

Transport Resilience Research

Event: Built Environment – Horizontal Infrastructure Research Day
Date: 30 June 2021
Venue: The University of Auckland
Speaker: Assoc. Prof. Seosamh Costello



ENGINEERING



Criticality of Auckland's Road Network

BE(Hons) students: Kester Rebello and Karan Jaggi

Supervisor: Costello



South Island Road Network Resilience Assessment

PhD Student: Mohammad Aghababaei

Supervisors: Costello and Ranjitkar



Auckland Mass Evacuation Travel Time Model

PhD Student: Mujaddad Afzal

Supervisors: Ranjitkar and Costello



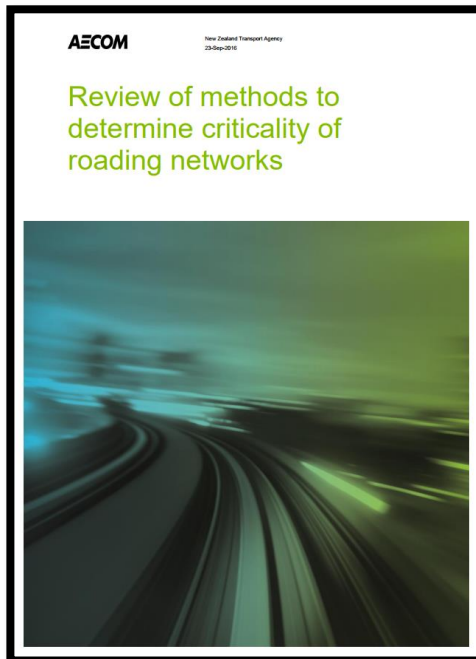
Criticality of Auckland's Road Network



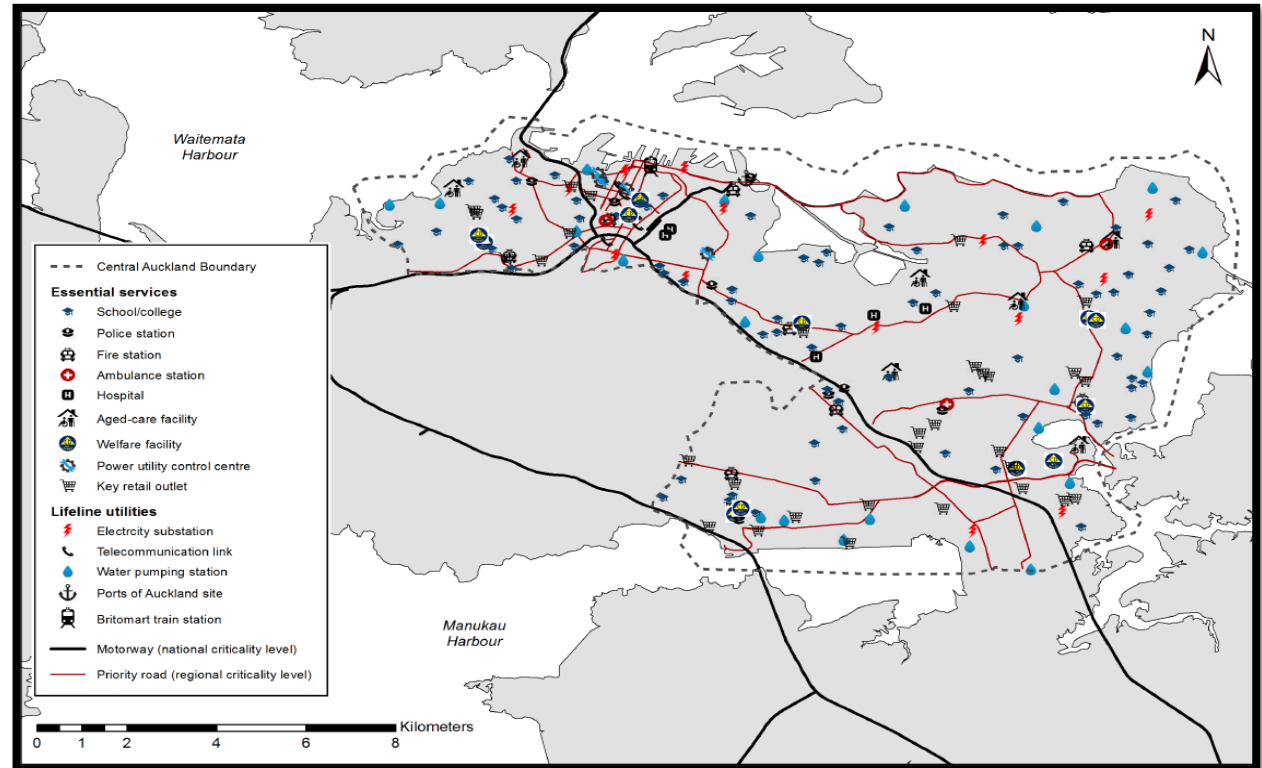
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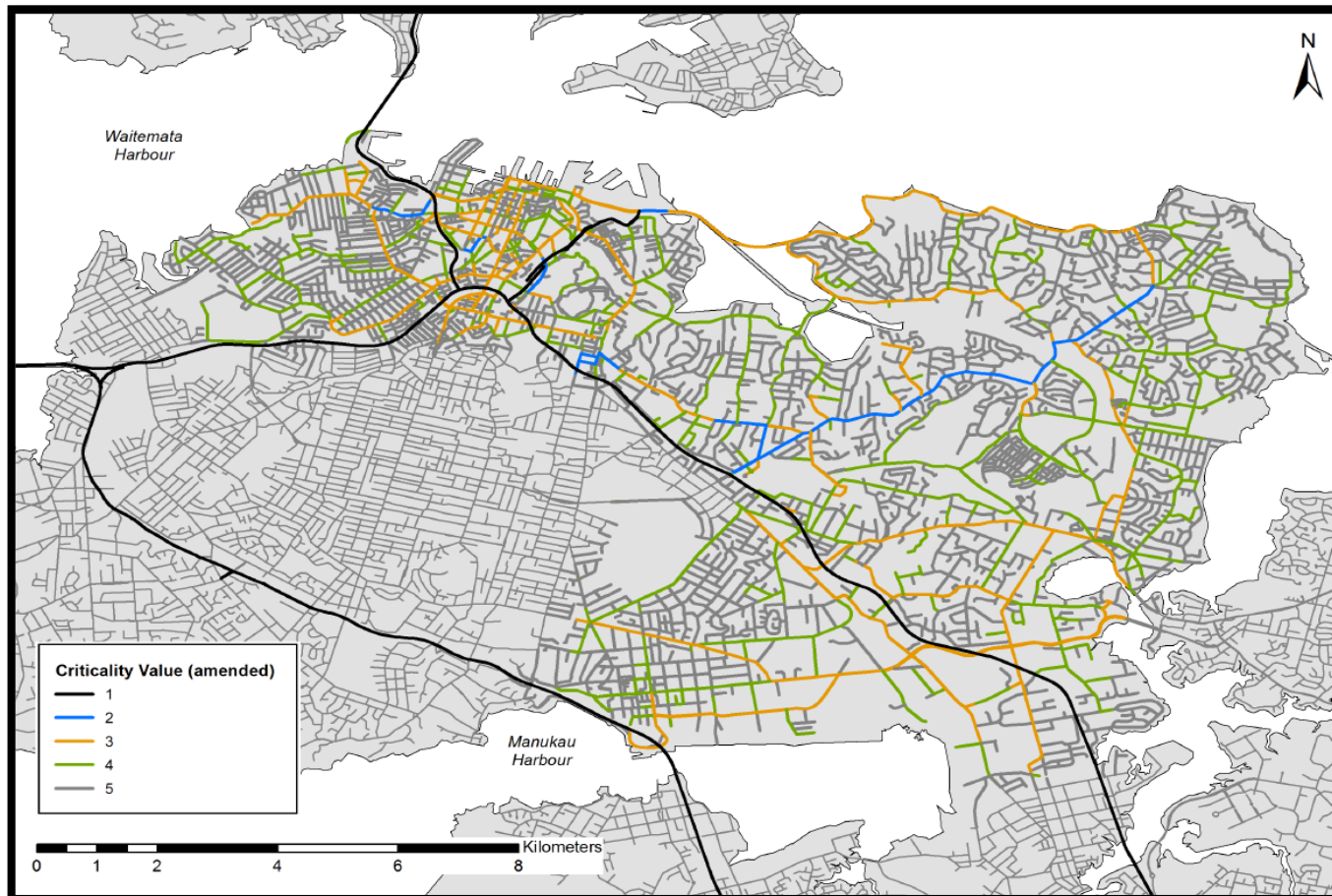
Criticality



