmer: Randomize Items)

		Yes, well prepared	No, not well prepared	(It depends)	(DK)	(Refused)
8A	The national government	1	2	3	98	99
8B	Hospitals in the city or area where you live	1	2	3	98	99
8C	You and your family	1	2	3	98	99
8D	Local government	1	2	3	98	99

9. **In the past 5 years, have you personally experienced a disaster, such as floods or violent storms? Please do not think of coronavirus for this question.**

Yes	No	(DK)	(Refused)
1	2	98	99

(If code 1 in Q9, Continue; Otherwise, Skip to Q12)

10. **Thinking about the last disaster you experienced, what type of event was it?**
(INTERVIEWER: Capture verbatim response)
(Allow ONE response)

	CIRCLE ONE RESPONSE:
Write in:	
(DK)	98
(Refused)	99

10.1 *(INTERVIEWER: Do NOT read response options. Code respondent's verbatim response using the list of pre-coded options below. Refer to previous screen for verbatim. If respondent said more than one type of event or disaster, select the code below that describes the most extreme event, if known.)*

	CIRCLE ONE RESPONSE:
Flood/Heavy rain	1
Hurricane/Cyclone	2
Tornado	3
Thunder or lightning storm	4
Tsunami	5
Mudslide	6
Earthquake	7
Wildfire	8
Volcano eruption	9
Blizzard or snowstorm	10
Other	11
Don’t know	98
Refused	99

11. **Still thinking about the last disaster you experienced, did you receive any advance warning about the event from any of the following, or not?** *(Read Items)*

		Yes	No	(Does not apply)	(DK)	(Refused)
11A	Internet or social media	1	2	97	98	99
11B	Local government agency, such as the Met Office, or the police	1	2	97	98	99
11C	Radio, TV, or newspapers	1	2	97	98	99
11D	Local community organization	1	2	97	98	99

12. **If a disaster were to occur near you in the future, do you think there is ANYTHING you could do to protect yourself or your family from its impact?**

	CIRCLE ONE RESPONSE:
Yes	1
No	2
(It depends)	3
(DK)	98
(Refused)	99

13. **If a disaster were to occur near you in the future, do you have a plan for what to do that all members of your household know about?**
(INTERVIEWER: If respondent says they are the only person in their household, READ: "Do you have a plan for what you would do if a disaster were to occur near you in the future?")

Yes	No	(DK)	(Refused)
1	2	98	99

14. **Have any of the following happened to you in the past 12 months, or not? Have you…?**
(Read Items)

		Yes	No	(Does not apply)	(DK)	(Refused)
14A	Gone without electricity for more than a day	1	2	97	98	99
14B	Been without clean drinking water for more than a day	1	2	97	98	99
14C	Been unable to obtain food BECAUSE of shortages for more than a day	1	2	97	98	99
14D	Been unable to obtain medical assistance or medicine for more than a day	1	2	97	98	99
14E	Been unable to access a telephone for more than a day	1	2	97	98	99

(READ:) Now, on a different topic …

15. **Have you, PERSONALLY, ever EXPERIENCED any discrimination because of any of the following?**
(Read Items)
(Programmer: Randomize Items)

		Yes	No	(Does not apply)	(DK)	(Refused)
15A	The colour of your skin	1	2	97	98	99
15B	Your religion	1	2	97	98	99
15C	Your ethnic group	1	2	97	98	99
15D	Your gender	1	2	97	98	99
15E	A disability, if you have one	1	2	97	98	99

