

MENOG 24  
December 2024

# Indexing Internet Resilience in the Middle East

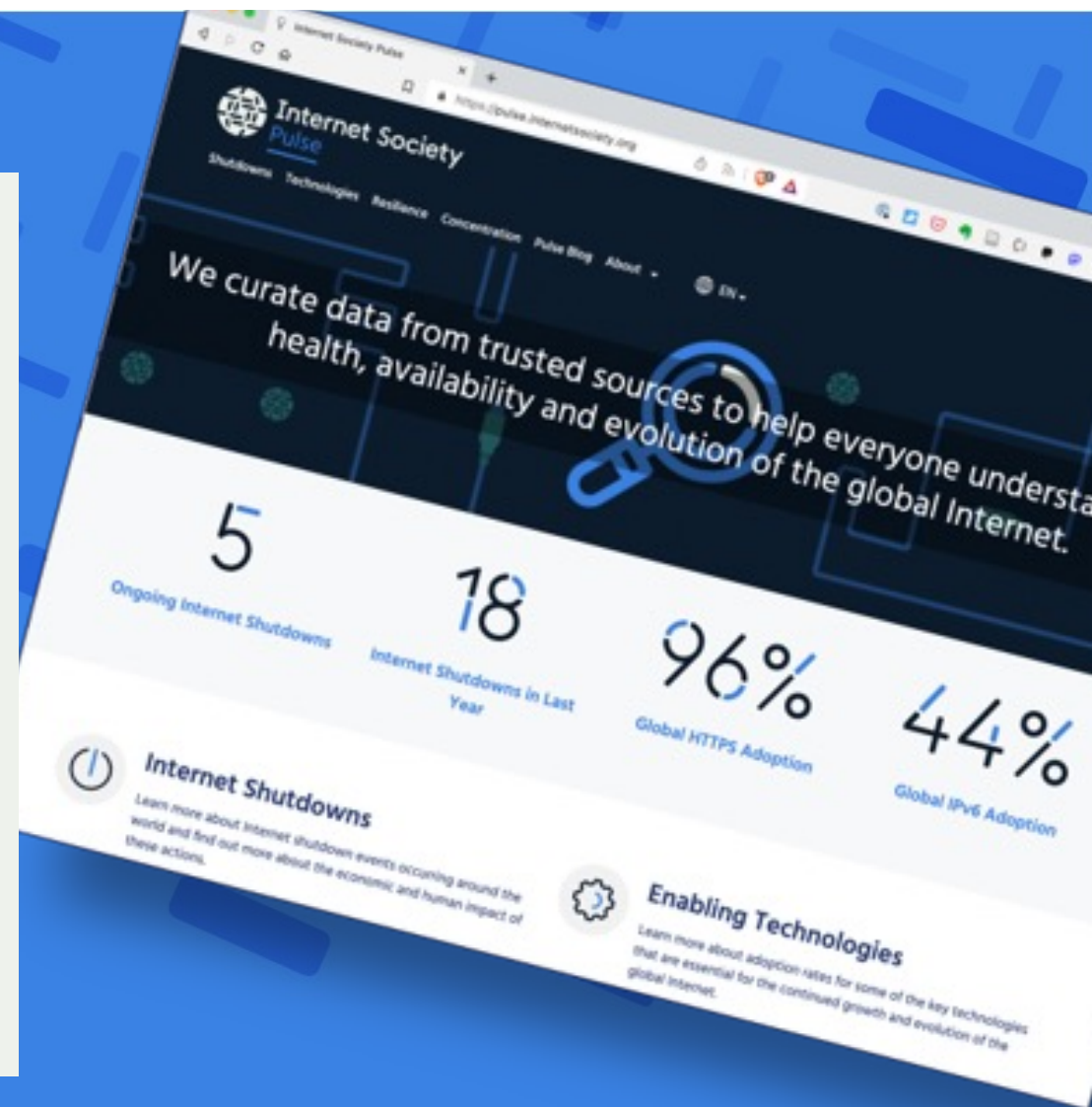


Amreesh Phokeer  
Internet Measurement and Data Expert  
Internet Society

- Launched December 2020.
- We curate Internet measurement data from trusted sources to help everyone gain deeper, data-driven insight into the Internet.

#### Trusted data from multiple sources:

- **Benefit:** Helps to assess whether efforts to ensure that the Internet remains open, globally connected, secure, and trustworthy are working.
- **Benefit:** Allows policymakers, researchers, journalists, network operators, civil society groups, and others to better understand the health, availability, and evolution of the Internet.



[pulse.internetsociety.org](https://pulse.internetsociety.org)




# Pulse Data Partners




- Data is provided by our trusted data partners




# Pulse tracks


 **Shutdowns:** Where do Internet shutdowns take place?


 **Net Loss:** Estimate the economic impacts of Internet shutdowns.

 **Technologies:** Tracking the deployment of technologies critical for the evolution of the Internet.

 **Concentration:** How much are services concentrated in the hands of a few?


 **Resilience:** How robust is the Internet ecosystem?


 **IXP Tracker:** monitors the growth of IXPs globally

 **Popular Content Locality:** tracks where the most popular content are cached




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CNN

<https://www.cnn.com> > 2024/03/04 > business > red-sea... ⋮

## Red Sea cables have been damaged, disrupting internet ...

Mar 4, 2024 — Damage to submarine **cables** in the Red Sea is disrupting telecommunications networks and forcing providers to reroute as much as 50% of traffic.



CNN

<https://www.cnn.com> > 2023/07/03 > middleeast > mid... ⋮

## Middle Eastern regimes have a history of shutting down ...

Jul 3, 2023 — Iran's record-long **internet** shutdown between November 16 and 23, 2019 is estimated to have cost the country more than \$33 million in economic ...



SubTel Forum

<https://subtelforum.com> > cable-cut-to-hit-net-users-in-t... ⋮

## Cable Cut to Hit Net Users in the UAE

Aug 27, 2024 — Internet users in the **UAE** on the du network would face a possible downgrade of services following an undersea **cable cut** between **Dubai** and Oman.



