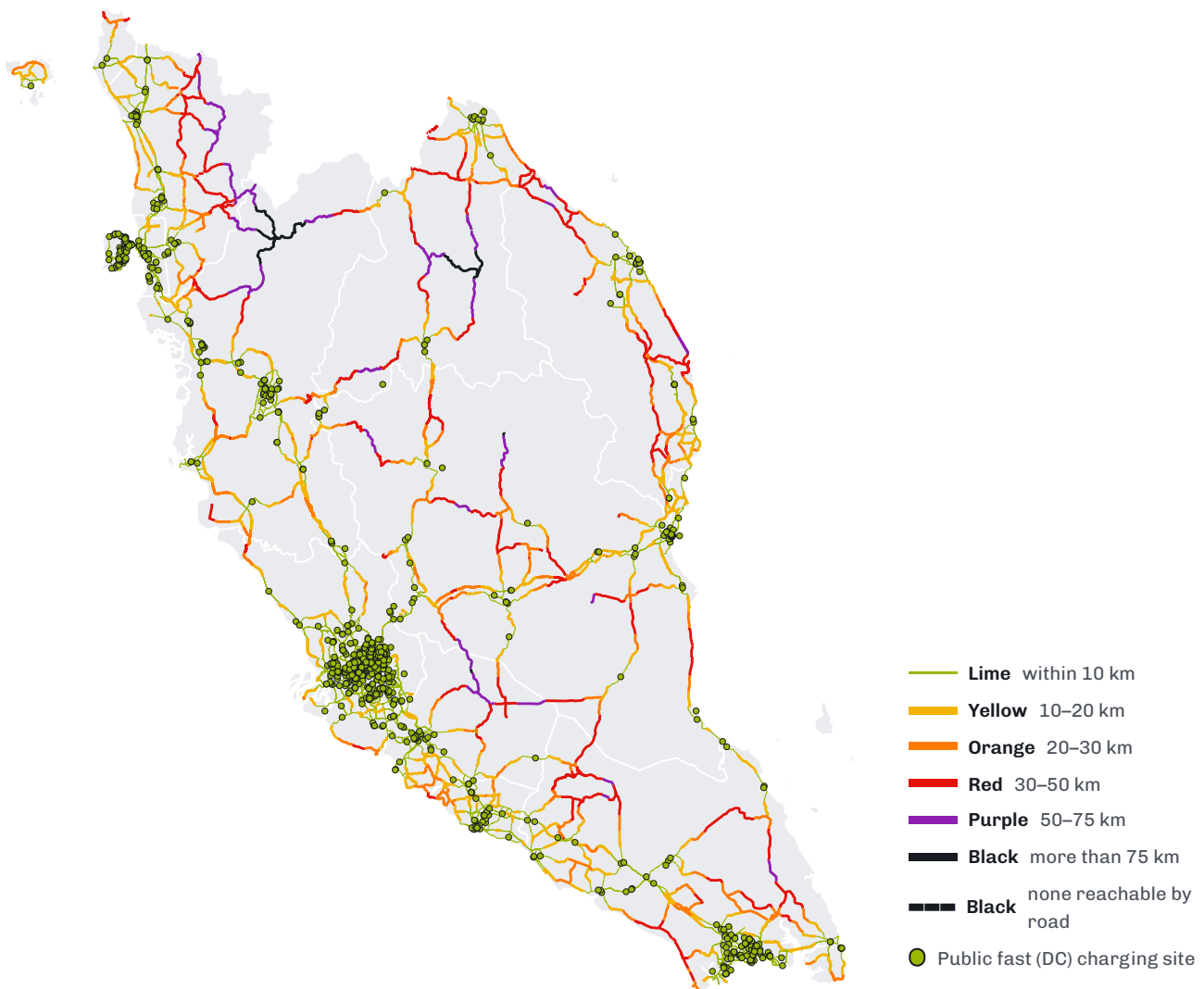


Case study

Nearly one in five kilometres of the Peninsula's main roads is more than 30 km from a fast charger

How AGA GeoAnalitik merged six charger maps and registers into one list of 898 public fast-charging sites, measured the drive from every point on 13,798 km of the Peninsula's main roads to the nearest one, and found where the gaps are.



What GeoAnalitik does

Every gap named, measured and put on the map

AGA GeoAnalitik builds location studies from public records and pins every claim to a place. Here, 898 fast-charging sites and 13,798 km of main road became one question a reader can act on: how far is this stretch of road from the nearest fast charger?