Appendix 2: Regions

2021 World Risk Poll regions and countries

Australia & New Zealand	Australia; New Zealand
Central Asia	Armenia; Georgia; Kazakhstan; Kyrgyzstan; Tajikistan; Uzbekistan
Central/Western Africa	Benin; Burkina Faso; Cameroon; Congo Brazzaville; Gabon; Ghana; Guinea; Ivory Coast; Mali; Nigeria; Senegal; Sierra Leone; Togo
Eastern Asia	China; Hong Kong SAR of China; Japan; Mongolia; South Korea; Taiwan
Eastern Africa	Kenya; Mauritius; Mozambique; Tanzania; Uganda; Zambia; Zimbabwe
Eastern Europe	Bulgaria; Czech Republic; Hungary; Kosovo; Moldova; Poland; Romania; Russia; Slovakia; Ukraine
Latin America & Caribbean	Argentina; Bolivia; Brazil; Chile; Colombia; Costa Rica; Dominican Republic; Ecuador; El Salvador; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; Uruguay; Venezuela
Middle East	Iran; Iraq; Israel; Jordan; Lebanon; Saudi Arabia; Turkey; United Arab Emirates
Northern/Western Europe	Austria; Belgium; Denmark; Estonia; Finland; France; Germany; Iceland; Ireland; Latvia; Lithuania; Netherlands; Norway; Sweden; Switzerland; United Kingdom
Northern Africa	Algeria; Egypt; Morocco; Tunisia
Northern America	Canada; United States
Southern Asia	Afghanistan; Bangladesh; India; Nepal; Pakistan; Sri Lanka
Southeastern Asia	Cambodia; Indonesia; Laos; Malaysia; Myanmar; Philippines; Singapore; Thailand; Vietnam
Southern Africa	Namibia; South Africa
Southern Europe	Albania; Bosnia Herzegovina; Croatia; Cyprus; Greece; Italy; Malta; North Macedonia; Portugal; Serbia; Slovenia; Spain

Appendix 3: Resilience Index methodology

Building on the existing body of literature and different measures of resilience, the 2021 World Risk Poll included several questions on the topic. The questions, or items, were drafted in close consultation with Lloyd's Register Foundation and its subject matter expert partners[69]. While the data and insights from each individual item in the survey have value in themselves, the research team decided also to construct a composite measure of resilience: the Resilience Index.

Given the multiple ways resilience is defined and measured in the literature (see the next sections below), with different models and approaches, the 2021 World Risk Poll survey items were mapped to dimensions informed by the literature. The resulting Resilience Index is a first pilot measure that uses the World Risk Poll to add value by creating a summary tool useful for policy analysis and communication, where country-level trends and patterns could be highlighted and analysed before diving into the many constituent variables from which the index is constructed. Lloyd's Register Foundation hopes this index generates further thought and research into the topic and contributes to the knowledge base on resilience and its measurement.

The Resilience Index was developed to summarise and facilitate the analysis of a complex construct — resilience. The development of an index starts by carefully defining the construct and its composition, including the construct structure and its dimensions. The composition of the construct is then mapped to measurable indicators, which are finally aggregated and summarised into a single index score. Each of these steps is described in more detail below.

Construct definition

In its broadest sense, resilience is the capacity to handle and recover from adversity and difficulties. For risk management experts, that generally means how well individuals or groups manage and recover from 'shocks' — instances when risks evolve into disruptive events that threaten safety.

In some cases, resilience refers to the ability to return relatively quickly to the pre-shock state; this recalls how physicists use the term to describe a system's capacity to return to equilibrium after being exposed to a stressor. The European Union's definition reflects this view of resilience as 'the ability of an individual, a household, a community, a country or a region to withstand, to adapt, and to quickly recover from stressors and shocks[70].'

In the context of risk and safety, however, resilience often refers not just to the ability to recover from specific shocks as they occur but also to adapt to changes in the risk landscape to make shocks less likely or less harmful when they do occur. The Rockefeller Foundation's definition, for example, emphasises this adaptive aspect of resilience: 'The capacity of individuals, communities, and systems to survive, adapt, and grow in the face of stress and shocks, and even transform, when conditions require it[71].'

