

Route Recalculating...

Investigating changes in primary health care access
in Hawke's Bay, New Zealand following Cyclone Gabrielle



Public Health



A 2011 protest about health care in New York City. (Photo: Spencer Platt/Getty Images)

From Belluz, Julia. "Why Canadians and Americans Will Never Agree on Health Care." Vox. July 1, 2015. Accessed April 15, 2024

Today!

Public Health



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Today!

Extreme Events



Driveway in Middlebury, Vermont after heavy rain. Grace Sokolow 2023.

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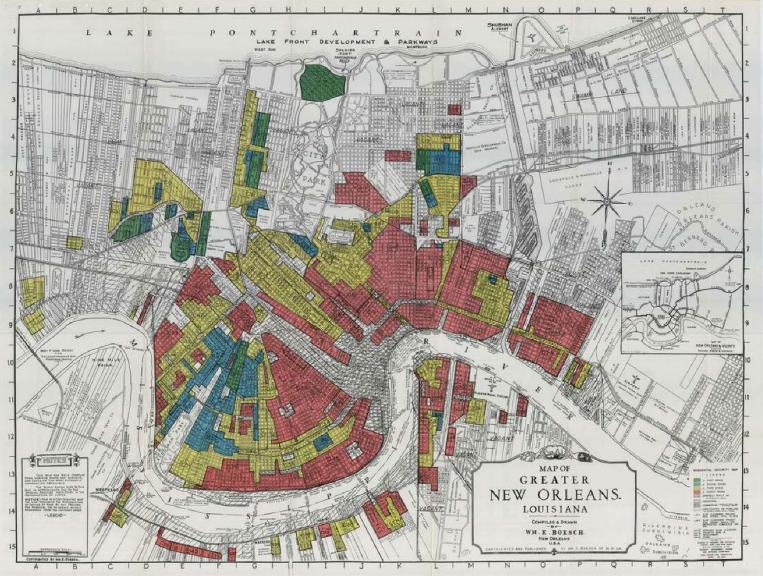
Today!

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Social Geographies



The original HOLC map of New Orleans. (Mapping Inequality). From Domonoske, Camilla.

"Interactive Redlining Zooms in on America's History of Discrimination." NPR. October 2016. Accessed April 16, 2024

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Today!

