Networking The Pacific

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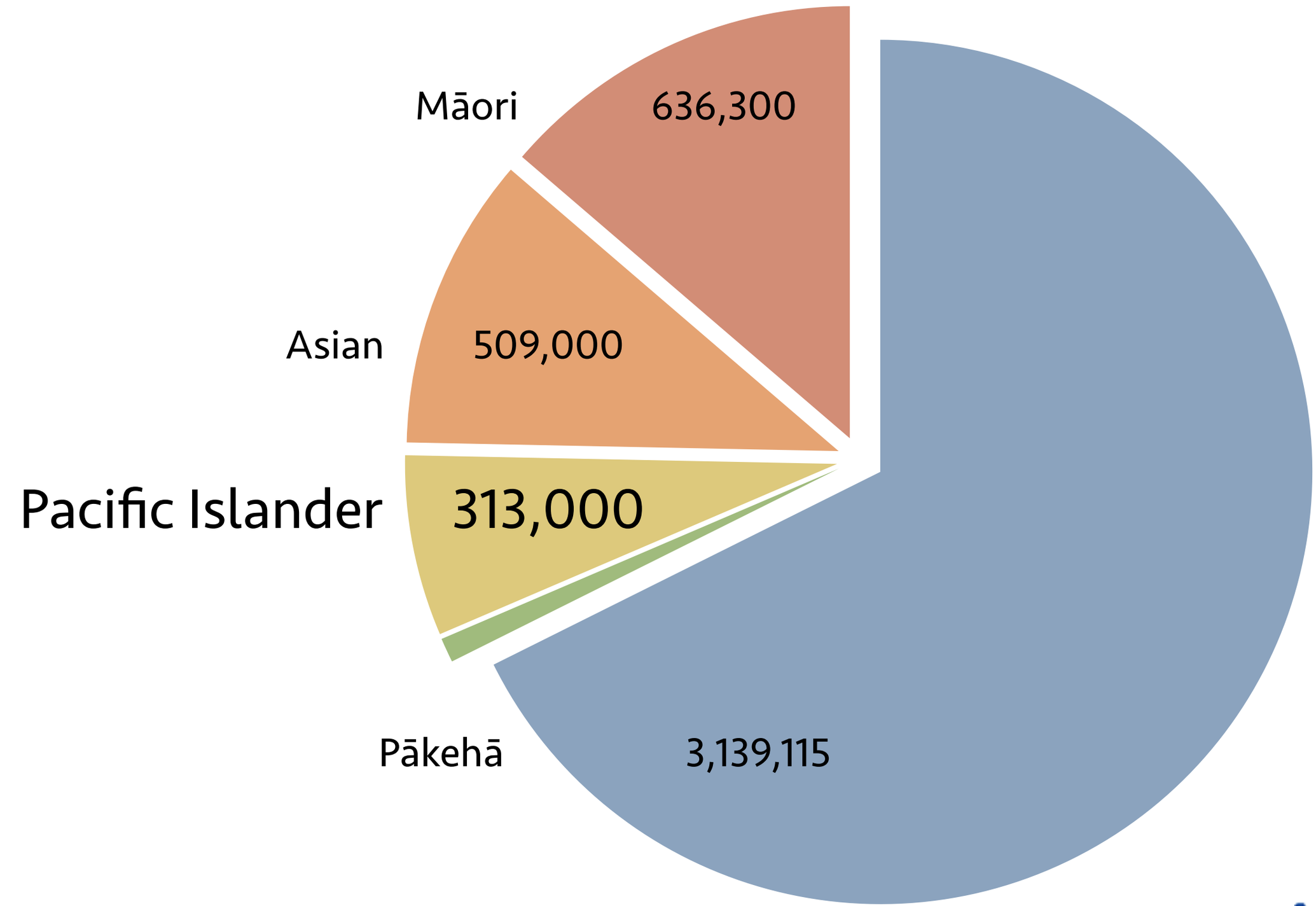
He tangata! He tangata! He tangata!



