



The Global State of D2D Through Real-World Measurements

What two years of readings from ordinary phones show about satellite service,
and what can be verified from the ground



Salem Askar

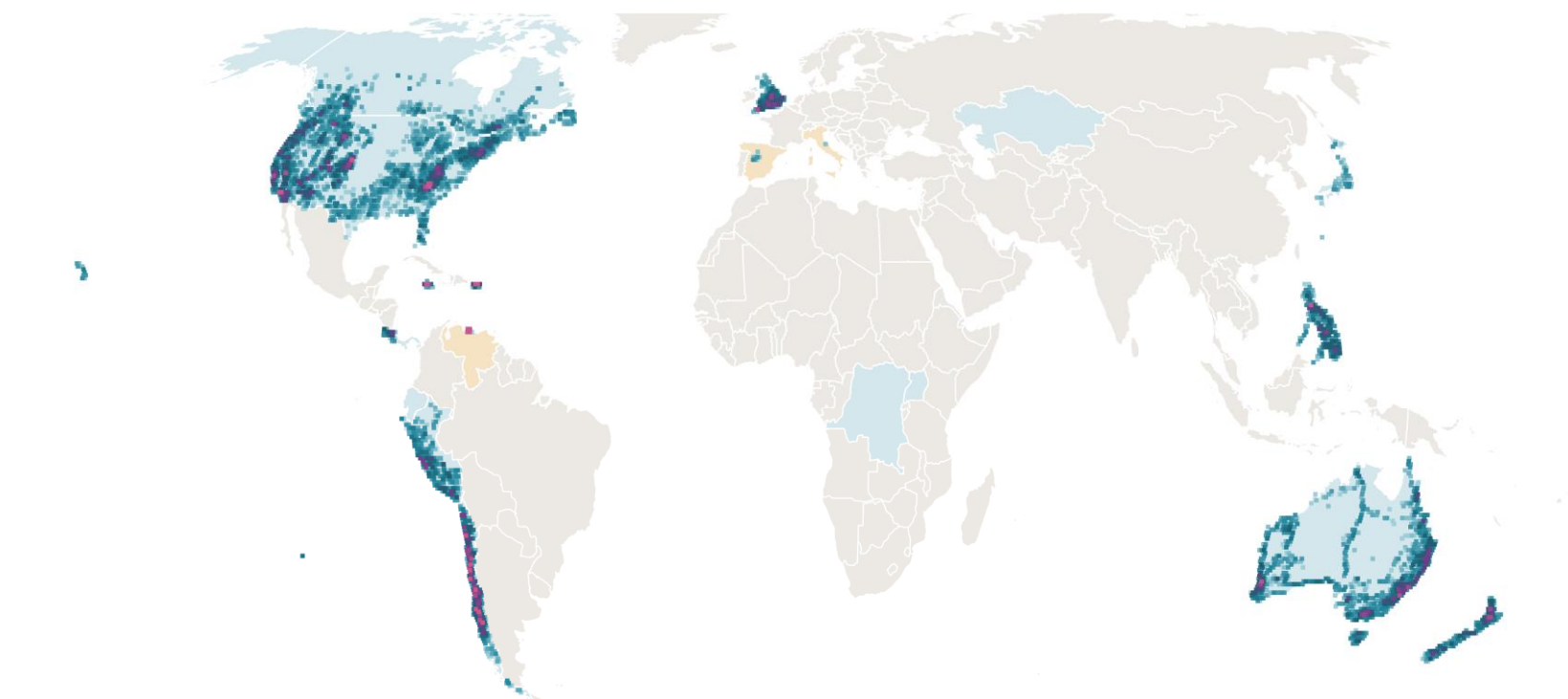
Director of Sales, Ookla

Global Space Connectivity and Sustainability Events, Riyadh, 12 October 2026

Speedtest® background signal data

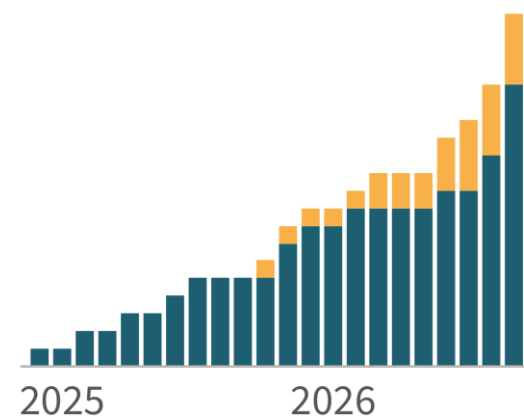
Satellite service on ordinary phones is live in 16 countries

Verified satellite use over 12 months, and countries with service by month of launch or activation



20 countries

with satellite service on phones



16 consumer service

4 trial or emergency

fewer phones  more phones  consumer service  trial or emergency

Every reading names the satellite that served it

And each one is checked against that satellite's published orbit, at the second of the reading

