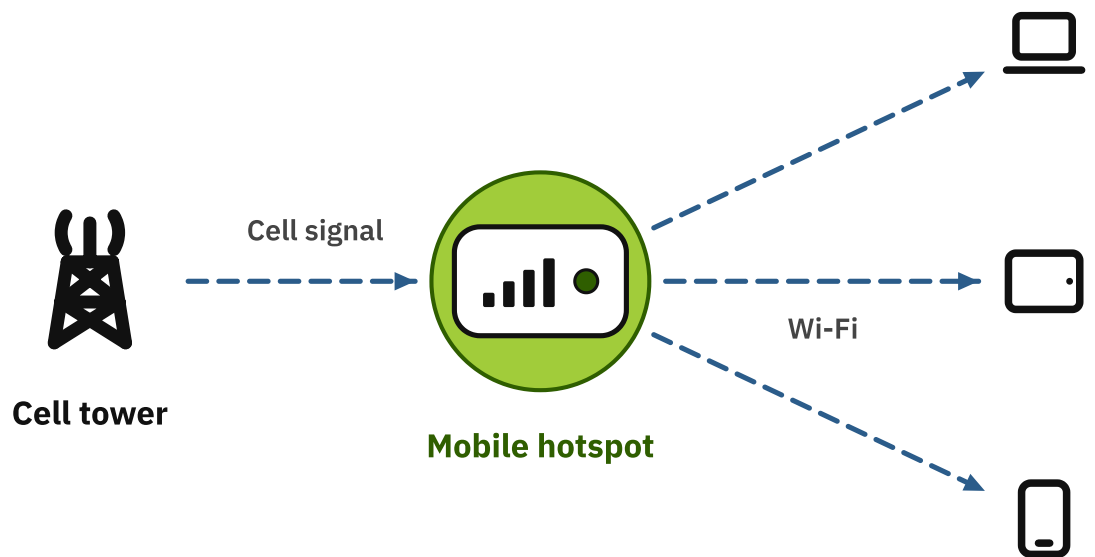


Mobile Hotspots, Explained

How a small box, or your phone, turns cell signal into Wi-Fi, and how to get the most from it.



Cell signal in. Wi-Fi out.

The short answer

A mobile hotspot takes the cell signal your phone uses and turns it into Wi-Fi. Your laptop and tablet join that Wi-Fi, just like at home. The hotspot can be a small box of its own, or your phone.

This guide answers three questions. What is a hotspot? What makes it fast or slow? And how do you use it well?

A word on the words

A **cell tower** is the mast that sends and receives phone signal. **Wi-Fi** is the short-range radio your laptop uses. A **hotspot** joins the two. Here, **tethering** means sharing your phone's cell data.

What this guide leaves out

Travel Routers, Explained covers sharing hotel Wi-Fi. *Phone Data Abroad, Explained* covers data plans in other countries. *Weak Cell Signal at Home, Explained* covers boosters. *Home Internet, Explained* compares a hotspot with other ways to get internet at home.

What's inside

Cell signal in, Wi-Fi out	3	Where to put it	10
Two kinds of hotspot	4	Other ways to share	11
How it works, in pictures	5	Keep it private	12
What decides the speed	6	Hotspot or travel router	13
A busy network	7	Four myths, and tips	14
Data and your plan	8	Where these facts come from	15
Battery and heat	9		

Cell signal in, Wi-Fi out

A hotspot has two radios. One talks to a cell tower. The other makes Wi-Fi for your devices.

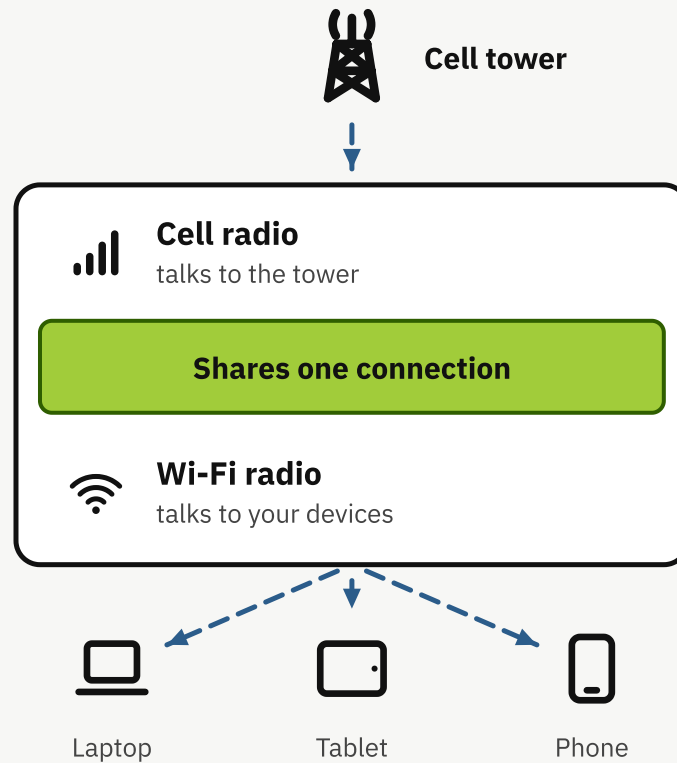


Figure 1. Two radios in one box. The cell radio brings the internet in. The Wi-Fi radio hands it out to your laptop, tablet and phone.