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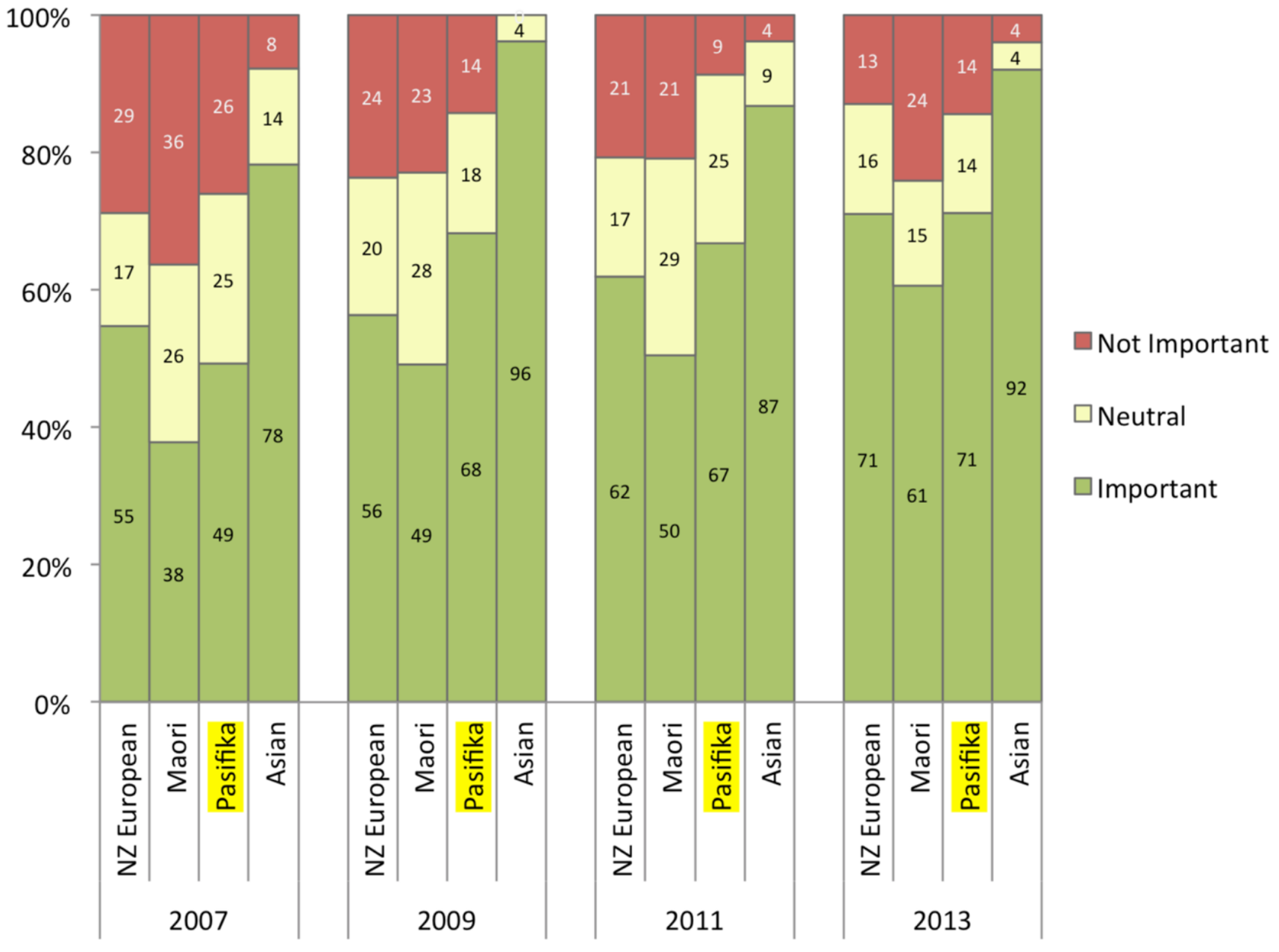
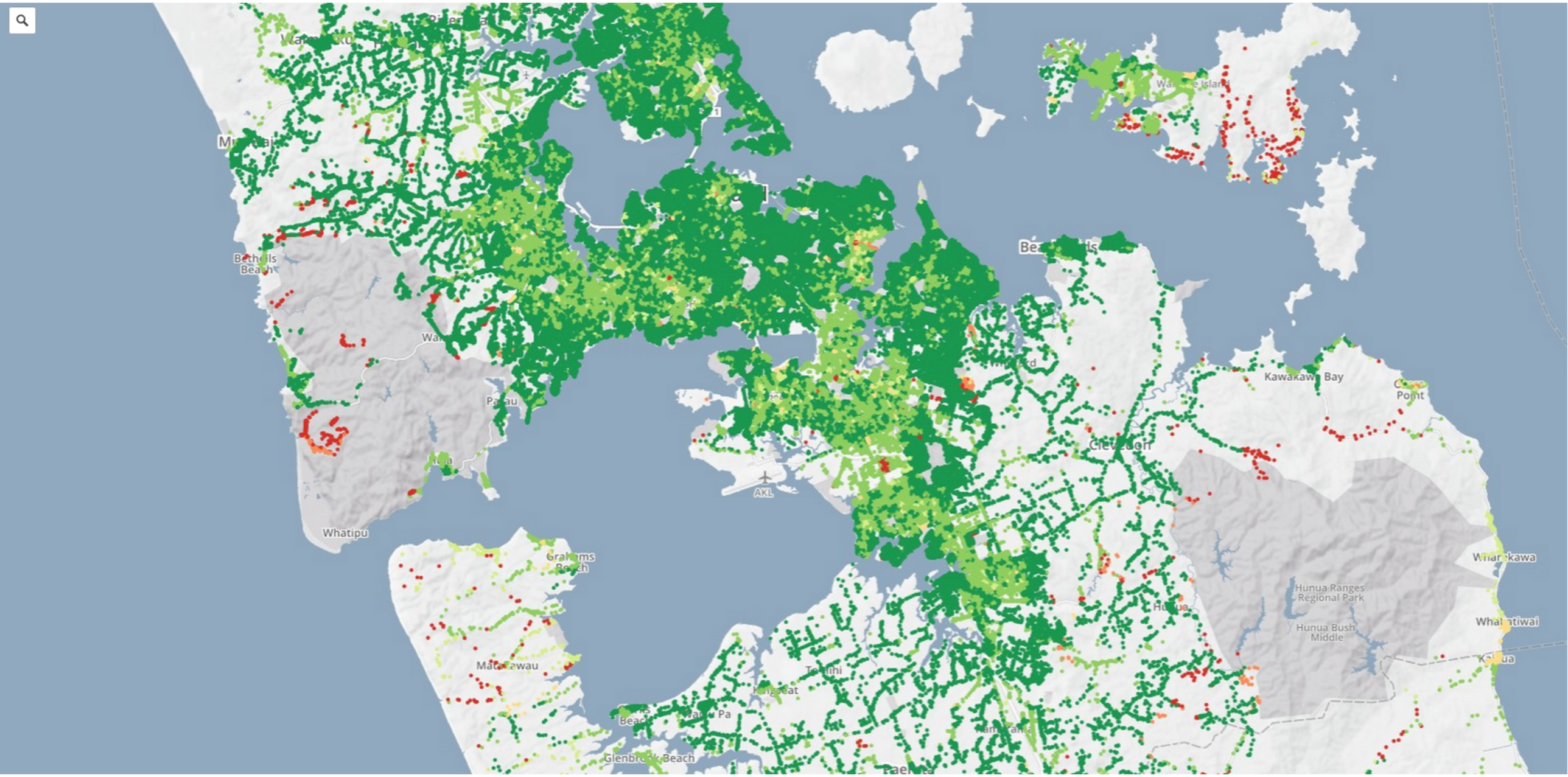
Internet is Important to Pacific Islanders in NZ