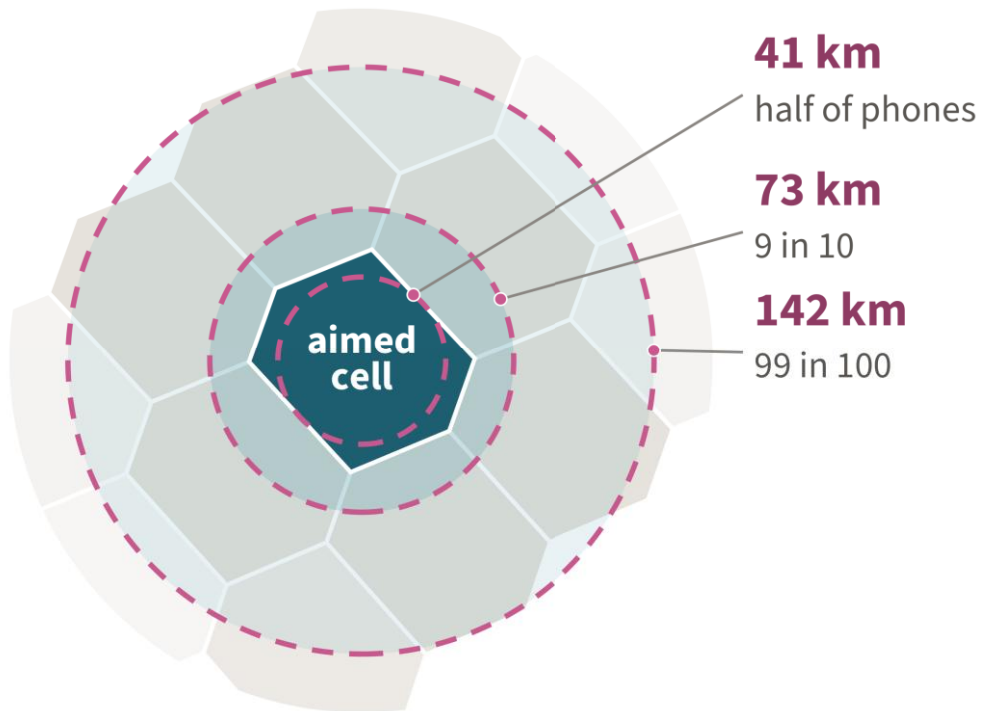


Source: Speedtest Intelligence®, Ookla, and published orbits (Space-Track). Each dot is a reading drawn at random from those passing every other check.

Each beam is aimed at one ground cell, and its signal reaches well beyond it

Where the phones each beam serves are, how fast its signal fades, and how often the satellite changes

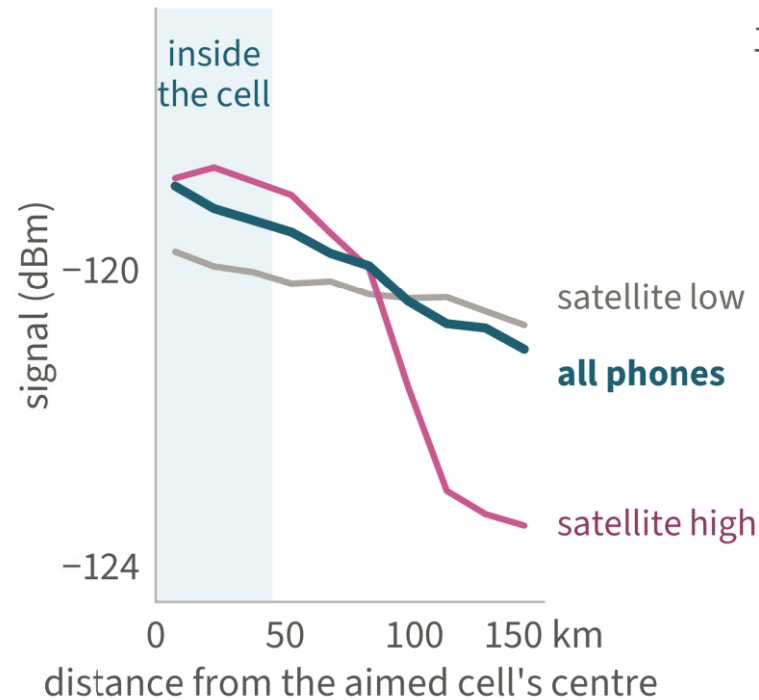
Where the phones a beam serves are



Each shape is one earth-fixed ground cell, about 90 km across

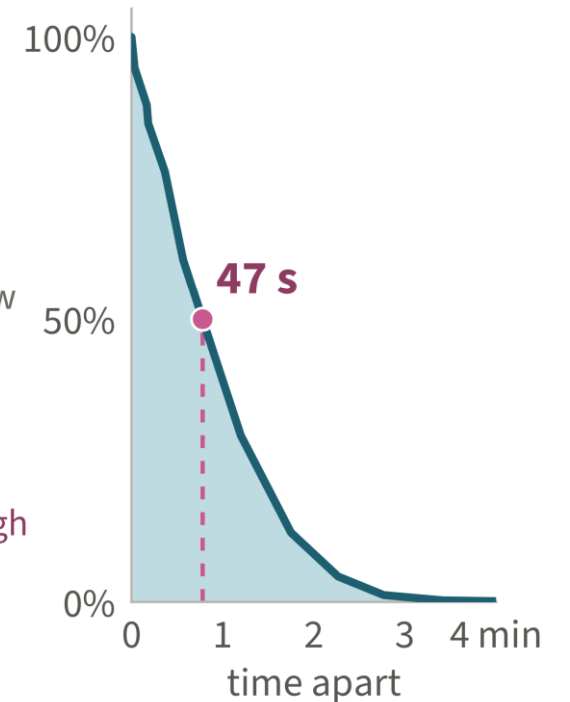
Signal fades slowly

about 2 dB weaker 135 km out



Satellites hand over

still on the same satellite



The satellite footprint follows the authorisation

Ground cells about 90 km across that the layer was aimed at, against cells where we saw phones