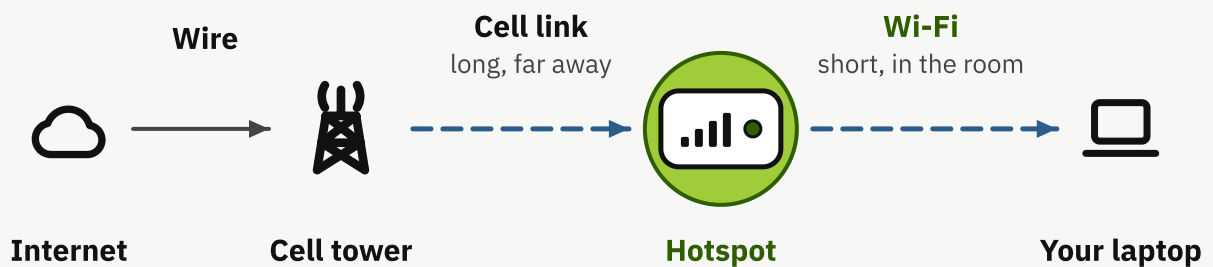
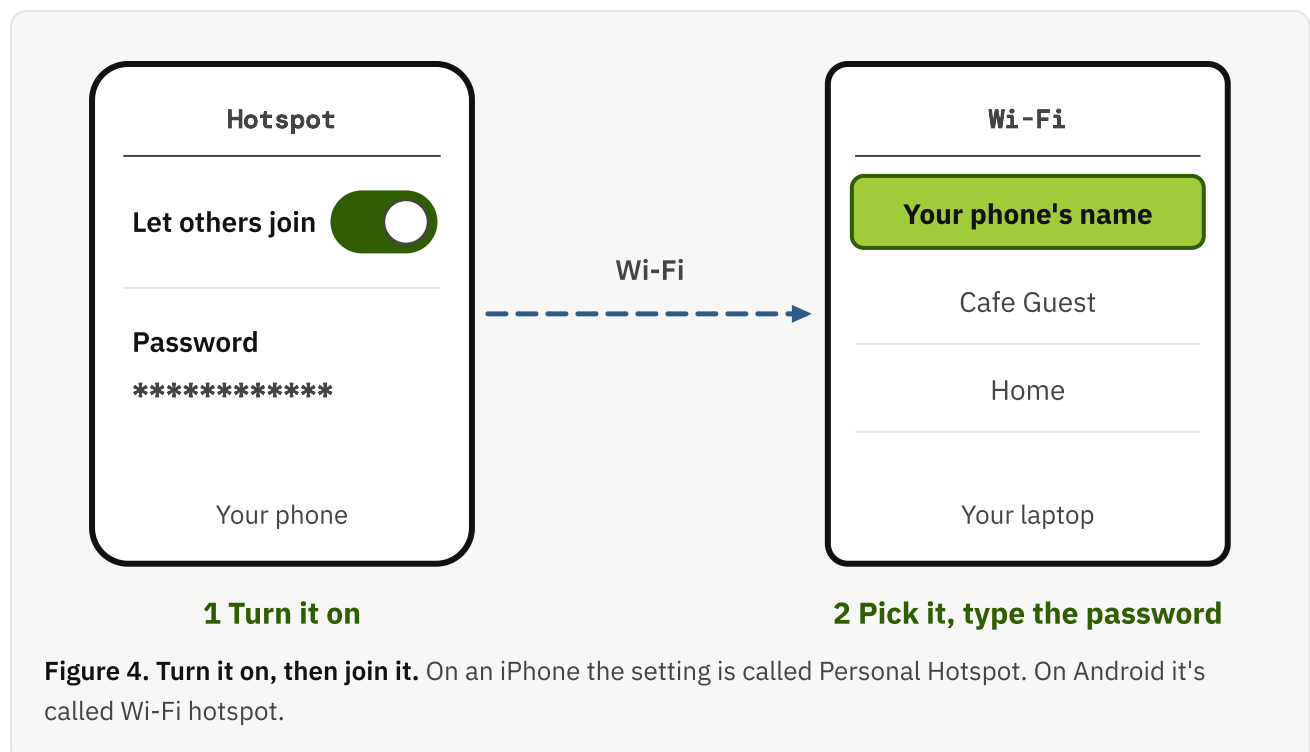
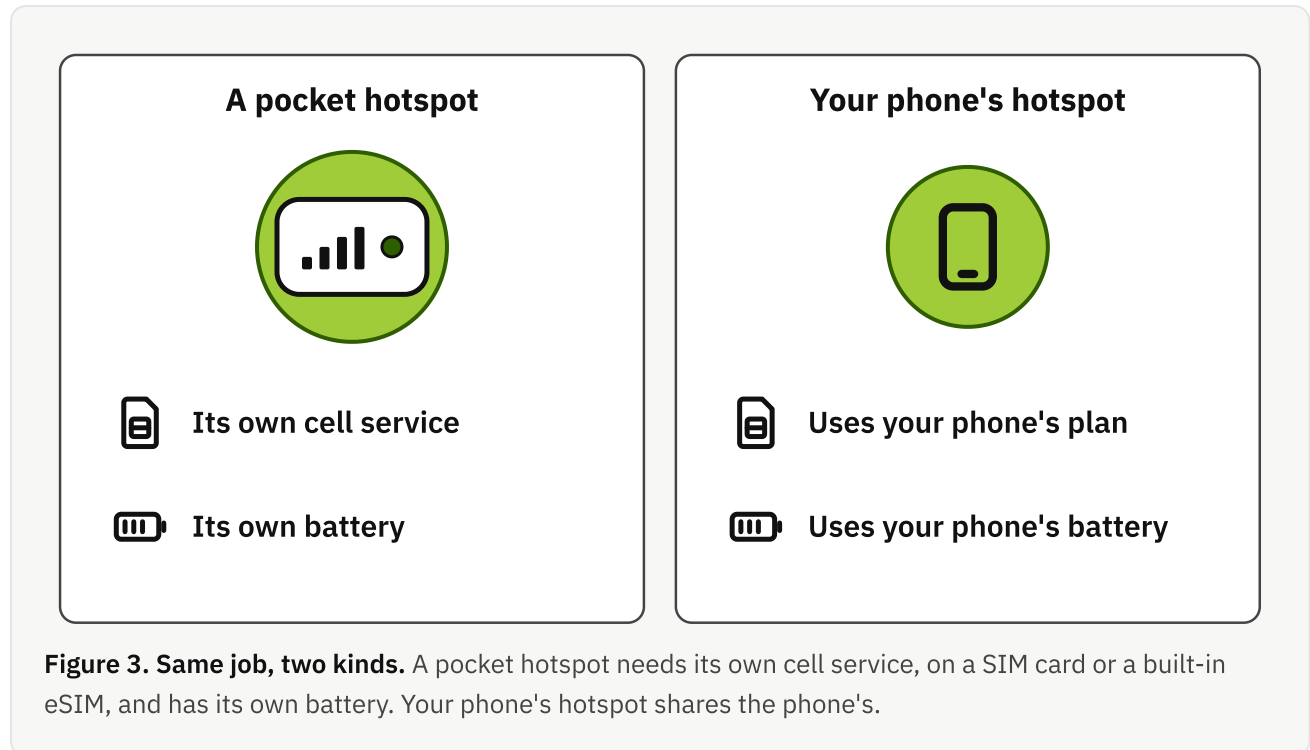


Figure 2. One chain, three links. The tower is far away. Your laptop is close. The hotspot sits in the middle and joins them.