WIP/AUT Internet Trends in New Zealand 2007-2013

Internet is Affordable for Pacific Islanders in NZ



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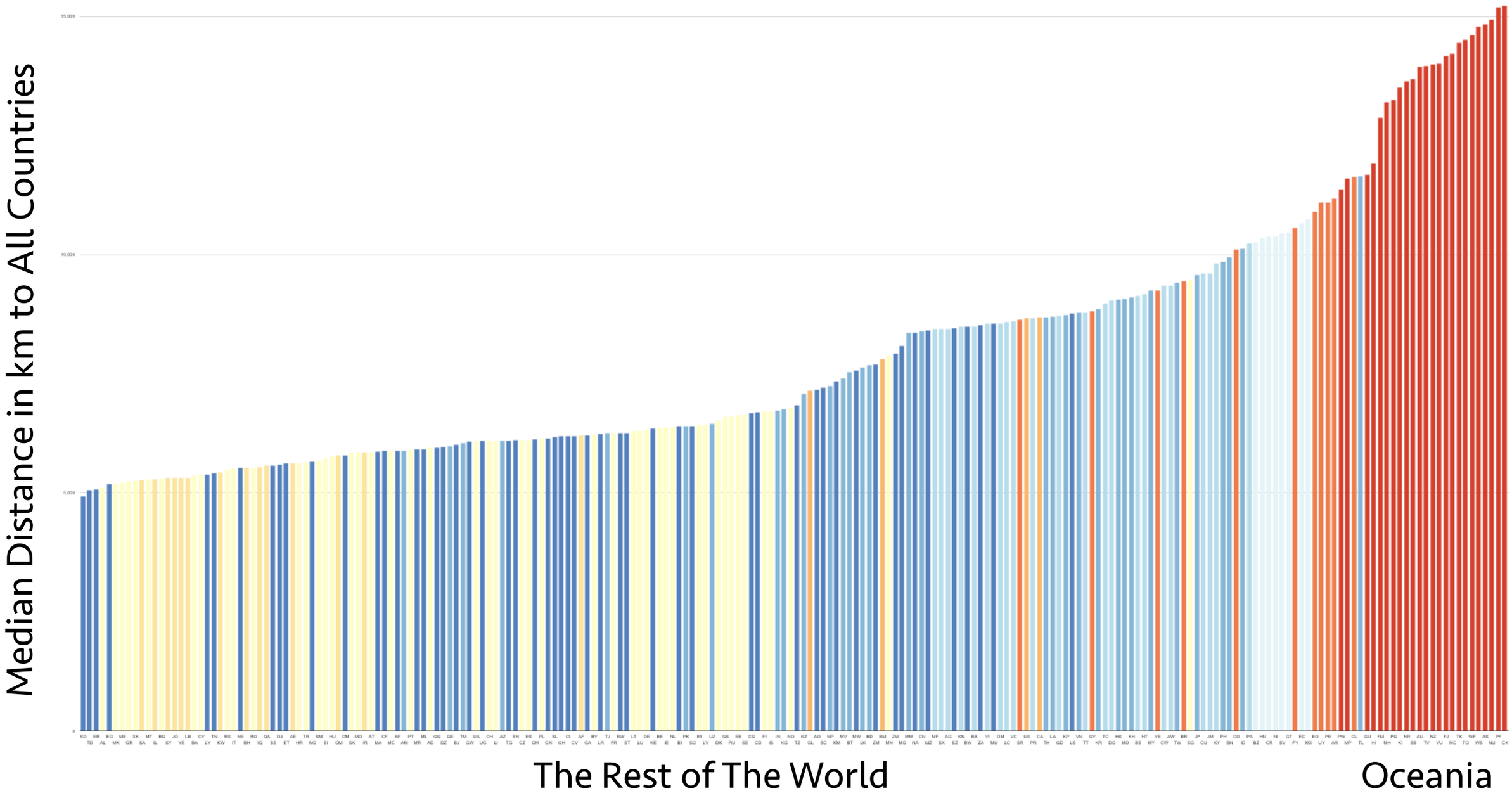
Pacific Countries Are A Long Way Away



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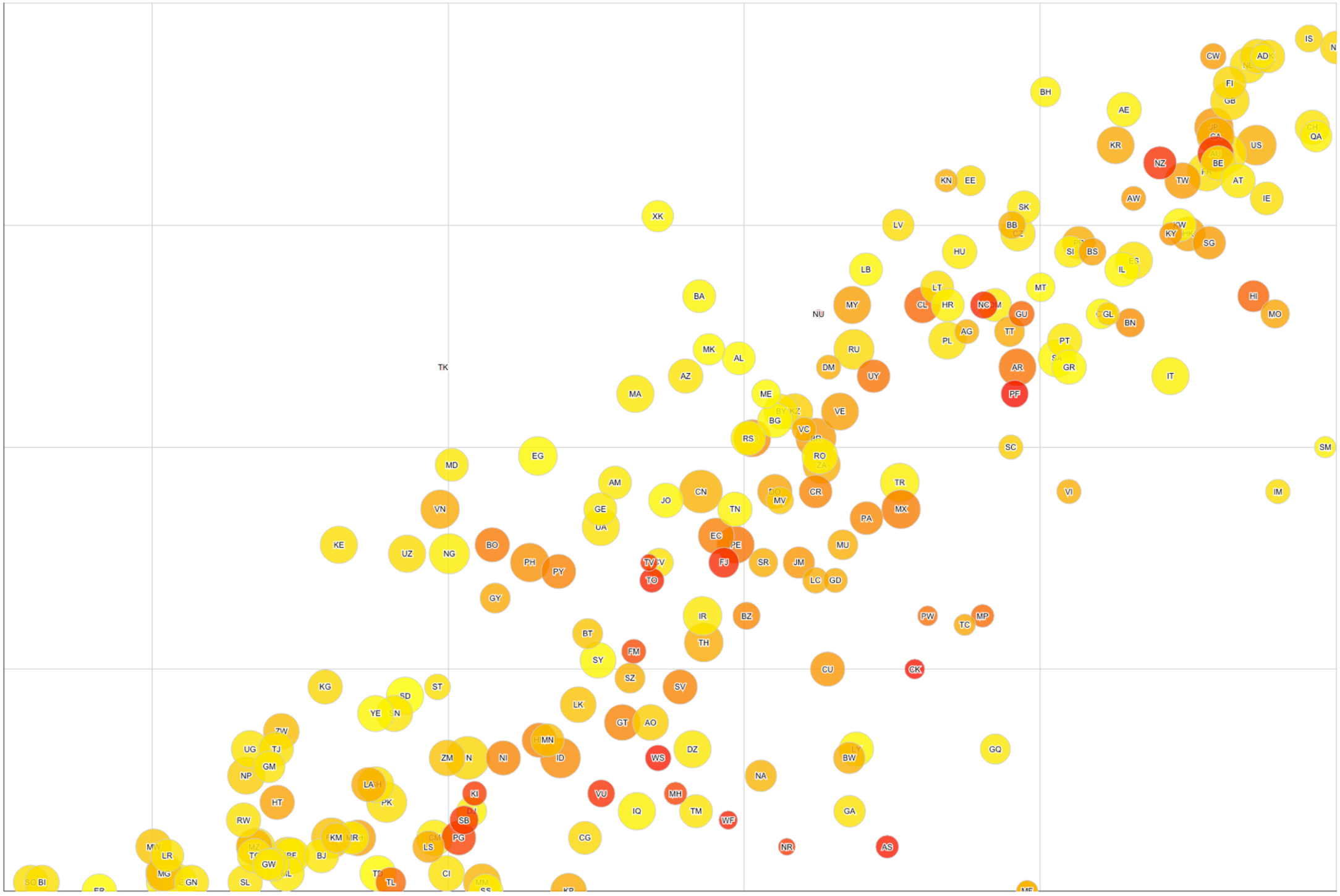
Internet Uptake