1	2	3
Collect	Measure	Pin
PlugShare, Google Maps, Open Charge Map, OpenStreetMap, Supercharge.info and the government register, merged into one list of sites; OpenStreetMap roads; DOSM household income.	The shortest drive along the road network from every point on 13,798 km of main road to the nearest public fast charger, in both directions.	Each finding names its road, its district and its distance, and the map colours every stretch in one of seven levels.

What this study answers

Charge-point operators	Where the next DC site closes the most far kilometres. FT3 alone has 203 km more than 30 km from a fast charger.
Fuel and highway operators	Where the gaps sit on the expressways and trunk roads they serve, and how far each stretch is from the nearest fast charger today.
Government and planners	Where public money would close a gap, and who the network leaves out: 81% of fast-charging sites stand in the richest two fifths of areas.
Car makers and dealers	Which routes a buyer can drive with confidence: 51% of main road is within 10 km of a fast charger, 18% more than 30 km.

Every source is public; no operator's own data was used. The data is correct as of the study date, 30 September 2026, and the study is not refreshed after it.

The study at a glance

2,481 km of main road more than 30 km from a fast charger

13,798 km

of expressways, main federal and state roads and roads to 28 resorts, jetties and parks

898

public fast (DC) charging sites, merged from six maps and registers

18%

of main road is more than 30 km from a fast charger

51%

is within 10 km of one

41%

of Kelantan's main road is more than 30 km from one, the highest share; then Terengganu 33% and Kedah 27%

77 km

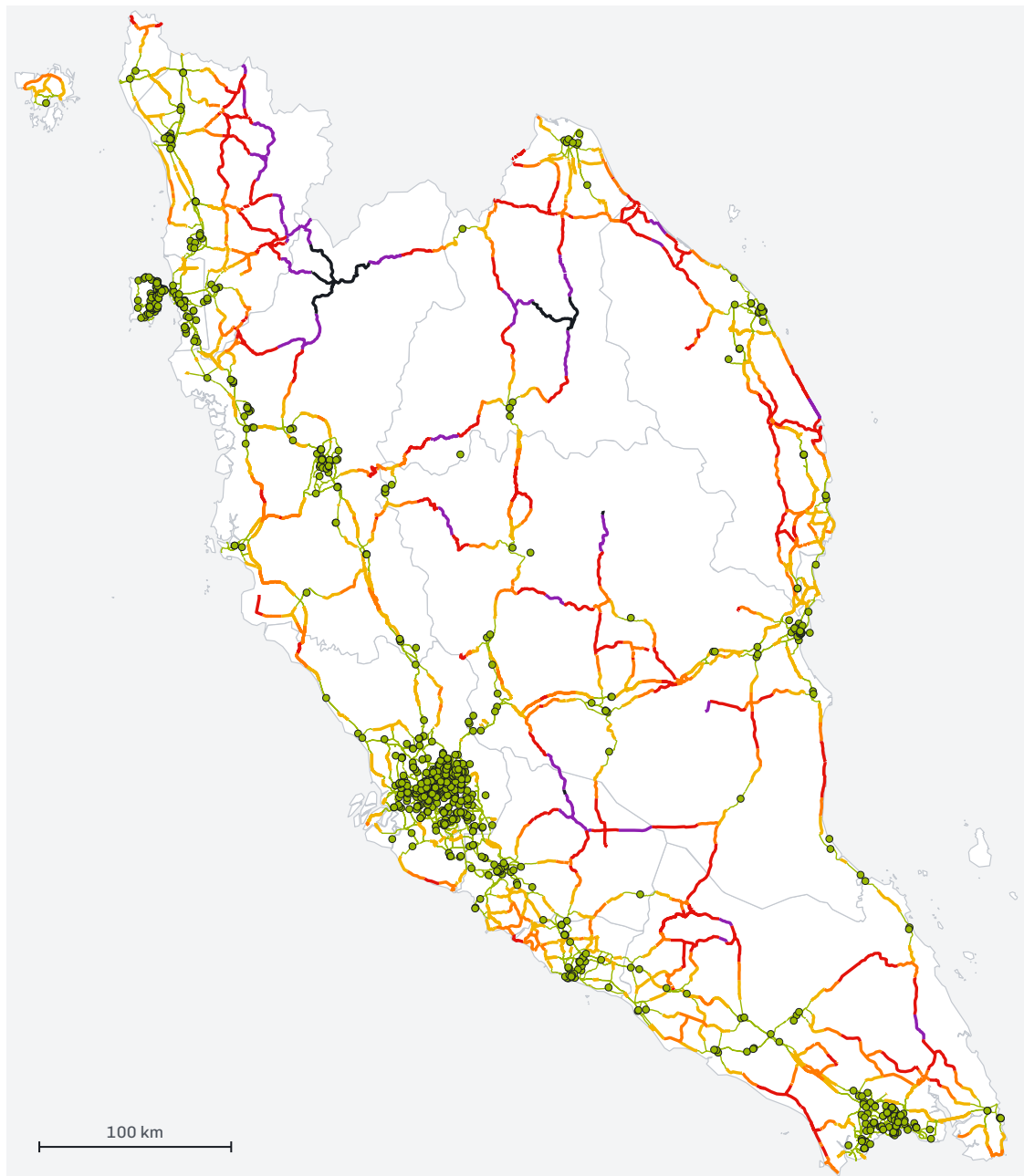
from Taman Negara to the nearest fast charger, the farthest destination