Source: Hughes, 2016



Source: Rebello et al. (2018)



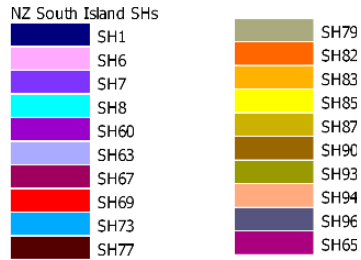
South Island Road Network Resilience Assessment



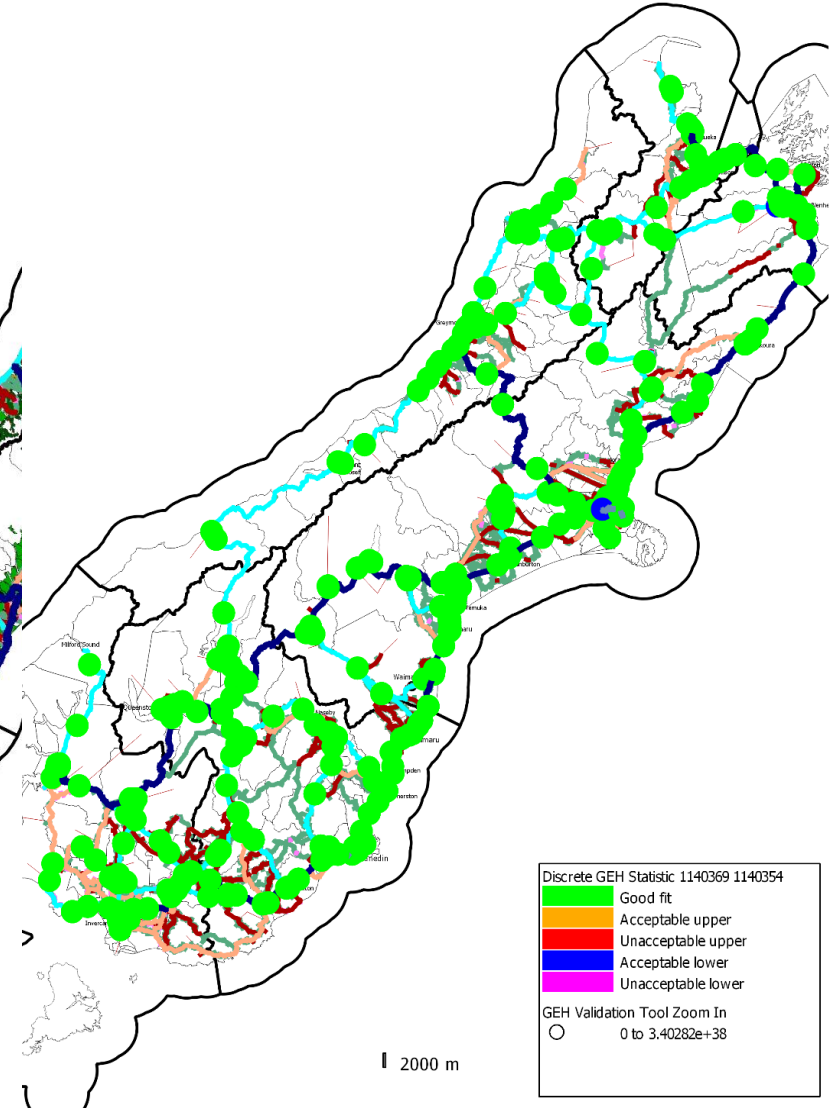
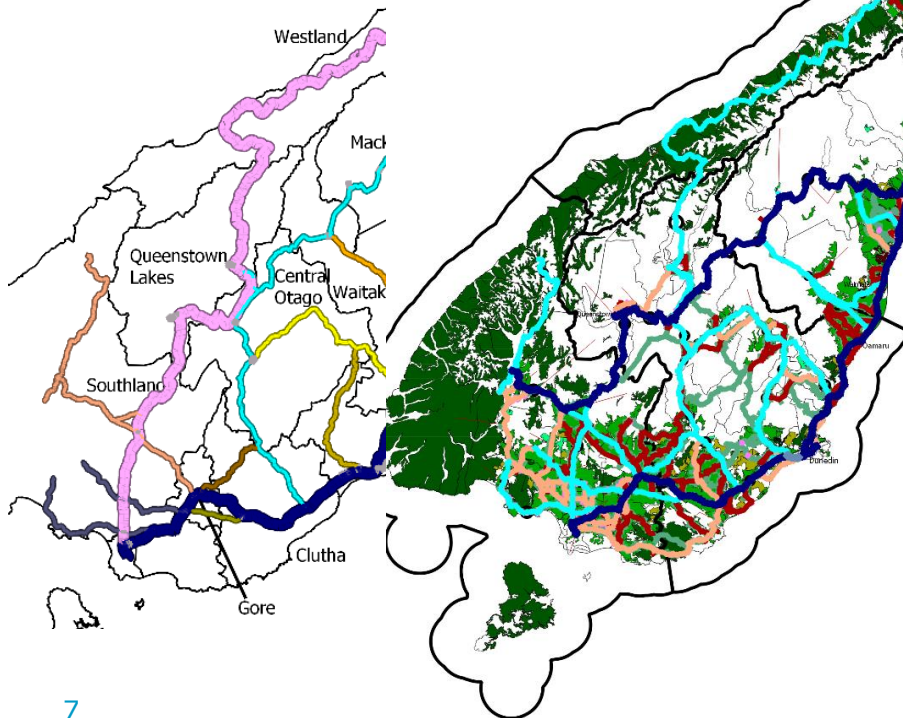
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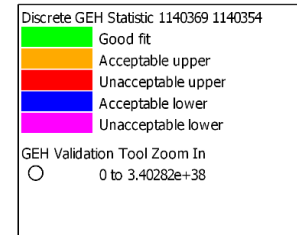
Model Development and Calibration