GDP Per Capita

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Internet Uptake

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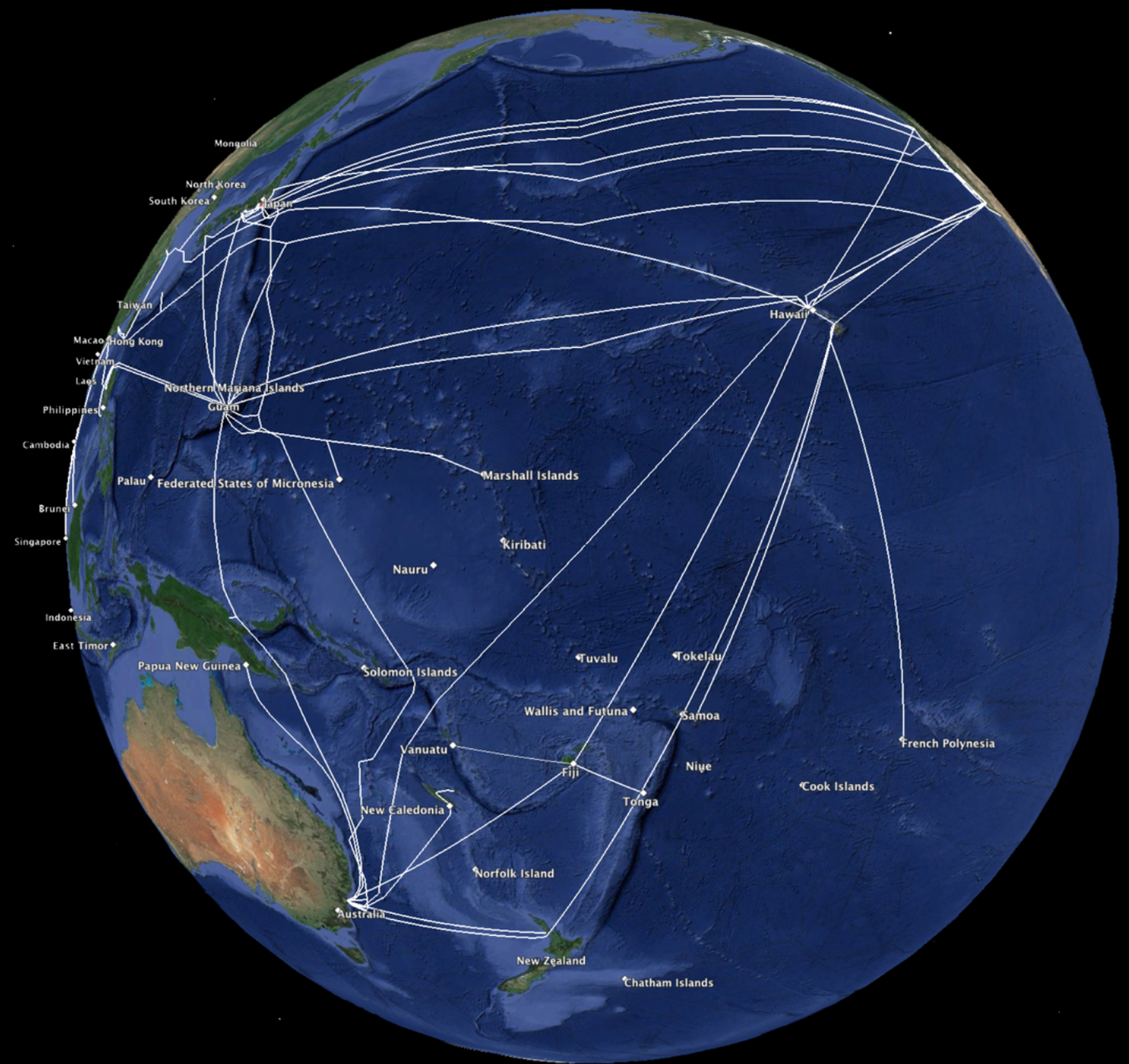
Pacific Islands Submarine Cables



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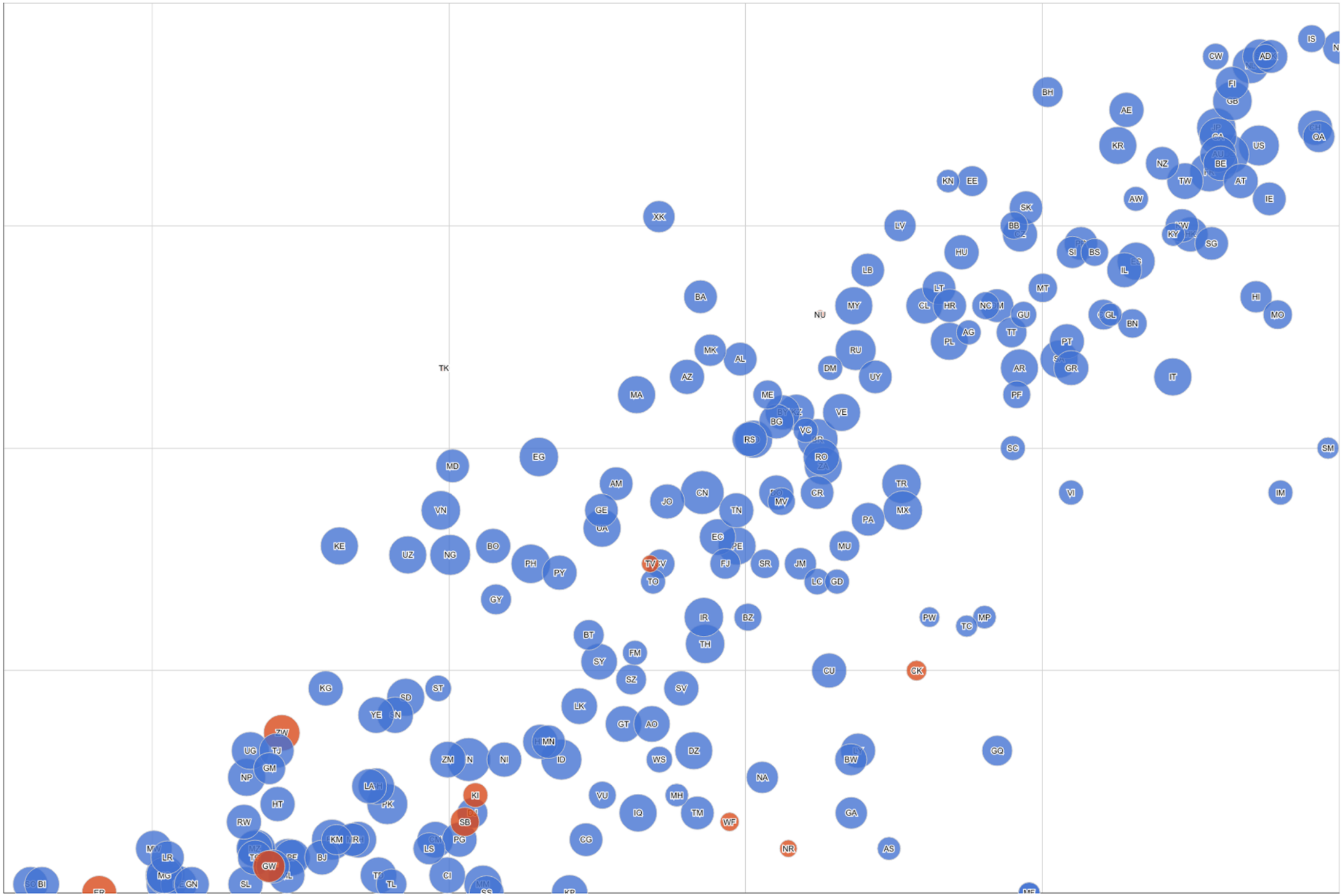