Computational Methodologies



XKCD.
From Patrizi4, Pinterest. Accessed April 16, 2024

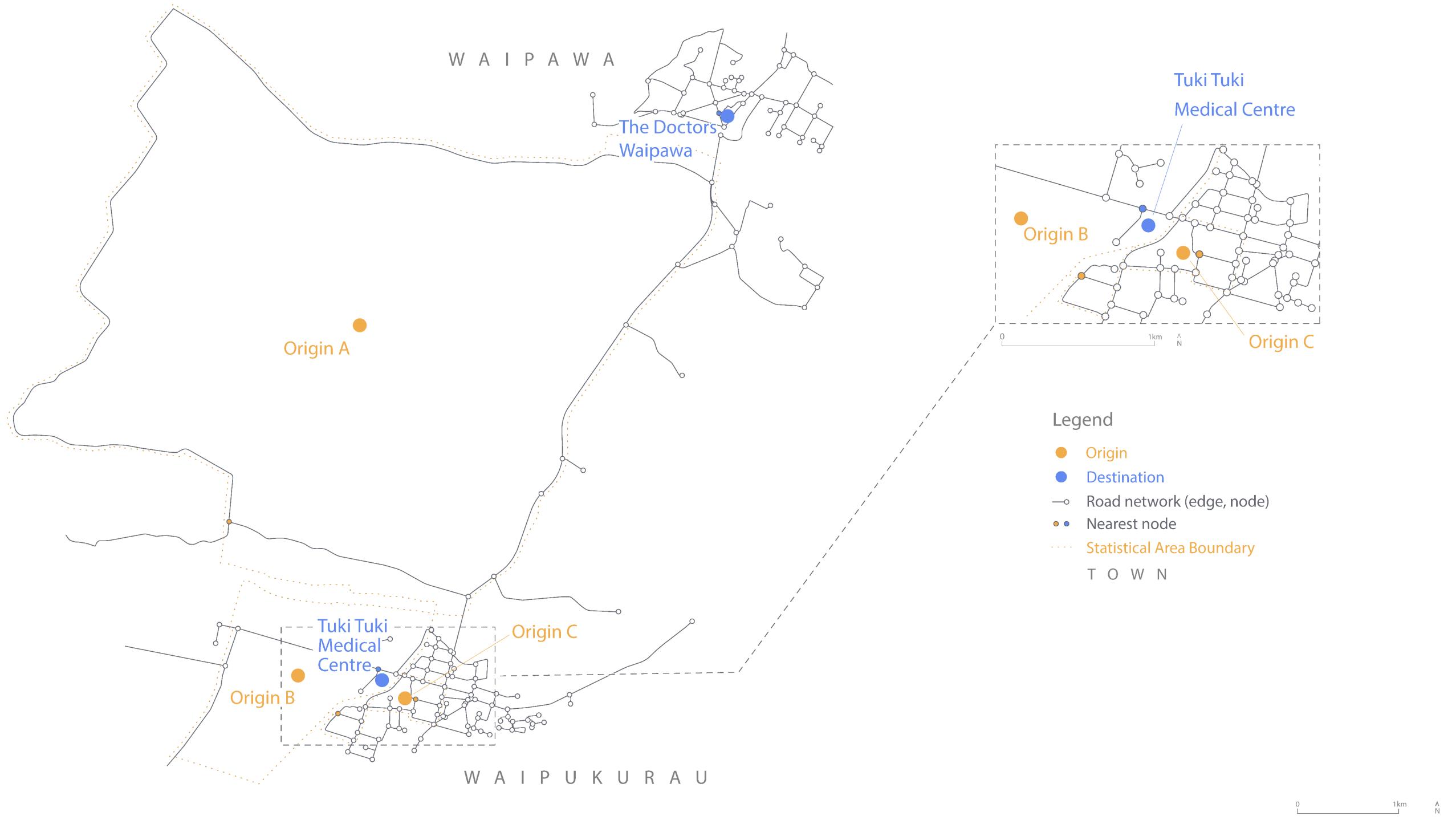


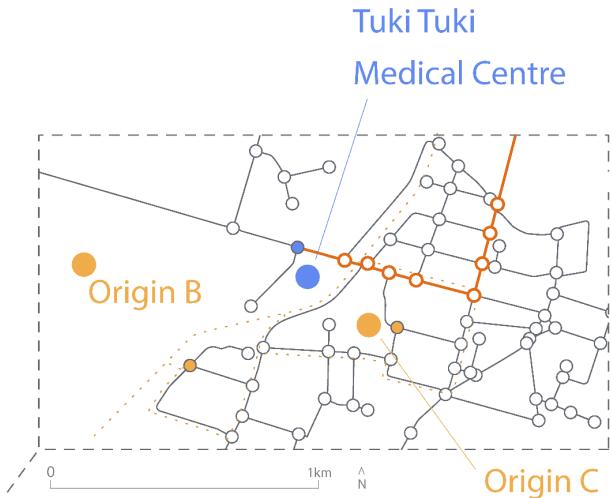
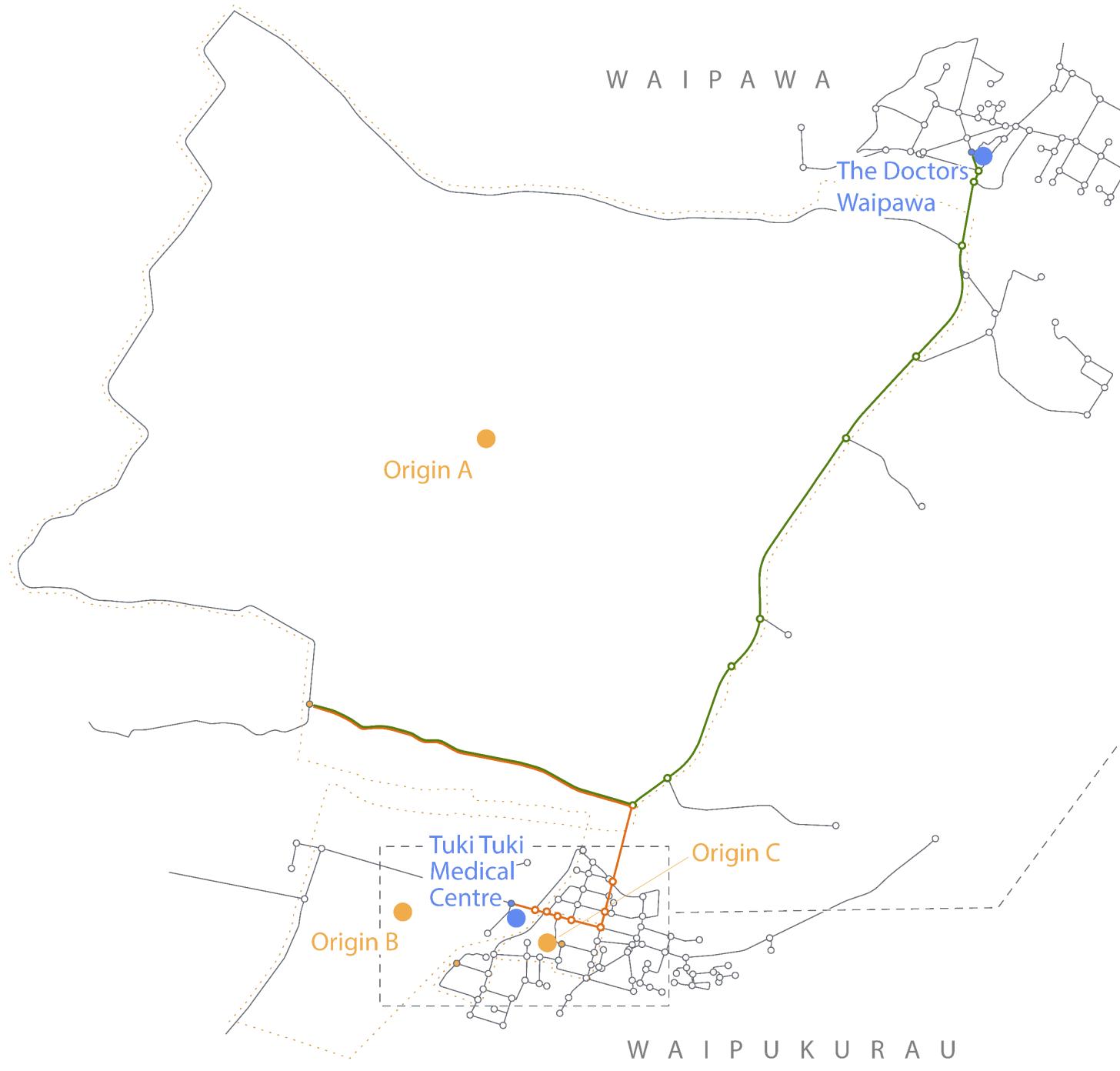
Cyclone Gabrielle

Research Questions:

- 1.** How did road access to primary care facilities change as a result of Cyclone Gabrielle?

- 2.** What characterizes the communities affected?