Dawn

<https://www.dawn.com> > news > it-industry-loses-1m-du... ⋮

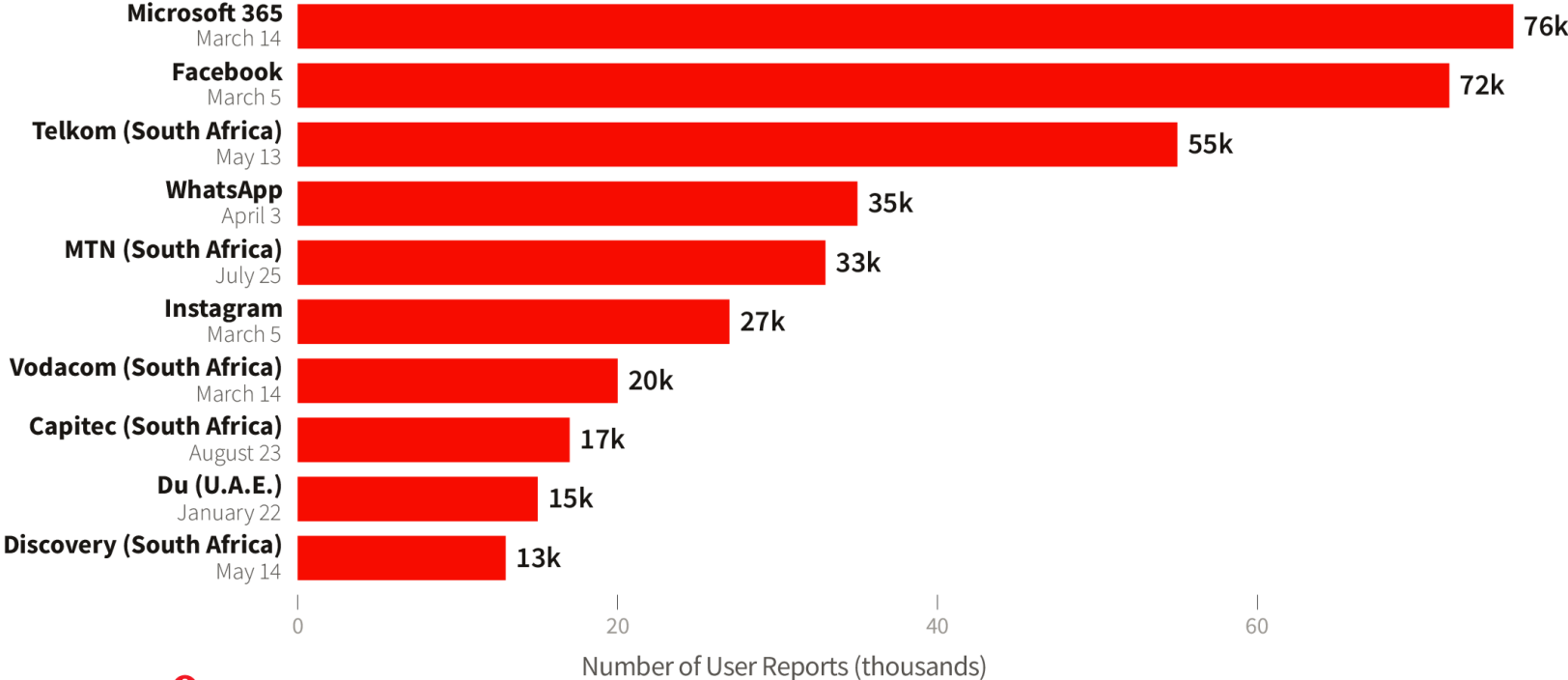
## IT industry 'loses \$1m' due to one hour of net outage

2 hours ago — ISLAMABAD: The IT industry has claimed that **one hour of internet outage** or disruption results in a loss of more than one million dollars for ...

# Middle East and Africa experience mix of local and global outages

## Largest Outages in the Middle East and Africa

Downdetector® | Q1-Q3 2024



DownDetector



# The Internet Resiliency Index (IRI)

The framework collates around 30 sets of public metric data that relate to **four pillars** of a resilient Internet:

## Infrastructure

The existence and availability of physical infrastructure that provides Internet connectivity.

## Performance

The ability of the network to provide end-users with seamless and reliable access to Internet services.

## Security

The ability of the network to resist intentional or unintentional disruptions through the adoption of security technologies and best practices.

## Market Readiness

The ability of the market to self-regulate and provide affordable prices to end-users by maintaining a diverse and competitive market.



Methodology: <https://pulse.internetsociety.org/wp-content/uploads/2023/07/Internet-Society-Pulse-IRI-Methodology-July-2023-v2.0-Final-EN.pdf>



# Index architecture



## How did we select our indicators?

- **Relevance:** The indicator should work towards showing an increase or decline in the resilience of the Internet in a selected country.
- **Accuracy:** The indicator should correctly estimate or describe the quantities or characteristics they are designed to measure.
- **Coverage:** The data should cover as many countries as possible, as the Index is intended to be a global index. An indicator is not included if there is missing data on more than 25% of countries in the Index.
- **Freshness:** Any dataset should be at most two years old. Some datasets such as performance or network coverage should be recent. Some other datasets such as number of exits points do not change considerably over years, so it is acceptable to use a dataset which is a year or two old.
- **Continuity:** To objectively compare the index over the years, it is important to work with a stable list of indicators, which will provide data consistently over time.