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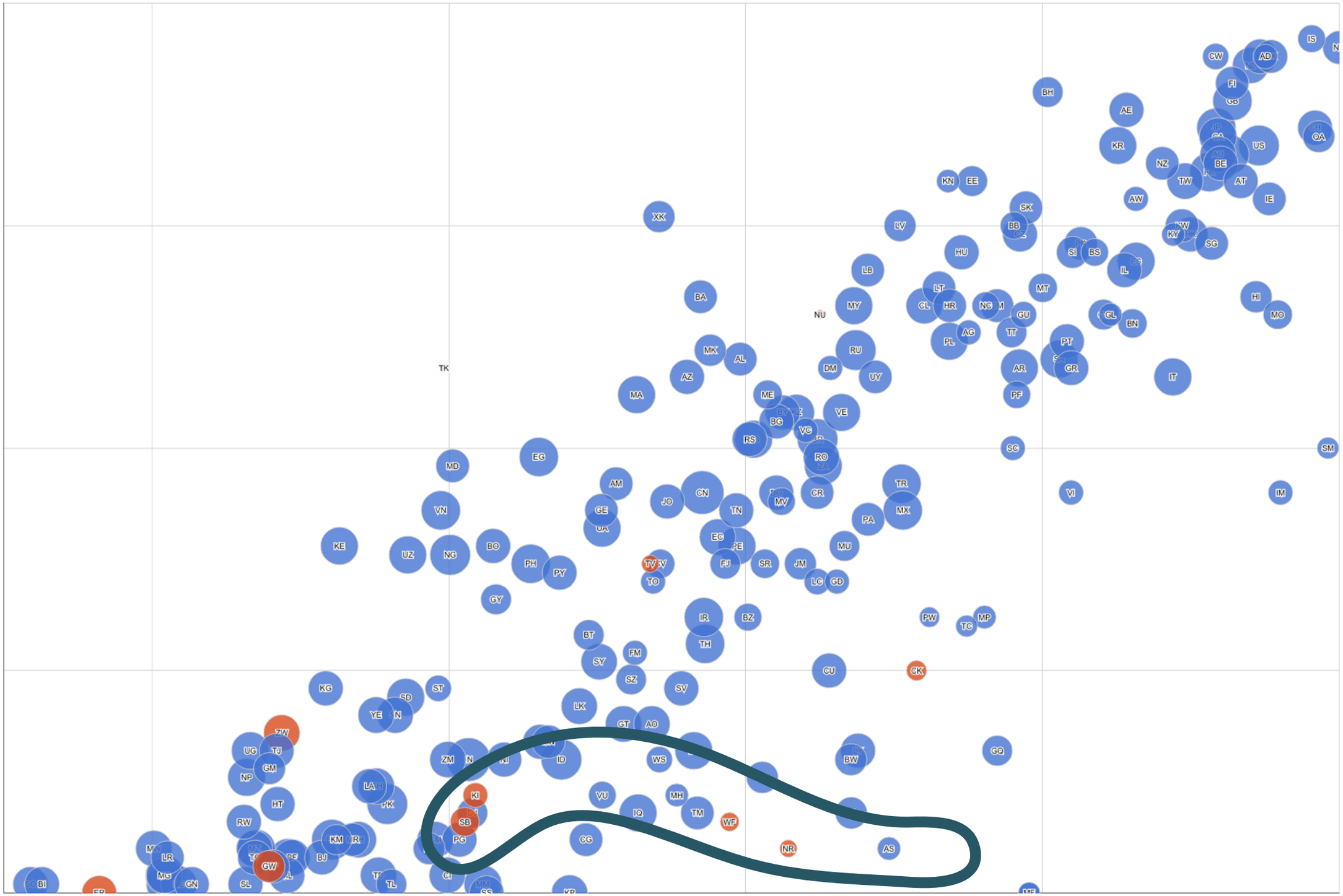