Legend

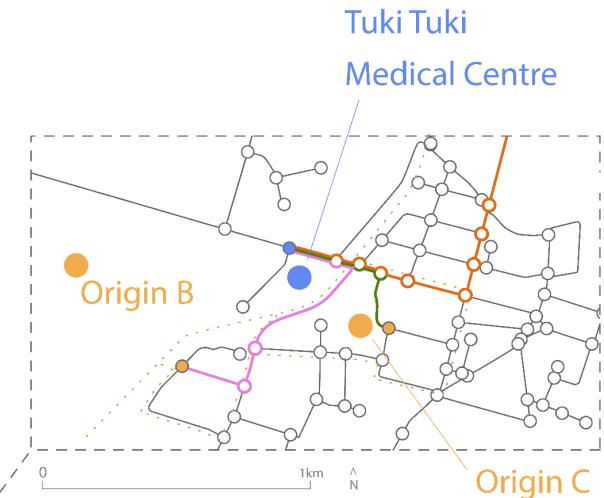
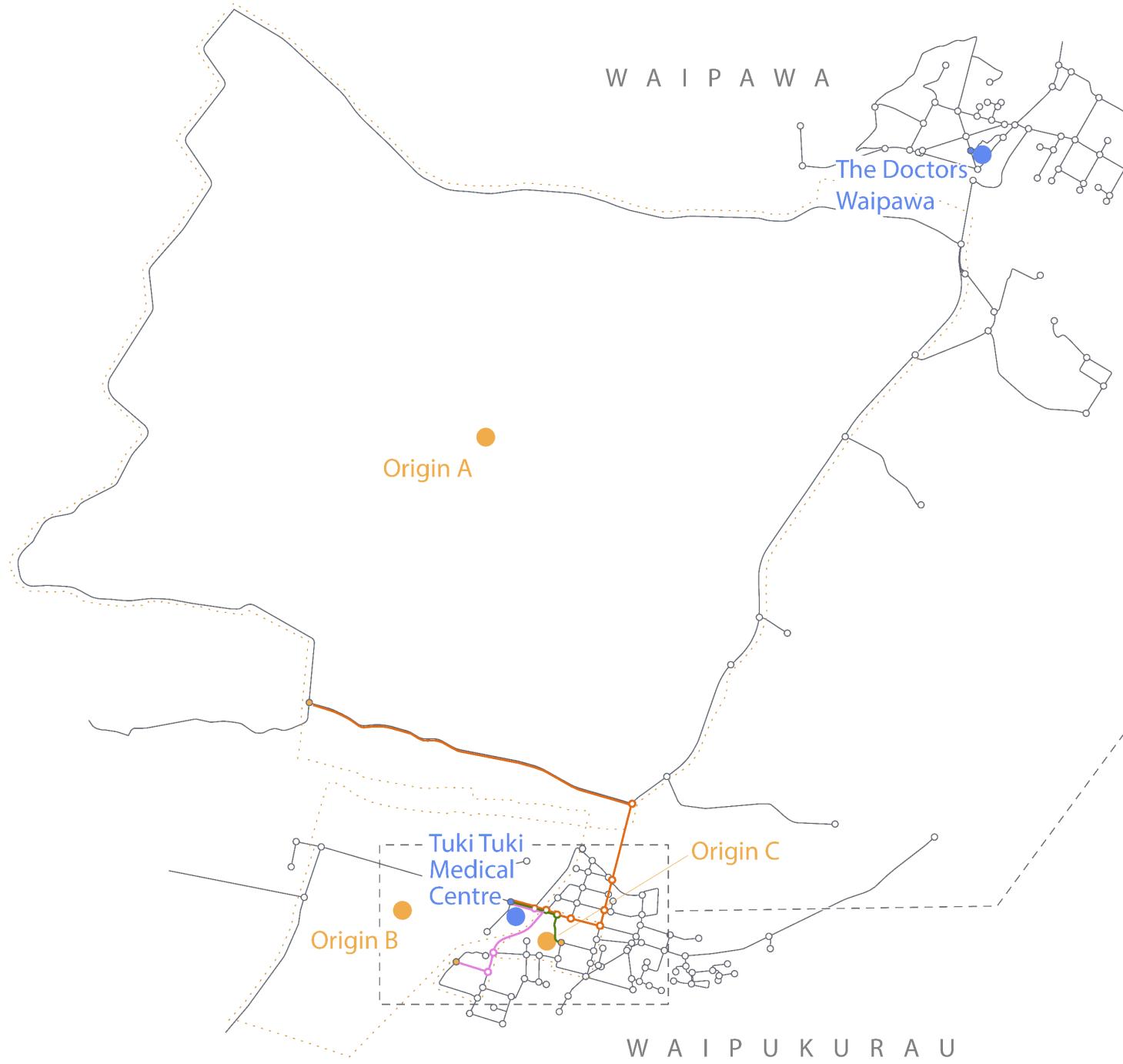
- Origin
- Destination
- Road network (edge, node)
- Nearest node
- Statistical Area Boundary