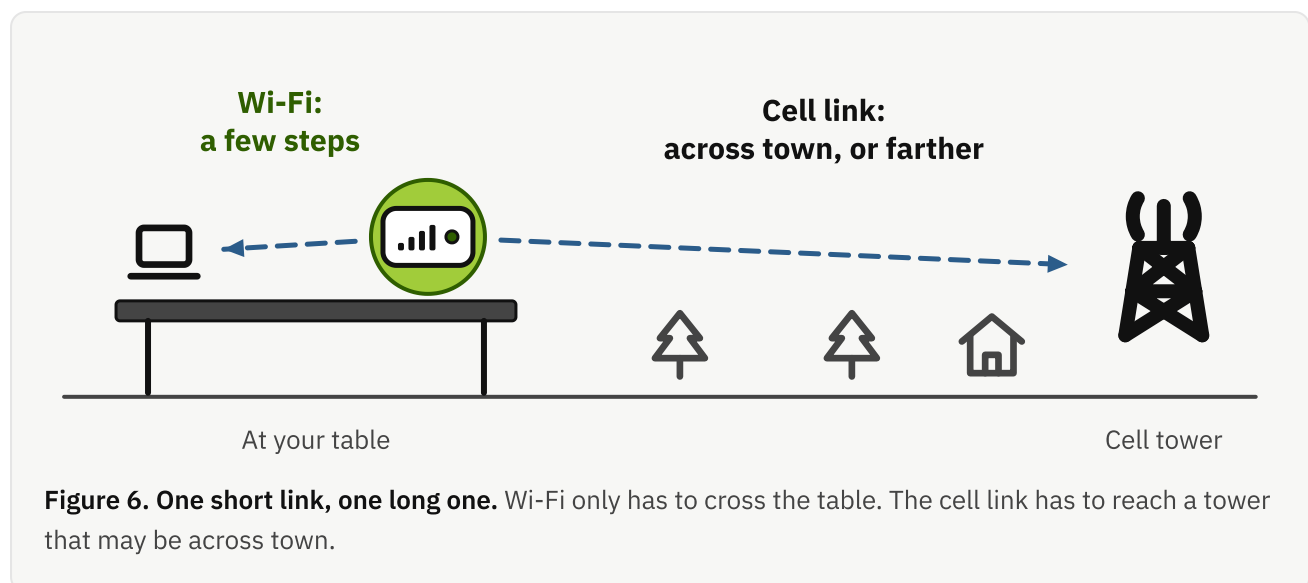
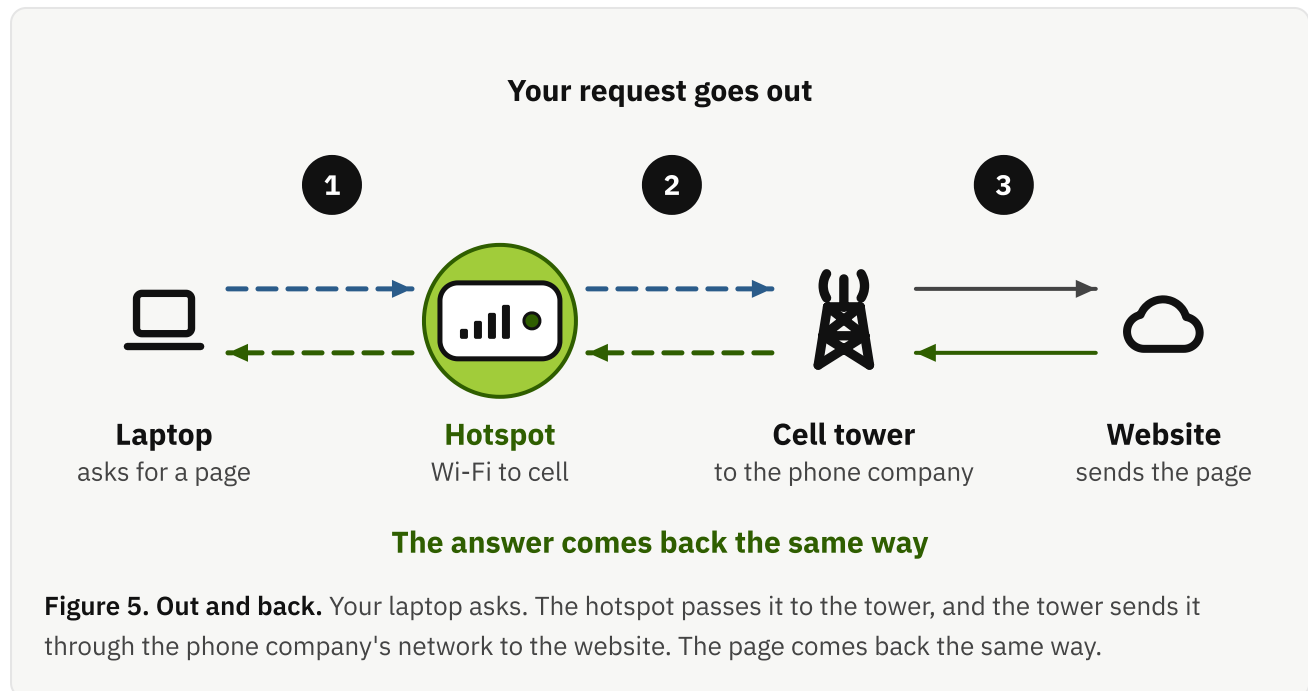
Two kinds of hotspot

A pocket hotspot is a small box that does only this job. Your phone can do the same job with a setting.



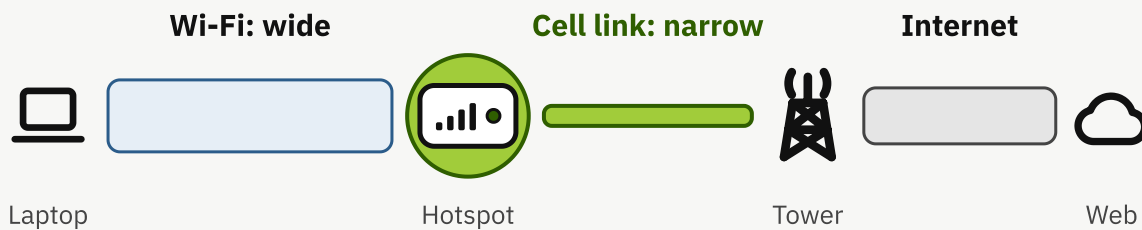
How it works, in pictures

Every web page makes a round trip. It goes out through the hotspot and the tower, and comes back the same way.



What decides the speed

Two things decide how fast a hotspot feels. The first is the cell signal where you are.



Your speed is set by the narrow part

Figure 7. The narrow part wins. When you sit near the hotspot, the narrow part is usually the cell link, not the Wi-Fi.