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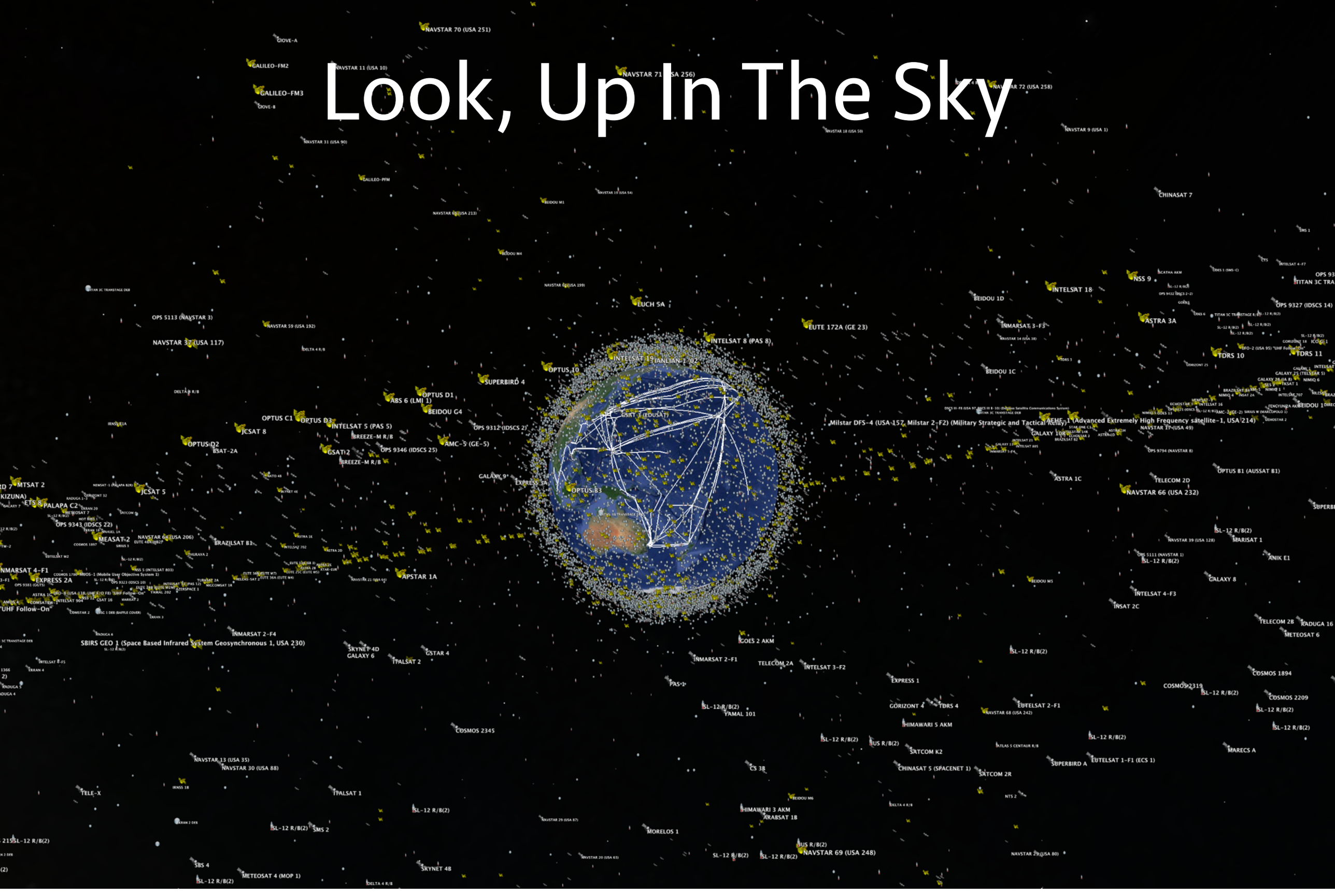
Look, Up In The Sky



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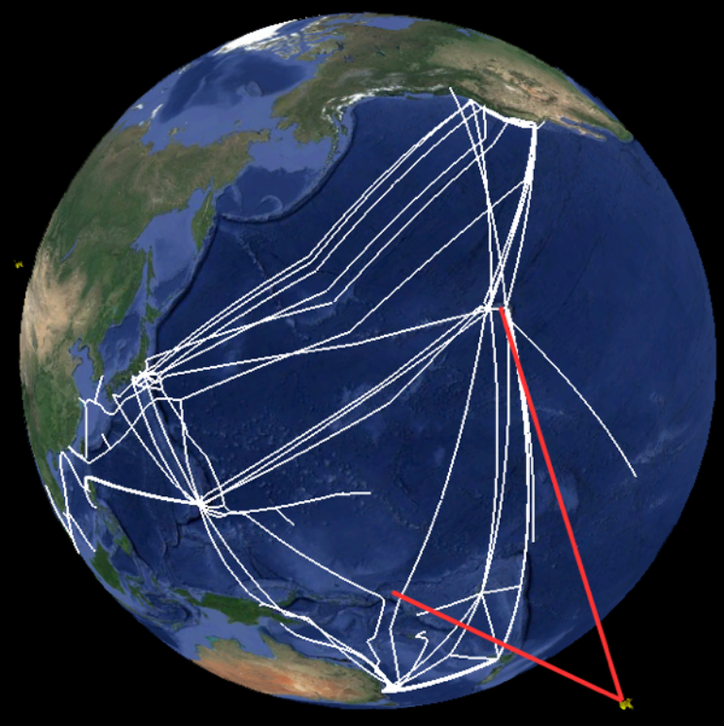
Sometimes Satellite is Faster than Fibre

Satellite Math

- O3b is 8,060 km Up
- c = 300,000 km /sec
- Honiara/Hawaii RTT: 107ms



Fibre Math

- Honiara/Hawaii: 11,150km
- c = 200,000 km /sec
- Honiara/Hawaii RTT: 111.5ms

There's Heaps of Fibre

Satellite is now Awesome

(and getting even better)

What's the Problem?