Italy

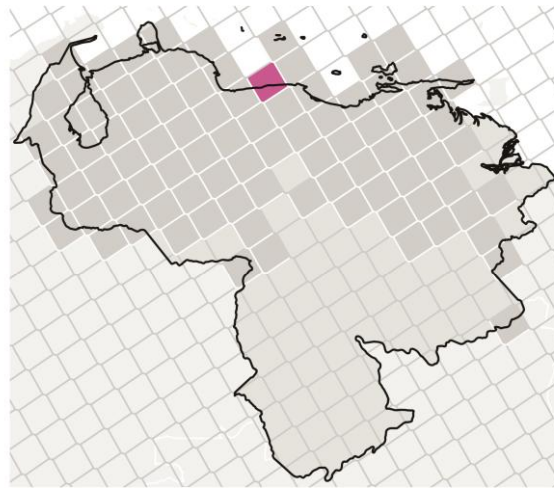
technical trial



1 ground cell lit
over Umbria

Venezuela

emergency permit



1 ground cell lit
over La Guaira

Spain

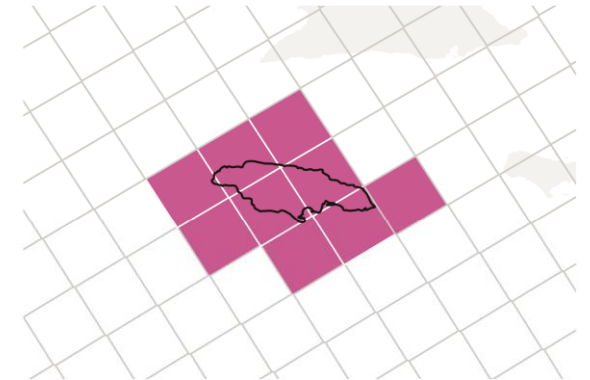
pilot, then emergency permit



4 for the pilot
then 7 over the fires, 1 in both

Jamaica

hurricane emergency

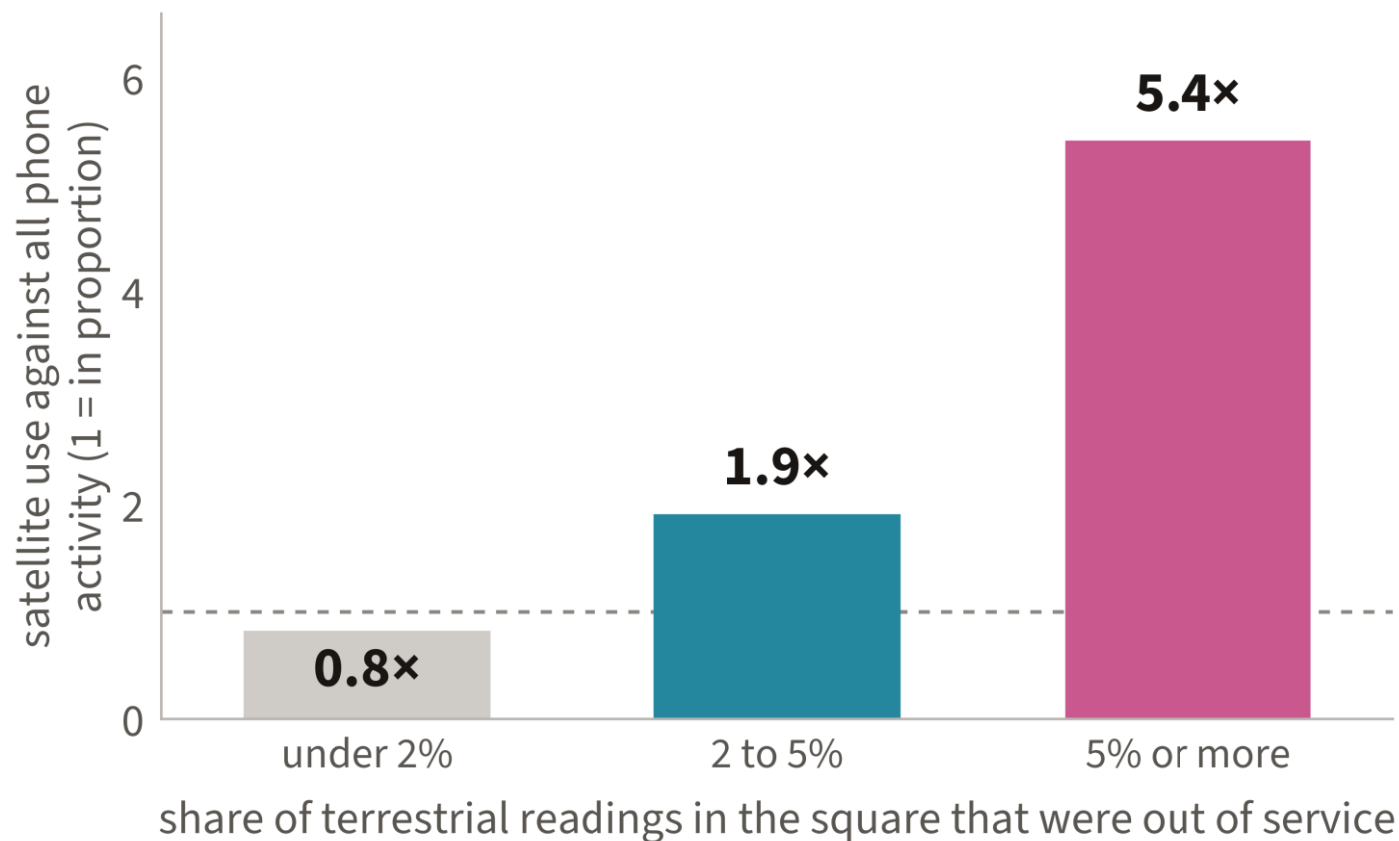