What we found

- 1** Hulu Perak has no listed fast charger, and its roads are the Peninsula's farthest from one. p. 6
- 2** Inland Kelantan, around Kuala Krai, is up to 86 km from a fast charger. p. 6
- 3** The east coast road has more kilometres far from a fast charger than any other. p. 7
- 4** The interiors of Kedah and Negeri Sembilan list no fast charger. p. 7
- 5** Taman Negara and Fraser's Hill are the resorts farthest from a fast charger. p. 9
- 6** Two thirds of the fast-charging sites stand in the country's richest fifth of areas. p. 10
- 7** The Klang Valley and Penang are covered. p. 11
- 8** The map holds when the least certain sources are dropped. p. 11

The map

Every stretch of main road, coloured by the drive to the nearest fast charger



— **Lime** within 10 km
 — **Yellow** 10–20 km
 — **Orange** 20–30 km
 — **Red** 30–50 km
 — **Purple** 50–75 km
— **Black** more than 75 km
 --- **Black** none reachable by road
 ● Public fast (DC) charging site

Figure 1. The main roads of Peninsular Malaysia: expressways, main federal and state roads and the roads to 28 resorts, jetties and parks, coloured by the distance by road from each point to the nearest public fast (DC) charger (lime dots). A stretch 30 km from one sits in a gap of 60 km or more between them.

By state

Kelantan, Terengganu and Kedah have the largest share of main road far from a fast charger

By share, Kelantan (41%), Terengganu (33%) and Kedah (27%) have the most main road more than 30 km from a fast charger (Figure 2). By length the far kilometres are spread wider: Pahang, Johor, Kedah, Kelantan, Terengganu and Perak each have 330 to 460 km of the Peninsula's 2,481. Selangor, Kuala Lumpur, Putrajaya and Penang, with 503 of the 898 sites, have 19 km between them.