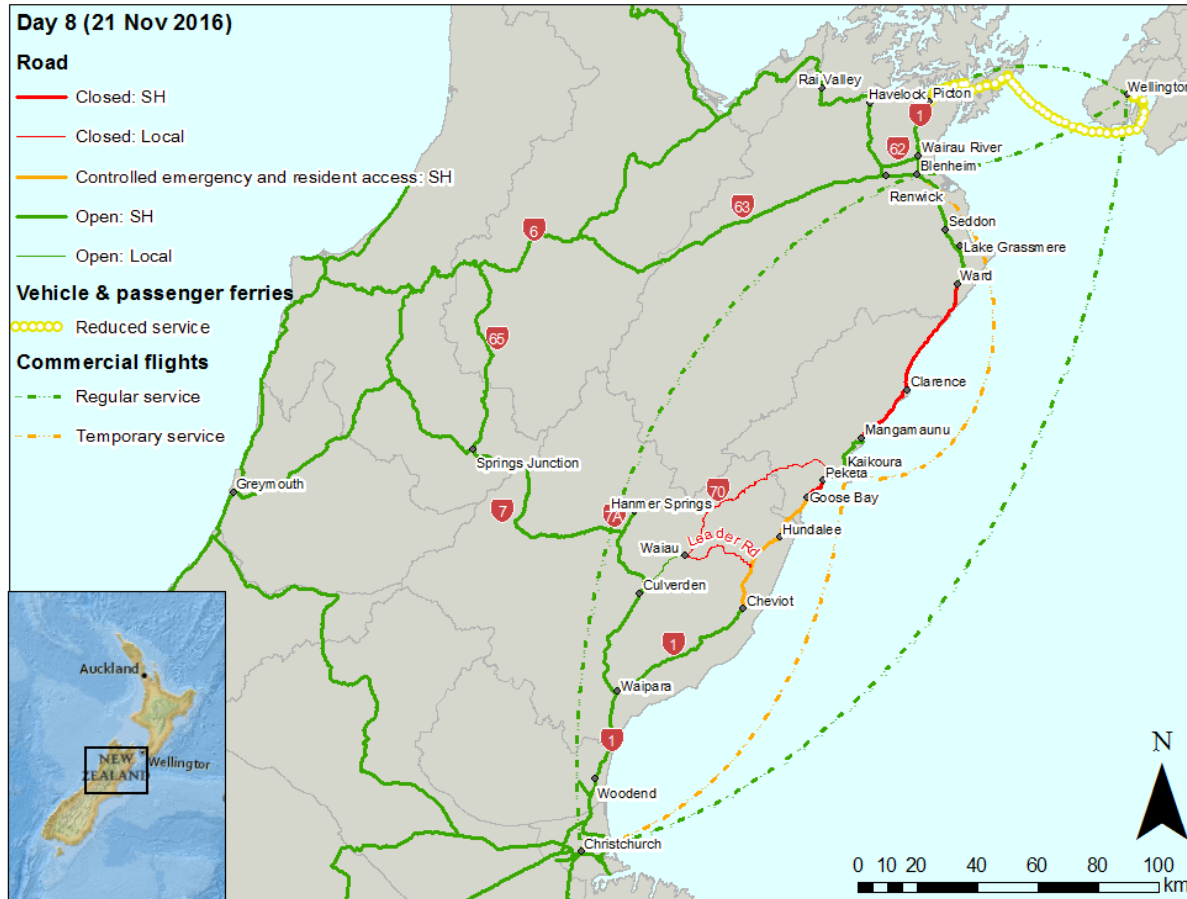
2000 m



2000 m



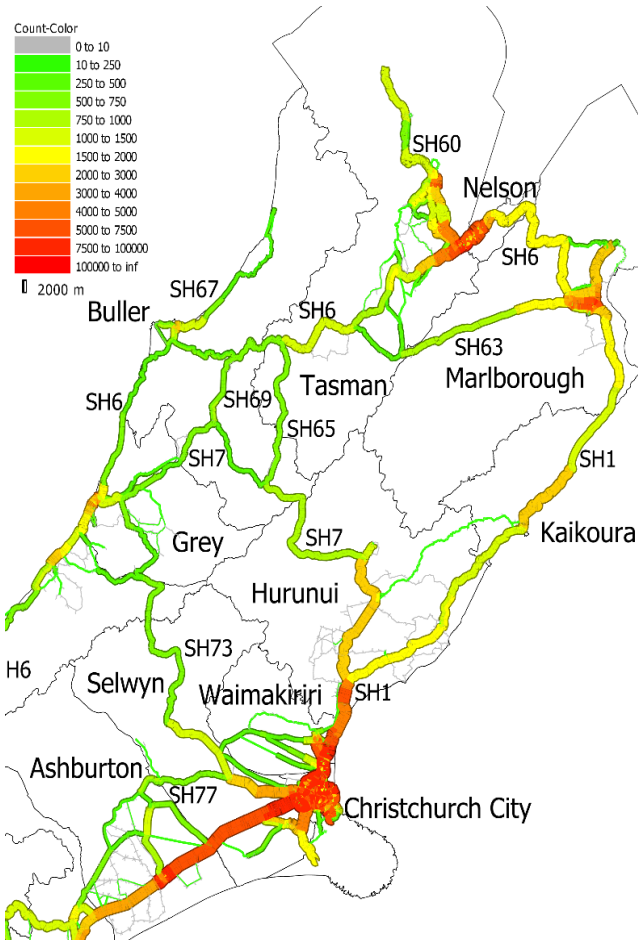
Model Validation (Kaikoura EQ)



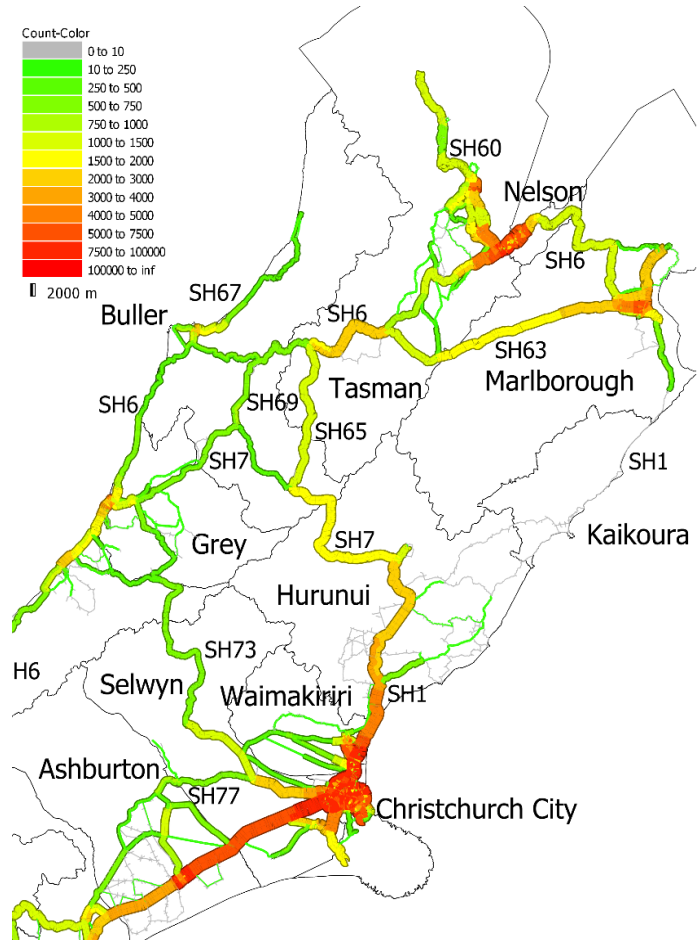
Source: Davies et al. (2017).