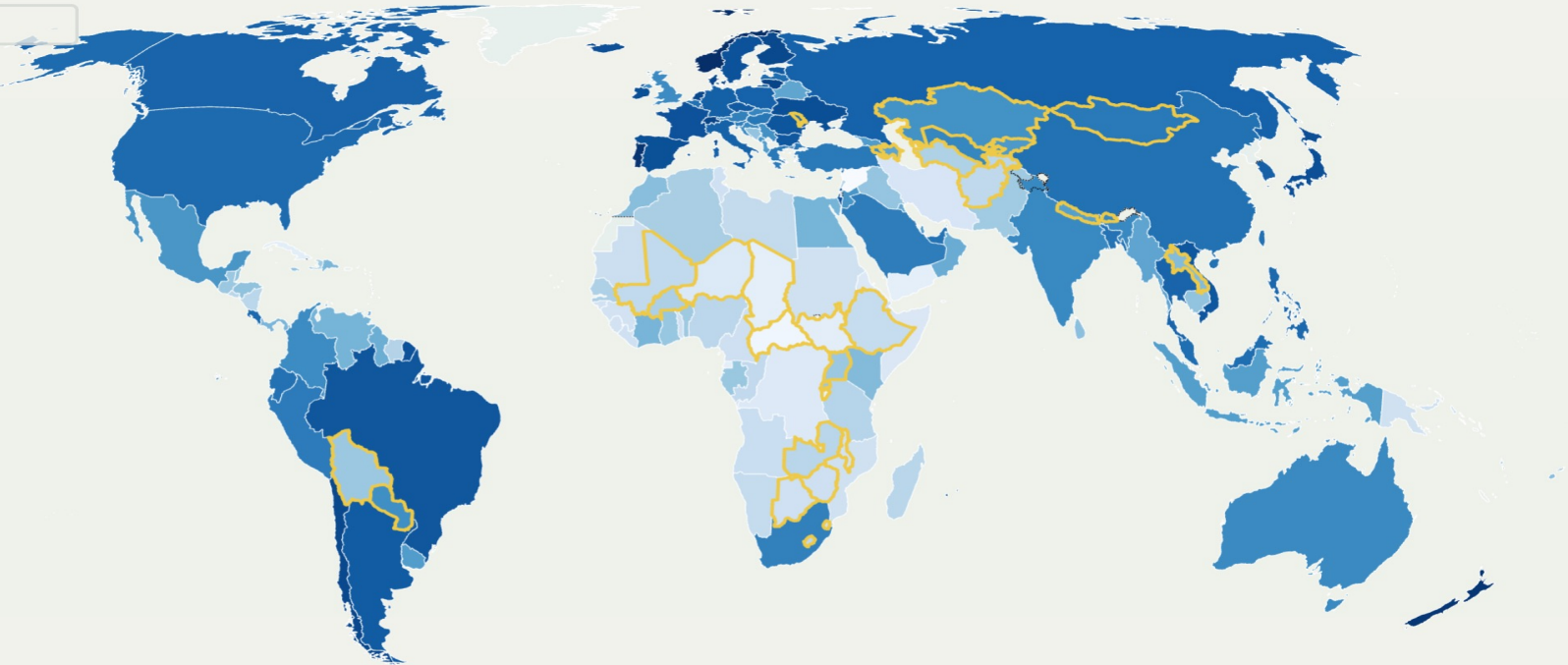
# Internet Resilience Globally

## Pulse Internet Resilience Index

Landlocked Developing Countries

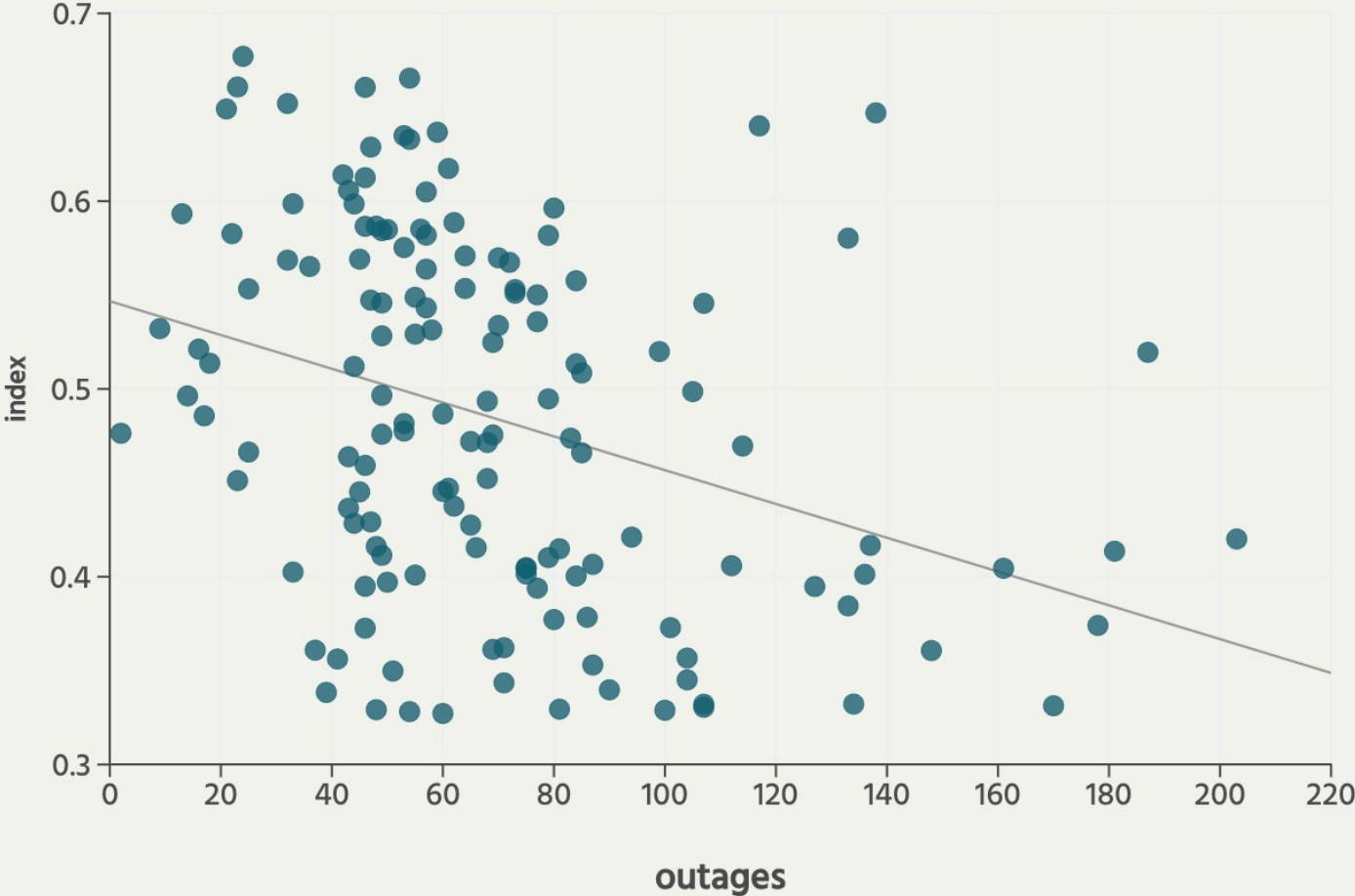
19.9  69.15

Q Search..