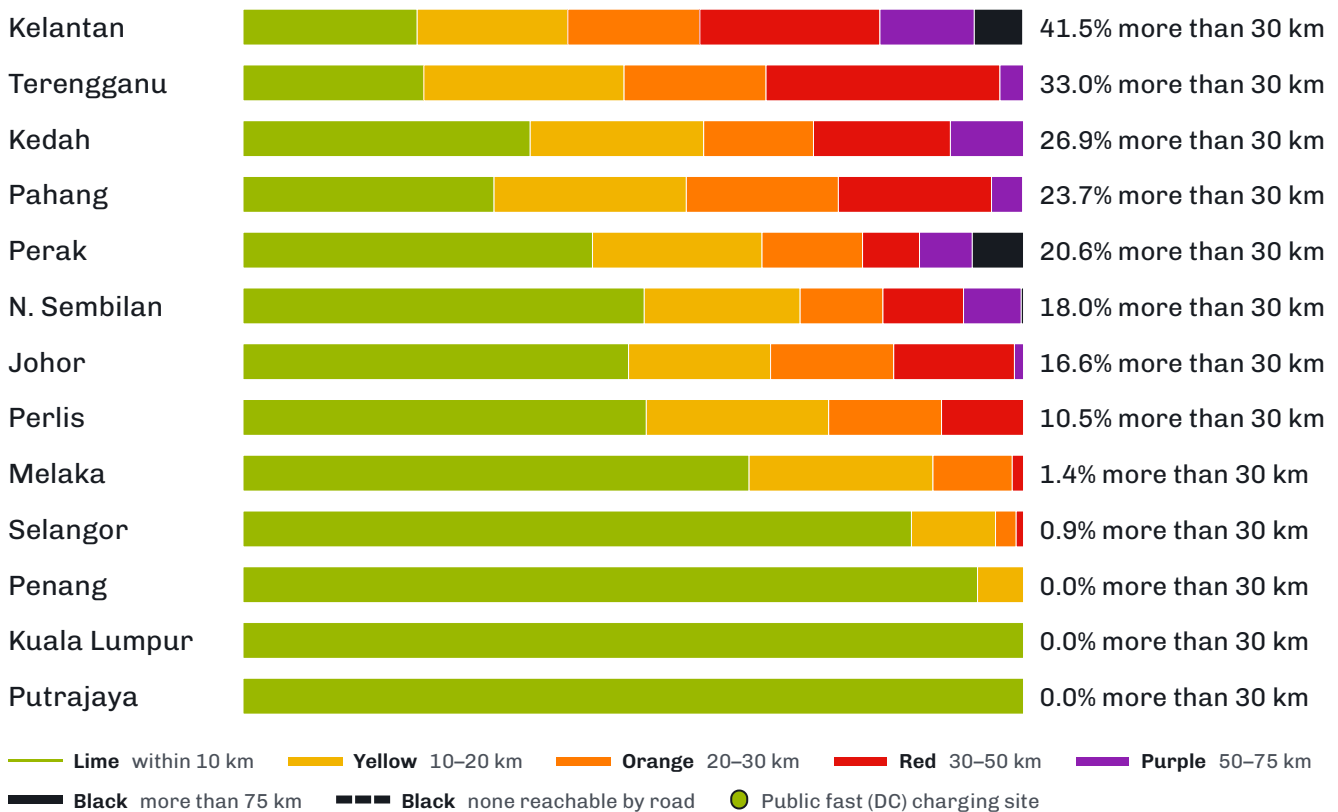


Figure 2. Kilometres of main road by distance by road to the nearest public fast charger, by state, the farthest first. The figure at the end of each bar is the share more than 30 km from one.

Findings 1 and 2

The farthest roads are in the north and east

Hulu Perak has no listed fast charger, and its roads are the Peninsula's farthest from one.

FT76 **FT4**

Only slow (AC) chargers are listed there. The road north from Kuala Kangsar through Gerik and the East–West Highway to Jeli are up to 98 km from a fast charger by road. With inland Kelantan, they hold nearly all of the Peninsula's 164 km more than 75 km from one.

FT76 Hulu Perak	54 km
FT4 Hulu Perak	48 km
D66 Kuala Krai	33 km
FT8 Kuala Krai	22 km
FT9 Jelebu	3 km
Taman Negara road Jerantut	2 km
Black more than 75 km	

Inland Kelantan, around Kuala Krai, is up to 86 km from a fast charger.

FT8 **FT185**

No fast charger is listed in Kuala Krai, Machang or Tanah Merah. Of the Kota Bharu–Gua Musang road's 376 km, 136 km are more than 30 km from one; of the Second East–West Highway over Lojing, 74 km of 152.