Kaikoura EQ

BAU

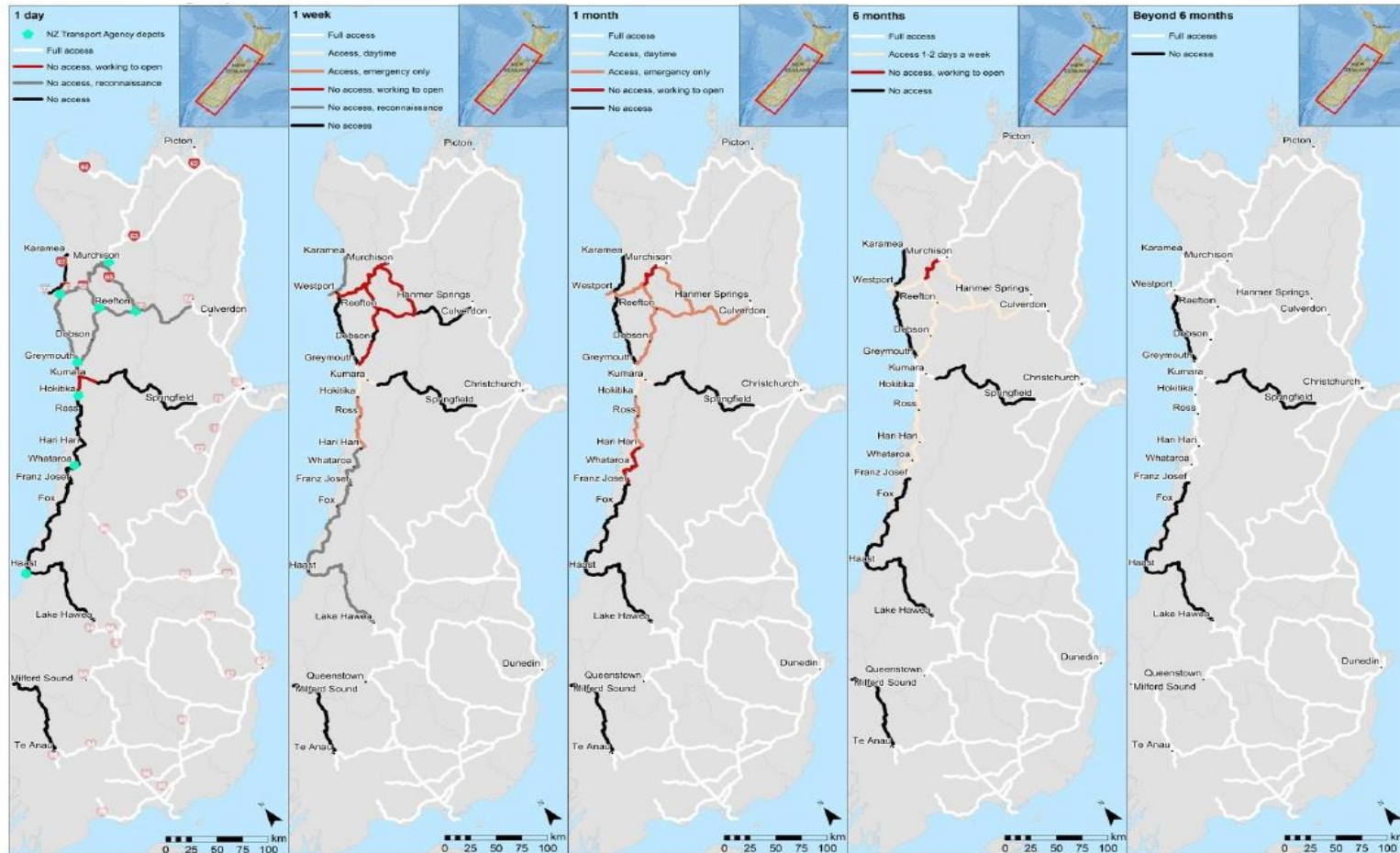


Day 8



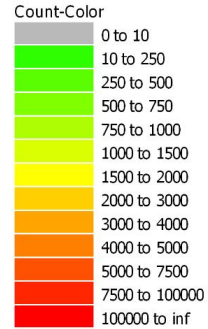
Source: Aghababaei, Costello and Ranjitkar (2020a).

AF8 Scenario

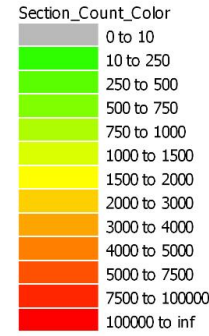
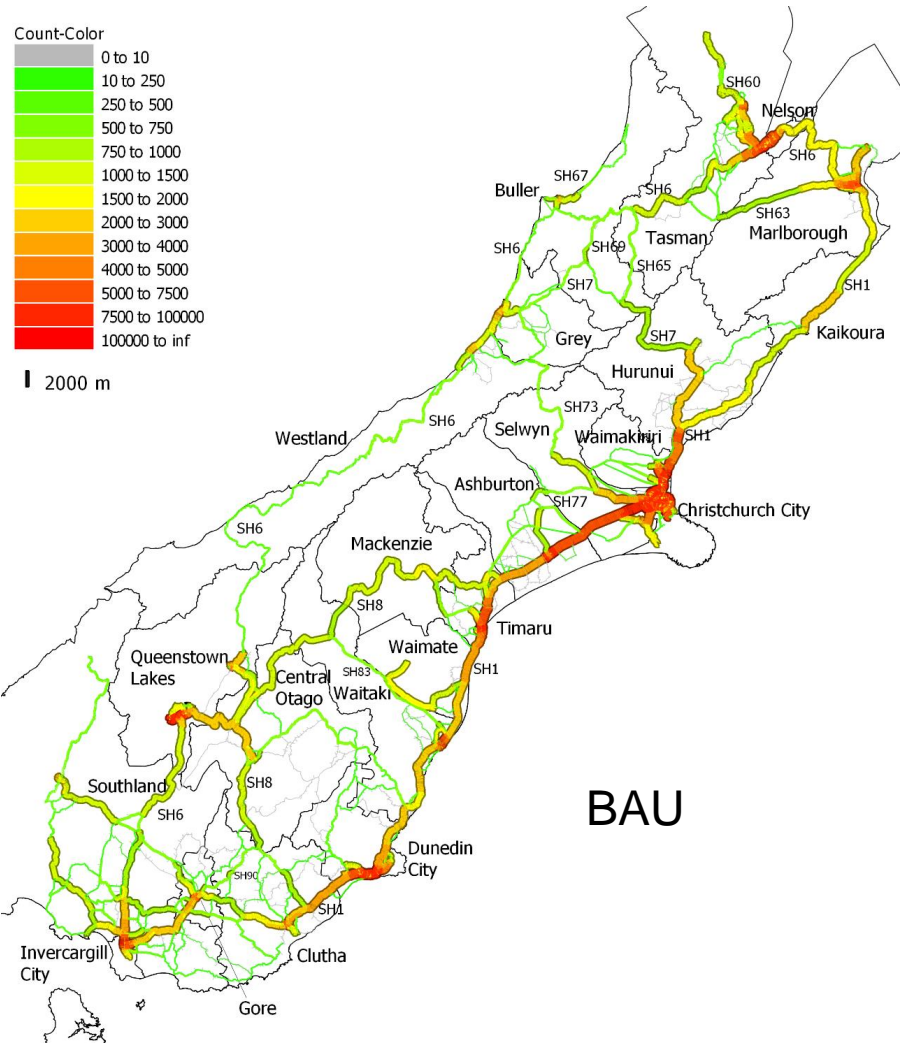


Source: Davies (2019) and Davies et al. (2021).