Source: [Internet Society Pulse](#), [World Bank Official Boundaries](#)

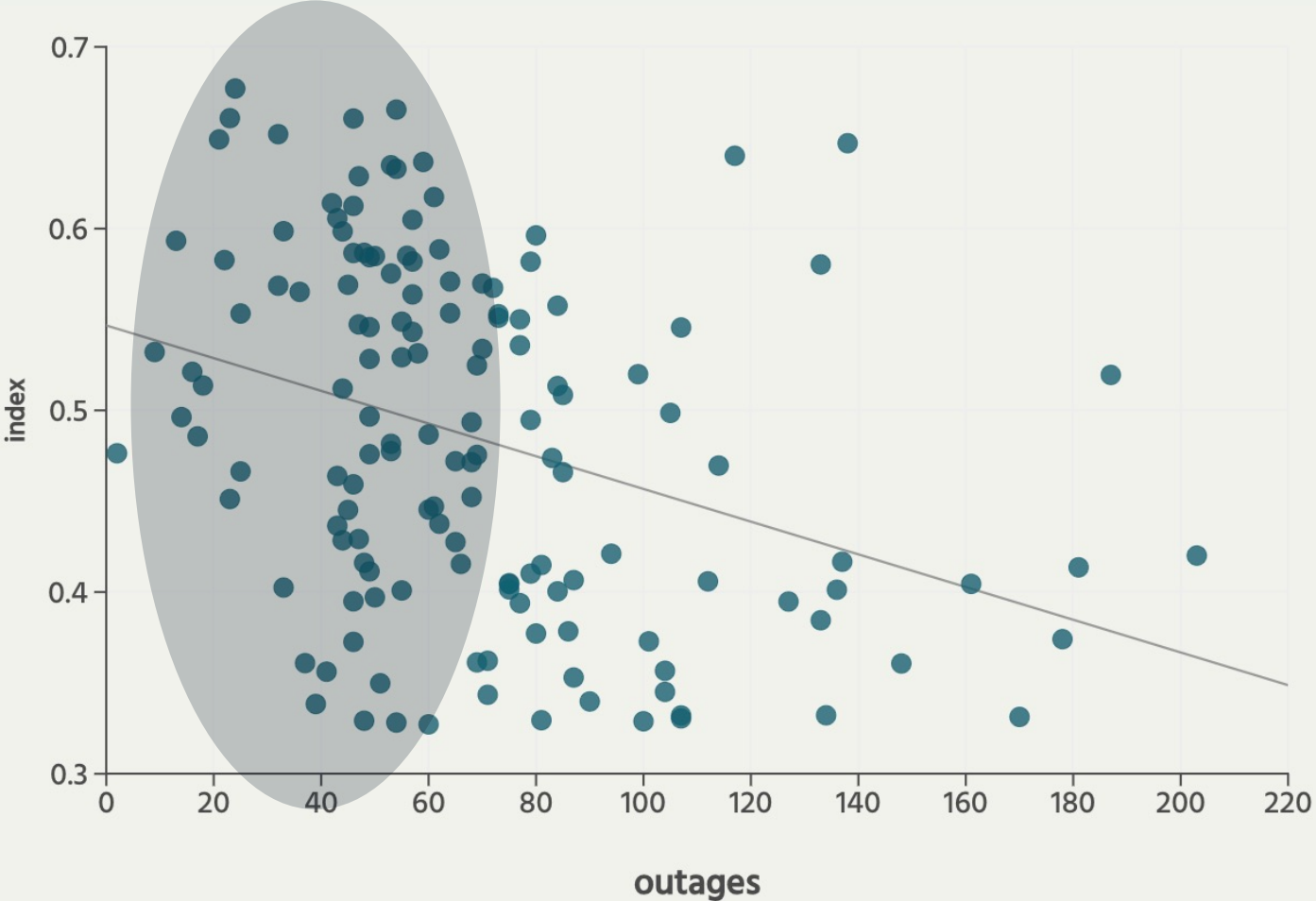
# Internet outages vs Index (2023)