FT8

Kuala Krai

136 of 376 km

FT185

Kecil Lojing

74 of 152 km

Red

30–50 km

Purple

50–75 km

Black

more than 75 km

Grey

within 30 km

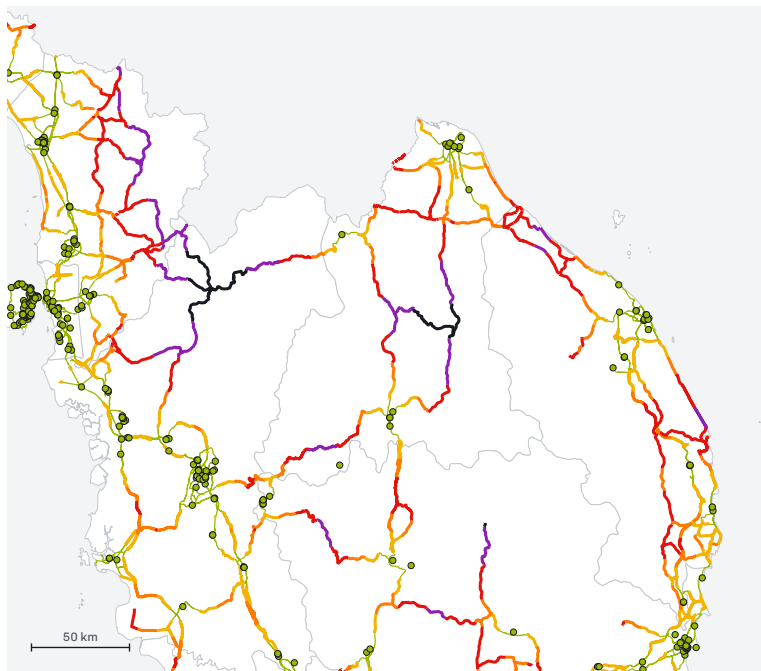


Figure 3. The north and east, closer: the same colours at a larger scale.

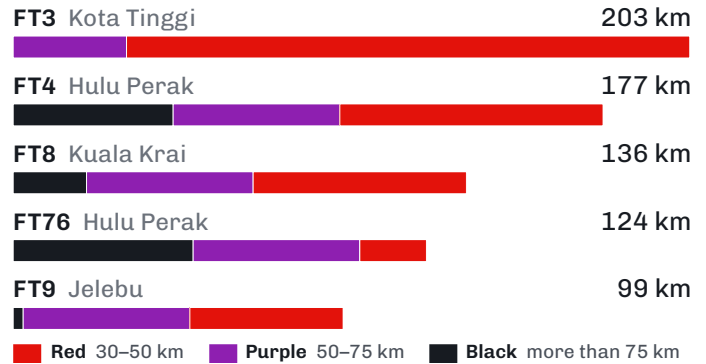
Findings 3 and 4

The east coast and the interiors

The east coast road has more kilometres far from a fast charger than any other.

FT3 **FT14**

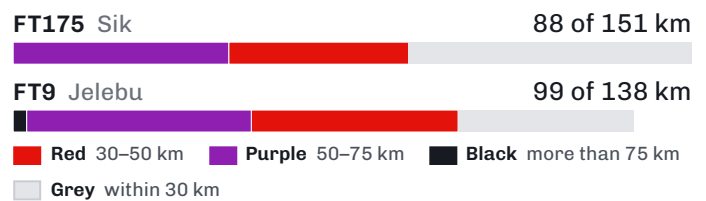
Federal Route 3 runs 738 km from Johor Bahru to Kota Bharu. 203 km of it are more than 30 km from a fast charger: up to 57 km in Kota Tinggi in Johor, then around Pekan in Pahang and through Setiu, Dungun, Besut and Marang in Terengganu. Setiu and Marang list no fast charger.



The interiors of Kedah and Negeri Sembilan list no fast charger.

FT175 **FT9**

Sik, Padang Terap and Baling in Kedah list none, and the road through Sik is up to 70 km from one. Jelevu, Kuala Pilah and Jempol in Negeri Sembilan list none, and the Tampin–Kuala Pilah–Manchis road is up to 76 km from one, in Jelevu.



The far roads

The roads with the most kilometres more than 30 km from a fast charger

The east coast road (**FT3**) leads on length; the two roads out of Hulu Perak (**FT4**, **FT76**) and inland Kelantan's **FT8** lead on distance.

Road	Km more than 30 km away	Farthest point	Districts
FT3 Jalan Kuantan - Kuala Terengganu	203 of 738	57 km Kota Tinggi, Johor	Kota Tinggi, Setiu, Pekan, Dungun, Besut, Marang
FT4 Jalan Grik – Jeli (Lebuhraya Timur-Barat)	177 of 293	98 km Hulu Perak, Perak	Hulu Perak, Tanah Merah, Baling, Machang
FT8 Jalan Kota Bharu – Gua Musang	136 of 376	86 km Kuala Krai, Kelantan	Kuala Krai, Gua Musang, Lipis, Machang
FT76 Jalan Kuala Kangsar - Grik - Pengkalan Hulu	124 of 149	97 km Hulu Perak, Perak	Hulu Perak, Baling
FT9 Jalan Tampin - Kuala Pilah - Manchis	99 of 138	76 km Jelebu, N. Sembilan	Bentong, Jelebu, Jempol, Kuala Pilah
FT175 Jalan Gurun - Kepala Batas	88 of 151	70 km Sik, Kedah	Sik, Padang Terap
FT14 Jalan Jabor - Al Muktafi Billah Shah	80 of 172	41 km Dungun, Terengganu	Dungun, Kemaman
FT64 Jalan Maran - Jerantut - Benta	77 of 141	57 km Jerantut, Pahang	Jerantut, Maran, Lipis
FT185 Lebuhraya Timur-Barat Kedua	74 of 152	59 km Kecil Lojing, Kelantan	Kecil Lojing, Kinta
FT11 Lebuhraya Bahau - Keratong	60 of 71	58 km Jempol, N. Sembilan	Jempol, Bera, Rompin