9 ground cells lit
the whole island

cells where we saw phones lit by a trial or pilot lit by an emergency permit

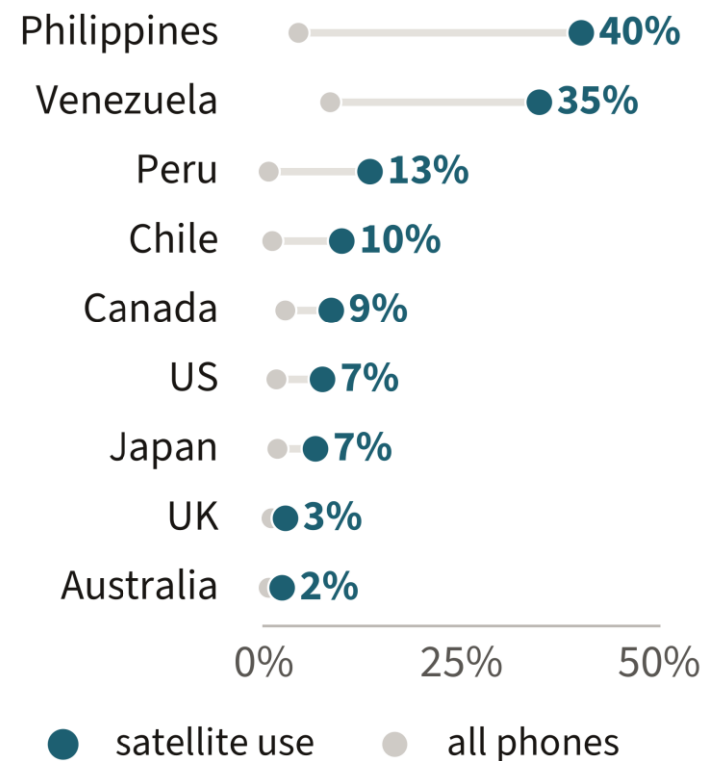
Satellite use is about five times higher where terrestrial service is patchy

Satellite use against all phone activity, by the share of readings out of service in each 10 km square