Summarising these different conceptions, Béné et al.'s 2014 review of the literature concluded that resilience can consist of **absorptive**, **adaptive** or **transformative** capacities and that the need for each capacity varies with the

69 The foundation's partners included Resilience Rising, the UNDRR and the World Bank.

70 European Commission. (2016). *Building resilience: The EU's approach.* https://ec.europa.eu/echo/files/aid/countries/factsheets/thematic/EU_building_resilience_en.pdf

71 Rockefeller Foundation. (2017). *Introducing Zilient: A global resilience network.* https://www.rockefellerfoundation.org/blog/introducing-zilient-global-resilience-network/

intensity and costs of the shocks involved[72]. Truly resilient systems have all three capacities to deal with a wide range of potential shocks.

Construct composition

The Lloyd's Register Foundation report, *Foresight Review on Resilience Engineering*, notes that standards and processes for measuring resilience are still emerging, citing the need for 'assessment and predictive capabilities that do not presently exist, including identification, collection and analysis of relevant data[73].' In recent years, researchers and development practitioners have developed a number of frameworks for measuring resilience, several of which were summarised in a 2016 report from the United Kingdom's Department for International Development (DFID), now the Foreign, Commonwealth and Development Office[74]. The report lists several common methods for quantifying resilience, including the following:

1) **Household or community characteristics:** includes income, access to safety nets and social capital
2) **Functionality:** includes measures of infrastructure resilience — for example, the presence of a system to measure structures' resilience to earthquakes
3) **Access to food**
4) **Activities:** attempts to put a monetary value on interventions designed to improve resilience
5) **Subjective perceptions:** includes individuals' self-evaluation of their household's capacities in responding to risk
6) **Costs of resilience:** includes the costs of anticipation, impact and recovery

Another review of existing resilience studies conducted by Serfilippi and Ramnath in 2018 classified 76 indicators into three categories[75]:

1) **Social:** includes coping strategies, access to safety nets, inclusion, education, living conditions, access to information, access to basic services and infrastructure
2) **Environmental:** includes soil and water conservation measures, land use change and fertiliser use
3) **Economic:** Includes diversification of livelihoods, access to credit and productive assets

In his 2013 review of resilience measures, Béné wrote about the need for indicators that are not only generic enough to measure resilience to different types of shocks but also 'multi-scale' in that they assess resilience at different levels — including the household, community and societal levels — to capture the full range of risk mitigation factors in their environment[76].

Indicator mapping

In the process of designing the Resilience Index, the conceptual frameworks described above were reviewed to identify unique, measurable variables. Each of these variables was then compared to data available from the World Risk Poll (Table 1) and the Gallup World Poll (GWP) more broadly (Table 2). Matching indicators were then mapped to the existing resilience frameworks. As Table 1 and Table 2 show, there was not a perfect match between the variables available in the World Risk Poll/GWP and any specific resilience frameworks; however, all frameworks were at least partially covered.

72 Béné, C., Newsham, A., Davies, M., Ulrichs, M., & Godfrey-Wood, R. (2014). Resilience, poverty and development. *Journal of International Development, 26*(5), 598-623.

73 Lloyd's Register Foundation. (2015). *Foresight review of resilience engineering*. https://www.lrfoundation.org.uk/en/publications/resilience-engineering/

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75 Serfilippi, E., & Ramnath, G. (2018). Resilience measurement and conceptual frameworks: A review of the literature. *Annals of Public and Cooperative Economics, 89*(4), 645-664. https://doi.org/10.1111/apce.12202

76 Béné, C. (2013). Towards a quantifiable measure of resilience. *IDS Working Papers, 434*, 1-27.

Table 1

Correspondence between resilience conceptual frameworks and World Risk Poll items