Table 1. The ten main roads with the most kilometres more than 30 km by road from a public fast charger, the farthest point on each, and the districts they run through. The report lists them all.

Finding 5: destinations

Taman Negara, Fraser's Hill and the Perhentian ferry are the destinations farthest from a fast charger

Taman Negara and Fraser's Hill are the resorts farthest from a fast charger.

Taman Negara road **Fraser's Hill road**

Kuala Tahan, the way into Taman Negara, is 77 km by road from the nearest one, and Fraser's Hill 40 km.

Genting Highlands and Cameron Highlands have fast chargers of their own.



We added the roads to 28 resorts, island ferry jetties and parks (24 of them are off the main roads). By road, Taman Negara at Kuala Tahan is 77 km from the nearest fast charger, Fraser's Hill 40 km, the Perhentian ferry at Kuala Besut 37 km, Tasik Kenyir 35 km and Sungai Lembing 32 km. Genting Highlands, Cameron Highlands, Desaru Coast, Bukit Merah and Langkawi Port have one within a kilometre.

Destination	Kind	To the nearest fast charger	Access road
Taman Negara Jerantut, Pahang	national park	77 km Black	58 km
Fraser's Hill Ulu Selangor, Selangor	hill resort	40 km Red	37 km
Kuala Besut jetty Besut, Terengganu	island ferry	37 km Red	0.3 km
Tasik Kenyir Hulu Terengganu, Terengganu	lake	35 km Red	29 km
Sungai Lembing Kuantan, Pahang	heritage town	32 km Red	27 km
Bagan Lalang Sepang, Selangor	beach	26 km Orange	4.1 km
Tanjung Piai Pontian, Johor	national park	24 km Orange	8.0 km
Gunung Jerai Yan, Kedah	hill resort	21 km Orange	14 km
Bukit Tinggi Bentong, Pahang	hill resort	15 km Yellow	11 km
Kuah jetty Langkawi, Kedah	island ferry	13 km Yellow	2.6 km

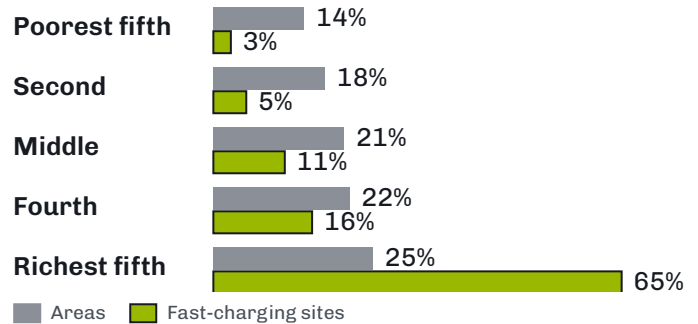
Table 2. The ten destinations farthest by road from a public fast charger, of the 28 resorts, island ferry jetties and parks in the study, and the length of the road from each to the main roads.

Finding 6: household income

Two thirds of the Peninsula's fast chargers stand in its richest areas

Two thirds of the fast-charging sites stand in the country's richest fifth of areas.

By median household income (DOSM, 2024), 65% of the Peninsula's fast-charging sites are in areas in the richest fifth nationally, a quarter of its areas; 8% are in the poorest two fifths, a third of its areas.



Of the 898 fast-charging sites, 583 (65%) are in areas in the richest fifth nationally by median household income, which make up a quarter of the Peninsula's areas. The poorest two fifths, a third of its areas, have 72 (8%) (Table 3).