T O W N

Routing

- Origin A - Tuki Tuki Medical Centre
- Origin A - The Doctors Waipawa

0 1km N



Legend

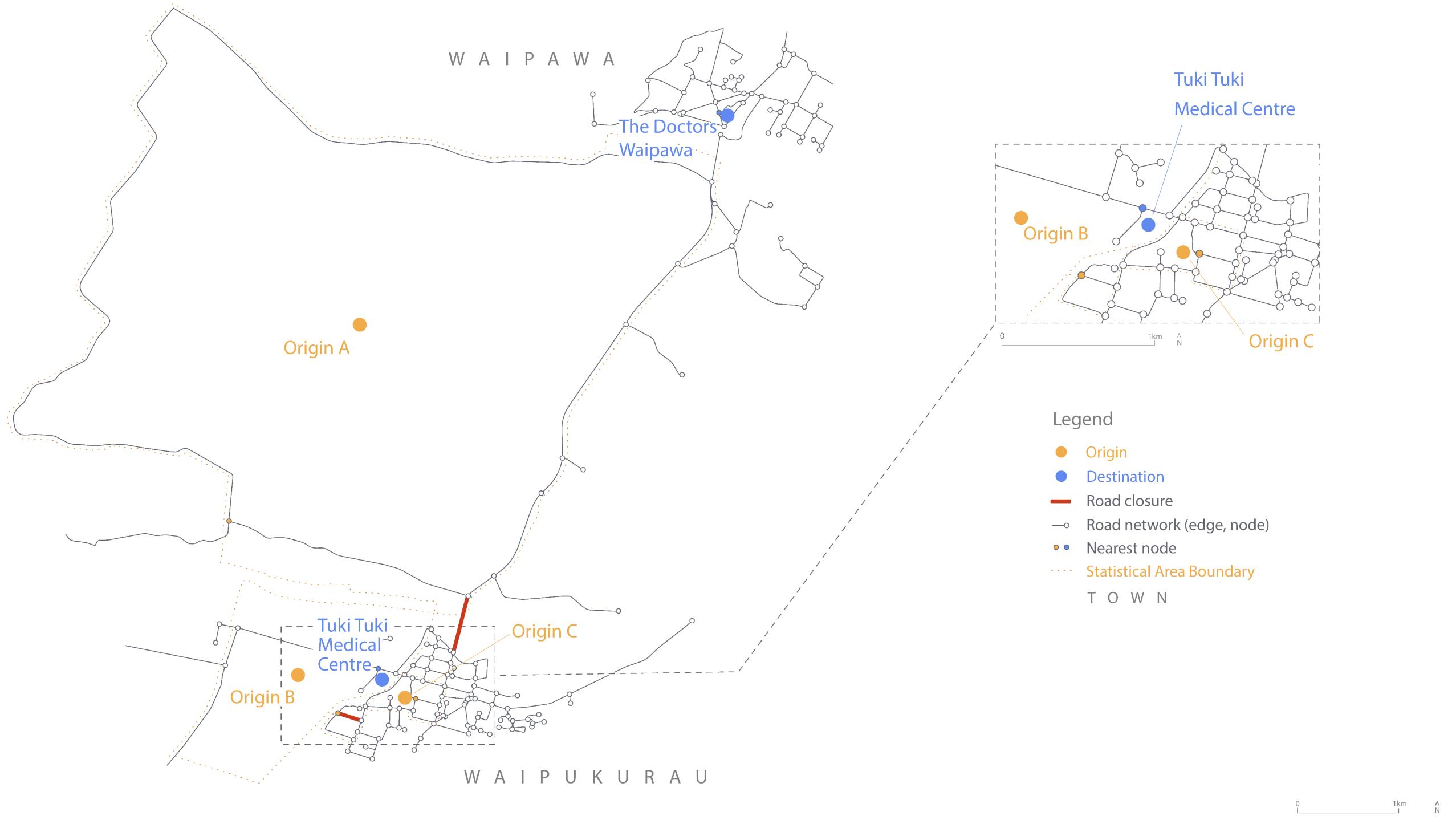
- Origin
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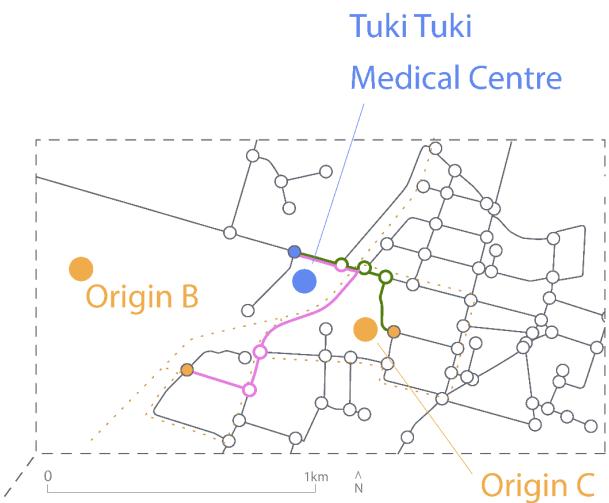
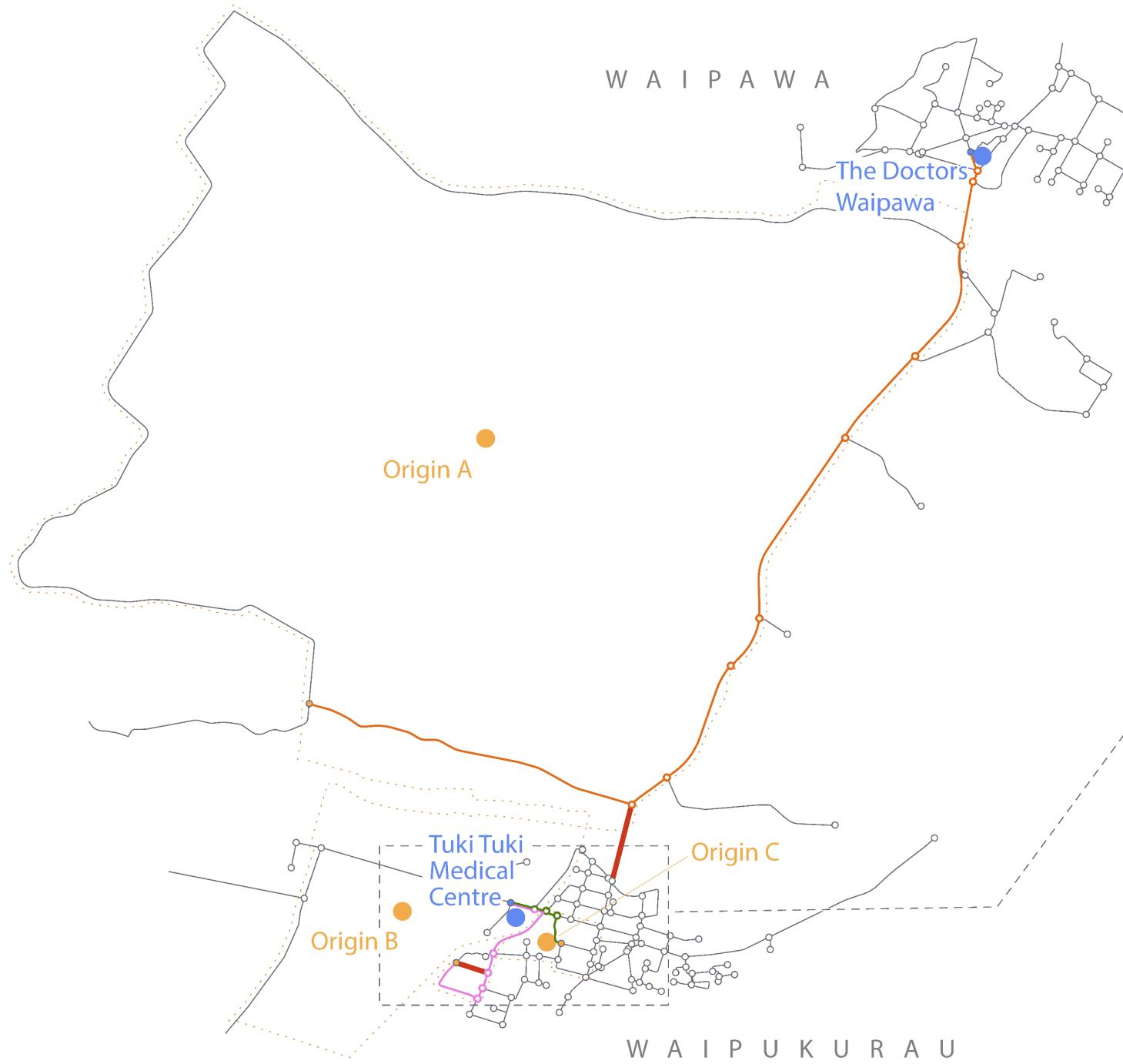
T O W N

Routing

- Origin A - Tuki Tuki Medical Centre
- Origin B - Tuki Tuki Medical Centre
- Origin C - Tuki Tuki Medical Centre

0 1km N





Legend

- Origin
- Destination
- Road closure
- Road network (edge, node)
- Nearest node
- Statistical Area Boundary