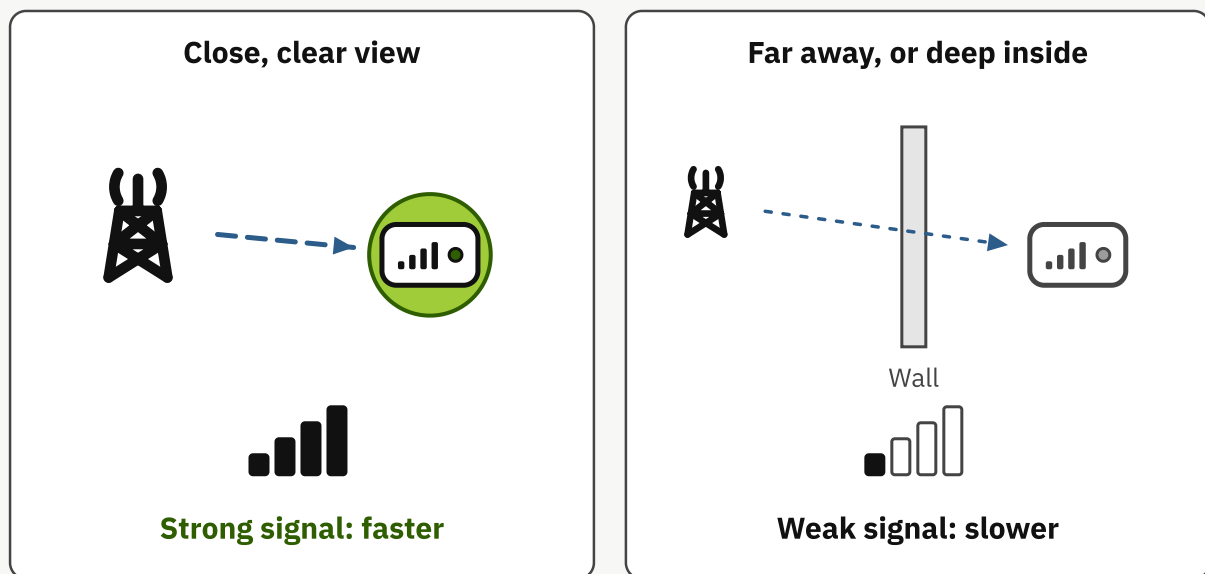


Figure 8. Where you are matters. Close to a tower with a clear view, the signal is strong. Far away, or behind walls, it's weak and slower.

Your laptop's Wi-Fi bars show only the short link to the hotspot. To judge the speed, look at the cell bars on the hotspot or the phone. Cell bars help, but they don't promise speed. A busy tower can be slow even with full bars.

A busy network

The second thing is how many people share the tower. A busy place can feel slow, even with full bars.

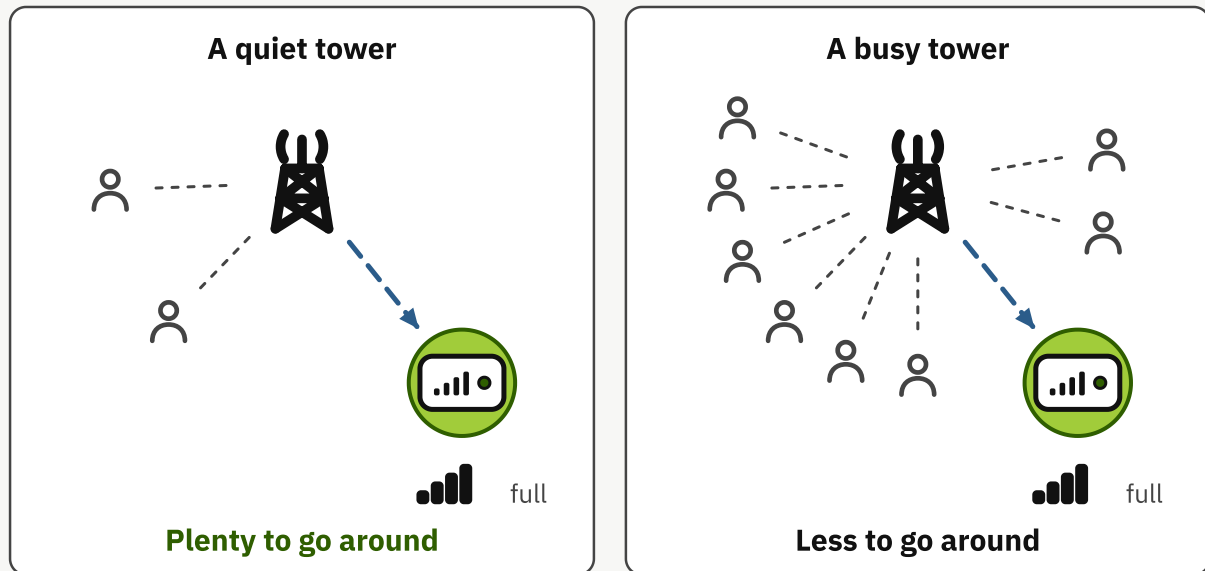


Figure 9. A tower is shared. Everyone near a tower shares it. At a game or a busy airport, there is less to go around, so many people slow down.

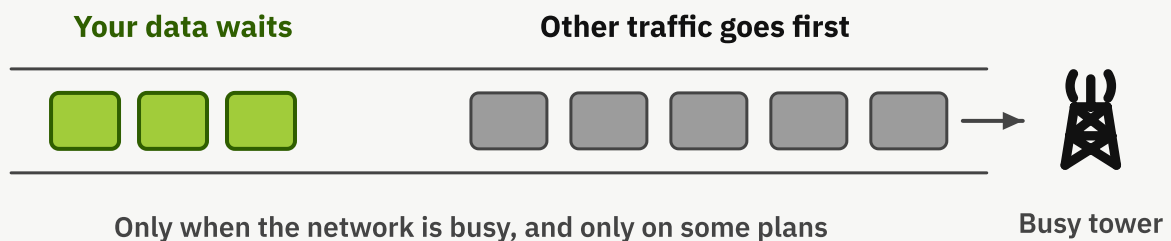


Figure 10. Some data waits its turn. On some plans, when the network is busy, your data gets lower priority, so it can be slower. When it's quiet, there's no line.

Data and your plan

A hotspot uses your cell data. A laptop can use a lot of it without asking.

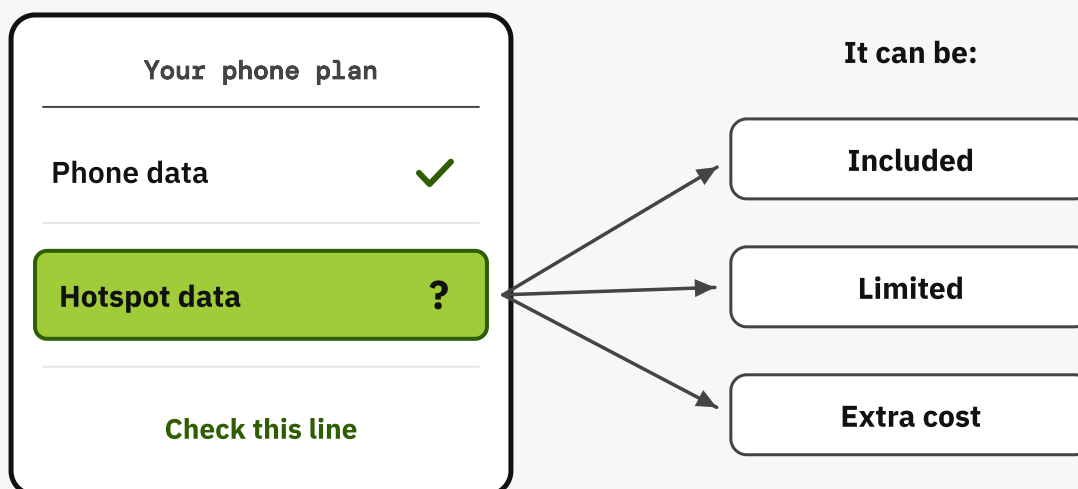


Figure 11. Check the hotspot line. Some plans limit hotspot data or charge extra for it. Check your plan, or ask your carrier.