Area median household income	Areas	Fast-charging sites
Poorest fifth	66	25
under RM 4,040 a month	14%	3%
Second	81	47
RM 4,040–4,800 a month	18%	5%
Middle	95	102
RM 4,800–5,860 a month	21%	11%
Fourth	99	141
RM 5,860–7,460 a month	22%	16%
Richest fifth	116	583
over RM 7,460 a month	25%	65%
Total	457	898

Table 3. Areas and public fast-charging sites by the median monthly household income of the area, in national fifths (DOSM Household Income Survey 2024).

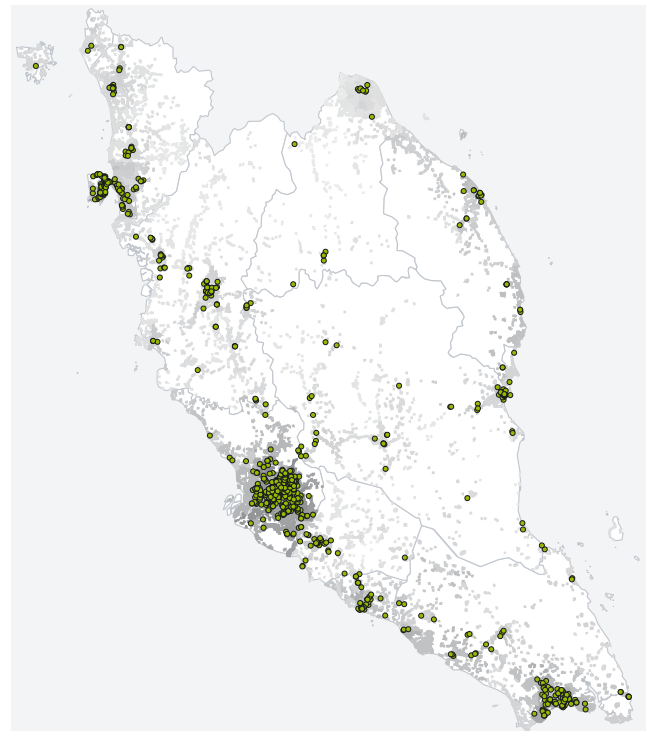


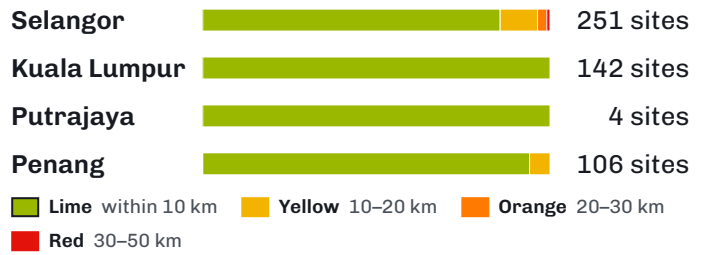
Figure 4. Median household income by area, darker for richer, with the fast-charging sites.

How we check our work

The gaps hold when the least certain sources are dropped

The Klang Valley and Penang are covered.

No main road in Kuala Lumpur, Putrajaya or Penang is more than 20 km from a fast charger; in Selangor, 4% is. The four hold 503 of the Peninsula's 898 fast-charging sites.



The map holds when the least certain sources are dropped.

Leaving out Tesla-only sites, or sites known only from the government register (last updated May 2025), moves no road's kilometres beyond 30 km by more than 2 km.

Six sources, one list of sites

Each source misses sites the others list. We merged all six: records within 100 m of each other are one site, fast if any source reports a DC connector there. The counts are records for all of Malaysia on 30 September 2026.

Source	Records	What it adds
PlugShare	3,418	Public and restricted locations reported by drivers
Google Maps	1,127	Listings typed as EV charging stations
Government register (MEVnet)	1,370	Kept by KPKT and PLANMalaysia; rows dated up to May 2025
Open Charge Map	811	Open data, export of 22 April 2026
OpenStreetMap	217	Charging stations mapped by volunteers
Supercharge.info	31	Tesla Supercharger sites

How the study was built

Data, method and stated limits

Study date: 30 September 2026. Every figure, map and table is correct as of that date. The study records what the sources listed then; it is not refreshed as chargers open or close, roads change or new surveys are published.

Chargers, 30 September 2026, for all of Malaysia: PlugShare (public and restricted locations; 3,418), Google Maps listings typed as EV charging stations (1,127), MEVnet, the government charger register kept by KPKT and PLANMalaysia (1,370 existing sites, rows dated up to May 2025), Open Charge Map (811; export of 22 April 2026), OpenStreetMap (217) and Supercharge.info (31 Tesla sites). Home chargers were never collected.