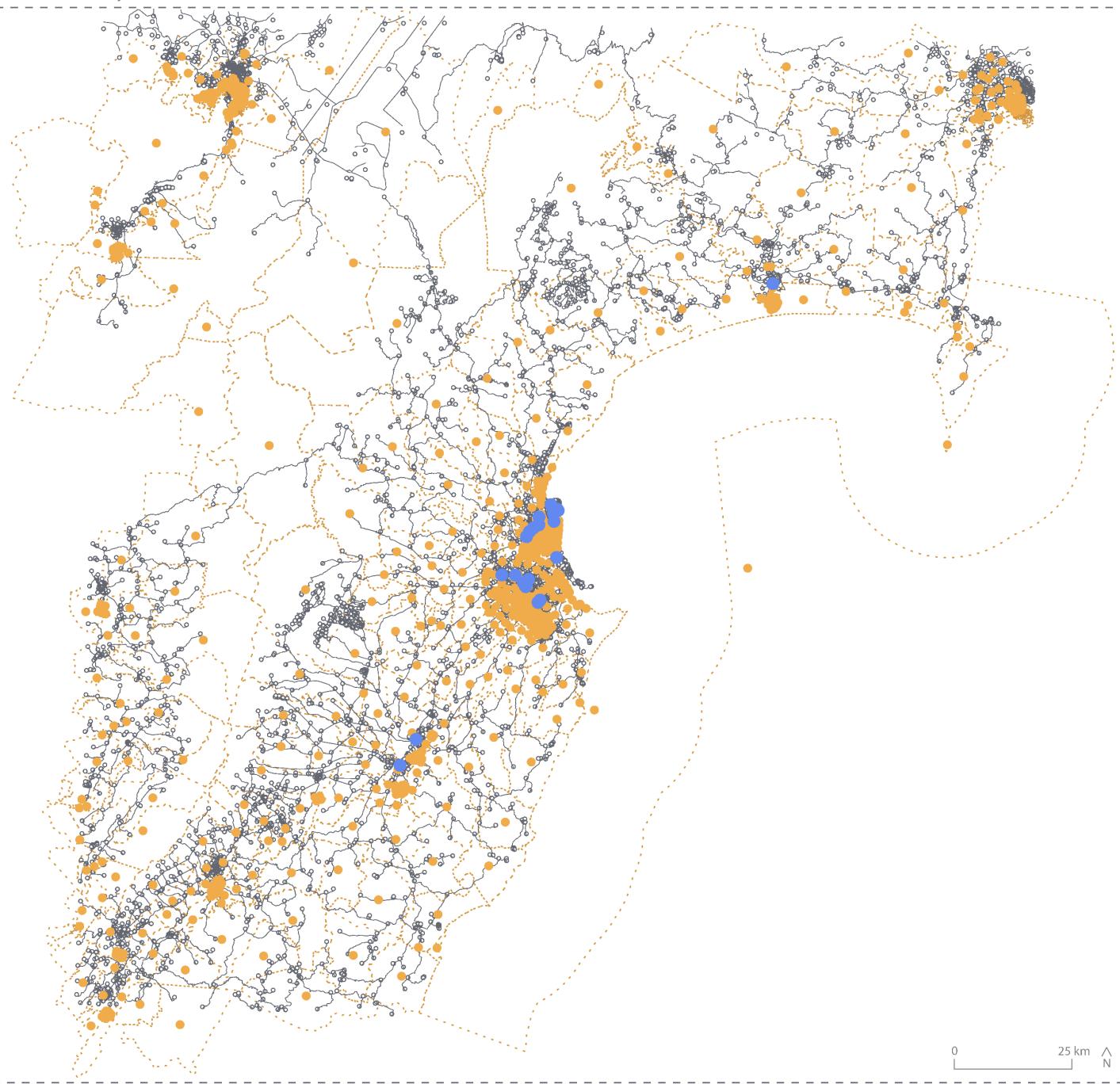
T O W N

Routing

- Origin A - The Doctors Waipawa
- Origin B - Tuki Tuki Medical Centre
- Origin C - Tuki Tuki Medical Centre



Hawke's Bay, New Zealand



Legend

- Centroid
- Statistical Area Boundary
- Primary Care Provider
- Road network (edge, node)

Data Sources: Te Oranga o Te Matau-a-Māui Health Hawke's Bay, Stats NZ, Open Street Maps, Toitū Te Whenua Land Information New Zealand

Out of 1471 statistical areas...

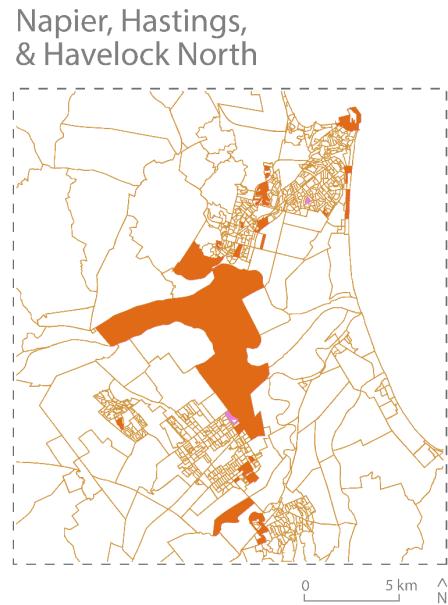
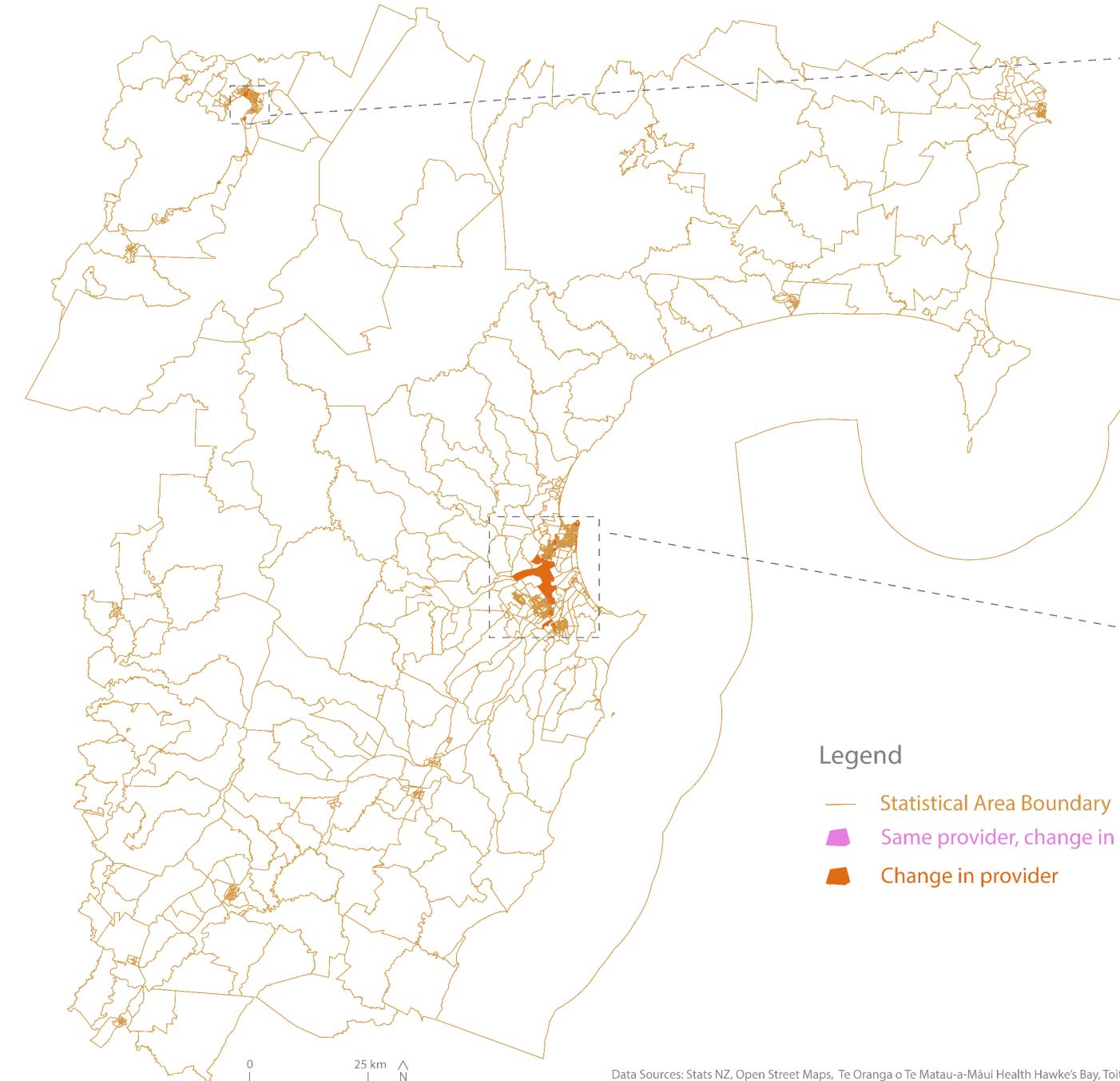