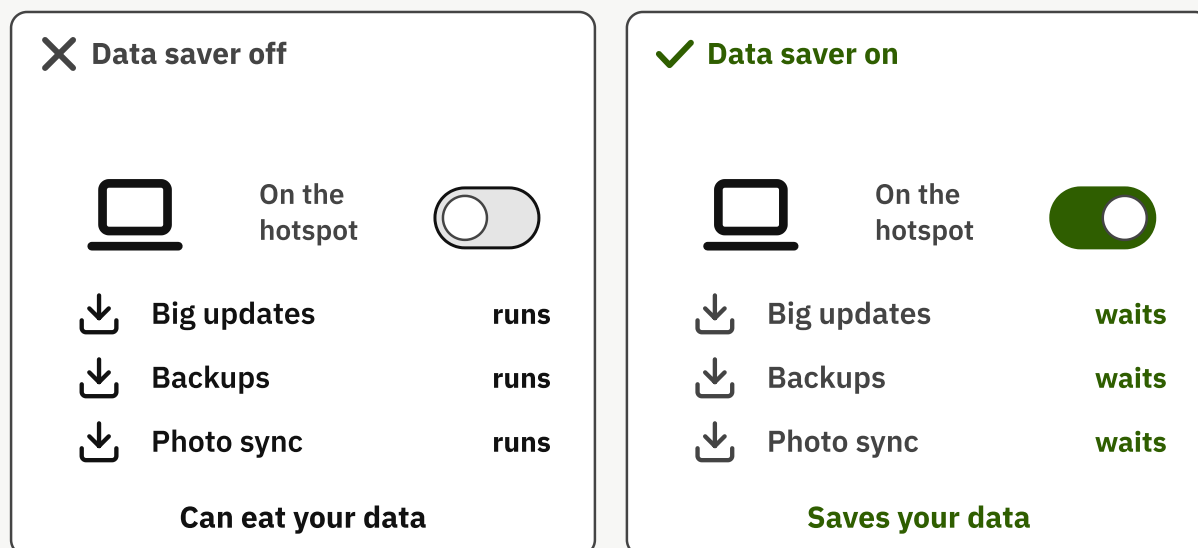


Figure 12. Turn on data saver. Turn it on for the hotspot's network, on the device that joins it. It's called Low Data Mode on an iPhone or iPad, and Metered connection on a Windows laptop. It holds back many updates and backups, but not everything.

Using a hotspot in another country? See *Phone Data Abroad, Explained* first.

Battery and heat

Sharing data is hard work for a small radio. It uses battery, and it makes heat.

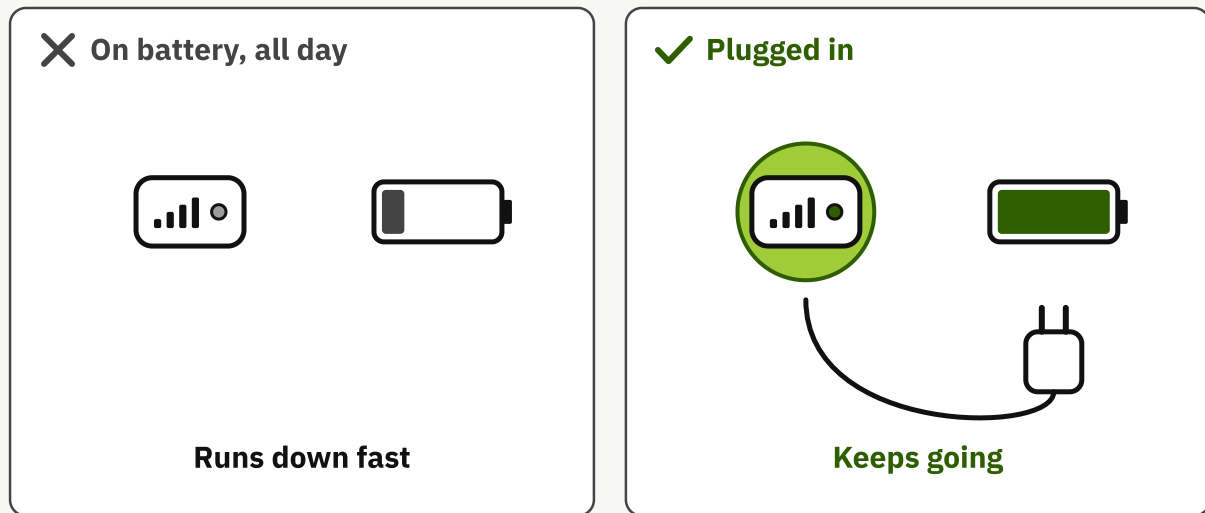


Figure 13. Plug it in for long use. On battery, a hotspot runs down fast. When it's plugged in, keep it cool and in the open. On Android, you can also set it to turn off when no one is using it.