Source of outages:  
Cloudflare  
IODA



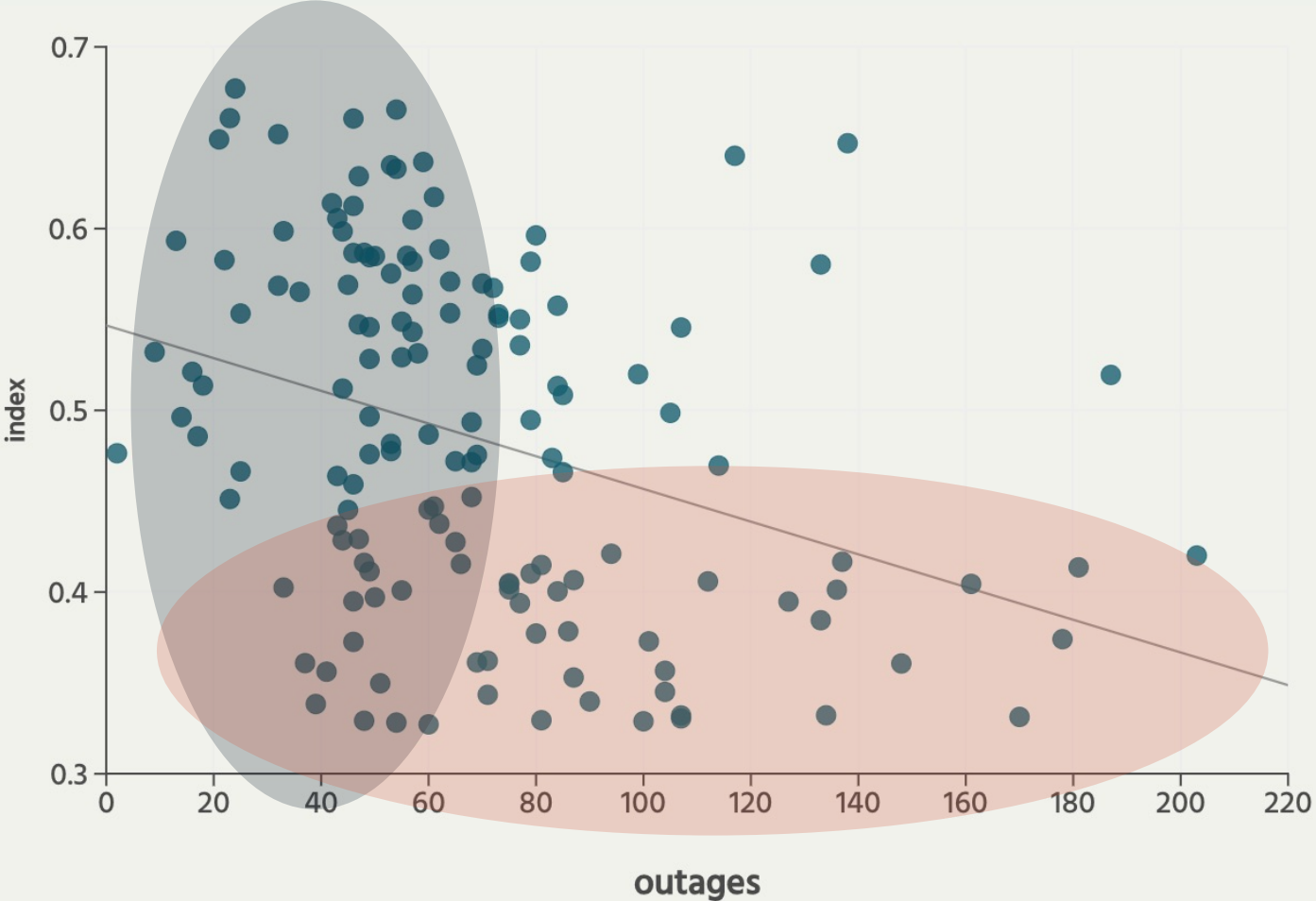
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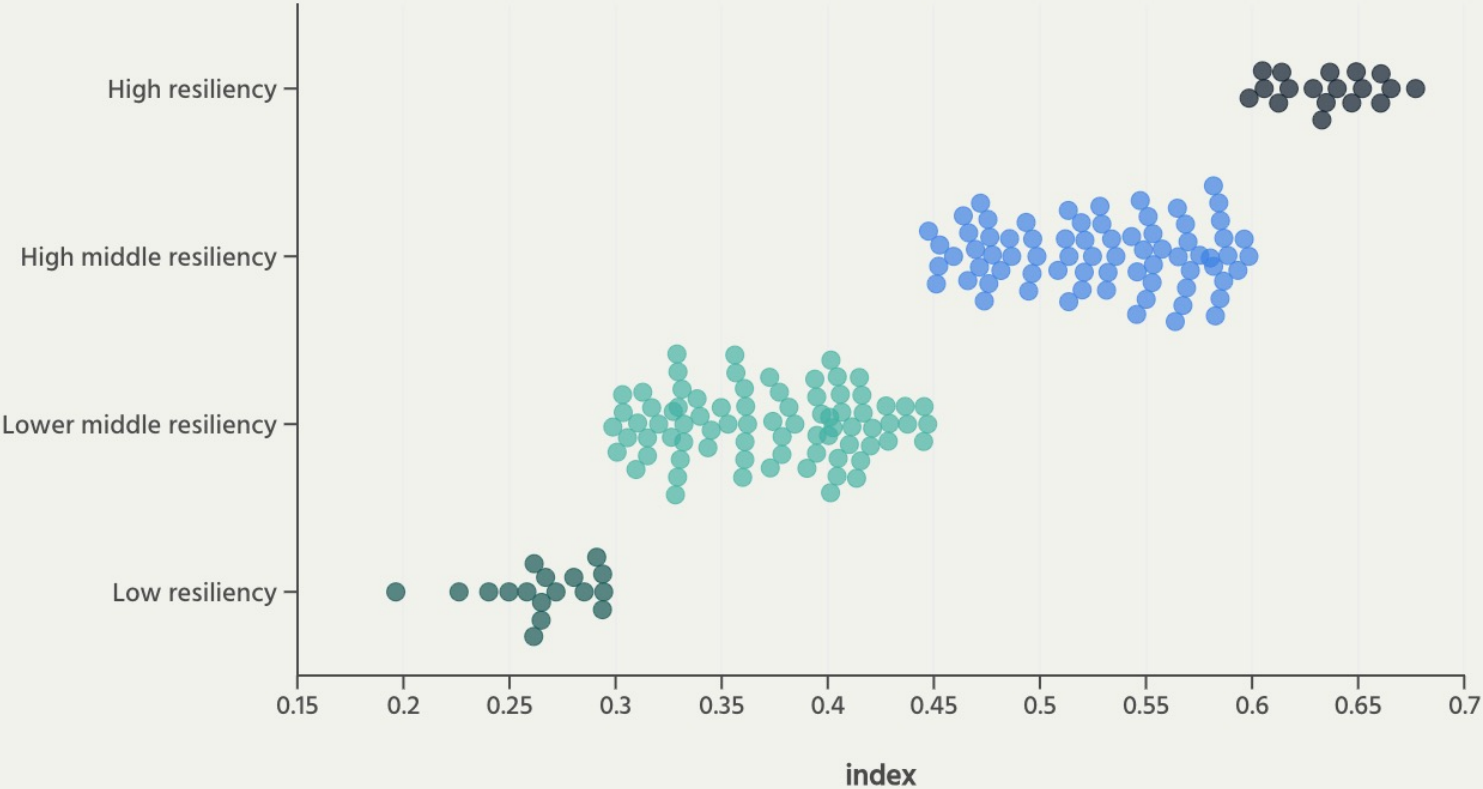