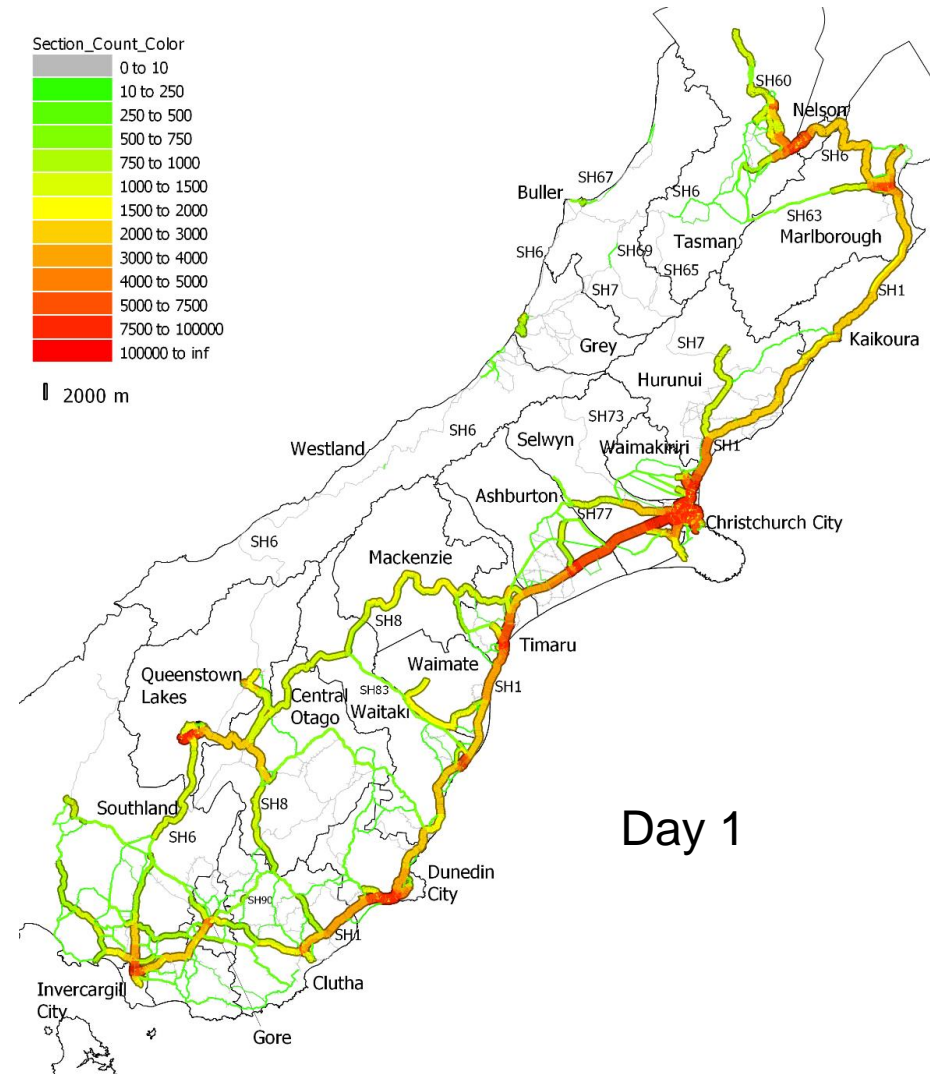
Day 1



2000 m

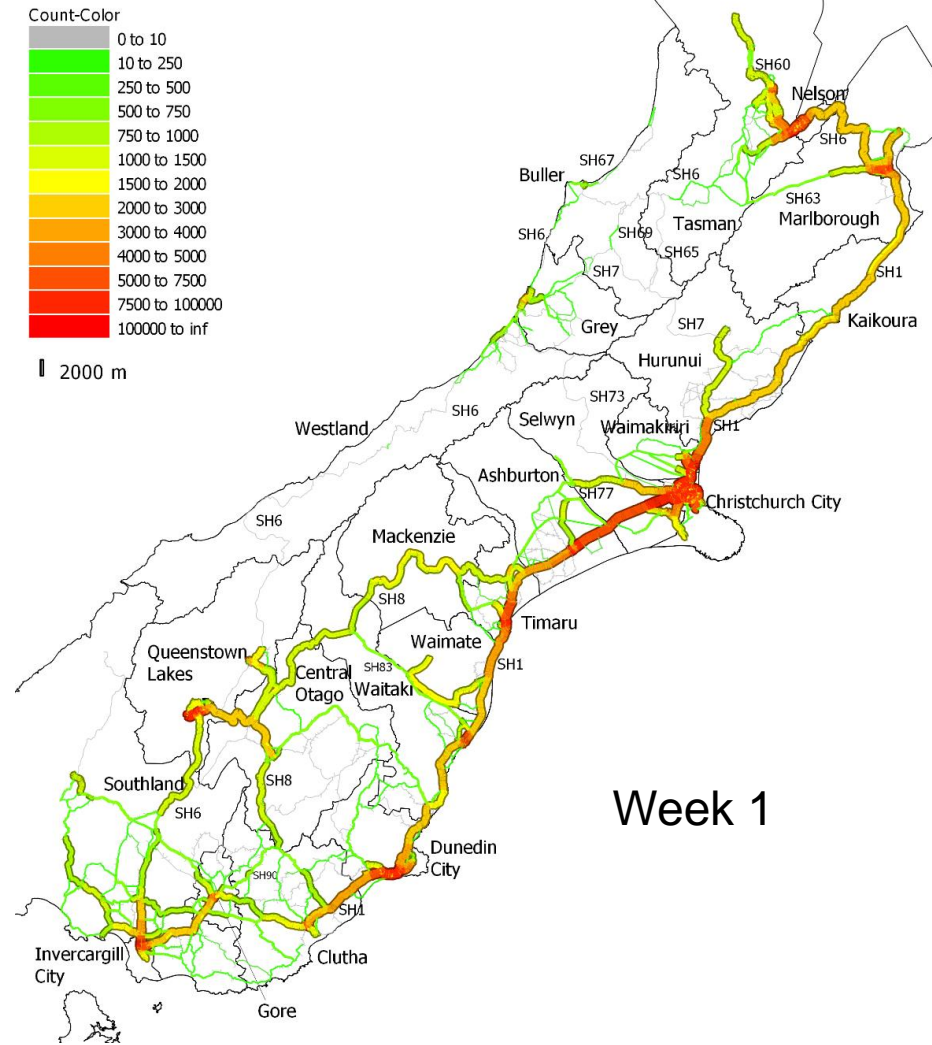
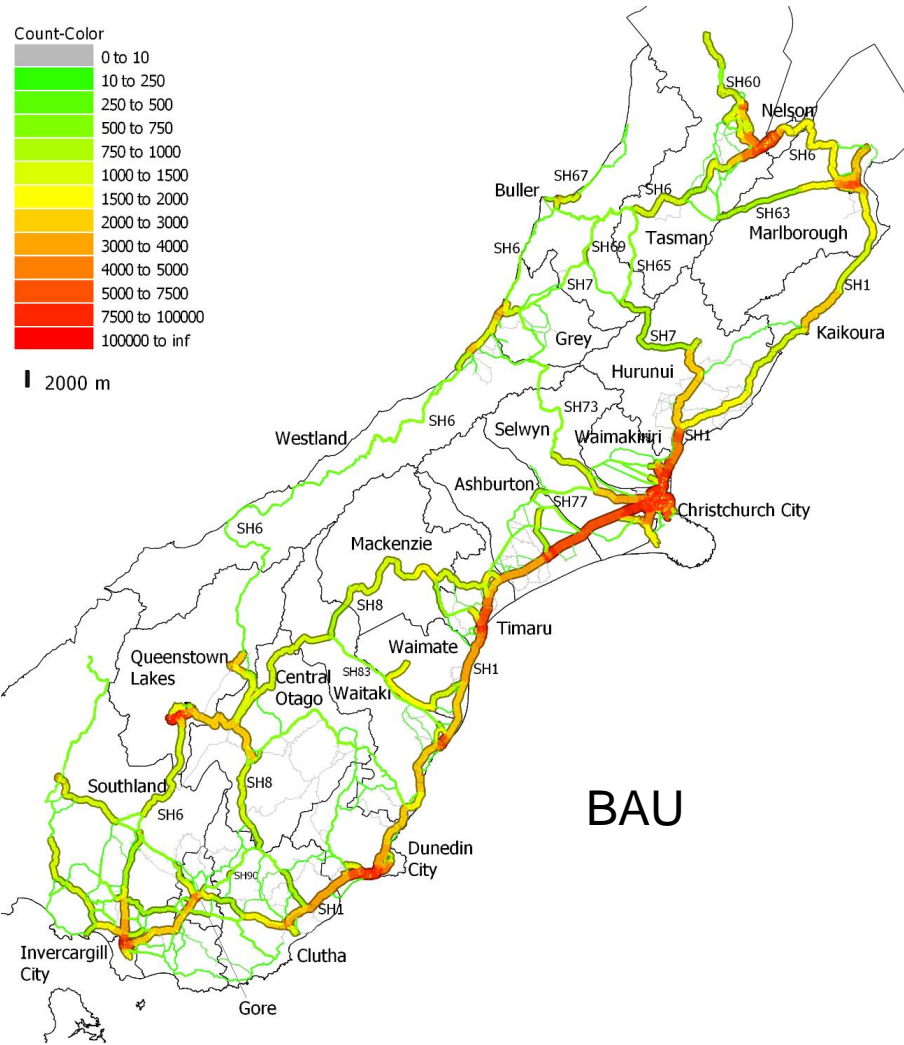