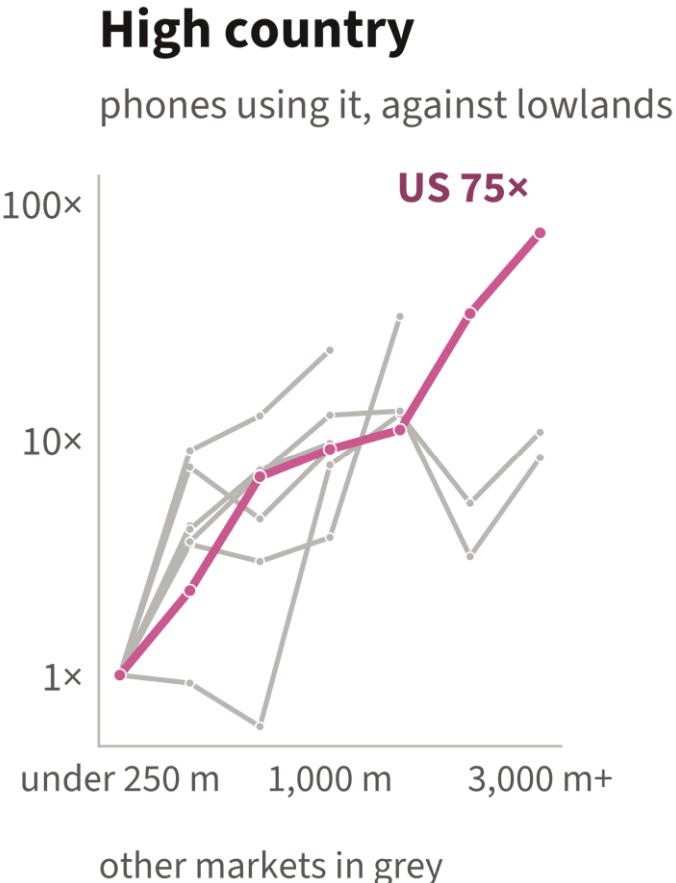
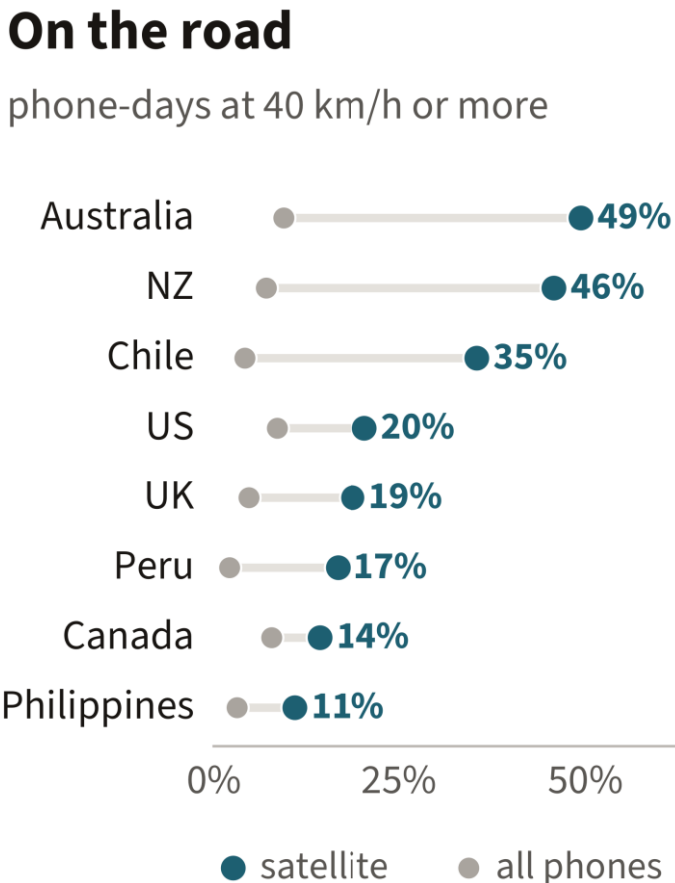
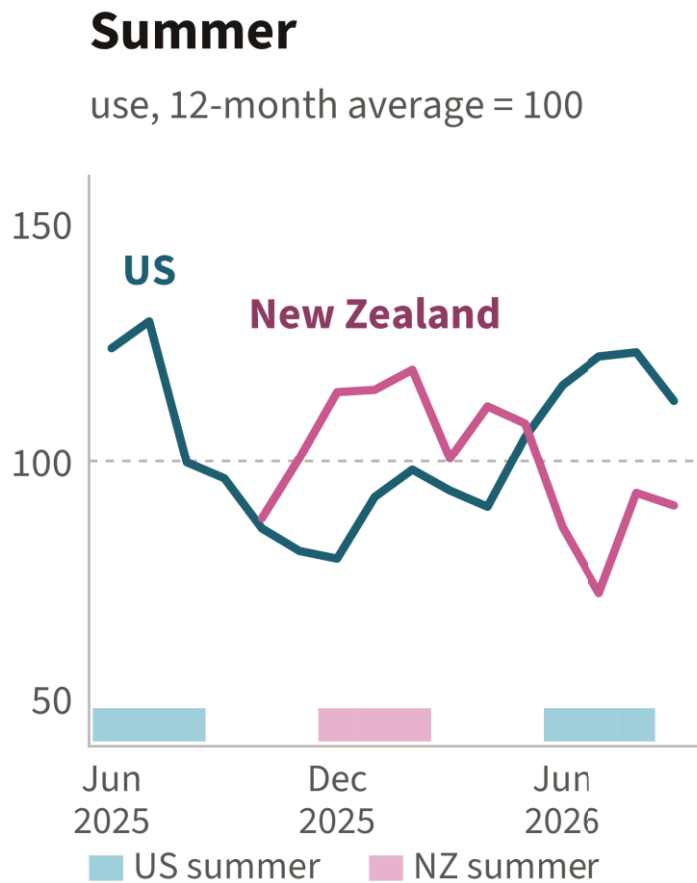
Share in the patchiest squares

1 reading in 20 or more out of service



Satellite use rises in summer, on the road and in the high country

Use by month in the US and New Zealand, phone-days at road speed, and phones using it by elevation band



The fleet is thinnest over the latitudes where most people lack coverage

Satellites overhead, serving height measured on phones, and people without mobile broadband, by latitude

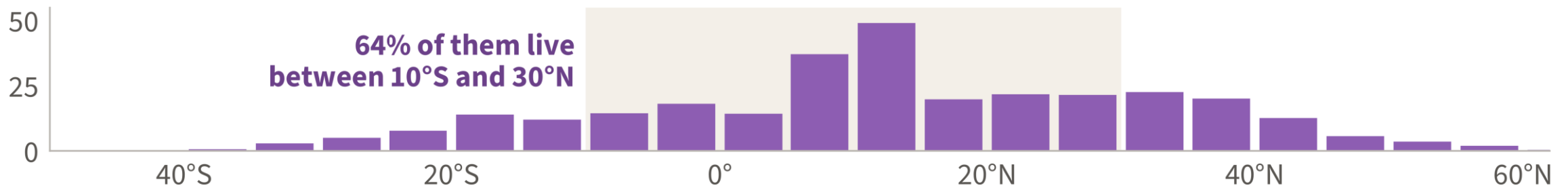
Direct to Cell satellites more than 25° above the horizon, on average (from published orbits)



How high the serving satellite was, measured on phones (median for each market)