Framework	Variable	Cover Basic Needs	Government Cares	Neighbours Care	Look to/Trust Info Sources	Institutions Prepared	Experienced Disaster	Received Warning	Individual Agency	Household Plan	Loss of Services	Discrimination
Capacities Framework	Absorptive capacity	X	X	X						X		
	Adaptive capacity								X			
	Transformative capacity								X			
Capacities Measurement Framework	Social		X	X				X				X
	Environmental											
	Economic	X										
DFID (2016)	Hhld/Community characteristics	X		X								X
	Functionality							X				
	Access to food											
	Activities											
	Subjective perceptions								X	X		
	Costs of resilience											
Psychological Resilience – U.K.'s NHS	Confidence (self-efficacy)								X			
	Coordination (planning)									X		
	Control								X			
	Composure (low anxiety)											
	Commitment (persistence)											
	Make adversity meaningful											

Table 2

Correspondence between resilience conceptual frameworks and GWP items

Framework	Variable	Indi-vidual	Household							Community									Society	
		Educational Attainment*	Internet Access*	Mobile Phone Access*	Feelings About Household Income	Standard of Living	Standard of Living Better	Not Enough Money: Food	Not Enough Money: Shelter	Safe Walking Alone*	Helped a Stranger*	Money/Property Stolen	Public Transport	Roads*	Schools*	Quality of Air	Quality of Water	Quality Healthcare*	Voiced Opinion to Official	National Institutions Index*
Capacities Framework	Absorptive capacity	X	X	X	X	X	X	X	X											
	Adaptive capacity																			
	Transformative capacity																		X	X
Capacities Measurement Framework	Social	X	X	X	X	X	X			X	X	X	X	X	X			X		
	Environmental															X	X			
	Economic							X	X											
DFID (2016)	Hhld/Community characteristics				X	X	X			X	X	X								
	Functionality												X	X	X			X		
	Access to food							X												
	Activities																			
	Subjective perceptions																			
	Costs of resilience																			
Psychological Resilience – U.K.'s NHS	Confidence (self-efficacy)																			
	Coordination (planning)																			
	Control																			
	Composure (low anxiety)																			
	Commitment (persistence)																			
	Make adversity meaningful																			

* *A Resilience Index ranking for this country is not included due to missing items in the Society Dimension. The Resilience Index scores are presented here as an indicative measure of resilience for each country individually, but a ranking is not advisable due to the lack of strict cross-country comparability.*

Following Béné's recommendation that resilience be assessed at different levels of individuals' social setting, the World Risk Poll Resilience Index was structured to combine indicators of resilience at the individual, household, community and society levels.

Table 3

Dimensions and indicators in the World Risk Poll Resilience Index

Dimension	Indicators
Individual	**Agency/Self-efficacy:** *If a disaster were to occur near you in the future, do you think there is anything you could do to protect yourself or your family from its impact?*
	Educational attainment: *What is your highest completed level of education?*
Household	**Financial assets:** *Suppose your household suddenly lost all income and had to survive only on savings and things that could be sold. How long would your household be able to cover all the basic needs, such as food, housing, and transportation?*
	Planning: *If a disaster were to occur near you in the future, do you have a plan for what to do that all members of your household know about?*
	Access to communications: *Does your home have access to: 1) the internet, 2) a cellular phone?*
Community	**Social capital:** 1. *How much do you think most of your neighbours care about you and your wellbeing?* 2. *Do you feel safe walking alone at night in the city or area where you live?* 3. *Have you done any of the following in the past month? Helped a stranger or someone you didn't know who needed help.*
	Local infrastructure: *In the city or area where you live, are you satisfied or dissatisfied with:* 1. *The roads and highways?* 2. *The educational system or the schools?* 3. *The availability of quality health care?*
Society	**Discrimination:** *Have you, personally, ever experienced any discrimination because of any of the following? The colour of your skin? Your religion? Your ethnicity/nationality? Your gender? A disability, if you have one?*
	Government support: *How much do you think the government of [country] cares about you and your wellbeing?*
	National Institutions Index *In [country], do you have confidence in each of the following, or not?* 1. *The military?* 2. *The judicial system or courts?* 3. *The national government?* 4. *The honesty of elections?*

Total scores for each of the four index dimensions (listed in Table 3) were derived by averaging the scores of the individual items in each dimension. The final overall Resilience Index score is computed as the arithmetic mean of the scores of the four dimensions. Section 1 below discusses how overall index and dimension scores varied by region and demographic grouping, while Section 2 takes a more detailed look at the results for each index component.