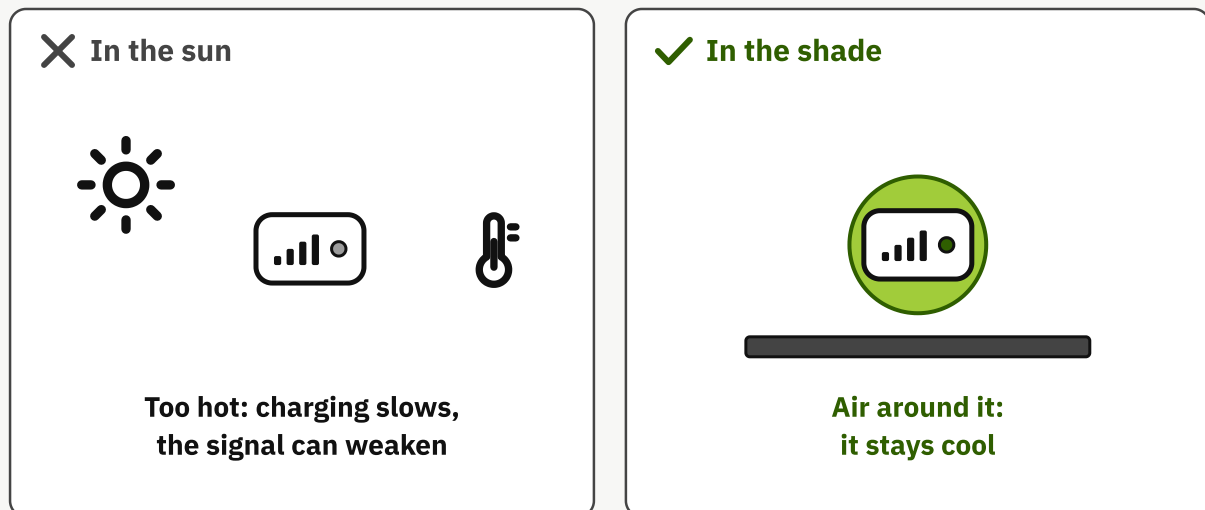


Figure 14. Keep it cool. When a phone gets too hot, charging slows and its cell signal can weaken. Keep it out of the sun and out of a hot car.

Where to put it

Put the hotspot where the cell signal is best. That is often near a window, out in the open.

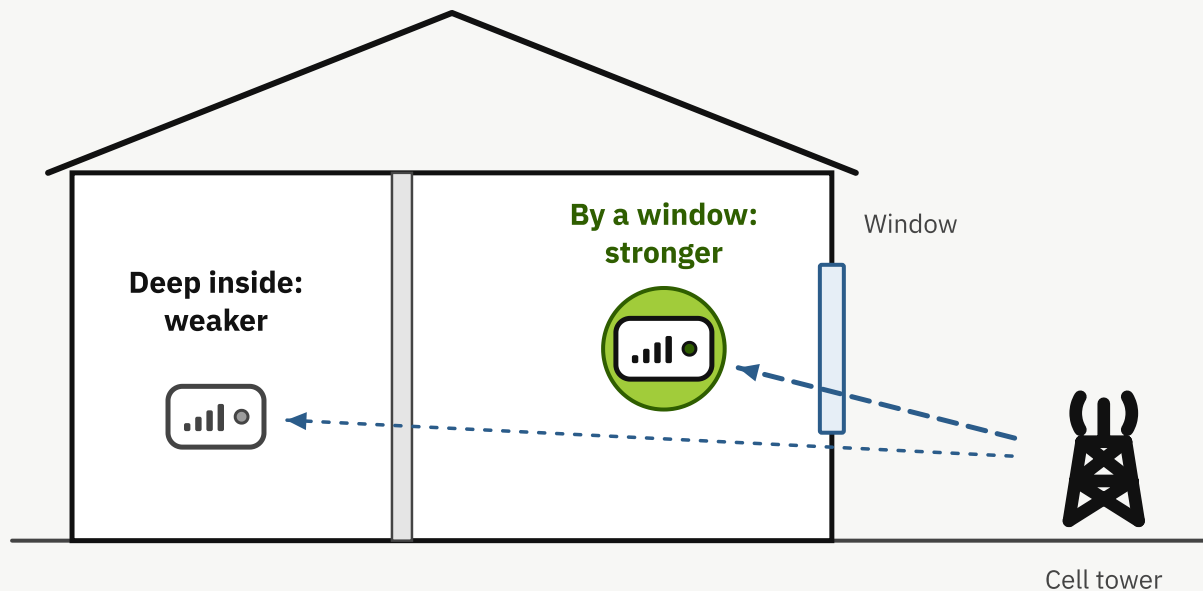


Figure 15. Near a window. Walls and roofs weaken cell signal. A window often lets more of it in, so try a few.

✓ **Out in the open**



On a table, near a window

✗ **Zipped in a bag**



Traps heat

Figure 16. Not in a bag. Give it air. A bag traps heat, and heat slows it down.

To find the best spot, watch the cell bars on the hotspot as you move it around. *Weak Cell Signal at Home, Explained* has more ways to find it.

Other ways to share

Wi-Fi is the usual way to share. A phone has two more.

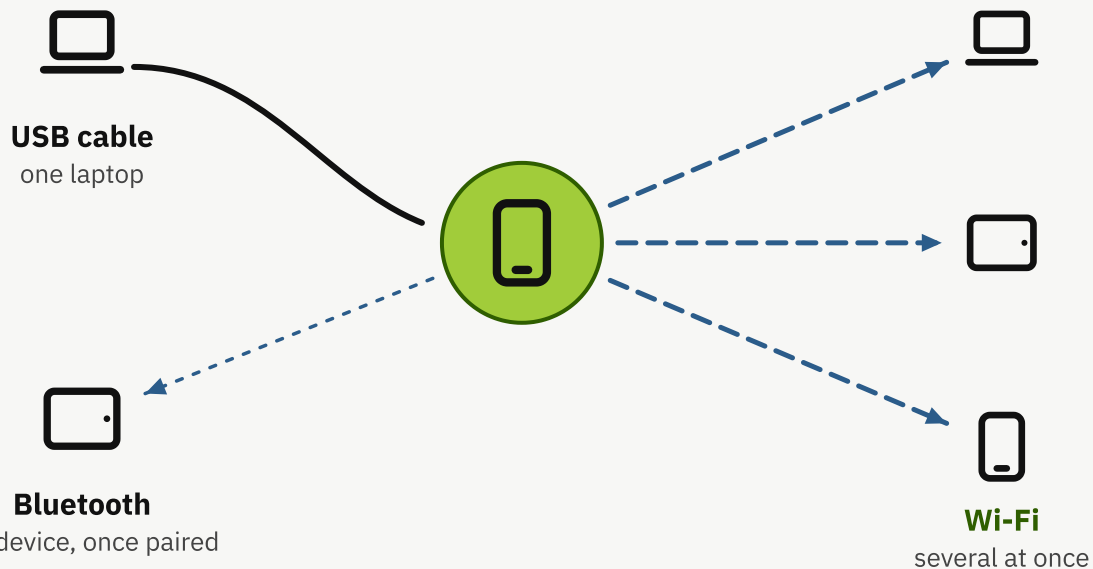


Figure 17. Three ways to share. Wi-Fi reaches several devices. A cable or Bluetooth reaches one.

- **USB tethering:** plug a cable from your phone into one laptop. Some pairs need extra setup, and an Android phone can't do this with a Mac.
- **Bluetooth tethering:** pair your phone with one nearby device, then share over Bluetooth.