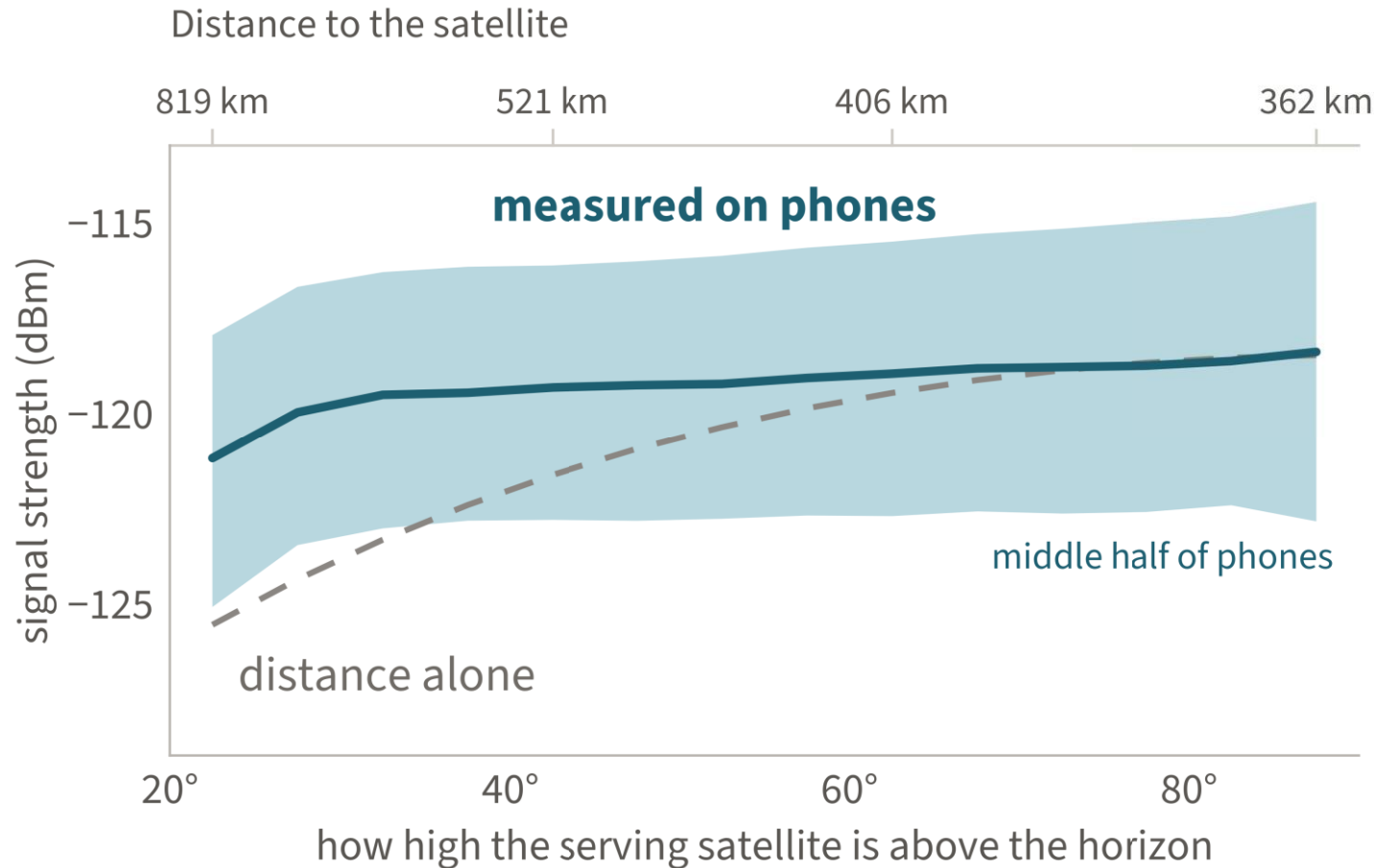


People without mobile broadband coverage, millions, estimated from ITU 2025 regional figures



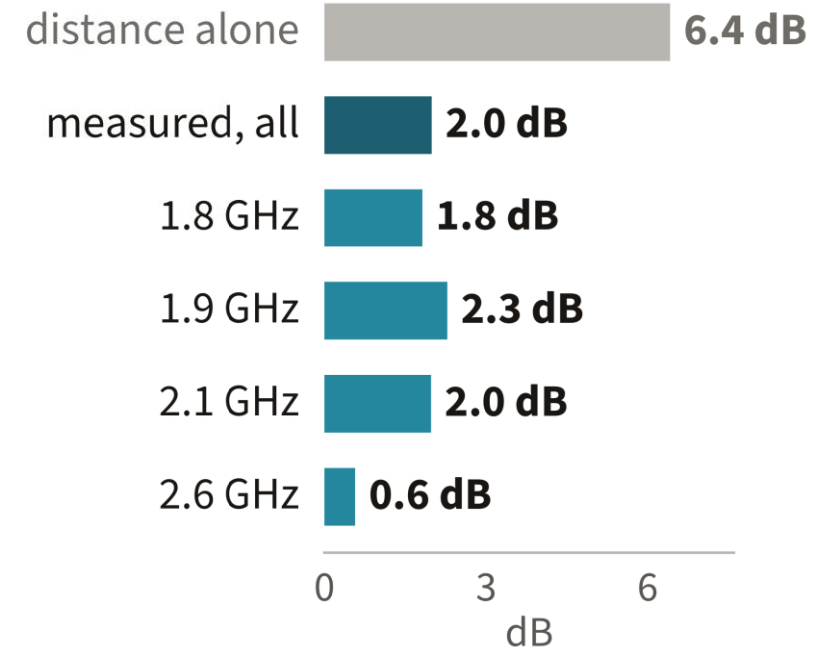
Signal at the phone barely changes with the satellite's height in the sky