It is important to note that the Resilience Index was designed to measure each of the four dimensions of resilience using multiple, conceptually inter-related, items. Doing so enhances the robustness of the measure in the event of missing, or otherwise uninformative, responses (e.g., 'Don't know/refused'). However, eight countries in the sample (Algeria, Cambodia, Laos, Morocco, Pakistan, Tajikistan, United Arab Emirates and Vietnam) were systematically missing data for one or more items in the 'society' dimension (see list below for items by country). An indicative resilience score can be computed for those countries, since they still have at least one item within all four dimensions of the index, but overall resilience scores for these countries are not strictly comparable to the other countries in the sample. Therefore, resilience scores for these eight countries are presented in the report as an indicative measure of resilience but are not included in the resilience rankings due to the lack of strict cross-country comparability. Additionally, two countries (China and Saudi Arabia) were lacking all items in the society dimension, which prevented them from receiving a score for the Resilience Index.

The following list details the indicators for the eight countries that were systematically missing data for one or more items in the 'society' dimension:

Algeria:	Gallup Confidence in National Institution Index, Government cares about you and your wellbeing
Cambodia:	Gallup Confidence in National Institution Index
China:	Gallup Confidence in National Institution Index, Government cares about you and your wellbeing, Experience of discrimination
Laos:	Gallup Confidence in National Institution Index
Morocco:	Gallup Confidence in National Institution Index
Pakistan:	Gallup Confidence in National Institution Index
Saudi Arabia:	Gallup Confidence in National Institution Index, Government cares about you and your wellbeing, Experience of discrimination
Tajikistan:	Gallup Confidence in National Institution Index, Government cares about you and your wellbeing
United Arab Emirates:	Gallup Confidence in National Institution Index, Experience of discrimination
Vietnam:	Gallup Confidence in National Institution Index

Standardisation and aggregation

Standardisation and aggregation involve translating survey responses into numerical values that can be averaged into a quantitative index. This step is critical but also involves judgement calls regarding the numerical value of survey responses that are either nominal or, at best, ordinal in nature, and their relative weight in the final index.

Guided by the principles of transparency, simplicity and parsimony, each item identified by the resilience frameworks in the review was scored using a numerical equivalence ranging from 0 to 1, with a scaling approach corresponding to their response format:

- **Binary items:** Items where valid response options (i.e., excluding 'Don't know/refused') only included two options were coded as binary values:
  - Yes = 1
  - No = 0
  - DK or Refused = Missing

- **Ordinal items:** Items where valid response options (i.e., excluding 'Don't know/refused') included more than two ordered options were coded as rank order values e.g.:
  - A lot = 1
  - Somewhat = 0.5
  - Not at all = 0
  - DK or Refused = Missing
- **Continuous items:** Items that could be expressed as continuous values were scaled to the 0-1 range. For example, household financial preparedness was expressed in terms of the number of weeks that the household could cover their basic needs using just their savings.

Besides these general approaches, some variables required multiple levels of standardisation and aggregation, including household-level access to communications, community-level social capital and local infrastructure and society-level discrimination.

- **Access to communications:** average of two binary variables
  - Household access to the internet (0, 1)
  - Household cell phone access (0, 1)
- **Social capital:** average of three ordinal and binary variables
  - Neighbours care about you (0, 0.5, 1)
  - Feel safe walking alone at night (0, 1)
  - Helped a stranger (0, 1)
- **Local infrastructure:** average of three binary variables
  - Satisfaction with local roads and highways (0, 1)
  - Satisfaction with local education system (0, 1)
  - Satisfaction with local healthcare system (0, 1)
- **Discrimination:** five binary variables of experienced discrimination were aggregated non-linearly using the following approach:
  - If someone experiences 0 discriminatory practices, they are given a score of 1.0
  - If someone experiences 1 discriminatory practice, they are given a score of 0.5
  - If someone experiences 2 discriminatory practice, they are given a score of 0.375
  - If someone experiences 3 discriminatory practice, they are given a score of 0.250
  - If someone experiences 4 discriminatory practice, they are given a score of 0.125
  - If someone experiences 5 discriminatory practice, they are given a score of 0