57 were rerouted to new providers

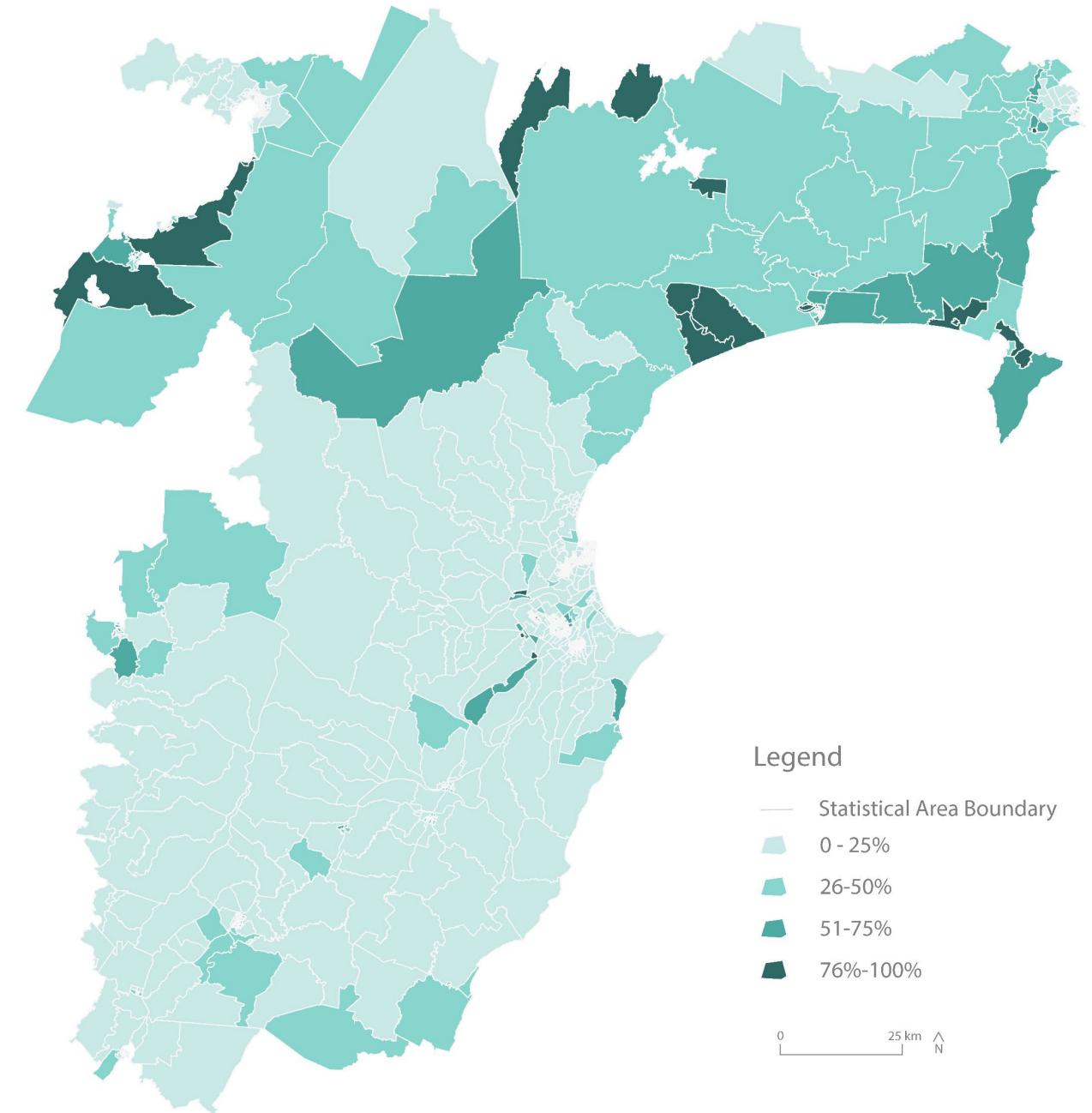
&

5 had to travel further to their original provider

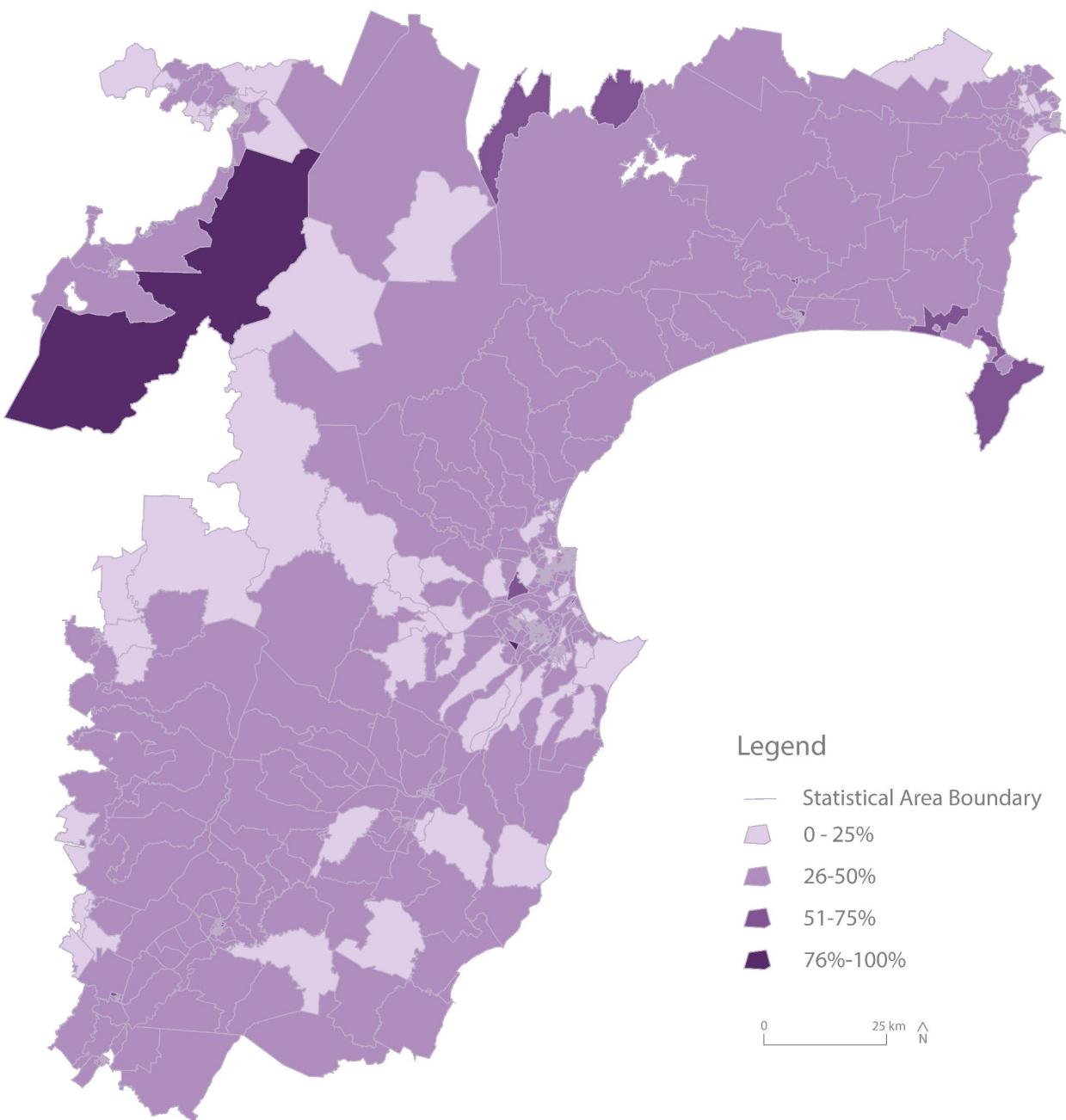
Impacted Statistical Areas



Percent Māori (self identified ethnicity)