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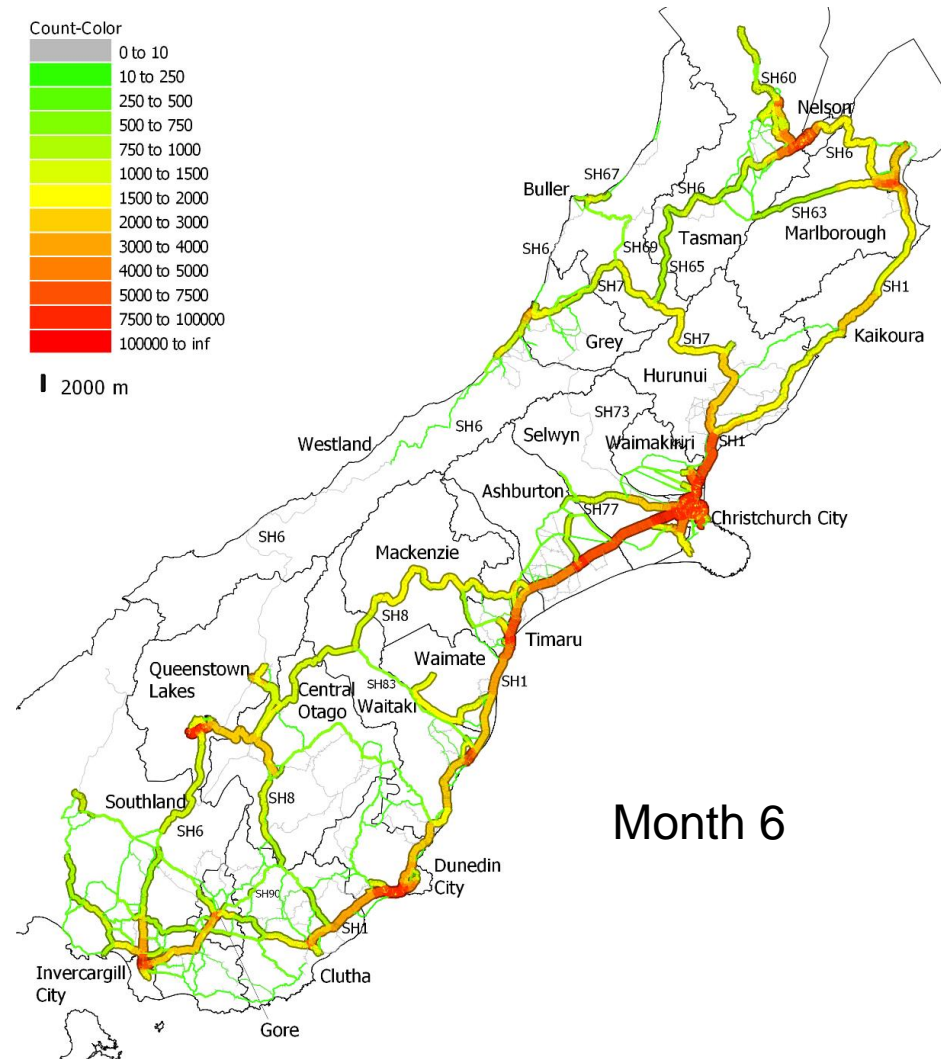
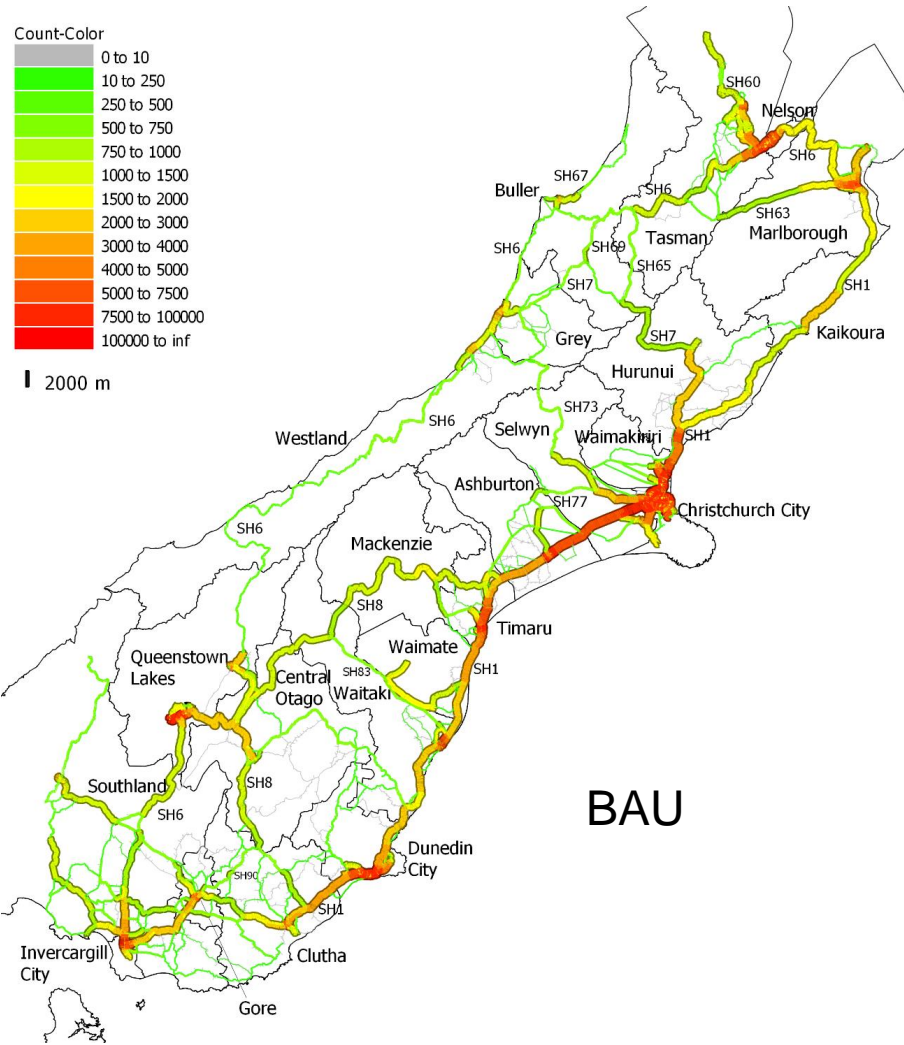
Source: Aghababaei, Costello and Ranjitkar (2020b).

Week 1 / Month 1



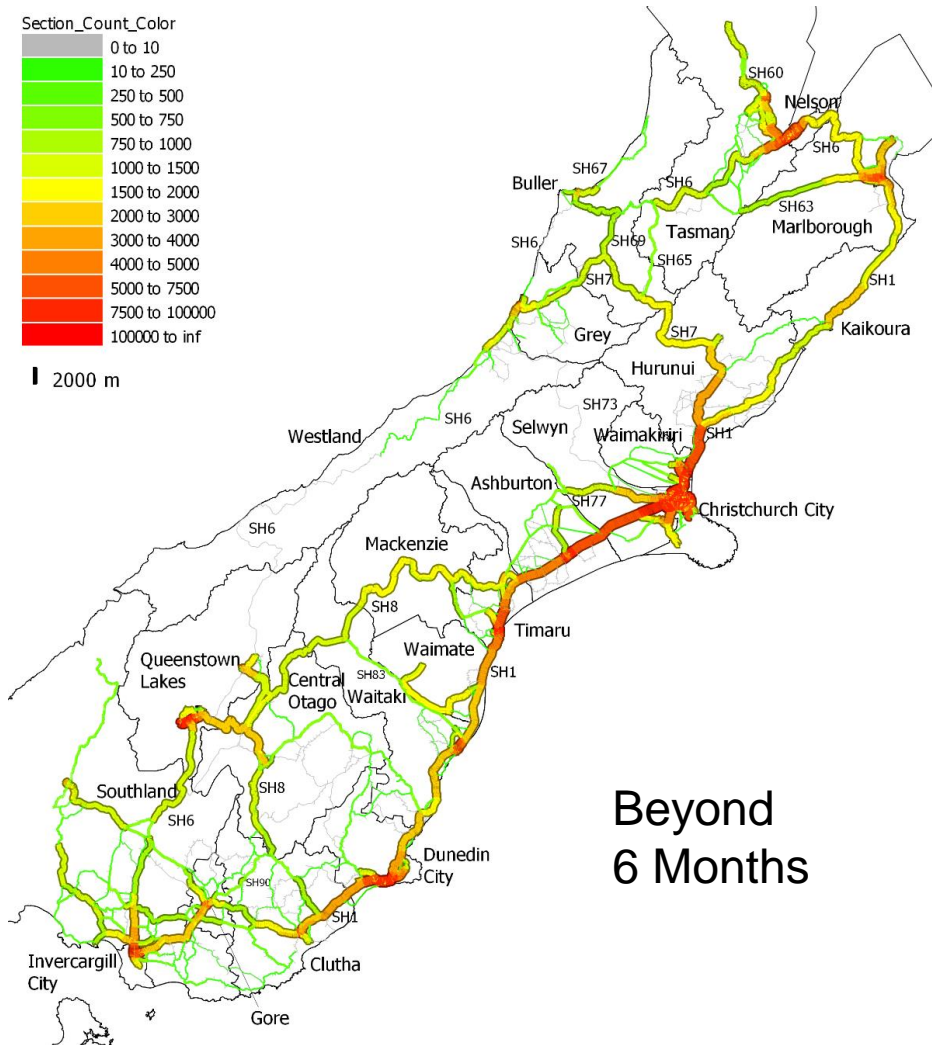
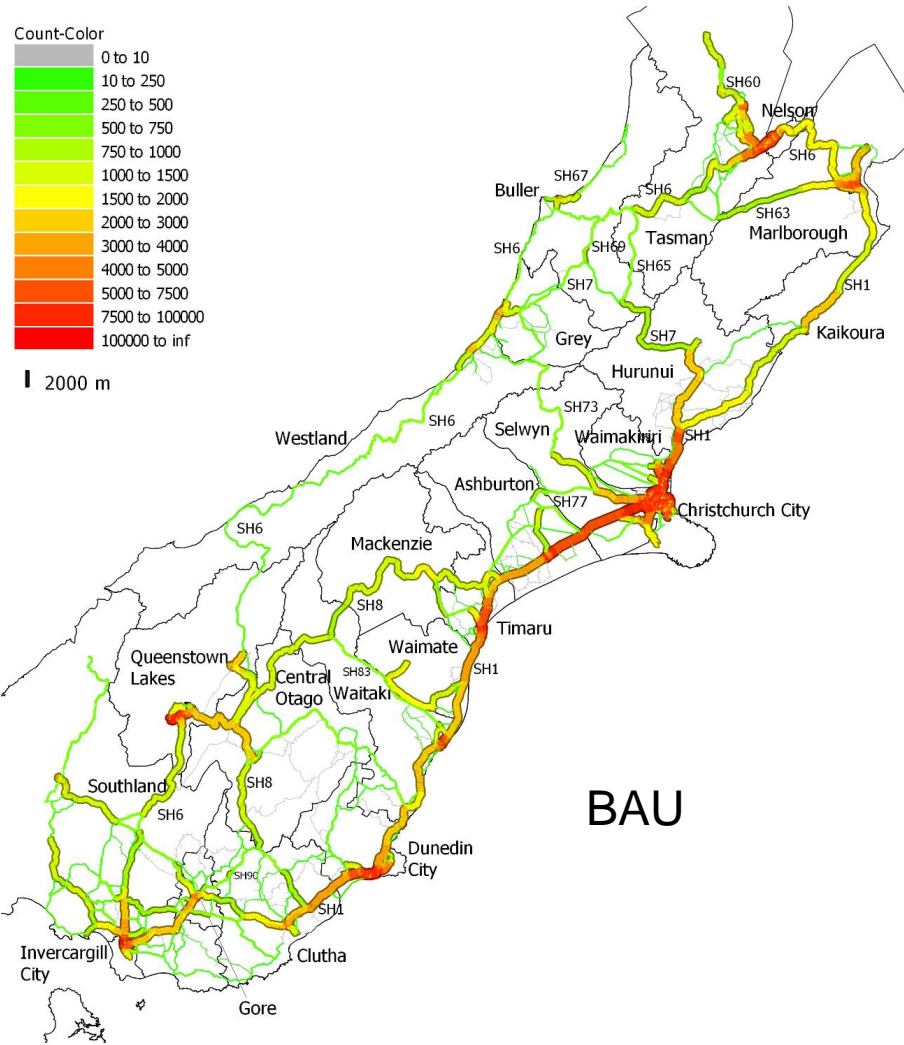
Source: Aghababaei, Costello and Ranjitkar (2020b).