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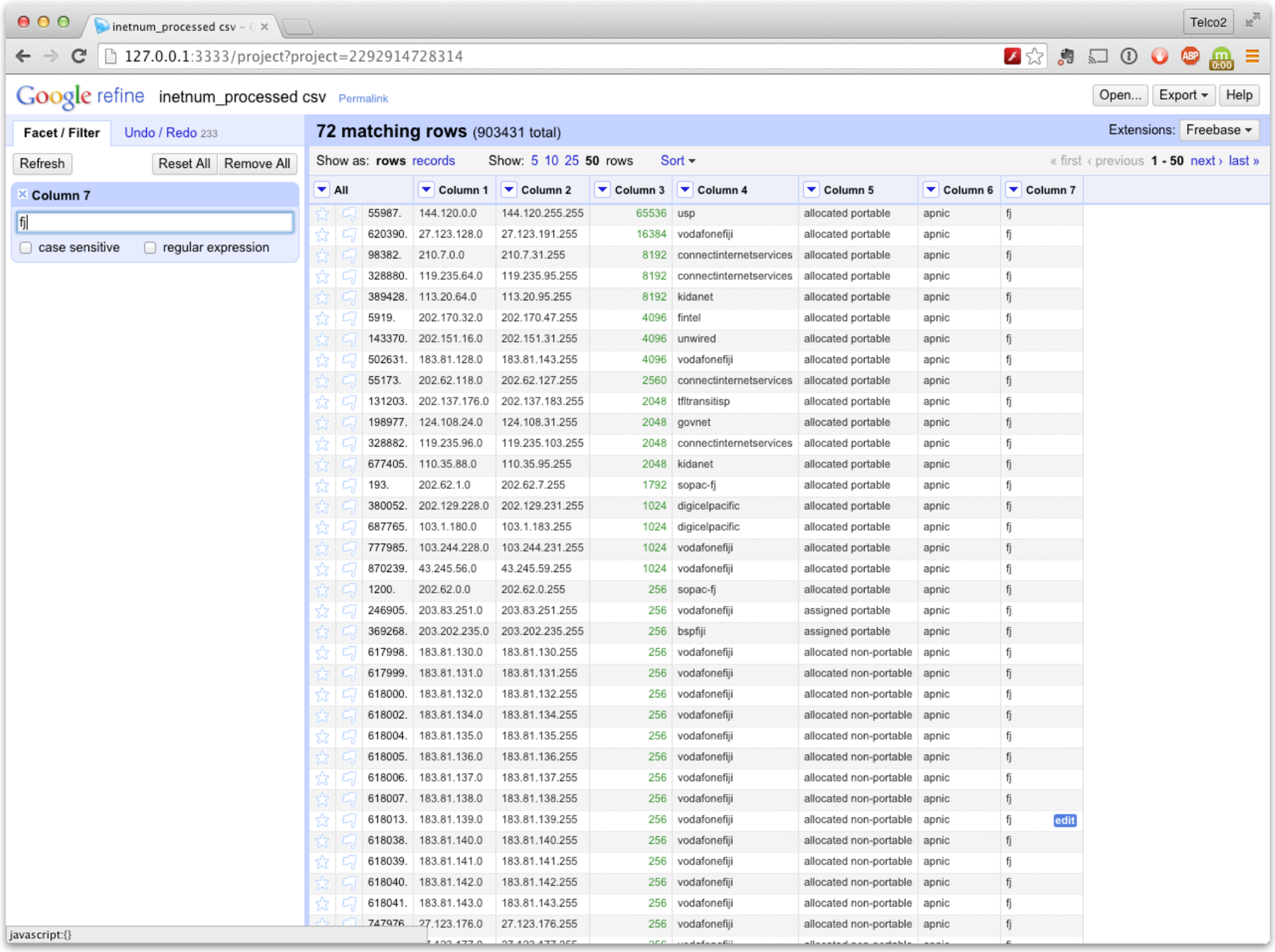
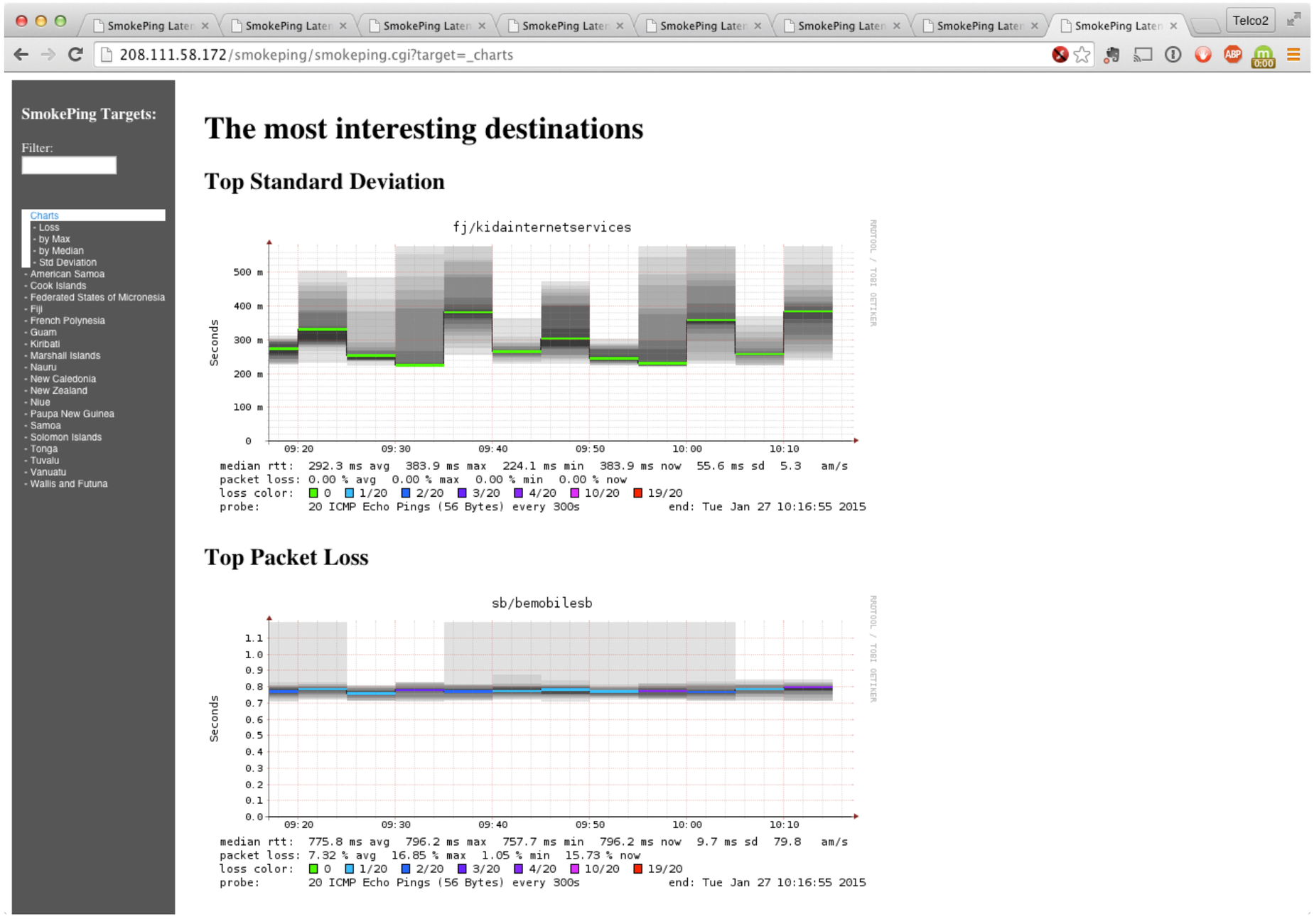
Carrier Investigation