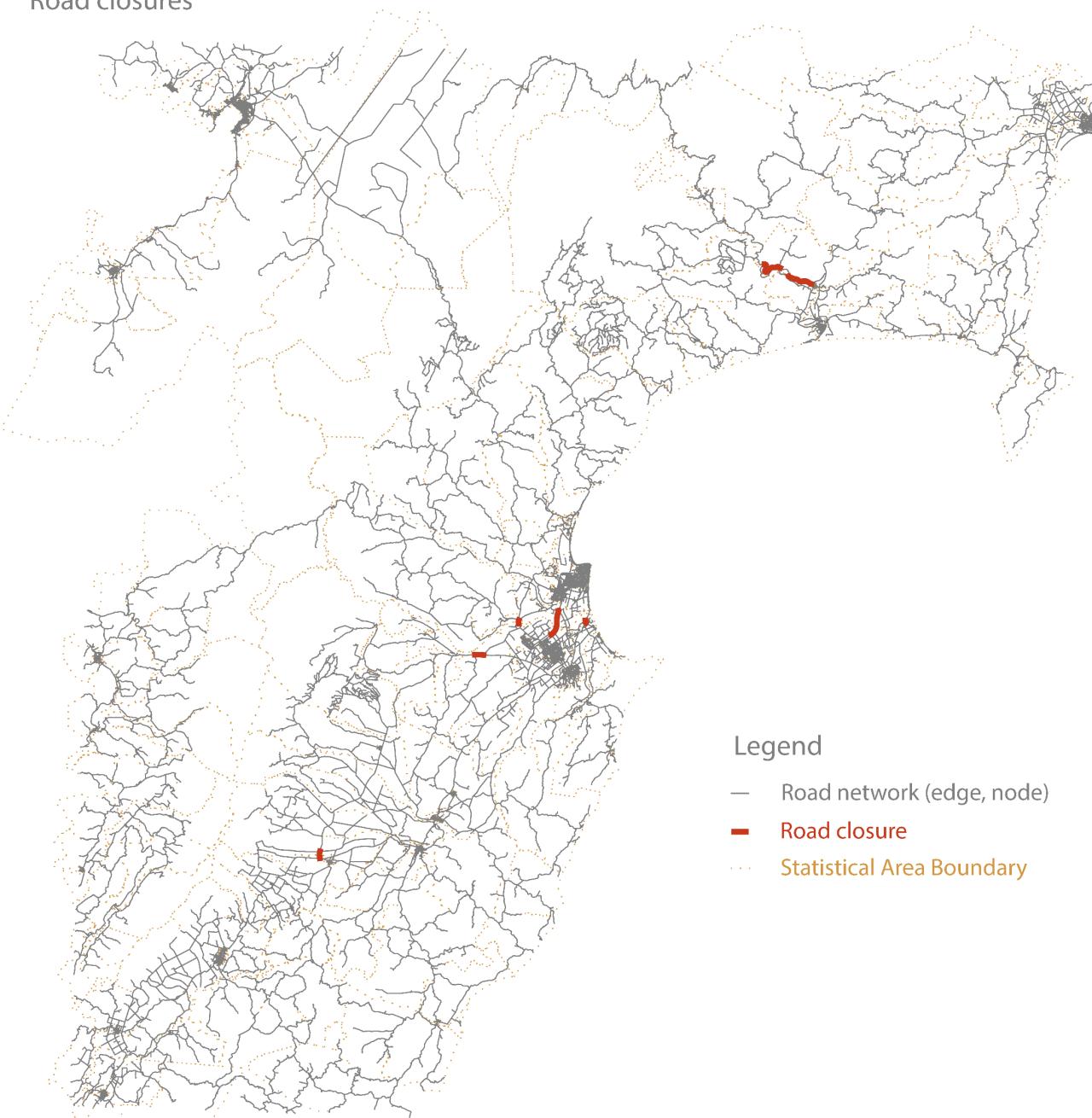


Percent Low Income



Population Characteristic	T-Test Statistic	P-Value
Percent Māori	0.76	0.45
Percent Pacifica	1.19	0.23
Percent low income	0.5	0.61

Road closures

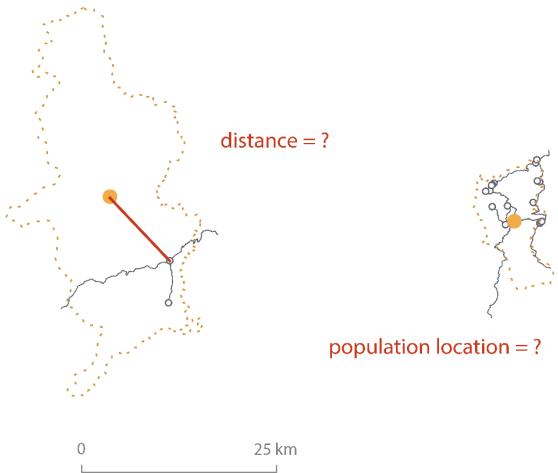


Improvements:

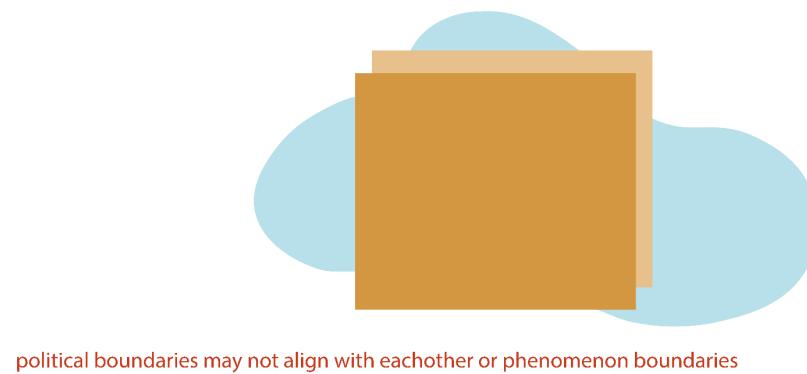
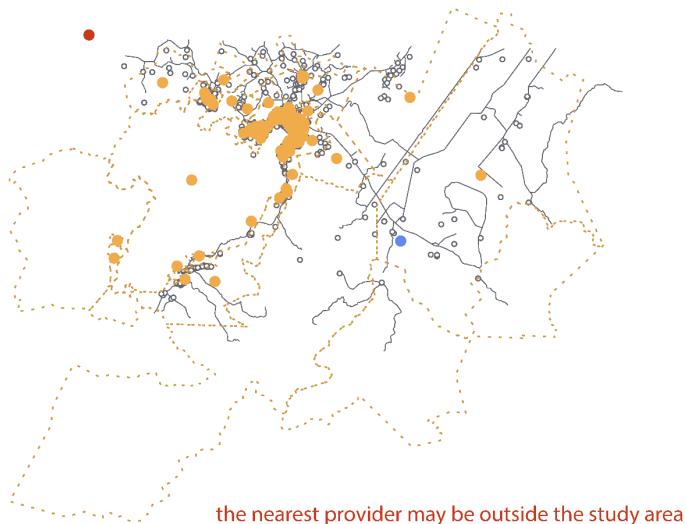
- Fit number of road closures to service area
- Close entire roads

Further Improvements:

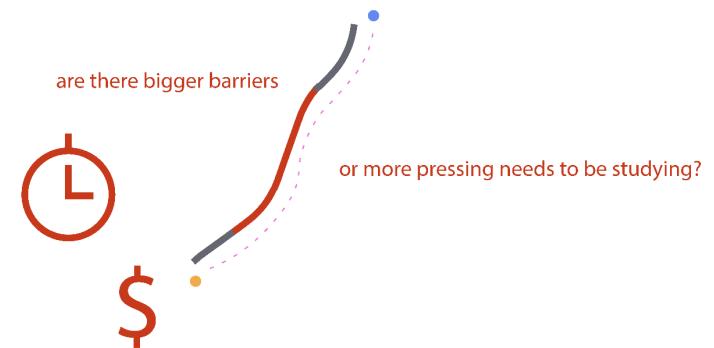
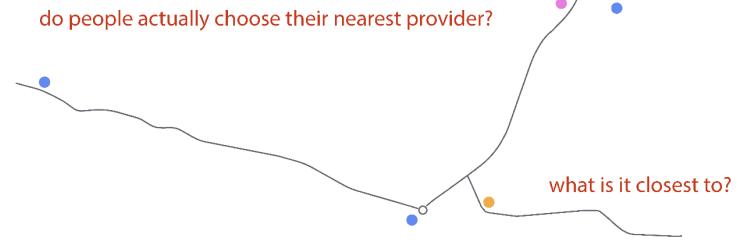
Centroid Placement



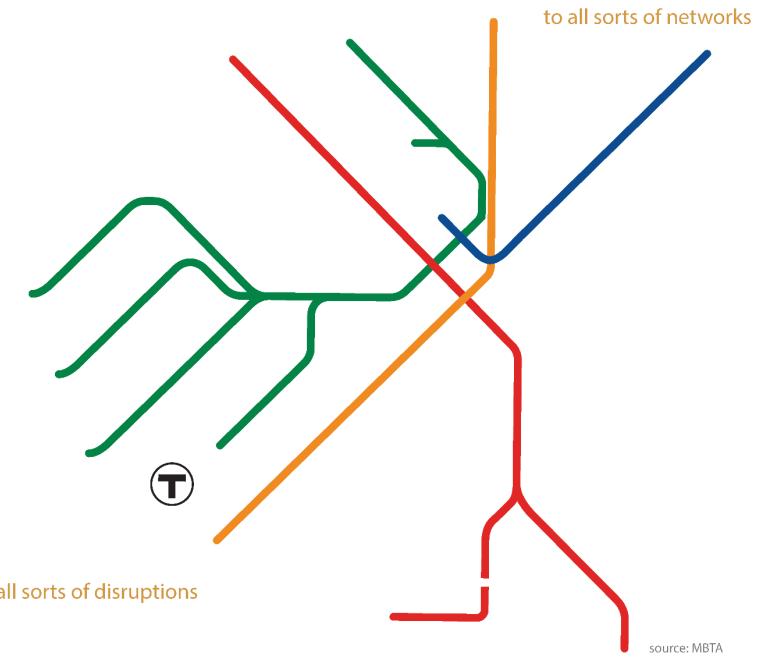
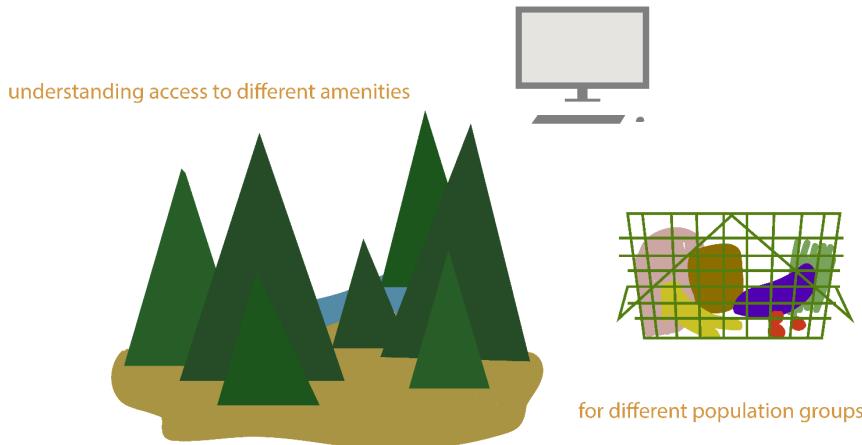
Edge Effects



Theoretical Constraints



Varied applications



Special Thanks to...

Pete Nelson

Joe Holler

Caitlyn Myers

Pete Johnson

The sandbox crew ❤

Middlebury Geography department

Spring Symposium Organizers

The Sokolow Anderson Hung Boone Clan

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... and YOU! For being here today 😊