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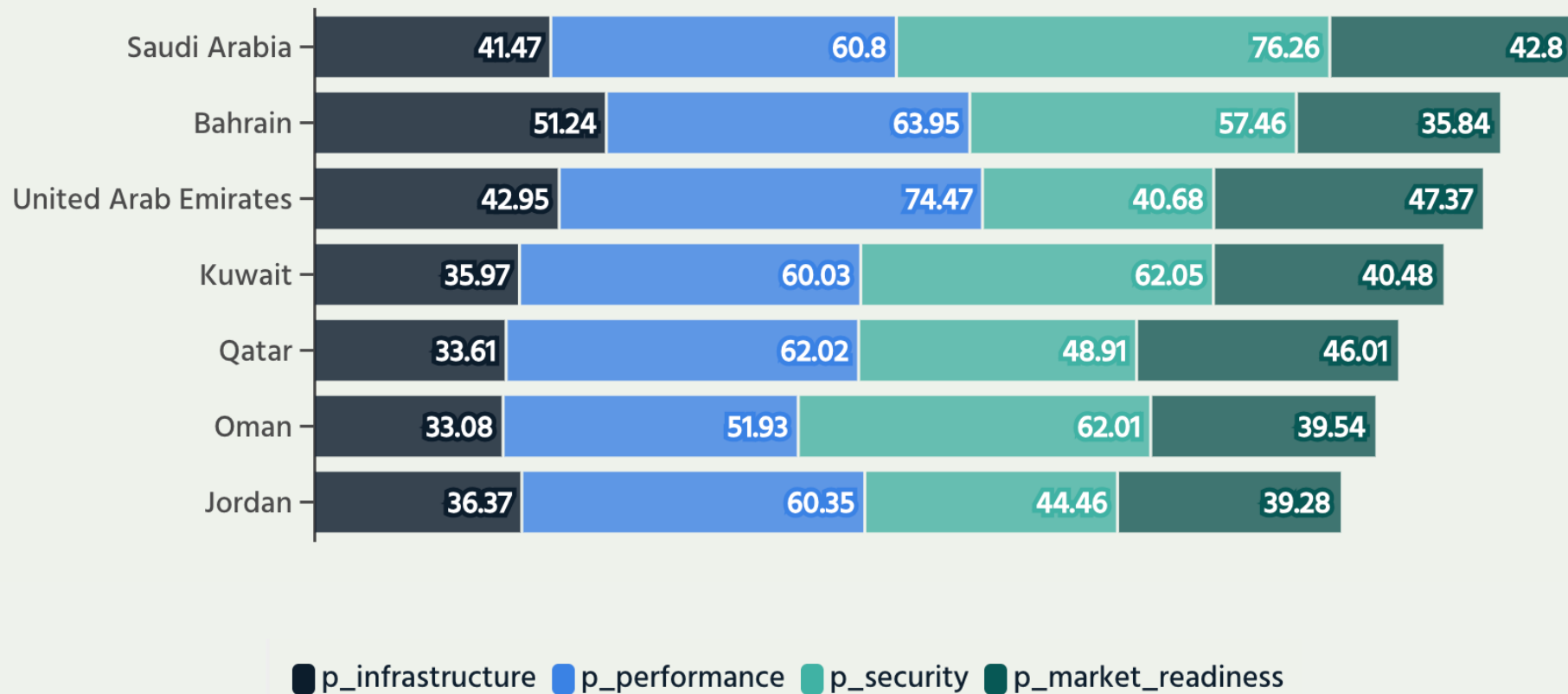


# Distribution

level ● High resiliency ● High middle resiliency ● Lower middle resiliency ● Low resiliency