  The rationale, based on literature supporting the cumulative impact of intersectional discrimination is that the effects of intersectional discrimination are cumulative but not linear. One form of discrimination causes a person to feel disconnected from society, and any additional forms of discrimination add to their feelings of 'non-cohesion' but not at the same rate. A person would feel aggrieved from one form of discrimination and would not feel 'doubly so' from a second, 'triple' from a third and so on, with a finite 'worst' score of 0 if someone experienced five forms of discrimination.

The details of item scoring for each item and dimension are provided below. The resulting variables were finally aggregated into four dimensions of resilience by averaging the variables in each dimension with equal weighting. To minimise missing data, dimension scores were computed even if one or more of the underlying variables was missing. In those cases, the dimension score was calculated as the average of any of the underlying variables containing valid data. Only individuals with missing data in all variables within a given dimension were given a missing score.

1) Individual Dimension

- Individual Agency (0-1)
- Education (0-1)

2) Household Dimension

- Preparedness (0-1)
- Financial (0-1)
- Access to Communications (0-1)

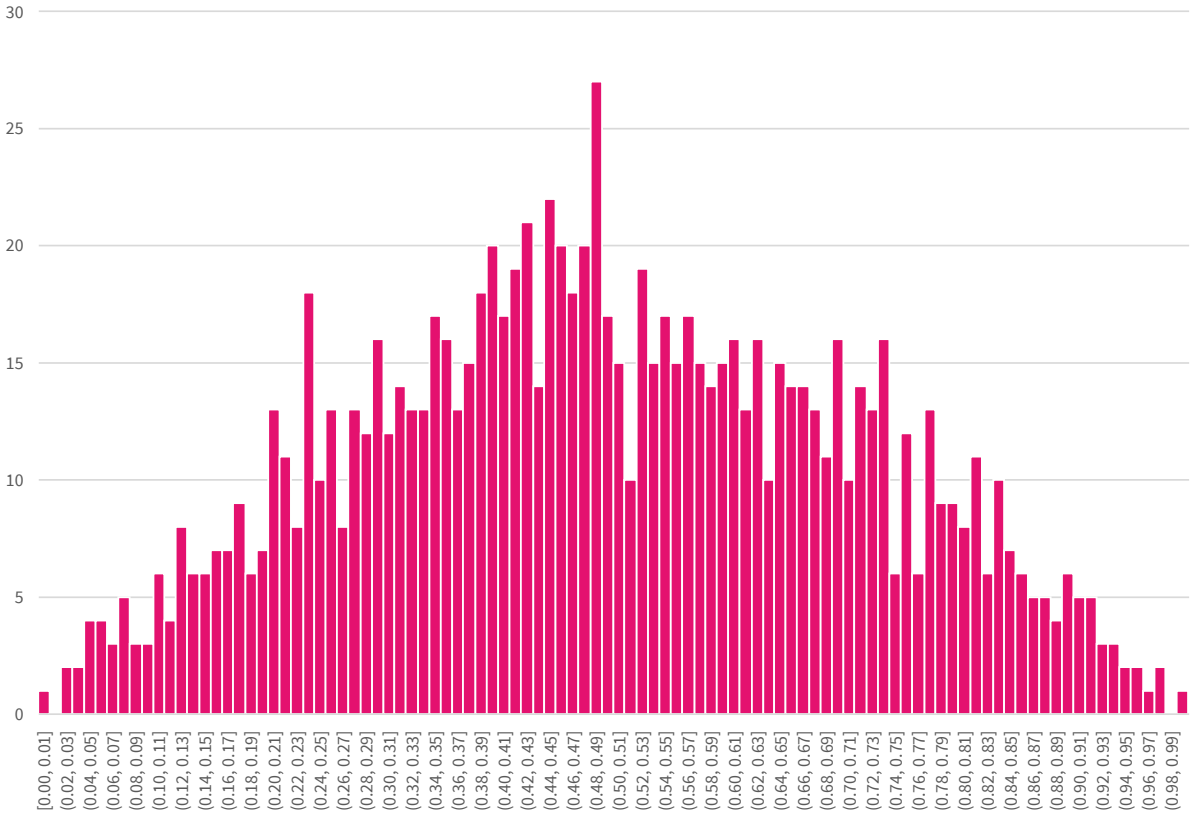
3) Community Dimension

- Social Capital (0-1)
- Local Infrastructure (0-1)

4) Society Dimension

- Discrimination (0-1)
- Safety Net (0-1)
- Trust in Institutions (0-1)

The final Resilience Index is computed as the arithmetic mean of the four dimensions. The index was only calculated for individuals with valued values in all four dimensions.



Item scoring for the Resilience Index and its dimensions

Individual Dimension

WP22252: Individual Agency		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
3	It depends	0.5
98	Don't know	Missing
99	Refused	Missing

WP3117: Educational Attainment		
Value	**Value Label**	**Score**
1	Primary (0-8 years)	0
2	Secondary (9-15 years)	0.5
3	Tertiary (16 years or more)	1
98	Don't know	Missing
99	Refused	Missing

Household Dimension

Cover Basic Needs				
Weeks	**Score (0-1)**	**Value**	**Value Label**	**Score**
0	0 (0/16)	1	Less than a week	0