Month 6



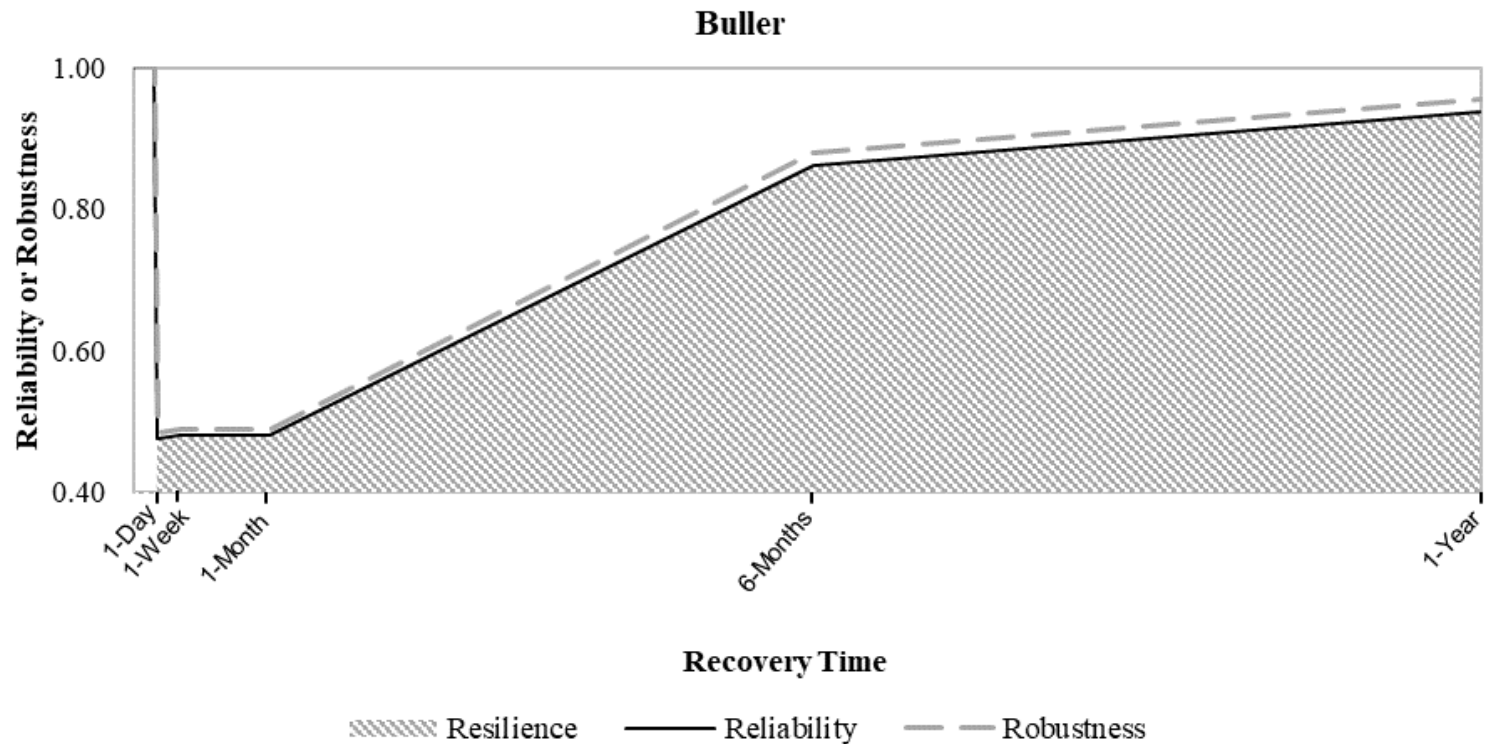
Source: Aghababaei, Costello and Ranjitkar (2020b).

Beyond 6 Months



Source: Aghababaei, Costello and Ranjitkar (2020b).

Trip Resilience



Source: Aghababaei, Costello and Ranjitkar (2021 under review).

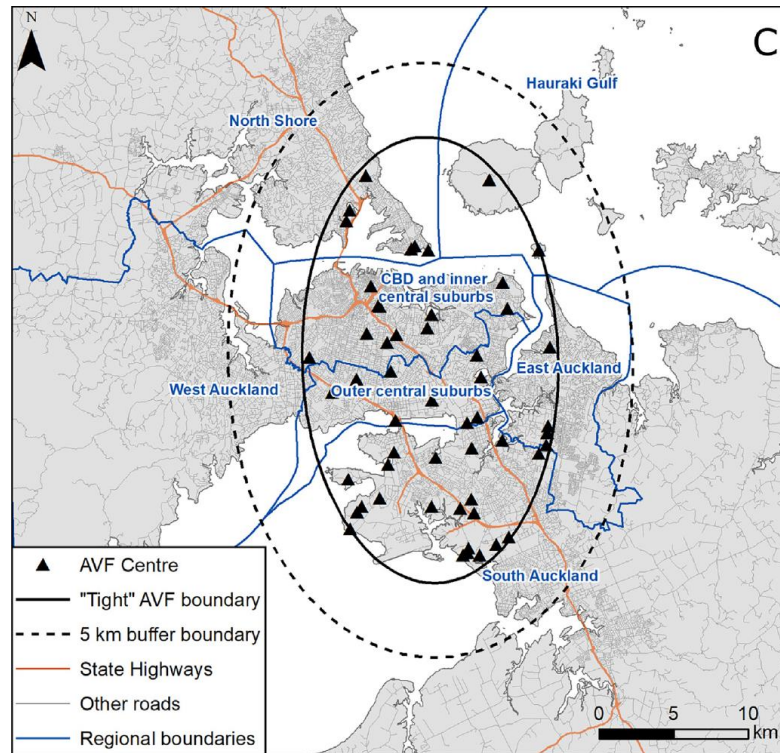
Auckland Mass Evacuation Travel Time Model