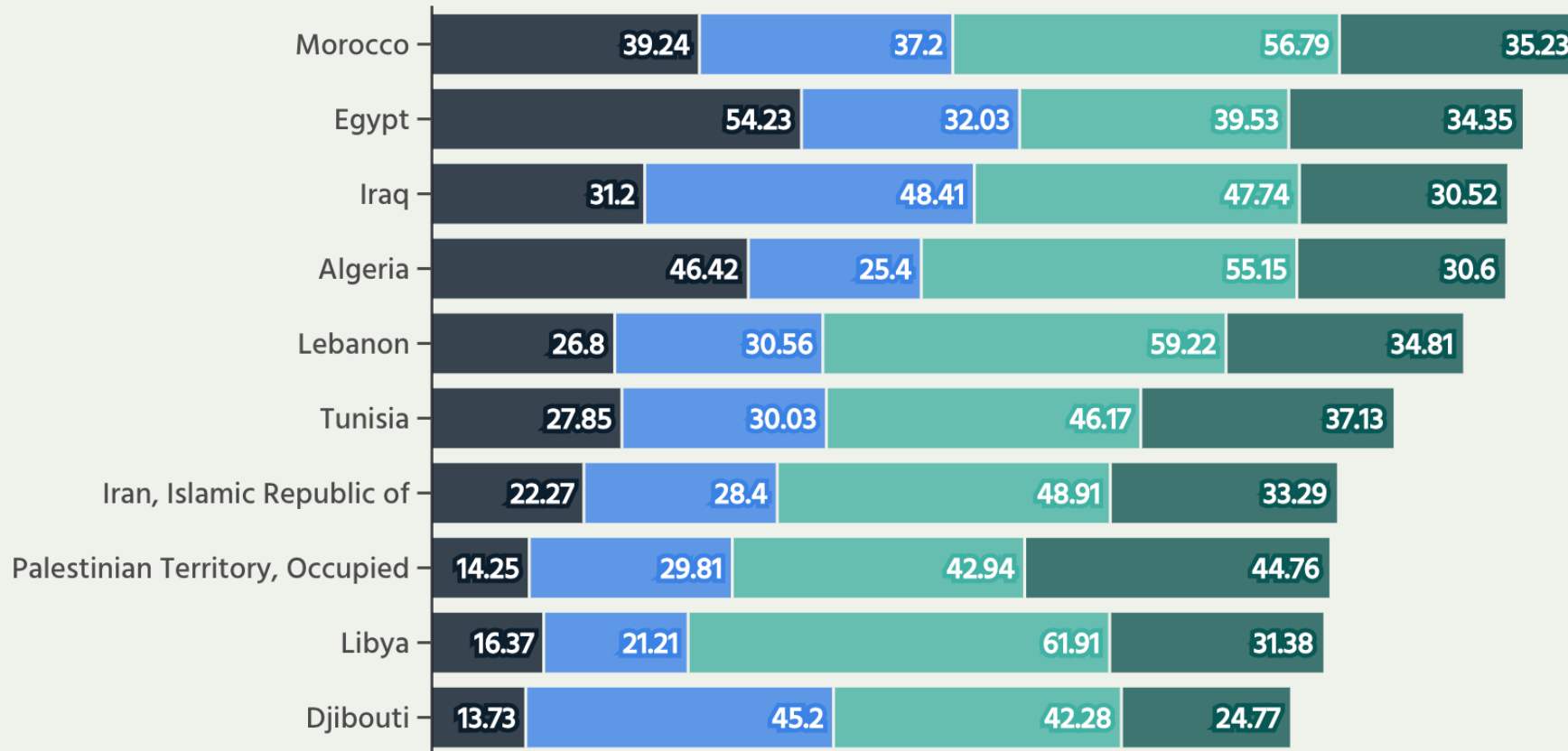


# High Middle Resiliency



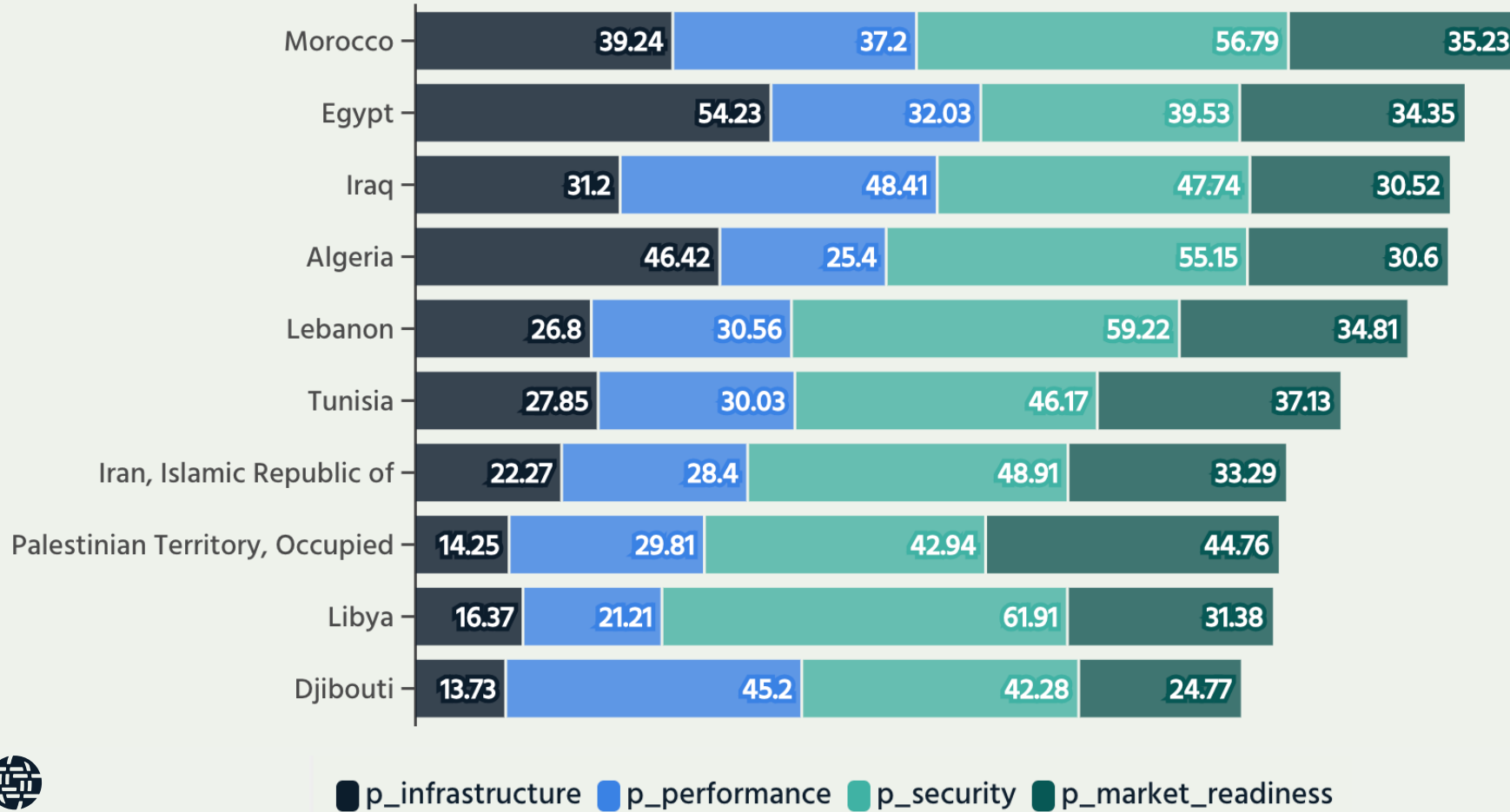


# Lower Middle Resiliency

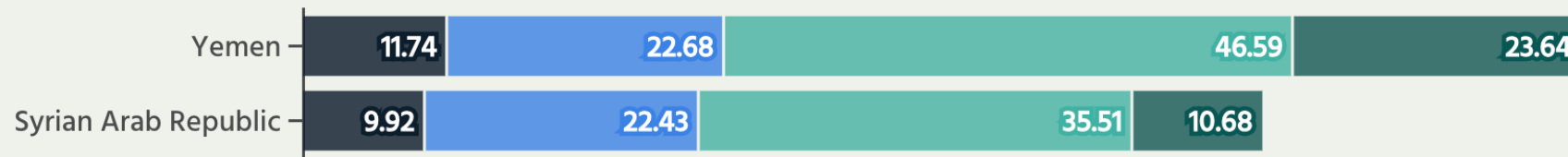


■ p\_infrastructure ■ p\_performance ■ p\_security ■ p\_market\_readiness

# Low Resiliency



## Low resiliency



■ p\_infrastructure ■ p\_performance ■ p\_security ■ p\_market\_readiness



# Oman



# Open Internet Environment, Oman

An open Internet is an accessible Internet – it is easy to connect to the open Internet and use its services.

## Internet Use

Individuals using the Internet as a percentage of the total population.

95%

Regional Rank: 10th  
Asia average: 74%

## Internet Shutdowns

Intentional disruptions of Internet communications, making them unavailable for a specific population, location, or type of access.

Ongoing: 0

Last 12 months: 0

[Read more about Internet Shutdowns](#)

## Internet Resilience Score

A resilient Internet connection is one that maintains an acceptable level of service in the face of faults and challenges to normal operation.

47%

Regional Rank: 34th  
Asia average: 48%

[See details](#)

## Transit Provider Diversity

More diversity in routes to the global Internet improves connection resilience.

Poor



## Retail ISP Diversity

Diversity of retail Internet providers improves resilience and user choice.

Poor



## IXP Operator Market

A measure of the diversity and concentration of the local market for Internet Exchange Point operations.

Equinix, Inc.: 56%



Awasm: 44%



[See details](#)

## Popular Content Locality

A measure of how much locally popular web content is hosted in-country or in-region.

71%

Regional Rank: 8th  
Asia average: 49%

[See details](#)



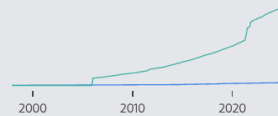
# Globally Connected Infrastructure

## Globally Connected Infrastructure

The globally connected Internet is inclusive. It allows networks and users to interconnect without geographical restrictions. Increasing the connectivity of the Internet makes it more valuable to every participant, as a tool for communications, learning, commerce.

### Networks Assigned

A measure of how many Internet networks are active here.

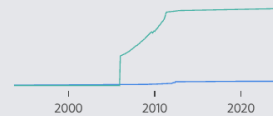


23

Regional Rank: 40th  
Asia average: 614

### IPv4 Addresses Assigned

A measure of how many legacy addresses are assigned here.

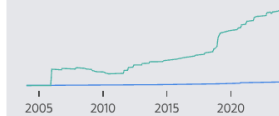


951,296

Regional Rank: 24th  
Asia average: 17,588,943

### IPv6 Addresses Assigned

A measure of how many Internet addresses are assigned here.



7,864,321

Regional Rank: 30th  
Asia average: 155,410,899

### IPv6 Adoption

Enabling the Internet to support more users and more uses.



24%

Regional Rank: 19th  
Asia average: 21%

