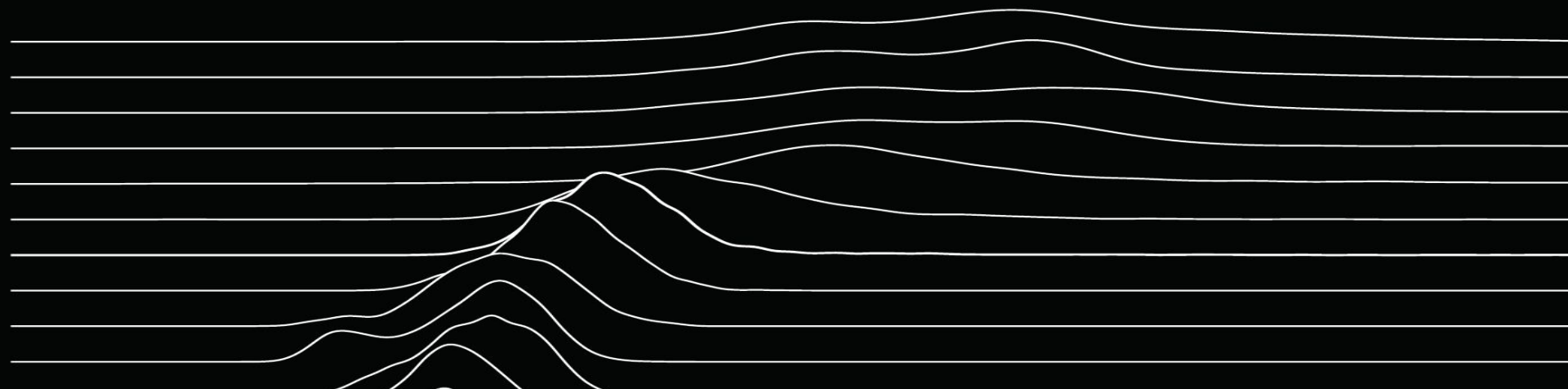


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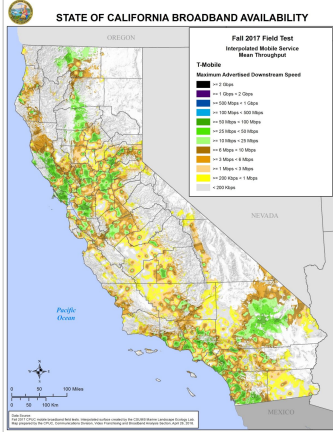
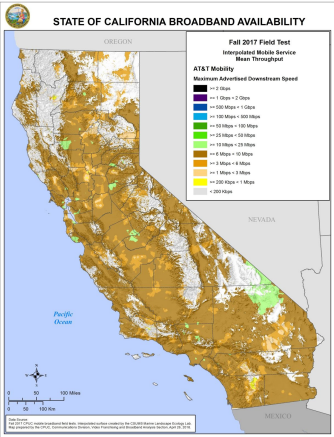
Measuring Broadband in CA

Six Years of CalSPEED | Ken Biba/Novarum



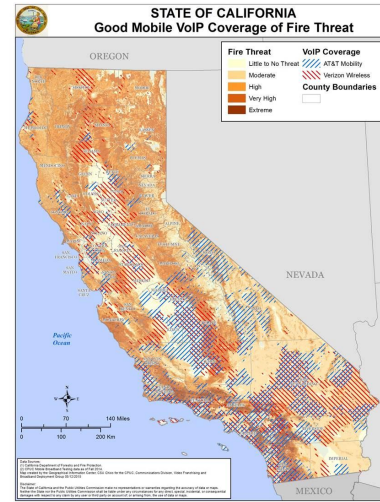
Essential CA Broadband Metrics

- Mobile -> wired -> WiFi
- California Public Utility Commission
 - Partnership w/Novarum and CalStateU Monterey + Chico
- 95% of CA has no crowds, so we sample
 - ~2000 CA locations, every six months, student collection
 - latest devices (smartphones+), four carriers, multiple servers
 - 2012 - present
- Open source, collaborative, user perspective
 - iPerf tool based, AWS measurement servers
 - Tested throughput to ~< 1 Gb/s
 - Innovative interpolated broadband maps: thruput, latency, VoIP, video, etc
 - 6 years, tens of millions of measurements, same locations, same servers
- Information and maps for decision makers



Results with Impact

- Quality and coverage: facts vs opinion
- Improved allocation of state broadband divide \$
- Some carriers are **MUCH** better than others
- Location matters: user **and** content
- Rural/tribal users **consistently** ~3/5ths of urban user
- Wireless is not a wire replacement
 - Mission critical actions
 - ~**80%** of CA high-extreme fire risk areas w/ **no** mobile VoIP
 - ~**40%** of SF Bay area 911 calls w/ **no** mobile VoIP



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