Signal strength on phones by the serving satellite's elevation, against what distance alone would predict



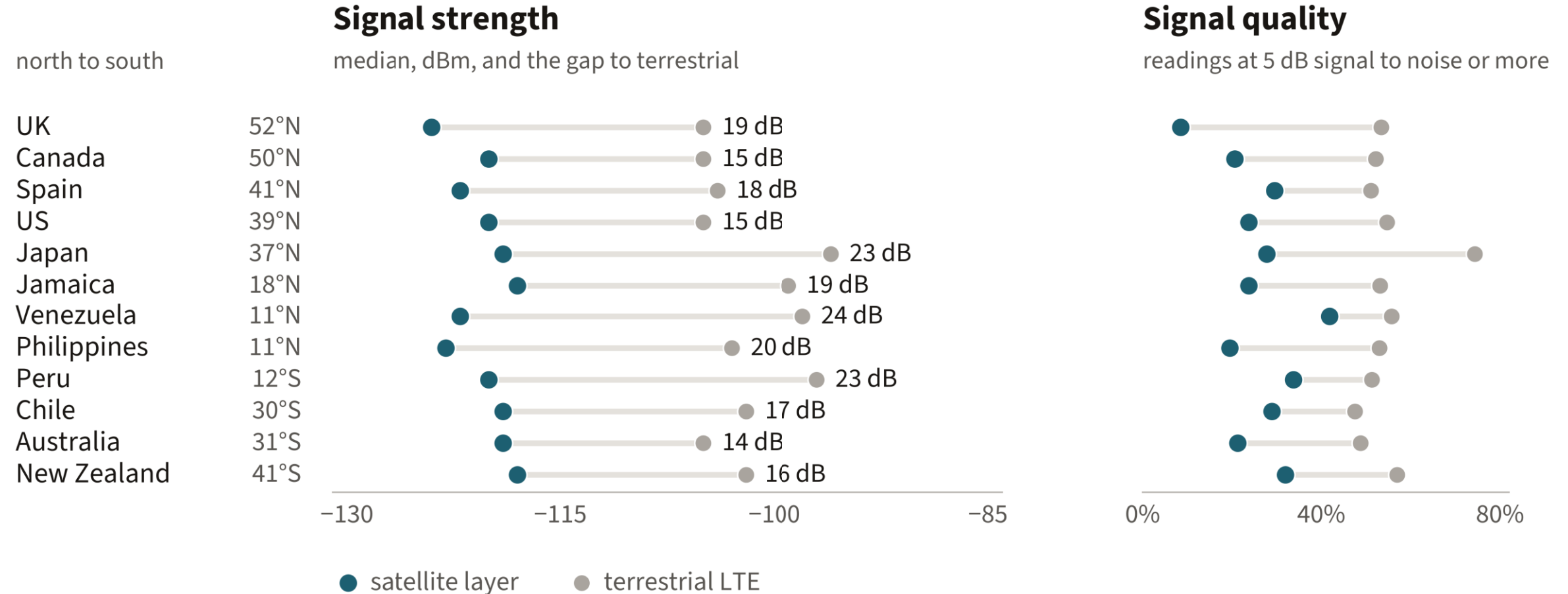
How much stronger high in the sky

75 to 85° against 20 to 25°



Satellite signals arrive 14 to 24 dB below terrestrial signals in every market

Signal strength and signal quality on the satellite layer and on terrestrial LTE, by country