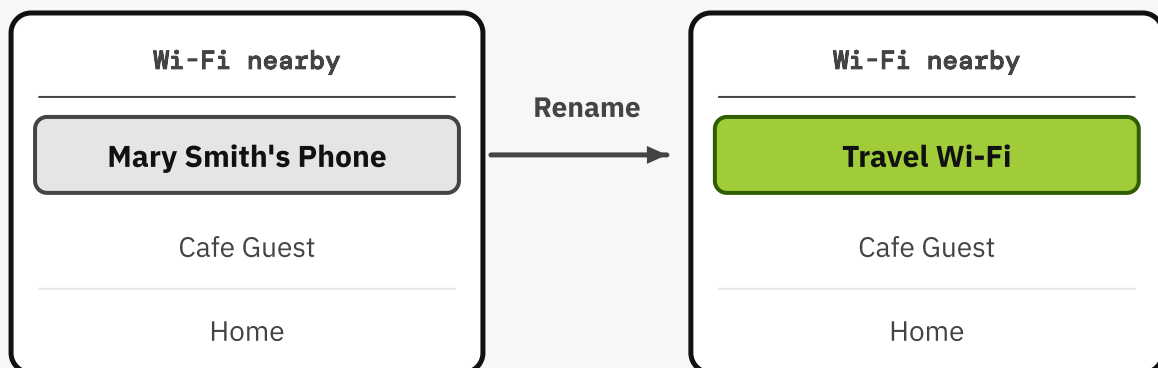


Figure 18. Your hotspot has a name. Anyone nearby can see it. On an iPhone, it is the phone's name: change it in Settings, General, About, Name. On Android, tap the hotspot name to change it.

Keep it private

Your hotspot is your own small Wi-Fi network. Lock it, and turn it off when you're done.

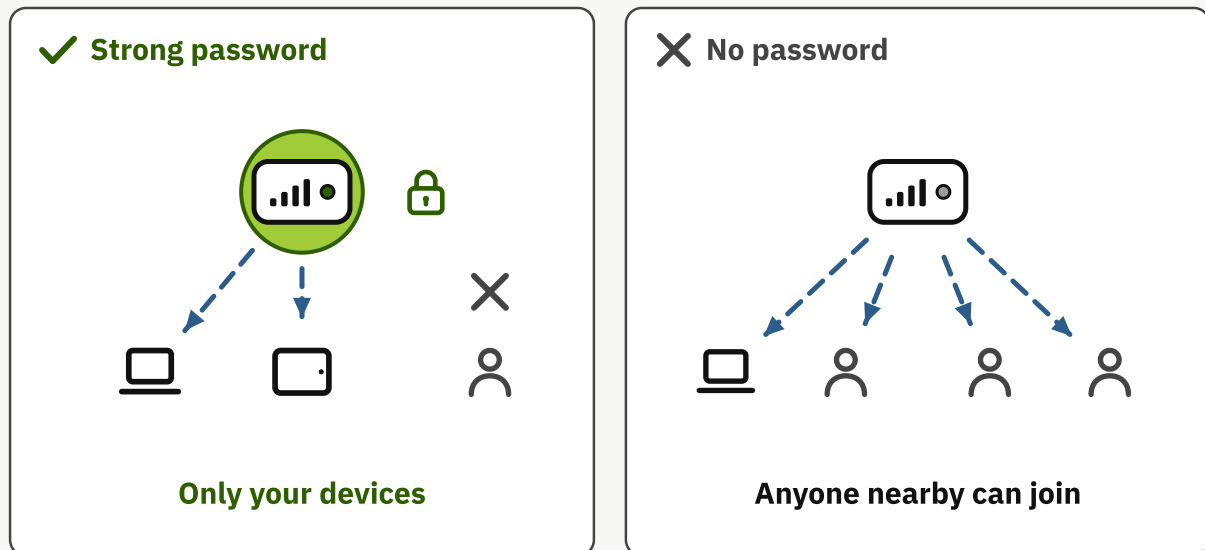


Figure 19. Use a strong password. Some phones let you pick no password at all. Don't. Use at least eight characters, and longer is better.

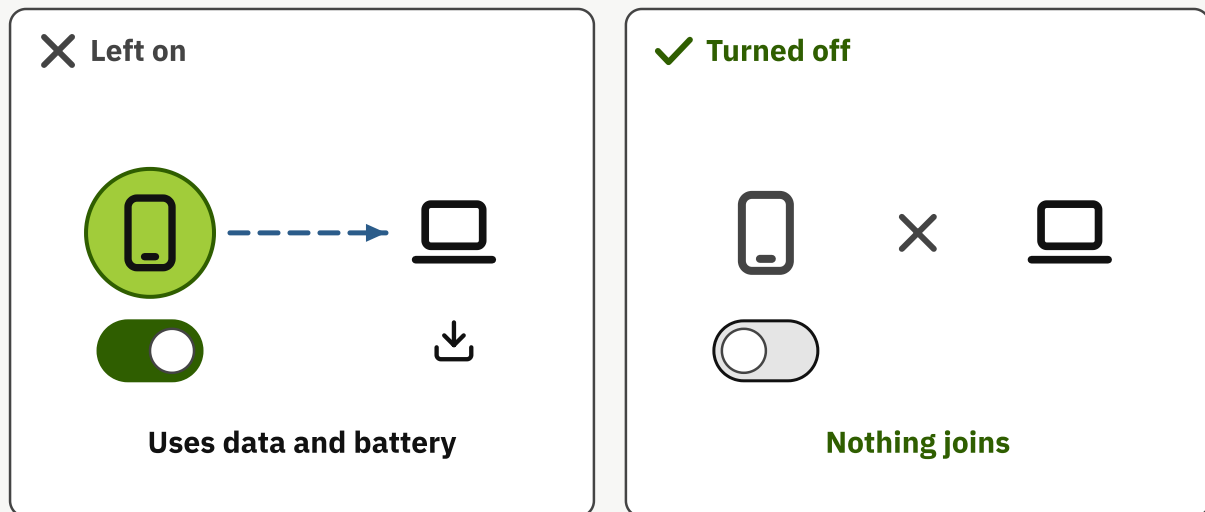


Figure 20. Turn it off when you're done. A device that joined before may join again by itself and use your data. Turning the hotspot off stops that.

Hotspot or travel router?