Price Investigation

Performance Investigation



American Samoa

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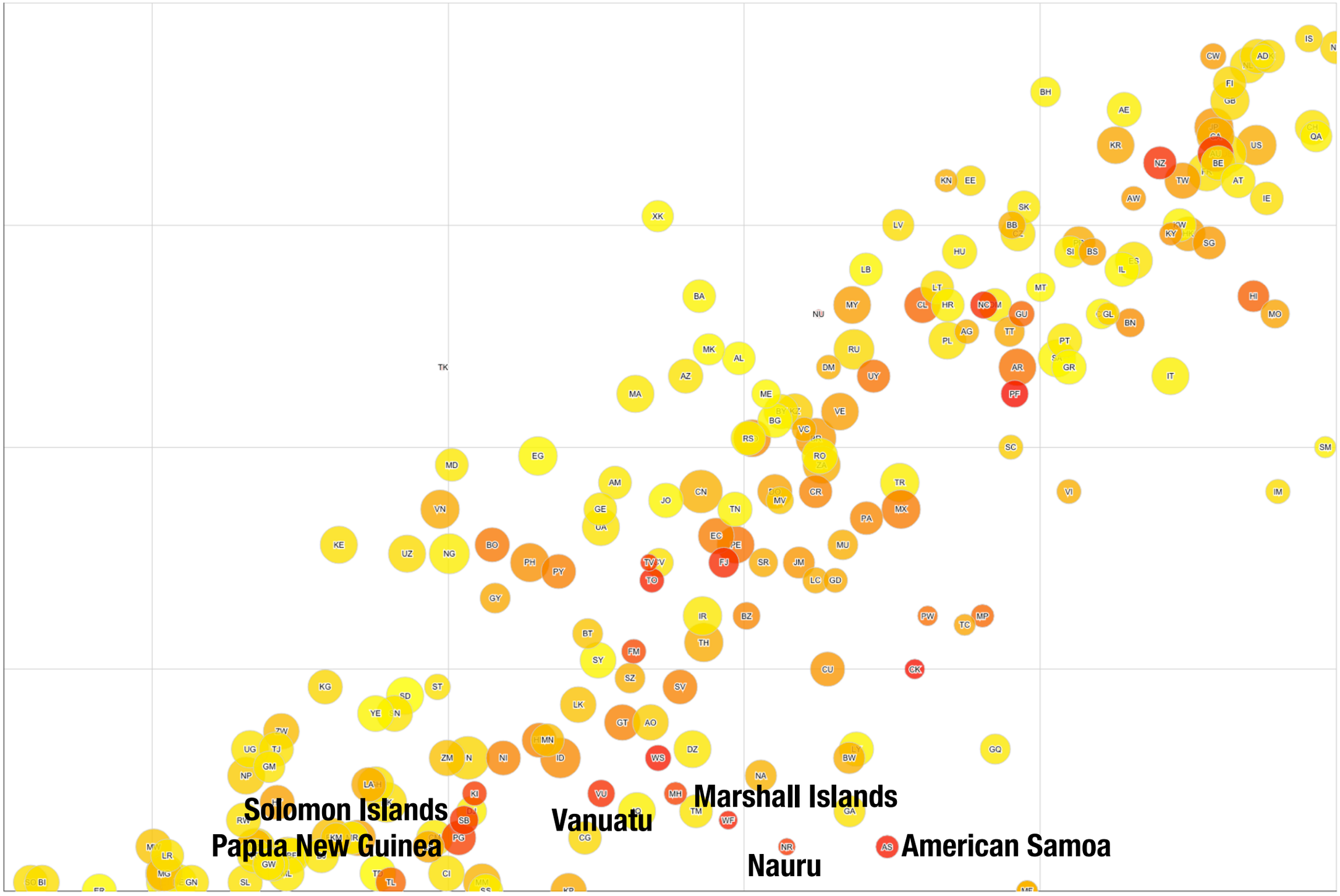
BlueSky American Samoa

- HFC, Wireless, Cellular Operator
- Same Parent as ASH Cable
- Competes against ASH Customers
- ASH FY13 = US $5.8m (800mbps at $600/mbps)
- 768kbps Cable Subscribers Pay US $70/month

BlueSky Performance

Location	Distance	Best RTT	Actual RTT	Ratio
Tokyo	7,617	76.17	240	3.15
Singapore	9,552	95.52	300	3.14
Sydney	4,397	43.97	270	6.14
Ireland	15,435	154.35	280	1.81
Sao Paulo	12,613	126.13	290	2.30
North Virginia	11,330	113.3	190	1.68
Oregon	8212	82.12	140	1.70
Hawaii	4144	41.44	60	1.45
Overall Performance Indicator:				2.67

Internet Uptake



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Pacific Interconnectivity

- Focus on Transit to the nearest big market(s)
- No regard for other Pacific Island countries
  - Vanuatu -> Suva traffic routes via Australia
  - Typically no peering or interconnection on islands
  - In PNG two carriers take two different fibres out
  - Vanuatu Exchange works - due to government help

Interconnectivity Issues

- NZ to Hawaii $/mbps == NZ to California $/mbps
- Vanuatu-Suva cheap, but no good transit ex Suva
- Domestic transit in Fiji, Hawaii is very expensive
- Peering is difficult in Hawaii, impossible in Fiji
- Stopping along the way for big carriers is expensive
- Pacific Interconnectivity today = Market Failure

Real Issues for The Pacific

- Communications between islands suffer
- Communications on-island suffer (WS,FJ,SB,etc..)
- Education Networks performance suffers
- Sub-optimal routing benefits few.
- Market failure compounded by regulatory failure
- High costs could be affecting Internet uptake

Next Steps: ISIF Project

- Document Pacific Economic, Social, & Educational Ties
- Monitor Interconnectivity to/from ~ 60 Pacific networks
- Determine Regional Routing Inefficiencies
- Analyse Benefits of Regional Peering Points
  - Does every country need an exchange? Maybe not.
- Develop a Strategy for Improving Interconnectivity

Project Goals

- Topology of the Internet in the Pacific
- Matrix of inter-island stakeholders & their issues
- Information on the market to benefit users & providers
- Suggestions on where Peering might help networking

How Can You Help?

- Interviews: Tell me your stories, please!
  - Where have things gone right?
  - Where have things gone wrong?
- RIPE Atlas Probes: Host one, please!
  - They use around ~10kbps of traffic
  - Only need to allow ping, traceroute, http(s)

Thank You!

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