Sites: records from any source within 100 m of each other are one site. A site is fast if any source reports a DC connector there, and counted unless every source marks it restricted or any listing says it is (“[Restricted]”, “residents only”: mostly condominium car parks, 247 sites in Malaysia). In the Peninsula: 898 open public fast-charging sites; 1,134 more with slow (AC) charging only.

Roads: OpenStreetMap motorway, trunk and primary roads, and the road from each of 28 resorts, island ferry jetties and parks to them (the cheapest drive, costing village lanes and car parks up; listed in Table 2), 13,798 km in the Peninsula. A divided road is counted once: OpenStreetMap draws each carriageway as a one-way road, and each counts half. Secondary roads and dead ends within 150 m of another road are used to connect them, but not counted or drawn.

Household income: DOSM Household Income Survey 2024 (storage.dosm.gov.my/hies), median monthly gross household income for the smallest area DOSM publishes (613 in Malaysia), placed with DOSM's open area outlines. Only built-up land is shaded: OpenStreetMap's residential, commercial and industrial land and buildings, and about 250 m around each village it names (30 September 2026), so estates, forest and water inside an area stay blank. Each patch takes its area's median. The map shades each area in proportion to its median, from RM 1,500 (palest) to RM 16,000 (darkest). The Sabah and Sarawak report tops its scale at RM 8,000, so a shade does not mean the same income in the two. Table 3 groups the areas in national fifths, which break at RM 4,040, 4,800, 5,860 and 7,460. A charger takes the income of the area it stands in; one just offshore takes the nearest area of its own state.

Distance: the shortest drive along that network from each point to the nearest fast-charging site, both directions treated alike. A stretch's colour is the larger of the distances at its two ends.

Colours: in this report thin lime is within 10 km, yellow 10–20, orange 20–30, red 30–50, purple 50–75 and black more than 75 km. The Sabah and Sarawak report uses 25, 50, 75, 100 and 150 km, so a colour does not mean the same distance in the two.

Route numbers: OpenStreetMap references; a number alone is a federal route (FT), a letter first a state route.

Sensitivity: the same run without Tesla-only sites, and without sites known only from MEVnet, changes no road's kilometres beyond 30 km by more than 2 km.

Limits

A road far from a *listed* fast charger may have one that no map or register lists.

Any DC charger counts as fast, whatever its power; some are 20–30 kW. The power is unknown for many sites.

Distances follow the road network in both directions: a charger at an R&R on the other carriageway counts as reachable, a few kilometres short of the real drive.

A charger up to 5 km off a main road counts, with its detour (1.3 times the straight line) added.

Chargers across the borders, in Singapore and southern Thailand, are not counted.

Whether a charger works, is open at night, or takes your car is not known; Tesla sites are counted as open to all.

What a study for you adds

The same measurement, run for your decision

Traffic on every gap	JKR's road traffic counts put a number of cars on each stretch, so the gaps that strand the most drivers rank first.
Sites that would close a gap	Petrol stations, R&R stops and towns midway along each gap, ranked by how many far kilometres a fast charger there would close.
Charging points, not sites	The DC points and their power at every site, so a gap bridged by one charger shows as one fault away from reopening.
Hills and range	Climbs of more than 1,000 m on the East–West Highway and over Lojing and Cameron Highlands, which shorten a car's range.
Your own network	Your stations, dealers or planned sites added to the map, and the gaps each would close.

How a study runs

- 1 You tell us the decision.** A region, a corridor, or the sites you are weighing.
- 2 We measure every road** against today's fast chargers, and against yours or your candidates'.
- 3 We rank the sites** by the far kilometres each would close, weighted by traffic.
- 4 You read the results on a private link:** the report, the map and a page per site.

Tell us who you are, a charge-point operator, a station network, a planning office or a car maker, and the decision in front of you.



Digital transformation through data analytics and artificial intelligence. Turning data into decisions, and intelligence into impact.

Contact

AGA Group
SH-02-15, Block A, Geo Bukit Rimau
Jalan Sungai Burung 32/68
Seksyen 32, Bukit Rimau
40460 Shah Alam, Selangor

+603 5891 2191

Online

geo.analitik.my
geo.analitik.my/contact

Other AGA platforms

Climate Risk intelligence
RoadAsset
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