### IXP Count

IXPs help strengthen local Internet connectivity, develop local Internet industry, improve competitiveness, and serve as a hub for technical activity.

2

Regional Rank: 19th  
Asia average: 6

[See details](#)

### Peering Networks

Peering networks help to keep Internet traffic local, provide faster connections, and improve the experience of the people relying on them.

12

Regional Rank: 33rd  
Asia average: 129



<https://pulse.internetsociety.org/reports/om>

# Secure and Trustworthy Internet (Oman)

## Secure and Trustworthy Internet

A secure Internet is resistant to attacks on its infrastructure, delivering a robust service to its user community. A trustworthy Internet meets the expectations of its users by offering a resilient and reliable base for applications and services.

### Naming Security Status

Adopting DNSSEC improves trustworthiness of Internet communications.

.om  Inactive

### Naming Security Adoption

A measure of how much local Internet users are protected by DNSSEC.

60%

Regional Rank: 17th  
Asia average: 40%

### Routing Security Adoption

A measure of how much local Internet providers are checking validity of connectivity information they receive from other networks.

3%

Regional Rank: 25th  
Asia average: 12%

### Routing Security Coverage IPv4

One measure of how much local Internet network providers are securing their infrastructure.

95%

Regional Rank: 15th  
Asia average: 77%

### Routing Security Coverage IPv6

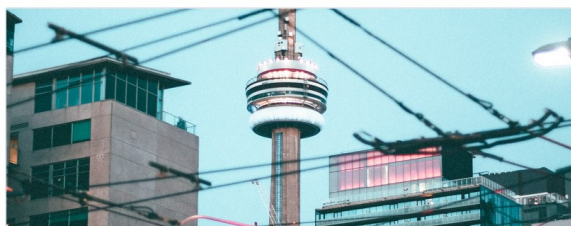
One measure of how much local Internet network providers are securing their infrastructure.

42%

Regional Rank: 47th  
Asia average: 78%



# Not if, but when



9 September 2022

## Rogers Outage: What do we Know After Two Months?



**Jim Cowie**  
Former Resident  
Advisor, Internet  
Society

Categories:  
Concentration,  
Resilience

Hiding operational failures in darkness helps nobody.



15 November 2023

## Optus Outage Exposes Australia's Internet Resilience



**Aftab Siddiqui**  
Senior Manager, Internet  
Technology - Asia-Pacific,  
Internet Society

Categories:  
Resilience

A minor technical slip-up by Australia's second-largest operator causes one-third of Australians to lose Internet and mobile connectivity.



Who's next?



Canada, July 2022

Australia, November 2023



We all have a role to play



## Advocating for a healthy Internet

- What data are you collecting and sharing?
- What data can help you in your research/advocacy/decision making efforts?
- How can we collaborate to improve the health of the Internet in your countries and as a region?



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Review the Pulse IRI  
methodology



# Thank you



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