1	0.0625 (1/16)	2	Between one and two weeks	0.09375
2	0.125			
3	0.1875	3	Between two and four weeks	0.21875
4	0.25	4	Less than a month	
		5	Around a month	0.25
5	0.3125	9	A month or more (unsure)	0.3125
8	0.5	6	Two months	0.5
12	0.75	7	Three months	0.75
16	1 (16/16)	8	Four months or more	1
		98	Don't know	Missing
		99	Refused	Missing

WP22253: HH Planning		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP16056: Internet Access		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP17626: Cellphone Access		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't Know	Missing
99	Refused	Missing

Community Dimension

WP22232: Neighbours Care		
Value	**Value Label**	**Score**
1	A lot	1
2	Somewhat	0.5
3	Not at all	0
98	Don't know	Missing
99	Refused	Missing

WP113: Safe Walking Alone		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP110: Helped a Stranger		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP92: Roads and Highways		
Value	**Value Label**	**Score**
1	Satisfied	1
2	Dissatisfied	0
98	Don't know	Missing
99	Refused	Missing

WP93: Educational System		
Value	**Value Label**	**Score**
1	Satisfied	1
2	Dissatisfied	0
98	Don't know	Missing
99	Refused	Missing

WP97: Quality Healthcare		
Value	**Value Label**	**Score**
1	Satisfied	1
2	Dissatisfied	0
98	Don't know	Missing
99	Refused	Missing

Society Dimension

WP22259: Experienced Racial Discrimination		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP22260: Experienced Religious Discrimination		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP22261: Experienced Ethnic Discrimination		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP22262: Experienced Gender Discrimination		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP22263: Experienced Disability Discrimination		
Value	**Value Label**	**Score**
1	Yes	1
2	No	0
98	Don't know	Missing
99	Refused	Missing

WP22231: Government Cares (Safety Net)		
Value	**Value Label**	**Score**
1	A lot	1
2	Somewhat	0.5
3	Not at all	0
98	Don't know	Missing
99	Refused	Missing

National Institutions Index	
Value	**Score**
0	0
25	0.25
33.3	0.333
50	0.5
66.6	0.666
75	0.75
100	1
Missing	Missing

Appendix 4: References

Introduction

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Chapter 1

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