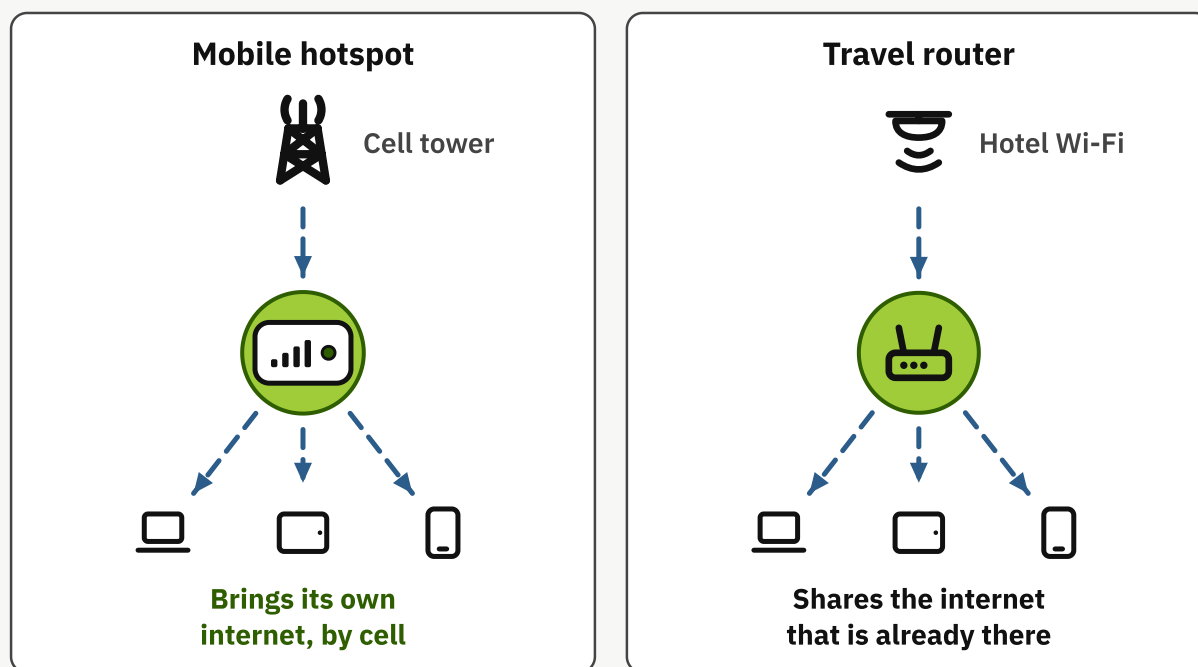


Figure 21. Different jobs. A hotspot is for places with no Wi-Fi. A travel router shares Wi-Fi that is already there, like the hotel's. *Travel Routers, Explained* covers it.

Four good habits

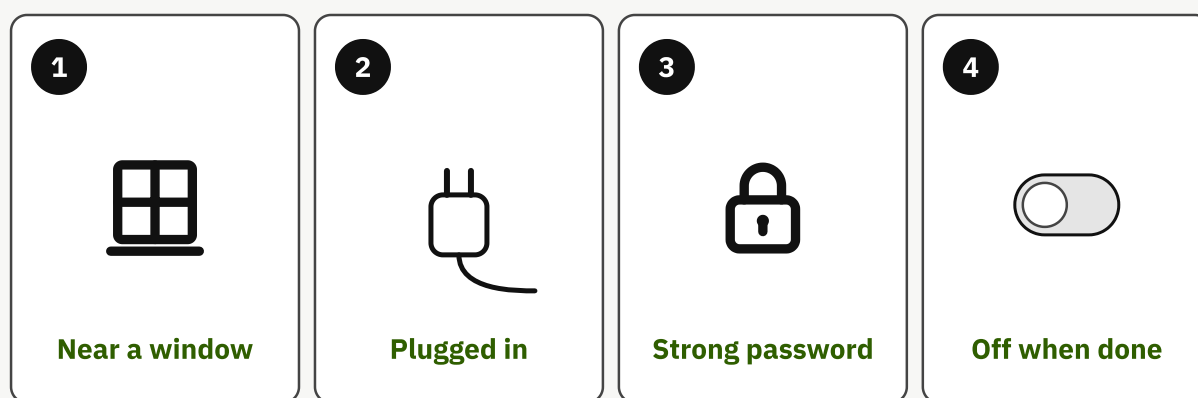


Figure 22. Four habits that help. Each one makes a hotspot work better, and each has its own page earlier in this guide.

Four things people get wrong

MYTH Full Wi-Fi bars on my laptop mean fast internet.

FACT Those bars show only the short link to the hotspot. The speed comes from the cell signal.

MYTH Unlimited data means unlimited hotspot data.

FACT Many plans treat hotspot data on its own. Some limit it or charge extra. Check your plan.

MYTH A hotspot and a travel router are the same thing.

FACT A hotspot brings its own internet, by cell. A travel router shares internet that is already there.

MYTH It's fine to leave it on all day.

FACT It drains the battery, and your devices may join it again and use data. Turn it off when you're done.

Tips

- 1 **Put it near a window**, out in the open. Not in a bag or a hot car.
- 2 **Watch the cell bars** on the hotspot, not the Wi-Fi bars on your laptop.
- 3 **Plug it in** if you'll use it for a long time.
- 4 **Use a strong password**. Never pick no password.
- 5 **Turn on data saver** on the laptop or tablet that joins it.
- 6 **Check your plan** before a big download, like a movie or a system update.
- 7 **Turn it off when you're done**.

SOURCES

Where these facts come from

Checked on 28 September 2026. Company pages are cited as sources only, not as recommendations.

- Apple Support 111785, "Connect to the Personal Hotspot of an iPhone or iPad": carrier support and fees; Wi-Fi, USB and Bluetooth; password of eight or more characters; the network uses the device's name; turn it off when not needed
- Google, Android Help 9059108, "Share a mobile connection by hotspot or tethering on Android": hotspot, USB and Bluetooth tethering; a "None" security choice; changing the name; no USB tethering to a Mac; carriers may limit or charge extra; auto-off
- Apple Support 118431, "If your iPhone or iPad gets too hot or too cold": charging slows or stops; "Cellular signal might weaken"
- Apple Support 102433, "Use Low Data Mode on your iPhone and iPad"; Microsoft Support, "Metered connections in Windows"
- Verizon, "Network Management Information": on certain plans, data may be put behind other traffic when busy
- IETF RFC 9913 (April 2026), 5G system description: radio network, core network, then the internet
- NETGEAR KB 000070348: a hotspot takes a SIM card or an eSIM
- Ofcom, Building Materials and Propagation (2014), §4.3, as cited in *Weak Cell Signal at Home, Explained*: metal-coated windows block signal too
- US FCC, "Wireless Connections and Bluetooth Security Tips," reviewed 26 November 2025 (Internet Archive copy, 28 September 2026): longer, stronger passwords
- US FTC, "Are Public Wi-Fi Networks Safe? What You Need To Know," February 2023

About this guide

Written for people who aren't technical and want to get online from a phone or a small hotspot. It is independent, and isn't affiliated with or endorsed by any phone, carrier or hotspot maker. It names no brand to buy.

About the author

Keith Parsons, CWNE #3, has designed, installed and troubleshot Wi-Fi for over 25 years. He runs Wireless LAN Professionals and the WLPC conferences.