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Source: Wild et al. (2021)

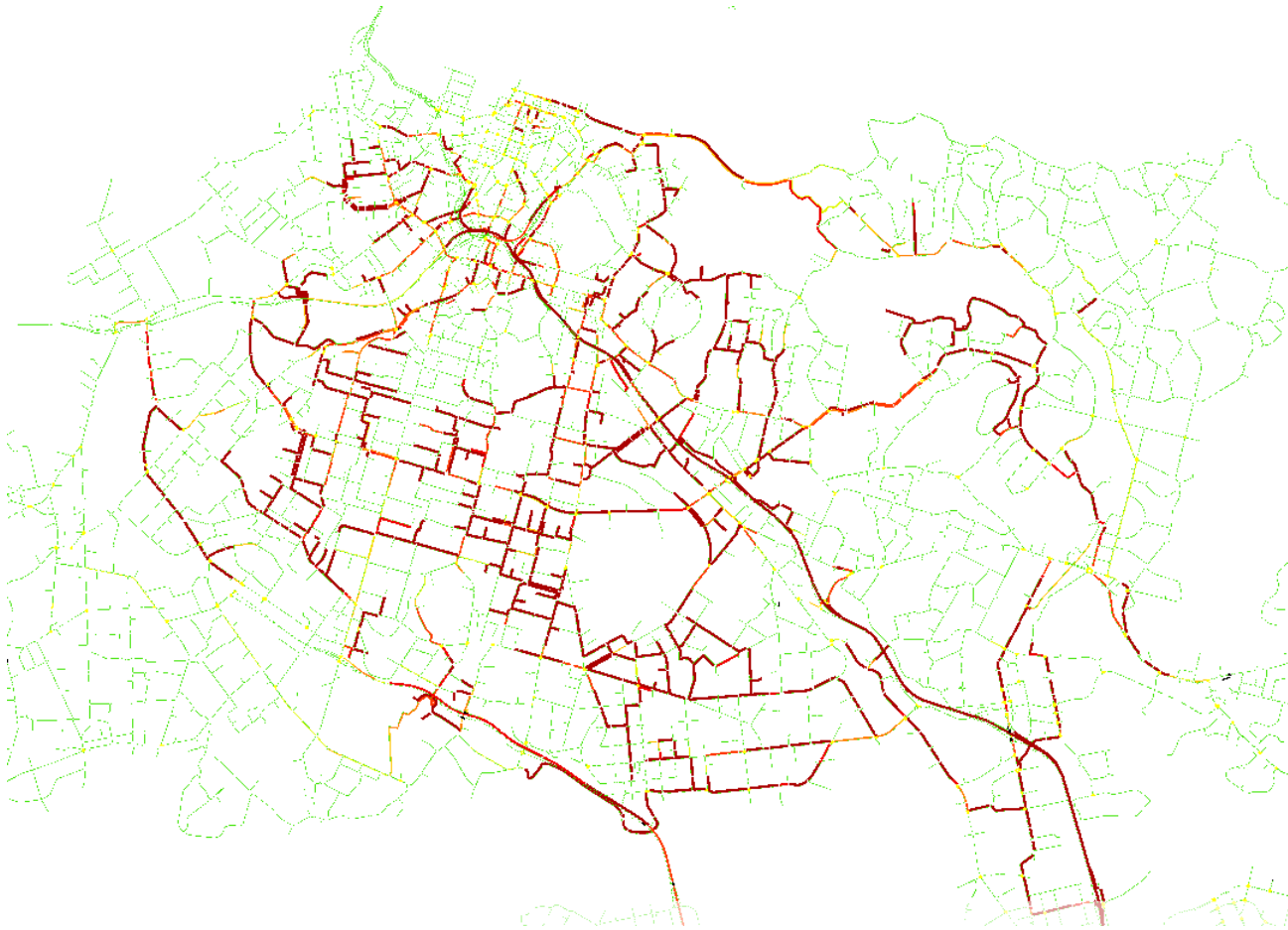


Auckland Evacuation



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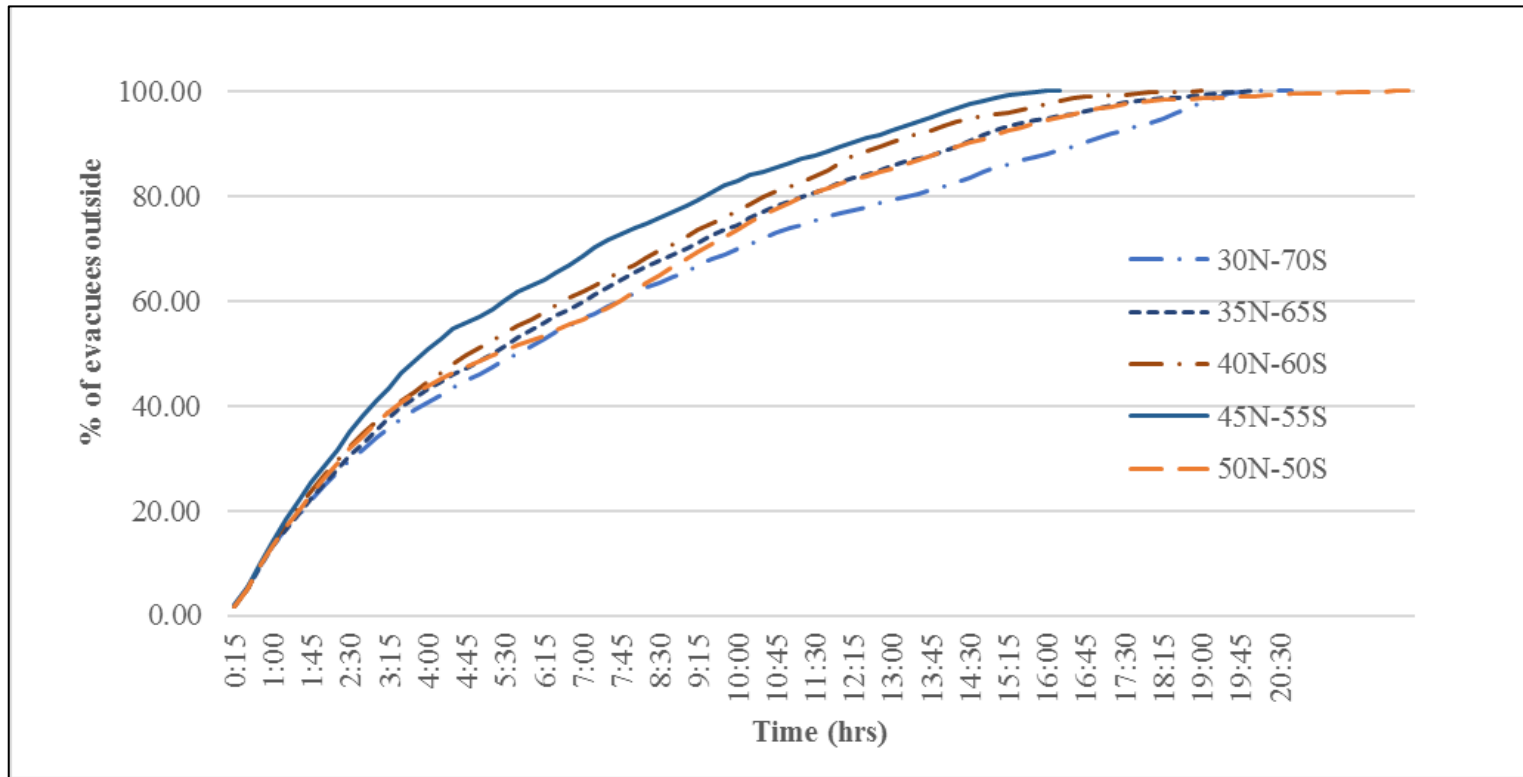
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Auckland Evacuation



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References



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