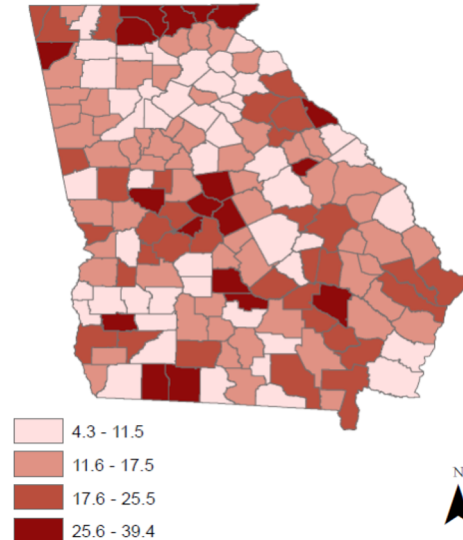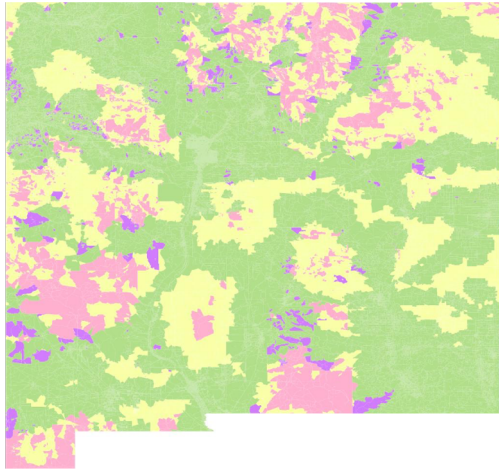# Measuring and Improving Underserved Community Access

Beatriz Palacios Abad (GT), Elizabeth Belding (UCSB), Morgan Vigil-Hayes (NAU), Ellen Zegura (GT)
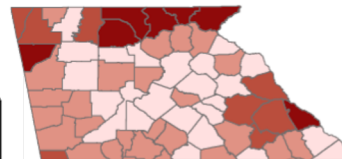
Context: Two measurement examples

LEFT: FCC and crowdsourced Verizon LTE coverage comparison in New Mexico; Yellow and Purple are DISAGREEMENT

RIGHT: Cellular infrastructure increases in Georgia, Jan 2020-Sept 2020

Context: Two measurement examples

Block type	Total blocks	Verizon	T-Mobile	AT&T	Sprint
Non-Tribal Rural	93680	13974	8909	8276	1162
Non-Tribal Urban	41872	0	0	217	25
Tribal Rural	30588	4020	8480	3448	220
Tribal Urban	2469	0	0	2	0

Number of census blocks where there is coverage according to the FCC but no coverage according to Skyhook

- 4.3 - 11.5
- 11.6 - 17.5
- 17.6 - 25.5
- 25.6 - 39.4

N

LEFT: FCC and crowdsourced LTE coverage comparison in New Mexico; Yellow and Purple are DISAGREEMENT

RIGHT: Cellular infrastructure increases in Georgia, Jan 2020-Sept 2020

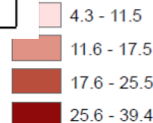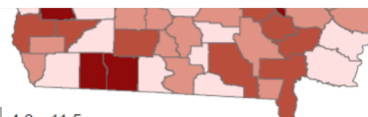# Measurement Barriers

- Rapidly changing landscape
- Hard-to-reach areas: If crowdsourcing is the answer (cf. FCC), how do you crowdsource where there isn't a crowd?
- Data collection and presentation to empower communities
- Complex governance (sovereignty, tribal lands) that we should neither ignore nor conclude is too complicated
- Research community culture and shiny object fascination: "Measuring LTE coverage is not an interesting problem" (paper review)

What We Need

- Recognition that achieving equitable access requires technical advancements in measurement. ("If you can't measure it, you can't improve it." -- Peter Drucker)
- Research-community-led standards and best practice bakeoffs to create an access measurement ecosystem
- Cross-agency partnerships to support high quality, longitudinal measurement and reporting (NSF, FCC, Bureau of Indian Affairs)
- Additional funding for socio-technical work such as the Smart and Connected Communities program