One satellite serves phones under many national authorisations in a day

Countries linked by satellites that served phones in both, 22 September 2026

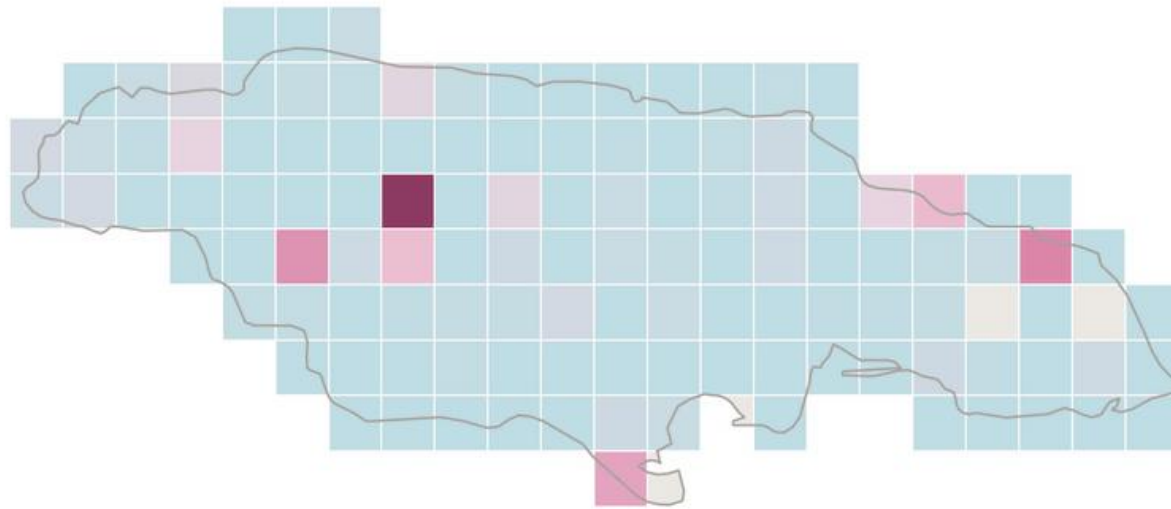


Source: Speedtest Intelligence®, Ookla. Verified readings. Dots are the ground cells served (about 90 km across), not phones. Ukraine not shown.

When Melissa cut western Jamaica off, the satellite layer filled in

Readings out of service, the storm's track and phones on the satellite layer, October to December 2025

Share of readings out of service, 11 km squares 0% 40% or more



Readings out of service

— far west — rest of the island



Phones on the satellite layer



Source: Speedtest Intelligence®, Ookla, Jamaican SIMs. Unshaded squares had too few phones reporting. Track: NOAA NHC.

Every emergency satellite layer so far was authorised one event at a time

Phones on the satellite layer in each disaster area, by day, against the announced permit or switch-on

Hurricane Helene

United States, 2024

Los Angeles wildfires

United States, 2025

Hurricane Melissa

Jamaica, 2025

Mindanao earthquake

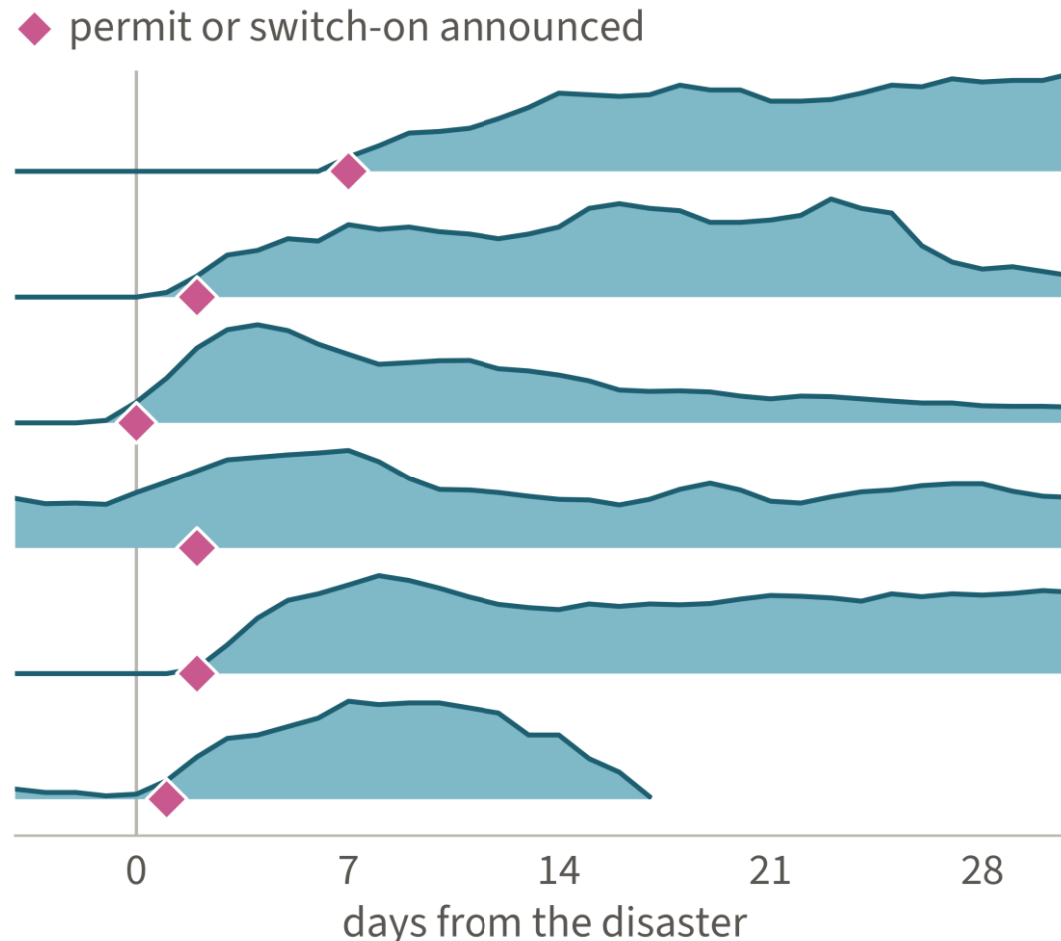
Philippines, 2026

Earthquakes

Venezuela, 2026

Sierra Oeste wildfires

Spain, 2026



first phones on the layer

day 8

FCC authority on day 7

day 3

switched on day 2

same day

licensed on landfall day

already live

under a demonstration permit

day 3

emergency permit on day 2

day 2

switched on late on day 1



D2D service on phones is measurable from the ground
Every reading names its satellite and its ground cell
So authorisations can be checked cell by cell

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